Texas Commission on Environmental Quality

Waste Permits Division Correspondence Cover Sheet

Date: 02/2025
Facility Name: City of Meadow Landfill
Permit or Registration No.: 2293C

Nature of Correspondence:
☐ Initial/New
☒ Response/Revision to TCEQ Tracking No.: 30060987 (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:	

REPUBLIC SERVICES
Sustainability in Action

February 28, 2025

Mr. Jason Baiocchi
Project Manager
MC-124
Texas Commission on Environmental Quality
12100 Park 35 Circle
Austin, Texas 78753

Re: Response to Technical Notice of Deficiency Letter
City of Meadow Landfill
Meadow, Terry County, Texas
Municipal Solid Waste Permit Number: 2293C
Tracking No. 30060987; RN101570976/CN606025534
Major Permit Amendment

Dear Mr. Baiocchi:

On behalf of Meadow Landfill, LLC, please find enclosed one original and three copies of the replacement pages for the referenced permit amendment application. The attached replacement pages were developed to incorporate comments included in your email dated December 3, 2024.

The enclosed table contains each comment identified by the TCEQ and a response to each below the comment.

We appreciate your review of this permit application and look forward to your comments. In the meantime, if you have any questions, please do not hesitate to contact me by phone (325-518-7397) or emai[redacted]

Sincerely,

Brian Danko

Brian Danko
Environmental Manager

Copies submitted: Attachment 1: NOD1 Table
Attachment 2: Replacement Pages (Redline/Strikeout Version)
Attachment 3: Replacement Pages (Clean Version)

cc: Duncan Norton, Lloyd Gosselink Rochelle & Townsend, P.C.
Kyle D. Gould, P.E., Weaver Consultants Group, LLC

ATTACHMENT 1

NOD 1 TABLE

NOD ID	MRI ID	Location	Rule (30 TAC)	Comment
1	45-46	General	330.55(a)-(b)	Provide a written acknowledgement within the application that these requirements will be complied with. **Response:** Appendix IIIC, Section 1 and Appendix III-I, Sections 1.1 and 1.2 have been revised accordingly.
2	12	General	330.57(d)	The Waste Acceptance Plan form, Section C states that the facility will *not* accept Class 1 RACM. This contradicts Part IV, Section 4.20.5-6, which states that the facility *will* accept Class 1 RACM. If the facility will accept Class 1 RACM, please address all the rules applicable to the management of Class 1 waste. **Response:** Section C on Form TCEQ-20873 has been corrected to show that the landfill will accept Class 1 waste that is designated as Class 1 only because of asbestos content (Class 1 RACM), as described in Title 30 TAC §330.171(c)(3), which sets forth the requirements for acceptance and disposal of RACM, and Title 30 TAC §330.173(c) which sets forth the additional requirements for acceptance and disposal of Class 1 RACM (which by definition in Title 30 TAC §330.171 is a Special Waste acceptable at Type I and Type IAE landfills). The requirements for acceptance of Class 1 RACM, including the recordkeeping and reporting requirements of Title 30 TAC §330.173(g) and (h) are discussed in Part IV, Section 4.20.5.

3	12	Part I/II, Appendix I/IIB	330.57(d)	The project summary submitted to other state and federal agencies mentions that collected LFG will be combusted in a flare or "*processed for beneficial reuse as renewable energy*". Acknowledge that prior authorization under a Type IX registration will be obtained prior to the implementation of the latter option. **Response:** The Project Summary packages were submitted to the various agencies included in Appendix I/IIB to obtain authorizations that support this permit application. The City of Meadow acknowledges that a Type IX registration will be required prior to the processing of landfill gas as beneficial reuse as renewable energy.
4	12	Part I/II, Appendix I/IID	330.57(d)	Add a list of Tables and Figures to the Table of Contents. **Response:** Appendix I/IID (Traffic Study) was prepared and submitted to the Texas Department of Transportation (TXDOT) in January of 2024 and approved by TXDOT in June of 2024 to support this permit application. This document cannot be revised.
5	12	Part I/II, I/II-v	330.57(d)	Provide the referenced Figure I/II-3.4 (missing) and add Figure I/II-11.1 to the list of Tables & Figures. **Response:** Reference to Figure I/II-3.4-Citizens Convenience Center (CCC) Plan has been removed from the table of contents, and reference to Figure I/II-11.1-Flood Insurance Rate Map has been added to the table of contents.
6	12	Part I/II, Section 10.1	330.57(d)	Provide information on the overall direction of groundwater flow and depth to water. **Response:** Parts I/II Section 10.1 has been amended to provide a summary of regional and site-specific groundwater flow. Regional aquifer and site-specific groundwater depths and elevations are provided and discussed in Appendix IIIG (Geology Report) and Appendix IIIH (GWSAP).

7	12	Part I/II, Section 2, Figure I/II-2.1	330.57(d)	Identify the arrows and structures colored in blue in the Legend. **Response:** Figure I/II-2.1 has been revised accordingly.
8	12	Part I/II, Section 2.1.1	330.57(d)	"*…the facility will not accept for disposal liquid waste (unless accepted for solidification…*" It is understood that the facility intends to accept liquid waste regularly and that all liquid waste will be solidified prior to disposal. Clarify under what circumstances liquid waste will not be accepted. **Response:** Parts I/II, Section 2.1.1 has been modified to state the affirmative that liquid waste will only be accepted for solidification and meeting the acceptance criteria for Special Waste as set forth in Part IV, Section 4.20 and Appendix IVC.
9	12	Part III, Appendix IIIJ	330.57(d)	Ensure that the title of Figure IIIJ-1 matches the title presented in the Table of Contents. **Response:** The Table of Contents List of Figures titles have been corrected.
10	12	Part III, Appendix IIIJ, Figure IIIJ-2	330.57(d)	Clarify how the bold, horizontal lines in the final closure figure are to be interpreted. Confirm if the notice will be published 90 days prior to initiation of closure activities and remain published for the full 90 days. **Response:** Minor edits have been made to Figure IIIJ-2 to include adding a legend to designate between milestones and periods, revising the publication date to a milestone, revising the time for notification of the TCEQ from 45 to 90 days, adding a task of providing the closure and post-closure documents for public review, and minor revisions to Appendix IIIJ, Section 4 to provide clarification.
11	12	Part III, Appendix IIIL, Appendix IIIL-A	330.57(d)	Verify and correct the cost for contingency. The cost differs from the corresponding costs in Table 1. Explain why no monitoring wells or gas probes need to be installed for closure.

				Response: The contingency costs on form 20721 and Table 1 (Appendix IIIL) have been updated to reflect revised costs discussed in Comment 62 response. Refer to Comments 62 and 97 response for additional information related to the Appendix IIIL changes for this response.
12	12	Part III, Appendix IIIM	330.57(d)	2120 is listed as the year of closure. IIIM-5 and IIIM-4 states the available tonnage will be consumed in the year 2121. Please explain the discrepancy. Verify and correct the calculations on page IIIM-3. Remaining airspace is listed as two different values. **Response:** Appendix IIIM, Section 1.4 has been revised to reflect 2021 as the year of closure. The calculations on Sheet IIIM-3 begin in cubic yards (as can be determined from AutoCAD) and then are converted to tons, which is how a landfill measures incoming waste. The calculations in the table are performed for waste tonnage, not cubic yards.
13	12	Part III, Appendix IIIM, Sheet IIIM-6	330.57(d)	Add Sheet IIIM-6 to the Appendix IIIM Table of Contents. **Response:** Sheet IIIM-6 has been added to the Appendix IIIM Table of Contents.
14	12	Part III, Appendix IIIM, Sheet IIIM-6	330.57(d)	Provide separate figures to show the projected depth of remaining fill, projected bottom of waste contours, and projected top of intermediate cover. Also specify if depth to remaining fill is in feet. **Response:** Additional figures (IIIM-6A and IIIM-6B have been added showing the bottom of waste contours and top of intermediate cover grades. Additionally, the legend has been revised to indicate that the depth to remaining fill is in feet.

15	12	Part IV, Appendix IVB, Section 3	330.57(d)	Describe how used ADC that has come into contact with waste will be stored. Explain how it will be determined when tarps are no longer effective as daily cover and specify if these traps will be replaced with new ones. **Response:** Section 3 addresses tarp storage and inspections for effectiveness. Section 3 has been updated to address this comment.
16	12	Part IV, Appendix IVC	330.57(d)	Explain how the Express Waste Profile is different from the Special Waste Profile and the conditions under which either are used. **Response:** The Express Waste Profile is used for a limited class of waste defined in Section III-Waste Stream Information shown on the form. The Express Waste Profile allows this limited class of materials (Special Wastes) to bypass the more formal Special Waste Profile form requirements. Please note that the purpose of both forms is to adequately demonstrate the acceptability of the individual waste into the landfill.
17	12	Part IV, Appendix IVC, Section 5	330.57(d)	The application states special waste generators must recertify their waste annually. Please clarify what is meant by “on-time basis wastes” and explain why recertification of this waste by special waste generators is not necessary. **Response:** A one-time basis waste would not require recertification as described in the section, as it would be associated with a specific event (i.e., spill) and not received on an ongoing basis.
18	12	Part IV, Appendix IVC, Section 8	330.57(d)	Provide a minimum frequency for refresher training. **Response:** Appendix IVC, Section 8 has been revised to reference the training and recordkeeping requirements set forth in Part IV, Section 6.4-Training.

19	12	Part IV, Appendix IVD, Drawing 2	330.57(d)	Identify the square around the solidification basins and tracking guide. Show the slope direction on the access road leading into the containment pad. Provide a note explaining where the sediment trap will direct wastewater/stormwater. **Response:** The leader on Drawing 2 has been repositioned to identify the “Limit of Solidification Basin Containment Area.” Note 8 is revised for clarity. A slope indicator for the road has been added to Drawing 2. Note 10 was added to detail the sediment trap discharge.
20	12	Part IV, Appendix IVD, Drawing 4	330.57(d)	Section 8.3 notes that bulking agents will be stored within secondary containment berm. Indicate this on the figure. Explain how waste will be transported into and out of the bulking facility given the figure shows the secondary containment berm completely encloses the solidification basins. **Response:** Note 3 on Drawing 4 has been revised to indicate that bulking agents will be stored within the secondary containment berm. In the Option B scenario, liquid waste transporters will pump liquid waste through a hose over the containment berm and into the tanks.
21	12	Part IV, Appendix IVD, Drawing 5	330.57(d)	Identify the material between the GCL and concrete lining. **Response:** Annotation has been added to identify General Fill as the material to be placed between GCL and Concrete Lining in Appendix IV, Drawing 3.

22	12	Part IV, Appendix IVD, Section 1	330.57(d)	Clarify if "yard waste bulking" is synonymous with "liquid waste bulking." Clarify what information provided by Appendix IVD is required by 330.201. That rule subjects all non-disposal units to the requirements of Subchapter E but itself requires no information be provided. **Response:** In Appendix IVD, Section 1 “Yard waste bulking” has been corrected to “liquid waste bulking”. The applicability of Title 30 TAC §330.201 to liquid waste bulking facilities is related to the reference contained in the rule stating “this subchapter applies to the operation of municipal solid waste storage and processing units.” The TCEQ has considered liquid waste bulking facilities to be processing facilities and has adopted similar liquid waste bulking plans into permits as a component of the Site Operating Plan.
23	12	Part IV, Appendix IVD, Section 3.1	330.57(d)	Explain what is meant by "Railroad Commission waste." Note that not all waste regulated under the RRC is considered solid waste. **Response:** Railroad Commission waste is a generally accepted industry term related to waste regulated by the Railroad Commission of Texas, and is related primarily to by-products of the oil and gas industry. Please note that there is nothing in the reference to “Railroad Commission” waste within the application that excludes it from the strict requirements for Special Waste acceptance set forth in Part IV – Special Waste Acceptance Plan included in the application.
24	12	Part IV, Appendix IVD, Section 7.1	330.57(d)	Explain how fuel spills will be contained. Clarify if "designated site personnel" refers to select individuals or any personnel are staffing the bulking facility at the time. Identify the fuel stations and designated smoking areas on-site.

				Response: Containment of fuel spills is addressed in the first paragraph of Part IV, Section 7.4. The section has been expanded to include additional discussion regarding containment of fuel spills. Reference has been added to Section 7.1 of Appendix IVD. The requirements of IVD-Section 7.1 are applicable to "landfill personnel" according to their assigned tasks and training at the landfill, hence the term "designated". Note that the requirements listed in Section 7.1 are not necessarily exclusive to the liquid waste stabilization basins but represent the overall mission of the landfill personnel to operate in all areas of the landfill in a safe and responsible manner. An additional clarification has been added to Appendix IVD, Section 7.1. Designated smoking areas have not been assigned to the landfill, but as set forth in Section 7.1 smoking will be designated in areas not in the immediate work area, and away from the liquid waste bulking facility, fueling stations, and other fire sensitive areas. Additionally, "fuel stations" are generally dual-contained portable storage tanks with fuel loading appurtenances that can be moved to strategic locations on the landfill property as not to interfere with landfill traffic, and are not confined to a specific location.
25	12	Part IV, Appendix IVD, Section 8.1.1	330.57(d)	Explain which parties qualify as visitors requiring an escort by a facility representative. **Response:** Clarification has been provided in Appendix IVD, Section 8.1.1 to further define the term "visitors".
26	12	Part IV, Appendix IVD, Section 8.1.2	330.57(d)	The application states that "solid waste" collection vehicles will be directed to the liquid waste bulking facility. Please revise the reference to clarify if solid waste will be deposited in the bulking facility or if the facility will be restricted to only liquid waste. **Response:** Appendix IVD, Section 8.1.2 gas been revised to reference "liquid waste transport" vehicles.

27	12	Part IV, Appendix IVD, Section 8.2.2	330.57(d)	Identify the "sampling station" mentioned during the visual inspections of incoming waste. **Response:** A designated "sampling station" is not proposed for this facility. Reference to the "sampling station" has been deleted from Appendix IVD, Section 8.2.2.
28	12	Part IV, Appendix IVD, Section 8.9	330.57(d)	Clarify if any future relocations of the bulking facility will always be a minimum of 125 feet from the landfill permit boundary. **Response:** Appendix IVD, Section 8.9 has been revised to state that future relocations of the bulking facility will also be a minimum 125 feet from the permit boundary.
29	12	Part IV, Appendix IVD, Section 9	330.57(d)	Clarify if the facility closure procedures will only be implemented upon final closure of the landfill or will be performed after each relocation. If the former, provide a discussion of the procedures for relocation. **Response:** The Option A facility will be closed when the landfill is developed in that area. It is not anticipated that the Option A facility will be relocated as the site will move forward with utilizing the Option B facility for solidification. However, Section 4 was revised to include the possibility of relocation of Option A. For Option B, this facility will be relocated, as necessary, as the landfill is developed. The Option B facility will be located over a Subtitle D lined area within the permitted waste footprint. Section 9.2 has been revised to address relocation and closure of the Option B facility.
30	12	Part IV, Appendix IVD, Section 9.2	330.57(d)	Define "decompressing process." **Response:** The word "decompressing" has been replaced with "decommissioning" in Appendix IVD, Section 9.2.
31	12	Part IV, Section 4.1.1	330.57(d)	Explain what is meant by "equipment" used to temporarily block compromised perimeter fencing. **Response:** Additional text has been added to Part IV, Section 4.1.1 to describe the use of "equipment".

32	12	Part IV, Section 4.16	330.57(d)	Explain the discrepancy between the assertion that no known water wells exist on site when several wells are shown as being within the proposed permit boundary in Figure I/II-4.3. **Response:** Part IV Section 4.16 has been revised to provide a discussion of the existing onsite water wells.
33	12	Part IV, Section 4.2.1	330.57(d)	Explain why the Convenience Center may be used for storage of recyclable materials when the Waste Acceptance Plan Form states that no material recovery operations will be conducted. **Response:** “Material recovery from incoming waste” is interpreted to mean selective picking or screening of raw MSW to remove recyclables, which is not proposed for this facility. However, should recyclables be received at the landfill (in segregated containers or bins) these materials may be stored within the Convenience Center area prior to off-site shipping for recycling.
34	12	Part IV, Section 4.21	330.57(d)	Explain where water running off the Convenience Center area is or will be directed. **Response:** Water contacting the Convenience Center will discharge as surface water into the on-site stormwater management systems.
35	12	Part IV, Section 4.22, IV-45	330.57(d)	Explain the difference in process between directly discharging leachate to a POTW versus transferring it to a POTW via an authorized hauler. **Response:** Discharging to a POTW would refer to discharge to a sewer system or dedicated pipeline to a POTW, whereas transport by hauler is via tanker truck. The first condition implies that at some point in the future life of the landfill a POTW (or a sewer system capable of receiving and transporting leachate to a POTW from the landfill) will be installed at a location allowing leachate to be disposed directly from the landfill to the POTW without tanker transport.

36	12	Part IV, Section 6.2	330.57(d)	Explain why transfer station loads, liquid wastes, asbestos wastes, and other waste loads are to be excluded from random inspections as required by 330.127(5)(A). **Response:** As described in Section 6.2, random inspections includes dumping the waste load on the ground at or near the working face, and the operator breaks open the load for inspection. Certain waste streams are excluded from the inspection process for the reasons given below: Transfer Station Loads – waste from licensed transfer stations is inspected during the transfer and loading procedures at the transfer station, incorporating procedures approved by the TCEQ for the transfer station. Liquid Wastes – liquid wastes are accepted as special waste and require a higher level of reporting and testing prior to acceptance than typical waste loads subject to random inspection. Asbestos – asbestos arrives at the landfill in sealed bags and is disposed in a manner that the bags are not opened or disturbed for safety reasons. Other Wastes – As defined in Section 6.2, these “other” wastes are wastes that have undergone other activities (e.g., qualification for acceptance of special wastes) to define the acceptability of the waste.
37	12	Part IV, Section 7.7.1	330.57(d)	Clarify where the water supply for firefighting purposes is sourced from and what will be done if a sufficient volume of water cannot be sourced. **Response:** The use of water obtained from on-site detention ponds is addressed in Part IV, Section 7.7.3. The text has been expanded to include additional water supply options.

38	12	Part IV, Section 7.7.3	330.57(d)	Clarify if the 2000 gallon minimum water supply account for fires started outside the working face and non- firefighting water usage. **Response:** Part IV, Section 7.7.3 refers to the water maintained on-site to fight working face fires within the waste mass. Fires outside of the waste mass or landfill footprint will be fought on a fire-specific basis, with small fires extinguished with extinguishers, tanker water, soil, or a combination of the available resources. As a contingency, the fire department will be contacted and brought in to assist with firefighting.
39	12	Part IV, Section 7.7.4	330.57(d)	Explain why no more than 15% of the working face is expected to catch fire under the current fire prevention plan. Explain the difference between soil stockpiles and soil borrow areas. Please update to use consistent terminology. Clarify if the "trucks" used in the soil stockpile calculations is being used as a generic term to refer to any number of vehicles with soil-moving capabilities listed in the equipment section or if it refers to separate, specific vehicles. **Response:** The assumption is that no more than 10 to 15 percent of the working face will be engaged in a fire event at the working face, based on the fact that equipment operators are at the working face providing a quick response time. Soil stockpiles consist of soil that has been excavated and stockpiled at the site. Soil from a borrow area (e.g., future disposal cells, stormwater features, or an area on or off the property specifically designated as a soil source) is excavated directly from the original source and transported for use or placed into stockpiles for future use. It is not inconsistent to have both terms used in the application, even interchangeably as they represent the same soil.

				The “truck” used in the calculations is a generic term, and as defined in the calculations is a truck with a hauling capacity of 20 cy (i.e., a large dump truck typical of landfill operations).
40	12	Part IV, Section 7.9	330.57(d)	Explain where the source of the soil used for firefighting will be drawn from. Also indicated if the Convenience Center will have a dedicated stockpile. **Response:** Soil for firefighting will be transported to a location near the working face from either onsite stockpiles or borrow areas. Soil stockpiles will not be maintained at the Convenience Center.
41	12	Waste Acceptance Plan Form	330.57(d)	Section G, Table 1 shows that the Convenience Center will accept all authorized wastes other than liquids and special wastes. Section 4.2.1 however, says that sharps will be excluded. If so, indicate sharps in the list of excluded wastes for the Convenience Center on the Waste Acceptance Plan Form. **Response:** Sharps are a form of “untreated medical waste” as defined as a special waste in Appendix IVC. However, for clarity the term “medical sharps” has been added to the form.
42	12	Waste Acceptance Plan Form	330.57(d)	The Waste Acceptance Plan Form states the contributing areas include the City of Meadow along with Terry and Lubbock counties. Appendix IIIM states that the service area will also include Cochran, Dawson, Gaines, Hockley, Lynn, and Yoakum counties. Please verify, correct, and adjust calculations accordingly. **Response:** The City of Meadow, Terry County and Lubbock County represent the currently anticipated primary service areas for the landfill. Appendix IIIM has been updated accordingly.
43	25	Part I/II, Section 4, Figure I/II-4.2	330.57(h)(1)	Revise map to use more legible radii callouts. **Response:** Radii callouts have been revised on Figure I/II-4.2 for clarity.

44	25	Part IV, Appendix IVB-1	330.57(h)(1)	Provide legible MSDS sheets. **Response:** Updated specifications and an MSDS example for the ADC tarps replaces the previous information contained in Appendix IVB-1.
45	73	Part I/II, Section 6, Figure I/II-6.1	330.59(c)(1)(A)	Indicate the coordinates provided for the site. The checklist indicated the referenced figure as demonstration, but the information could not be identified on the figure nor any of the other figures provided in Part I/II. **Response:** Coordinates have been added to Parts I/II, Figure I/II-6.1.
46	125	Part I/II, Table 2-2	330.61(b)(1)(A)	Clarify if the population equivalent represents the current population served or a future population projection. Also clarify if the Site Life represents the time until facility closure or includes the post-closure care period. **Response:** Part I/II, Table 2-2 has been revised (Note added) to clarify the population equivalent. Site life is the period the landfill will receive waste, and does not include the post-closure period.
47	128	Part I/II, Section 2.1.2	330.61(b)(1)(C)	Clarify if the two-column table after Table 2-2 indicates the maximum expected waste acceptance rates or the average for each year. Please provide the maximum expected waste acceptance rate for five years. Please also label this table and add to the Table of Contents. **Response:** The table (new Table 2-2A) has been labeled and added to the table of contents. As shown, the values are the maximum estimated values as calculated from projected population increases presented in Appendix IIIM, Section 1.4.
48	155	Part IV, Section 4.20.3	330.155	Indicate that pesticide, fungicide, rodenticide, and herbicide containers will not be salvaged unless being salvaged through a state-sponsored recycling program. **Response:** Section 4.20.3 has been revised as requested.

49	156	Part I/II, Section 10.2 and Appendix I/IIE	330.61(k)(3)(B)	Provide a valid wastewater permit number or a certification statement that a TPDES Permit will be acquired. ID number *TXR050000* could not be connected to City of Meadow Landfill. **Response:** The facility currently is permitted under the Multi-Sector General Permit TXR050000, which is a general permit used by multiple sites in multiple sectors, and is not specific to the City of Meadow Landfill.
50	171	Part I/II, Section 4, Figure I/II-4.2	330.61(c)(1)	Provide wind rose as a separate enlarged figure and clarify if the Lubbock Regional Airport is the nearest representative meteorological station. **Response:** The wind rose has been removed from Figure I/II-4.2 and placed onto a new Figure I/II-4.2A. Additionally, the new wind rose was obtained from Levelland, Texas which is closer to the landfill.
51	212	Part I/II, Appendix I/IIC, Section 4	330.547(c)	Provide the response letter from FEMA regarding the Conditional Letter of Map Revision (CLOMR). **Response:** The CLOMR is currently under review by FEMA, and a copy of their response letter will be provided once it is received.
52	216	Part I/II, Section 12	330.553(b)(2)(A) - (D)	The checklist indicated that this rule was not applicable to the site. Please incorporate this information into the application. **Response:** The applicability of Title 30 TAC §330.553(b) (related to the construction of landfills in wetlands) is addressed in Parts I/II, Section 11.2.
53	229	Part I/II, Appendix I/IIC, Section 2	330.543(a)	Acknowledge that no solid waste unloading, storage, disposal, or processing operations shall occur within any easement, buffer zone, or right-of-way that crosses the facility. **Response:** Section 2 of I/IIC has been updated as requested.

54	691	Part III, Appendix IIIJ, Table 2-1	330.457(c)	The table referenced by the checklist does not exist in Appendix IIIJ. Please provide the table referenced. **Response:** Table 2-1 is present in Appendix IIIJ-A on page IIIJ-A-14.
55	707	Part III, Appendix IIIJ	330.461(a)	Acknowledge that notice of closure will be provided to the executive director 90 days prior to the initiation of a final facility closure and that the owner or operator will also make available an adequate number of copies of the approved final closure and post-closure plans for public access and review. **Response:** Additional text has been added to Appendix IIIJ, Section 4.1.
56	715	Part IV, Appendix D, Section 9	330.459(b)	Describe what will be done with the remaining bulking agent stockpiles. **Response:** Additional text has been added to Appendix IVD, Section 9.1 expanding the final disposition of bulking agents remaining at the time of closure.
57	716	Part III, Appendix IIIJ, Sections 3.4 and 3.5	330.459(c)	Acknowledge that if there is evidence of a release, the executive director may require an investigation, assessment, or corrective action. **Response:** Additional text has been added to Appendix IIIJ, Section 3.4.
58	721	Part III, Appendix IIIK, Section 2.2	330.463(a)(1)	Acknowledge that the executive director may reduce the post-closure period for the unit if all wastes and waste residues have been removed during closure **Response:** Additional text has been added to Appendix IIIK, Section 2.2.
59	723	Part III, Appendix IIIK, Section 2.1	330.463(a)(3)	Acknowledge that the executive director may require an investigation into the nature and extent of any release from the facility and an assessment to correct an impact to groundwater. **Response:** Additional text has been added to Appendix IIIK, Section 2.1.

60	731	Part III, Appendix IIIK, Section 2.1	330.463(b)(3)(A)	Specify the frequency at which the monitoring and maintenance activities will be performed. **Response:** The frequencies are provided in the form in Appendix IIIK-A (Part C).
61	737	Part III, Appendix IIIL	330.63(j)	Submit existing financial assurance documentation. **Response:** Existing financial assurance documentation has been provided as Appendix IIIL-C.
62	738	Part III, Appendix IIIL, Appendix IIIL-A	330.503(a)	Enter costs for Items 2.1.1, 2.6.1, 2.7, 2.8, 2.9, 3.1 - 3.3. Regarding the Final Cover System, enter costs for the Side Slope Cover, Top Slope Cover, and Cells for Class 1 Nonhazardous Industrial Waste, as applicable. Note that some rows in the worksheet contain a unit cost, but no quantity or total cost. **Response:** Appendix L, Tables 1 and 2, and TCEQ forms 20721 and 20723 have been updated (and replaced herein) to reflect the similar cost times. Items not used in the TCEQ forms (as not a component of closure or post-closure) have been homogenized to reflect "NA" and will be revised for future. Finally, note that the costs shown on Table 1 for closure of evaporation basins has been removed, as no evaporation basins are existing for the initial CPC period. Both Tables 1 and 2 have been revised and replaced to allow input of TCEQ inflation factors during future CPC updates consistent with other CPC cost updates submitted to the TCEQ by Republic. Lastly, the entire IIIL text has been edited to more accurately depict the various stages of future landfill expansion and development.
63	741	Part III, Appendix IIIL, Section 4	330.503(a)(3)	Revise language to reflect that a permit modification for reducing the cost estimates will be submitted to the executive director. **Response:** This requirement is specifically addressed in Appendix IIIL, Section 4 (third paragraph).

64	756	Part III, Appendix IIIL-C	330.503(b)	Provide the referenced appendix. The checklist cited this appendix to address this rule requirement, but it could not be found in the application submittal. **Response:** Existing financial assurance documentation, as referenced in the worksheet, is included in Appendix IIIL-C.
65	763	Part IV, Section 9	330.121(a)	Acknowledge that any deviation from the permit and incorporated plans or other related documents associated with the permit without prior approval is a violation of this chapter. **Response:** The requirements of Title 30 TAC §330.121(a) have been incorporated into Parts I/II, Section 1.
66	782	Part IV, Table 9.1	330.125(g)	Move the language "if contaminants migrate off-site as indicated by groundwater sampling" to the end of the paragraph to match rule requirement. **Response:** Part IV, Table 9.1 has been revised to address reviewer's comment.
67	794	Part IV, Section 6	330.127(5)(A)	Indicate that trained staff will observe each load that is disposed at the landfill. **Response:** The requirements of Title 30 TAC §330.127(5)(A) have been incorporated into Part IV, Section 4.2.3.
68	799/800	Part IV, Section 7	330.129	Demonstrate that the facility will have the ability to cover all exposed waste surfaces in six inches of soil within one hour of detecting a fire. Also revise the soil stockpile calculations in Section 7.7.4 to factor in loading and unloading times for the trucks. **Response:** Title 30 TAC §330.129 allows the executive director to approve alternative methods of fire protection. Per Section 7.7.1, the fire protection plan included is an alternative plan utilizing earthen material and water. Similar plans have been reviewed, approved, and

				incorporated into SOPs across the state. A note has been added to Part IV, Section 7.7.4 addressing the correlation between truck travel velocities and loading and unloading times in the calculations.
69	808	Part IV, Section 4.2.1	330.133(a)	Provide the maximum size for all unloading areas. **Response:** Maximum unloading area sizes are addressed in Section 4.2.4 of Part IV.
70	830	Part IV, Section 4, Table 4.1	330.139(2)	Acknowledge that all access roads will be checked daily for windblown waste. **Response:** Title 30 TAC §330.139 addresses litter and windblown waste "throughout the site", which is addressed in Table 4.1 (Appendix IV) under the row titled "Windblown Waste and Litter Collection". Note that the control of windblown waste along the route to the landfill is addressed in Part IV, Section 4.8 of the application.
71	844	Part IV, Section 4.7	330.143(b)(5)	Acknowledge that the landfill grid system will encompass no less than the area expected to be filled within the next three-year period. **Response:** Part IV, Section 4.7 has been revised to address the grid system.
72	846	Part IV, Section 4.7	330.143(b)(6)	Acknowledge that the landfill markers will be reported on each SLER and GLER. **Response:** Part IV, Section 4.7 has been revised to address SLER/GLER markers.
73	847	Part IV, Section 4.7	330.143(b)(6)	Revise the language regarding the areas where markers may not be placed as "constructed" areas to match rule requirements. **Response:** Part IV, Section 4.7 has been revised.

74	858	Part IV, Section 4.11	330.151	Specify the alternative bird abatement programs to be utilized in lieu of pyrotechnic devices. If none are currently proposed, acknowledge that any future alternatives must be approved by the executive director prior to implementation. **Response:** Part IV, Section 4.11 has been revised to require executive director approval for alternative bird abatement programs.
75	863	Part IV, Section 4.12	330.153(c)	Provide a minimum frequency for regrading of access roads. **Response:** The frequency of regrading is specified in Part IV, Section 4.12 as "when necessary" to control or remove mud accumulations on roads or minimize depressions, ruts and potholes. The section further states that "Mud and associated debris tracked onto public roadways will be removed at least once a day on days when present."
76	872	Part I/II, Section 2.5	330.161(b)	Acknowledge that written notification shall be provided to the executive director of the location of any such well within 30 days after discovery during the course of facility development. **Response:** Part I/II, Section 2.5 (paragraph 3) includes the 30-day notification requirement.
77	885	Part IV, Appendix IVB	330.165(d)(1)(A)-(E)	Provide the minimum thickness of the ADC material. **Response:** Updated specifications and an MSDS example for the ADC tarps replaces the previous information contained in Appendix IVB-1.
78	936	Part IV, Section 4.24	330.175	Acknowledge that the executive director may require visual screening. **Response:** Part IV, Section 4.24 has been revised accordingly.
79	990	Part IV, Appendix D, Section 3.2	330.203(b)	Specify expected amounts of each waste stream identified in Section 3.1 to be received, average storage time, and processing timeframes.

				Response: Appendix IVD, Section 3.1 has been revised accordingly.
80	1027	Part IV, Appendix D, Section 5.2	330.211	Provide a plan that describes how all food wastes will be stored in covered or closed containers that are leak-proof, durable, and designed for safe handling and easy cleaning. **Response:** Title 30 TAC §330.211 is applicable to the storage of MSW containing food waste. We have stricken the rule reference from Section 5.
81	1028	Part IV, Appendix D, Section 5.2	330.211(1)	Indicate that nonreusable containers will be of suitable strength to minimize vector scavenging and rupturing. **Response:** See response to comment 80 above.
82	1029	Part IV, Appendix D, Section 5.2	330.211(2)	Indicate how frequently the basins will be cleaned. **Response:** See response to comment 80 above.
83	1030	Part IV, Appendix D, Section 5.2	330.211(2)(A)	Indicate how the storage container basins will be emptied. **Response:** See response to comment 80 above.
84	1031	Part IV, Appendix D, Section 5.2	330.211(2)(B)	Indicate that containers that are mechanically handled must be designed to prevent spillage/leakage during storage, handling, and transport. **Response:** See response to comment 80 above.
85	1040	Part IV, Appendix D, Section 6	330.219(c)(1)(A) - (C)	A distinction is made between "authorized representative" and City of Meadow "personnel" when describing signatories to reports. Describe which personnel will have signatory authority if the signer is not an authorized representative. **Response:** Appendix IVD, Section 6 has been revised to remove reference to “personnel” other than the authorized representative.
86	1054	Part IV, Section 7.1	330.221	Provide a minimum training frequency for non-admin personnel.

				Response: Fire safety (which includes fire protection), is listed as an annual (minimum) training topic for site personnel in Part IV, Section 2.2 of the application.
87	1056	Part IV, Appendix D, Section 8	330.223(b)	Provide a reference to Part I/II, Appendix D (Traffic Study) for access road information. **Response:** Section 8.8 was revised to add reference, as requested.
88	1057	Part IV, Appendix D, Section 8	330.223(b)	Provide a description of vehicle parking for equipment, employees, and visitors. Indicate that safety bumpers at hoppers must be provided for vehicles. Provide a description of the positive means to control dust and mud. **Response:** Designated vehicle parking at the solidification basins is not provided for either employees or visitors. Additionally, the solidification basins are located in the active area of the landfill, and it would be unreasonable to expect or mandate that equipment has specific parking areas. Track guides are provided for solidification equipment. Lastly, the control of dust and mud for the facility (not just the solidification basins) is described in Part IV, Section 4.12.
89	1065	Part IV, Appendix IVD, Section 8.3	330.227	Identify the material used to construct the earthen berms for both facility bulking options. **Response:** Appendix IVD, Section 8.3 has been revised to indicate that berms described for Options A and B will be constructed of earthen materials (soils) obtained from on-site borrow areas or stockpiles.
90	1073	Part IV, Appendix D, Section 8.6	330.233(a)(1)	Explain how reducing the size of the bulking agent stockpiles will prevent windblown waste. **Response:** Reducing the size of a stockpile has been demonstrated to reduce windblown effects of stockpiled bulking agents. Part IV, Section 8.6 has also been expanded to also include the use of water sprayed onto the bulking agent piles to reduce the incidence of dust.

91	1074	Part IV, Appendix D, Section 8.6	330.233(b)	Provide a description of the fence or screen used to minimize windblown waste if the bulking facility is not completely enclosed. **Response:** The use of screens or fencing around bulking agent piles is not feasible and control is provided as revised for Comment 90, above.
92	1083	Part IV, Appendix D, Section 8.10	330.241(b)	Identify the location where incoming waste will be diverted if the bulking facility is non-operational for longer than 24 hours. **Response:** In the event of facility shutdown (regardless of timeframe), the waste will be rejected at the scalehouse and the transporter directed to exit the facility property. Section 8.10 has been updated accordingly.
93	1088	Part IV, Appendix D, Section 8.12	330.245(a)	Acknowledge that air emissions from municipal solid waste facilities must not cause or contribute to a condition of air pollution as defined in the Texas Clean Air Act. **Response:** Section 8.12 has been updated accordingly.
94	1090	Part IV, Appendix D, Section 8.12	330.245(c)	Provide a reference to Section 5.2 (Approved Containers). **Response:** Section 8.12 has been updated accordingly.
95	1092	Part IV, Appendix D, Section 8.12	330.245(e)	Indicate that and the misters and any other abatement equipment will be cleaned and maintained per manufacturer’s recommendations and as necessary so that the equipment efficiency can be adequately maintained. **Response:** Section 8.12 has been updated accordingly.
96	1093	Part IV, Appendix D, Section 8.12	330.245(f)(3) – (4)	Provide information on the "accelerated schedule" processing for problematic liquid waste streams. **Response:** The term “accelerated schedule” has been expanded in Appendix IVD, Section 8.12.

97	738/749	Part III, Appendix IIIL	330.503(a) and 330.507(a)	Recalculate the closure and post-closure care cost estimates to account for the installation of the necessary groundwater monitoring network, landfill gas management system, and leachate collection system. These systems are required and must be accounted for in the facility closure and post closure care cost estimates. **Response:** The closure and post-closure cost estimates were prepared to reflect closure of the existing historic waste disposal area only which do not incorporate the requirements for groundwater monitoring, landfill gas management or leachate collection (no collection systems are existing). The requirements described into this comment will be incorporated into the CPC cost estimates during future updates, as warranted. Refer to Comment 62 response for additional information related to the Appendix IIIL changes for this response.
98	992-997	Part IV, Appendix D, Section 3	330.203(c)	Provide the information requested as applicable. **Response:** Appendix IVD has been developed to address all applicable portions of Title 30 TAC §330.203-207. As discussed during our February 18, 2025 meeting, the purpose of the operating plan is to address the applicability of the rules. If a portion of the rule is not applicable, it has not been addressed in the application.
99	1006-1008	Part IV, Appendix D, Section 3	330.205	Provide references to the relevant sections of the SOP referred to in the checklist that address the requirements of 330.205. **Response:** Refer to Comment Response 98.
100	1019-1022	Part IV, Appendix D, Section 4	330.207(d)-(g)	Provide the information requested as applicable. **Response:** Refer to Comment Response 98.
101	n/a	Part IV, Appendix IVD, Section 4	305.70(d)	Regarding the potential relocation of the bulking facility during the active life of the landfill, acknowledge that the facility obtain prior approval from the executive director through a permit modification.

				Response: Appendix IVD, Section 4, has been revised accordingly. Additionally, the table in Appendix IVD, Section 3.2 has been corrected.
102	149	Parts I/II, Section 9.2	330.61(j)(2)	Indicate the date a field visit was conducted along with the name of the geologist or PG firm that conducted the site physical inspection. Provide specific references of published literature substantiating the reported field observations. **Response:** The requested information is provided in the existing Fault Areas location demonstration certification in existing Parts I/IIC, Section 8 (Fault Areas). The existing Parts I/II, Section 9.2 also includes a textual reference to Parts I/IIC.
103	157	Parts I/II, Section 7.7	330.61(l)(1)	Identify the water well locations in Figure I/II-4.2 referenced in section I/II-7.7. Figure IIIG-A-6 referenced in section I/II-7.7 is not a water well locations map. Provide a map showing water well locations. **Response:** Parts I/II, Section 2.5 and Section 7.7 have been revised to reference the water well locations illustrated on existing Parts I/II Figure I/II-4.3 and existing Appendix IIIG Figure IIIG-A-8.
104	158	Acknowledged	330.61(l)(1)	Compare locations of water wells in Figure IIIG-A-8 and monitoring wells in Figure IIIH-A-1 and revise the groundwater monitoring system such that none of the water supply wells within the facility boundary are inside the groundwater monitoring perimeter. Provide a list of the monitoring wells to be relocated as well as the proposed new locations. **Response:** Parts I/II, Section 2.5 (Abandoned Oil and Water Wells) and Section 7.7 (Water Wells Within 500 Feet) have been amended to clearly indicate that the existing onsite

				water wells located within the groundwater monitoring network or limits of waste disposal footprint will be plugged and abandoned prior to landfill expansion area development.
105	159	Acknowledged	330.61(l)(1)	Monitoring well 2 identified on Figure IIIG-A-8 as water supply, appears to be within the proposed limit of waste. Plug this monitoring well as well as any other water supply wells within the permit boundary. Provide certification of plugging and abandonment within 30 days prior to construction. Submit the plugging report for gas well 32282 shown on Figure III-G-A-9. **Response:** Per Figure IIIG-A-8 (Water Well Location Map) legend, the wells shown are all water wells and the referenced well 2 is a water well identified in the visual search. As indicated in Parts I/II, Section 2.5 (Abandoned Oil and Water Wells) and Section 7.7 (Water Wells Within 500 Feet), any existing onsite water wells located within the limits of waste disposal footprint and within the groundwater monitoring network will be plugged and abandoned prior to landfill expansion area development. The plugging report for gas well 32282 has been added to Appendix IIIG-A on page IIIG-A-82.
106	479	Part III, Appendix IIIG, Section 2.4	330.63(e)(3)(C)	Provide the hydraulic properties of the Ogallala and Edwards-Trinity aquifers. Discuss their hydraulic connectivity in the vicinity of the site. This information was not found in IIIG-2.4 **Response:** Hydraulic properties of the Ogallala and Edwards-Trinity High Plains Aquifer are discussed in Appendix IIIG, Section 2.4 with regional hydraulic property and water quality parameter values provided in Appendix IIIG, Table 2-2. Appendix IIIG, Section 2.4 (Regional Aquifers) has been amended with additional hydrogeological information pertaining to the hydraulic interconnectivity of the

				Ogallala and Edwards-Trinity aquifers. Appendix IIIG, Table 2-1 (Regional Stratigraphy in the Vicinity of the City of Meadow Landfill) has also been revised to provide more precise estimates of approximate thickness and depths of the Ogallala, Edwards-Trinity High Plains, and Dockum aquifers in the Site area.
107	481	Part III, Appendix IIIG, Section 2.4	330.63(e)(3)(E)	Provide specific information and/or examples on where it has been established that the Ogallala and Edwards-Trinity aquifers are hydraulically connected. Discuss the nature of the interconnection and proximity to the facility. **Response:** Appendix IIIG Section 2.4 (Regional Aquifers) has been amended to indicate the closest extent of observed hydraulic interconnectivity among the Ogallala and Edwards-Trinity High Plains regional aquifers.
108	485	Part III, Appendix IIIG, Section 2.4	330.63(e)(3)(I)	Submit a map showing established recharge areas to the aquifers within five miles of the site. This information was not found in IIIG 2.4. **Response:** Appendix IIIG provides a textual summary of groundwater recharge areas to regional aquifers in Section 2.4.1 (Ogallala Aquifer), Section 2.4.2 (Edwards-Trinity High Plains Aquifer), and Section 2.4.3 (Dockum Aquifer). The hydrostratigraphy of the Ogallala Aquifer and underlying regional aquifers is complex and areas of potential aquifer recharge are not delineated specifically in the facility area. However, tracer study models by TWDB and others indicate that recharge to the Ogallala Aquifer occurs predominantly (if not exclusively) through precipitation on outcrop or where quaternary sediments directly overlie outcrop in Terry County. Therefore, potential recharge areas for the Ogallala Aquifer are considered to be commensurate with areas of Ogallala Formation and Quaternary sediment outcrop illustrated on the Geologic Map of Texas as shown in

				Figure IIIG-A-1 (Regional Geologic Map) for the facility area. As discussed in Appendix IIIG, the site-specific subsurface and hydrogeological data indicate that Uppermost Aquifer is commensurate with the regional Ogallala Aquifer and is present under confined conditions within Lower Sand stratum sediments below the overlying confining Caprock stratum. In addition, the site-specific hydrogeological data show that Uppermost Aquifer groundwater flows toward the northwest, north, northeast, east, and southeast from a groundwater high observed at the southwest expansion area boundary at piezometer pair PWCG-5A/PWCG-5B. As indicated on Figure IIIG-A-1 (Regional Geologic Map) the Ogallala Formation outcrops immediately southwest of the facility property boundary. The location of this groundwater high is commensurate with the Ogallala Formation outcrop mapped to the immediate southwest of the facility and suggests that recharge to Ogallala is occurring locally immediately southwest of the facility.
109	495	Part III, Appendix IIIG, Section 3.1.1	330.63(e)(4)(H)	Provide a focused discussion of permeability in the Caprock based on the lithologic heterogeneity referenced in section IIIG-3.1.3 and shown in the boring logs, Appendix IIIG-B. Explain how the hydraulic conductivity of 2.3x10-7 cm/sec measured in PWGC-5A may or may not be representative of the Caprock stratum under the site. **Response:** Appendix IIIG, Section 3.1.3 (Caprock) has been amended to provide additional details regarding the permeability of the Caprock stratum.
110	497	Part III, Appendix IIIE	330.63(e)(5)(A)	Identify the specific samples that were used to characterize each stratum at the bottom and sides of the proposed excavation. Discuss the suitability of these strata as excavation bottom and side walls based on the results of geotechnical lab analyses. **Response:** The geological profiles developed for the generalized

				geotechnical analyses incorporated into the geotechnical study are based on review of the overall drilling results and laboratory testing for the site. Appendix IIIE, Section 2.2.1 has been expanded to better reflect the assumptions for both the caliche and the surficial overburden soils (primarily sands and sands with silt as demonstrated by less than 50% passing the #200 sieve in all but a single soil sample obtained from the surficial overburden soils in Table IIIE-C-1), with both being conservatively represented by strength values presented in Section 2.2.1. Overall the analyses are conservative, as for example, sands generally exhibiting internal friction angles in the mid to high 30's, and caliches (with the presence of sand and stone) even higher.
111	509	Part III, Appendix IIIH-A	330.63(f)(1)	Add property boundary to Figure IIIH-A-1. **Response:** Figure IIIH-A-1 has been revised to show the facility Property Boundary.
112	513	Part III, Appendix IIIH	330.63(f)(3)	Discuss the lithologic and stratigraphic basis for the assumed contaminant pathways in Sections IIIG-4.4 and IIIH-7.2. Considering the confined or semi-confined condition of the uppermost aquifer as described in Section IIIG-4.3, explain the anticipated paths and fate of contaminants released into the "confining" caprock above the lower sand stratum. **Response:** Appendix IIIG Section 4.4 (Contaminant Pathways) and Appendix IIIH Section 7.2 (Potential Contaminant Migration) have been amended to provide additional details. Please note that the Uppermost Aquifer characterization provided in Appendix IIIG Section 4.3 (Hydrogeologic Interpretation) states that the Uppermost Aquifer is wholly confined by the overlying Caprock. The confined condition of the Uppermost Aquifer is made evident by the vertical separation

				between uppermost saturated sediments observed at time of drilling within the Lower Sand stratum and the groundwater potentiometric head elevations observed within onsite groundwater piezometers. Whereby, the potentiometric head groundwater elevations are higher than the uppermost elevation of subsurface saturated sediments in all 2023 expansion piezometer locations. Appendix IIIG Section 4.4 (Contaminant Pathways) and Appendix IIIH Section 7.2 (Potential Contaminant Migration) have been amended to provide an additional assessment of fate and transport taking into consideration the low permeability of the Caprock.
113	514	Part III, Appendix IIIH	330.63(f)(4)	Discuss the geologic and hydrogeologic basis for not monitoring saturated intervals within the Caprock stratum. **Response:** No saturated intervals were observed within the Caprock stratum during the 2023 subsurface investigation drilling event.
114	556	Part III, Appendix IIIH	330.403(a)	The groundwater monitoring contour map, Figure IIIH-A- 1, is not sufficiently constrained to inform that no groundwater flows toward the northwest. Modify the groundwater monitoring network as follows: 1. Add at least one point of compliance well to the west- northwest of the site. 2. Relocate upgradient well, MW-1, to the west side of Sector 5 or Sector 6, or add at an appropriate location at least one background well to the monitoring system. 3. Install and screen for monitoring purpose the saturated intervals within the Caprock of all point of compliance wells. Please explain the need for co-locating background wells, MW-1 & MW-1P. **Response:** The groundwater contours shown on Figure IIIH-A-1 were produced from site-wide groundwater elevations measured within a 24-hour period in September 2023

				and are representative of the site-specific groundwater flow regime as supported by the groundwater elevation data presented in Appendix IIIG Section 4 and the groundwater contour drawings provided in Appendix IIIG-D. These data demonstrate a consistent Uppermost Aquifer groundwater flow regime whereby groundwater is observed to consistently flow toward the northwest in addition to flowing towards the north, northeast, east, and southeast from a continuous groundwater high/mound observed at piezometer pair PWCG-5A/5B. Therefore, the September 2023 groundwater contours shown in Figure IIIH-A-1 accurately depict the Uppermost Aquifer groundwater flow regime for the Site. 1. The proposed groundwater monitoring network has been revised to install proposed POC monitoring wells MW-19 and MW-20 west of Sectors 1 through 3, convert existing piezometer PWCG-6 to POC monitoring well MW-21, and extend the POC to monitoring well MW-21. Appendix IIIH Section 2.1.3, Table 2-1, Figure IIIH-A-1 and Figure IIIH-A-2 have been updated to reflect changes made to the proposed groundwater monitoring system design. Accordingly, Figures depicting the proposed groundwater monitoring system in other parts of the application have also been revised to reflect these changes. 2. The proposed groundwater monitoring network has been revised to convert existing piezometer PWCG-6 to POC monitoring well MW-21 and extend the POC to monitoring well MW-21. Appendix IIIH Section 2.1.3, Table 2-1, Figure IIIH-A-1 and Figure IIIH-A-2 have been updated to reflect changes made to the proposed groundwater monitoring system design. 3. No saturated intervals were observed within the Caprock stratum during the 2023 subsurface investigation drilling event. The Caprock overlaying the uppermost groundwater zone observed to be dry and had no indication of upward groundwater movement from the uppermost aquifer. Additionally, surficial soils overlaying the Caprock identified to be

				an average thickness of 5 feet with no indication of wet zones in the surficial soils. Saturated intervals were only observed within the Lower Sand stratum. Because the surficial soil layer has an average thickness of 5 feet, underlaying Caprock has low permeability, and both lithologic layers are dry, no groundwater monitoring is provided for these lithologies. Proposed monitoring wells MW-1 and MW-1P are proposed for conversion from existing expansion piezometers PWCG-5A and PWCG-5B; respectively. These paired piezometers were installed to assess a perched Uppermost Aquifer groundwater zone observed during the drilling of PWCG-5A pursuant to characterizing the Uppermost Aquifer as discussed in Appendix IIIG, Section 3 and Section 4. Both piezometers are proposed to be retained and converted to background monitoring wells as a conservative measure to provide background groundwater quality data for future potential interwell groundwater statistical analytical purposes. The groundwater quality data collected from the MW-1/1P upgradient well pair will serve to provide a more robust background that is representative of both the shallower and basal zones of saturation within the Uppermost Aquifer.
115	606	Part III, Appendix IIIH, Section 6	330.409(g)(1)-(A)	Provide for additional wells as necessary to characterize the extent of potential releases. **Response:** The provision to install additional monitoring wells as necessary for nature and extent characterization is already provided in the first bullet point under Appendix IIIH, Section 6.3.
116	607	Part III, Appendix IIIH, Section 6	330.409(g)(1)(B)	Provide for the installation of at least one groundwater well adjacent to the well with exceedance, before the next sampling event. **Response:** The provision for the installation of at least one additional groundwater monitoring well is already provided in the second bullet point under Appendix IIIH, Section 6.3.

117	623	Part III, Appendix IIIH, Section 6	330.409(k)(3)	Submit groundwater flow direction(s) based on existing data. **Response:** Appendix IIIH, Section 6.3 has been amended to include all the assessment groundwater monitoring reporting criteria listed in 30 TAC §330.409(k)(3).
118	655	Part III, Appendix III I, Section 3	330.371(b)(1)(A)-(C)	Provide a summary of the site subsurface characteristics the landfill gas monitoring plan is based on. Explain how this plan specifically addresses the existing soil, hydrogeologic and hydraulic conditions. **Response:** The summary of the site subsurface characteristics which is the basis for the landfill gas monitoring plan is discussed in Section 2.11 of Section 2. In addition, the plan specifically addresses the existing soil, hydrogeologic, and hydraulic conditions in Sections 2.2 and 2.3 of Section 2.
119	667	Part III, Appendix III I, Section 6	330.371(g)-(1)	Name and outline the anticipated installation phases for the proposed gas collection and control system. Referring to Section III-I-6.2, please state that the MSW Section will be notified of any changes to the gas collection and control system and that all may require a permit modification to implement. **Response:** Currently, the site is not required to install a gas collection and control system. As such, the site may install a gas collection and control system voluntarily or in preparation of an energy facility or as required in the future to comply with state or federal rules as discussed in Section 6.2. Section 6.2 of Appendix III I has been revised to include the requested information regarding MSW Section notification.
120	668	Part III, Appendix III I, Section 6	330.371(g)(2)	Provide the installation timeline of the landfill gas monitoring system.

				Response: The new probes will be installed around the perimeter of the landfill permit boundary prior to placing new waste within 1,000 feet of the proposed probe location as discussed in Section 3.1.2 of Section 3.
121	25	Entire Application (figures/drawings)	330.57(h)(1)	Note 6 on Drawing I/IIA.1 refers to a Drawing I/IIA.14. Drawing I/IIA.14 is not provided. Revise to provide the missing drawing (ensure consecutive numbering) or revise the note as necessary. **Response:** Note 6 on Drawing I/IIA.1 has been revised accordingly.
122	32	Entire Application (figures/drawings)	330.57(h)(4)(E)	Add page numbers to all drawings contained under Appendix I/IIA. **Response:** All drawings in I/IIA have been revised to include sheet numbers (i.e., page numbers).
123	179	Parts I/II, Appendix I/IIA	330.61(c)(9)	Revise Drawing I/IIA.1 to show the landfill's property boundary. Ensure a Legal Description is provided for the landfill's property boundary in Section 13 of Parts I/II. Also, revise Note 3 as necessary. **Response:** Drawing I/IIA.1 has been revised to show the property boundary as well as the permit boundary, and the legend updated accordingly. Additionally, copies of the landfill property legal descriptions for the properties that comprise the permit boundary have been added to Parts I/II, pages I/II-13-7 through I/II-13-31.
124	181	Parts I/II, Figure I/IIA.10	330.61(c)(11)	The site access control measures illustrated and described in Drawing I/IIA.10 are inconsistent with Section 4.1.1 of Part IV, SOP. Revise I/IIA.10 to have fencing and gate completely encircling the site, consistent with the descriptions in Section 4.1.1 of the SOP. **Response:** The fence line completely encircles the proposed permit boundary. The fence has been shown more prominently on Figure I/IIA.10.

125	185	Parts I/II, Appendix I/IIA, Multiple Drawings	330.61(d)(1)	1. Drawing I/IIA.1 seems to indicate that portions of the existing waste area will not become part of the proposed Sub D cells. Revise the application at relevant locations to clarify if some existing waste will remain in place and, if applicable, discuss how these portions will be properly closed and separated from the proposed Sub D unit. Revise other portions of the application as necessary. 2. Revise Drawing I/IIA.8 to clarify if top of liner refers to the top of the soil protective cover or another component in the liner system. 3. Drawing I/IIA.9 depicts an area as "Proposed Landfill Leachate Storage and Treatment Area." Revise to be consistent with Section 4 of Appendix IIIC regarding leachate evaporation pond and storage tanks. Also revise Figure 3-1 in Appendix IIIC to properly identify storage tanks and the evaporation pond. Update the legends and the descriptions as necessary. Revise other drawings in the application for the same discrepancies. 4. The flare location shown in Drawing I/IIA.9 is different than Figure III I-F-1 of Appendix III I-F. Revise the drawing(s) for consistency. 5. Revise Drawing I/IIA.7 to identify Detention Ponds P1 and P2. **Response:** 1. Drawing I/IIA.1 shows the limits of historic (existing) waste with the legend title of “Historic Waste to be Relocated”. Historic waste will be relocated as the landfill is developed. Note 7 has been added for clarification. 2. A note was added for clarity as to what the “Top of Liner Contour” is referred to on Drawing I/IIA.8. The “Top of Liner Contour” is referring to the bottom of protective cover or top of the geomembrane. 3. Depicted area(s) text was revised for consistency with Section 4 of Appendix IIIC. Drawings and figures throughout the application have been revised per the

				comment. 4. Flare location was revised for consistency on Drawing I/IIA.9 and Figure III I-F-1. 5. Labels were added to the ponds on Drawing I/IIA.7.
126	271	Part III, Sections 2.2.1 and 2.2.2	330.63(b)(2)	1. Revise Section 2 in Part III to include discussions for all staging/storage/processing activities/facilities identified in other portions of the application (including, but not limited to, Figure III-1, Appendix IIIJ (Closure Plan), Part IV (SOP)). 2. Revise the application to ensure consistent identification/discussion of the staging/storage/processing activities/facilities (for example, but not limited to, electronic recycling staging area, Citizen Convenience Center). **Response:** 1. Appendix IIIJ, Section 3.5 has been revised to indicate that any recyclables stored at the Citizens Convenience Center at the time of closure will be transported off site for recycling or disposed. Additionally, similar text has been incorporated into the Part IV Site Operating Plan, Section 4.2.1. Additional information regarding staging areas and facilities is provided in the response to NOD ID 127, below. 2. Comment is addressed in response No.1 above.
127	272	Part III, Section 2.2.1	330.63(b)(2)(A)	Figure III-1 (Waste Movement Flow Diagram) shows a list of staging areas. Revise to remove the staging areas which operations are not specifically identified and addressed in Part IV, SOP, or add these to the SOP. Revise drawings in Appendix I/IIA (and in other relevant portions of the application) to show the locations of the staging areas that are properly specified in the SOP. **Response:** Figure III-1 has been revised to clarify that the recycling staging will occur at the Citizens Convenience Center, with asphalt, rock and soil delivered to the site

				stockpiled separately for reuse by the landfill. Both of these activities are part of the day to day operations of the landfill and do not warrant designation of specific areas for these non-putrescible recyclables.
128	275	Part III, Section 2.2.4	330.63(b)(2)(D)	Revise Section 2 of Part III to include information related to storage/processing units to address all applicable requirements under 330.63(b)(2). Section 2 may be revised to refer to where in the application the relevant information is contained. **Response:** Recyclable materials identified in Comment 127 will be segregated and staged as described on Figure III-1. All storage will occur at the Citizens Convenience Center area, as described on Figure III-1.
129	288	Part III, Section 3	330.63(c)	Revise Section 4.3 of Appendix IIIF to clarify the relations between post-development discharge points (DP1 through DP4) and the Unnamed Rich Lake Tributary depicted in Figure 1.6 of Appendix IIIF-G. Refer to comments on MRI ID 314. **Response:** The Unnamed Rich Lake Tributary will be rerouted around the facility and will discharge off the property at the same location in the pre-development and post-development condition. The location of where the Unnamed Rich Tributary exits the property is identified as DP3 and is designed to not adversely impact drainage patterns in accordance with 30 TAC §330.63(c)(1)(D)(iii). Callouts for the respective Unnamed Rich Lake Tributary run-on and runoff locations have been added to Figures 4.4 and 4.5 in Appendix IIIF.

130	290	Part III, Appendix IIIF, Section 4	330.305(a)	1. Drawings I/IIA.4, I/IIA.5 and I/IIA.6 seem to show a phased development of the surface drainage systems. Section 2.1 of Appendix IIIF (Surface Water Drainage Plan) specifies a phased development for the perimeter drainage system. a) Ensure the drainage system development phases/schedules described in Appendix IIIF and Drawings I/IIA.4, I/IIA.5 and I/IIA.6 are consistent. b) Revise to demonstrate that all phases, not just the landfill final configuration, meet the requirements in 330.305 (one or two most conservative scenarios may be determined and analyzed for the "interim" phases). Revise all relevant portions of the application as necessary. 2. Drawing I/IIA.6 appears to show that the excavation area (where existing waste will be removed) will be used for holding stormwater. Revise relevant portions of the application to address the following concerns: a) Stormwater may be contaminated by waste residuals or soils contaminated by the waste. Revise to discuss how contamination will be prevented or how the contaminated stormwater will be properly managed. b) Revise to specify that contaminated stormwater will not be used for on-site construction/operation (such as liner construction, dust control, etc.). c) Revise to specify that a proper liner will be installed in the excavation pit. Without a liner, use of the pit may cause groundwater/soil contamination, and alter groundwater elevations/flow patterns, interfering with the groundwater monitoring system. 3. In accordance with 330.301, the site-wide drainage system needs to be completed before waste can be accepted under this permit amendment. **Response:** 1. a) As noted in Section 2.1 of Appendix IIIF, the perimeter drainage system will be constructed as the

				site is developed. b) The methodology selected to analyze the final landfill condition (e.g. increased curve numbers and runoff coefficients) is chosen to provide a very conservative analysis of a landfill development. The landfill can be developed in many different configurations and phases. Consistent with TAC regulations and TCEQ guidance, the permitted and post-development conditions are modeled. The perimeter drainage system will be constructed as the landfill develops, erosion during interim conditions will be controlled as described in Appendix IIIF-F, and the drainage system will be maintained to operate properly as described in Appendix IIIF, Section 2 and the Site Operating Plan. 2. a) The footprint within the trench fill area will not be designed to hold stormwater. All uncontaminated stormwater runoff from the proposed landfill footprint (lined area) and the depression from the trench fill relocation will be contained separately. Text locations within Drawing I/IIA.6 has been reorganized for clarity. Additional information for waste relocation can be found in Section 4.25 of Appendix IV and response to MRI ID 358. b) The requested text was added to Section 2.3 of Appendix IIIC. c) Not applicable, as contaminated water will not enter the excavation pit. Refer to the text referenced in 2. a) above. 3. The TAC regulation referenced (30 TAC §330.301) in the comment does not indicate site-wide drainage systems must be complete before waste is accepted. Per Section 2.1 of Appendix IIIF, the perimeter drainage system will be constructed as the site is developed.

131	293	Part III, Appendix IIIF-D	330.305(d)	1. The figure (Regional Depth of Frost Penetration in Inches) included on Page IIIF-D-17 is dated 1989, which was widely used in published literature. Data currently available in the public domain indicates that the 1989 data for the project area is outdated. Verify the validness of the 1989 data or revise Page IIIF-D-17 to provide updated frost depth/line data for the project area or a location that is close and representative of the site conditions. Revise all relevant portions of the application accordingly (including, but not limited to, Appendix IIIF-D, Section 4.3.3 of Part III regarding the final cover system). 2. In lieu of addressing the above comment, the application may be revised to increase the final cover erosion layer from 12 inches to 24 inches; remove all contents related to frost depth; and revise the rest of the application accordingly. **Response:** 1. While there are publicly available maps relating to frost depth with more recent dates than 1989, the sources for this data are unclear or not published. For instance, Hammerpedia, a plumbing company, provides a map showing the frost line in this area is around 11-inches, but the data source is only the NOAA.gov website, and the NOAA.gov website does not include this map. Since the designed erosion layer is 12-inches-thick, almost twice as thick as published frost penetration data, and greater than the 11-inches from undocumented sources, the erosion layer design is still considered valid. 2. No revision to the final cover erosion layer was made and the frost depth is addressed as noted above.

132	295	Part III, Appendix IIIF-D	330.305(d)(2)	Section 2.2 of Appendix IIIF states, "If there are areas that do not maintain at least 80 percent vegetative coverage, vegetation in these areas will be reestablished to maintain at least 80 percent vegetative cover." Revise to ensure that relevant portions of the application (including, but not limited to Postclosure Care Plan) contains measures for maintaining the required vegetative coverage (at least 80 percent) on the final covers. The measures need to cover periodic inspection, repair/reestablishment, and recordkeeping. Refer to comment on MRI ID 689 regarding minimum vegetative coverage. **Response:** Page IIIJ-6 and Appendix IIIJ-C TCEQ-20720 form was updated for 80 percent vegetative coverage for consistency. Measures needed to ensure/maintain vegetative coverage are defined in the postclosure activities in Section 2 of Appendix IIIK. Inspection and repair procedures are noted in Section 2.3 of Appendix IIIF and the Site Operating Plan.
133	296	Part III, Appendix IIIF-C and IIIF-D	330.305(e)	Revise Appendix IIIF to clearly specify how many detention ponds will be built; to clarify if the detention ponds will be wet or dry ponds; and to discuss how the ponds will be lined (esp. for wet pond design). **Response:** The expansion will consist of two dry detention ponds. The locations and numbering can be found on Drawing IIIF.1 in Appendix IIIF. Additionally, outlet structures for the ponds are detailed in the sections of Drawings IIIF.13 and IIIF.14.
134	298	Part III, Appendix IIIF-F	330.305(e)(2)	Revise to provide necessary information for wet "retention pond/Pond NP" mentioned in Section 2.4 of Appendix IIIF-F. **Response:** The expansion will not consist of any wet ponds. Section 2.4 of Appendix IIIF-F was revised to omit wet pond information.

135	301	Part IV, Section 4.22	330.305(g)	1. Per 330.305(g) and 330.207, delete "or recirculated back into the landfill" from Section 4.2 of Appendix IIIC.2. Section 4.2 of Appendix IIIC specifies that contaminated water will be transported via tanker trucks to a properly permitted offsite wastewater treatment facility. Other sections in Appendix IIIC indicate that contaminated water may be managed in the leachate tank and the evaporation ponds. Revise Appendix IIIC and other relevant portions of the application for consistency. 2. Section 4.3 of Appendix IIIC indicates that contaminated water will also be "stored in the leachate tank or evaporation ponds." a. Clarify if the tank and the pond are designed with sufficient capacity to accept the expected amount of contaminated water. b. The leachate stream comingled with contaminated stormwater may not be recirculated into the landfill. To comply with this restriction, revise Appendix IIIC and other relevant portions of the application as necessary. 3. Revise the first paragraph in Section 4.3 and Table 4-2 of Appendix IIIC to specify a minimum 2-ft freeboard for the evaporation ponds, consistent with the last paragraph in Section 4.3 of Appendix IIIC. 4. Revise the third paragraph in Section 4.3 of Appendix IIIC to specify how spilled leachate will be promptly/properly managed if the tank is damaged. **Response:** 1. Section 4.2 in Appendix IIIC has been revised to state that contaminated water may be stored in the leachate tank or evaporation ponds but will not be recirculated. 2. a. Typically, contaminated water will be contained at the working face with containment berms and infiltrate into the waste mass after a rainfall event. Calculations for containment of the 25-year, 24-hour storm at the working face are presented in Appendix IIIC-C.

				Contaminated water that has been ponded will be removed no later than 7 days per §330.167 and stored in the leachate tank, evaporation ponds, or will be transported via tanker truck to a properly permitted offsite wastewater treatment facility as stated in Section 4.2. If the contaminated water is stored onsite, the leachate tank and evaporation ponds will be operated as described in Section 4.3 and Section 5.3, to maintain a minimum of 15,000 gallons of emergency backup storage in the tank and maintain a minimum of 2 feet of freeboard in the evaporation ponds. b. Refer to Appendix IIIC, Section 5.3 on contaminated water disposal to describe how the contaminated water will be handled. Additionally, Section 4.2 has been updated to be consistent with Section 5.3. 3. The first paragraph in Appendix IIIC, Section 4.3 and Table 4-2 have been revised to reflect 2 feet of freeboard. 4. The third paragraph of Appendix IIIC, Section 4.3 has been updated to specify how spilled leachate from a damaged tank will be handled.
136	304	Part III, Appendix IIIF and Drawings IIIF.9 to IIIF.14	330.63(c)(1)(B)	1. Revise Appendix IIIF to include necessary cross-sections for the detention ponds (it is noted that two detention ponds are named, P1 and P2). Choose proper sections to show the bottom slopes/elevations and bank top elevations/maximum water tables/free board. 2. Revise Drawing IIIF.5 to provide the Pond 2 outlet structure as referenced in Drawing IIIF.1; or revise Drawing IIIF.1 to correctly refer to where the outlet structure is shown. 3. Revise Drawing IIIF.1 to specify where the Pond 1 outlet structure is illustrated. 4. Consistent with 330.63(c)(1), 330.305(e), 330.307 and engineering practice, revise Appendix IIIF to include general descriptions on how freeboard has been considered for proper sizing all drainage features (channels, detention ponds, flood levees, etc.). Ensure that freeboards are shown/marked on all applicable

				cross- sections and in tables (such as the one on Page IIIF-B-2). **Response:** 1. Per the request, sections through the detention ponds with additional annotations have been added to Drawings IIIF.13 and IIIF.14. 2. Drawing IIIF.1 was revised to include locations of outlet structures. Comment has been further addressed by revising Drawing IIIF.4 and adding culvert design calculations an additional page IIIF-B-17 for culvert design calculations. 3. Drawing IIIF.1 was revised to include locations of outlet structures. 4. Conservatively, the minimum freeboard available for all channels and detention ponds have been added to the profiles in Drawings IIIF.5, IIIF.6, IIIF.13, and IIIF.14.
137	306	Part III, Appendix IIIF-A and IIIF-E	330.63(c)(1)(B)	1. Per Figure 1.6 of Appendix IIIF-G, stream flow from the Unnamed Rich Lake Tributary will enter Channel 1 and leave Pond 2 outlet. In accordance with 330.63(c), revise Appendix IIIF (text, design, and drawings) to show that the perimeter channels and the pond are designed to be able to safely accommodate the 100-year storm flow from the tributary as discussed in Appendix IIIF-G. Also, revise per the applicable comments for MRI ID 314. 2. Revise Figures 4.4 and 4.5 in Appendix IIIF to show flow from the Unnamed Rich Lake Tributary entering the site. Show or note the upper reach drainage area/catchment for the tributary. **Response:** 1. Drawing IIIF.15 has been revised to include freeboard identifications as evidence of safe conveyance of the 100-year storm. 2. Callouts for the respective Unnamed Rich Lake Tributary run-on and runoff locations have been added to Figures 4.4 and 4.5 in Appendix IIIF. Additionally, an annotation was added to identify the upper reach drainage area to Figure 4.3 in Appendix IIIF.

138	312	Part III, Appendix IIIF, Section 4	330.63(c)(1)(D)(iii)	Revise Figures 4.4 and 4.5 of Appendix IIIF to clarify if DP3 under the post-development pattern is the discharge from Detention Pond 2. Revise to clarify the flow conditions (sheet flow/overland or concentrated or channelized) at DP1, DP2, and DP4; and reference their discharge structure design as necessary. Discuss erosion prevention measures at these discharge points/areas. It is noted that Section 2.1 of Appendix IIIF states, "Currently the site sheet flows toward the south." **Response:** Callouts were added to clarify DP3 is the discharge location of Detention Pond 2 to Figures 4.4 and 4.5 in Appendix IIIF. As stated in Section 4.4 of Appendix IIIF, the existing drainage patterns will not be altered by the proposed development. Evaluations of flow rates, volumes, and velocities at each discharge point are discussed in Section 4.3, Table 4-1, and Figures 4.4 and 4.5. Currently, the site generally sheet flows to the south, as there are no constructed channels to concentrate runoff.
139	314	Part III, Appendix IIIF, Figure 4.6	330.63(c)(2)(A)	1. Section 2.4 of Appendix IIIF states that excerpts from the approved Conditional Letter of Map Revision (CLOMR) and the FEMA approval letter for the proposed CLOMR is included in Appendix IIIF-G. Revise to provide the FEMA approval letter. 2. Revise Appendix IIIF-G by adding a Table of Contents listing the contents contained in Appendix IIIF-G. The existing Table of Contents does not match the contents contained in the appendix. 3. As shown in Figure 1.6 of Appendix IIIF-G, the re-routed Unnamed Rich Lake Tributary will share the landfill perimeter drainage channel and detention pond within the proposed permit boundary. Discuss how the re-routed tributary (and the floodplain) will comply with 330.63(c)(2) and 330.307. Refer to comment on MRI ID 315 related to floodplain definition. 4. Revise Appendix IIIF to design and construct a "levee" to separate and protect the landfill unit from potential flood of the re-routed Unnamed Rich Lake

				Tributary. Ensure the "levee" complies with applicable requirements of 330.307. 5. After revising the application per the two preceding comments, revise Appendix IIIF to update the CLOMR related contents if necessary. 6. Revise other relevant portions of the application to accommodate the changes made per the three preceding comments. Refer to comments on MRI ID 335. **Response:** 1. The FEMA approval letter has not been issued. Once received, it will be provided in the new Appendix IIIF-G-B. 2. The Table of Contents within the excerpt was removed, as not all portions of the CLOMR are included in this application. The Appendix IIIF-G has been revised accordingly. 3. The CLOMR application, which is included in IIIF-G, includes detailed hydraulic modeling indicating the proper conveyance and containment of the 100-year floodplain. Drawing IIIF.15 has been inserted to include freeboard availability, compliant with Title 30 TAC §330.63(c)(2) and 330.307. 4. A levee is not included in the proposed expansion of the City of Meadow Landfill. The Unnamed Rich Lake Tributary is being rerouted around the landfill in a perimeter channel, and the limit of waste is protected by a perimeter berm. 5. Not applicable. Refer to responses above. 6. Not applicable. Refer to responses above.
140	315	Part III, Appendix IIIF-G	330.63(c)(2)(B)	1. Two different effective dates for FEMA's FIRM map are specified in Drawing A.6 of Appendix IIIF-G: June 14, 1977 vs June 4, 2010. Similar discrepancy also exists in other drawings (for example, but not limited to, Figure 4.6 in Appendix IIIF). Explain the discrepancy and revise the drawing and other relevant portions of the application as necessary. 2. Figure 4.6 (Flood Insurance Rate Map) of Appendix

				IIIF shows a (nearly) circular-shaped floodplain without an adjacent stream/water identified. Discuss if/how the circular-shaped floodplain shown in this FIRM map meets the floodplain definition under 330.3(55). 3. This application revised the circular-shaped floodplain by associating it with an Unnamed Rich Lake Tributary. Drawing A.6 (Revised FIRM) in Appendix IIIF-G shows three floodplains: the circular-shaped floodplain, one pre- project 100-year floodplain, and one post-project 100- year floodplain. Figures 1.5 and 1.6 of Appendix IIIF-G show the floodplains associated with the tributary, but not the circular-shaped floodplain. Explain why the original circular-shaped floodplain has not changed after the floodplains are established. Revise as necessary. 4. Section 1.5.1 (Effective Condition) of Appendix IIIF-G states, "The existing condition of the Unnamed Rich Lake Tributary contains Zone A flood hazard areas as shown on the effective FIRM panels for the area (refer to Figure 1.4)." Figure 1.4 does not show or identify the Unnamed Rich Lake Tributary or any surface streams. Explain the discrepancy and/or revise as necessary. 5. Revise to provide the basis for adding the Unnamed Rich Lake Tributary to the floodplain maps (e.g., other published maps, field observation, existing contours, etc.) 6. Like Figure 4.6 of Appendix IIIF, Drawing 4.6 of Appendix IIIF-G (revised Flood Insurance Rate Map) shows no floodway associated with any of the floodplains. Explain the lack of a floodway associated with the 100- year floodplains established for the proposed landfill site. Revise the application as necessary. **Response:** 1. The effective date of the FIRM is June 1977. Because the drawing is an excerpt from a submittal to FEMA, it is not being revised at this time. 2. FEMA is responsible for the delineation and

				designation of floodplain areas. Per the effective FIRM, the areas shaded gray are Zone A floodplains. 3. The published FIRM in the location of interest is an approximate delineation based on approximation methods of the 100-year floodplain. The area north of the City of Meadow Landfill was not included in the detailed study of the CLOMR, so no changes are shown. No revisions are made to the excerpts in IIIF-G. 4. Figure 1.4 presents the floodplain information as published by FEMA. Due to the approximate methods FEMA used and the status as a Zone A (unstudied) floodplain, FEMA did not identify any surface streams. It would be incorrect to include any streamlines on Figure 1.4, since they are not included in the effective FIRM. 5. The basis for adding the tributary is the existing topography and the presence of Zone A floodplain. 6. Zone A (unstudied) floodplain areas do not include floodways. Floodways are not proposed to be established by the CLOMR submittal.
141	335	Part III	330.63(c)(2)(D)(i)	1. Section 1.1 of Appendix IIIF-G indicates that the request for a Conditional Letter of Map Revision (CLOMR) has been submitted to Terry County and to FEMA. Clarify if the county is the local floodplain administrator. Revise this section and other relevant portions of the application to update the status of this request. 2. Revise to provide applicable approvals per Title 3-TAC §330.63(c)(2)(D)(i) and (ii). Refer to comment on MRI ID 314. **Response:** 1. The county has sole authority under the NFIP to act as the local floodplain administrator in this area. 2. The approval letter from FEMA will be provided when received.
142	349	Part III, Appendix IIIA-A, Drawings A.1 and A.2	330.63(d)(4)(C)	1. Drawings I/IIA.3 and I/IIA.8 specify an inconsistent elevation of deepest excavation. Revise to specify the correct elevation; and to identify the LCS sump(s) where the deepest excavation occurs.

				2. Discuss how the air space and the maximum elevation of waste are determined and specified with respect to the use of an 18-inch clay layer or a GCL; and revise Section 4.3.3 of Part III as necessary. Revise other relevant portions of the application as necessary. **Response:** 1. The location of the Elevation of Deepest Excavation (EDE) was updated on Drawing I/IIA.8. Additionally, the locations of the EDE have been identified on the drawing. 2. Total landfill volumes are estimated based on comparison of AutoCAD surfaces developed for the top of protective cover surface (at the base of landfill) and the bottom of intermediate cover surface (at top of landfill) over which the final cover system is installed. The calculations assume that the bottom of the protective cover (at the base of the landfill) is installed above the top of liner grades shown on Drawing I/II.A-8 – Top of Liner Plan. The installation grades of the final cover system (clay versus GCL) do not impact the total calculated landfill capacity as that is constructed above intermediate cover.
143	358	Part III, Appendix IIIB	330.331(a)(1)	1. Section 3 of Appendix IIIA states, "the historic waste fill area will be relocated to the main disposal area within the City of Meadow Landfill." Explain how the "fill area" will be relocated or revise for clarity. 2. Revise Section 3 to discuss if existing waste will be completely excavated for relocation to the proposed Sub D area; and to briefly explain how the excavated area will be prepared for construction of a Subtitle D liner system. Revise drawings (plan and cross-sections) in Appendix IIIA-A and IIIA-B as necessary. 3. Revise Section 2 of Appendix IIIA to discuss how the excavated area where the existing waste has been removed will be prepared for construction of the proposed Subtitle D Cells, considering factors such as excavation stability, liner stability, and liner settlement/strain analysis. Revise other relevant

				portions of the application as necessary. **Response:** 1. Section 3 in Appendix IIIA has been revised to better reference the Waste Relocation Plan incorporated as Part IV, Section 4.25. 2. Additional clarification has been added to Appendix IIIA, Section 3 and Part IV, Section 4.25 has been revised to include discussion of foundation preparation after excavation and removal of the historic waste, prior to liner construction. Finally, Appendix IIIA, Section 2 has been revised to reference Part IV, Section 4.25 related to inspection and preparation of the historic waste area prior to cell construction. 3. Appendix IIIA, Section 2, Appendix IIIE, Section 4.3 and Part IV, Section 4.25 have been revised accordingly. Once the waste is removed, an inspection will be conducted by a geotechnical engineer to confirm the foundation conditions are suitable for liner construction. It is reasonable to assume the stability analyses, settlement analyses, and excavation stability applied to the remainder of the landfill (as set forth in the drawings, Appendix IID SOP and Appendix IIIE Geotechnical Report) are applicable to this area as well.
144	359	Part III, Appendix IIIC-A	330.331(a)(2)	Page IIID-10 in Appendix IID states, "Top of soil liner surveying will be performed within a tolerance of 0.0 feet to +0.2 feet." Clarify the meaning of this statement and revise the LQCP as necessary. Note that the soil liner component must be at least two feet thick per 330.331(b). **Response:** Appendix IIID, Section 2.3.1 requires that liner subgrade (i.e., bottom of clay liner grades) be installed to the survey tolerances of -0.2 feet to 0 feet of the design grades, and Section 2.3.2.2 requires that the top of clay liner be installed to the tolerance of 0.0 feet to +0.2 feet. The two survey tolerances (the top and bottom of clay liner) combined require a clay liner installation thickness ranging from 2.0 feet (for tolerances of 0 feet) to 2.4 feet (for tolerances of -0.2 feet and +0.2 feet for

				the bottom and top of the clay liner, respectively).
145	375	Part III, Appendix IIIC-B	330.333	The reference to Section 3.5.4 on Page IIID-37 seems to be a typo for Section 3.4.4. Review and revise as necessary. **Response:** Appendix IIID, Section 3.4.3 has been revised accordingly.
146	376	Part III, Appendix IIIC-B	330.333(A)-(G)	1. Explain if/how creep reduction has been considered in the drainage geocomposite design; and, if applicable, revise Appendix IIIC-A to add this consideration. Revise Appendix IIID and other relevant portions of the application accordingly. 2. The HELP modeling included in Appendix IIIC-A uses a hydraulic conductivity of 1.2E-04 for the protective cover. Revise Appendix IIID to include measures to ensure the installed protective cover has proper properties. **Response:** 1. Refer to Page IIIC-A-6 for a calculation for thickness reduction due to creep. The reduced thickness due to creep is calculated for each fill condition and is a direct input (as reduced leachate collection layer thickness as the waste thickness increases) into the HELP Model. 2. As discussed at the end of the first paragraph in Section 2.3.5 of Appendix IIID, the protective cover will have passageways (i.e., chimney drains) to allow moisture to drain to the leachate collection system. This approach is consistent with the methodology discussed in Table 2-2 in Section 2.5 of the TCEQ Regulatory Guidance RG-534 – Guidance for Liner Construction and Testing for a Municipal Solid Waste Landfill (Rev. September 2017).
147	377	Part III, Appendix IIIB	330.335	1. Add a footnote to Table 2-1 or revise Section 2.3 in Appendix IIIB to specify where the groundwater testing samples were taken: in the Lower Sand zone or above the Lower Sand zone (Section 2.2 includes description of the Lower Sand zone, the uppermost aquifer). Concentrations of several constituents in Table 2-1 are

				close to the MCLs (e.g., Arsenic's 0.0476 mg/l vs MCL 0.05 mg/l). Also refer to the first comment on MRI ID 383. 2. Clarify if the site groundwater concentrations listed in Table 2-1 will be used as the background concentrations; and, if applicable, ensure the listing is consistent with Appendix IIIH (Groundwater Sampling and Analysis Plan). If applicable, review the relationship between the reporting limit cited in Note 2 to Table 2-1 and the PQL discussed in Appendix IIIH. Revise the application as necessary. 3. Section 3.1.2 of Appendix IIIB implies that the modeling timeframe is 128 years, while 127 years is specified in other sections (e.g., 3.4.3 and 3.4.4 of Appendix IIIB). Explain the discrepancy and/or revise for consistency. Explain if/how the magnitude of the calculated DAF listed in Table 4-1 is related to the length of the modeling time, travel distance, and travel time. 4. Clarify if groundwater hydraulic gradients were used in the modeling; and, if applicable, revise Table 3-4 in Appendix IIIB to specify the hydraulic gradients used in the modeling. Briefly discuss how the gradients were determined. 5. Revise Section 3.4.2 of Appendix IIIB to confirm if MODFLOW with PCG2 is suitable for the site-specific hydrogeological conditions; or revise to use "better" models. **Response:** 1. Footnote 1 on Table 2-1 was updated to indicate that the sampling was within the uppermost aquifer (i.e., lower sand zone as defined in Appendix IIIG). Additionally, the constituents remain below the MCLs, as shown in Table 2-1. 2. The analytical testing performed in April 2023 by WCG was conducted as a preliminary sampling project and will not be used as background concentrations as a part of the GWSAP. The testing is provided to assess

				existing groundwater concentrations for the POC demonstration only. Background concentrations for the groundwater monitoring wells will be established during the initial phase of routine groundwater monitoring. Any groundwater quality data generated for the purpose of the POC demonstration will be available in the site operating record for future use as part of establishing groundwater background water quality. 3. The interim case was updated to reflect 96 years in Section 3.1.2. The modeling timeframe is 127 years (1 year for the active case, 96 years for the interim case, and 30 years for the closed case). 4. The last bullet in Section 3.4.4 was updated to provide a discussion of how the groundwater gradients were selected. Additionally, Figure 3-1 has been revised to provide a table (by the legend) reflecting the selected groundwater gradients for Sections A and B. 5. The precondition conjugate-gradient 2 (PCG2) was developed to solve equations produced by MODFLOW for hydraulic head. Since the PCG2 solver utilizes the hydraulic head flow through lithologies depends on the soil parameters for each lithologic portion. In other words, none or minimal for low hydraulic conductivity soils (e.g., Caprock) below the head and higher hydraulic conductivity for more permeable soils (e.g., uppermost aquifer). The PCG2 is a three-dimensional model which is conservatively used as two-dimensional assuming that the third dimension is one foot. The conservative assumptions also includes distance to point of compliance (e.g., a groundwater monitoring well) and highest groundwater gradient. As deployed in the modeling approach, the PCG2 is applicable to the site subsurface conditions.

148	379	Part III	330.337(b)(1)	Drawings B-7 and B-9 in Appendix IIIA-B show that the water in the detention ponds can be higher than the liner systems of the Subtitle D cells. Clarify if the liner can be under uplift force due to the water in the detention ponds; and, if applicable, revise the application to provide necessary measures to meet requirements of 330.337(b) and (c). **Response:** The ponds are designed as dry ponds with short, intermittent stormwater residence times. The short residence time combined with the offset distances between the ponds and liner systems will prevent the intermittent stormwater in the ponds from infiltrating and affecting the adjacent cell liners.
149	383	Part III	330.337(c)	1. Revise Appendix IIID (Liner Quality Control Plan) to briefly discuss if any part of the liner will ever be under uplift from hydrostatic forces; and, if applicable, revise to meet 330.337(b) and (c). Include explanations for the conclusion. It is noted that Appendix IIID-A-2 is a map showing the uppermost aquifer contours and that the groundwater potentiometric head elevations listed in Table 4-1 of Appendix IIIG show some groundwater elevations above the proposed excavation elevations/contours illustrated in Figure IIID-A-2. The information in Table 4-1 of Appendix IIIG and Section 2.2 of Appendix IIIB does not eliminate the possibility that the liner might be below the groundwater table at the south portion of the site. Section 2.2 of Appendix IIIB states, "Lower Sand groundwater exhibits ... lesser confined conditions downgradient to the south nearing the Ogallala Formation outcrop approaching Rich Lake." Note 4 to Figure 1-2 of Appendix IIIB describes the aquifer as "semi-confined." 2. The footnotes to Drawing IIID-A-2 are inconclusive regarding if the excavations will be below or above the groundwater tables/limits. Revise the footnotes to Figure IIID-A-2 as necessary. 3. Per 330.373(b) and (c), revise LQCP to include measures to observe for signs of groundwater/seepage during excavation and liner construction; and actions to

				be taken if groundwater/seepage is encountered. **Response:** 1. WCG prepared a Ballast Demonstration (new Appendix IIID-B) that demonstrates that the liner system is adequately ballasted against groundwater uplift (as represented by the Highest Measured Groundwater Potentiometric Head Map on Figure IIID-B-1) during construction by placement of the 2-foot-thick protective cover layer. As noted in the Ballast Demonstration, the evaluation will be revisited at the time of cell design in the affected area and adjusted to incorporate the most recent groundwater conditions. Additionally, the excavation grades will be inspected by a geotechnical engineer as set forth in Appendix IIIE, Section 4.3 – Landfill Excavation. 2. Appendix IIID-A, Figure IIID-A-1 has been revised to reference the influence of groundwater and the Ballast Demonstration presented in Appendix IIID-B. 3. Appendix IIIE, Section 4.3 has been revised to address the unlikely occurrence of groundwater in the excavations and potential remedies. Additional clarification has also been added to Appendix IIID, Section 2.3.7.
150	397	Part III, Appendix IIID	330.339(a)	1. Revise Section 2.3.1 (Subgrade) in Appendix IIID to include necessary measures for subgrade preparation in areas where existing waste will be removed. If the currently proposed measures are sufficient, revise to clarify as such. 2. Briefly explain why FTB is not a specified passing criterium for shear strength tests on Page IIID-33 in Section 3.3.4 of Appendix IIID; and revise Section 3.3.4 as necessary. 3. Revise Page IIID-33 to specify that all five tests need to meet the FTB classification. It is noted that Table 3-2 lists FTB as one of the passing criterium for five out of five specimens. 4. Revise the second paragraph in Section 7.2 of Appendix IIID to include measures meeting the

				requirements of 330.341(d) and Section 7.2 (Interim Status Report) of the TCEQ RG-534. 5. Explain the meaning of "in the dewatering system installation area" used in Section 7.2 of Appendix IIID; and revise this section and other relevant portions of the application as appropriate. Refer to the comment on MRI ID 383. **Response:** 1. A new Section 4.25.5 has been added to Part IV to expand the discussion of historic waste excavation and foundation inspection and preparation. 2. Appendix IIID, Section 3.3.4 has been revised accordingly. 3. Appendix IIID, Section 3.3.4 has been revised accordingly. 4. Appendix IIID, Section 7.2 has been revised to address Title 30 TAC §330.341(d), specifically regarding the unlikely event of a constructed soil liner being left uncovered or unprotected for a period of 6 months or longer. 5. Section 7.2 has been revised to remove the reference to dewatering system area, as the inspection requirement is applicable to all areas of completed liner system at the landfill.
151	400	Part III, Appendix IIID	330.339(a)(2)	In accordance with 330.339(a)(2) and (c), revise Section 1.1 of Appendix IIID to clarify if the LQCP has been prepared consistent with the current TCEQ RG-534 (September 2017); and, if applicable, revise the LQCP to be consistent with the RG. RG-534 can be downloaded from the agency's website at https://www.tceq.texas.gov/downloads/permitting/waste - permits/publications/rg-534.pdf. **Response:** We have reviewed RG-534 as a guidance document in preparing our LCQP, while meeting the regulatory obligation to conform to applicable sections of Title 30 TAC 330 in preparing the Appendix IIID - Liner Quality Control Plan. Section 1.1 has been updated accordingly.

152	413	Part III, Appendix IIID, Section 2.4	330.339(c)(4)(A)	1. Per 330.339(c)(4)(A), revise Appendix IIID to specify that permeability tests shall be run using tap water or 0.05 Normal (N) solution of calcium sulfate (CaSO4) and not distilled water. 2. Consistent with 330.339(c)(4)(A), revise Table 2-2 on Page IIID-16 by replacing "Falling head" with "Constant head with back pressure" when ASTM D5084 is used. 3. Revise Section 2.3.2.1 of Appendix IIID to specify the test methods and conditions for tests listed in Table 2-1 (Required Borrow Soil Properties). Also refer to the above 2 comments. **Response:** 1. Appendix IIID, Table 2-2 has been revised accordingly (by the addition of a new note at bottom of table). 2. Appendix IIID, Table 2-2 has been revised accordingly. 3. The requirement that the borrow soils used as liner material be tested in accordance with the requirements set forth in Section 2.4 is stated as Note 1 below Table 2-1, which includes both test methods and frequencies. Note 1 below Table 2-1 has been revised to reference both test methods and frequencies set forth in Section 2.4.
153	685	Part III, Appendix IIIJ, Section 2	330.457(a)	1. Provide appropriate qualifiers for the parameters and their values listed in Table 3-1 of Appendix IIIJ-A. 2. The required permeability for GCL is specified inconsistently in Appendix IIIJ (for example, but not limited to, 5x10E-9 cm/s in Table 3-1 of Appendix IIIJ-A and 3x10E-9 cm/s in Appendix IIIJ-B). Revise all relevant portions of the application to consistently specify and use the permeability. **Response:** 1. Table 3-1 was developed from Geosynthetic Institute GRI-GCL3 Standard Specification, which is considered “industry standard of practice” for specification of GCLs. GRI-GCL3 is referenced in Note 1 of Table 3-1.

				2. The hydraulic conductivity presented in Appendix IIIJ-B were revised to reflect 5.0X10^{-9} cm/sec for the GCL. The application was checked to ensure that GCL is specified as 5.0x10^{-9} cm/sec.
154	686	Part III, Appendix IIIJ, Section 2.2	330.457(a)(1)	1. As modeled by HELP and listed on Page IIIJ-A-A-17, the peak daily heads on geomembrane in the final cover far exceed the drainage geocomposite thickness. Revise to discuss the impact on slope stability or refer to where in the application the relevant information is contained. The final cover must remain stable under the modeled conditions. Consider the next comment as necessary. 2. The erosion layer thickness is listed at 12 inches in the HELP modeling presented on Page IIIJ-A-A-17. Clarify if the modeling conditions are conservatively representative of all possible final cover conditions. Revise the modeling and other relevant portions of the application as necessary. Refer to comments regarding frost depth on MRI ID 293. **Response:** 1. Refer to IIIJ-A-A-7 through IIIJ-A-A-8 for a discussion and calculations on the final cover erosion stability. The calculations demonstrate that the uplift force exerted by the maximum head on the final cover geomembrane is less than the weight of the erosion layer. The calculations were revised to conservatively assume the erosion layer is completely saturated (12 inches), which provides a factor of safety of 1.9, demonstrating that the erosion layer is stable as designed. 2. The HELP Model summary and output pages on IIIJ-A-A-17 and subsequent pages were updated to correct inconsistencies in the modeling. This includes revising the sideslope transition condition with a slope length of 270 feet to conservatively model flow in the geocomposite. IIIJ-A-A-9 through IIIJ-A-A-11 were updated to reflect this change. The modeling conditions presented conservatively model the final cover in all possible final cover conditions. Refer to Response to NOD ID 131 regarding frost depth.

155	689	Part III, Appendix IIIJ, Section 2.2	330.457(a)(3)	1. Revise Section 2.2 of Appendix IIIJ (Closure Plan) to clearly specify (to be consistent with Appendix IIIF-D): a) The minimum vegetation coverage to be established at closure and maintained throughout the post-closure care period. b) The maximum swale spacing on the final cover. c) The sideslopes will not be steeper than 4H:1V. d) Procedures to comply with 330.165(g) and (h); or refer to where the relevant procedures are contained in the application. e) Revise other relevant portions of the application accordingly. 2. Section 3.2 of Appendix IIIJ and Page 5 of the closure form in Appendix IIIJ-C specifies a minimum vegetative coverage of 90 percent on the final cover. The minimum coverage is stated to be 80 percent in Section 2.2 of Appendix IIIF and Section 2.1 of Appendix IIIK. Revise the application to consistently specify the required minimum vegetative coverage for the final cover. 3. Revise Section 4 of Appendix IIIJ to also include closures of staging/storage/processing facilities discussed in comments on MRI ID 714. 4. Revise Appendix IIIJ-A to include procedures for establishment, evaluation, and reporting of the minimum vegetation coverage required in the final cover (at least 80 percent). The procedures need to be consistent with Section 2.2 of Appendix IIIF, and Appendix IIIF-D (Erosion Layer Evaluation), and provide the required minimum coverage. **Response:** 1. Section 2.2 of Appendix IIIJ (Closure Plan) was revised to be consistent with Appendix IIIF-D. Clarification on inconsistencies between these appendixes can be found below. a) Section 2.2 of Appendix IIIJ specifies 80% ground cover to be established and maintained throughout

				the post-closure care period. b) Revised Section 2.2 of Appendix IIIJ to clarify the maximum swale spacing. c) Revised Section 2.2 of Appendix IIIJ to clarify the slopes used for the final cover design. d) Revised Section 2.2 of Appendix IIIJ to reference Part IV SOP. e) Revised Section 2.2 to correctly reference intended sections. Calculations on page IIIF-D-4 were revised to correctly show 80% ground cover was used and consistent across the application 2. Revised Section 3.2 of IIIJ to show minimum vegetative coverage of 80% is required. 3. Revised Section 4 of Appendix IIIJ to include closure of facilities. 4. Appendix IIIJ-A, Section 5 has been revised to incorporate establishment and monitoring requirements for vegetation.
156	692	Part III, Appendix IIIJ-B	330.457(d)(1)	1. Revise Appendix IIIJ-B to consistently list modeled percolations (for example, but not limited to, Table IIIJ-B.1, Page IIIJ-B-1-1, and HELP model output printouts). Adjust the effective digits as necessary. 2. (After having addressed the comment above) Explain the differences in modeled percolations listed on Page IIIB-A-2 and Page IIIJ-B-1-1. Revise the application as necessary. **Response:** 1. Appendix IIIJ-B was updated to correct inconsistencies between IIIJ-B-1-1 and the HELP Model output pages. Additionally, minor changes such as slope length and the CN were updated to be consistent with the rest of the application. 2. The modeled percolations in IIIB-A-2 model the entire landfill structure (i.e., bottom liner, leachate collection system, waste, and final cover system) and represent the percolation passing through the bottom

				liner system. The percolations listed in IIIJ-B-1-1, evaluate the alternative final cover system only.
157	696	Part III, Appendix IIIJ, Section 3.2.2	330.457(e)(3)	Section 3.2.2 of Appendix IIIJ specifies the maximum inventory of waste (defined as waste and daily cover) to be approximately 29,500,000 cubic yards. Revise to clarify if intermediate cover is counted towards the maximum inventory/air space. Revise Section 3.2.2 of Appendix IIIJ and Appendix IIIM to briefly discuss how the maximum inventory of waste or total air space is calculated, which must be consistent with the landfill configurations (including the elevations/contours/slopes of the liner system and final cover systems). Identify the software used in the airspace calculation. Revise other relevant portions of the application as necessary. **Response:** Appendix IIIJ, Section 3.2.2 and Appendix IIIM, Section 1.3 have been revised to provide additional clarification regarding the development of the maximum inventory of waste calculations. As noted, intermediate cover (except for the intermediate cover immediately below the final cover) is not included in the waste calculations.
158	698	Part III, Appendix IIIF, Drawings IIIF.1 through IIIF.15	330.457(e)(5)	1. Consistent with 330.457(e)(5), revise Figure IIIJ-1 in Appendix IIIJ to show the proposed 100-year floodplain as illustrated in Figure 1.6 of Appendix IIIF-G. 2. Per 330.63(h), revise Appendix IIIJ to include necessary cross-sections depicting the 100-year flood protection features ("levees", channels, etc.). The cross-sections of Appendix IIIA-B do not show the flood protection features relative the 100-year floodplain/water elevations. **Response:** 1. Figure IIIJ-1 was updated to show the 100-year floodplain and designed freeboard. 2. Figure IIIJ-1A, Landfill Sections, was added to show the 100-year flood stage and adequate flood protection.

159	705	Part III, Appendix IIIJ, Section 4.1	330.457(g)	Revise the seventh bullet in Section 4.1 of Appendix IIIJ by replacing "Title 30 TAC §330.465" with "Section 4 of Appendix IIIK, Postclosure Care Plan." **Response:** Appendix IIIJ, Section 4.1 has been revised accordingly.
160	706	Part III, Appendix IIIJ, Section 4.1	330.461(a)	Provide more information for the "certification" mentioned in the definition for FCSER in Section 1.2 of Appendix IIIJ-A. If it is meant to be the certification required by 330.461(c)(2), revise Section 7 of Appendix IIIJ-A and the sixth bullet in Section 4.1 of Appendix IIIJ to also address closures of staging/storage/processing facilities. Use of FCSER as the certification would also conflict with Section 2.5 (Reporting) of Appendix IIIJ-A. To prevent confusion and conflicting information, it is suggested that FCSER and the certification are submitted as separate documents; and revise Appendix IIIJ and its appendices accordingly. **Response:** Additional text has been added to Appendix IIIJ-A, Section 1.2 clarifying the intent of the stated certification, and differentiating the certification from the certification described in Appendix IIIJ, Section 8 and Title 30 TAC §330.461(c)(2).
161	714	Part III, Appendix IIIJ, Section 3.5 and 3.6	330.459(a)	1. Revise Section 3.3 of Appendix IIIJ to provide measures for removal and proper disposal of the leachate pond liner system. Also revise this section to include measures for excavation and proper disposal of piping and contaminated soils below the liner system. Revise this section in accordance with applicable requirements under 330.459. 2. Revise Sections 3.3, 3.4, and 3.5 to specify the timeline by which these staging/storage/processing facilities/operations will be closed (need to be tied to the timelines of the site closure and postclosure care ending, as applicable). 3. Revise Section 3 of Appendix IIIJ to include closure measures for all staging/storage/processing operations. Refer to comment on MRI ID 271. Revise closure cost estimates and other relevant portions of the application

				accordingly. **Response:** 1. Appendix IIIJ, Section 3.3 has been revised to expand the closure of the leachate pond discussion to address both liner and piping, as well as visually contaminated or stained soils observed beneath the liner (if existing). 2. Appendix IIIJ, Section 4.1 has been expanded to describe the closure schedule to incorporate the facilities described in Section 3 of this appendix. 3. Appendix IIIJ, Section 3 envisions all ancillary facilities proposed at the landfill. Note that the reference to other "areas" on Figure III-1, Appendix III has been revised to clarify that the listed activities are activities preformed at the Citizens Convenience Center. The costs for closure of ancillary facilities will be incorporated into the CPC cost estimates included in Appendix IIIL at the time these facilities are constructed or as a component of the annual updates as described in revisions to Appendix IIIL.
162	738	Part III, Appendix IIIL, Section 2	330.503(a)	1. Figure IIIL.1 in Appendix IIIL shows that some areas outside of the proposed waste footprint need final closure/final cover. Refer to comments on the excavation of the existing waste under MRI ID 358; and revise the drawing and cost estimates (such as Table 1 on page IIIL- 5) as necessary. 2. Table 1 in Appendix IIIL appears to show no costs for Construction Items under 2.1B. Revise to include costs for items specified in other relevant portions of the application (for example, but not limited to, final cover system described in Section 2 of Appendix IIIJ). 3. Refer to comments on drainage systems under MRI ID 290 and, if necessary, revise Item 2.3 in Table 1 of Appendix IIIL. **Response:** 1. Appendix IIIL, Figure IIIL-1 represents the area requiring closure as incorporated into the CPC cost estimates presented in Appendix IIIL and is limited (initially) to the existing trench fill landfill only. The

				CPC costs for subsequent facilities will be incorporated into future modified CPC cost estimates as described in Appendix IIIL. However, Appendix I/II, Figure I/II-3.3 has been revised to clarify that at the time of landfill development the historic waste footprint will be relocated. 2. Table 1 and TCEQ form 20721 have been revised and replaced to homogenize the presentation of line items between the two tables. However, as noted in the revisions, the only costs initially included are closure of the existing historic fill area. All future development (disposal cells and facilities) will be incorporated into the CPC cost estimate by permit modification in the future, as described in Appendix IIIL. 3. Refer to comment response 2, above. Future drainage systems will be incorporated into the CPC cost estimate by permit modification in the future, as described in Appendix IIIL.
163	1012	Part IV, Section 4.22	330.207(a)	1. Revise Section 4.3 of Appendix IIIC, and other relevant portions of the application, to specify how leachate (and contaminated water) will be conveyed to the evaporation ponds. 2. Revise Appendix IIIC-D to include calculations for the volume of leachate/contaminated water that can be expected to be lost through evaporation by the proposed evaporation ponds. Consistent with 330.245(c), if no such calculations are included or no annual net loss from evaporation ponds is expected, the proposed evaporation ponds will be classified as storage units and may not be used at this site. Revise as necessary. **Response:** 1. As discussed in the third paragraph of Section 4.1, a forcemain will extend to serve each sector of the landfill, which will transport leachate from the landfill sumps to the leachate storage area (leachate storage tank and evaporation ponds). Contaminated water will be removed via a vacuum truck or similar vehicle, as discussed in Section 4.2.

				2. The evaporation pond calculations in Appendix IIIC-D were updated to include evapotranspiration rates versus precipitation rates at the site to demonstrate that evaporation will contribute to leachate removal at the site.

ATTACHMENT 2

REPLACEMENT PAGES (REDLINE/STRIKEOUT VERSION)

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

VOLUME 1 OF 6

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

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Prepared by

02/28/2025

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This document is intended for permitting purposes only.

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

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CITY OF MEADOW LANDFILL
MAJOR PERMIT AMENDMENT APPLICATION
TCEQ PERMIT NO. MSW-2293C

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CITY OF MEADOW LANDFILL
MAJOR PERMIT AMENDMENT APPLICATION
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02/28/2025

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
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MAJOR PERMIT AMENDMENT APPLICATION

TCEQ APPLICATION FORMS AND MAILING LABELS

Prepared for

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817-735-9770

WCG Project No. 0120-809-11-05

This document intended for permitting purposes only.

PART I APPLICATION FORM TCEQ-00650

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: Brian Danko Title: Environmental Manager

Email Address: [redacted]

Signature: Brian Danko Date: 02/28/2025

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 Brian Danko

On this 28th day of February, 2025

My commission expires on the 11th day of August, 2026

Stacy M. Wilson

Notary Public in and for

Tarrant County, Texas (notary's jurisdiction, including county and state)

Note: Application Must Bear Signature & Seal of Notary Public

STACY M. WILSON
Notary Public, State of Texas
Comm. Expires 08-11-2026
Notary ID 133903285

WASTE ACCEPTANCE PLAN FORM TCEQ-20873

2. Types of Waste to be Accepted for Disposal at the Facility

   a. Indicate whether the following wastes will be accepted for disposal (check "Yes" for will accept or "No" for will not accept).

      i. ☑ Yes ☐ No Municipal solid waste [§330.3(88)]

      ii. ☑ Yes ☐ No Construction or demolition waste [§330.3(33)]

      iii. ☑ Yes ☐ No Brush [§330.3(18)]

      iv. ☑ Yes ☐ No Rubbish [§330.3(130)]

      v. ☑ Yes ☐ No Used or scrap tires that have been processed (such as by splitting, shredding, quartering or sidewall removal) in a manner acceptable to the executive director [§330.3(130)]

      vi. ☑ Yes ☐ No Class 2 nonhazardous industrial solid waste [§330.3(22), §330.173(i)]

      vii. ☑ Yes ☐ No Class 3 nonhazardous industrial solid waste [§330.3(23), §330.173(j)]

   b. Indicate whether the following special wastes will be accepted for disposal. These wastes must have been or are to be treated and the treated materials have been tested and are certified to contain no free liquids.

      i. ☑ Yes ☐ No Municipal wastewater treatment plant sludge. [§330.3(148)(D), §330.171(c)(7)]

      ii. ☑ Yes ☐ No Other types of domestic sewage treatment plant sludge [§330.3(148)(D), §330.171(c)(7)]

      iii. ☑ Yes ☐ No Municipal water-supply treatment plant sludge. [§330.3(148)(D), §330.171(c)(7)]

      iv. ☑ Yes ☐ No Septic tank pumping waste [§330.171(c)(7)]

      v. ☑ Yes ☐ No Grease trap waste. [§330.3(59), §330.171(c)(7)]

      vi. ☑ Yes ☐ No Grit trap waste [TAC §330.3(60), §330.171(c)(7)]

      vii. ☑ Yes ☐ No Waste from commercial or industrial wastewater treatment plants [§330.3(148)(G), §330.171(b)]

      viii. ☐ Yes ☑ No Other liquid waste. Explain ________________ [§330.171(c)(7)]

      ix. Specify other special wastes to be accepted for disposal that are not listed above and for which free liquids may be an issue.

      ____

      ____

   c. Indicate whether the following Special Wastes will be accepted for disposal.

      i. ☑ Yes ☐ No Municipal hazardous waste from conditionally exempt small quantity generators [§330.171(c)(6), §330.3(32)].

      ii. ☐ Yes ☑ No Class 1 industrial nonhazardous solid waste (excluding waste that is Class 1 only because of asbestos content). May be accepted only at Type I landfills with a Class 1 cell [§330.3(21), §330.171(b), §330.3(148)(B), §330.173]; may not be accepted at arid exempt [AE] landfills [330.173(a)].

      iii. ☑ Yes ☐ No Waste that is Class 1 only because of asbestos content [§330.3(21), §330.171(b), §330.3(148)(B), §330.171(c)(3)(I), 30 TAC §330.171(c)(3)]

G. Storage and Processing Units

Indicate units that will store or process waste at the facility. Describe the wastes that will be stored or processed in these units. Provide the final disposition or use (e.g., landfill disposal, composting) of the processed materials. **Waste storage and processing authorized separately (such as a registered transfer station within the permit boundary of a landfill) should not be included on this form.**

Storage and processing units must be illustrated (or locations described) on site layout figures in Part II of the application.

Examples:

1. Unit: liquid stabilization unit, Purpose: process, Waste Type: liquid waste, Disposition: solidified material to be disposed in a properly authorized landfill; or
2. Unit: grease separation and dewatering unit, Purpose: process, Disposition: water to WWTP and grease to composter or Type I landfill.

Table 1. Waste storage and processing units.

Unit	Purpose	Waste Type Stored or Processed	Final Disposition or Use
Citizens Convenience Center	☑Store ☑Process	Accepted wastes except: (See Note 1)	Landfill disposal
Liquid Waste Bulking Facility	☑Store ☑Process	Accepted liquid wastes	Landfill disposal
Landfill Disposal Cells	☑Store ☐Process	All accepted wastes except un-bulked liquid wastes	Landfill disposal
	☐Store ☐Process		
	☐Store ☐Process		Note 1: Liquid and Special Wastes, medical sharps
	☐Store ☐Process		

H. Prohibited from Processing

The following wastes are prohibited from processing:

- Any wastes not authorized for processing above.
- Lead-acid storage batteries may not be incinerated. [§330.15(e)(1)]
- Used motor vehicle oil may not be incinerated. [§330.15(e)(2)]
- Regulated hazardous waste [40 CFR §261.3] that is not excluded from regulation as a hazardous waste [40 CFR §261.4(b)] or that was not generated by a conditionally exempt small-quantity generator. [§330.15(e)(7), §330.3(127)]

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PARTS I/II
GENERAL APPLICATION REQUIREMENTS

Prepared for

Meadow Landfill, LLC

August 2024
Revised August 2024

Revised February 2025

KYLE D. GOULD
106018

02/28/2025

Prepared by

Weaver Consultants Group, LLC
TBPE Registration No. F-3727
6420 Southwest Boulevard, Suite 206
Fort Worth, Texas 76109
817-735-9770

WCG Project No. 0120-809-11-06

This document intended for permitting purposes only.

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STATE OF TEXAS
KYLE D. GOULD
106018
LICENSED PROFESSIONAL ENGINEER

02/28/2025

1 INTRODUCTION

This section addresses §330.59, §330.61, and §305.45.

The purpose of this Major Permit Amendment is to secure authorization to expand and reconfigure the waste disposal area of the existing City of Meadow Landfill, TCEQ Permit No. MSW-2293. The permitted 45-acre waste disposal area will be reconfigured, resulting in a net increase of approximately 165.7 acres (from 45 acres to 210.7 acres). The existing permit boundary of 72.9 acres will be expanded by approximately 265 acres to 337.9 acres. The maximum permitted final cover elevation will be increased from 3,300 ft-msl to 3,425 ft-msl. The landfill expansion and reconfiguration results in a capacity increase of 28,356,013 cubic yards (refer to Section 2.1 for a detailed project overview). This major permit amendment will provide for the long term disposal needs of Terry County and surrounding areas.

The City of Meadow Landfill has provided for the municipal solid waste (MSW) disposal needs of Terry County and surrounding areas for over 20 years. This major permit amendment will ensure that this critical service will continue for the landfill's service area.

The General Application Requirements section (Parts I/II) of this permit amendment application for the City of Meadow Landfill has been prepared consistent with the State of Texas requirements set forth in Title 30 Texas Administrative Code (TAC) §330.59, §330.61 and §305.45. Part II has been combined with Part I in accordance with Title 30 TAC §330.57(c)(2). Section 2, Supplementary Technical Report, presents an overview of the project and a detailed facility description as well as the types of waste that will be accepted at the facility. The remaining portions of Parts I/II present information on specific existing conditions on and around the site and regulatory matters related to the application process.

In accordance with Title 30 TAC §330.121(a), any deviation from the requirements set forth in this permit, incorporated plans or other related documents without prior approval is a violation of the rules.

conditions. As economic conditions and available landfill disposal capacity change, the landfill may accept waste from areas other than those identified above.

The quantity and types of waste accepted at the landfill and the site design and operations are discussed in the following subsections. Consistent with Title 30 TAC §330.61(b), the sources and characteristics of wastes are detailed in the following sections. In addition, waste screening and acceptance procedures are further discussed in Part IV – SOP.

2.1.1 Waste Acceptance Plan

The City of Meadow Landfill is currently operated as a Type IAE and Type IVAE municipal solid waste disposal facility. With this Major Permit Amendment Application, the landfill will be permitted and operated as a Type I municipal solid waste disposal facility. The facility accepts waste for disposal from both public and private entities within the City of Meadow, Terry County, and surrounding communities. The design and operation of the facility considers the characteristics of the waste types discussed in this section.

The major classifications of solid waste to be accepted at the City of Meadow Landfill include municipal solid waste, household waste, yard waste, commercial waste, industrial waste (nonhazardous), construction-demolition waste, and some special wastes. Each classification of waste is defined by Title 30 TAC §330.3 (note that not all of the special wastes listed in §330.3(148) will be accepted at this site – refer to Part IV for additional information).

Consistent with Title 30 TAC §330.15, the facility will not accept for disposal liquid waste (~~unless accepted for solidification per the SOP~~ except those liquid wastes meeting the criteria for Special Waste in Part IV, Section 4.20 and Appendix IVC, and solidified according to Appendix IVD prior to disposal into the landfill), regulated hazardous waste, prohibited PCBs, untreated medical waste, and other wastes prohibited by TCEQ regulations.

Waste will only be disposed of in the 210.7-acre proposed solid waste disposal area described in this permit application. No other waste disposal activities will occur within the 337.9-acre City of Meadow Landfill permit boundary.

2.1.2 Disposal Rate and Volume of Waste

The following two subsections detail the volume of waste disposal capacity and the projected disposal rates.

Volume of Waste Disposal Capacity

The waste disposal capacity of the site is summarized in Table 2-1.

Table 2-1
Waste Disposal Capacity Summary

Item	Disposal Capacity[1]	
	Permit No. MSW-2293	Permit No. MSW-2293C
Consumed Airspace	1,082,287 cy	1,143,987 cy
Remaining Airspace	61,700 cy	28,356,013 cy
Airspace Gained by Expansion	---	28,356,013 cy
Total Capacity	**1,143,987 cy** [2]	**29,500,000 cy** [2]

[1] Disposal capacity is defined as waste and daily cover. The consumed airspace represents the waste that has been placed at the site as of December 14, 2022.

[2] The expansion will have 29,500,000 cy of airspace of which approximately 1,143,987 cy of existing waste in-place will be relocated.

Disposal Rate Projections

The disposal rate estimate is based on Meadow Landfill, LLC's knowledge of market conditions, both currently and after the permit is issued.

The disposal rate projections are discussed in detail in Appendix IIIM and summarized in Table 2-2.

Table 2-2
Solid Waste Disposal Rate Summary

Initial Waste Inflow	Average Daily Projected Waste Inflow	Maximum Projected Waste Inflow	Population Equivalent (persons)[1]	Site Life (years)[2]
107,250 tons/year 375 tons/day	165,308 tons/year 578 tons/day	244,745 tons/year 856 tons/day	181,1~~59~~60	97

1 Population equivalent based on average daily projected waste flow and 5 pounds/person/day (Refer to Appendix IIIM, Section 1.2).

2 Site life is defined as years landfill will receive waste.

Meadow Landfill, LLC's estimate for 2025 waste inflow is approximately 107,250 tons per year (375 tons per day based on a 286-day operating schedule). After 2025, the waste inflow rate is assumed to increase consistent with the projected growth rate for the facility's general service area.

Operating criteria for a range of waste acceptance rates are included in Part IV – SOP. The above projections are based on current market conditions and may vary as market conditions change. These waste acceptance rates are not a limiting parameter of this permit. The actual yearly waste acceptance rate is a rolling quantity based on the sum of the previous four quarters of waste acceptance (refer to Part IV – SOP for additional information).

The estimated maximum annual waste acceptance rate for the facility for 7 years is shown in the following table.

Table 2-2A
Maximum Estimated Waste Acceptance

Year	Waste Acceptance Rate (tons per year)
2025	107,250
2026	108,356
2027	109,473
2028	110,601
2029	111,742
2030	112,893
2031	114,057

The projected waste acceptance rate for other years is summarized in Part III, Appendix IIIM.

2.1.3 Solid Waste Containment System

The design objective of the containment system [final cover, Subtitle D liner, and leachate management systems] is to isolate the solid waste and remove leachate that may collect on the liner system. The Subtitle D liner system proposed for the landfill consists of a composite liner (compacted clay, 60-mil geomembrane liner, and drainage geocomposite). A generalized detail of the containment system for the City of Meadow Landfill is shown in Figure 2.1. Design information and the required QA/QC construction procedures for the individual components of the containment system are presented in Part III of this application.

Figure 2.1. The composite liner and cover systems will be designed to meet or exceed all state and federal regulations.

2.1.4 Site Development Plan

The Site Development Plan (SDP) is included in Part III of this application. The SDP sets forth the overall design and operating characteristics of the landfill. Drawings showing the proposed landfill configuration during site development are presented in Parts I/II, Appendix I/IIA – Facility Layout Maps. A summary of the landfill configuration is provided below (refer to Figures I/II-2.1 and I/II-2.2 for additional information).

- The proposed permit boundary will include an area of 337.9 acres. The permit boundary for the existing site (TCEQ Permit No. MSW-2293) is 72.9 acres. The legal description for the permit boundary is included in Section 13 of Parts I/II.

2.2 Regulatory Agency Coordination

Documentation of coordination with the following regulatory agencies is included in Appendix I/IIB:

- Federal Aviation Administration
- Texas Historical Commission
- Texas Department of Transportation
- Texas Parks and Wildlife Department
- U.S. Army Corps of Engineers
- U.S. Department of the Interior, Fish and Wildlife Service
- Southern Plains Association of Governments

2.3 Texas Historical Commission Review

As noted in Section 2.2, a Texas Historical Commission (THC) coordination letter is included in Appendix I/IIB. The Historical Commission concluded that no historic properties will be affected by the proposed expansion.

2.4 Southern Plains Association of Governments

The expansion and reconfiguration of the City of Meadow Landfill is consistent with the Southern Plains Association of Governments' (SPAG) Regional Solid Waste Plan. The continued development of the facility will provide a regional facility that will ensure long-term, cost-effective, and environmentally-suitable disposal capacity for the region. This is a major goal of the SPAG Regional Plan. A letter documenting that Parts I/II were submitted to the SPAG is provided in Appendix I/IIB.

2.5 Abandoned Oil and Water Wells

A search to identify water wells within a one-mile radius of the landfill permit boundary was completed in October 2023 by Environmental Risk Information Services (ERIS) and Weaver Consultants Group (WCG) and included a review of records from the Texas Water Development Board (TWDB), the TCEQ, and other database records. The results of this search are provided in Part III, Appendix IIIG, Section 2.5 and Appendix IIIG-A. The water well locations are plotted on Figure IIIG-A-8~~6~~ (Water Well Location Map). Three registered water wells were located within 500-feet of the permit boundary. The closest registered water well is located approximately 83-feet west of the landfill permit boundary and is reportedly used for domestic purposes.

In addition to the database record searches, WCG completed a reconnaissance survey from area roadways to identify apparently unregistered water wells located within one mile of the landfill permit boundary. A total of 99 unregistered water wells were located by WCG reconnaissance, including ~~10~~ 11 water wells located within the permit boundary (see Figure I/II-4.3~~2~~). Any water wells located within the limits of waste footprint or within the perimeter groundwater monitoring system will be plugged and abandoned prior to development of the landfill expansion area waste disposal cells.

If an abandoned water well is located within the permit boundary during the course of facility development, the Landfill Manager will provide written notification to the TCEQ's Executive Director of their location within 30 days after discovery. As the site is developed, if any wells are encountered, the wells will be plugged in accordance with all applicable rules and regulations of the TCEQ, the Railroad Commission of Texas, or other applicable state agency and written certification provided to the Executive Director within 30 days after the plugging is complete.

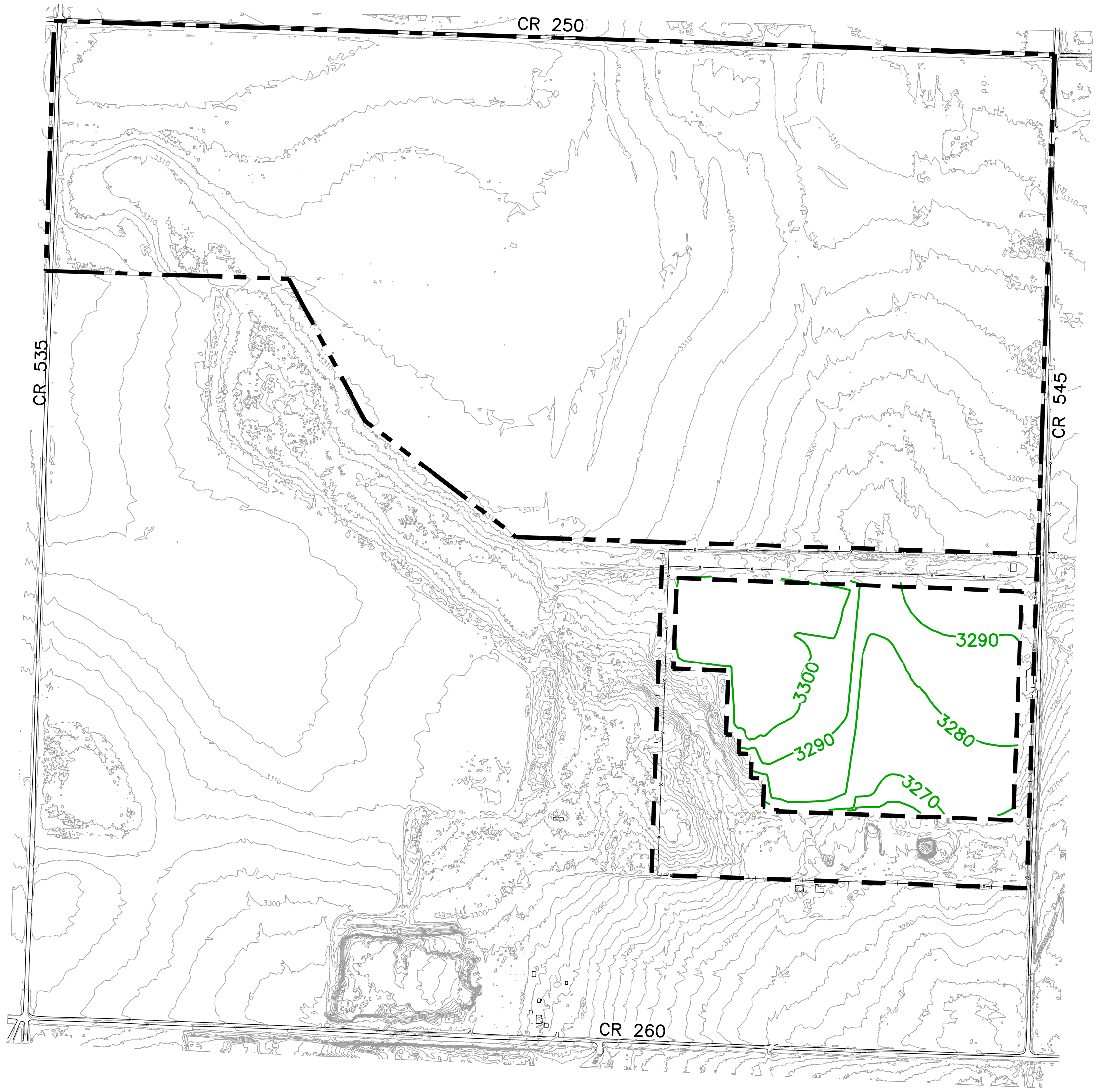
If crude oil, natural gas wells, or other wells associated with mineral recovery that are under the jurisdiction of the Railroad Commission of Texas are located within the permit boundary during the course of site development, within 30 days after the plugging of any such well, the Landfill Manager will provide the Executive Director of the TCEQ with written notice and shall provide to the Executive Director with certification that all such wells have been properly plugged, capped, and closed in accordance with all applicable rules and regulations of the Railroad Commission of Texas within 30 days after the plugging is complete.

A copy of the well plugging report to be submitted to the appropriate state agency will also be submitted to the Executive Director of the TCEQ within 30 days after the well has been plugged. Plugging reports for former onsite oil and gas wells are provided in Part III, Appendix IIIG-A.

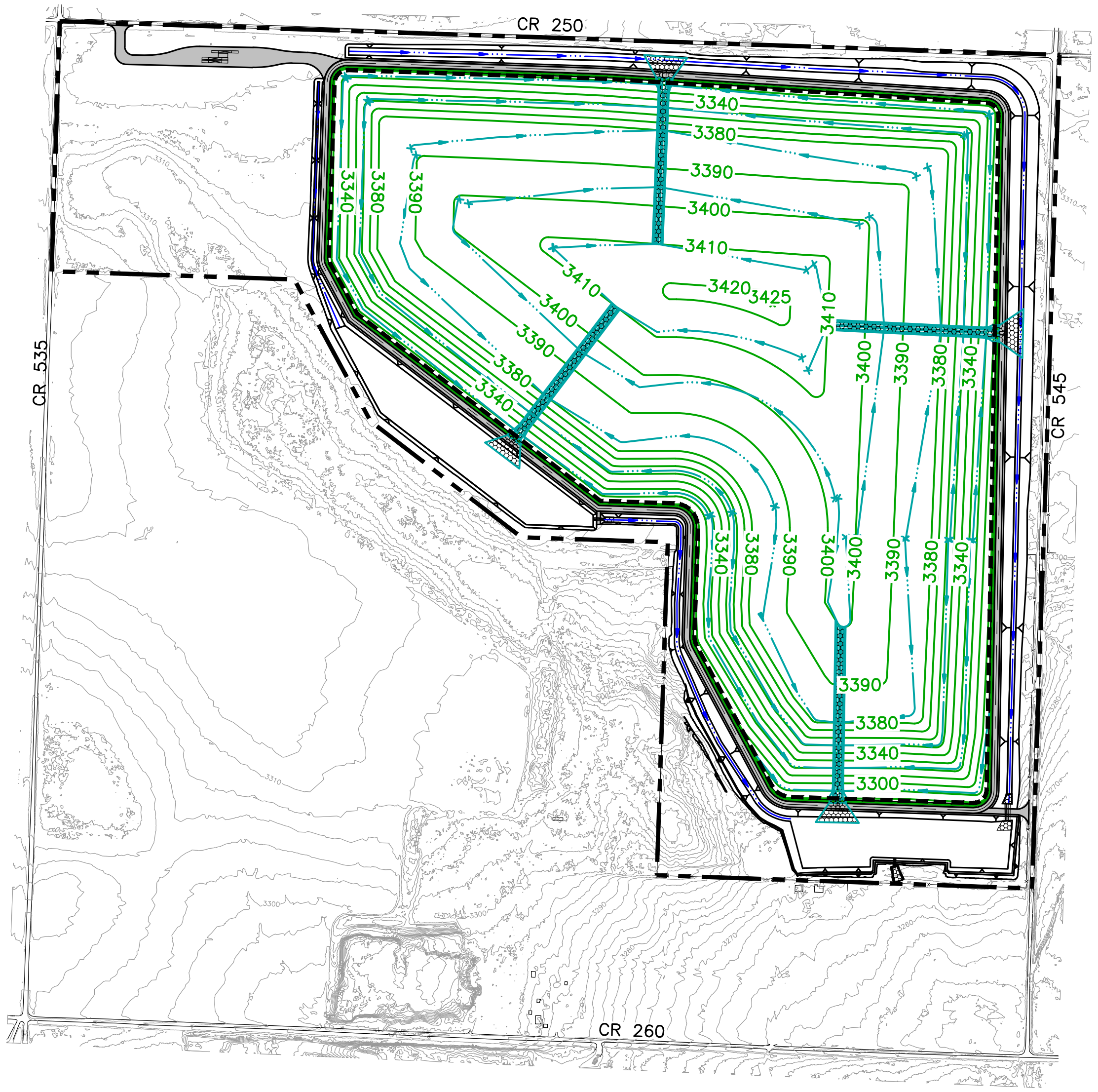
In the event that an abandoned well causes a change to the liner installation plan, a permit modification will be submitted to the Executive Director in accordance with Title 30 TAC §330.161(d).

2.6 Internet Posting

In accordance with Title 30 TAC §330.57(i), a complete copy of this permit application will be posted to the internet at the following publicly accessible website: ~~http://www.ftwweaverboos.com~~ https://www.tceq.texas.gov/permitting/waste_permits/wpd_pending_permit_apps. All future revisions or supplements to this permit application will also be posted at the same location. This internet posting is for informational purposes only.



PERMITTED LANDFILL COMPLETION PLAN
(TCEQ PERMIT NO. MSW–2293)



PROPOSED LANDFILL COMPLETION PLAN
(TCEQ PERMIT NO. MSW–2293C)

GENERAL INFORMATION

ITEM	EXISTING PERMIT (TCEQ PERMIT NO. MSW–2293)	PROPOSED PERMIT (TCEQ PERMIT NO. MSW–2293C)
PERMIT BOUNDARY	72.9 ACRES	337.9 ACRES
WASTE DISPOSAL AREA	45.0 ACRES	210.7 ACRES
PERMITTED TOP DECK ELEVATION	–––––	3380.0 (FT–MSL)
MAXIMUM PERMITTED ELEVATION	3307.0 (FT–MSL)	3425.0 (FT–MSL)

LEGEND

— · —	PROPOSED PERMIT BOUNDARY
— · — · —	PERMITTED PERMIT BOUNDARY
- - - -	PROPOSED LIMIT OF WASTE
— — —	PERMITTED LIMIT OF WASTE
3300	EXISTING CONTOUR
3400	FINAL COVER CONTOUR
▨	DRAINAGE LETDOWN
→	DRAINAGE SWALE
△	INDICATES REVISION (SEE LIST OF REVISIONS)

△1

N

0 500 1000
SCALE IN FEET

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.

LIST OF REVISIONS:

1. UPDATED LEGEND.

KYLE D. GOULD
106018
02/28/2025

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120–809–11
CAD: 2.1–LANDFILL COMPLETION PLAN.DWG

DRAWN BY: JDW
DESIGN BY: SSM
REVIEWED BY: KDG

Weaver Consultants Group
TBPE REGISTRATION NO. F–3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

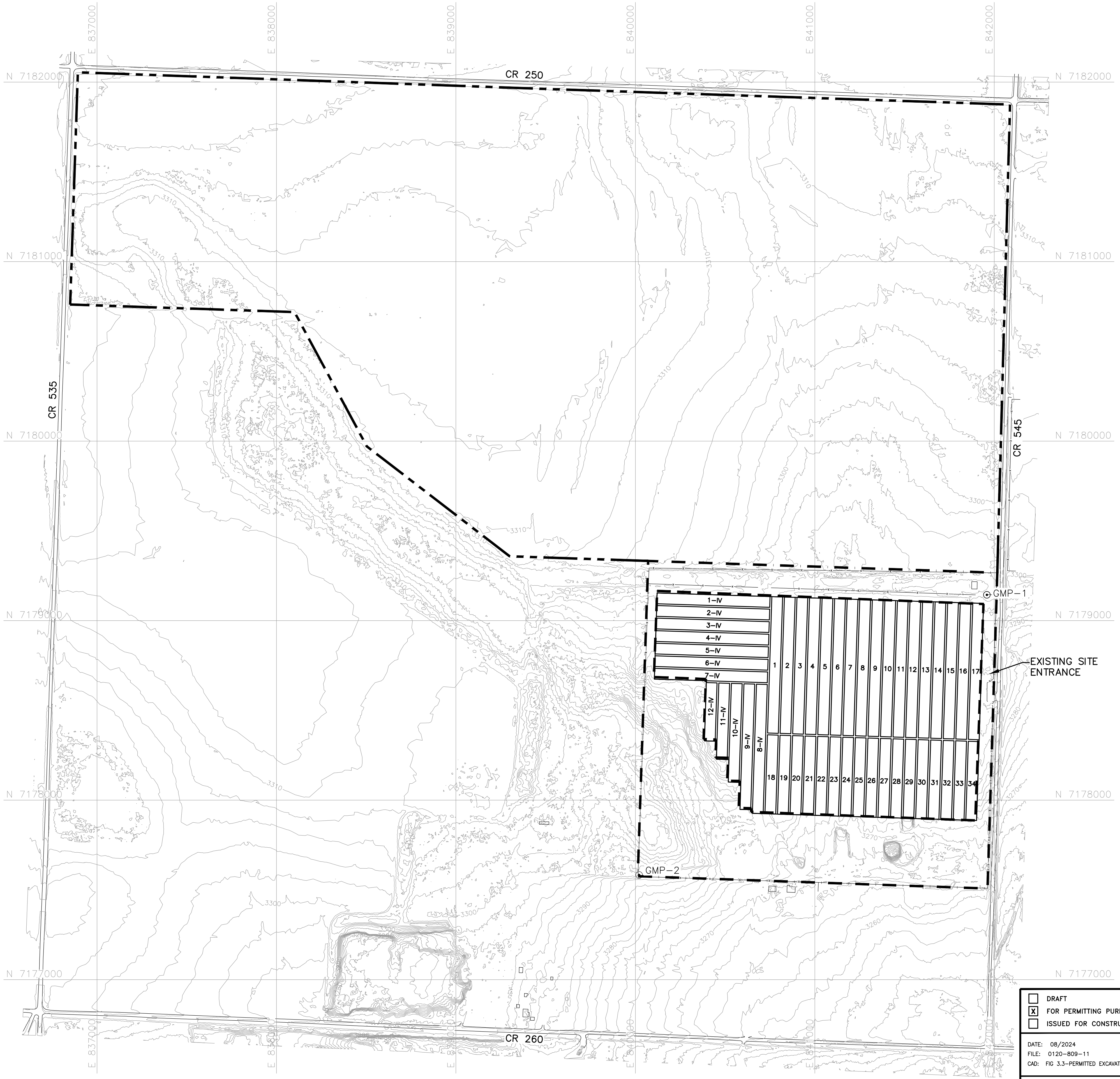
NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

MAJOR PERMIT AMENDMENT EXISTING AND PROPOSED LANDFILL COMPLETION PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

FIGURE I/II–2.1



N

0 300 600
SCALE IN FEET

LEGEND

PROPOSED PERMIT BOUNDARY
PERMITTED PERMIT BOUNDARY
PERMITTED LIMIT OF WASTE
N 7180000 STATE PLANE COORDINATE SYSTEM
3300 EXISTING CONTOUR
GP-1 EXISTING LANDFILL GAS DETECTION PROBE
1 EXISTING TYPE I TRENCH
1-IV EXISTING TYPE IV TRENCH
△ INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.
3. △1 HISTORIC WASTE WILL BE EXCAVATED AND RELOCATED INTO THE SUBTITLE D-LINED DISPOSAL CELLS DURING LANDFILL DEVELOPMENT.

LIST OF REVISIONS:

1. ADDED NOTE 3.

KYLE D. GOULD
106018

02/28/2025

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120-809-11
CAD: FIG 3.3-PERMITTED EXCAVATION PLAN.DWG

DRAWN BY: JDW
DESIGN BY: SSM
REVIEWED BY: KDG

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

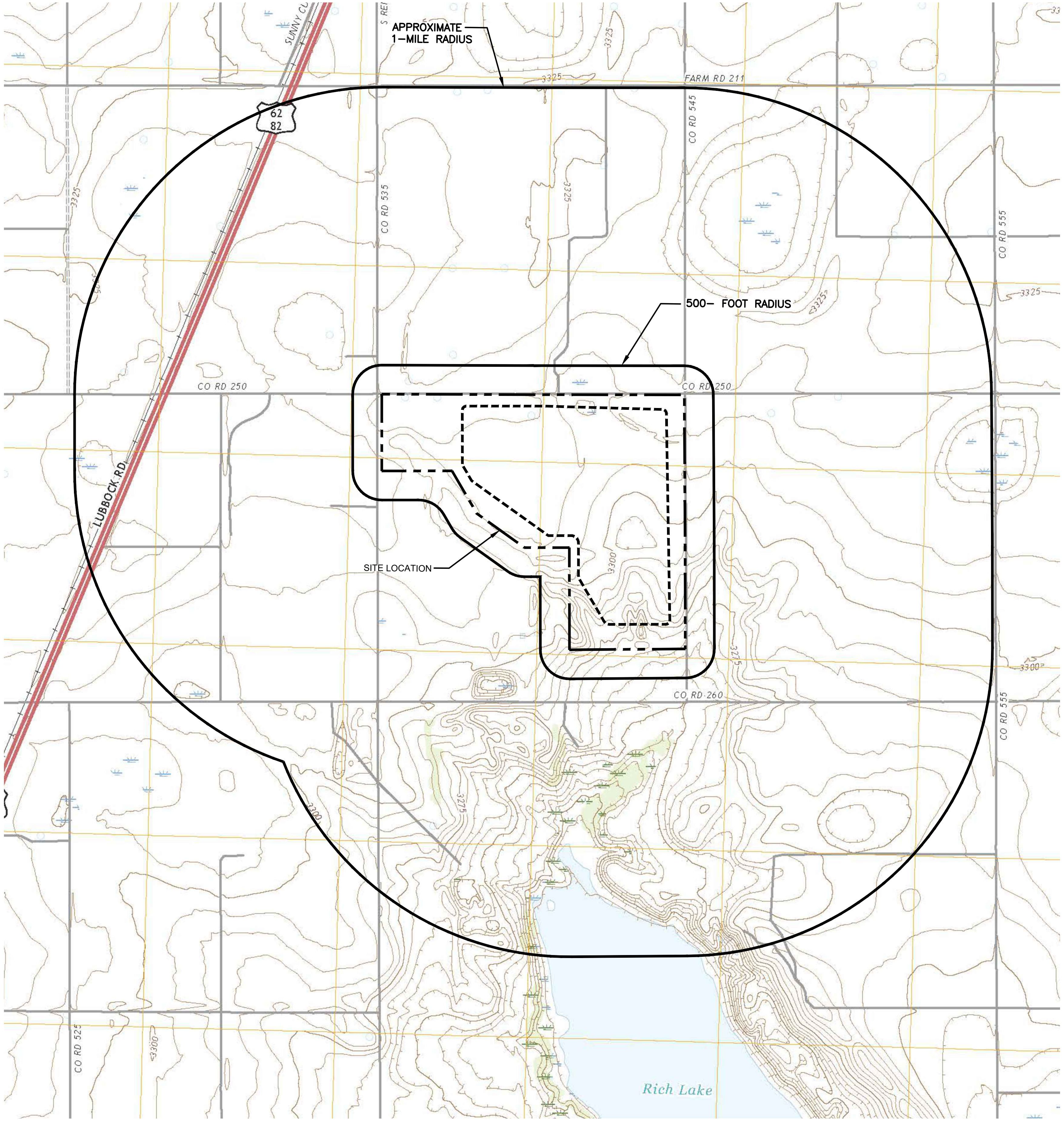
NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

MAJOR PERMIT AMENDMENT PERMITTED EXCAVATION PLAN (TCEQ PERMIT NO. MSW-2293)

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

FIGURE I/II-3.3



LEGEND

PROPOSED PERMIT BOUNDARY

PROPOSED LIMIT OF WASTE

△ INDICATES REVISION (SEE LIST OF REVISIONS)

ROAD CLASSIFICATION

Expressway	🟥	Local Connector	▬
Secondary Hwy	🟥	Local Road	▬
Ramp	🟥	4WD	┄

Interstate Route   US Route   State Route

MEADOW, TX

2022

△1

NOTES:

1. THE PRIMARY SITE ACCESS ROADS WITHIN ONE MILE OF THE SITE INCLUDE U.S. HIGHWAY 62, COUNTY ROAD 250, COUNTY ROAD 545, AND COUNTY ROAD 250.
2. SEE FIGURE I/II–5.1 FOR PROPERTY OWNERS WITHIN 1/4–MILE OF THE SITE.
3. SEE SECTION 7.7 FOR DISCUSSION OF WATER WELLS. WATER WELLS LOCATED WITHIN 500 FEET OF THE PERMIT BOUNDARY ARE SHOWN ON FIGURE I/II–4.3. REFER TO APPENDIX IIIG FOR WATER WELLS WITHIN ONE MILE OF THE PERMIT BOUNDARY.
4. NO SPRINGS ARE DOCUMENTED WITHIN ONE MILE OF THE PERMIT BOUNDARY.
5. REFER TO FIGURE 4.3 FOR LOCATION OF THE NEAREST RESIDENCE.
6. REFER TO SECTION 8 FOR AIRPORTS LOCATED WITHIN 6 MILES OF THE PERMIT BOUNDARY.
7. REFER TO SECTION 13 FOR EASEMENT INFORMATION AND DRAWING I/IIA.11 FOR ACCESS CONTROL INFORMATION.
8. △1 ALL TOPOGRAPHIC INFORMATION REPRODUCED FROM 7.5 MINUTE, MEADOW, TEXAS QUADRANGLE USGS MAP DATED 2022.

LIST OF REVISIONS:

1. MOVED WIND ROSE AND AFFILIATED NOTE TO FIGURE I/II 4.2A.

STATE OF TEXAS
KYLE D. GOULD
106018
LICENSED PROFESSIONAL ENGINEER

02/28/2025

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120–809–11
CAD: FIG 4.2–GENERAL TOPO.DWG

DRAWN BY: JDW
DESIGN BY: SSM
REVIEWED BY: KDG

Weaver Consultants Group
TBPE REGISTRATION NO. F–3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

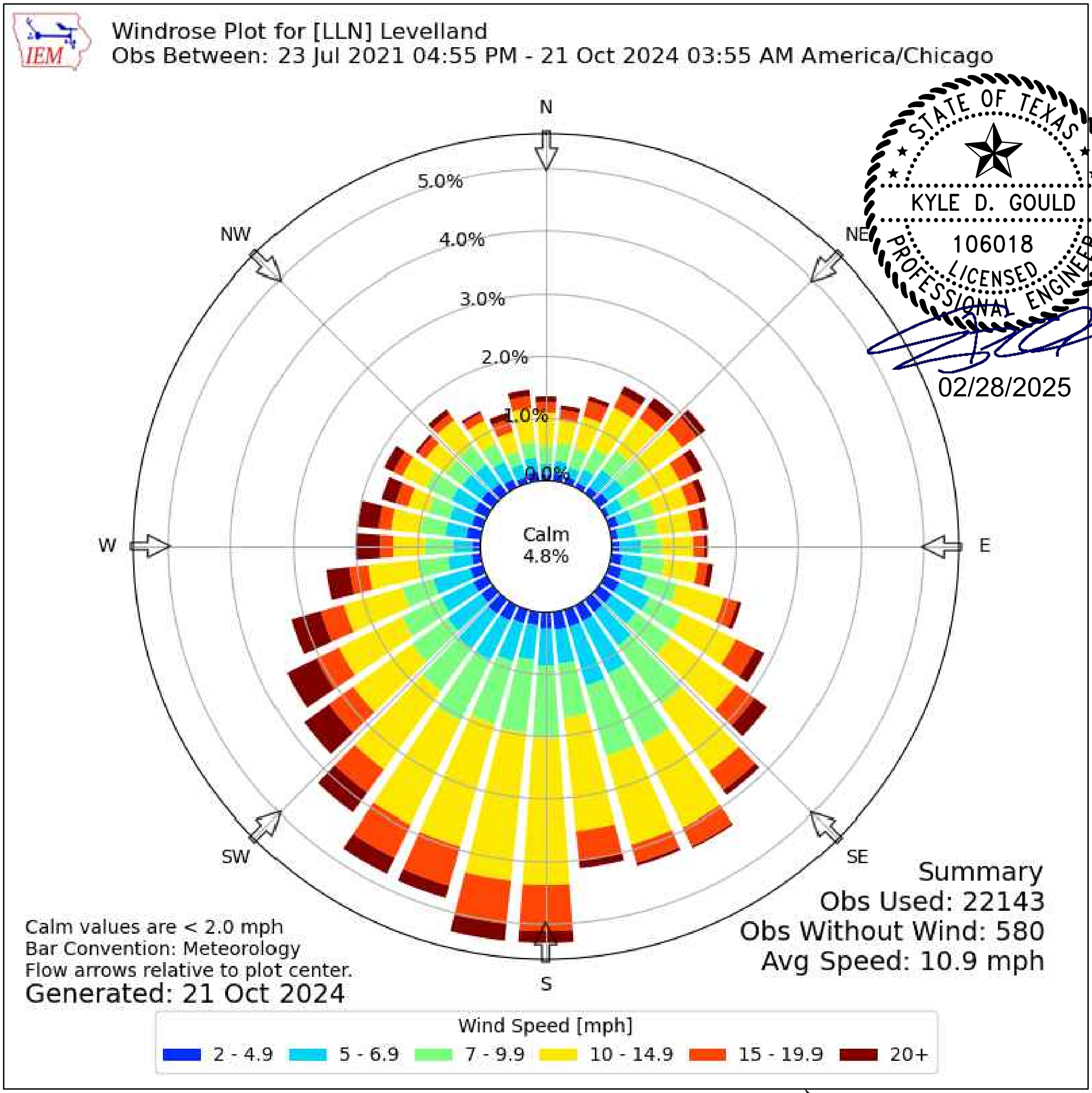
MAJOR PERMIT AMENDMENT GENERAL TOPOGRAPHIC MAP

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

FIGURE I/II–4.2

O:\0120\809\EXPANSION 2023\PARTS I–II\4.2–GENERAL TOPO MAP.dwg, jwilson, 1:2



KYLE D. GOULD
106018

02/28/2025

△1

NOTE:

1. THE WIND ROSE IS REPRODUCED FROM THE AUTOMATED SURFACE OBSERVING SYSTEM (ASOS) AT LEVELLAND AND GENERATED FROM THE IOWA ENVIRONMENTAL MESONET. THE ASOS IS A JOINT PROGRAM OF THE NATIONAL WEATHER SERVICE, THE FEDERAL AVIATION ADMINISTRATION AND THE DEPARTMENT OF DEFENSE.

LIST OF REVISIONS:

1. UPDATED ASOS STATION AND MOVED WIND ROSE FROM FIGURE I/II–4.2.

LEGEND

△1 INDICATES REVISION (SEE LIST OF REVISIONS)

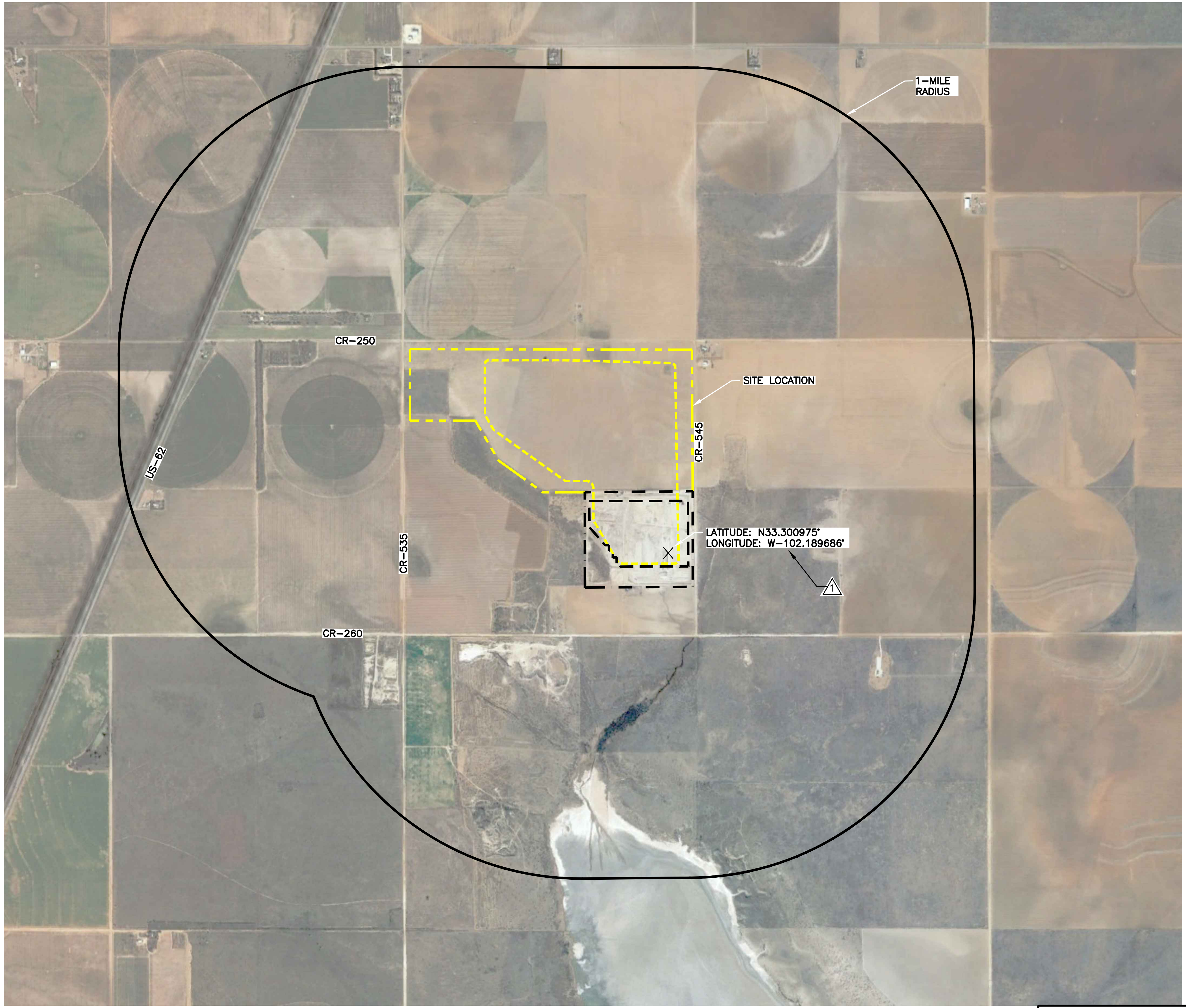
MAJOR PERMIT AMENDMENT
ASOS WIND ROSE

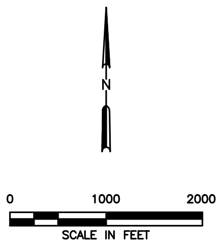
CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

DRAWN BY: RAA	DATE: 02/2025	FILE: 0120–809–11
REVIEWED BY: JBM	CAD: I/II–4–2 WIND ROSE.DWG	FIGURE I/II–4.2A

O:\0120\809\EXPANSION 2023\PARTS I-II\4.2A-ASOS WIND ROSE.dwg, jwilson, 1:1





LEGEND

— · —	PROPOSED PERMIT BOUNDARY
— · —	PERMITTED PERMIT BOUNDARY
- - - -	PROPOSED LIMIT OF WASTE
— — —	PERMITTED LIMIT OF WASTE
△1	INDICATES REVISION (SEE LIST OF REVISIONS)

NOTE:

1. AERIAL PHOTOGRAPH OBTAINED FROM GOOGLE EARTH DATED 2-5-2021.

LIST OF REVISIONS:

1. ADDED LATITUDE AND LONGITUDE GEOGRAPHIC COORDINATES OF THE FACILITY.

KYLE D. GOULD
106018

02/28/2025

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120-809-11
CAD: FIG 6.1-AERIAL PHOTOGRAPH.DWG

DRAWN BY: JDW
DESIGN BY: SSM
REVIEWED BY: KDG

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

MAJOR PERMIT AMENDMENT
AERIAL PHOTOGRAPH

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

FIGURE I/II-6.1

7.6 Land Use Conclusions

The use of this land for a municipal solid waste site represents a compatible land use for the following reasons.

- The site has been permitted as a landfill for over 20 years.
- The waste placement footprint represents only 210.7 acres out of a permit boundary of 337.9 acres.
- The site has not and will not affect area growth trends.
- The generally rural/undeveloped nature of the existing land uses in the area is compatible with the proposed expansion.

In summary, the existing site has long been established as a disposal facility. The expansion and reconfiguration of the City of Meadow Landfill will provide long term waste disposal for area communities at a facility that will continue to be developed to meet or exceed all regulatory requirements.

7.7 Water Wells Within 500 Feet

A search to identify water wells within a one-mile radius of the landfill permit boundary was completed in October 2023 by ERIS and WCG and included a review of records from the TWDB, the TCEQ, and other database records. The results of this search are provided in Part III, Appendix IIIG, Section 2.5 and Appendix IIIG-A. The water well locations are plotted on Figure IIIG-A-8~~6~~ (Water Well Location Map). Three registered water wells were located within 500-feet of the permit boundary. The closest registered water well is located approximately 83-feet west of the landfill permit boundary and is reportedly used for domestic purposes.

In addition to the database record searches, WCG completed a reconnaissance survey from area roadways to identify apparently unregistered water wells located within one mile of the landfill permit boundary. A total of 99 unregistered water wells were located by WCG reconnaissance, including 10 water wells located within the permit boundary (see Figure I/II-4.3~~2~~). Any water wells located within the limits of waste footprint or within the perimeter groundwater monitoring system will be plugged and abandoned prior to development of the landfill expansion area waste disposal cells.

10 GROUNDWATER AND SURFACE WATER STATEMENT

10.1 Groundwater Statement

This section addresses §330.61(k).

Groundwater conditions at the site were determined using data from groundwater piezometers and nearby water wells. Details and logs of on-site borings and piezometers, as well as potentiometric surface contour maps, are provided in Part III, Appendix IIIG.

The uppermost aquifer, for groundwater monitoring purposes, is contained within the site-specific Lower Sand Stratum (Ogallala Aquifer). The lower confining unit is comprised of low-permeability clay and shale sediments of the site-specific Basal Clay stratum which act as an aquiclude to restrict the downward vertical movement of Lower Sand groundwater. Regional Ogallala Aquifer groundwater flow generally follows the regional dip of the formation toward the south-southeast. The site-specific groundwater data indicate a groundwater flow regime toward the northwest, north, northeast, east, southeast, from a groundwater high located at the southeast proposed expansion area. Regional aquifer and site-specific groundwater data are provided and discussed in Appendix IIIG (Geology) and Appendix IIIH (Groundwater Sampling and Analysis Plan) of the Site Development Plan.

10.2 Surface Water Statement

The 337.9-acre City of Meadow Landfill permit boundary is located north of Rich Lake. The entire site drains south to an unnamed tributary which drains into Rich Lake. Rich Lake is approximately 1 mile south of the permit boundary and is part of the Colorado River Basin. Rich Lake drains to the south through a series of unnamed tributaries. The total drainage area of the Colorado watershed is approximately 250,000 square miles.

For the proposed landfill expansion and reconfiguration, the final cover system will include erosion control structures to effectively minimize erosion of final cover soils. The proposed drainage system also includes a perimeter channel system that will convey stormwater collected from the landfill area to one of two detention ponds. The stormwater detention ponds are designed to attenuate stormwater flow before stormwater is discharged into existing drainage features located downstream of the site. As discussed in Appendix IIIF, the site's stormwater management system is designed to not adversely alter existing permitted drainage patterns or have any adverse impact on offsite drainage features.

The facility has been designed to prevent discharge of pollutants into waters of the State or waters of the United States, as defined by the Texas Water Code and the

DEED FOR

REPUBLIC WASTE SERVICES OF TEXAS, LTD.

CALLED 159.87 AC

VOL. 764, PG. 673

O.P.R.T.C.T.

240262

NOTICE OF CONFIDENTIALITY RIGHTS:
IF YOU ARE A NATURAL PERSON, YOU MAY REMOVE OR STRIKE ANY OF THE FOLLOWING INFORMATION FROM THIS INSTRUMENT BEFORE IT IS FILED FOR RECORD IN THE PUBLIC RECORDS: YOUR SOCIAL SECURITY NUMBER OR YOUR DRIVER'S LICENSE NUMBER.

DEED BY SUBSTITUTE TRUSTEE

STATE OF TEXAS)

COUNTY OF TERRY)

WHEREAS on October 25, 2000, Ronnie G. Hitt, (herein called "Grantor") executed a certain deed of trust conveying to the State Director of the Farmers Home Administration for the State of Texas, and his successors in office as State Director or Acting State Director, Trustee, certain property hereinafter described for the purpose of securing and enforcing the payment to the United States of America of a certain note and other indebtedness as more fully described and provided for in said deed of trust which is recorded in Volume 656, Page 379, Official Public Records, Terry County, Texas, reference to which deed of trust and the record thereof is hereby made for all purposes; and

WHEREAS the said Trustee named in said deed of trust was unable to act as Trustee in said capacity; and

WHEREAS the United States of America, Beneficiary in said deed of trust, pursuant to and in accordance with the powers embodied in said deed of trust, did duly appoint the undersigned to serve as Substitute Trustee, and I, the duly named Substitute Trustee, at the request of the United States of America, the holder of said deed of trust, there having been default in the payment of the said note, after the posting of written notice thereof for twenty-one days prior to the date of sale at the Courthouse door in Brownfield, Terry County, Texas, in which county said real estate is situated, after serving written notice of the proposed sale by certified mail on each debtor obligated to pay such debt and on any persons shown of record to have an interest inferior to the interest of the United States of America in the property secured by said deed of trust, which notice stated the sale would be held at 10:00 a.m., or within three hours thereafter, on May 1, 2007, at the north door of the courthouse in said county, and after filing said notice of sale for record with the County Clerk of said county, did offer for sale at 10:01 a.m. at public auction on the first Tuesday in May 2007, the same being the 1st day of said month, at the north door of the courthouse in said County, that certain property, together with improvements thereon, with the rights, privileges and appurtenances thereto belonging, situated in said County, more particularly described as follows:

> 159.87 acre tract being the Northeast Quarter (NE/4) of Section 19, Block 4-X, C & M Ry. Co. Survey, Terry County, Texas, as described in Volume 552, Page 887, of the Deed Records of Terry County, Texas, and further described as follows:
>
> BEGINNING at ½" iron rod with cap set for the Northeast corner of this tract as the Northeast corner of said Section 19;
> THENCE S 0 deg. 02' 03" E along the east side of a graded county road and the East line of said Northeast Quarter, a distance of 2638.8 feet to a ½" iron rod with cap found at the Northeast corner of the Southeast Quarter of said Section 19 for the Southeast corner of this tract;
> THENCE West, along the North line of said Southeast Quarter, at a distance 35.0 feet pass a ½" iron rod with cap found in the West line of said county road, in all a distance of 2639.1 feet to a ½" iron rod with cap found at the Northwest corner of said Southeast Quarter and the Southwest corner of

said Northeast Quarter for the Southwest corner of this tract;
THENCE N 0 deg. 02' 30" W along the West line of said Northeast Quarter, at a distance of 2608.8 feet pass a ½" iron rod with cap set in the South line of a graded county road, in all a distance of 2638.8 feet to a ½" iron rod with cap set at the Northwest corner of said Northeast Quarter for the Northwest corner of this tact;
THENCE East, along the North line of said Northeast Quarter and said county road, a distance of 2639.1 feet to the Place of Beginning.

SUBJECT, HOWEVER, TO THE FOLLOWING:

1. Any discrepancies, conflicts, or shortages in area or boundary lines, or any encroachments or any protrusions, or any overlapping of improvements.

2. County Road established by jury view, width unknown, up to the Northeast corner of the Northeast Quarter of Section 19, Block 4-X, recorded in Volume 3, Page 5, Commissioner's Court Minutes, Terry County, Texas.

3. Visible and apparent easements and all underground easements, the existence of which may arise by virtue of use or unrecorded grant.

4. Reservation and/or conveyance of all oil, gas and other minerals by prior owners of record.

5. Unpaid ad valorem taxes.

WHEREUPON, the said tract of land was struck off to Republic Waste Services of Texas, Ltd., a Texas limited partnership, 1422 Hughes Avenue, San Angelo, Texas 76903, for the sum of $68,000.00, being the highest bid therefor.

NOW, THEREFORE, for and in consideration of the premises and of the sum of $68,000.00, (which amount is to be applied as a credit on the note and other indebtedness hereinabove referred to owing to the United States of America), the receipt of which is hereby acknowledged, I, the said Substitute Trustee, by virtue of the authority conferred upon me in writing by the said Beneficiary in said deed of trust as more fully shown by instrument dated March 14, 2007, recorded in Volume 745, Page 413, Official Public Records, Terry County, Texas, have BARGAINED, SOLD AND CONVEYED and by these presents do BARGAIN, SELL AND CONVEY unto Republic Waste Services of Texas, Ltd., a Texas limited partnership, its successors and assigns, forever, the above-described land and improvements thereon, together with all and singular the rights, privileges and appurtenances to the same in any manner belonging.

TO HAVE AND TO HOLD said property unto the said Republic Waste Services of Texas, Ltd., a Texas limited partnership, its successors and assigns, forever, in fee simple, and I, the said Substitute Trustee, as aforesaid, by virtue of the authority vested in me in said deed of trust, do hereby bind and obligate the said Grantor, his heirs and assigns, to forever warrant and defend the right and title of said property to Republic Waste Services of Texas, Ltd., a Texas limited partnership, its successors and assigns, against every person whomsoever lawfully claiming or to claim the same or any part thereof.

Dated this 1st day of May 2007.

Linda G. Turner
Linda G. Turner
Substitute Trustee

STATE OF TEXAS)

COUNTY OF TERRY)

This instrument was acknowledged before me on

May 10, 2007, by Linda G. Turner, as Substitute Trustee.

Debra Crutcher

Notary Public, State of Texas

SEAL)

DEBRA CRUTCHER

My Commission Expires 06-08-2010

AFFIDAVIT CONCERNING NOTICE OF THE SUBSTITUTE TRUSTEE'S SALE

(Ronnie G. Hitt - Borrower)

THE STATE OF TEXAS)
ss
COUNTY OF TERRY)

I, Linda G. Turner, being first duly sworn according to law do depose and say:

1. That I am the Substitute Trustee of that certain deed of trust dated October 25, 2000, executed by Ronnie G. Hitt, recorded in Volume 656, Page 379, Official Public Records, Terry County, Texas, which deed of trust secures a loan made under the Housing Act of 1949, 42 U.S.C. 1471 et seq., or the Consolidated Farm and Rural Development Act, 7 U.S.C. 1921 et seq.

2. That each of the persons obligated to pay the debt secured by said deed of trust was given at least 20 days' written notice by certified mail of his/her right to cure the default before the indebtedness was accelerated and before notice was given of the Substitute Trustee's sale.

3. That on April 3, 2007, I personally served written notice of the Substitute Trustee's sale by certified mail on each of the persons obligated to pay the debt secured by said deed of trust and that such notice was addressed to such persons at their last known address, as shown by the records of the holder of the debt.

4. If any person(s) (with a known address) were known to me to have an interest inferior to the interest of the United States of America in the property secured by said deed of trust, I personally mailed written notice of the Substitute Trustee's sale by certified mail to each of such person(s) at their known address on the same date specified in Paragraph 3 above.

5. That the Notice of the Substitute Trustee's Sale was filed with the County Clerk of Terry County, Texas, on April 3, 2007.

6. That the Notice of the Substitute Trustee's Sale was posted at the courthouse door in Brownfield, Terry County, Texas, on April 3, 2007.

7. That to the best of my knowledge and belief, none of the person(s) with a known ownership interest in the property which is the subject of the

Substitute Trustee's sale were in the Armed Forces of the United States of America on the date of the Substitute Trustee's sale and were subject to the provisions of the Soldiers' and Sailors' Civil Relief Act of 1940, 50 App. U.S.C. 510 et seq.

8. That to the best of my knowledge and belief, none of the person(s) with a known ownership interest in the property which is the subject of the Substitute Trustee's sale were deceased on the date of such sale.

9. That as of the date of the Substitute Trustee's sale, the present market value of the property was $56,000.00 and the total unpaid balance of the debt owed to the United States was $118,193.90.

Dated this 10th day of May, 2007.

Linda G. Turner

Linda G. Turner
Substitute Trustee

ACKNOWLEDGMENT

THE STATE OF TEXAS)

COUNTY OF TERRY)

This instrument was acknowledged and sworn to before me on May 10, 2007, by Linda G. Turner.

Notary Public, State of Texas

DEBRA CRUTCHER
NOTARY PUBLIC
STATE OF TEXAS
My Commission Expires 06-08-2010

FILED FOR RECORD

AT 1:00 O'CLOCK P M

ON THE 27 DAY OF August

A.D., 2008.

Vol. 764 Page 673

in the Official Public Records of Terry County, Texas.

Deborah Reid, deputy

Ann Willis

COUNTY CLERK, TERRY COUNTY, TEXAS

BY Deborah Reid

DEPUTY

ANY PROVISION HEREIN WHICH RESTRICTS THE SALE, RENTAL OR USE OF THE DESCRIBED REAL PROPERTY BECAUSE OF COLOR OR RACE IS INVALID AND UNENFORCEABLE UNDER FEDERAL LAW.

STATE OF TEXAS
COUNTY OF TERRY } OFFICIAL PUBLIC RECORD

I hereby certify that this instrument was FILED on the date and at the time stamped hereon by me and was duly RECORDED in the Volume and Page of the named RECORDS of Terry County, Texas, as stamped hereon by me.

Ann Willis

COUNTY CLERK
TERRY COUNTY, TEXAS

Ed Rhodes
Republic Services
1150 Estate Drive Suite D
Abilene Texas 79602

pd $40.00

envelope provided

DEED FOR
CITY OF MEADOW
CALLED 80.00 AC
VOL. 652, PG. 473
O.P.R.T.C.T.

217497

WARRANTY DEED

Date: July 10, 2000

Grantor: Willie A. Nieman and wife, Betty Nieman

Grantor's Mailing Address: 1613 Paseo Circle, Brownfield, Texas 79316

Grantee: City of Meadow, a Texas Municipality

Grantee's Mailing Address: P.O. Box 156
Meadow, Texas 79345

Consideration: Twenty four thousand dollars and zero cents ($24,000.00) cash

Property (including any improvements):

An 80.00 acre tract of land in the Southeast Quarter of Section 19, Block 4X, C & M Railroad Company Survey, Terry County, Texas being a portion of that tract of land described in Volume 428, Page 715 of the Deed Records of Terry County, Texas and further described as follows:
BEGINNING at a 1/2" iron rod with cap set for the Northeast corner of this tract in the East shoulder of a graded county road at the Northeast corner of said Southeast Quarter from whence a railroad spike found in the centerline of F.M. Highway 211 at the Northeast corner of Section 20 Block 4X bears N 0°02'03" W a distance of 7918.9 feet;
THENCE S 0°02'30" E, along said county road and the East line of said Southeast quarter, a distance of 1760.2 feet to a 1/2" iron rod with cap set in the centerline of said county road and the North line of that 53.333 acre tract of land described in Volume 466, Page 141 of said record for the Southeast corner of this tract;
THENCE N 89°54'40" W, along the North line of said 53.333 acre tract, at a distance of 31.1 feet pass a 3/8" iron rod found in a North South fence line, in all a distance of 1981.5 feet to a 1/2" iron rod with cap set one foot North of an East-West fence line for the Southwest corner of this tract from whence a 1/2" iron rod found at the Northwest corner of said 53.333 acre tract bears N 89°54'40" W a distance of 650.2 feet;
THENCE N 0°02'30" W , at a distance of 1620 feet pass an East-West fence line, in all a distance of 1757.2 feet to a 1/2" iron rod with cap set in the North line of said Southeast Quarter for the Northwest corner of this tract;
THENCE N 90°00'00" E, along said North line, at a distance of 1946.5 feet pass a 1/2" iron rod with cap set in the West line of said county road, in all a distance of 1981.5 feet to the place of beginning.

Reservations from and Exceptions To Conveyance and Warranty:

Easements, right-of-way, and prescriptive rights, whether of record or not; all presently recorded instruments other than liens and conveyances, that affect the property; rights of adjoining owners in any walls and fences situated on a common boundary; any discrepancies, conflicts, or shortages in area or boundary lines; taxes for the current year, the payment of which Grantee assumes; and prior reservations and conveyances of oil, gas, and other minerals in, on and under that may be produced from said land which are of record in Terry County, Texas.

Grantor, for the Consideration and subject to the Reservations from Conveyance and the Exceptions to Conveyance and Warranty, grants, sells, and conveys to Grantee the Property, together with all and singular the rights and appurtenances thereto in any way belonging, to have and to hold it to Grantee and Grantee's heirs, successors, and assigns forever. Grantor binds Grantor and Grantor's heirs and successors to warrant and forever defend all and singular the Property to Grantee and Grantee's heirs, successors, and assigns against every person whomsoever lawfully claiming or to claim the same or any part thereof, except as to the Reservations and Exceptions to Conveyance and Warranty.

When the context requires, singular nouns and pronouns include the plural.

Willie A. Nieman
Willie A. Nieman

Betty L. Nieman
Betty Nieman, aka Betty L. Nieman

STATE OF TEXAS §

COUNTY OF TERRY §

This instrument was acknowledged before me on this the 12th day of July , 2000, by Willie A. Nieman and wife, Betty Nieman, aka Betty L. Nieman.

JIM PETE HALE
Notary Public, State of Texas
My Comm. Expires Oct. 31, 2000

Jim Pete Hale
Notary of Public, State of Texas

FILED FOR RECORD

AT 3:00 O'CLOCK P M

ON THE 17th DAY OF July

A.D., 2000.

Vol. 652 Page 473

In the Official Public Records of Terry County, Texas.

Susan Pickett, deputy

Ann Willis

COUNTY CLERK, TERRY COUNTY, TEXAS

BY Bertha Alvarado

DEPUTY

ANY PROVISION HEREIN WHICH RESTRICTS THE SALE, RENTAL OR USE OF THE DESCRIBED REAL PROPERTY BECAUSE OF COLOR OR RACE IS INVALID AND UNENFORCEABLE UNDER FEDERAL LAW.

STATE OF TEXAS
COUNTY OF TERRY } OFFICIAL PUBLIC RECORD

I hereby certify that this instrument was FILED on the date and at the time stamped hereon by me and was duly RECORDED in the Volume and Page of the named RECORDS of Terry County, Texas, as stamped hereon by me.

Ann Willis

COUNTY CLERK
TERRY COUNTY, TEXAS

JPH

11⁰⁰

DEED FOR
CITY OF MEADOW
CALLED 79.94 AC
VOL. 875, PG. 629
O.P.R.T.C.T.

TERRY, TX
KIM CARTER

2:24:42 PM #265887
10-15-2014 B-875 P-629

NOTICE OF CONFIDENTIALITY RIGHTS: IF YOU ARE A NATURAL PERSON, YOU MAY REMOVE OR STRIKE ANY OR ALL OF THE FOLLOWING INFORMATION FROM ANY INSTRUMENT THAT TRANSFERS AN INTEREST IN REAL PROPERTY BEFORE IT IS FILED FOR RECORD IN THE PUBLIC RECORDS: YOUR SOCIAL SECURITY NUMBER OR YOUR DRIVER'S LICENSE NUMBER.

GENERAL WARRANTY DEED

Date:	April 8th, 2014
Grantor:	**Clarence Nieman**
Grantor's Mailing Address (including county):	471 FM 179 Tahoka, Lynn County, Texas 79373
Grantee:	**City of Meadow**
Grantee's Mailing Address (including county):	906 1ST Street Meadow, Terry County, Texas 79345

Consideration: TEN AND NO/100 DOLLARS ($10.00) cash, and other good and valuable consideration the receipt and sufficiency of which is hereby fully acknowledged and confessed.

Property (including any improvements):

The property described in Exhibit "A" attached hereto and incorporated herein for all purposes.

TO HAVE AND TO HOLD the property described, together with all the rights and appurtenances lawfully accompanying it, by the Grantee and the Grantee's heirs, personal representatives, successors, and assigns forever. Grantor binds himself and Grantor's heirs, personal representatives, successors, and assigns to warrant and forever defend the property against every person lawfully claiming or to claim all or any part of the property; provided, however, it is expressly understood and agreed that this conveyance is made subject to all easements, exceptions, covenants, conditions, restrictions, reservations, and rights appearing of record.

When the context requires, singular nouns and pronouns include the plural.

Clarence Nieman

Clearance Nieman

ACKNOWLEDGMENT

STATE OF TEXAS §
§
COUNTY OF TERRY §

This instrument was acknowledged before me on the 10th day of October, 2014, by Clearance Nieman.

NOTARY PUBLIC, STATE OF TEXAS

TERRI MCCLANAHAN
Notary Public, State of Texas
My Commission Expires
September 05, 2017

Exhibit A

LEGAL DESCRIPTION OF THE PROPERTY

THE NORTH HALF OF THE NORTHWEST QUARTER OF SECTION 19, BLOCK 4X, C. & M. RR. CO. SURVEY, TERRY COUNTY, TEXAS

METES AND BOUNDS DESCRIPTION OF A 79.94 ACRE TRACT OF LAND LOCATED IN THE NORTHWEST QUARTER OF SECTION 19, BLOCK 4X, C. & M. RAILROAD COMPANY SURVEY, TERRY COUNTY, TEXAS BEING THAT TRACT DESCRIBED AS THE NORTH HALF OF THE NORTHWEST QUARTER IN VOLUME 428, PAGE 715 OF THE DEED RECORDS OF TERRY COUNTY, TEXAS AND FURTHER DESCRIBED AS FOLLOWS:

BEGINNING AT A ½" IRON ROD FOUND FIVE FEET SOUTH OF THE CENTERLINE OF INTERSECTING GRADED COUNTY ROADS FOR THE NORTHWEST CORNER OF THIS TRACT AT THE NORTHWEST CORNER OF SAID SECTION 19;

THENCE S 90°00'00" E, ALONG THE NORTH LINE OF SAID NORTHWEST QUARTER AND SAID COUNTY ROAD, A DISTANCE OF 2639.10 FEET TO A ½" IRON ROD WITH CAP FOUND AT THE NORTHWEST CORNER OF THE NORTHEAST QUARTER OF SAID SECTION 19 AS DESCRIBED IN VOLUME 656 PAGE 374 OF SAID RECORDS FOR A CORNER OF THIS TRACT;

THENCE S 0°02'30" E, ALONG THE WEST LINE OF SAID NORTHEAST QUARTER, A DISTANCE OF 1319.42 FEET TO A ½" IRON ROD WITH CAP SET AT THE SOUTHEAST CORNER OF SAID NORTH HALF FOR THE SOUTHEAST CORNER OF THIS TRACT;

THENCE N 90°00'00" W, ALONG THE SOUTH LINE OF SAID NORTH HALF, AT A DISTANCE OF 1358.00 FEET PASS A SET ½" IRON ROD WITH CAP, AT A DISTANCE OF 1817.00 FEET PASS A SET ½" IRON ROD WITH CAP, AT A DISTANCE OF 2608.82 FEET PASS A ½" IRON ROD WITH CAP SET IN THE EAST LINE OF SAID COUNTY ROAD, IN ALL A DISTANCE OF 2639.10 FEET TO A ½" IRON ROD WITH CAP SET IN THE WEST LINE OF SAID NORTHWEST QUARTER AND SAID COUNTY ROAD AT THE SOUTHWEST CORNER OF SAID NORTH HALF FOR THE SOUTHWEST CORNER OF THIS TRACT;

THENCE N 0°02'30" W, ALONG SAID COUNTY ROAD AND SAID WEST LINE, A DISTANCE OF 1319.42 FEET TO THE PLACE OF BEGINNING.

FILED FOR RECORD
2014 OCT 15 PM 1:43
KIM CARTER
TERRY COUNTY CLERK
BY

DEED FOR
CITY OF MEADOW
CALLED 26.315 AC
VOL. 875, PG. 633
O.P.R.T.C.T.

TERRY, TX
KIM CARTER

2:29:42 PM #265888
10-15-2014 B-875 P-633

NOTICE OF CONFIDENTIALITY RIGHTS: IF YOU ARE A NATURAL PERSON, YOU MAY REMOVE OR STRIKE ANY OR ALL OF THE FOLLOWING INFORMATION FROM ANY INSTRUMENT THAT TRANSFERS AN INTEREST IN REAL PROPERTY BEFORE IT IS FILED FOR RECORD IN THE PUBLIC RECORDS: YOUR SOCIAL SECURITY NUMBER OR YOUR DRIVER'S LICENSE NUMBER.

GENERAL WARRANTY DEED

Date:	April 8th, 2014
Grantor:	**Willie Nieman**
Grantor's Mailing Address (including county):	**1309 E Hester St Brownfield, Terry County TX 79316-5823**
Grantee:	**City of Meadow**
Grantee's Mailing Address (including county):	**906 1ST Street Meadow, Terry County, Texas 79345**
Consideration:	TEN AND NO/100 DOLLARS ($10.00) cash, and other good and valuable consideration the receipt and sufficiency of which is hereby fully acknowledged and confessed.

Property (including any improvements):

The property described in Exhibit "A" attached hereto and incorporated herein for all purposes.

TO HAVE AND TO HOLD the property described, together with all the rights and appurtenances lawfully accompanying it, by the Grantee and the Grantee's heirs, personal representatives, successors, and assigns forever. Grantor binds himself and Grantor's heirs, personal representatives, successors, and assigns to warrant and forever defend the property against every person lawfully claiming or to claim all or any part of the property; provided, however, it is expressly understood and agreed that this conveyance is made subject to all easements, exceptions, covenants, conditions, restrictions, reservations, and rights appearing of record.

When the context requires, singular nouns and pronouns include the plural.

Willie G Nieman

Willie Nieman

ACKNOWLEDGMENT

STATE OF TEXAS §
§
COUNTY OF TERRY §

This instrument was acknowledged before me on the 10th day of October, 2014, by Willie Nieman.

NOTARY PUBLIC, STATE OF TEXAS

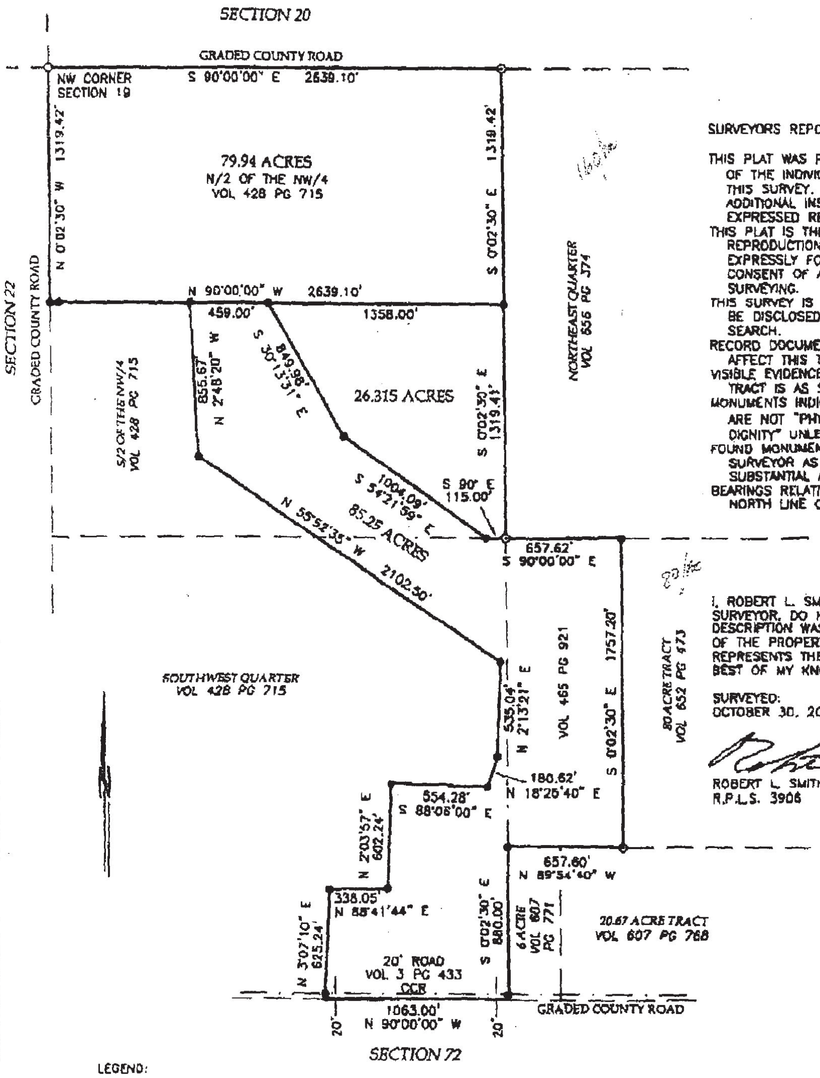
TERRI MCCLANAHAN
Notary Public, State of Texas
My Commission Expires
September 05, 2017

Exhibit A

LEGAL DESCRIPTION OF THE PROPERTY

BOUNDARY SURVEY OF THREE TRACTS OF LAND IN SECTION 19, BLOCK 4X, TERRY COUNTY, TEXAS

METES AND BOUNDS DESCRIPTIONS
ON SEPARATE DOCUMENTS



SURVEYORS REPORT:

THIS PLAT WAS PREPARED FOR THE EXCLUSIVE USE OF THE INDIVIDUAL AND/OR INSTITUTIONS NAMED ON THIS SURVEY. IT IS NON TRANSFERABLE TO ADDITIONAL INSTITUTIONS OR INDIVIDUALS WITHOUT EXPRESSED RECERTIFICATION BY SMITH SURVEYING.

THIS PLAT IS THE PROPERTY OF SMITH SURVEYING. REPRODUCTION OF THIS PLAT FOR ANY PURPOSE IS EXPRESSLY FORBIDDEN WITHOUT THE WRITTEN CONSENT OF AN AUTHORIZED AGENT OF SMITH SURVEYING.

THIS SURVEY IS SUBJECT TO ANY FACTS WHICH MAY BE DISCLOSED BY A FULL AND ACCURATE TITLE SEARCH.

RECORD DOCUMENTS OTHER THAN THOSE SHOWN MAY AFFECT THIS TRACT.

VISIBLE EVIDENCE OF CONDITIONS AFFECTING THIS TRACT IS AS SHOWN ON THIS PLAT.

MONUMENTS INDICATED AS FOUND BY THIS SURVEY ARE NOT "PHYSICAL MONUMENTS OF RECORD DIGNITY" UNLESS SO NOTED.

FOUND MONUMENTS ARE ACCEPTED BY THIS SURVEYOR AS CONTROLLING EVIDENCE DUE TO SUBSTANTIAL AGREEMENT WITH RECORD DOCUMENTS.

BEARINGS RELATIVE TO THE RECORD CALL OF THE NORTH LINE OF SECTION 19, BLOCK 4X.

I, ROBERT L. SMITH, REGISTERED PROFESSIONAL LAND SURVEYOR, DO HEREBY CERTIFY THAT THIS PLAT AND DESCRIPTION WAS PREPARED FROM AN ACTUAL SURVEY OF THE PROPERTY AND THAT THE INFORMATION HEREON REPRESENTS THE FINDINGS OF THIS SURVEY TO THE BEST OF MY KNOWLEDGE AND BELIEF.

SURVEYED:
OCTOBER 30, 2007

Robert L Smith

ROBERT L. SMITH
R.P.L.S. 3906

ROBERT L. SMITH
3906

LEGEND:

SCALE: 1" = 800'
HEAVY LINES INDICATE LIMITS OF SURVEY.
⊚ = FOUND 1/2" IRON ROD WITH CAP (PMRD).
○ = FOUND 1/2" IRON ROD (CM).
● = SET 1/2" IRON ROD WITH CAP.
PMRD = PHYSICAL MONUMENT OF RECORD DIGNITY.
CM = CONTROLLING MONUMENT.
THIS PLAT INVALID UNLESS IT BEARS SURVEYOR'S ORIGINAL SIGNATURE.

SMITH SURVEYING
8310 GENOA AVE., STE. A
LUBBOCK, TEXAS 79424
806-765-9543

PREPARED FOR: CITY OF MEADOW
REF: 070806rtk/recon
JOB# 07-0806r FB 92 PG 1 MFS

10-15-2014 2:29:42 PM B-875 P-636 #265888

KIM CARTER
TERRY, TX

85.25 ACRE TRACT IN
SECTION 19, BLOCK 4X,
C. & M. RR. CO. SURVEY,
TERRY COUNTY, TEXAS

METES AND BOUNDS DESCRIPTION OF AN 85.25 ACRE TRACT OF LAND LOCATED IN SECTION 19, BLOCK 4X, C. & M. RAILROAD COMPANY SURVEY, TERRY COUNTY, TEXAS BEING A PORTION OF THOSE TRACTS DESCRIBED IN VOLUME 428, PAGE 715 AND VOLUME 465, PAGE 921 OF THE DEED RECORDS OF TERRY COUNTY, TEXAS AND FURTHER DESCRIBED AS FOLLOWS:

BEGINNING AT A ½" IRON ROD WITH CAP FOUND FOR A CORNER OF THIS TRACT AT THE SOUTHWEST CORNER OF THE NORTHEAST QUARTER OF SAID SECTION 19 AS DESCRIBED IN VOLUME 656 PAGE 374 OF SAID RECORDS;

THENCE S 90°00'00" E, ALONG THE SOUTH LINE OF SAID NORTHEAST QUARTER, A DISTANCE OF 657.62 FEET TO A ½" IRON ROD WITH CAP SET AT THE NORTHWEST CORNER OF THAT 80.00 ACRE TRACT DESCRIBED IN VOLUME 652 PAGE 473 OF SAID RECORDS FOR A NORTHEAST CORNER OF THIS TRACT;

THENCE S 0°02'30" E, ALONG THE WEST LINE OF SAID 80.00 ACRE TRACT, A DISTANCE OF 1757.20 FEET TO THE SOUTHWEST CORNER OF SAID 80.00 ACRE TRACT FOR A SOUTHEAST CORNER OF THIS TRACT FROM WHENCE A FOUND ½" IRON ROD WITH CAP BEARS SOUTHWEST A DISTANCE OF 0.20 FEET;

THENCE N 89°54'40" W, ALONG THE NORTH LINE OF THOSE TRACTS DESCRIBED IN VOLUME 607, PAGE 768 AND VOLUME 607, PAGE 771, AT A DISTANCE OF 650.50 FEET PASS A FOUND ½" IRON ROD, IN ALL A DISTANCE OF 657.60 FEET TO A ½" IRON ROD WITH CAP SET IN THE EAST LINE OF THE SOUTHWEST QUARTER OF SAID SECTION 19 FOR AN ELL CORNER OF THIS TRACT;

THENCE S 0°02'30" E, ALONG SAID EAST LINE, AT A DISTANCE OF 860.00 FEET PASS A ½" IRON ROD WITH CAP SET IN THE NORTH LINE OF A GRADED COUNTY ROAD, IN ALL A DISTANCE OF 880.00 FEET TO A POINT IN THE SOUTH LINE OF SAID SECTION 19 FOR A SOUTHEAST CORNER OF THIS TRACT;

THENCE N 90°00'00" W, ALONG SAID SOUTH LINE AND SAID COUNTY ROAD, A DISTANCE OF 1063.00 FEET TO THE SOUTHWEST CORNER OF THIS TRACT;

THENCE N 3°07'10" E, AT A DISTANCE OF 20.10 FEET PASS A ½" IRON ROD WITH CAP SET IN THE NORTH LINE OF SAID COUNTY ROAD, IN ALL A DISTANCE OF 625.24 FEET TO A ½" IRON ROD WITH CAP SET FOR CORNER OF THIS TRACT;

THENCE N 88°41'44" E A DISTANCE OF 338.05 FEET TO A ½" IRON ROD WITH CAP SET FOR AN ELL CORNER OF THIS TRACT;

THENCE N 2°03'57" E A DISTANCE OF 602.24 FEET TO A ½" IRON ROD WITH CAP SET FOR A CORNER OF THIS TRACT;

THENCE S 88°06'00" E A DISTANCE OF 554.28 FEET TO A ½" IRON ROD WITH CAP SET FOR AN ELL CORNER OF THIS TRACT;

THENCE N 18°25'40" E A DISTANCE OF 180.62 FEET TO A ½" IRON ROD WITH CAP SET FOR A CORNER OF THIS TRACT;

THENCE N 2°13'21" E A DISTANCE OF 535.04 FEET TO A ½" IRON ROD WITH CAP SET FOR AN ELL CORNER OF THIS TRACT;

THENCE N 55°52'35" W A DISTANCE OF 2102.50 FEET TO A ½" IRON ROD WITH CAP SET FOR A CORNER OF THIS TRACT;

THENCE N 2°48'20" W A DISTANCE OF 855.67 FEET TO A ½" IRON ROD WITH CAP SET IN THE NORTH LINE OF THE SOUTH HALF OF THE NORTHWEST QUARTER OF SAID SECTION 19 FOR THE NORTHWEST CORNER OF THIS TRACT;

THENCE S 90°00'00" E, ALONG SAID NORTH LINE, A DISTANCE OF 459.00 FEET TO A ½" IRON ROD WITH CAP SET FOR A NORTHEAST CORNER OF THIS TRACT;

THENCE S 30°13'31" E A DISTANCE OF 849.98 FEET TO A ½" IRON ROD WITH CAP SET FOR A CORNER OF THIS TRACT;

THENCE S 54°21'59" E A DISTANCE OF 1004.09 FEET TO A ½" IRON ROD WITH CAP SET IN THE NORTH LINE OF THE SOUTHWEST QUARTER OF SAID SECTION 19 FOR A CORNER OF THIS TRACT;

THENCE S 90°00'00" E, ALONG SAID NORTH LINE, A DISTANCE OF 115.00 FEET TO THE PLACE OF BEGINNING.

A 26.315 ACRE TRACT IN
THE NORTHWEST QUARTER OF
SECTION 19, BLOCK 4X,
C. & M. RR. CO. SURVEY,
TERRY COUNTY, TEXAS

METES AND BOUNDS DESCRIPTION OF A 26.315 ACRE TRACT OF LAND LOCATED IN THE NORTHWEST QUARTER OF SECTION 19, BLOCK 4X, C. & M. RAILROAD COMPANY SURVEY, TERRY COUNTY, TEXAS BEING A PORTION OF THAT TRACT DESCRIBED AS THE SOUTH HALF OF THE NORTHWEST QUARTER IN VOLUME 428, PAGE 715 OF THE DEED RECORDS OF TERRY COUNTY, TEXAS AND FURTHER DESCRIBED AS FOLLOWS:

BEGINNING AT A ½" IRON ROD WITH CAP FOUND FOR THE SOUTHEAST CORNER OF THIS TRACT AT THE SOUTHWEST CORNER OF THE NORTHEAST QUARTER OF SAID SECTION 19 AS DESCRIBED IN VOLUME 656 PAGE 374 OF SAID RECORDS;

THENCE N 90°00'00" W, ALONG THE SOUTH LINE OF SAID NORTHWEST QUARTER, A DISTANCE OF 115.00 FEET TO A ½" IRON ROD WITH CAP SET FOR A CORNER OF THIS TRACT;

THENCE N 54°21'59" W A DISTANCE OF 1004.09 FEET TO A ½" IRON ROD WITH CAP SET FOR A CORNER OF THIS TRACT;

THENCE N 30°13'31" W A DISTANCE OF 849.98 FEET TO A ½" IRON ROD WITH CAP SET IN THE NORTH LINE OF SAID SOUTH HALF FOR THE NORTHWEST FOR A CORNER OF THIS TRACT;

THENCE S 90°00'00" E, ALONG SAID NORTH LINE, A DISTANCE OF 1358.00 FEET TO A ½" IRON ROD WITH CAP SET IN THE WEST LINE OF SAID NORTHEAST QUARTER AT THE NORTHEAST CORNER OF SAID SOUTH HALF FOR THE NORTHEAST CORNER OF THIS TRACT;

THENCE S 0°02'30" E, ALONG THE WEST LINE OF SAID NORTHEAST QUARTER AND THE EAST LINE OF SAID SOUTH HALF, A DISTANCE OF 1319.41 FEET TO THE PLACE OF BEGINNING.

FILED FOR RECORD
2014 OCT 15 PM 1:43
KIM CARTER
TERRY COUNTY CLERK
BY

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

APPENDIX I/IIA
FACILITY LAYOUT MAPS

Prepared for

Meadow Landfill, LLC

July 2024

Revised February 2025

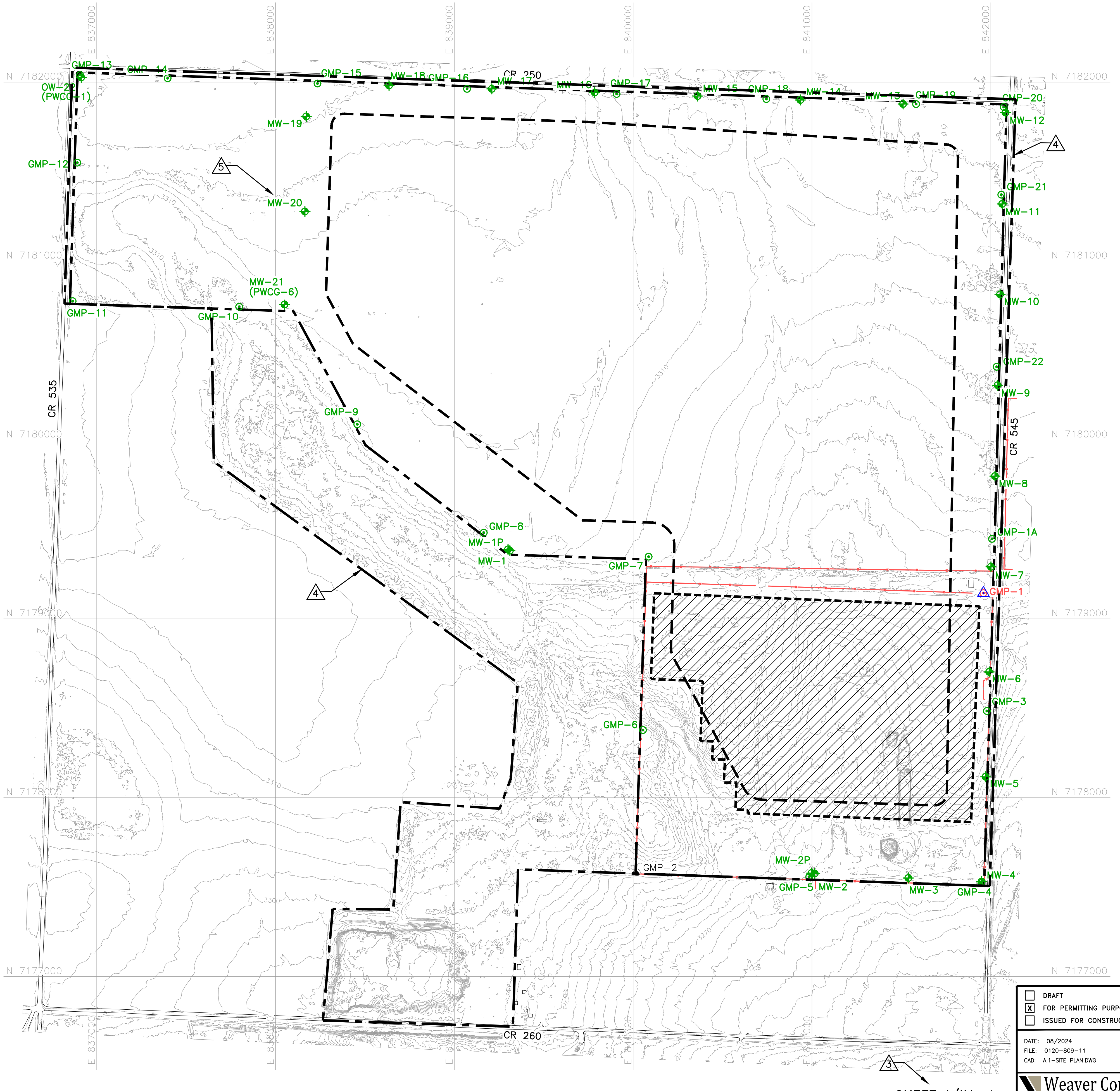
KYLE D. GOULD
106018
02/28/2025

Prepared by

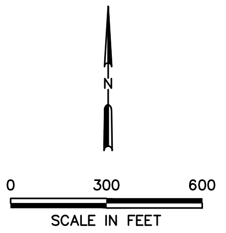
Weaver Consultants Group, LLC
TBPE Registration No. F-3727
6420 Southwest Boulevard, Suite 206
Fort Worth, Texas 76109
817-735-9770

WCG Project No. 0120-809-11-05

This document intended for permitting purposes only.



SHEET I/IIA-1



KYLE D. GOULD
106018
02/28/2025

LEGEND

—·—	PROPERTY BOUNDARY
—·—·—	PROPOSED PERMIT BOUNDARY
— — —	PROPOSED LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
350	EXISTING CONTOUR
—x—	EXISTING FENCE
△	SITE BENCHMARK (SEE NOTE 4)
▨	HISTORIC WASTE TO BE RELOCATED (SEE NOTE 7)
⊙ GMP-2	EXISTING LANDFILL GAS MONITORING PROBE
⊙ GMP-1	EXISTING LANDFILL GAS MONITORING PROBE (TO BE DECOMMISSIONED)
⊕ MW-10	PROPOSED GROUNDWATER MONITORING WELL
⊙ GMP-21	PROPOSED GAS PROBE
△1	INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.
4. THE SITE BENCHMARK INFORMATION IS LISTED BELOW.

SITE BENCHMARK INFORMATION

MONUMENT	NORTHING	EASTING	ELEVATION (FT-MSL)
200	7179142.87	841959.98	3297.45

5. THE SEQUENCE OF SITE DEVELOPMENT IS PROVIDED ON DRAWINGS I/IIA.4 THROUGH I/IIA.7.
6. UNAUTHORIZED ACCESS TO THE EXISTING FILL AREA AND FACILITY IS CONTROLLED WITH PERIMETER FENCING (MINIMUM 4-FOOT HIGH, 3-STRAND BARBED WIRE FENCE), GATED ENTRANCE AND NATURAL BARRIERS (DENSE FOLIAGE, VEGETATION, AND WATERWAYS). REFER TO DRAWING I/IIA.10 FOR ACCESS CONTROL PLAN.
7. HISTORIC WASTE WILL BE EXCAVATED AND RELOCATED INTO THE SUBTITLE D-LINED DISPOSAL CELLS DURING LANDFILL DEVELOPMENT.
8. DEED DESIGNATIONS THAT FORM THE PROPERTY BOUNDARY ARE SHOWN ON PAGE I/II-13-6. LEGAL DESCRIPTIONS OF THE PARCELS OF LAND CAN BE FOUND IN PART I/II-13.

LIST OF REVISIONS:

1. REVISED NOTE 6.
2. ADDED NOTES 7 AND 8.
3. ADDED PAGE NUMBER.
4. ADDED PROPERTY BOUNDARY.
5. REVISED MONITORING WELL NETWORK.

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

PREPARED FOR
MEADOW LANDFILL, LLC

DATE: 08/2024
FILE: 0120-809-11
CAD: A.1-SITE PLAN.DWG

DRAWN BY: JDW
DESIGN BY: CAM
REVIEWED BY: KDG

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

MAJOR PERMIT AMENDMENT
SITE PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

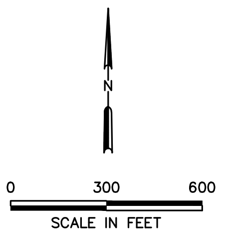
WWW.WCGRP.COM

DRAWING I/IIA.1

O:\0120\809\EXPANSION 2023\PARTS I-II\A.1-SITE PLAN.dwg, jwilson, 1:2

SECTOR SUMMARY			
SECTOR	MAX LENGTH (FT)	MAX WIDTH (FT)	AREA (ACRES)
SECTOR 1	1710	279	10.9
SECTOR 2	1710	300	11.8
SECTOR 3	1710	300	11.8
SECTOR 4	1710	300	11.6
SECTOR 5	1585	300	10.2
SECTOR 6	1191	300	7.4
SECTOR 7	1799	271	10.0
SECTOR 8	1804	300	12.4
SECTOR 9	1808	300	12.4
SECTOR 10	1813	300	12.5
SECTOR 11	1818	300	12.5
SECTOR 12	1822	300	12.5
SECTOR 13	2607	330	18.5
SECTOR 14	2160	300	12.3
SECTOR 15	1553	300	10.7
SECTOR 16	1553	330	11.8
SECTOR 17	1482	300	9.8
SECTOR 18	1315	415	11.5

SHEET I/IIA-2



STATE OF TEXAS
KYLE D. GOULD
106018
LICENSED
PROFESSIONAL ENGINEER
02/28/2025

LEGEND

PROPOSED PERMIT BOUNDARY
PROPOSED LIMIT OF WASTE
N 7180000 — STATE PLANE COORDINATE SYSTEM
350 — EXISTING CONTOUR
CHANNEL CENTERLINE
SECTOR BOUNDARY
→ FILL DIRECTION (SEE NOTE 4)
PERIMETER ACCESS ROAD
3H:1V SLOPE (TYPICAL)
MW-1 PROPOSED OBSERVATION/GROUNDWATER MONITORING WELL
GMP-5 PROPOSED LANDFILL GAS MONITORING PROBE
GMP-2 EXISTING LANDFILL GAS MONITORING PROBE
△1 INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.
4. SECTOR DESIGNATIONS INDICATE GENERAL PROGRESSION OF LANDFILL OPERATIONS. FILL DIRECTION ARROWS INDICATE GENERAL DIRECTION OF FILL WITHIN A CELL.
5. TYPICAL CROSS SECTION PROVIDED IN DRAWING I/IIA.3 ADDITIONAL SECTION INFORMATION PROVIDED IN APPENDIX IIIA-B – LANDFILL UNIT CROSS SECTIONS.
6. SEE DRAWINGS I/IIA.4 THROUGH I/IIA.6 FOR DETAILED SECTOR DEVELOPMENT PLANS.
7. WIDTH OF THE BUFFER ZONE BETWEEN THE LIMITS OF WASTE AND THE PERMIT BOUNDARY VARIES; HOWEVER, THE BUFFER ZONE IS A MINIMUM OF 125 FEET FOR THE NEWLY PERMITTED AIRSPACE. REFER TO APPENDIX I/IIC FOR MORE INFORMATION REGARDING BUFFER ZONE.
8. EACH SECTOR WILL ACCEPT MUNICIPAL SOLID WASTE RESULTING FROM, OR INCIDENTAL TO, MUNICIPAL, COMMUNITY, COMMERCIAL, INSTITUTIONAL, RECREATIONAL AND INDUSTRIAL ACTIVITIES, INCLUDING GARBAGE, PUTRESCIBLE WASTES, RUBBISH, ASHES, BRUSH, STREET CLEANINGS, DEAD ANIMALS, ABANDONED AUTOMOBILES, CONSTRUCTION-DEMOLITION WASTE, YARD WASTE, CLASS 2 NON-HAZARDOUS INDUSTRIAL SOLID WASTE, CLASS 3 NON-HAZARDOUS INDUSTRIAL SOLID WASTE, AND CERTAIN SPECIAL WASTES.

LIST OF REVISIONS:

1. ADDED PAGE NUMBER.
2. REVISED MONITORING WELL NETWORK.

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DATE: 08/2024
FILE: 0120-809-11
CAD: 1-SITE PLAN.DWG

DRAWN BY: JDW
DESIGN BY: CAM
REVIEWED BY: KDG

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS		
NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

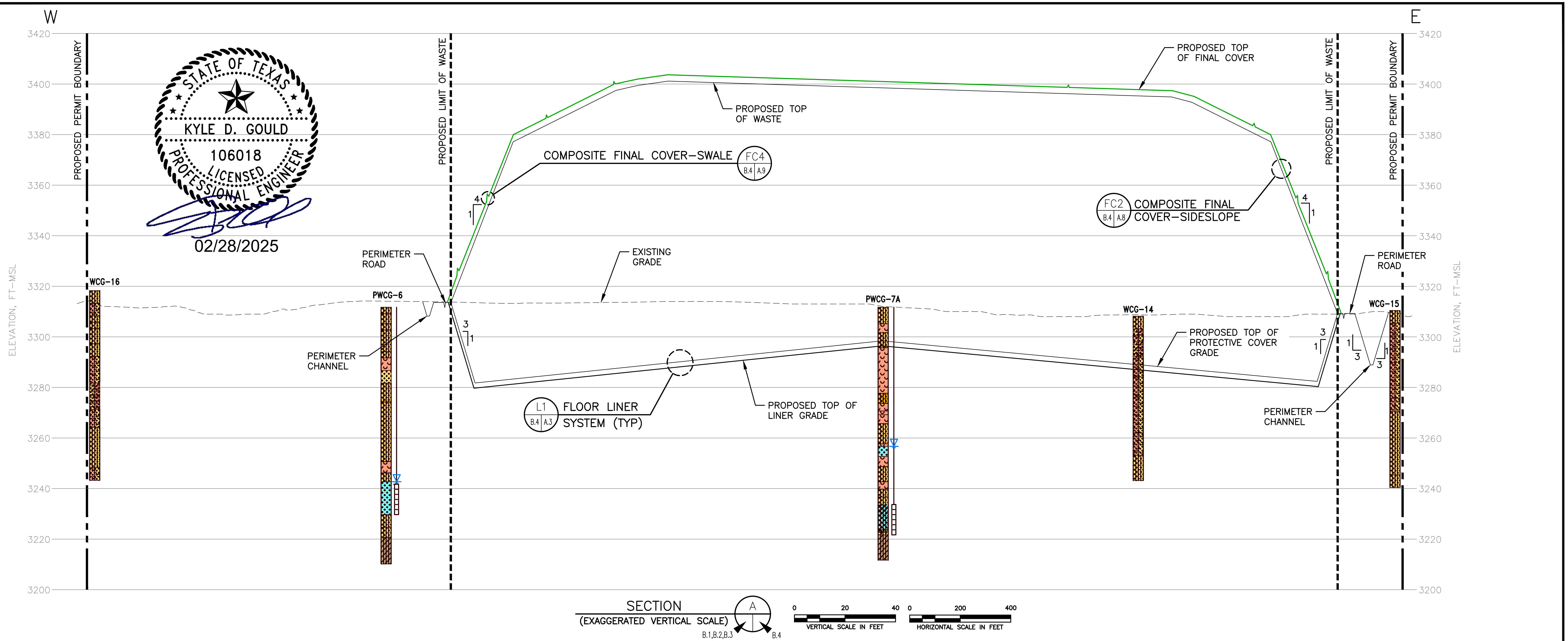
MAJOR PERMIT AMENDMENT
SECTOR DEVELOPMENT PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

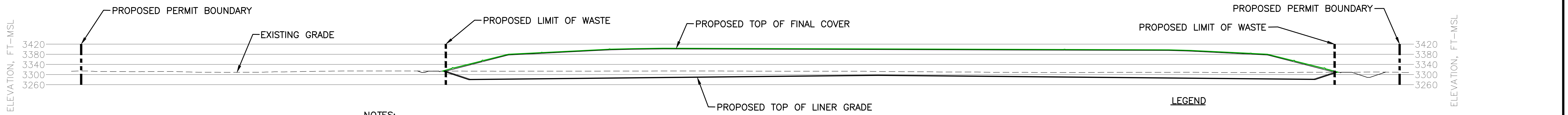
WWW.WCGRP.COM

DRAWING I/IIA.2

O:\0120\809\EXPANSION 2023\PARTS I-II\A.2-SECTOR PLAN.dwg, jwilson, 1:2



SECTION A
(EXAGGERATED VERTICAL SCALE)
B.1,B.2,B.3 B.4

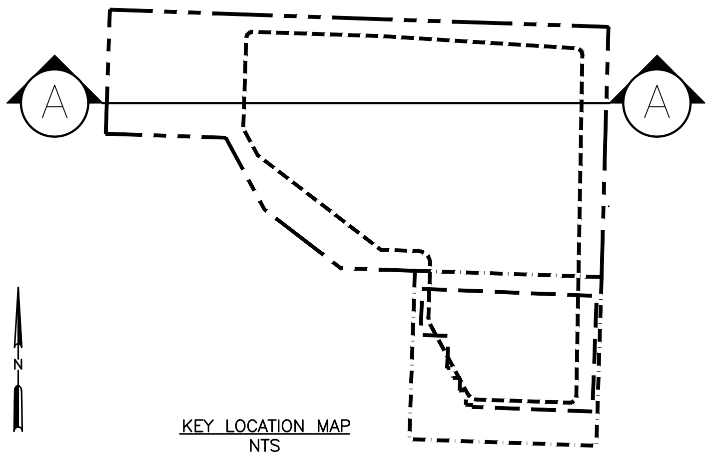


SECTION A
(1H:1V)
B.1,B.2,B.3 B.4

0 200 400
SCALE IN FEET

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. REFER TO APPENDIX IIIA-A FOR LINER, LEACHATE COLLECTION, AND FINAL COVER SYSTEM DETAILS.
3. SEE APPENDIX IIIG FOR BORING DATA. BORINGS PROJECTED INTO THE LINE OF SECTION. SEE DRAWING B.1 FOR LOCATION.
4. AS SHOWN IN APPENDIX I/IIC, THE BUFFER ZONE BETWEEN THE PERMIT BOUNDARY AND NEWLY PERMITTED (PERMIT NO. 2293C) WASTE DISPOSAL AIRSPACE IS AT LEAST 125-FEET.
5. REFER TO APPENDIX IIII, FOR DETAILS OF THE LANDFILL GAS MANAGEMENT PLAN.
6. DRAINAGE DESIGN INFORMATION IS PROVIDED IN APPENDIX IIIF-SURFACE WATER DRAINAGE PLAN.
7. ELEVATION OF DEEPEST EXCAVATION AT THE LCS SUMP IS 3250.0 FT-MSL.
8. EXISTING WASTE LOCATIONS ARE APPROXIMATE AND WAS REPRODUCED FROM DRAWINGS INCLUDED IN THE NO. 2293 PERMIT APPLICATION PREPARED BY WEAVER CONSULTANTS GROUP.



KEY LOCATION MAP
NTS

LIST OF REVISIONS:

1. ADDED PAGE NUMBER.

LEGEND

PERMITTED PERMIT BOUNDARY
PROPOSED PERMIT BOUNDARY
PERMITTED LIMIT OF WASTE
PROPOSED LIMIT OF WASTE
EXISTING GRADE
TOP OF FINAL COVER
TOP OF WASTE
STATIC GROUNDWATER ELEVATION (FT-MSL)
INDICATES REVISION (SEE LIST OF REVISIONS)

Caliche
Sandy Clay or Sandy Silty Clay
Sand
Sandstone with Caliche
Sandy Silt or Sandy Clayey Clayey
Caliche with Sandstone
Shaley Clay or Shaley Sandy Clay
Clayey Sand or Clayey Silty Sand
Saturated Sand
Silstone
Caliche with Silstone
Silty Clay or Silty Sandy Clay
Silty Sand or Silty Clayey Sand
Caliche with West Sandstone
Silstone with Caliche
Clay
Earthen Fill
Sand or Sandstone
Clayey Silt or Clayey Sandy Silt
Silty Sand

1
SHEET I/IIA-3

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☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0023-404-11
CAD: A.3-CROSS SECTION B.DWG

DRAWN BY: JDW
DESIGN BY: CAM
REVIEWED BY: JBP

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

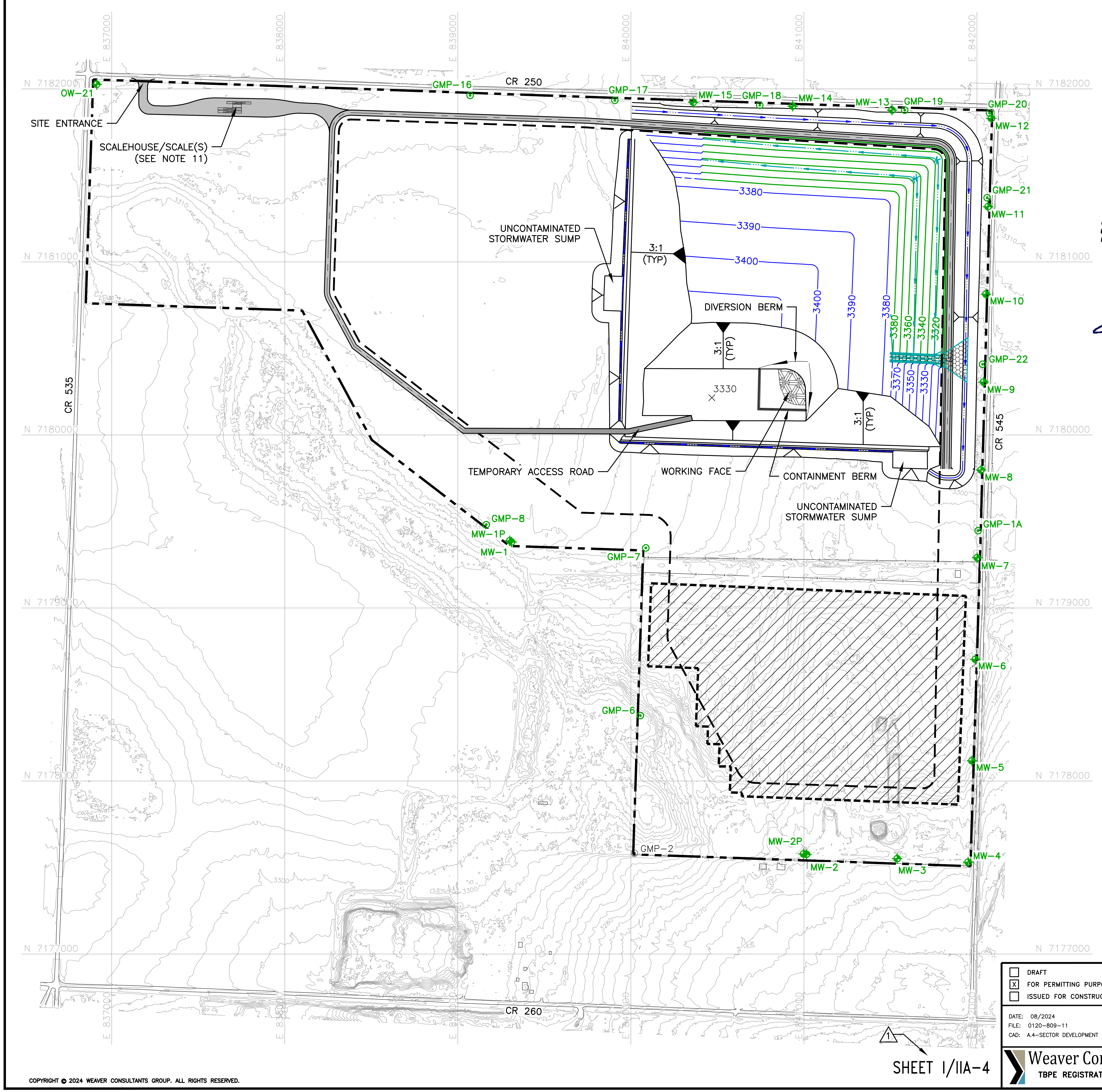
MAJOR PERMIT AMENDMENT
TYPICAL SECTION A

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

DRAWING I/IIA.3

O:\0120\809\EXPANSION 2023\PARTS I-II\A.3-CROSS SECTION.dwg, jwilson, 1:2



0 300 600
SCALE IN FEET

KYLE D. GOULD
106018
LICENSED PROFESSIONAL ENGINEER
02/28/2025

LEGEND

▬ ▬ ▬	PROPOSED PERMIT BOUNDARY
— — —	PROPOSED LIMIT OF WASTE
N 7181000	STATE PLANE COORDINATE
3310	EXISTING CONTOUR
3340	FINAL COVER CONTOUR
3400	INTERMEDIATE CONTOUR
×→···→···	DRAINAGE SWALE
MW-1	PROPOSED OBSERVATION/GROUNDWATER MONITORING WELL
GMP-5	PROPOSED LANDFILL GAS MONITORING PROBE
GMP-2	EXISTING LANDFILL GAS MONITORING PROBE
GMP-1	EXISTING LANDFILL GAS MONITORING PROBE (TO BE DECOMMISSIONED)
—×—×—×—	EXISTING FENCE
▬	ACCESS ROAD
▨	HISTORIC WASTE TO BE RELOCATED
△1	INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. THE PROPERTY AND PERMIT BOUNDARY WAS REPRODUCED FROM A LEGAL DESCRIPTION PREPARED BY WEAVER CONSULTANTS GROUP.
3. REFER TO APPENDIX IIIC–LEACHATE AND CONTAMINATED WATER MANAGEMENT PLAN FOR CONTAMINATED WATER RUN–ON/RUN–OFF BERM DESIGN INFORMATION.
4. THE SECTOR DEVELOPMENT SHOWN ON THIS DRAWING SHOWS THE GENERAL SEQUENCE OF FILLING OPERATIONS. THE LOCATION OF THE ALL–WEATHER ACCESS ROAD FROM THE LANDFILL HAUL ROAD TO THE ACTIVE AREA WILL BE DETERMINED DURING SITE OPERATIONS.
5. INTERMEDIATE COVER CONSISTS OF A 12–INCH THICK SOIL LAYER. REFER TO PART IV – SITE OPERATING PLAN FOR ADDITIONAL SOIL COVER REQUIREMENTS.
6. LANDFILL HAUL ROAD WILL BE SURFACED WITH CRUSHED STONE TO PROVIDE ALL–WEATHER ACCESS.
7. REFER TO APPENDIX IIIF–SURFACE WATER DRAINAGE PLAN FOR THE EROSION AND SEDIMENTATION CONTROL PLAN. DRAINAGE STRUCTURES ARE SHOWN AS THE SITE DEVELOPS. ADDITIONALLY BMPs WILL BE USED TO CONTROL EROSION AS NEEDED.
8. REFER TO APPENDIX IIII FOR LANDFILL GAS MANAGEMENT PLAN.
9. UNCONTAMINATED STORMWATER THAT HAS NOT COME INTO CONTACT WITH WASTE WILL BE COLLECTED IN SUMPS AND PERIODICALLY REMOVED FROM EXCAVATED AREAS BY PUMPING TO PERIMETER DRAINAGE CHANNELS OR USED IN SITE OPERATIONS (E.G., DUST CONTROL, COMPACTING, ETC.).
10. TEMPORARY CHUTES AND SWALES WILL BE PLACED OVER THE INTERMEDIATE COVER AREA TO MINIMIZE EROSION AND HELP ESTABLISH VEGETATION FOR INTERMEDIATE COVER AREAS THAT WILL NOT RECEIVE WASTE OR FINAL COVER WITHIN 180 DAYS AFTER PLACEMENT (REFER TO APPENDIX IIIF–G FOR MORE INFORMATION). MULCH, HYDROSEEDING OR SIMILAR METHODS WILL BE USED TO ESTABLISH VEGETATION OVER THE INTERMEDIATE COVER AREAS. SWALE AND LETDOWN SPACING WILL MEET THE REQUIREMENTS OF THE EROSION CONTROL PLAN INCLUDED IN APPENDIX IIIF–G.
11. REFER TO DRAWING I/IIA.9 FOR DETAILED SITE ENTRANCE INFORMATION.
12. GROUNDWATER MONITORING WELLS WILL BE INSTALLED OR CONVERTED FROM EXISTING PIEZOMETERS IN PHASES IN ACCORDANCE WITH SECTION 2.0 OF APPENDIX IIIH, GROUNDWATER MONITORING, SAMPLING AND ANALYSIS PLAN.
13. GAS MONITORING PROBES WILL BE INSTALLED PRIOR TO PLACING NEW WASTE WITHIN 1,000 FEET OF THE PROPOSED PROBE LOCATION IN ACCORDANCE WITH APPENDIX III I, LANDFILL GAS MANAGEMENT PLAN.

LIST OF REVISIONS:

1. ADDED PAGE NUMBER.

☐ DRAFT
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☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120–809–11
CAD: A.4–SECTOR DEVELOPMENT PLAN I.DWG

DRAWN BY: JDW
DESIGN BY: CAM
REVIEWED BY: KDG

Weaver Consultants Group
TBPE REGISTRATION NO. F–3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

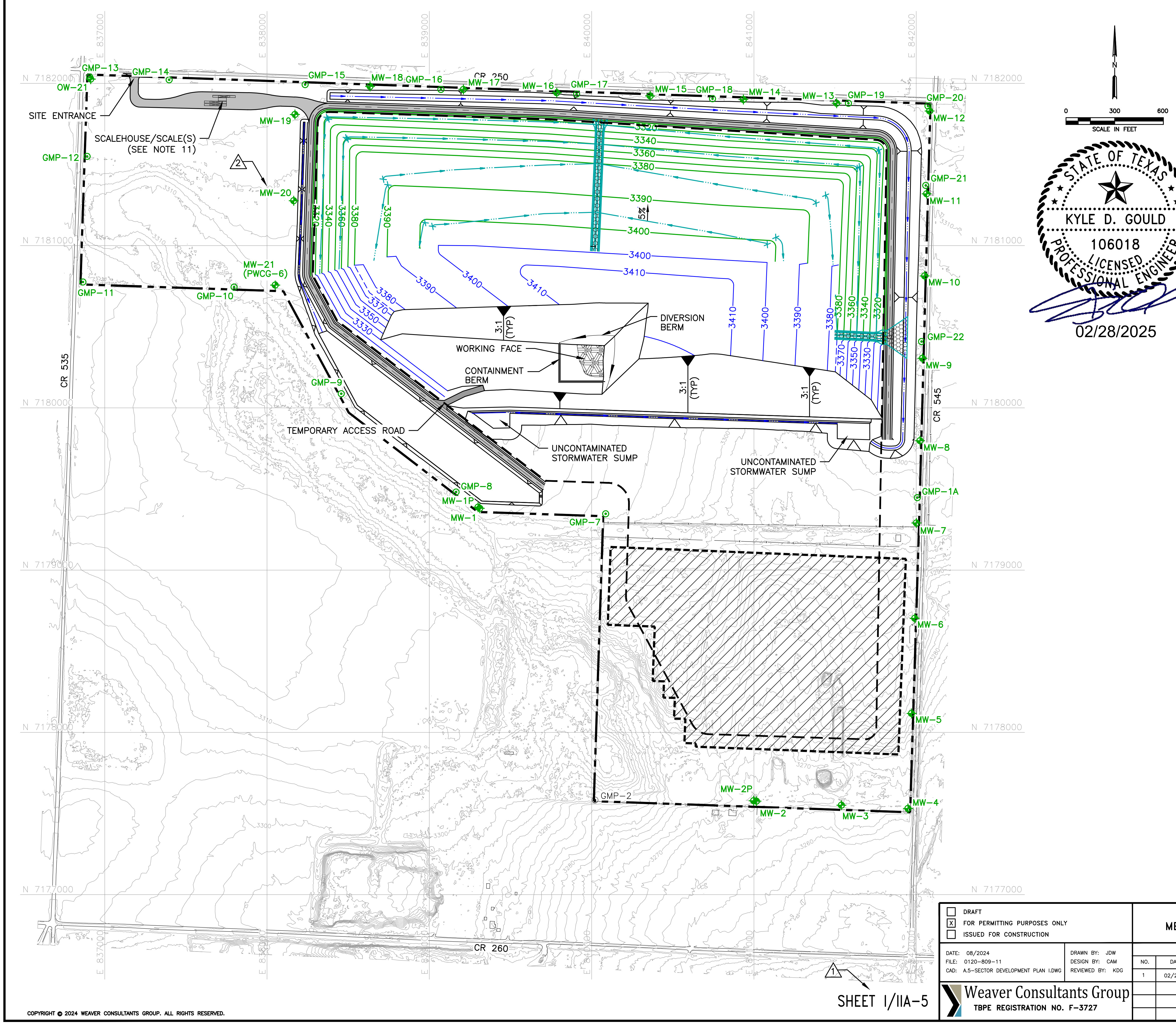
MAJOR PERMIT AMENDMENT
SECTOR DEVELOPMENT PLAN I

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

DRAWING I/IIA.4

O:\0120\809\EXPANSION 2023\PARTS I-II\A.4 Sequence Dev Plan I.dwg, jwilson, 1:2



SHEET I/IIA-5

KYLE D. GOULD
106018

02/28/2025

LEGEND

	PROPOSED PERMIT BOUNDARY
	PROPOSED LIMIT OF WASTE
N 7181000	STATE PLANE COORDINATE
3310	EXISTING CONTOUR
3340	FINAL COVER CONTOUR
3400	INTERMEDIATE CONTOUR
	DRAINAGE SWALE
MW−1	PROPOSED OBSERVATION/GROUNDWATER MONITORING WELL
GMP−5	PROPOSED LANDFILL GAS MONITORING PROBE
GMP−2	EXISTING LANDFILL GAS MONITORING PROBE
GMP−1	EXISTING LANDFILL GAS MONITORING PROBE (TO BE DECOMMISSIONED)
	EXISTING FENCE
	ACCESS ROAD
▨	HISTORIC WASTE TO BE RELOCATED
△1	INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. THE PROPERTY AND PERMIT BOUNDARY WAS REPRODUCED FROM A LEGAL DESCRIPTION PREPARED BY WEAVER CONSULTANTS GROUP.
3. REFER TO APPENDIX IIIC−LEACHATE AND CONTAMINATED WATER MANAGEMENT PLAN FOR CONTAMINATED WATER RUN−ON/RUN−OFF BERM DESIGN INFORMATION.
4. THE SECTOR DEVELOPMENT SHOWN ON THIS DRAWING SHOWS THE GENERAL SEQUENCE OF FILLING OPERATIONS. THE LOCATION OF THE ALL−WEATHER ACCESS ROAD FROM THE LANDFILL HAUL ROAD TO THE ACTIVE AREA WILL BE DETERMINED DURING SITE OPERATIONS.
5. INTERMEDIATE COVER CONSISTS OF A 12−INCH THICK SOIL LAYER. REFER TO PART IV − SITE OPERATING PLAN FOR ADDITIONAL SOIL COVER REQUIREMENTS.
6. LANDFILL HAUL ROAD WILL BE SURFACED WITH CRUSHED STONE TO PROVIDE ALL−WEATHER ACCESS.
7. REFER TO APPENDIX IIIF−SURFACE WATER DRAINAGE PLAN FOR THE EROSION AND SEDIMENTATION CONTROL PLAN. DRAINAGE STRUCTURES ARE SHOWN AS THE SITE DEVELOPS. ADDITIONALLY BMPs WILL BE USED TO CONTROL EROSION AS NEEDED.
8. REFER TO APPENDIX IIII FOR LANDFILL GAS MANAGEMENT PLAN.
9. UNCONTAMINATED STORMWATER THAT HAS NOT COME INTO CONTACT WITH WASTE WILL BE COLLECTED IN SUMPS AND PERIODICALLY REMOVED FROM EXCAVATED AREAS BY PUMPING TO PERIMETER DRAINAGE CHANNELS OR USED IN SITE OPERATIONS (E.G., DUST CONTROL, COMPACTING, ETC.).
10. TEMPORARY CHUTES AND SWALES WILL BE PLACED OVER THE INTERMEDIATE COVER AREA TO MINIMIZE EROSION AND HELP ESTABLISH VEGETATION FOR INTERMEDIATE COVER AREAS THAT WILL NOT RECEIVE WASTE OR FINAL COVER WITHIN 180 DAYS AFTER PLACEMENT (REFER TO APPENDIX IIIF−G FOR MORE INFORMATION). MULCH, HYDROSEEDING OR SIMILAR METHODS WILL BE USED TO ESTABLISH VEGETATION OVER THE INTERMEDIATE COVER AREAS. SWALE AND LETDOWN SPACING WILL MEET THE REQUIREMENTS OF THE EROSION CONTROL PLAN INCLUDED IN APPENDIX IIIF−G.
11. REFER TO DRAWING I/IIA.9 FOR DETAILED SITE ENTRANCE INFORMATION.
12. GROUNDWATER MONITORING WELLS WILL BE INSTALLED OR CONVERTED FROM EXISTING PIEZOMETERS IN PHASES IN ACCORDANCE WITH SECTION 2.0 OF APPENDIX IIIH, GROUNDWATER MONITORING, SAMPLING AND ANALYSIS PLAN.
13. GAS MONITORING PROBES WILL BE INSTALLED PRIOR TO PLACING NEW WASTE WITHIN 1,000 FEET OF THE PROPOSED PROBE LOCATION IN ACCORDANCE WITH APPENDIX III I, LANDFILL GAS MANAGEMENT PLAN.

LIST OF REVISIONS:

1. ADDED PAGE NUMBER.
2. REVISED MONITORING WELL NETWORK.

☐ DRAFT
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☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120−809−11
CAD: A.5−SECTOR DEVELOPMENT PLAN I.DWG

DRAWN BY: JDW
DESIGN BY: CAM
REVIEWED BY: KDG

Weaver Consultants Group
TBPE REGISTRATION NO. F−3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

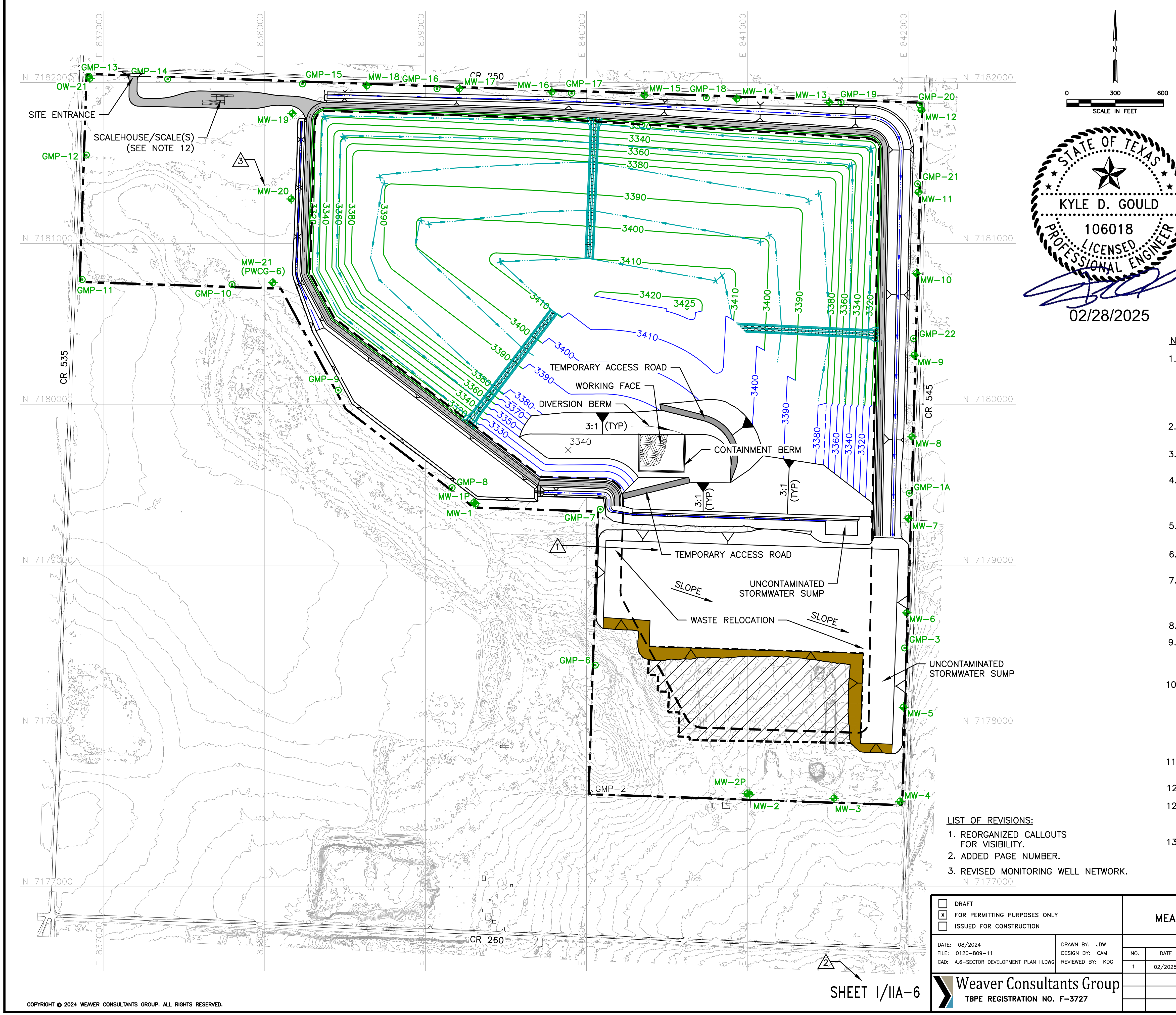
MAJOR PERMIT AMENDMENT SECTOR DEVELOPMENT PLAN II

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

DRAWING I/IIA.5

O:\0120\809\EXPANSION 2023\PARTS I−II\A.5 Sequence Dev Plan II.dwg, jwilson, 1:2



KYLE D. GOULD
106018
02/28/2025

LEGEND

— - —	PROPOSED PERMIT BOUNDARY
— — —	PROPOSED LIMIT OF WASTE
N 7181000	STATE PLANE COORDINATE
3310	EXISTING CONTOUR
3340	FINAL COVER CONTOUR
3400	INTERMEDIATE CONTOUR
▨	DRAINAGE LETDOWN
✕—✕	DRAINAGE SWALE
MW-1	PROPOSED OBSERVATION/GROUNDWATER MONITORING WELL
GMP-5	PROPOSED LANDFILL GAS MONITORING PROBE
GMP-2	EXISTING LANDFILL GAS MONITORING PROBE
—|—	EXISTING FENCE
▬	ACCESS ROAD
▬	TEMPORARY SIDESLOPE COVER (SEE NOTE 11)
▨	HISTORIC WASTE TO BE RELOCATED
△	INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. THE PROPERTY AND PERMIT BOUNDARY WAS REPRODUCED FROM A LEGAL DESCRIPTION PREPARED BY WEAVER CONSULTANTS GROUP.
3. REFER TO APPENDIX IIIC–LEACHATE AND CONTAMINATED WATER MANAGEMENT PLAN FOR CONTAMINATED WATER RUN–ON/RUN–OFF BERM DESIGN INFORMATION.
4. THE SECTOR DEVELOPMENT SHOWN ON THIS DRAWING SHOWS THE GENERAL SEQUENCE OF FILLING OPERATIONS. THE LOCATION OF THE ALL–WEATHER ACCESS ROAD FROM THE LANDFILL HAUL ROAD TO THE ACTIVE AREA WILL BE DETERMINED DURING SITE OPERATIONS.
5. INTERMEDIATE COVER CONSISTS OF A 12–INCH THICK SOIL LAYER. REFER TO PART IV – SITE OPERATING PLAN FOR ADDITIONAL SOIL COVER REQUIREMENTS.
6. LANDFILL HAUL ROAD WILL BE SURFACED WITH CRUSHED STONE TO PROVIDE ALL–WEATHER ACCESS.
7. REFER TO APPENDIX IIIF–SURFACE WATER DRAINAGE PLAN FOR THE EROSION AND SEDIMENTATION CONTROL PLAN. DRAINAGE STRUCTURES ARE SHOWN AS THE SITE DEVELOPS. ADDITIONALLY BMPs WILL BE USED TO CONTROL EROSION AS NEEDED.
8. REFER TO APPENDIX IIII FOR LANDFILL GAS MANAGEMENT PLAN.
9. UNCONTAMINATED STORMWATER THAT HAS NOT COME INTO CONTACT WITH WASTE WILL BE COLLECTED IN SUMPS AND PERIODICALLY REMOVED FROM EXCAVATED AREAS BY PUMPING TO PERIMETER DRAINAGE CHANNELS OR USED IN SITE OPERATIONS (E.G., DUST CONTROL, COMPACTING, ETC.).
10. TEMPORARY CHUTES AND SWALES WILL BE PLACED OVER THE INTERMEDIATE COVER AREA TO MINIMIZE EROSION AND HELP ESTABLISH VEGETATION FOR INTERMEDIATE COVER AREAS THAT WILL NOT RECEIVE WASTE OR FINAL COVER WITHIN 180 DAYS AFTER PLACEMENT (REFER TO APPENDIX IIIF–G FOR MORE INFORMATION). MULCH, HYDROSEEDING OR SIMILAR METHODS WILL BE USED TO ESTABLISH VEGETATION OVER THE INTERMEDIATE COVER AREAS. SWALE AND LETDOWN SPACING WILL MEET THE REQUIREMENTS OF THE EROSION CONTROL PLAN INCLUDED IN APPENDIX IIIF–G.
11. TEMPORARY AREAS AND SLOPES RESULTING FROM REMOVAL OF WASTE FROM THE EXISTING LANDFILL WILL HAVE DAILEY OR INTERMEDIATE COVER PLACED AS NEEDED.
12. REFER TO DRAWING I/IIA.9 FOR DETAILED SITE ENTRANCE INFORMATION.
12. GROUNDWATER MONITORING WELLS WILL BE INSTALLED OR CONVERTED FROM EXISTING PIEZOMETERS IN PHASES IN ACCORDANCE WITH SECTION 2.0 OF APPENDIX IIIH, GROUNDWATER MONITORING, SAMPLING AND ANALYSIS PLAN.
13. GAS MONITORING PROBES WILL BE INSTALLED PRIOR TO PLACING NEW WASTE WITHIN 1,000 FEET OF THE PROPOSED PROBE LOCATION IN ACCORDANCE WITH APPENDIX III I, LANDFILL GAS MANAGEMENT PLAN.

LIST OF REVISIONS:

1. REORGANIZED CALLOUTS FOR VISIBILITY.
2. ADDED PAGE NUMBER.
3. REVISED MONITORING WELL NETWORK.

SHEET I/IIA-6

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120-809-11
CAD: A.6-SECTOR DEVELOPMENT PLAN III.DWG

DRAWN BY: JDW
DESIGN BY: CAM
REVIEWED BY: KDG

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

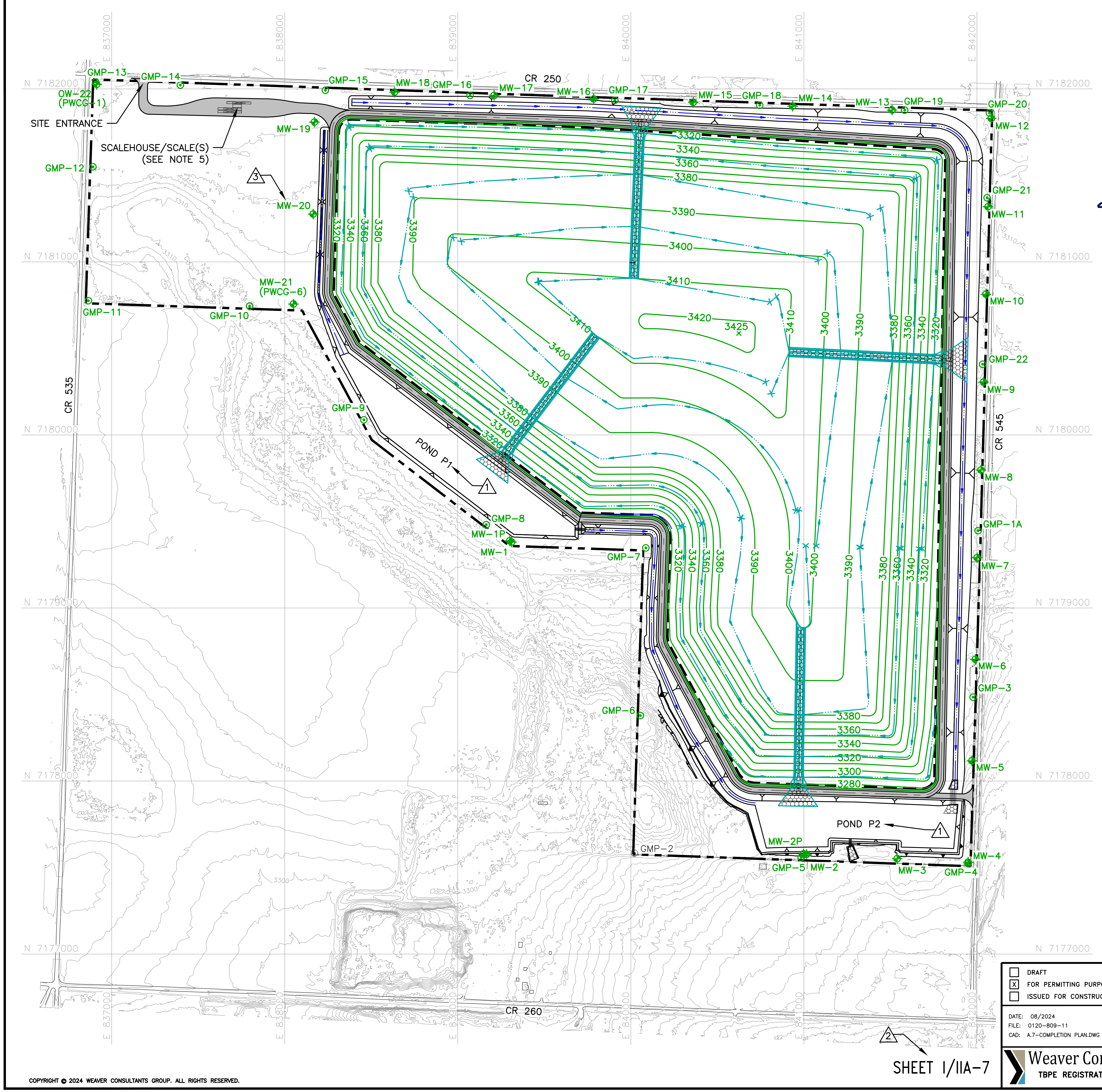
Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

MAJOR PERMIT AMENDMENT
SECTOR DEVELOPMENT PLAN III

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

DRAWING I/IIA.6



KYLE D. GOULD
106018
02/28/2025

LEGEND

— · — · —	PROPOSED PERMIT BOUNDARY
— — —	PROPOSED LIMIT OF WASTE
N 7181000	STATE PLANE COORDINATE
3310	EXISTING CONTOUR
3340	FINAL COVER CONTOUR
▨	DRAINAGE LETDOWN
×——	DRAINAGE SWALE
MW-1	PROPOSED OBSERVATION/GROUNDWATER MONITORING WELL
GMP-5	PROPOSED LANDFILL GAS MONITORING PROBE
GMP-2	EXISTING LANDFILL GAS MONITORING PROBE
△	INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. THE PERMIT BOUNDARY WAS REPRODUCED FROM A LEGAL DESCRIPTION PREPARED BY WEAVER CONSULTANTS GROUP.
3. REFER TO APPENDIX IIIF–SURFACE WATER DRAINAGE PLAN FOR THE EROSION AND SEDIMENTATION CONTROL PLAN. DRAINAGE STRUCTURES ARE SHOWN AS THE SITE DEVELOPS. ADDITIONALLY BMPs WILL BE USED TO CONTROL EROSION AS NEEDED.
4. REFER TO APPENDIX IIII FOR LANDFILL GAS MANAGEMENT PLAN.
5. REFER TO DRAWING I/IIA.9 FOR DETAILED SITE ENTRANCE INFORMATION.
6. GROUNDWATER MONITORING WELLS WILL BE INSTALLED OR CONVERTED FROM EXISTING PIEZOMETERS IN PHASES IN ACCORDANCE WITH SECTION 2.0 OF APPENDIX IIIH, GROUNDWATER MONITORING, SAMPLING AND ANALYSIS PLAN.
7. GAS MONITORING PROBES WILL BE INSTALLED PRIOR TO PLACING NEW WASTE WITHIN 1,000 FEET OF THE PROPOSED PROBE LOCATION IN ACCORDANCE WITH APPENDIX III I, LANDFILL GAS MANAGEMENT PLAN.

LIST OF REVISIONS:

1. ADDED POND LABELS.
2. ADDED PAGE NUMBER.
3. REVISED MONITORING WELL NETWORK.

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120-809-11
CAD: A.7-COMPLETION PLAN.DWG

DRAWN BY: JDW
DESIGN BY: CAM
REVIEWED BY: KDG

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

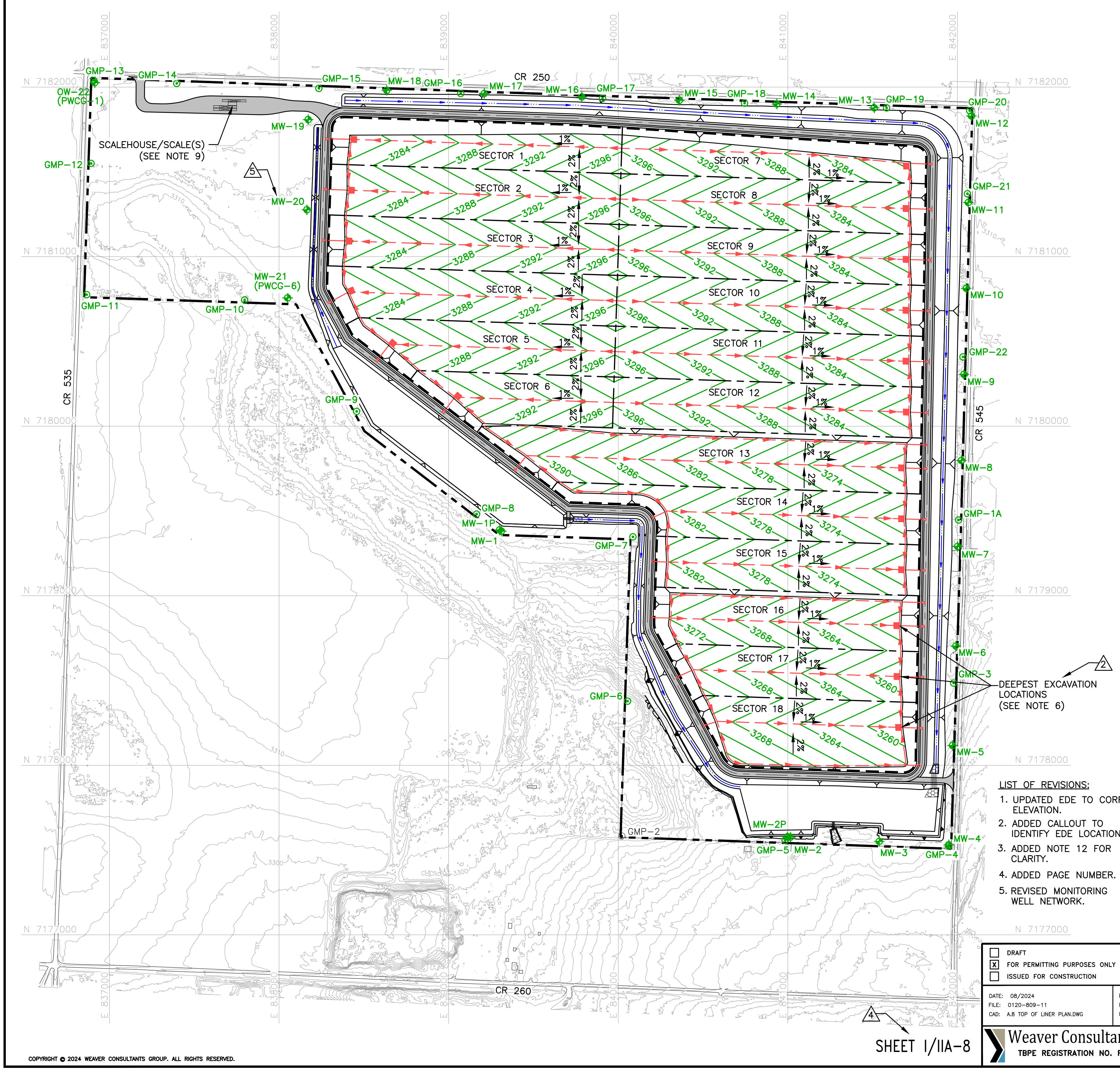
MAJOR PERMIT AMENDMENT
LANDFILL COMPLETION PLAN

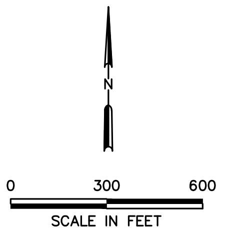
CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

DRAWING I/IIA.7

O:\0120\809\EXPANSION 2023\PARTS I-II\A.7 Completion Plan.dwg, jwilson, 1:2





KYLE D. GOULD
106018

02/28/2025

LEGEND

— · — · —	PROPOSED PERMIT BOUNDARY
— — —	PROPOSED LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
3300	EXISTING CONTOUR
3280	TOP OF LINER CONTOUR (SEE NOTE 12) 3
— - —	SECTOR BOUNDARY
— ◄ —	LEACHATE COLLECTION PIPE
■	LEACHATE COLLECTION SUMP
—●	LEACHATE RISER PIPE
⊕ MW-1	PROPOSED GROUNDWATER MONITORING WELL
⊙ GMP-5	PROPOSED LANDFILL GAS MONITORING PROBE
⊙ GMP-1	EXISTING LANDFILL GAS MONITORING PROBE
△1	INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.
4. EXCAVATION SLOPES AND SLOPES OUTSIDE THE LIMIT OF WASTE (e.g., CHANNELS) ARE TYPICALLY 3H:1V.
5. REFER TO APPENDIX IIIC FOR LEACHATE STORAGE INFORMATION.
6. ELEVATION OF DEEPEST EXCAVATION AT THE LCS SUMP IS 3250.0 FT-MSL. 1
7. SEQUENCE OF SITE DEVELOPMENT IS PROVIDED IN PARTS I/II, APPENDIX I/IIA DRAWINGS I/IIA.4 THROUGH I/IIA.7.
8. REFER TO APPENDIX IIIF FOR DRAINAGE DESIGN INFORMATION.
9. REFER TO APPENDIX I/IIA.9 FOR DETAILED SITE ENTRANCE INFORMATION.
10. GROUNDWATER MONITORING WELLS WILL BE INSTALLED OR CONVERTED FROM EXISTING PIEZOMETERS IN PHASES IN ACCORDANCE WITH SECTION 2.0 OF APPENDIX IIIH, GROUNDWATER MONITORING, SAMPLING AND ANALYSIS PLAN.
11. GAS MONITORING PROBES WILL BE INSTALLED PRIOR TO PLACING NEW WASTE WITHIN 1,000 FEET OF THE PROPOSED PROBE LOCATION IN ACCORDANCE WITH APPENDIX III I, LANDFILL GAS MANAGEMENT PLAN.
12. TOP OF LINER CONTOURS REPRESENT ELEVATIONS OF THE GEOMEMBRANE PLACEMENT ON THE BOTTOM OF THE LANDFILL. 3

LIST OF REVISIONS:

1. UPDATED EDE TO CORRECT ELEVATION.
2. ADDED CALLOUT TO IDENTIFY EDE LOCATIONS.
3. ADDED NOTE 12 FOR CLARITY.
4. ADDED PAGE NUMBER.
5. REVISED MONITORING WELL NETWORK.

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120-809-11
CAD: A.8 TOP OF LINER PLAN.DWG

DRAWN BY: JDW
DESIGN BY: CAM
REVIEWED BY: KDG

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

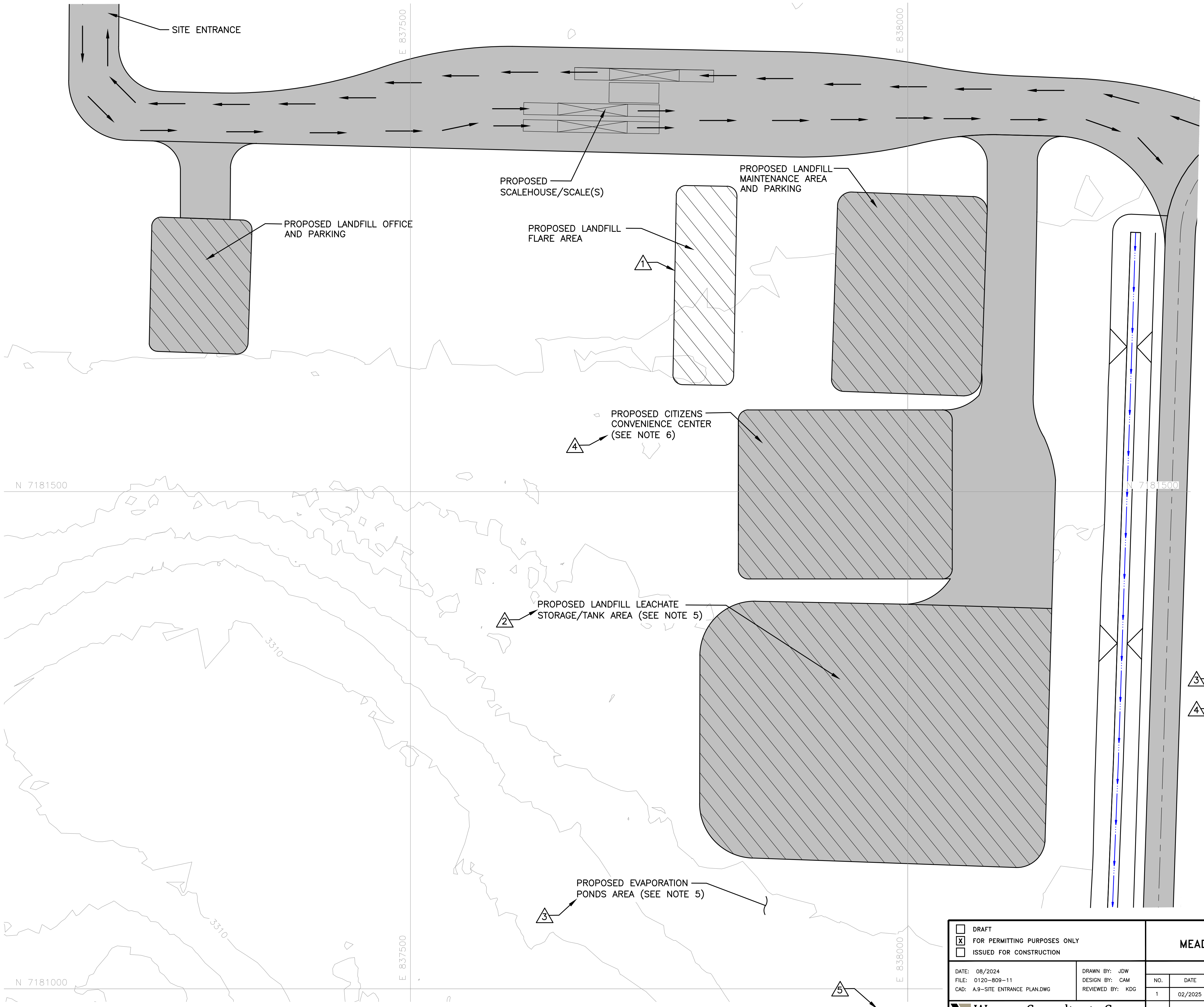
MAJOR PERMIT AMENDMENT
TOP OF LINER PLAN

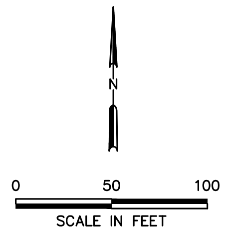
CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

DRAWING I/IIA.8

O:\0120\809\EXPANSION 2023\PARTS I-II\A.8-TOP LINER PLAN.dwg, jwilson, 1:2





STATE OF TEXAS
KYLE D. GOULD
106018
LICENSED PROFESSIONAL ENGINEER

02/28/2025

LEGEND

N 7180000 ——	STATE PLANE COORDINATE SYSTEM
—— 3300 ——	EXISTING CONTOUR
——→	VEHICLE TRAFFIC DIRECTION
▒	PAVED AREA (SEE NOTE 2)
△1	INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. PAVED AREAS INSIDE THE PERMIT BOUNDARY HIGHLIGHTED. ALL WEATHER PAVING MAY BE PROVIDED USING ASPHALT, CONCRETE, OR GRAVEL OR A COMBINATION OF VARIOUS ALL WEATHER SURFACING.
3. ADDITIONAL INBOUND/OUTBOUND SCALES MAY BE ADDED TO THE SITE ENTRANCE TO FACILITATE CUSTOMER TRAFFIC.
4. PROPOSED SITE ENTRANCE FACILITIES SHOWN WILL BE PHASED IN AND CONSTRUCTED AS NEEDED. SOME OR ALL FACILITIES MAY OR MAY NOT BE CONSTRUCTED DEPENDENT ON LANDFILL DEVELOPMENT AND OPERATIONAL NEED.
5. REFER TO APPENDIX IIIC–D FOR LEACHATE STORAGE TANK AND EVAPORATION POND PLANS AND DETAILS. △3
6. △4 RECYCLABLE ELECTRONICS, WHOLE TIRES, WHITE GOODS AND OTHER NON–PUTRESCIBLE RECYCLABLES WILL BE STAGED AT THE CITIZENS CONVENIENCE CENTER IN NON–DESIGNATED AREAS, AND STAGED IN A MANNER NOT TO IMPEDE CITIZEN ACCESS TO THE DISPOSAL ROLL–OFF CONTAINERS. THE RECYCLABLES WILL BE PERIODICALLY REMOVED FROM THE SITE BY RECYCLING VENDORS OR TRANSPORTED OFF–SITE FOR RECYCLING. RECYCLABLE MATERIALS WILL BE STORED ON THE GROUND, PALLETIZED, PLACED IN ROLL–OFF CONTAINERS OR BINS, OR OTHER APPROPRIATE STORAGE METHODS.

LIST OF REVISIONS:

1. REVISED PROPOSED LANDFILL FLARE AREA.
2. REVISED CALLOUT DESCRIPTION.
3. ADDED NOTE 5 AND CALLOUT.
4. ADDED NOTE 6.
5. ADDED PAGE NUMBER.

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120–809–11
CAD: A.9–SITE ENTRANCE PLAN.DWG

DRAWN BY: JDW
DESIGN BY: CAM
REVIEWED BY: KDG

Weaver Consultants Group
TBPE REGISTRATION NO. F–3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

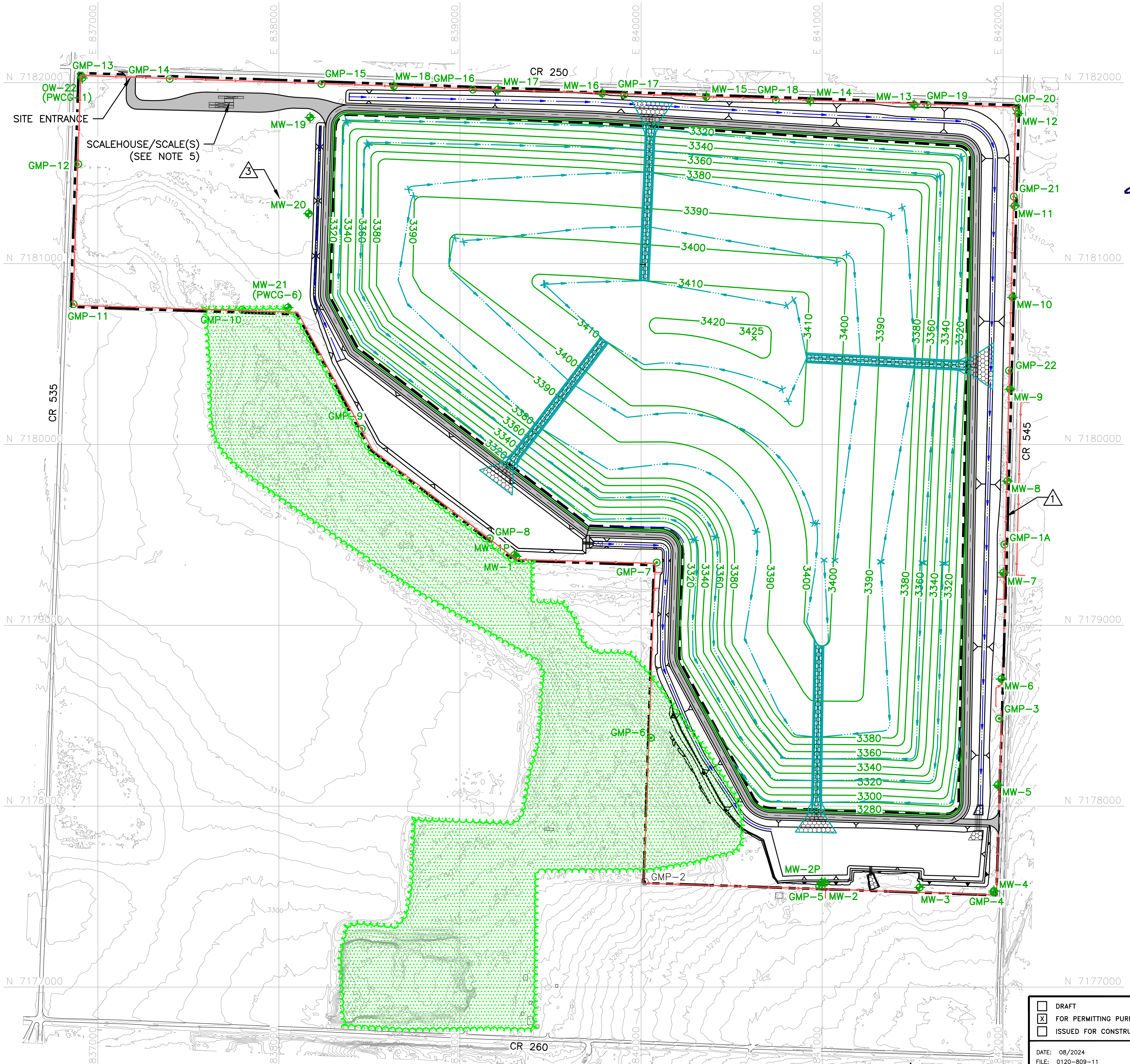
MAJOR PERMIT AMENDMENT PROPOSED SITE ENTRANCE FACILITY PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

DRAWING I/IIA.9

O:\0120\809\EXPANSION 2023\PARTS I–II\A.9–Site Entrance Plan.dwg, jwilson, 1:2



SHEET I/IIA-10

N

0 300 600
SCALE IN FEET

KYLE D. GOULD
106018
02/28/2025

LEGEND

— · —	PROPOSED PERMIT BOUNDARY
— — —	PROPOSED LIMIT OF WASTE
N 7181000	STATE PLANE COORDINATE
3310	EXISTING CONTOUR
3340	FINAL COVER CONTOUR
▨	DRAINAGE LETDOWN
× →	DRAINAGE SWALE
—	EXISTING/PROPOSED FENCE
▬	ACCESS ROAD
🟩	EXISTING TREES
◆ MW-1	PROPOSED OBSERVATION/GROUNDWATER MONITORING WELL
⊙ GMP-5	PROPOSED LANDFILL GAS MONITORING PROBE
⊙ GMP-2	EXISTING LANDFILL GAS MONITORING PROBE
△ 1	INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PROPERTY AND PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.
4. ACCESS TO THE SITE WILL BE CONTROLLED BY PERIMETER FENCING (MINIMUM 4-FEET HIGH, 3-STRAND BARBED WIRE FENCES), A GATED ENTRANCE, A GATED SECONDARY CONSTRUCTION ENTRANCE, AND NATURAL BARRIERS (e.g DENSE FOLIAGE AND VEGETATION). ADDITIONALLY, IN AREAS OF NATURAL BARRIERS, THE ACCESS CONTROL PLAN IS PROVIDED TO PREVENT THE ENTRY OF LIVESTOCK, TO PREVENT THE PUBLIC FROM EXPOSURE TO POTENTIAL HEALTH AND SAFETY HAZARDS, AND TO DISCOURAGE UNAUTHORIZED ENTRY OR UNCONTROLLED DISPOSAL OF SOLID WASTE OR HAZARDOUS MATERIALS. "NO TRESPASSING" SIGNS WILL BE ADDED TO DISCOURAGE UNAUTHORIZED ENTRY OR UNCONTROLLED DISPOSAL OF SOLID WASTE OR HAZARDOUS MATERIALS.
5. REFER TO DRAWING I/IIA.9 FOR DETAILED SITE ENTRANCE INFORMATION.
6. GROUNDWATER MONITORING WELLS WILL BE INSTALLED OR CONVERTED FROM EXISTING PIEZOMETERS IN PHASES IN ACCORDANCE WITH SECTION 2.0 OF APPENDIX IIIH, GROUNDWATER MONITORING, SAMPLING AND ANALYSIS PLAN.
7. GAS MONITORING PROBES WILL BE INSTALLED PRIOR TO PLACING NEW WASTE WITHIN 1,000 FEET OF THE PROPOSED PROBE LOCATION IN ACCORDANCE WITH APPENDIX III I, LANDFILL GAS MANAGEMENT PLAN.

LIST OF REVISIONS:

1. IMPROVED VISIBILITY OF EXISTING/PROPOSED FENCE.
2. ADDED PAGE NUMBER.
3. REVISED MONITORING WELL NETWORK.

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☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120-809-11
CAD: A.10-ACCESS CONTROL PLAN.DWG

DRAWN BY: JDW
DESIGN BY: CAM
REVIEWED BY: KDG

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

MAJOR PERMIT AMENDMENT ACCESS CONTROL PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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DRAWING I/IIA.10

O:\0120\809\EXPANSION 2023\PARTS I-II\A.10 Access Control Plan.dwg, jwilson, 1:2

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PARTS I/IIC
LOCATION RESTRICTION DEMONSTRATIONS

Prepared for:

Meadow Landfill, LLC.

August 2024

Revised February 2025

KYLE D. GOULD
106018

02/28/2025

Prepared by:

Weaver Consultants Group, LLC
TBPE Registration No. F-3727
6420 Southwest Boulevard, Suite 206
Fort Worth, Texas 76109
817-735-9770

WCG Project No. 0120-809-11-05

This document intended for permitting purposes only.

2 EASEMENTS AND BUFFER ZONES

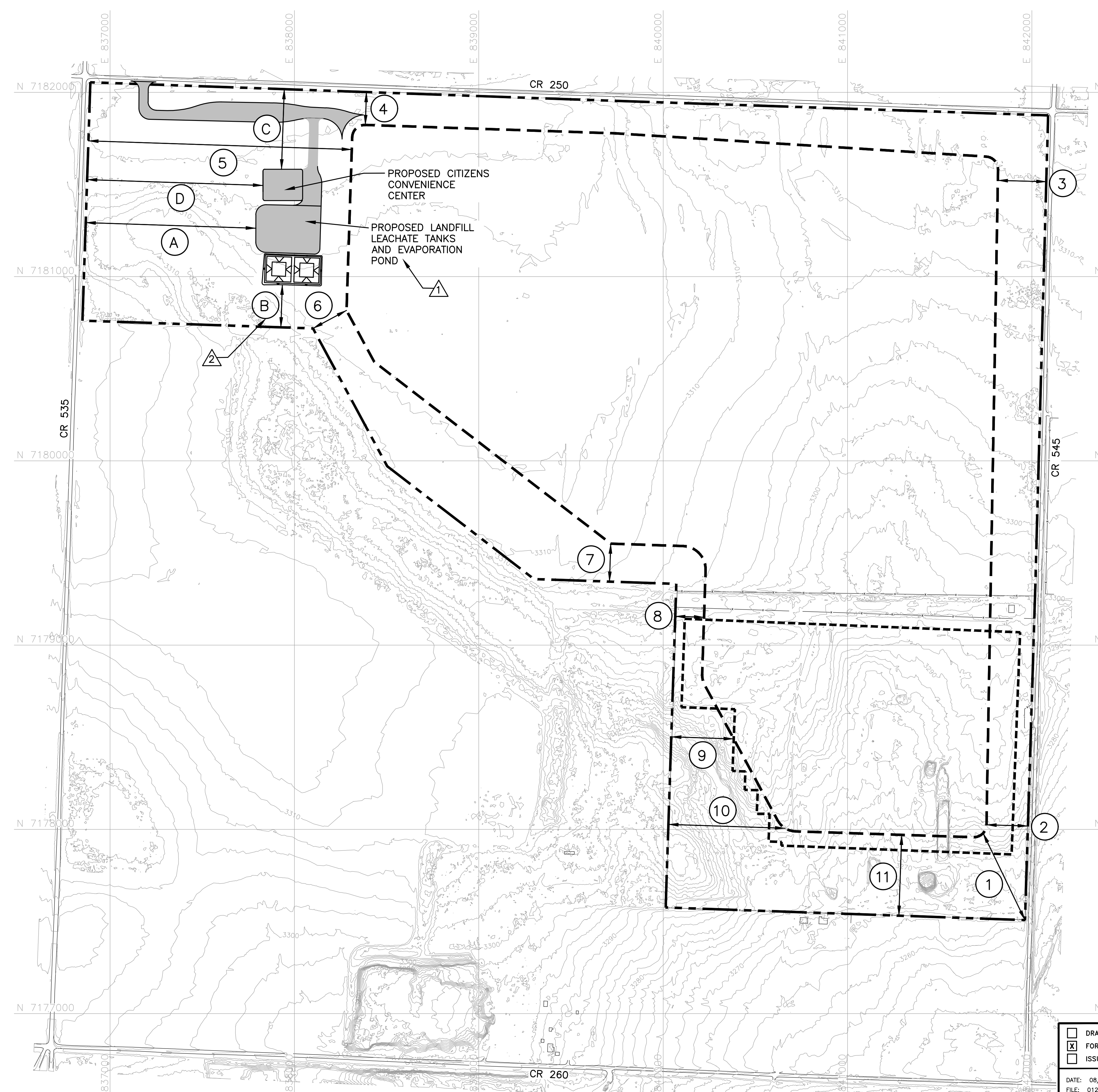
The easements and buffer zones location restrictions within Title 30 TAC §330.543 require that no solid waste disposal shall occur within 25 feet of the center line of any utility line or pipeline easement but no closer than the easement, unless otherwise authorized by the Executive Director. Also, all pipeline and utility easements shall be clearly marked with posts that extend at least six feet above ground level, spaced at intervals no greater than 300 feet. In addition, for vertical or lateral expansions, the owner or operator shall establish and maintain a 125-foot buffer zone for any newly permitted airspace.

The proposed buffer zones for the site are shown on Drawing I/IIC-1 and are discussed below.

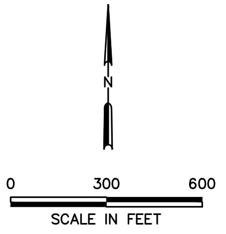
- **Limit of Existing Waste.** As shown on Drawing I/IIC-1, a buffer zone of at least 50 feet is maintained between the permit boundary and the limit of existing waste defined in TCEQ Permit No. 2293.
- **Proposed Limit of Waste.** As shown on Drawing I/IIC-1, a buffer zone of at least 125 feet is maintained between the permit boundary and the proposed new waste disposal airspace (labeled as "proposed limit of waste"), consistent with Title 30 TAC §330.543(b)(2)(B).
- **Leachate Storage Tank Area.** A buffer zone of over 50 feet is maintained between the permit boundary and the proposed leachate storage tank area.
- **Citizens Convenience Center.** A buffer zone of over 50 feet is maintained between the permit boundary and the proposed Citizens Convenience Center.

There are no easements located within the permit boundary at the site. No solid waste unloading, storage, disposal, or processing will occur within ~~25 feet of the centerline of~~ any easement, buffer zone, or right-of-way. In addition, all utility line and pipeline easements will be clearly marked in accordance with the Site Operating Plan.

Given the above, the site is in compliance with the easements and buffer zone location restrictions.



KYLE D. GOULD
106018
02/28/2025



LEGEND

— - — PROPOSED PERMIT BOUNDARY
— — — PROPOSED LIMIT OF WASTE (PERMIT NO. 2293C)
- - - - PERMITTED LIMIT OF WASTE (PERMT NO. 2293)
N 7180000 —— STATE PLANE COORDINATE SYSTEM
—350— EXISTING CONTOUR
△ INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.
4. PROPOSED FACILITIES WILL BE PLACED IN AND CONSTRUCTED AS NEEDED. FACILITIES MAY OR MAY NOT BE CONSTRUCTED DEPENDED ON LANDFILL DEVELOPMENT AND OPERATIONAL NEEDS.

BUFFER ZONE INFORMATION

LOCATION	BUFFER ZONE BETWEEN PERMIT BOUNDARY AND EXISTING LIMIT OF WASTE	BUFFER ZONE BETWEEN PERMIT BOUNDARY AND PROPOSED LIMIT OF WASTE
1	400 FEET	524 FEET
2	82 FEET	224 FEET
3	N/A	263 FEET
4	N/A	179 FEET
5	N/A	1,429 FEET
6	N/A	206 FEET
7	N/A	206 FEET
8	63 FEET	156 FEET
9	339 FEET	339 FEET
10	547 FEET	633 FEET
11	356 FEET	439 FEET

LIST OF REVISIONS:

1. UPDATED CALLOUT DESCRIPTION.
2. UPDATED INFORMATION TO INCLUDE EVAPORATION PONDS.

PROCESSING/DISPOSAL UNIT BUFFER ZONE INFORMATION (SEE NOTE 4)

LOCATION	BUFFER ZONE BETWEEN PERMIT BOUNDARY
A	924 FEET
B	232 FEET
C	435 FEET
D	955 FEET

1

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☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120-809-11
CAD: C-1 BUFFER PLAN.DWG

DRAWN BY: JDW
DESIGN BY: MB
REVIEWED BY: CRM

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

MAJOR PERMIT AMENDMENT BUFFER ZONE PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

DRAWING I/IIC-1

O:\0120\809\EXPANSION 2023\PARTS I-II\II-C\C-1-BUFFER PLAN.dwg, jwilson, 1:2

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN
SITE DEVELOPMENT PLAN NARRATIVE

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

KYLE D. GOULD
106018

Prepared by

02/28/2025

Weaver Consultants Group, LLC
TBPE Registration No. F-3727
6420 Southwest Blvd., Suite 206
Fort Worth, TX 76109
817-735-9770

WCG Project No. 0120-809-11-05

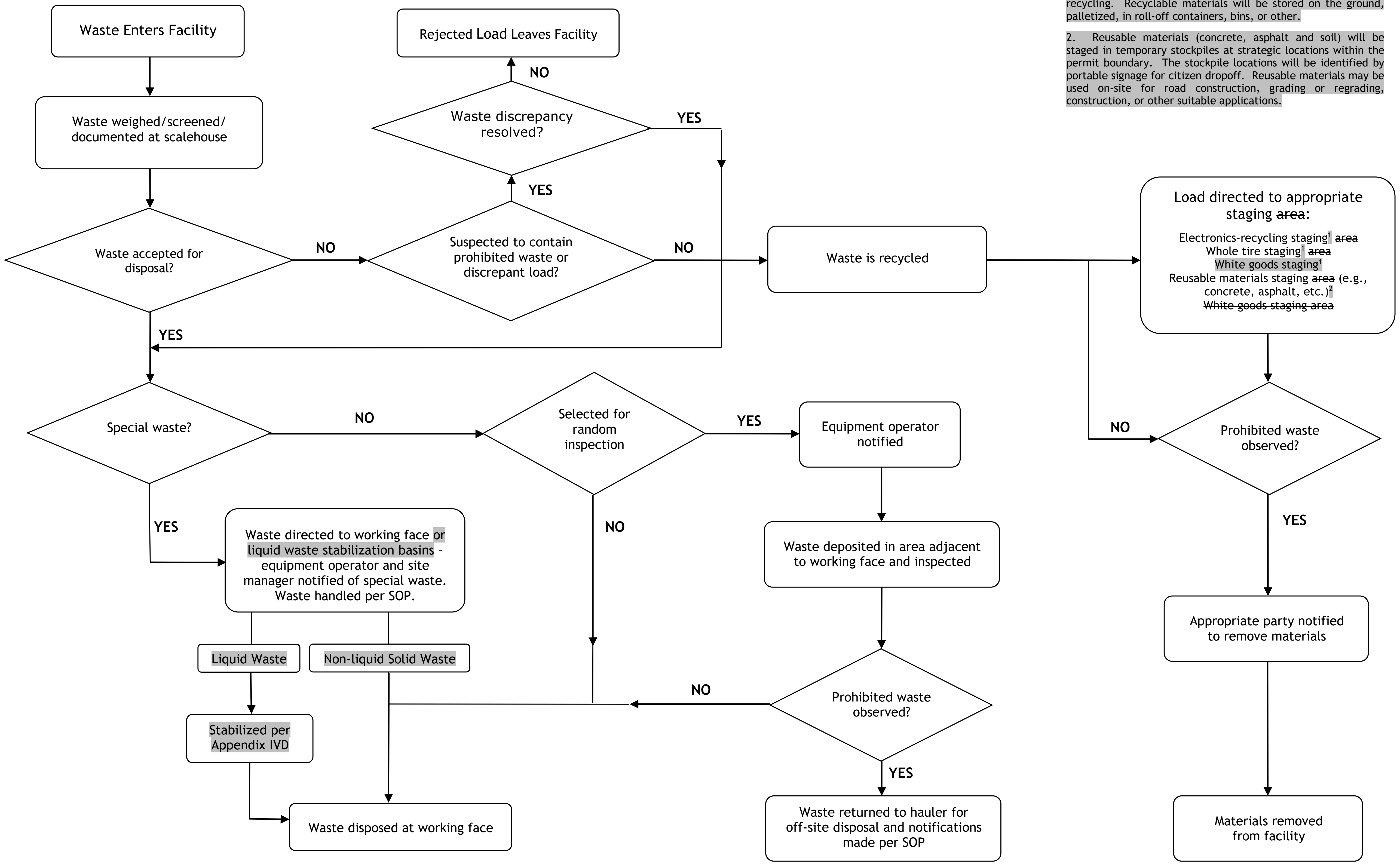
This document is intended for permitting purposes only.

Notes

1. Recyclable Electronics, whole tires, white goods and other non-putrescible recyclables will be staged at the Citizens Convenience Center in non-designated areas, staged in a manner not to impede citizen access to the disposal roll-off containers. The recyclables will periodically be removed from the site by recycling vendors or transported off-site for recycling. Recyclable materials will be stored on the ground, palletized, in roll-off containers, bins, or other.

2. Reusable materials (concrete, asphalt and soil) will be staged in temporary stockpiles at strategic locations within the permit boundary. The stockpile locations will be identified by portable signage for citizen dropoff. Reusable materials may be used on-site for road construction, grading or regrading, construction, or other suitable applications.

Figure III-1
Waste Movement Flow Diagram



CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN
APPENDIX IIIA
LANDFILL UNIT DESIGN INFORMATION

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

KYLE D. GOULD
106018

02/28/2025

Prepared by

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WCG Project No. 0120-809-11-05

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- **Excavation Stability.** The stability of the proposed excavation slopes was evaluated at critical sections. The excavation slopes were analyzed using undrained strength parameters (total stress) as well as drained strength parameters (effective stress). The slope stability analysis resulted in an acceptable factor of safety for each analyzed condition. All factors of safety generated were greater than the minimum recommended factor of safety of 1.3 for short-term and 1.5 for long-term conditions.
- **Liner System Stability.** In addition to the generalized slope stability summarized above, the interfaces of the components of the liner systems were evaluated using infinite slope stability analysis. All the calculated factor of safety values for interface slope stability are acceptable.
- **Liner System Settlement and Strain Analysis.** The liner system was evaluated for settlement and strain due to loading of liner soil, waste, and cover soils. The maximum strain on the liner system, caused by the estimated differential settlement, is within the acceptable range for each liner system component and will not adversely affect the performance of the liner system.
- **Historic Waste Area Inspection and Liner Preparation.** The area of historic waste that is excavated in preparation for liner construction will be inspected and prepared as set forth in Part IV, Section 4.25. With the completion of waste removal and inspection by a geotechnical engineer (to evaluate the adequacy of waste removal and condition of foundation soils), the liner foundation will be prepared consistent with the requirements set forth in Appendix IIIE, Section 4.3 – Landfill Excavation.

3 EXISTING LINER SYSTEMS

The existing site under the TCEQ Permit No. MSW-2293 is a Type IAE and Type IVAE permitted to accept Type I and Type IV waste. The site at the time was qualified as arid exemption as specified in 30 TAC §330.5(b) and did not require a leachate collection system or liner.

As part of this major permit amendment application, the historic waste fill area will be excavated and relocated to the main disposal area within the City of Meadow Landfill. The estimated limits are based on the currently approved 2006 Major Permit Amendment and visual observations. The waste relocation plan is shown in Parts I/II, Sector Development Plans I through III. ~~The waste relocation procedure is discussed in Part IV – SOP, Section 4.25.~~ A Waste Relocation Plan is presented in Part IV, Section 4.25, which addresses waste removal procedures, waste inspection procedures and odor control procedures to be implemented during relocation of the historic waste.

As described in Part IV, Section 4.25, the historic waste fill area will be excavated and disposed into the newly constructed landfill and it's developed. Inspection and preparation of the excavated historic waste area for subsequent liner construction is addressed in Section 4.25.

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN
APPENDIX IIIA-A
LINER AND FINAL COVER SYSTEM DETAILS

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

KYLE D. GOULD
106018

02/28/2025

Prepared by

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817-735-9770

WCG Project No. 0120-809-11-05

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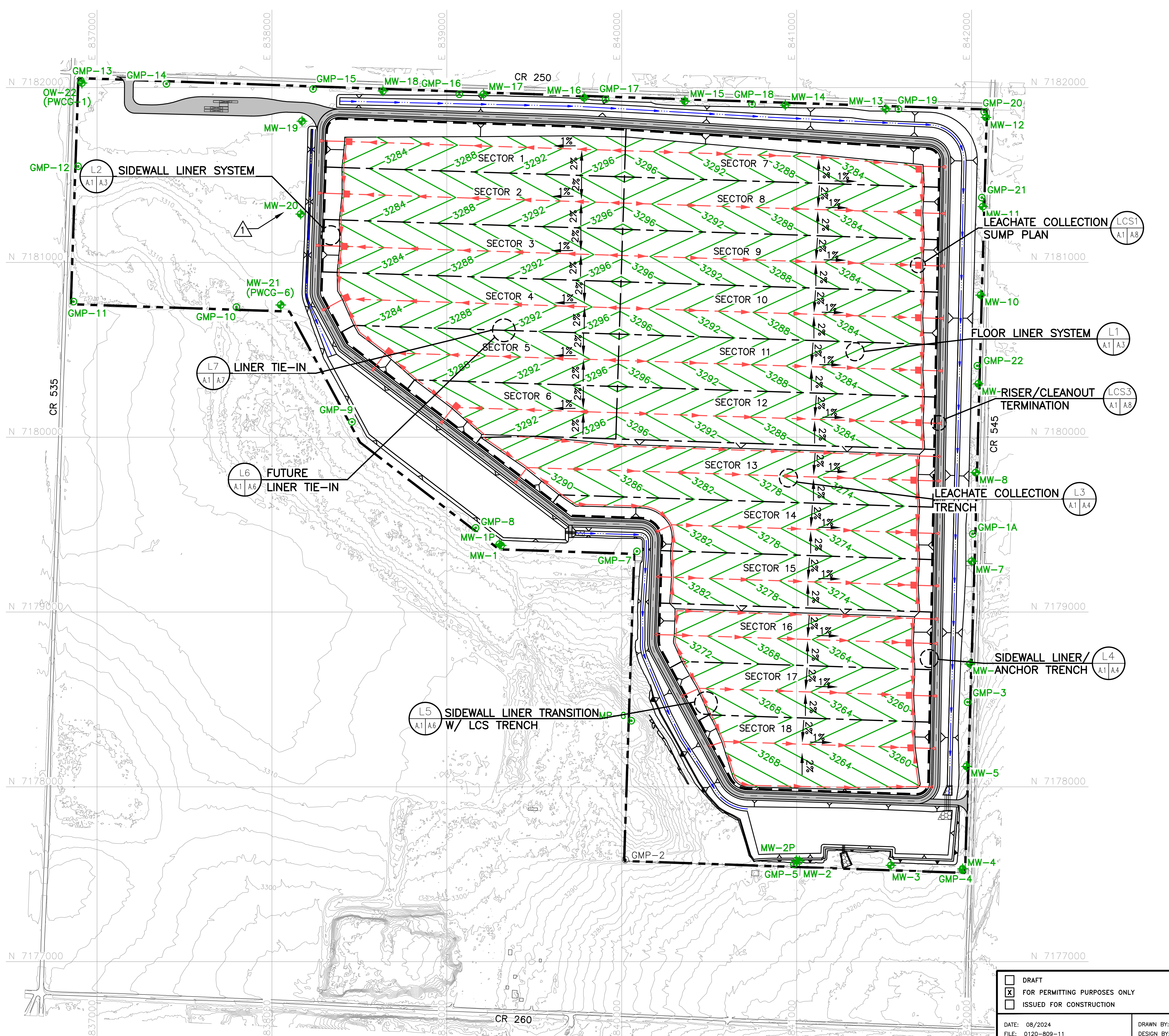

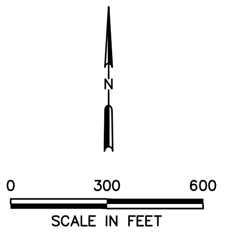

STATE OF TEXAS
KYLE D. GOULD
106018
LICENSED PROFESSIONAL ENGINEER
02/28/2025

LEGEND

	PROPOSED PERMIT BOUNDARY
	PROPOSED LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
3300	EXISTING CONTOUR
560	PROPOSED EXCAVATION CONTOUR
	SECTOR BOUNDARY
	CHANNEL CENTERLINE
	LEACHATE COLLECTION PIPE
■	LEACHATE COLLECTION SUMP
	LEACHATE RISER PIPE
⊙ GMP–2	EXISTING GAS PROBE
◆ MW–10	PROPOSED GROUNDWATER MONITORING WELL
⊙ GMP–1	GAS PROBE TO BE ABANDONED
⊙ GMP–21	PROPOSED GAS PROBE
△1	INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.
4. EXCAVATION SLOPES AND SLOPES OUTSIDE THE LIMIT OF WASTE (e.g., CHANNELS) ARE TYPICALLY 3H:1V.
5. REFER TO APPENDIX IIIC FOR LEACHATE STORAGE INFORMATION.
6. ELEVATION OF DEEPEST EXCAVATION AT THE LCS SUMP IS 3,250.0 FT–MSL.
7 SEQUENCE OF SITE DEVELOPMENT IS PROVIDED IN PARTS I/II, APPENDIX I/IIA DRAWINGS I/IIA.4 THROUGH I/IIA.6.
8. REFER TO APPENDIX IIIF FOR DRAINAGE DESIGN INFORMATION.

LIST OF REVISIONS:

1. REVISED MONITORING WELL NETWORK.

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120–809–11
CAD: A.1–LINER PLAN.DWG

DRAWN BY: RAA
DESIGN BY: JBM
REVIEWED BY: DEP

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

MAJOR PERMIT AMENDMENT
BOTTOM OF LINER PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

Weaver Consultants Group
TBPE REGISTRATION NO. F–3727

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DRAWING A.1

SHEET IIIA–A.1

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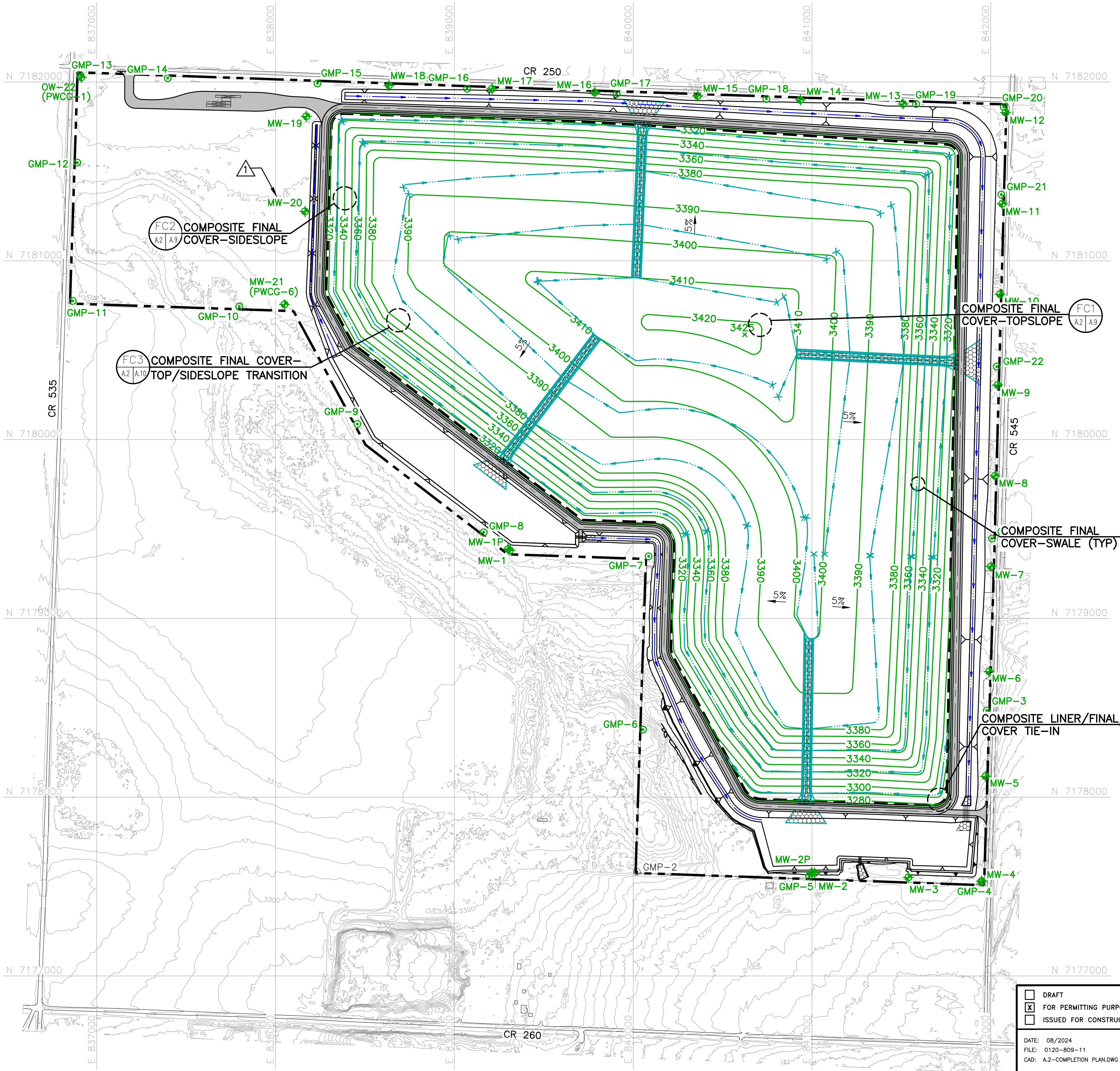

KYLE D. GOULD
106018
02/28/2025

LEGEND

	PROPOSED PERMIT BOUNDARY
	PROPOSED LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
3300	EXISTING CONTOUR
3400	FINAL COVER CONTOUR
	DRAINAGE SWALE
	DRAINAGE LETDOWN
	CHANNEL CENTERLINE
GMP-2	EXISTING GAS PROBE
MW-10	PROPOSED GROUNDWATER MONITORING WELL
GMP-1	GAS PROBE TO BE ABANDONED
GMP-21	PROPOSED GAS PROBE
△	INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

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2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PROPERTY AND PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.
4. REFER TO APPENDIX IIIF-SURFACE WATER DRAINAGE PLAN FOR DRAINAGE DESIGN INFORMATION.
5. MAXIMUM FINAL COVER ELEVATION IS 3425.0 FT-MSL. MAXIMUM TOP OF WASTE ELEVATION IS 3421.5 FT-MSL.
6. TYPICAL SIDESLOPES ARE 4H:1V. TYPICAL TOPSLOPE IS 5%.

LIST OF REVISIONS:

1. REVISED MONITORING WELL NETWORK.

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DATE: 08/2024
FILE: 0120-809-11
CAD: A.2-COMPLETION PLAN.DWG

DRAWN BY: RAA
DESIGN BY: JBM
REVIEWED BY: DEP

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

MAJOR PERMIT AMENDMENT LANDFILL COMPLETION PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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DRAWING A.2

SHEET IIIA-A.2

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CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN
APPENDIX IIIA-B
LANDFILL UNIT CROSS SECTIONS

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

KYLE D. GOULD
106018

Prepared by

02/28/2025

Weaver Consultants Group, LLC
TBPE Registration No. F-3727
6420 Southwest Boulevard, Suite 206
Fort Worth, Texas 76109
817-735-9770

WCG Project No. 0120-809-11-05

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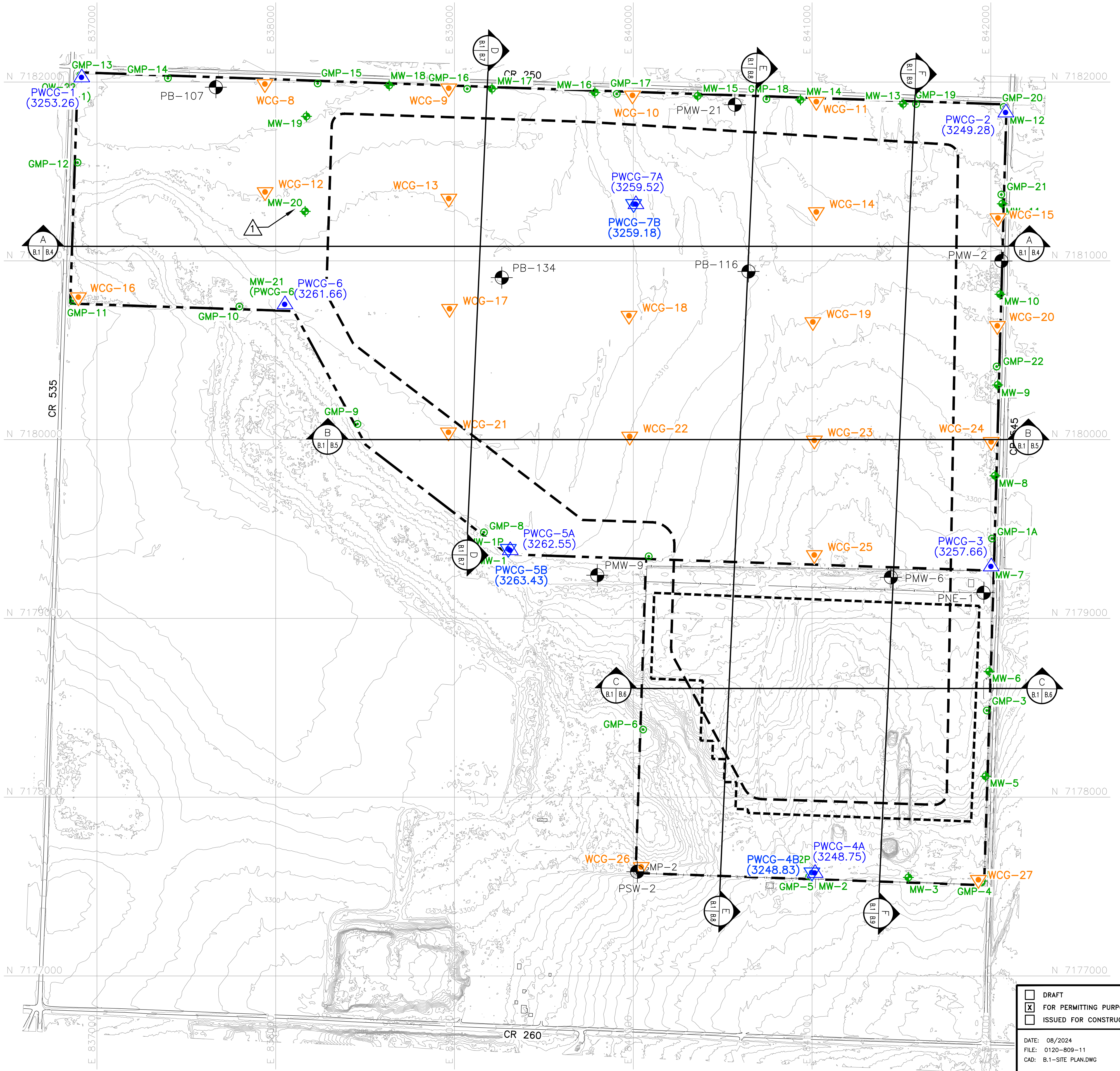

N

0 300 600
SCALE IN FEET

KYLE D. GOULD
106018

02/28/2025

LEGEND

▬ · ▬	PROPOSED PERMIT BOUNDARY
— · —	PERMITTED PERMIT BOUNDARY
— — —	PROPOSED LIMIT OF WASTE
- - - -	PERMITTED LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
350	EXISTING CONTOUR
⊕ PMW–116	RELICT GROUNDWATER PIEZOMETER LOCATION
△ PWCG–4A (3248.75)	2023 UPPERMOST AQUIFER EXPANSION PIEZOMETER WITH GROUNDWATER ELEVATION POSTED IN FT–MSL
▽ PWCG–4B (3253.26)	2023 PERCHED ZONE EXPANSION PIEZOMETER WITH GROUNDWATER ELEVATION POSTED IN FT–MSL
▽ WCG–23	EXPANSION BOREHOLE LOCATION
⊙ GMP–2	EXISTING GAS PROBE
⊕ MW–10	PROPOSED GROUNDWATER MONITORING WELL
⊙ GMP–1	GAS PROBE TO BE ABANDONED
⊙ GMP–21	PROPOSED GAS PROBE
△1	INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.

LIST OF REVISIONS:

1. REVISED MONITORING WELL NETWORK.

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120–809–11
CAD: B.1–SITE PLAN.DWG

DRAWN BY: RAA
DESIGN BY: MB
REVIEWED BY: CRM

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TBPE REGISTRATION NO. F–3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

MAJOR PERMIT AMENDMENT
TYPICAL SECTION LOCATIONS

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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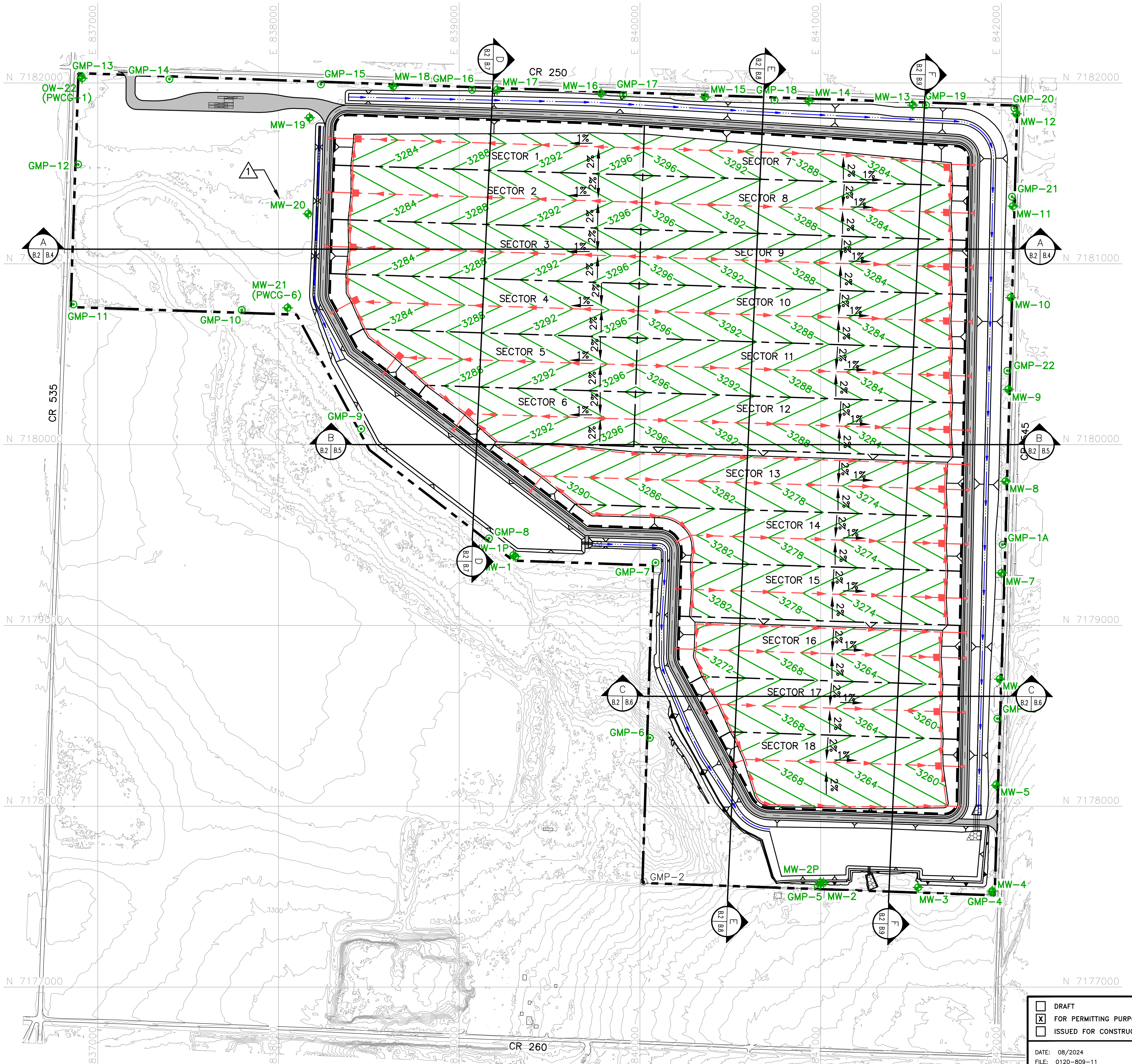
DRAWING B.1

SHEET IIIA–B.1

O:\0120\809\EXPANSION 2023\PART III\IIIA\B\B.1 – TYPICAL SECTION LOCATIONS.dwg, jwilson, 1:2



N

0 300 600
SCALE IN FEET

STATE OF TEXAS
KYLE D. GOULD
106018
LICENSED PROFESSIONAL ENGINEER
02/28/2025

LEGEND

	PROPOSED PERMIT BOUNDARY
	PROPOSED LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
3300	EXISTING CONTOUR
560	PROPOSED EXCAVATION CONTOUR
	SECTOR BOUNDARY
	CHANNEL CENTERLINE
	LEACHATE COLLECTION PIPE
■	LEACHATE COLLECTION SUMP
	LEACHATE RISER PIPE
⊙ GMP-2	EXISTING GAS PROBE
MW-10	PROPOSED GROUNDWATER MONITORING WELL
⊙ GMP-1	GAS PROBE TO BE ABANDONED
⊙ GMP-21	PROPOSED GAS PROBE
△1	INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
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4. EXCAVATION SLOPES AND SLOPES OUTSIDE THE LIMIT OF WASTE (e.g., CHANNELS) ARE TYPICALLY 3H:1V.
5 REFER TO APPENDIX IIIC FOR LEACHATE STORAGE INFORMATION.
6. ELEVATION OF DEEPEST EXCAVATION AT THE LCS SUMP IS 3250.0 FT-MSL.
7. SEQUENCE OF SITE DEVELOPMENT IS PROVIDED IN PARTS I/II, APPENDIX I/IIA.
8. REFER TO APPENDIX IIIF FOR DRAINAGE DESIGN INFORMATION.

LIST OF REVISIONS:

1. REVISED MONITORING WELL NETWORK.

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120-809-11
CAD: B.2-BOTTOM OF LINER PLAN.DWG

DRAWN BY: RAA
DESIGN BY: JBM
REVIEWED BY: KDG

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

MAJOR PERMIT AMENDMENT
BOTTOM OF LINER PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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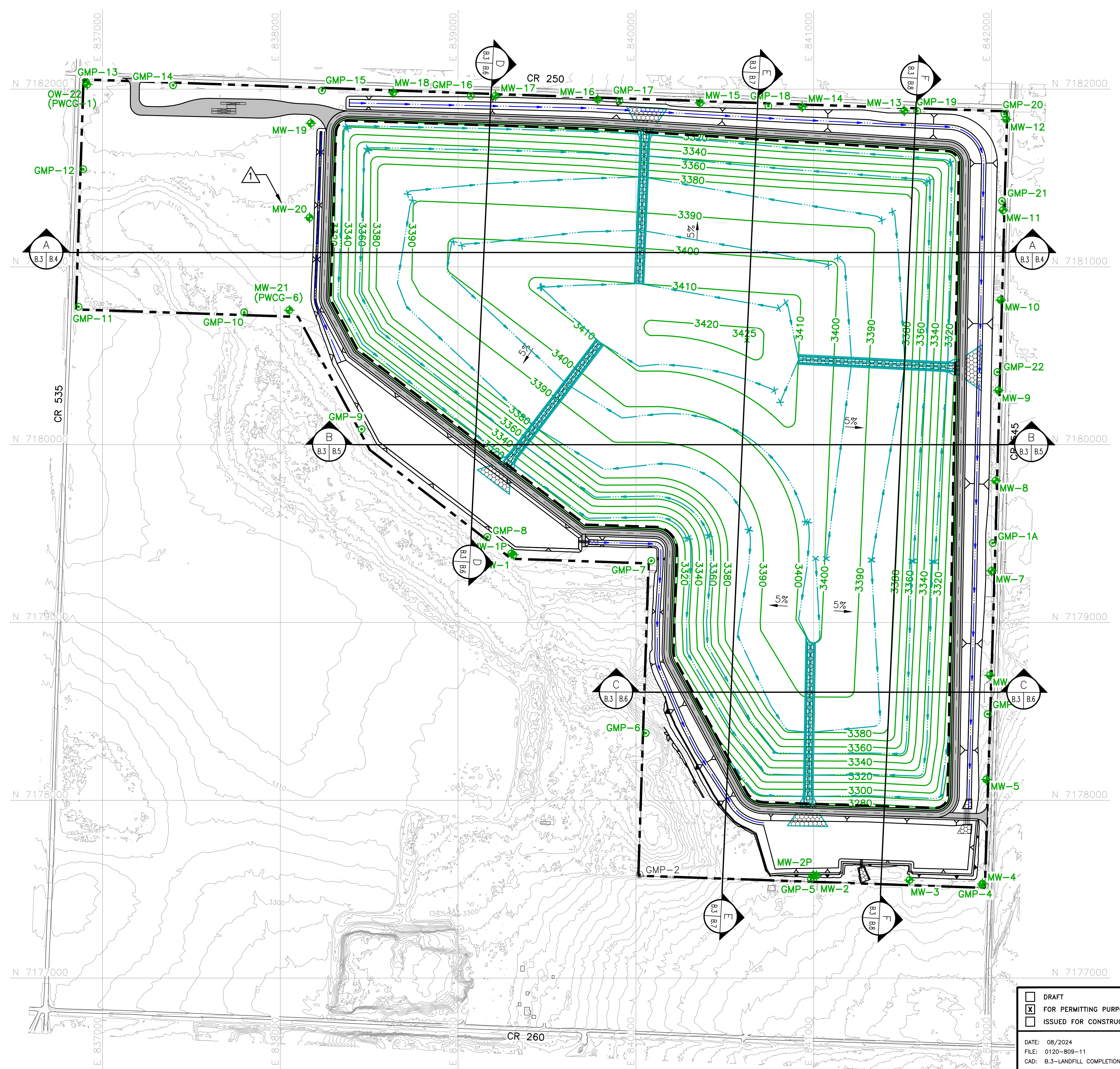
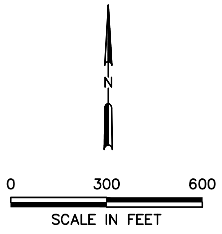
DRAWING B.2

SHEET IIIA-B.2

O:\0120\809\EXPANSION 2023\PART III\IIIA\B\B.2- BOTTOM OF LINER PLAN.dwg, jwilson, 1:2





KYLE D. GOULD
106018
02/28/2025

LEGEND

▬ · ▬	PROPOSED PERMIT BOUNDARY
▬ ▬	PROPOSED LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
3300	EXISTING CONTOUR
3400	FINAL COVER CONTOUR
	DRAINAGE SWALE
	DRAINAGE LETDOWN
	CHANNEL CENTERLINE
⊙ GMP–2	EXISTING GAS PROBE
MW–10	PROPOSED GROUNDWATER MONITORING WELL
⊙ GMP–1	GAS PROBE TO BE ABANDONED
⊙ GMP–21	PROPOSED GAS PROBE
△1	INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PROPERTY AND PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.
4. REFER TO APPENDIX IIIF–SURFACE WATER DRAINAGE PLAN FOR DRAINAGE DESIGN INFORMATION.
5. MAXIMUM FINAL COVER ELEVATION IS 3425.0 FT–MSL. MAXIMUM TOP OF WASTE ELEVATION IS 3421.5 FT–MSL.
6. TYPICAL SIDESLOPES ARE 4H:1V. TYPICAL TOPSLOPE IS 5%.

LIST OF REVISIONS:

1. REVISED MONITORING WELL NETWORK.

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DATE: 08/2024
FILE: 0120–809–11
CAD: B.3–LANDFILL COMPLETION PLAN.DWG

DRAWN BY: SRF
DESIGN BY: JBM
REVIEWED BY: KDG

Weaver Consultants Group
TBPE REGISTRATION NO. F–3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

MAJOR PERMIT AMENDMENT
LANDFILL COMPLETION PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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DRAWING B.3

SHEET IIIA–B.3

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

VOLUME 2 OF 6

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

KYLE D. GOULD
106018

02/28/2025

Prepared by

Weaver Consultants Group, LLC
TBPE Registration No. F-3727
6420 Southwest Boulevard, Suite 206
Fort Worth, Texas 76109
817-735-9770

WCG Project No. 0120-809-11-05

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CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN
APPENDIX IIIB
ALTERNATIVE LINER POINT OF COMPLIANCE DEMONSTRATION

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

NEVZAT TURAN
84059
02/28/2025

Weaver Consultants Group, LLC
TBPE Registration No. F-3727
6420 Southwest Boulevard, Suite 206
Fort Worth, Texas 76109
817-735-9770

WCG Project No. 0120-809-11-05

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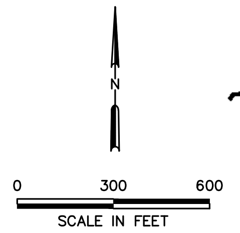

NEVZAT TURAN
84059
02/28/2025

LEGEND

— · — · —	PROPOSED PERMIT BOUNDARY
— — —	PROPOSED LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
3300	EXISTING CONTOUR
3280	TOP OF LINER CONTOUR
— —	SECTOR BOUNDARY
◄ ◄	LEACHATE COLLECTION PIPE
■	LEACHATE COLLECTION SUMP
—●	LEACHATE RISER PIPE
✚ MW-1	PROPOSED OBSERVATION/GROUNDWATER MONITORING WELL
⊙ GMP-5	PROPOSED LANDFILL GAS MONITORING PROBE
⊙ GMP-2	EXISTING LANDFILL GAS MONITORING PROBE
△	INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.
4. EXCAVATION SLOPES AND SLOPES OUTSIDE THE LIMIT OF WASTE (e.g., CHANNELS) ARE TYPICALLY 3H:1V.
5. REFER TO APPENDIX IIIC FOR LEACHATE STORAGE INFORMATION.
6. ELEVATION OF DEEPEST EXCAVATION AT THE LCS SUMP IS 3251.0 FT-MSL.
7. SEQUENCE OF SITE DEVELOPMENT IS PROVIDED IN PARTS I/II, APPENDIX I/IIA DRAWINGS I/IIA.4 THROUGH I/IIA.7.

LIST OF REVISIONS:

1. REVISED MONITORING WELL NETWORK.

SHEET IIIB-2A

☐ DRAFT
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DATE: 08/2024
FILE: 0120-809-11
CAD: FIG 1-1 TOP OF LINER PLAN.DWG

DRAWN BY: RAA
DESIGN BY: JPI
REVIEWED BY: NT

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

MAJOR PERMIT AMENDMENT
TOP OF LINER PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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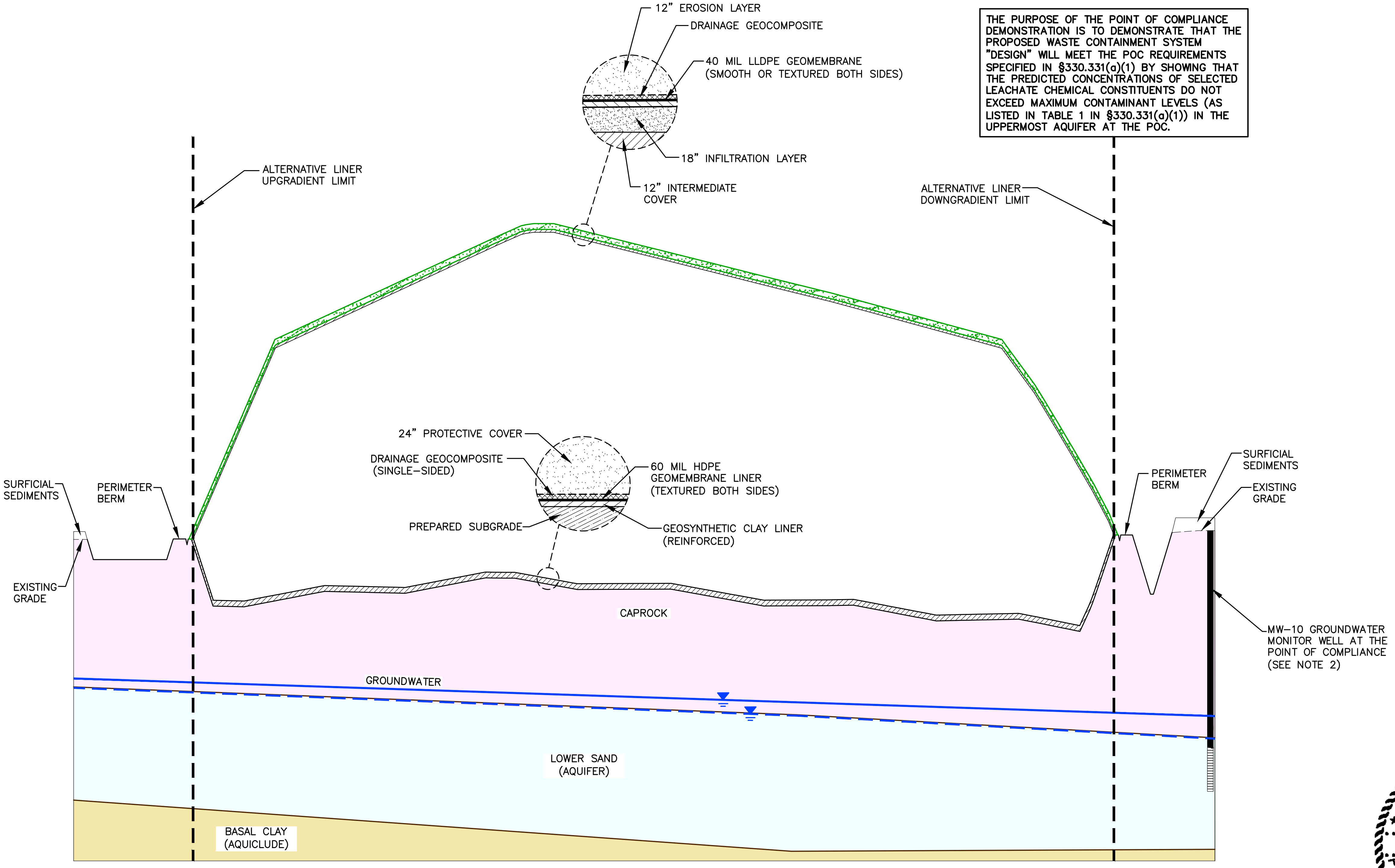
FIGURE 1-1

O:\0120\809\EXPANSION 2023\PART III\IIIB\FIG 1-1 TOP OF LINER PLAN.dwg, jwilson, 1:2



THE PURPOSE OF THE POINT OF COMPLIANCE DEMONSTRATION IS TO DEMONSTRATE THAT THE PROPOSED WASTE CONTAINMENT SYSTEM "DESIGN" WILL MEET THE POC REQUIREMENTS SPECIFIED IN §330.331(a)(1) BY SHOWING THAT THE PREDICTED CONCENTRATIONS OF SELECTED LEACHATE CHEMICAL CONSTITUENTS DO NOT EXCEED MAXIMUM CONTAMINANT LEVELS (AS LISTED IN TABLE 1 IN §330.331(a)(1)) IN THE UPPERMOST AQUIFER AT THE POC.

NOTES:

1. TYPICAL GEOLOGIC PROFILE DEVELOPED FROM CROSS-SECTIONS INCLUDED IN APPENDIX IIIG.
2. THE MODEL IS DEVELOPED CONSERVATIVELY USING THE DOWNGRADIENT MONITORING WELL THAT IS CLOSEST TO THE LIMIT OF WASTE AND THE LARGEST TWO-DIMENSIONAL WASTE FILL AREA (I.E., LONGEST DISTANCE LEACHATE BETWEEN THE UPGRADIENT AND DOWNGRADIENT LIMIT OF WASTE).
3. GROUNDWATER ELEVATIONS MEASURED BY WCG IN APRIL 2024 AND POSTED BY MEASUREMENT LOCATIONS IN FT-MSL. GROUNDWATER CONTOURS INTERPOLATED BETWEEN MEASUREMENT LOCATIONS. ACTUAL GROUNDWATER ELEVATIONS MAY VARY FROM THOSE ILLUSTRATED IN THIS FIGURE.
4. DUE TO THE CONFINED NATURE OF THE AQUIFER ACROSS THE SITE, THE MODELED GROUNDWATER SURFACE REPRESENTS THE EXPECTED FLOW OF GROUNDWATER BETWEEN THE BASAL CLAY AQUICLUDE AND THE CAPROCK. △1

LEGEND

— — —	LIMITS OF WASTE
——▼——	APPROXIMATE GROUNDWATER POTENTIOMETRIC SURFACE (SEE NOTE 3)
— —▼— —	MODELED GROUNDWATER SURFACE (SEE NOTE 4)
△1	INDICATES REVISION (SEE LIST OF REVISIONS)

LIST OF REVISIONS:

1. UPDATED NOTE 4.

TYPICAL SECTION A

0 200 400
HORIZONTAL SCALE IN FEET

0 20 40
VERTICAL SCALE IN FEET

SHEET IIIB-2B

NEVZAT TURAN
84059
02/28/2025

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DATE: 08/2024
FILE: 0120-809-11
CAD: FIG 1-2 WASTE CONTAINMENT.DWG

DRAWN BY: SRF
DESIGN BY: JPI
REVIEWED BY: NT

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

MAJOR PERMIT AMENDMENT
WASTE CONTAINMENT SYSTEM
ALTERNATIVE LINER

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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FIGURE 1-2

O:\0120\809\EXPANSION 2023\PART III\IIIB\FIG 1-2 WASTE CONTAINMENT.dwg, jwilson, 1:2

Table 2-1
Chemical Constituent MCLs and Current Groundwater Conditions

Constituent	MCL Listed in §330.331(a)(1) (mg/l)	Site Groundwater Concentrations[1] (mg/l)
Arsenic	0.05	0.0476
Barium	1.0	0.415
Benzene[2]	0.005	0.0005
Cadmium[2]	0.01	0.001
Carbon tetrachloride[2]	0.005	0.0025
Chromium (hexavalent)[2]	0.05	0.01
2,4-Dichlorophenoxy acetic acid	0.1	--
1,4-Dichlorobenzene[2]	0.075	0.001
1,2-Dichloroethane[2]	0.005	0.0005
1,1-Dichloroethylene	0.007	--
Endrin	0.0002	--
Fluoride	4	--
Lindane	0.004	--
Lead[2]	0.05	0.0284
Mercury	0.002	--
Methoxychlor	0.1	--
Nitrate	10	--
Selenium[2]	0.01	0.005
Silver[2]	0.05	0.005
Toxaphene	0.005	--
1,1,1-Trichloroethane	0.2	0.0005
Trichloroethylene[2]	0.005	--
2,4,5-Trichlorophenoxy acetic acid	0.01	--
Vinyl Chloride[2]	0.002	0.001

[1] Current Groundwater concentrations are reproduced from analytical testing performed in April 2023 by WCG within the uppermost aquifer. Refer to Section 2.2 for more information on the uppermost aquifer.

[2] For constituents not detected at reporting limits, one-half of the reporting limit is listed.

ignores travel time, absorption, and consumption of water that occurs within the in-situ subsurface soils. The in-situ caprock stratum is comprised of loose to very dense caliche with low hydraulic conductivity that is expected to allow no recharge to the uppermost aquifer. Therefore, no recharge was modeled for the offsite areas. It is assumed that no recharge occurs in Zone II (i.e., perimeter berm), located between the groundwater recharge zone and the limits of waste. The percolation zones are summarized in Table 3-1.

Table 3-1
Summary of Percolation Zones

Percolation Zone	Description
Zone I (Alternative Liner Area)	This percolation zone models the impact of percolation through the alternative liner system.
Zone II (Perimeter Berm)	This percolation zone represents the perimeter berm area. The berm is considered well-drained where no recharge occurs.
Zone III (Offsite Area)	This percolation zone models the in-situ soils offsite. The in-situ soils (caprock stratum) is classified as loose to very dense caliche where no recharge is expected to occur.

3.1.2 Sequence of Site Development

As shown on Figure 3-2, the alternative liner area is expected to receive waste between 2025 and 2121. Therefore, three timeframes are considered: (1) the active case, which represents the time period beginning when waste is first placed and is expected to last 1 year, (2) the interim case, which represents the time period between the active case until final cover is installed and is expected to last ~~97~~96 years, and (3) the closed case, which represents the period after final cover is placed and is modeled for 30 years. Sequencing plans for the site are presented in Appendix I/IIA.

3.2 HELP Model Demonstration

3.2.1 HELP Model

The Hydrologic Evaluation of Landfill Performance (HELP) Model, Version 3.07, is a quasi-two-dimensional hydrologic model of water movement across, into, through, and out of the landfill. The model uses climate, soil, and landfill design data to perform a solution technique that accounts for the effects of surface storage, run-off, infiltration, percolation, soil moisture storage, evapotranspiration, and lateral drainage. The HELP Model was used to estimate the rate of percolation through the alternative liner system. The percolation rate was determined for various landfill configurations, as discussed in Section 3.2.2.

Fate and Transport Output

Fate and transport results and outputs are discussed in Section 4. The MT3DMS fate and transport modeling was performed for a period of 127 years (1 year active, 97 years interim, and 30 years closed landfill condition). The resulting DAF contours represent the ratio of dilution factor of 260 to represent the extent of 260 DAF contours, which stands for the minimum acceptable DAF value. The DAF contours are the result of attenuation of constituents due to (1) advective flow and (2) dispersion of constituents in the groundwater.

3.4.4 Parameter Selection

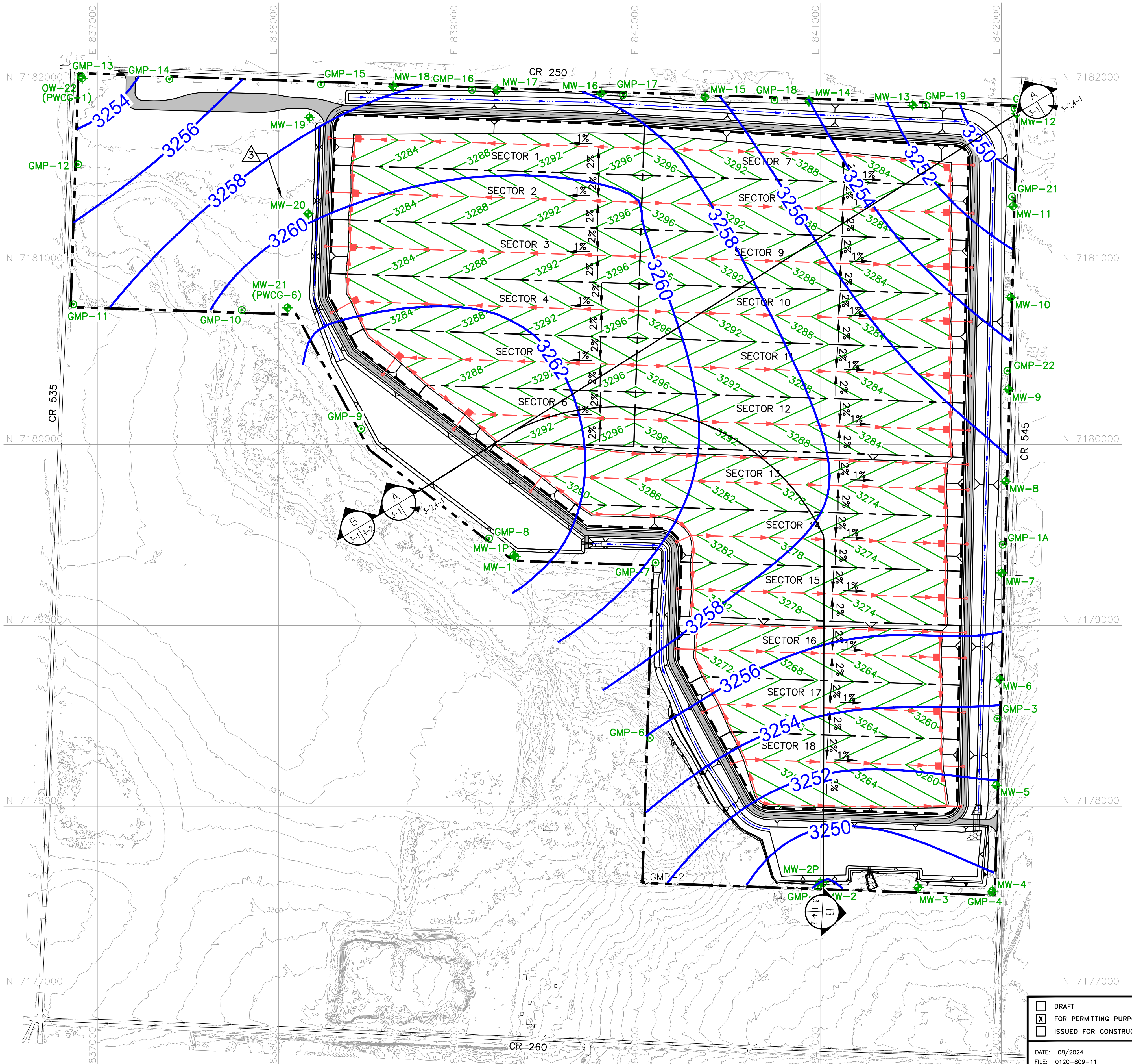
The following summarizes the model input key parameters.

- **Landfill Area Modeled.** The entire alternative liner area is modeled in the two-dimensional MODFLOW simulations as a section.
- **Time Frame.** The alternative liner area is expected to be in the active and interim condition (i.e., without final cover) for approximately 97 years. The modeling is performed for the duration from the initial placement of waste on the alternative liner area (starting the year of 2025 as shown on Figure 3-2) to the closure of the site, the year 2121 (final postclosure year 2151).
- **Percolation Rates.** The percolation rates were estimated as discussed in Section 3.3.
- **Subsurface Information.** The site geology and hydrogeology information is reproduced from Appendix IIIG. The key MODFLOW input parameters are listed in Table 3-4.
- **Groundwater.** Starting groundwater contours have been obtained from the groundwater contours generated based on the groundwater measurements obtained from the site on April 2024. The groundwater gradients for Sections A and B were selected using the groundwater contours ~~as~~ presented on Figure 3-1.

Table 3-4
MODFLOW Model Input Parameters

Layer	Maximum Hydraulic Conductivity (cm/s)[1]		Specific Storage (1/ft)[2]	Specific Yield[3]	Effective Porosity[1]	Total Porosity[3]
Lower Sand Layer	$K_{x,y}$	1.08x10^{-3}	3.28x10^{-5}	.30	.30	.45
	K_z	2.80X10^{-3}				

[1] Maximum hydraulic conductivity and effective values for subsurface soils obtained from Appendix IIIG.
[2] Specific storage values for subsurface soils obtained from Domenico and Mifflin (1965).
[3] Specific yield and total porosity values for subsurface soils obtained from the Morrison and Johnson (1967).



SHEET IIIB-15A

GROUNDWATER GRADIENT	
SECTION A	0.0031
SECTION B	0.0033

2

0 300 600
SCALE IN FEET

N

STATE OF TEXAS
NEVZAT TURAN
84059
LICENSED PROFESSIONAL ENGINEER
02/28/2025

LEGEND

— · — · —	PROPOSED PERMIT BOUNDARY
— — —	PROPOSED LIMIT OF WASTE
N 7180000 ———	STATE PLANE COORDINATE SYSTEM
—— 3300 ——	EXISTING CONTOUR
—— 3280 ——	TOP OF LINER CONTOUR
—— – ——	SECTOR BOUNDARY
— ◄ — ◄ —	LEACHATE COLLECTION PIPE
■	LEACHATE COLLECTION SUMP
——●	LEACHATE RISER PIPE
✦ MW-1	PROPOSED OBSERVATION/GROUNDWATER MONITORING WELL
⊙ GMP-5	PROPOSED LANDFILL GAS MONITORING PROBE
⊙ GMP-2	EXISTING LANDFILL GAS MONITORING PROBE
—— 3260 ——	GROUNDWATER POTENTIOMETRIC SURFACE CONTOUR IN FT-MSL
△	INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.
4. EXCAVATION SLOPES AND SLOPES OUTSIDE THE LIMIT OF WASTE (e.g., CHANNELS) ARE TYPICALLY 3H:1V.
5. REFER TO APPENDIX IIIC FOR LEACHATE STORAGE INFORMATION.
6. ELEVATION OF DEEPEST EXCAVATION AT THE LCS SUMP IS 3251.0 FT-MSL.
7. SEQUENCE OF SITE DEVELOPMENT IS PROVIDED IN PARTS I/II, APPENDIX I/IIA DRAWINGS I/IIA.4 THROUGH I/IIA.7.
8. GROUNDWATER POTENTIOMETRIC SURFACE CONTOURS ARE INTERPOLATED BETWEEN MEASUREMENT LOCATIONS; ACTUAL CONDITIONS MAY VARY.
9. GROUNDWATER ELEVATIONS MEASURED BY WCG IN APRIL 2024 AND POSTED BY MEASUREMENT LOCATIONS IN FT-MSL. GROUNDWATER CONTOURS INTERPOLATED BETWEEN MEASUREMENT LOCATIONS. ACTUAL GROUNDWATER ELEVATIONS MAY VARY FROM THOSE ILLUSTRATED IN THIS FIGURE.

LIST OF REVISIONS:

1. UPDATED SHEET NUMBER.
2. ADDED GROUNDWATER GRADIENT TABLE.
3. REVISED MONITORING WELL NETWORK.

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DATE: 08/2024
FILE: 0120-809-11
CAD: FIG 3-1 GROUNDWATER CONTOUR.DWG

DRAWN BY: RAA
DESIGN BY: JPI
REVIEWED BY: NT

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

MAJOR PERMIT AMENDMENT
APRIL 2024
GROUNDWATER CONTOUR MAP

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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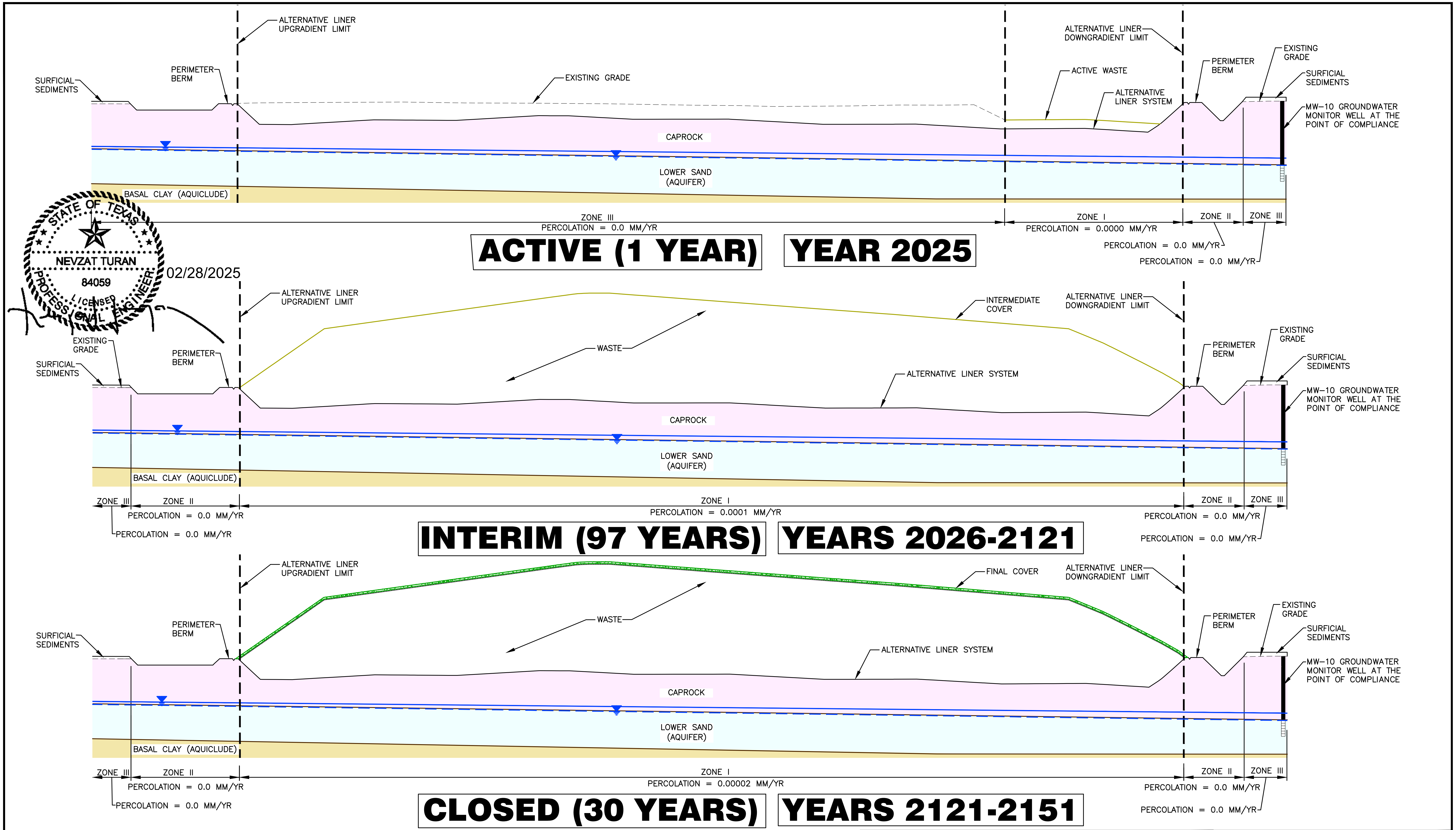
FIGURE 3-1

O:\0120\809\EXPANSION 2023\PART III\IIIB\FIG 3-1 GROUNDWATER CONTOUR MAP.dwg, jwilson, 1:2



NEVZAT TURAN
84059
02/28/2025

△ INDICATES REVISION
(SEE LIST OF REVISIONS)

LIST OF REVISIONS:
1. UPDATED SHEET NUMBER.

LEGEND
- — — — LIMITS OF WASTE
- APPROXIMATE GROUNDWATER POTENTIOMETRIC SURFACE
- MODELED GROUNDWATER SURFACE

SECTION A
A
3-1|3-2

0 150 300
HORIZONTAL SCALE IN FEET

0 50 100
VERTICAL SCALE IN FEET

△1
SHEET IIIB-15B

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DATE: 08/2024
FILE: 0120-809-11
CAD: FIG 3-2-SECTION A.DWG

DRAWN BY: SRF
DESIGN BY: JPI
REVIEWED BY: NT

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISIONS

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TBPE REGISTRATION NO. F-3727

MAJOR PERMIT AMENDMENT
TYPICAL SEQUENCE OF EVENTS

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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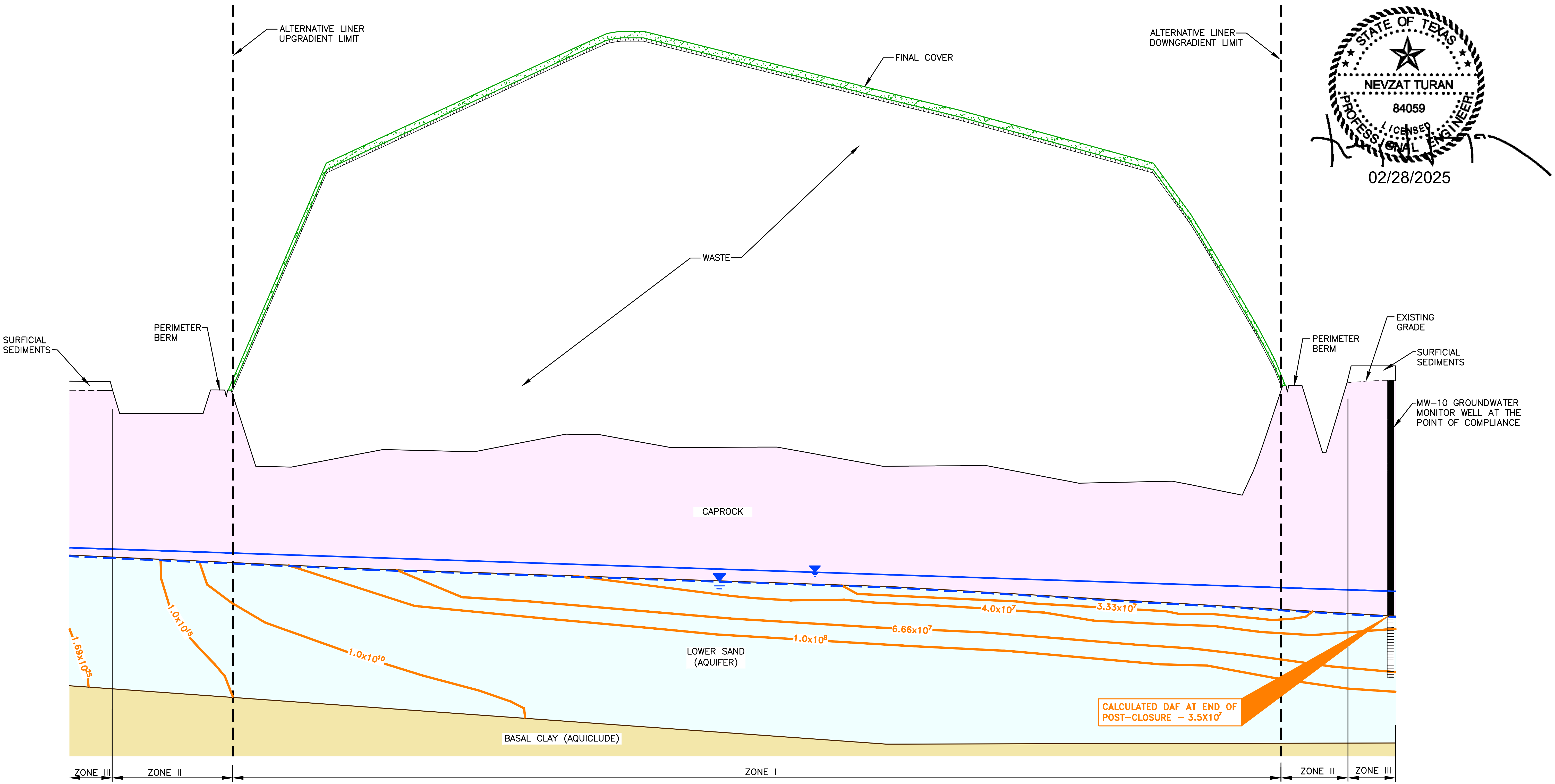
FIGURE 3-2

O:\0120\809\EXPANSION 2023\PART III\IIIB\FIG 3-2 SECTION A.dwg, jwilson, 1:2



NEVZAT TURAN
84059
02/28/2025

NOTES:

1. TYPICAL GEOLOGIC PROFILE DEVELOPED FROM CROSS–SECTIONS INCLUDED IN APPENDIX IIIG.
2. THE MODEL IS DEVELOPED CONSERVATIVELY USING THE DOWNGRADIENT MONITORING WELL THAT IS CLOSEST TO THE LIMIT OF WASTE AND THE LARGEST TWO–DIMENSIONAL WASTE FILL AREA (I.E., LONGEST DISTANCE LEACHATE BETWEEN THE UPGRADIENT AND DOWNGRADIENT LIMIT OF WASTE).
3. GROUNDWATER ELEVATIONS MEASURED BY WCG IN APRIL 2024 AND POSTED BY MEASUREMENT LOCATIONS IN FT–MSL. GROUNDWATER CONTOURS INTERPOLATED BETWEEN MEASUREMENT LOCATIONS. ACTUAL GROUNDWATER ELEVATIONS MAY VARY FROM THOSE ILLUSTRATED IN THIS FIGURE.
4. DUE TO THE CONFINED NATURE OF THE AQUIFER ACROSS THE SITE, THE MODELED GROUNDWATER SURFACE REPRESENTS THE EXPECTED FLOW OF GROUNDWATER BETWEEN THE BASAL CLAY AQUICLUDE AND THE CAPROCK. △1

LEGEND

— — — —	LIMITS OF WASTE
——▼——	APPROXIMATE GROUNDWATER POTENTIOMETRIC SURFACE (SEE NOTE 3)
— —▼— —	MODELED GROUNDWATER SURFACE (SEE NOTE 4)
—$1.0X10^{15}$—	DAF CONTOUR AT END OF POSTCLOSURE
△1	INDICATES REVISION (SEE LIST OF REVISIONS)

LIST OF REVISIONS:

1. UPDATED NOTE 4.

SECTION A

A 3–1 4–1

0 150 300

HORIZONTAL SCALE IN FEET

0 15 30

VERTICAL SCALE IN FEET

SHEET IIIB–19A

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DATE: 08/2024
FILE: 0120–809–11
CAD: FIG 4–1–SECTION A MODFLOW.DWG

DRAWN BY: SRF
DESIGN BY: JPI
REVIEWED BY: NT

Weaver Consultants Group
TBPE REGISTRATION NO. F–3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

MAJOR PERMIT AMENDMENT
MODFLOW RESULTS
SECTION A

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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FIGURE 4–1

O:\0120\809\EXPANSION 2023\PART III\IIIB\FIG 4–1 SECTION A MODFLOW RESULTS.dwg, jwilson, 1:2

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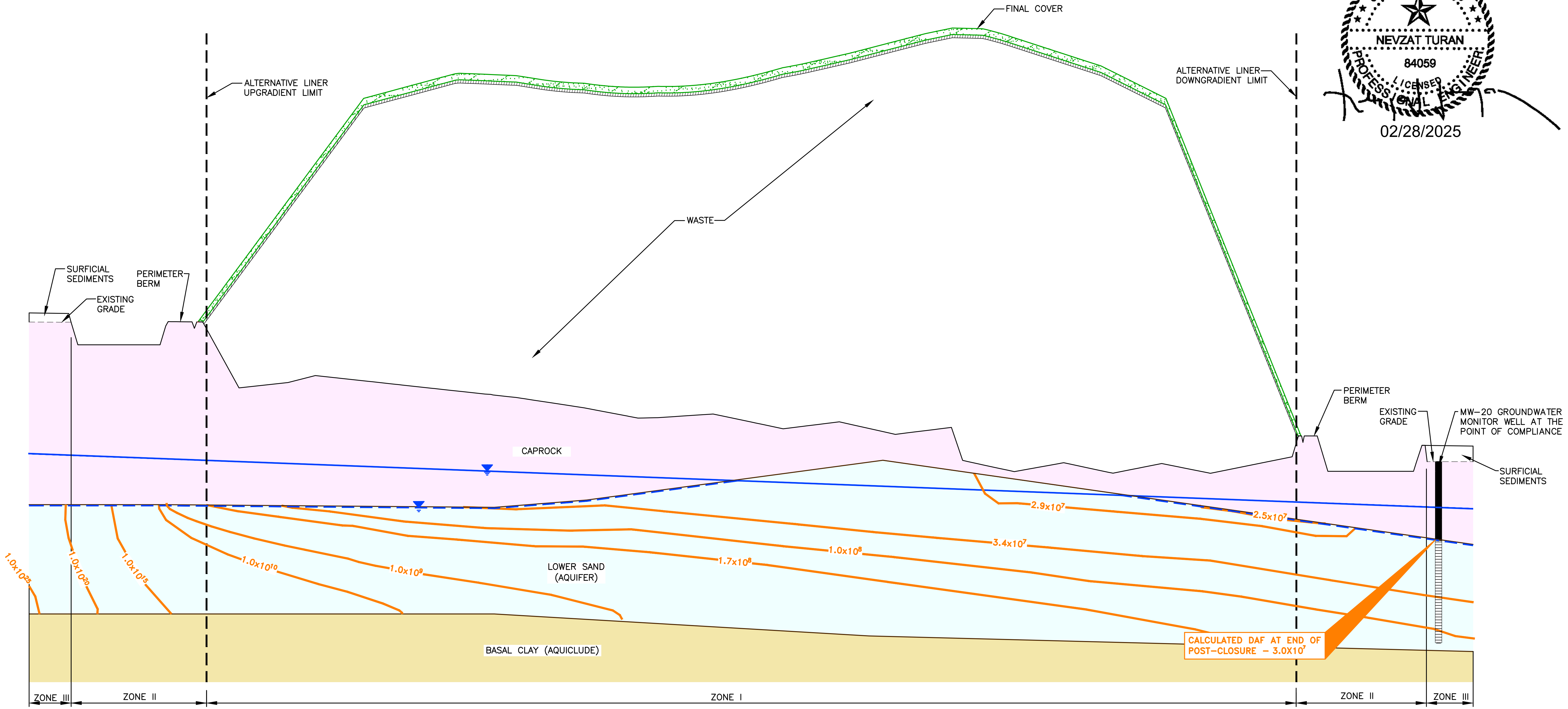
02/28/2025



SECTION B

B
3-1 4-2

0 150 300
HORIZONTAL SCALE IN FEET

0 15 30
VERTICAL SCALE IN FEET

NOTES:

1. TYPICAL GEOLOGIC PROFILE DEVELOPED FROM CROSS-SECTIONS INCLUDED IN APPENDIX IIIG.
2. THE MODEL IS DEVELOPED CONSERVATIVELY USING THE DOWNGRADIENT MONITORING WELL THAT IS CLOSEST TO THE LIMIT OF WASTE AND THE LARGEST TWO-DIMENSIONAL WASTE FILL AREA (I.E., LONGEST DISTANCE LEACHATE BETWEEN THE UPGRADIENT AND DOWNGRADIENT LIMIT OF WASTE).
3. GROUNDWATER ELEVATIONS MEASURED BY WCG IN APRIL 2024 AND POSTED BY MEASUREMENT LOCATIONS IN FT-MSL. GROUNDWATER CONTOURS INTERPOLATED BETWEEN MEASUREMENT LOCATIONS. ACTUAL GROUNDWATER ELEVATIONS MAY VARY FROM THOSE ILLUSTRATED IN THIS FIGURE.
4. DUE TO THE CONFINED NATURE OF THE AQUIFER ACROSS THE SITE, THE MODELED GROUNDWATER SURFACE REPRESENTS THE EXPECTED FLOW OF GROUNDWATER BETWEEN THE BASAL CLAY AQUICLUDE AND THE CAPROCK. △1

LEGEND

— — —	LIMITS OF WASTE
——▼——	APPROXIMATE GROUNDWATER POTENTIOMETRIC SURFACE (SEE NOTE 3)
— —▼— —	MODELED GROUNDWATER SURFACE (SEE NOTE 4)
—1.0X10^15—	DAF CONTOUR AT END OF POSTCLOSURE
△	INDICATES REVISION (SEE LIST OF REVISIONS)

LIST OF REVISIONS:

1. UPDATED NOTE 4.

SHEET IIIB-19B

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
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DATE: 08/2024
FILE: 0120-809-11
CAD: FIG 4-2-SECTION B MODFLOW.DWG

DRAWN BY: SRF
DESIGN BY: JPI
REVIEWED BY: NT

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

MAJOR PERMIT AMENDMENT
MODFLOW RESULTS
SECTION B

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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FIGURE 4-2

O:\0120\809\EXPANSION 2023\PART III\IIIB\FIG 4-2 SECTION B MODFLOW RESULTS.dwg, jwilson, 1:2

CITY OF MEADOW LANDFILL
TERRY COUNTY
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN
APPENDIX IIIC
LEACHATE AND CONTAMINATED WATER MANAGEMENT PLAN

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

NEVZAT TURAN
84059
02/28/2025

Prepared by

Weaver Consultants Group, LLC
TBPE Registration No. F-3727
6420 Southwest Blvd., Suite 206
Fort Worth, Texas 76109
817-735-9770

WCG Project No. 0120-809-11-05

This document is intended for permitting purposes only.

1 PURPOSE AND SCOPE

This appendix addresses §§330.305(g), 330.177, 330.207 and 330.333.

This Leachate and Contaminated Water Management Plan for the City of Meadow Landfill was prepared consistent with Title 30 Texas Administrative Code (TAC) §§330.305(c), 330.305(g), 330.177, 330.207, and 330.333. This plan provides the details of the collection, storage, and disposal of contaminated water, and leachate generated during the active and postclosure periods of the landfill.

The landfill will be developed with a Subtitle D liner system and the historic waste fill area will be relocated to Subtitle D lined areas. Refer to Section 4.25 of the Site Operating Plan for the waste relocation plan. The design details for the liner and final cover systems are included in Part III, Appendix IIIA-A – Liner and Final Cover System Details. The top of liner plan and landfill completion plan are also included in Part III, Appendix IIIA-A. Additionally, Figure 3-1 includes the top of liner plan showing the leachate collection system layout.

Leachate and contaminated water will be managed at the site in compliance with Title 30 TAC §330.55(b), including disposing of contaminated waters in a manner that does not cause surface water or groundwater contamination.

the diversion and containment berms required around the working face for a 25-year, 24-hour storm event are provided in Appendix IIIC-C.

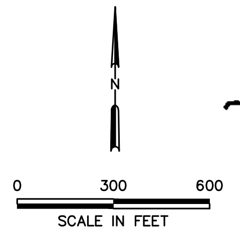
2.3 Stormwater Management

The City of Meadow Landfill will manage stormwater throughout the active life of the landfill to minimize the amount of stormwater that will come in contact with waste or leachate. Uncontaminated surface water will be controlled through the use of diversion berms and stormwater diversion ditches. To promote runoff and prevent ponding, the operational cover will be graded and maintained. The use of drainage swales, diversion berms, and the containment berm is illustrated in Parts I/II, Appendix I/IIA, Drawings I/IIA.4 through I/IIA.6 – Cell Development Plans.

Stormwater that comes into contact with waste will be considered contaminated water and handled consistent with Title 30 TAC §330.207. Contaminated water will be contained by the containment berm at the working face as shown in Appendix IIIC-C. At no time will contaminated water be allowed to discharge into waters of the United States nor will it be used for construction and/or operations (i.e., liner construction, dust control, etc.). Storage of contaminated water and its disposal are discussed in Sections 4 and 5 of this appendix, respectively.

The final cover has been designed to minimize infiltration and promote runoff. Uncontaminated surface water will be managed throughout the active life of the landfill to minimize infiltration into the filled areas and to minimize contact with solid waste. Also, daily and intermediate soil cover areas will be graded and maintained to promote runoff and prevent ponding as described in Part IV – Site Operating Plan (SOP).

Procedures for verifying the adequacy of daily cover placement to cover all waste material is discussed in Part IV – SOP, Section 4.18.2. Runoff generated from fill areas covered with a minimum 6 inches of earthen daily cover having no exposed waste or 12 inches of intermediate cover will be considered as uncontaminated and allowed to drain to the perimeter drainage system. In the event that the 6 inches of daily cover does not prevent stormwater from contacting solid waste or leachate, this stormwater will be collected and managed as contaminated and disposed of in an authorized manner. Uncontaminated surface water runoff will be diverted around the working face as shown in Appendix IIIC-C.



NEVZAT TURAN
84059
02/28/2025

LEGEND

	PROPOSED PERMIT BOUNDARY
	PROPOSED LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
3300	EXISTING CONTOUR
3280	TOP OF LINER CONTOUR
	SECTOR BOUNDARY
	LEACHATE COLLECTION PIPE
■	LEACHATE COLLECTION SUMP
	LEACHATE RISER PIPE
△1	INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.
4. ELEVATION OF DEEPEST EXCAVATION AT THE LCS SUMP IS 3250.0 FT-MSL. △1
5. REFER TO FIGURE 4-1 FOR THE LCS FORCEMAIN AND LCS STORAGE TANK INFORMATION.

LIST OF REVISIONS:

1. ADDED CALLOUT FOR EDE.
2. UPDATED CALLOUT DESCRIPTION.

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120-809-11
CAD: 3-1 LEACHATE COLLECTION.DWG

DRAWN BY: JDW
DESIGN BY: JPI
REVIEWED BY: NT

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

MAJOR PERMIT AMENDMENT LEACHATE COLLECTION SYSTEM PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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FIGURE 3-1

SHEET IIIC-10A

O:\0120\809\EXPANSION 2023\PART III\IIIC\3-1 LEACHATE COLLECTION.dwg, jwilson, 1:2

Table 4-1
Sump Flow and Pump Operating Times

Sump Storage Summary			
Condition	Sectors 1 through 18[1]		
	Flow (gpd)	Pump Operating Time (hours/day)	Pump Capacity (gpm)
	Average[2]	Average[2]	
Active	353.9	0.6	10
Interim	880.3	1.5	10
Closed	187.1	0.3	10

[1] Sumps draining the largest LCS layer areas are shown. Refer to Appendix IIIC-B, Sheet IIIC-B-38 – Sump Drainage Areas for Sector layout and areas draining to each sump.

[2] Refer to Appendix IIIC-B, page IIIC-B-34 for sump design calculations.

4.2 Contaminated Water Management

Contaminated water will be contained at the working face as shown in Appendix IIIC-C. A vacuum truck or similar vehicle will remove contaminated water from this area. Contaminated water will then be transported via tanker trucks to a properly permitted offsite wastewater treatment facility~~ or recirculated back into the landfill, as discussed in Section 5~~. Contaminated water may be stored in the leachate tank or evaporation ponds; however, comingled contaminated water and leachate will not be recirculated (refer to Section 5.2).

4.3 Onsite Storage Tank(s) and Evaporation Ponds

The proposed minimum 21,000-gallon leachate storage tank and evaporation ponds will provide enough storage capacity for the leachate expected to be generated at the site. Contaminated water and landfill gas condensate will also be stored in the leachate tank or evaporation ponds as discussed in Sections 5.3 and 5.4. The storage tank and evaporation ponds will be emptied, as required, to maintain capacity for the leachate currently generated at the site. The leachate level in the tank will be managed to provide a minimum of ~~2,500~~ 15,000 gallons of emergency backup storage capacity. The leachate level in the evaporation pond will be managed to provide a minimum of ~~1 foot~~ 2 feet of freeboard.

Leachate storage capacity calculations are provided in Appendix IIIC-D. The tank is equipped with a liquid-level sensor and a high-level alarm to prevent overfill. When the high level alarm is triggered, a light on the tank will start flashing, which will alert site personnel of the high level in the tank. Additionally, the alarm will activate an electronic signal that will be sent to the leachate sump pumps to shut them down until the issue is resolved. Site personnel will then take appropriate actions to reduce the leachate level in the tank. The storage tank will be emptied consistent with the leachate storage system operation plan detailed in Section 5.

The minimum 21,000-gallon tank will be dual contained or located within a secondary containment area consisting of a 2-foot-high (minimum) earthen berm. The design is sufficient to control and contain a worst case spill or release. As shown in Appendix IIIC-D, the design of the unenclosed containment area that surrounds the tank accounts for precipitation from the 25-year, 24-hour storm. Leachate spillage within the containment area, should it occur, will be ~~manually~~ pumped back into the storage tank, evaporation ponds, or transported by tanker trucks to a properly permitted wastewater treatment facility. In the event the leachate tank is damaged, the remaining leachate will be pumped into the evaporation ponds or transported by tanker trucks to a properly permitted wastewater treatment facility until the tank can be repaired.

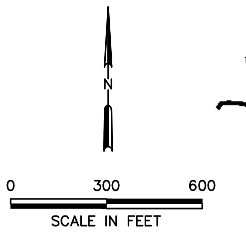
The evaporation ponds will be operated to maintain a minimum of 2 foot of freeboard. The limit of the maximum operating level (2 foot vertically down from the top of the pond) will be clearly marked with paint, or a bead of HDPE, or some other appropriate marking so that the operating level may be easily checked. The leachate level will be maintained at or below the maximum operating level. The level in the pond will be checked weekly and after rainfall events greater than four inches. If the leachate level exceeds the maximum operating level because of an excessive rainfall event, the pond content will be loaded into tanker trucks for off-site disposal or placed in the onsite leachate tank. The evaporation pond will be lined with a double liner system including geomembrane and geosynthetic clay composite liner using the same materials specified for the landfill liner and constructed in accordance with Appendix IIID – Liner Quality Control Plan. Design and calculations showing projected pond performance and design requirements are contained in Appendix IIID-D.

Table 4-2
Proposed Leachate Storage

Designation	Storage Capacity[1] (Total, gal)	Freeboard[2] (ft)	Overfill Protection	Construction	Dimensions	Secondary Containment Description	Leak Detection	Secondary Containment Capacity (gallons)	Discharge
Storage Tank L1[1]	Minimum 21,000 (total) 4,918 (working)	1	Yes, high level sensor within tank with actuated shutoff valve and visual alarm. Alarm set at or below freeboard height.	Single contained, dual contained or on concrete foundation. Closed top.	31-ft by 10-foot base 9-ft height	Dual contained tank or 2-foot-high containment berm	Visual inside secondary containment.	Minimum 21,000 (provides containment for working volume plus 1-ft freeboard)	Discharge by tanker truck
Evaporation Pond L2[2]	597,981 (working)	~~1~~2	Maximum operating level will be marked and checked weekly or after rainfall events greater than four inches.	Primary 60-mil HDPE geomembrane overlaying a primary geosynthetic clay liner (GCL) and a secondary 60-mil HDPE geomembrane overlaying a secondary GCL.	135 ft by 135 ft top 10-ft deep	Secondary Liner System	Visual	Minimum (provides containment for working volume plus ~~1~~2-ft freeboard)	Discharge by tanker truck
Evaporation Pond L3[2]	597,981 (working)	~~1~~2	Maximum operating level will be marked and checked weekly or after rainfall events greater than four inches.	Primary 60-mil HDPE geomembrane overlaying a primary geosynthetic clay liner (GCL) and a secondary 60-mil HDPE geomembrane overlaying a secondary GCL.	135 ft by 135 ft top 10-ft deep	Secondary Liner System	Visual	Minimum (provides containment for working volume plus ~~1~~2-ft freeboard)	Discharge by tanker truck

[1] Tank total storage capacity in table includes storage and freeboard volumes combined. Working storage capacity does not include freeboard storage.

[2] In all instances freeboard depth exceeds the 25-year, 24-hour storm event depth of 5.26 inches (reference: Appendix IIIC-C, Page IIIC-C-2).



NEVZAT TURAN
84059
02/28/2025

LEGEND

— · — · —	PROPOSED PERMIT BOUNDARY
— — —	PROPOSED LIMIT OF WASTE
N 7180000 ——	STATE PLANE COORDINATE SYSTEM
—3300—	EXISTING CONTOUR
—3280—	TOP OF LINER CONTOUR
—— — ——	SECTOR BOUNDARY
— ◄ — ◄ —	LEACHATE COLLECTION PIPE
■	LEACHATE COLLECTION SUMP
——●	LEACHATE RISER PIPE
– · – · –	PROPOSED FORCEMAIN
△	INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.

LIST OF REVISIONS:

1. UPDATED CALLOUT DESCRIPTION.

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120-809-11
CAD: 4-1 LEACHATE STORAGE.DWG

DRAWN BY: JDW
DESIGN BY: JPI
REVIEWED BY: KDG

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

MAJOR PERMIT AMENDMENT FORCEMAIN AND STORAGE TANK PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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FIGURE 4-1

SHEET IIIC-14A

O:\0120\809\EXPANSION 2023\PART III\IIIC\4-1 FORCEMAIN.dwg, jwilson, 1:2

5 LEACHATE AND CONTAMINATED WATER DISPOSAL

5.1 Leachate Storage System Operation and Disposal

Leachate that is generated at the site will be conveyed to the leachate collection sumps. Leachate levels in the sumps are measured and recorded to evaluate leachate production and fluctuations. A form to record leachate measurements is kept in the Site Operating Record and is used to evaluate the effectiveness of the leachate monitoring and control facilities. The depth of leachate in the sump will be monitored by the pressure transducer which will be calibrated to provide direct read-out of the leachate level in the sump (e.g., typically the leachate level is shown on a continuous digital display at the sump, as the pressure transducers provide a constant determination of the leachate levels in the sump). As noted in Part IV – SOP, Section 4.23, the leachate levels for each sump will be recorded in the Site Operating Record once per week at a minimum. Leachate will be pumped from the leachate sumps and transferred to the leachate storage tank or evaporation ponds via the forcemain (see Figure 4-1 for location).

The storage tank and evaporation pond capacity calculations are presented in Appendix IIIC-D. As noted in Appendix IIIC-D, the storage tank(s) will provide approximately 4 days of leachate storage and the evaporation ponds will provide approximately 222 days of leachate storage.

The collected leachate will be transported by tanker trucks to a properly permitted off-site wastewater treatment facility or recirculated back into the landfill (refer to Section 5.2). For leachate that is transferred to tanker trucks, sampling and analysis will be based on the disposal facility's requirements.

The leachate tank will be equipped with a liquid-level indicator. Leachate levels in the storage tanks will be controlled to prevent capacity exceedance. The leachate levels in the ponds will be monitored as discussed in Section 4.3 to prevent capacity exceedance. The quantity of leachate pumped from the system is also recorded on a monthly basis. This information is maintained in the Site Operating Record. When the high level alarm is triggered, a light on the tank will start flashing, which will alert site personnel of the high level in the tank. Additionally, the alarm will activate an electronic signal that will be sent to the leachate sump pumps to shut them down until the issue is resolved. Site personnel will then take appropriate actions (e.g., increase leachate discharge via pumping or tanker trucks) to reduce the leachate level in the tank.

- Refer to Part IV – SOP, Section 4.10 for additional information regarding the plan to be followed if odors due to leachate recirculation become an issue.

Contaminated stormwater will not be recirculated into the waste.

5.3 Contaminated Water Disposal

Contaminated water that collects behind the containment berm will be pumped into tanker trucks and transported to the leachate tank, evaporation ponds, or a properly permitted treatment facility. Contaminated water will be removed as soon as practicable from the area inside the containment berm (refer to Section 4.23 of the SOP for additional information and record keeping requirements). Contaminated water may also be transported to the leachate storage tank or evaporation ponds. When contaminated water is stored in the leachate storage tank or evaporation ponds, no leachate recirculation will occur, and a sign will be posted on the tank stating "No Recirculation." When the tank or pond containing the contaminated water is emptied, the sign will be removed.

5.4 Landfill Gas Condensate

Consistent with Title 30 TAC §330.177 and §330.207(e), landfill gas condensate will be pumped to the onsite leachate storage tank or evaporation ponds. It will then be handled and disposed of consistent with Section 5.1 or recirculated consistent with Section 5.2.

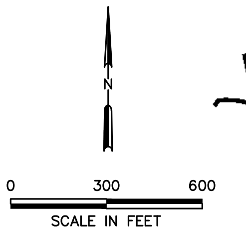
APPENDIX IIIC-B

LEACHATE COLLECTION SYSTEM DESIGN CALCULATIONS

NEVZAT TURAN
84059

02/28/2025

SECTOR SUMMARY	
SECTOR	AREA (ACRES)
SECTOR 1	10.9
SECTOR 2	11.8
SECTOR 3	11.8
SECTOR 4	11.6
SECTOR 5	10.2
SECTOR 6	7.4
SECTOR 7	10.0
SECTOR 8	12.4
SECTOR 9	12.4
SECTOR 10	12.5
SECTOR 11	12.5
SECTOR 12	12.5
SECTOR 13	18.5
SECTOR 14	12.3
SECTOR 15	10.7
SECTOR 16	11.8
SECTOR 17	9.8
SECTOR 18	11.5



NEVZAT TURAN
84059

02/28/2025

LEGEND

— · — · —	PROPOSED PERMIT BOUNDARY
— — —	PROPOSED LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
3300	EXISTING CONTOUR
3280	TOP OF LINER CONTOUR
— - —	SECTOR BOUNDARY
◄	LEACHATE COLLECTION PIPE
■	LEACHATE COLLECTION SUMP
●	LEACHATE RISER PIPE
△1	INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.

LIST OF REVISIONS:

1. UPDATED CALLOUT DESCRIPTION.

☐ DRAFT
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☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120-809-11
CAD: IIIC-B-39 SUMP DRAINAGE.DWG

DRAWN BY: JDW
DESIGN BY: JPI
REVIEWED BY: BPY

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS		
NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

MAJOR PERMIT AMENDMENT SUMP DRAINAGE AREAS

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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SHEET IIIC-B-38

O:\0120\809\EXPANSION 2023\PART III\IIIC\B\IIIC-B-38-SUMP DRAINAGE.dwg, jwilson, 1:2

APPENDIX IIIC-D

STORAGE TANK, EVAPORATION POND, AND FORCEMAIN CAPACITY CALCULATIONS

Includes pages IIIC-D-1 through IIIC-D-13

STATE OF TEXAS
NEVZAT TURAN
84059
LICENSED
PROFESSIONAL ENGINEER
02/28/2025

CITY OF MEADOW LANDFILL
0120-809-11-05
EVAPORATION POND CAPACITY CALCULATIONS

Required: Evaluate the evaporation pond to demonstrate the working capacity.

Method:

1. Calculate the working capacity of the evaporation pond.
2. Determine the leachate volume using predicted leachate generation values from the HELP model.

Solution:

1. **Calculate the working capacity of the evaporation pond.**

Each pond provides 2 feet of freeboard. The storage volume below elevation 3314 ft-msl is:

Containment Structure	Working Capacity [1] (ft^3)	Working Capacity [1] (gal)
Evaporation Pond L2	79,944	597,981
Evaporation Pond L3	79,944	597,981

[1] In all instances freeboard depth exceeds the 25-year, 24-hour storm event depth of 5.26 inches.

2. **Determine the leachate volume using predicted leachate generation values from the HELP model.**

Results from the HELP model in Appendix IIIC-A.

Sectors 1-18:

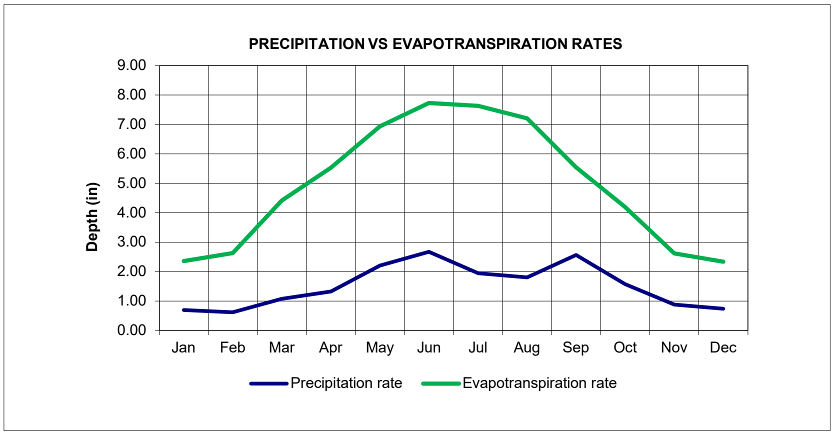
Condition	Average[1] cfy/ac	Average gpd/ac
Active, 10' Waste	0.0	0.0
Interim, 50' Waste	0.0	0.0
Interim, 100' Waste	1,287.5	26.4
Interim, 130' Waste	2,322.0	47.6
Closed, 130' Waste	493.5	10.1

[1] The leachate value is the sum of the leachate recirculated and the leachate collected for each condition, if applicable.

Assume the following fill scenarios:

Condition	Sectors 1 through 18	
	(ac)	(gpd)
Active, 10' Waste	14.0	0
Interim, 50 Waste	36.0	0
Interim, 100' Waste	76.6	2,021
Interim, 130' Waste	54.6	2,598
Closed	29.5	298
Total:	210.7	4,918

3. Evaluate rainfall and evapotranspiration rates for the site to determine the impact on the evaporation ponds.



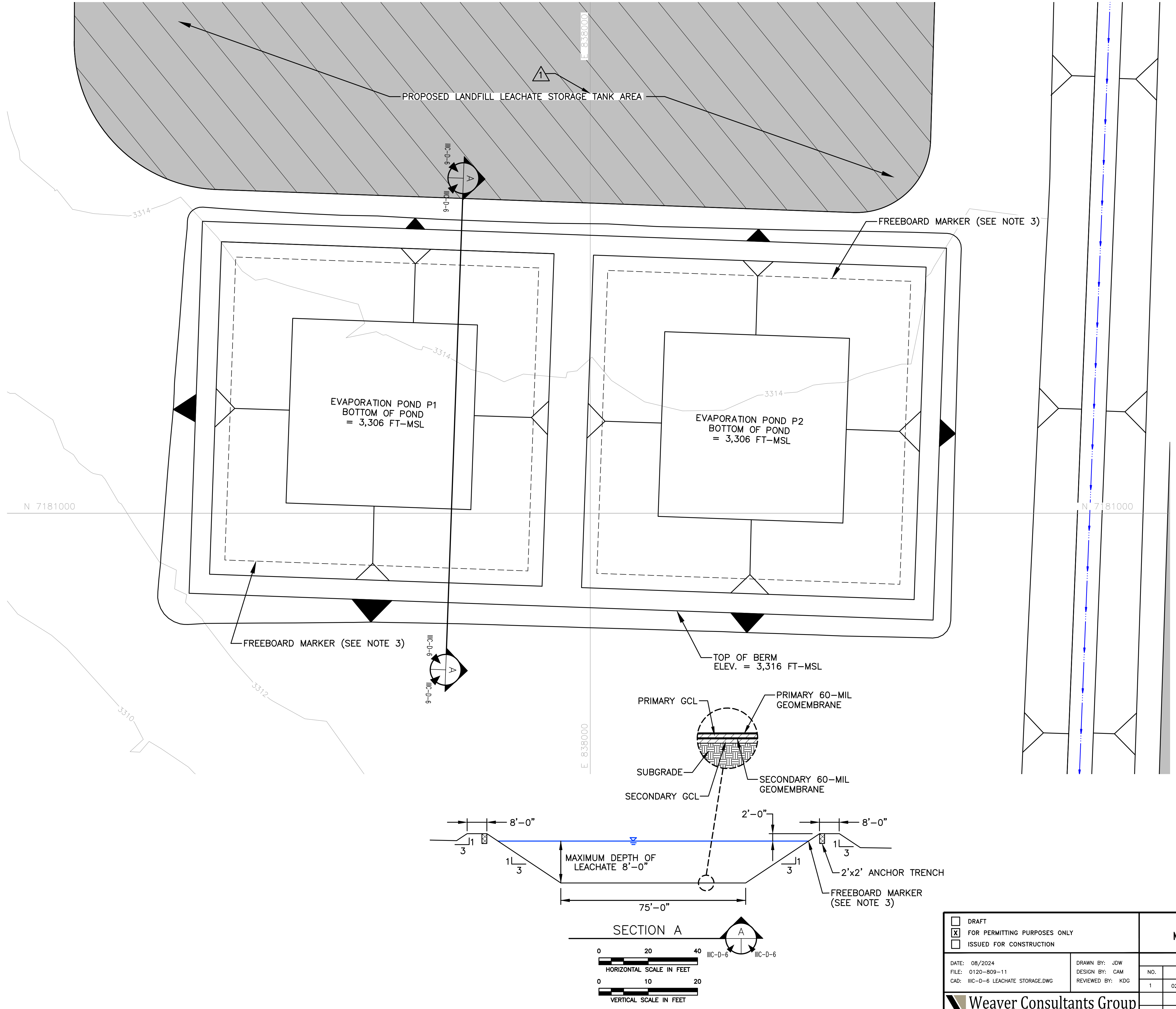
1 Mean monthly precipitation data from the National Oceanic Atmospheric Administration (NOAA) for the Brownfield #2, Texas weather station were used to determine the monthly precipitation rate.
2 Average monthly evapotranspiration data from the Texas A&M AgriLife Extension for the Lubbock Texas weather station was used to determine the monthly net evapotranspiration rate.

As shown on the table above, the monthly evapotranspiration rate is greater than the monthly precipitation rate for the site. Therefore, evaporation of leachate from the evaporation ponds will contribute to the sites leachate removal.

Conclusion:

Evaporation Pond Management Plan

Total Pond Working Capacity	Leachate Generation (gpd)	Management Plan
2 - 597,981 gallon ponds (1,195,962 total)	4,918	The 2 - 597,981 gallon evaporation ponds provides approximately 243 days of storage (121.5 days each). Leachate will be discharged in accordance with Section 5.1 of Appendix IIIC.



NEVZAT TURAN
84059
02/28/2025

N

0 20 40
SCALE IN FEET

LEGEND

N 7180000 ———	STATE PLANE COORDINATE SYSTEM
—— 3300 ——	EXISTING CONTOUR
—·—·—	CHANNEL CENTERLINE
△1	INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. REFER TO LEACHATE POND CAPACITY CALCULATIONS FOR STORAGE INFORMATION.
3. 2 FEET VERTICALLY DOWN FROM THE TOP OF THE POND WILL BE CLEARLY MARKED WITH PAINT, OR A BEAD OF HDPE, OR SOME OTHER APPROPRIATE MARKING.
4. IN ALL INSTANCES FREEBOARD DEPTHS EXCEED THE 25-YEAR, 24-HOUR STORM EVENT DEPTH OF 5.26 INCHES.

LIST OF REVISIONS:

1. REVISED CALLOUT DESCRIPTION.

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120-809-11
CAD: IIIC-D-6 LEACHATE STORAGE.DWG

DRAWN BY: JDW
DESIGN BY: CAM
REVIEWED BY: KDG

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISIONS

MAJOR PERMIT AMENDMENT
EVAPORATION POND DETAILS

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

SHEET IIIC-D-6

O:\0120\809\EXPANSION 2023\PART III\IIIC\D\D-6 Leachate Storage Pond.dwg, jwilson, 1:2

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN
APPENDIX IIID
LINER QUALITY CONTROL PLAN

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

KYLE D. GOULD
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02/28/2025

Prepared by

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WCG Project No. 0120-809-11-05

This document intended for permitting purposes only.

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1 INTRODUCTION

1.1 Purpose

This appendix addresses §330.63(d)(4)(G), §330.337, §330.339, and §330.341.

This Liner Quality Control Plan (LQCP) has been prepared to provide the Operator, Design Engineer, Construction Quality Assurance Professional of Record, and the Contractor the means to govern the construction quality and to satisfy the environmental protection requirements under current Texas Commission on Environmental Quality (TCEQ) Municipal Solid Waste Rules (MSWR), including the most up-to-date regulatory guidance. More specifically, the LQCP addresses the soil and geosynthetic components of the liner system. The provisions of this LQCP were developed based on the latest technical guidelines of the TCEQ, including quality control of construction, testing frequencies and procedures, and quality assurance of sampling and testing procedures.

This LQCP is divided into the following parts:

- Section 1 – Introduction
- Section 2 – Construction Quality Assurance for Earthwork and Drainage Aggregates
- Section 3 – Construction Quality Assurance for Geosynthetics
- Section 4 – Construction Quality Assurance for Geosynthetic Clay Liner
- Section 5 – Construction Quality Assurance for Piping
- Section 6 – Geotechnical Strength Testing Requirements
- Section 7 – Documentation

1.2 Definitions

Whenever the terms listed below are used, the intent and meaning will be interpreted as indicated.

Surveying will be performed to verify that the finished subgrade is to the lines and grades specified in design with a vertical tolerance of -0.2 feet to +0.0 feet to ensure that the soil liner will achieve a 2-foot minimum thickness. The surface slope of the top layer of composite liner will conform to the slope requirements of the leachate collection layer.

2.3.2 Soil Liner

The soil liner will consist of a minimum 2-foot-thick compacted clay liner (measured perpendicular to the subgrade surface) that will extend along the floor and side slopes of the landfill. The soil liner will be constructed in continuous, single, compacted lifts (6 inches thick) parallel to the floor and sideslope subgrades. A GCL may be used in lieu of the 2-foot-thick compacted clay liner. Details depicting the liner system are included in Appendix IIIA – Landfill Unit Design Information.

2.3.2.1 Soil Borrow Material

Adequate soil liner material will be available from proposed landfill excavations and/or on-site or off-site borrow sources. The liner soil will be free of debris, rock greater than 1 inch in diameter, vegetative matter, frozen materials, foreign objects, and organics. Laboratory tests will verify that materials are adequate to meet the compacted clay liner requirements listed in §330.339(c)(5) prior to liner construction.

Soils used in soil liners will have the following minimum values verified by testing in a soil laboratory prior to liner construction.

Table 2-1
Required Borrow Soil Properties

Test[1]	Specification
Coefficient of Permeability (Remolded Sample)[2]	1.0x10^{-7} cm/s or less
Plasticity Index	15 minimum
Liquid Limit	30 minimum
Percent Passing No. 200 Mesh Sieve	30 minimum
Percent Passing 1-inch Sieve	100

[1] Testing will be performed in accordance with the test methods and frequencies included in Section 2.4.

[2] The coefficient of permeability for remolded sample is run at a minimum of 95% of the maximum dry density at or above the optimum moisture content.

Representative preliminary sampling and testing will be performed on on-site soils to be used as liner material or on off-site borrow source material. The CQA monitor, Earthwork Contractor, and/or Operator will identify the clay material in on-site stockpiles or during excavation, and the clay material will be stockpiled separately, if stockpiling is required. Prior to construction of each new cell, conformance tests that include liquid limit, plasticity index, percent passing the No. 200 and 1-inch sieves, Standard Proctor (ASTM D 698) compaction test, and coefficient of

2.3.7 Surface Water Removal

The excavation may encounter water from storm events or groundwater. Soil liner will not be placed in standing water. The excavation area will therefore have a temporary sump area to collect water entering the excavation and be graded to allow drainage at planned areas. Portable pumps will be on site to dewater the sumps. Temporary earthen berms will be constructed to divert surface flow away from the excavation. Surface water that accumulates on the constructed soil liner or geosynthetics surface will be removed promptly after the end of a rainfall event. POR will inspect and approve the constructed area that received rainfall prior to placement of the overlying liner system component. The criteria for approval of the finished surface of the soil liner for geomembrane placement will follow the requirements of Section 3.3.3 and for geocomposite placement on top of geomembrane will follow the requirements of Section 3.5.3. Surface water from the site will be discharged per the site's TPDES permit requirement. Additional direction regarding addressing groundwater seepage observed at the excavation grades during cell construction is provided in Appendix IIIE, Section 4.3 – Landfill Excavation.

2.3.8 Liner Tie-In Construction

Newly constructed liners will be tied-in with any adjoining existing liners. Additionally, terminations will be constructed for future tie-ins along edges where the liner will be extended in the future. The tie-ins with existing clay liners will be constructed utilizing a sloped transition a minimum of 10 feet wide for the 2-foot-thick clay liner. Terminations for future tie-ins will be constructed by extending the clay liner approximately 10 feet past the limits for the cell under construction. The liner tie-in details are shown in Appendix IIIA – Landfill Unit Design Information. Waste and intermediate cover will not be deposited closer than 10 feet to the edge of any cell or 20 feet from the leading edge of a constructed clay liner (whichever is greater) where a future tie-in will be constructed. Red-colored markers (i.e., SLER markers) will be placed along the limits of the cells with constructed clay liners and tied to the site grid system in accordance with Title 30 TAC §330.143(b)(1).

2.4 Construction Testing

2.4.1 Standard Operating Procedures

Qualified CQA monitors will perform field and laboratory tests in accordance with applicable standards specified in this LQCP. All quality control testing and evaluation of soil liners will be performed during construction of the liner and must be complete before placement of the leachate collection system, except for the testing required for the final constructed lift, verification of liner thickness, or cover material thickness. Standard operating and test procedures will be utilized per the POR's direction. Sampling from the constructed soil liner lifts will be performed in accordance with ASTM D 1587. The sampling holes (e.g., samples for coefficient of

2.4.2 Test Frequencies

This LQCP establishes the minimum test frequencies for the soil liner construction quality assurance. The test frequencies for soil liner are listed in Table 2-2. Additional testing must be conducted whenever work or materials are suspect, marginal, or of poor quality. Additional testing may also be performed to provide additional data for engineering evaluation. The minimum number of tests is interpreted to mean minimum number of passing tests, and any tests that do not meet the requirements will not contribute to the total number of tests performed to satisfy the minimum test frequency.

Table 2-2
Required Tests and Observations on Soil Liner

Parameter	Frequency	Test Method	Passing Criteria
Field Density and Moisture	1 each per 8,000 SF per 6-inch parallel lift	ASTM D 6938 and ASTM D 2216[1]	95% Maximum Standard Proctor Dry Density. Standard Proctor optimum moisture content or greater determined during preconstruction testing.
Sieve Analysis (passing no. 200 and 1-inch)	1 test per 100,000 square feet per 6-inch parallel lift, with a minimum of 1 test per 6-inch lift	ASTM D 1140	30 percent minimum (#200) 100 percent minimum (1-inch)
Atterberg Limits	1 test per 100,000 square feet per 6-inch parallel lift, with a minimum of 1 test per 6-inch lift	ASTM D 4318	PI = 15 percent minimum LL = 30 percent minimum
Coefficient Permeability (Hydraulic Conductivity)[2, 3]	1 test per 100,000 square feet per 6-inch parallel lift, with a minimum of 1 test per 6-inch lift	ASTM D 5084 (Constant head with back pressure ~~(Falling head~~, flex wall), or Corps of Engineers EM 1110-2-1906, Appendix VII (Falling head permeameter)	1.0x10^{-7} cm/s or less
Thickness Verification	1 each 5,000 square feet with a minimum of 2 reference points by a qualified surveyor	Survey subgrade and top of soil liner and protective cover layer	2 feet minimum compacted soil liner thickness and 2 feet minimum protective cover thickness

[1] This method is not applicable if the field nuclear gauge reads both density and moisture.

[2] Field permeability testing performed in accordance with Title 30 TAC §330.339(c)(7), may be performed to augment this testing program if a permit modification is submitted and approved by the TCEQ.

[3] Permeability tests shall be run using tap water or 0.05 Normal (N) solution of calcium sulfate (CaSO4) and not distilled water.

2.4.3 Soil Liner Testing

CQA testing of the soil liner will be performed as the liner is being constructed. Sections of compacted soil liner which do not pass both the density and moisture requirements will be reworked with additional passes of the compactor until the section in question passes. All field density and moisture test results will be incorporated into the SLER.

Shear strength (lb/in)	120 (90 for Textured)
Shear elongation at break (%)	50
Peel strength (lb/in)	91 (78 Extrusion Weld) & FTB
Peel separation (%)	25

A passing extrusion or fusion welded seam will be achieved in peel when:

- Yield strength for all 5 specimens (10 tests for dual-track welds) is not less than the above minimum peel strength value (during FTB failure for all 5 specimens) and the average of all 5 specimens is not less than the minimum value.
- No greater than 25 percent of the seam width peels (separates) at any point for all 5 specimens (both inner and outer welds for dual-track welds).

A passing extrusion or fusion weld will be achieved in shear when:

- Yield strength for all 5 specimens is not less than the above minimum shear strength value and the average for all 5 specimens is not less than the minimum value.
- Break strain for all 5 specimens is at least 50 percent.

3.3.5 Repairs

Any portion of the geomembrane with a detected flaw, or which fails a nondestructive or destructive test, or where destructive tests were cut, or where nondestructive tests left cuts or holes, must be repaired in accordance with the specific liner construction specifications and consistent with all the applicable parts (e.g., material requirement, installation, testing, etc.) of this section. The CQA monitor must locate and record all repairs on the repair sheet and panel layout drawing. Repair techniques include the following:

- Patching – used to repair large holes, tears, large panel defects, undispersed raw materials, contamination by foreign matter, and destructive sample locations.
- Extrusion – used to repair small defects in the panels and seams. In general, this procedure will be used for defects less than -inch in the largest dimension.
- Capping – used to repair failed welds or to cover seams where welds or bonded sections cannot be nondestructively tested.
- Removal – used to replace areas with large defects where the preceding methods are not appropriate. Also used to remove excess material (wrinkles, fishmouths, intersections, etc.) from the installed geomembrane. Areas of removal will be patched or capped.

Geotextile Placement. During geotextile placement, the CQA monitor must:

- Observe the geotextile as it is deployed and record all defects and disposition of the defects (panel rejected, patch installed, etc.). Repairs are to be made in accordance with the specifications outlined in Section ~~3.5.4~~ 3.4.4.
- Observe that equipment used does not damage the geotextile by handling, equipment transit, leakage of hydrocarbons, or other means.
- Observe that people working on the geotextile do not smoke, wear shoes that could damage the geotextile, or engage in activities that could damage the geotextile.
- Observe that the geotextile is securely anchored or thermal bonded.
- Observe that the geotextiles are anchored to prevent movement by the wind.
- Observe that the panels are overlapped a minimum of six inches.
- Examine the geotextile after installation to ensure that no potentially harmful foreign objects are present.
- Observe that seams (where required) are continuously sewn or thermal bonded in accordance with the manufacturer's recommendations and the project specifications outlined in this LQCP.

The CQA monitor must inform both the contractor and POR if the above conditions are not met.

3.4.4 Repairs

Repair procedures include:

- Patching – used to repair large holes, tears, and large defects.
- Removal – used to replace areas with large defects where the preceding method is not appropriate.

Holes, tears, and defects must be repaired in the following manner. Soil or other material which may have penetrated the defect must be removed completely prior to repair. If located on a slope, the defect must be patched using the same type of geotextile and continuously seamed into place. Should any tear, hole, or defect exceed 30 percent of the width of the roll, the roll will be cut off and the defect removed or the roll removed and replaced. If the defect is not located on a slope, the patch must be made using the same type of material seamed into place with a minimum of 24 inches overlap in all directions. Seams will be either thermal bonded or sewn in accordance with the manufacturer's recommendations.

- The reports will be signed and stamped by a professional engineer(s) licensed to practice in the state of Texas.

The as-built record drawings will accurately identify the constructed location of all work items, including the piping and anchor trenches. The POR will review and verify that as-built drawings are correct. As-built drawings will be included in the SLER, GCLER, and GLER as appropriate.

7.2 Reporting Requirements

The SLER, GCLER, and GLER will be signed and sealed by the POR and signed by the Site Manager and submitted in triplicate (including all attachments) to the MSW Permits Section of the Waste Permits Division of the TCEQ for review and acceptance. If the Executive Director provides no response, either written or verbal, within 14 days of receipt, the owner or operator may continue facility construction or operation. Any notice of deficiency received from the TCEQ will be promptly addressed and incorporated into the SLER/GCLER/GLER report. No solid waste will be placed over the constructed liner areas until the final acceptance is obtained from the TCEQ. Additionally, upon approval of this application if a new liner area is developed, prior to accepting any solid waste to the newly developed liner area, a pre-opening inspection will be requested. The TCEQ staff will conduct a pre-opening inspection within 14 days of the request. If the TCEQ does not provide a written or verbal response 14 days after conducting the pre-opening inspection, the newly developed liner area will be considered acceptable for solid waste placement, given that the SLER, GCLER, and GLER for the area are also submitted to the TCEQ in accordance with this section.

Title 30 TAC §330.341(d) requires that any constructed soil liner left uncovered or unprotected for a period of 6 months or longer must be inspected by the POR, and a letter report of findings be submitted to the executive director. The regulation also requires that any repairs be performed promptly, and a new SLER be submitted for the constructed soil liner requiring repairs. These requirements will be observed during soil liner construction.

If a layer of waste is not placed over the top of the installed protective cover ~~in the dewatering system installation area~~ within 6 months, then the POR will visually observe that the liner is not damaged (e.g., excessive erosion) due to prolonged exposure of the surface of the protective cover. Repairs will be done promptly, and the POR will report findings and measures taken to repair damage in a letter report to the executive director for review and acceptance.

APPENDIX IIID-A

HIGHEST MEASURED GROUNDWATER INFORMATION

Includes Pages IIID-A-1 and IIID-A-2

STATE OF TEXAS
KYLE D. GOULD
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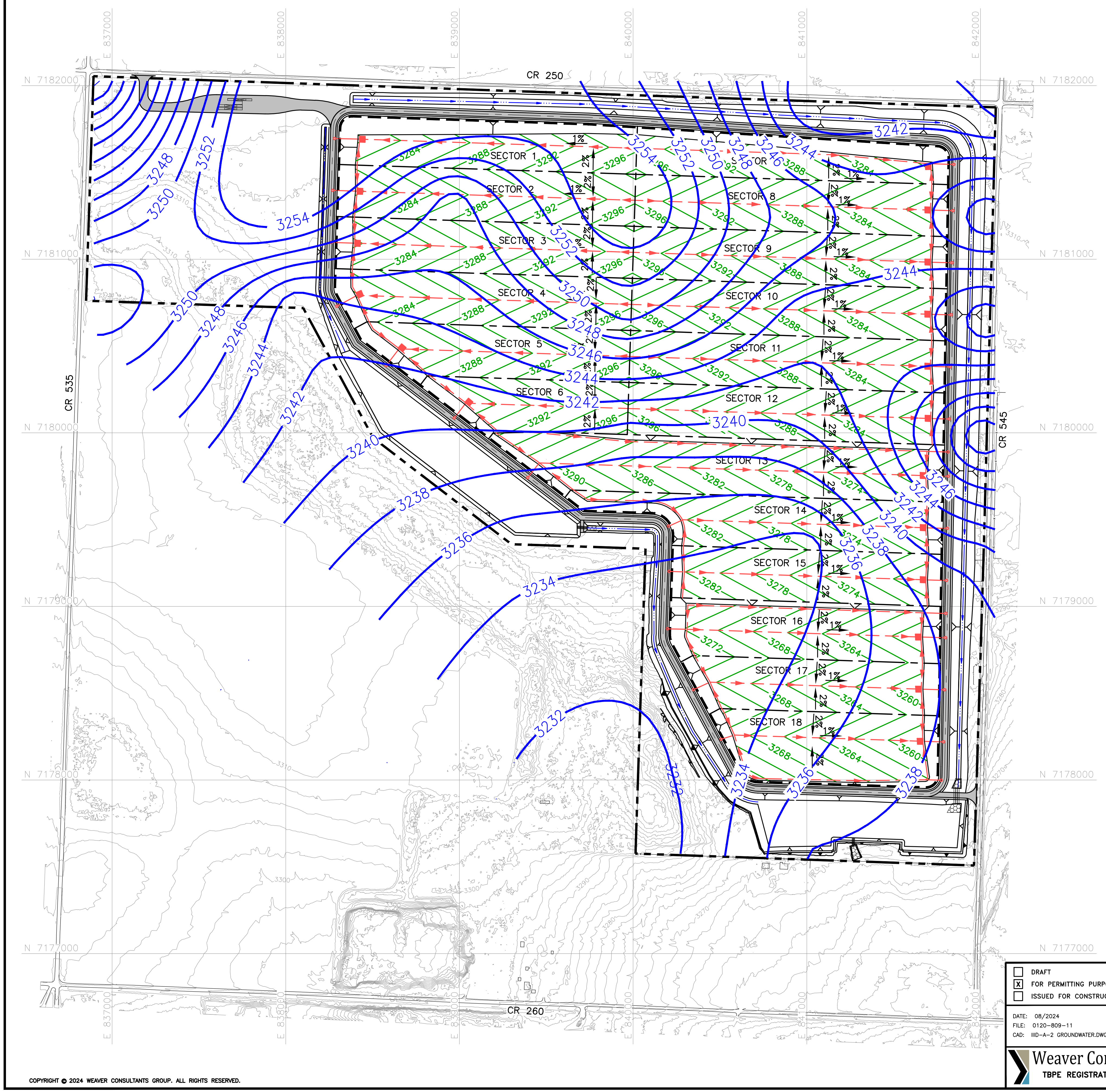
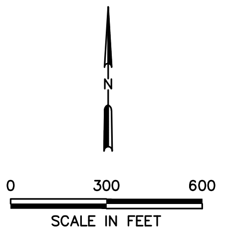
LICENSED PROFESSIONAL ENGINEER

02/28/2025





KYLE D. GOULD
106018
02/28/2025

LEGEND

— · — · —	PROPOSED PERMIT BOUNDARY
— — —	PROPOSED LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
3300	EXISTING CONTOUR
560	PROPOSED EXCAVATION CONTOUR
— —	SECTOR BOUNDARY
→	CHANNEL CENTERLINE
◄ - -	LEACHATE COLLECTION PIPE
■	LEACHATE COLLECTION SUMP
—●	LEACHATE RISER PIPE
3250	TOP OF UPPERMOST AQUIFER HYDROSTRATIGRAPHIC STRUCTURAL CONTOUR IN FT–MSL (SEE NOTES 3 AND 4)
△1	INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.
3. TOP OF UPPERMOST AQUIFER HYDROSTRATIGRAPHIC STRUCTURAL CONTOUR REPRESENTS HIGHEST GROUNDWATER ELEVATION WITHIN THE UPPERMOST AQUIFER ZONE OF SATURATION AS OBSERVED AT TIME OF DRILLING AT EACH EXPANSION BOREHOLE LOCATION.
4. TOP OF UPPERMOST AQUIFER HYDROSTRATIGRAPHIC STRUCTURAL CONTOURS DO NOT REPRESENT GROUNDWATER POTENTIOMETRIC HEAD OR GROUNDWATER FLOW.
5. △1 REFER TO APPENDIX IIID–B REGARDING THE IMPACTS OF THE HIGHEST MEASURED GROUNDWATER POTENTIOMETRIC HEAD CONTACTING THE EXCAVATION GRADES SHOWN IN THIS FIGURE, AND A DEMONSTRATION OF BALLASTING OF THE HIGHEST MEASURED GROUNDWATER.

LIST OF REVISIONS:

1. ADDED NOTE 5.

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120–809–11
CAD: IIID–A–2 GROUNDWATER.DWG

DRAWN BY: JDW
DESIGN BY: JPI
REVIEWED BY: KDG

Weaver Consultants Group
TBPE REGISTRATION NO. F–3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

MAJOR PERMIT AMENDMENT
TOP OF UPPERMOST AQUIFER CONTOUR MAP

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

FIGURE IIID–A–2

O:\0120\809\EXPANSION 2023\PART III\IIID\IIID–A–2 GROUNDWATER.dwg, jwilson, 1:2

APPENDIX IIID-B

BALLAST DEMONSTRATION

Includes pages IIID-B-1 through IIID-B-4

STATE OF TEXAS
KYLE D. GOULD
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PROFESSIONAL ENGINEER

02/28/2025

BALLAST THICKNESS CALCULATIONS

Introduction

This Ballast Demonstration has been prepared to demonstrate that the excavation and construction of disposal cells at the City of Meadow Landfill will be adequately ballasted against potential groundwater uplift during liner system construction (by the placement of the 2-foot-thick soil protective cover and 4-foot-thick gravel backfill in the sumps), and do not require ballasting by waste placement or the installation of an underdrain system to mitigate potential groundwater uplift. Note that this demonstration has been prepared assuming that the Highest Measured Groundwater Potentiometric Head Elevation shown on Figure IIIG-D-1B is connected to the landfill excavation grades overlain onto the map on Figure IIID-B-1, although previous drilling and laboratory testing of the upper confining unit does not support this conclusion of connectivity, hence the demonstration is conservative.

The ballast requirements evaluated in this appendix are based on the estimated maximum potentiometric head elevation contours shown on Figure IIIG-D-1B as overlain onto the design excavation grades on Figure IIID-B-1. As shown on Figure IIID-B-1, the groundwater contours are projected across the site to allow identification of areas of the landfill excavation grades at which the potentiometric groundwater head intersects the excavation grades. Based on review of the figure, the only area of landfill excavation grades identified as intersecting the potentiometric groundwater head is located along the southeast boundary of the landfill footprint. The area of ballasting evaluation is highlighted on Figure IIID-B-1 and expanded on Figure IIID-B-2 for use during the analysis.

Demonstration Calculations

The demonstration of ballasting is performed using the following two-step procedure:

1. The estimated maximum groundwater contours shown on Drawing IIID-B-1 are utilized to estimate the uplift pressures on the GCL and geomembrane liner shown for selected analysis points on Drawing IIID-B-2.
2. After Step 1 is complete, calculations are performed that demonstrate the protective cover soils and sump gravel backfill provide adequate ballast

to offset the hydraulic uplift pressures on the bottom liner. Calculations are shown on sheet IIID-B-4.

The evaluation points on Figure IIID-B-2 were selected to adequately evaluate the relatively small area of bottom liner installation (estimated at less than 10 acres) both inside and outside of the area potentially impacted by groundwater. Note that the protective cover component of the bottom liner system will be installed in all areas of cell construction and is not limited to the study area for this demonstration. Also note that ballasting is completed during construction of the bottom liner system, prior to certification of the bottom liner, with the demonstration of ballasting included in the future Geomembrane Liner Evaluation Report (GLER) submitted to the TCEQ at the end of cell construction and prior to waste placement into the cell.

The following procedure will be followed in developing this demonstration at the time of design and construction of the area addressed by this demonstration:

A. The Highest Measured Potentiometric Head Elevation Map will be updated (if new readings demonstrate that the groundwater potentiometric level has risen. In no instance will the potentiometric head elevations be lowered from prior readings.

B. At each evaluation point, determine the uplift pressure acting on the GCL and geomembrane liner using the unit weight of water times the vertical distance from the geomembrane liner to the highest measured potentiometric surface elevation.

$$P_{H2O=}\gamma_{H2O}{*}H$$

where: γ_{H2O} = unit weight of water (pcf)

H = vertical distance from the bottom of the liner (ft)

P_{H20} = uplift pressure on the base of the liner (psf)

C. At each evaluation point, determine the resisting pressure for vertical uplift.

Determine the vertical resisting pressure at the evaluation points using the unit weight of the protective cover layer times the thickness of the protective cover layer.

$$\Sigma R_{i,v} = \Sigma(\gamma_i{*}T_{i,})$$

where: $T_{i,v}$ = thickness of ballast component (protective cover) in vertical direction

= unit weight (pcf) of ballast component (protective cover)

$R_{i,v}$ = resisting pressure (psf) provided by each ballast component (protective cover) in vertical direction

D. Evaluate the factor of safety in the vertical direction at each evaluation point as a ratio of the total resisting pressure to uplift pressure.

The factor of safety (FS) against uplift due to the hydrostatic pressure acting at the geomembrane liner in the vertical direction is calculated as the resisting pressure determined in B divided by the uplift pressure determined in A.

E. If the factor of safety is less than 1.2, additional ballast will be necessary to offset the hydrostatic forces. The ballast thickness in Table IIID-B-1 will be increased until a minimum factor of safety of 1.2 is achieved.

As ballasting will be provided by the placement of additional protective cover soil (only) the use of a factor of safety of 1.2 against uplift pressure is appropriate. Note that any required additional protective cover ballast will be installed to the lateral limits set by the evaluation points used in the analysis, with the thickened protective cover extending to evaluation points achieving the required minimum factor of safety of 1.2 without additional protective cover.

Conclusion

Based on the demonstration presented herein, the bottom liner system will intercept the highest measured potentiometric head level in a very limited area of the landfill (less than 10 acres) and will rise above the proposed liner excavation grades by less than 4.6 feet (as shown for analysis point S1 (sump) in Table IIID-B-1). The placement of protective cover over the GCL and geomembrane will provide adequate ballasting to provide a factor of safety exceeding 1.2 (actual values of 1.56 or greater) across the study area.

Additionally, in the event of future updates to the Highest Measured Groundwater Potentiometric Head Elevation Map, the conclusions presented in this demonstration (Table IIID-B-1) can be updated, and if necessary additional protective cover soil incorporated into the cell design and placed at the time of construction, and the demonstration of ballast adequacy presented in the GLER prepared for the project.

Prep By: DEP
Date: 2/14/2025

Chkd By: KDG, DEP
Date: 2/14/2025

TABLE IIID-B-1
CITY OF MEADOW LANDFILL
APPENDIX IIID-B
BALLAST DEMONSTRATION

Unit Weight of Water = 62.4 pcf
Moist Unit Weight of Protective Cover Soil = 120 pcf (Note that sump gravel backfill conservatively assumed same unit weight for analysis)
Thickness of Protective Cover - Normal = 2.0 ft
Thickness of Gravel in Sump - Normal = 4.0 ft

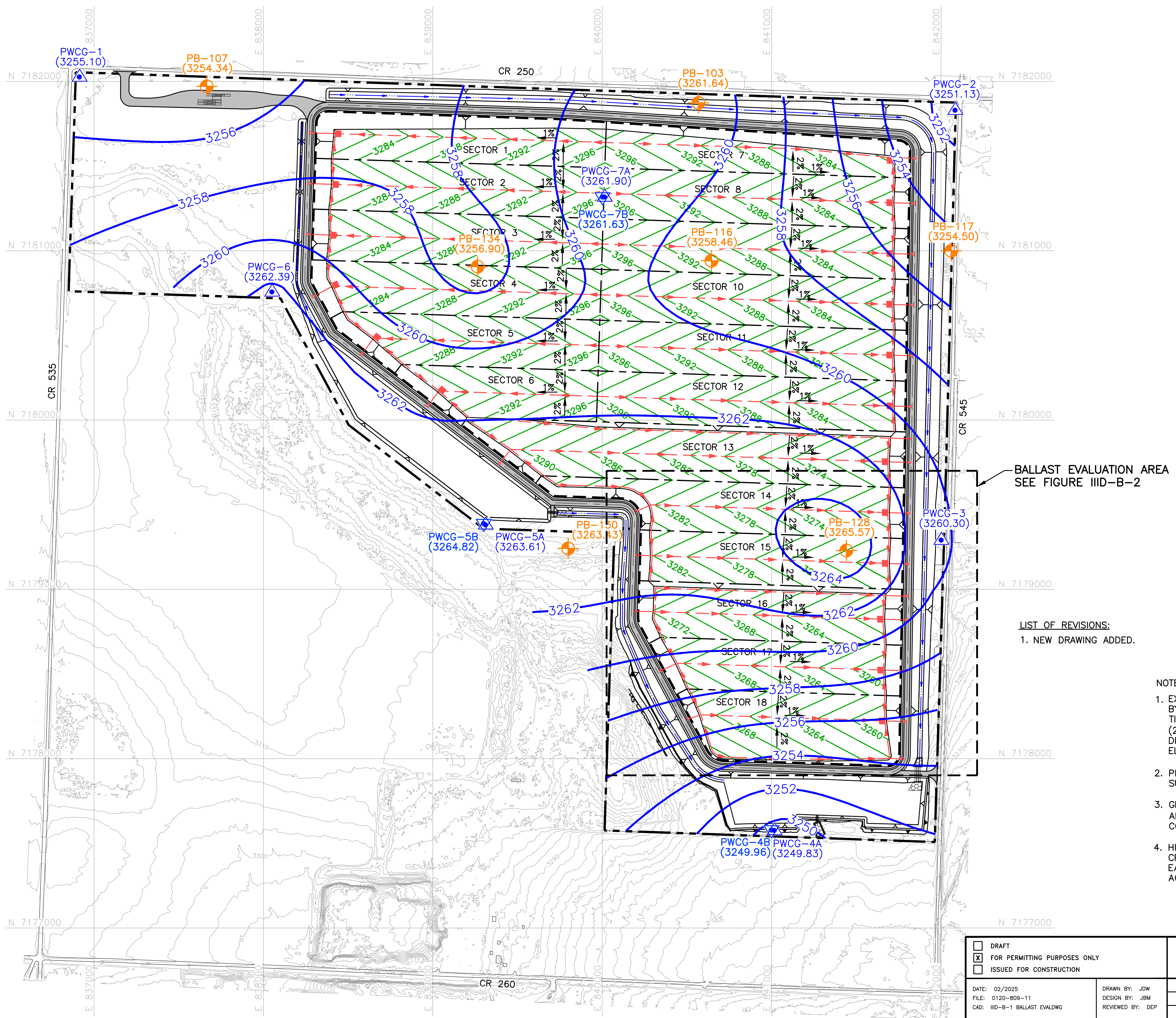
Evaluation Point	Estimated Potentiometric Surface Elevation E_{H20} (ft-msl) (Note 3, 4)	Excavation Grade (GCL)[3] E_{liner} (ft-msl) (Note 4)	Maximum Groundwater Head Above Top of GCL Liner H (ft)	Maximum Uplift Pressure Created by Groundwater Head P_{H20} (psf) at GCL (Note 1)	Elevation of Top of Protective Cover E_{pc} (ft-msl) (Note 2)	Counteracting Ballast Pressure from Protective Cover, R_{pc} (psf) (Note 2)	Calculated Factor of Safety with Protective Cover Installed F_{pc} (Notes 1, 2)	Factor of Safety > 1.2?
F1	3263.01	3265.99	-2.98	-186.0	3267.99	240	NA	YES
F2	3263.08	3263.49	-0.41	-25.6	3265.49	240	NA	YES
F3	3261.87	3261.09	0.78	48.7	3263.09	240	**4.93**	YES
F4	3261.91	3263.14	-1.23	-76.8	3265.14	240	NA	YES
F5	3261.73	3260.64	1.09	68.0	3262.64	240	**3.53**	YES
F6	3260.96	3258.50	2.46	153.5	3260.50	240	**1.56**	YES
F7	3259.13	3263.04	-3.91	-244.0	3265.04	240	NA	YES
F8	3258.89	3260.54	-1.65	-103.0	3262.54	240	NA	YES
F9	3258.43	3258.39	0.04	2.5	3260.39	240	**96.15**	YES
F10	3256.20	3262.95	-6.75	-421.2	3264.95	240	NA	YES
F11	3256.08	3260.44	-4.36	-272.1	3262.44	240	NA	YES
F12	3255.93	3258.29	-2.36	-147.3	3260.29	240	NA	YES
F13	3253.81	3267.76	-13.95	-870.5	3269.76	240	NA	YES
F14	3253.99	3265.11	-11.12	-693.9	3267.11	240	NA	YES
F15	3254.30	3261.96	-7.66	-478.0	3263.96	240	NA	YES
S1	3260.84	3256.27	4.57	285.2	3260.27	480	**1.68**	YES
S2	3258.36	3256.16	2.20	137.3	3260.16	480	**3.50**	YES
S3	3255.90	3255.98	-0.08	-5.0	3259.98	480	NA	YES

[1] If the maximum uplift pressure is less than zero (in column 4) then Factor of Safety is reported as "NA", as no uplift is acting on the GCL at the excavation grades.

[2] The factor of safety was calculated for the thickness of protective cover (2 feet) for the floor (F1-F15) and 4 feet for the bottom of sumps (S1-S3), with a required minimum factor of safety of 1.2 for protective cover soil as ballast (only). Waste not required for ballasting ballast calculations will be adjusted for updated estimated potentiometric surface. The estimated potentiometric surface can only be adjusted upward.

[3] Analysis performed using highest measured groundwater elevation.

[4] Analysis performed for GCL bottom liner option only.



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02/28/2025

LEGEND

— · · —	PROPOSED PERMIT BOUNDARY
— — —	PROPOSED LIMIT OF WASTE
N 7180000 ———	STATE PLANE COORDINATE SYSTEM
—3300—	EXISTING CONTOUR
—560—	PROPOSED EXCAVATION CONTOUR
—— — ——	SECTOR BOUNDARY
—··—··—	CHANNEL CENTERLINE
— ◄ — ◄ —	LEACHATE COLLECTION PIPE
■	LEACHATE COLLECTION SUMP
——●	LEACHATE RISER PIPE
⊕ PB-116 (3258.46)	EXISTING RELICT GROUNDWATER PIEZOMETER LOCATION (WITH HIGHEST MEASURED GROUNDWATER POTENTIOMETRIC HEAD ELEVATION POSTED IN FT-MSL)
△ PWCG-4A (3249.83)	2023 EXPANSION PIEZOMETER (WITH HIGHEST MEASURED GROUNDWATER POTENTIOMETRIC HEAD ELEVATION POSTED IN FT-MSL)
▽ PWCG-4B (3249.96)	2023 PERCHED ZONE EXPANSION PIEZOMETER (WITH HIGHEST MEASURED GROUNDWATER POTENTIOMETRIC HEAD ELEVATION POSTED IN FT-MSL)
—3260—	HIGHEST MEASURED GROUNDWATER POTENTIOMETRIC HEAD SURFACE CONTOUR IN FT-MSL
△1	INDICATES REVISION (SEE LIST OF REVISIONS)

LIST OF REVISIONS:

1. NEW DRAWING ADDED.

NOTES:

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2. PIEZOMETER LOCATION COORDINATES OBTAINED FROM AUGUST 2023 AS-BUILT SURVEY BY WEAVER CONSULTANTS GROUP.
3. GROUNDWATER POTENTIOMETRIC HEAD ELEVATION DATA FROM MANUAL GAUGING AND/OR DEDICATED DATA LOGGER MEASUREMENTS CONDUCTED BY WEAVER CONSULTANTS GROUP IN 2023 AND 2024.
4. HIGHEST MEASURED GROUNDWATER POTENTIOMETRIC HEAD SURFACE CONTOURS CREATED USING THE HIGHEST MEASURED GROUNDWATER ELEVATION RECORDED AT EACH MEASUREMENT POINT AND DO NOT REPRESENT A SINGLE GAUGING EVENT OR ACTUAL GROUNDWATER FLOW.

△1

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DESIGN BY: JBM
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Weaver Consultants Group
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HIGHEST MEASURED GROUNDWATER
POTENTIOMETRIC HEAD

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TERRY COUNTY, TEXAS

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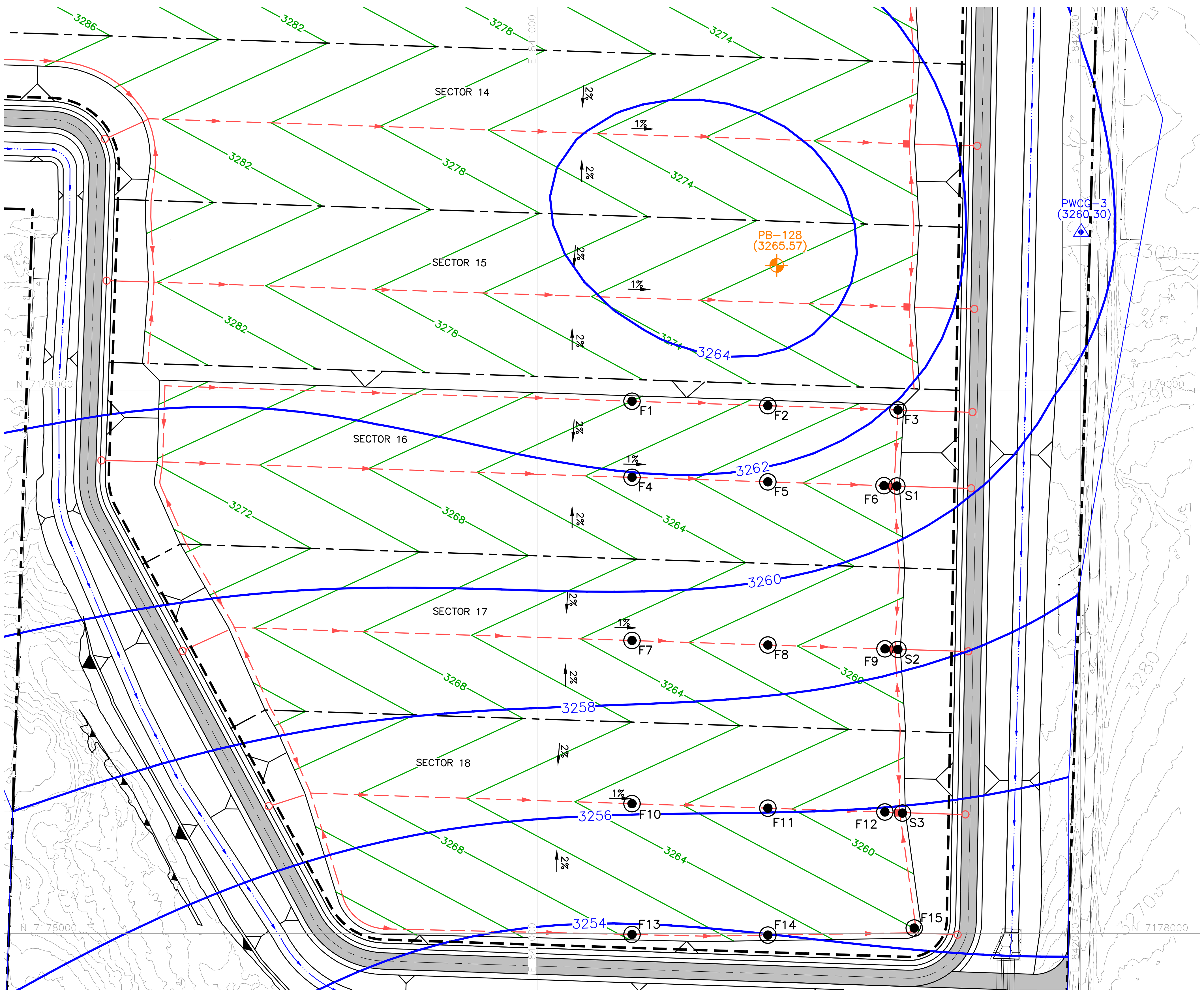
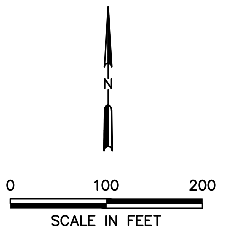
FIGURE IIID-B-1

O:\0120\809\EXPANSION 2023\PART III\IIID\IIID-B-1 BALLAST EVALUATION.dwg, jwilson, 1:2





KYLE D. GOULD
106018
02/28/2025

LEGEND

— - —	PROPOSED PERMIT BOUNDARY
— — —	PROPOSED LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
3300	EXISTING CONTOUR
560	PROPOSED EXCAVATION CONTOUR
— —	SECTOR BOUNDARY
→···	CHANNEL CENTERLINE
←- -	LEACHATE COLLECTION PIPE
■	LEACHATE COLLECTION SUMP
—	LEACHATE RISER PIPE
PB-116 (3258.46)	EXISTING RELICT GROUNDWATER PIEZOMETER LOCATION (WITH HIGHEST MEASURED GROUNDWATER POTENTIOMETRIC HEAD ELEVATION POSTED IN FT-MSL)
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3260	HIGHEST MEASURED GROUNDWATER POTENTIOMETRIC HEAD SURFACE CONTOUR IN FT-MSL
◉ F1	BALLAST EVALUATION POINT
△	INDICATES REVISION (SEE LIST OF REVISIONS)

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DESIGN BY: JBM
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MAJOR PERMIT AMENDMENT BALLAST EVALUATION

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FIGURE IIID-B-2

O:\0120\809\EXPANSION 2023\PART III\IIID\IIID-B-2 BALLAST BLOWUP.dwg, jwilson, 1:2

APPENDIX IIID-B-A

LINER UPLIFT DEMONSTRATION

Includes pages IIID-B-A-1 through IIID-B-A-3

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PROFESSIONAL ENGINEER

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APPENDIX IIID-B-A
LINER UPLIFT DEMONSTRATION

Required: Demonstrate that the potentiometric head within the Lower Sands does not induce an uplift pressure on the liner area.

Method:
1. Define Variables
2. Calculate Maximum Allowable Potentiometric Head

References:
1. Day, Robert W., *Geotechnical Engineer's Portable Handbook* , McGraw Hill, New York, 2000.

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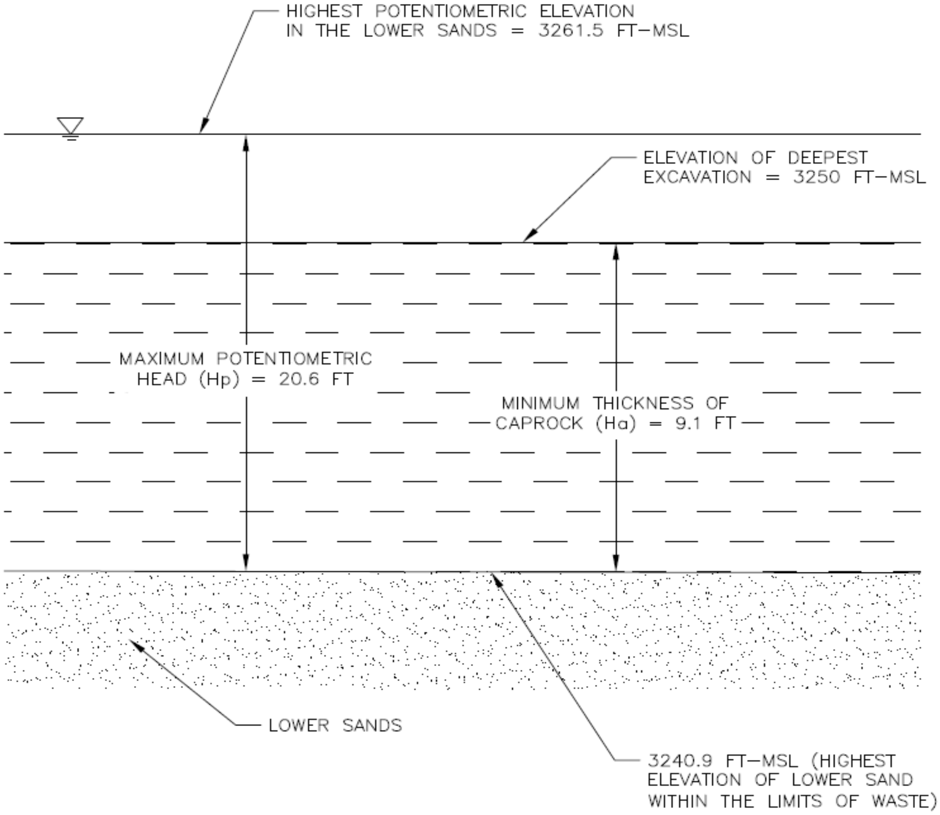
APPENDIX IIID-B-A
LINER UPLIFT DEMONSTRATION

1. Define Variables



The graphic shown is developed based on the EDE of 3250 ft-msl, and an elevation of 3261.5 ft-msl is used for the potentiometric head in Lower Sands for demonstration purposes. The highest elevation of Lower Sands within the limits of waste (i.e., 3240.9 ft-msl) is used for this demonstration. Refer to Appendix IIIG-C for detailed information for stratum thicknesses. The stability demonstration present here is developed along with the ballast demonstration included in Appendix IIID-B.

Maximum Potentiometric Elevation of Lower Sands, Ep =	3261.5	ft-msl
Elevation of Deepest Excavation (EDE), E_e =	3250	ft-msl
Minimum Thickness of Caprrock, H_a =	9.1	ft
Maximum Potentiometric Head, H_p =	20.6	ft
Unit Weight of Water, γ_w =	62.4	pcf
In-situ Saturated Unit Weight of the Caprock (determined from lowest test value from Appendix IIIE-C), γ_a =	132.6	pcf

2. Calculate Maximum Allowable Potentiometric Head (H_{max})

$$H_{max} = \frac{H_a \times \gamma_a \times 1.2}{\gamma_w}$$

H_{max} = 23.2 ft

CONCLUSION: The calculation above demonstrates that the Caprock formation can withstand up to 23.2 ft of potentiometric head from the Lower Sands. Currently the maximum potentiometric head of the Lower Sands that exists in the liner area is 20.6 ft (for the worst case scenario of excavations extending to the EDE). Therefore the liner excavations are stable and is not affected by the potentiometric head of the Lower Sands.

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TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

VOLUME 3 OF 6

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

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02/28/2025

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WCG Project No. 0120-809-11-05

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CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN

APPENDIX IIIE
GEOTECHNICAL REPORT

Prepared for

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August 2024

Revised February 2025

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02/28/2025

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WCG Project No. 0120-809-11-06

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02/28/2025

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- 2.2 Classification Tests IIIE-4
  - 2.2.1 Material Strength Tests IIIE-4
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Table 2-1
Geotechnical Test Methods Performed

Test	Test Method
Sieve Analysis (Passing No. 200)	ASTM D1140
Atterberg Limits (Liquid & Plastic Limit)	ASTM D4318
Moisture Content	ASTM D2216
Coefficient of Permeability (Hydraulic Conductivity)	Vertical - ASTM D5084 Method F Horizontal – ASTM D4044 and D8084 Method F

2.2 Classification Tests

Classification tests consisting of Atterberg limits, percent passing the #200 sieve, moist unit weight, and moisture content were performed on selected soil samples recovered from boreholes. Classification tests were used to characterize the soils according to the Unified Soil Classification System (USCS) and to evaluate physical properties of the soils. The test results for the strata identified at the site are presented in the summary table included in Appendix IIIE-C.

2.2.1 Material Strength Tests

The landfill is founded primarily in the Caliche formation described in Section 3 of this appendix. As described, the Caliche is a relatively hard formation, with interbedded sand and gravels that do not facilitate collection of undisturbed samples during field investigations. Hence, strength characteristics for the Caliche were derived from the Standard Penetration Testing (SPT) results obtained during drilling, which was correlated to strength characteristics for non-plastic soils, and from WCG experience with similar granular soils. The SPT results demonstrate the Caliche is hard to very hard, with blow counts generally exceeding 50 blows per 6 inches of spoon penetration. Based on this information, shear strength parameters of cohesion equal to 200 psf and an angle of internal friction of 28 degrees were conservatively assigned to the Caliche formation.

The overburden surficial soils encountered at the site are comprised predominately of sand and sand with silt as demonstrated in the laboratory results presented in Table IIIE-C-1. While sands and silty sands generally exhibit internal friction angles in the 30 to 36 percent range, the assumption that the upper sands and sands with silt are represented by the angle of internal friction value of 28 degrees and cohesion of 200 psf (as also conservatively assumed for the underlying Caliche) is conservative for the analyses presented in this appendix.

2.2.2 Hydraulic Conductivity Testing

Laboratory hydraulic conductivity tests were performed to evaluate the hydrogeological properties of the soils at the site. Additional discussion regarding the hydraulic conductivity testing is presented in Appendix IIIG–Geology Report and has not been reproduced for this appendix. The results of the hydraulic conductivity testing are included in Appendix IIIE-C.

4.3 Landfill Excavation

Excavation for the bottom liner construction will be performed in a manner that will achieve reasonable segregation of liner quality material from soils that are not suitable for liner construction. Soil materials to potentially be used for liner construction will be stockpiled separately, according to construction material properties outlined in Section 4.4 and visual observation during excavation. Alternatively, the operator may elect to not segregate the soils in anticipation of substituting GCL for the compacted clay liner component of the bottom liner system.

Excavation of the soils encountered will be achieved with equipment such as bulldozers and excavators. Local areas of cemented sands or Caliche may be encountered intermittently within the excavation. These zones can be broken up with an excavator equipped with a hydraulic hammer tool or ripped. The hydraulic hammer may be fitted with a pointed chisel or moil or a blunt tool for harder cemented material.

Excavation side slopes will be graded no steeper than 3 horizontal to 1 vertical (3H:1V). Temporary slopes during excavation may be steeper. Excavation cut slopes within the future cell construction areas may require erosion protection if an extended period of time occurs between excavation and liner construction. Interim erosion protection can be accomplished by diverting runoff away from the slopes. "Track walking" with a bulldozer up and down the slopes will create the effect of "mini-dikes" with the bulldozer tracks, which will also reduce erosion.

Prior to beginning construction of the liner components, the subgrade area will be stripped to a depth sufficient to remove all loose surface soils or soft zones within the exposed excavation. The liner base grades will be proof-rolled with heavy, rubber-tired construction equipment or equivalent to detect soft or pumping areas. Soft or pumping areas will be undercut to firm material and backfilled with suitable compacted fill, as discussed in Appendix IIID–LQCP. Preparation of the liner base grades will result in a surface that is stable and that does not exhibit significant rutting or pumping from the construction traffic. The prepared liner base grades will be approved by a Professional of Record (POR), tested to verify that it meets the requirements outlined in Appendix IIID–LQCP, and surveyed to verify grades.

In the event seepage of groundwater is observed at the excavation grades, the geotechnical engineer will make recommendations to address the short term seepage in consideration of the Ballast Demonstration included in Appendix IIID-B demonstrating that ballasting of the bottom liner system in the area intersecting the highest measured groundwater potentiometric head during liner construction, prior to certification of the liner system. Potential short term remedial measures might include drawdown trenches installed outside of the liner construction, replacement of the upper 2 feet of foundation soils with a low permeability soil, raising the bottom liner sufficient to lift the entire cell bottom out of the highest measured groundwater potentiometric surface, or other means. In the event sufficient groundwater is encountered to require an underdrain system and sump (i.e., cannot be controlled by the previously listed methods), a permit modification will be submitted to the executive director prior to proceeding with underdrain and liner construction. Additional guidance regarding groundwater encountered at the excavation grades is provided in Appendix IIID, Section 2.3.7 – Surface Water Removal.

4.4 Soil Liner Construction

The bottom and sides of the landfill excavation may consist of 2-foot-thick compacted clay liner (in instances a GCL is not substituted as an alternative to compacted clay liner). The clay liner will have a maximum hydraulic conductivity of $1x10^{-7}$ cm/s. Details for the liner system are provided in Appendix IIIA (Appendix IIIA-A). Adequate clay soil liner material may be available from proposed landfill excavations or onsite borrow areas, or offsite borrow sources. Preconstruction

APPENDIX IIIE-A

SLOPE STABILITY ANALYSIS

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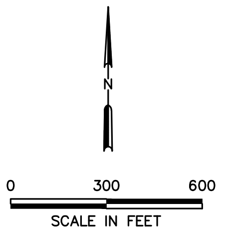

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LEGEND

- PROPOSED PERMIT BOUNDARY
- PROPOSED LIMIT OF WASTE
- N 7180000 STATE PLANE COORDINATE SYSTEM
- 3300 EXISTING CONTOUR
- 3400 FINAL COVER CONTOUR
- DRAINAGE SWALE
- DRAINAGE LETDOWN
- CHANNEL CENTERLINE
- MW-10 PROPOSED GROUNDWATER MONITORING WELL
- GP-1 EXISTING GAS PROBE
- C — C SECTION LOCATION
- 1 INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

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2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PROPERTY AND PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.

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APPENDIX IIIE-B

FOUNDATION SETTLEMENT

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81734
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APPENDIX IIIE-B-1

FOUNDATION/BOTTOM LINER SETTLEMENT ANALYSIS

Includes pages IIIE-B-1-1 through IIIE-B-1-30

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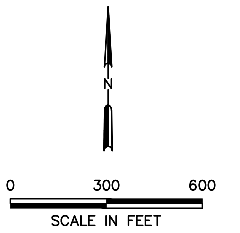

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- PROPOSED PERMIT BOUNDARY
- PROPOSED LIMIT OF WASTE
- N 7180000 STATE PLANE COORDINATE SYSTEM
- 3300 EXISTING CONTOUR
- 560 PROPOSED EXCAVATION CONTOUR
- SECTOR BOUNDARY
- LEACHATE COLLECTION PIPE
- LEACHATE COLLECTION SUMP
- LEACHATE RISER PIPE
- MW-10 PROPOSED GROUNDWATER MONITORING WELL
- GP-1 EXISTING GAS PROBE
- BL1 BOTTOM LINER EVALUATION POINT
- BOTTOM LINER EVALUATION LINE
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APPENDIX IIIE-B-2

FINAL COVER SETTLEMENT ANALYSIS

Includes pages IIIE-B-2-1 through IIIE-B-2-12

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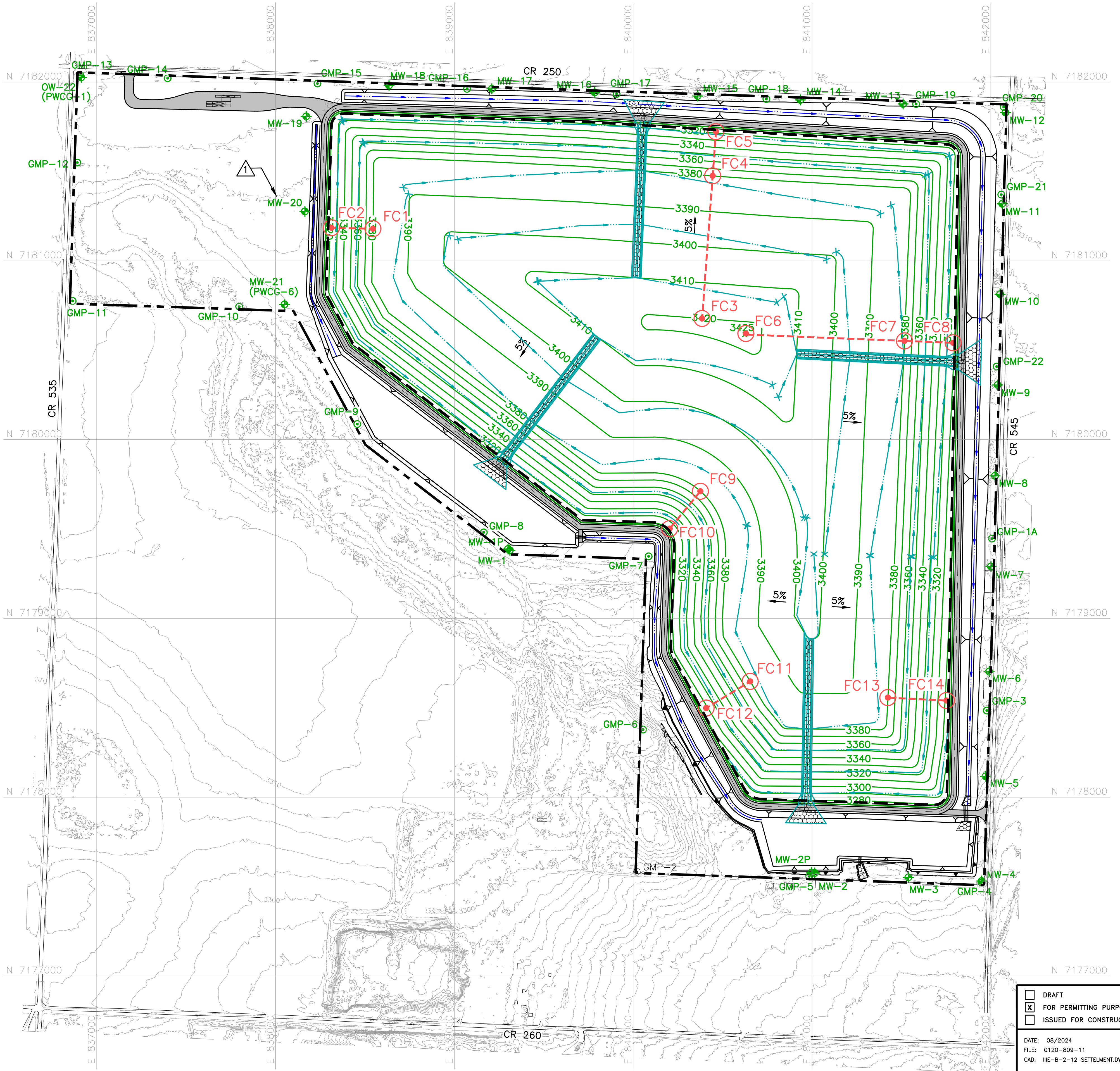

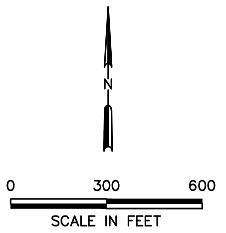

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81734

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— · — · —	PROPOSED PERMIT BOUNDARY
— — — —	PROPOSED LIMIT OF WASTE
N 7180000 ————	STATE PLANE COORDINATE SYSTEM
——3300——	EXISTING CONTOUR
——3400——	FINAL COVER CONTOUR
→·→·→	DRAINAGE SWALE
▨	DRAINAGE LETDOWN
→·→·→	CHANNEL CENTERLINE
✦ MW-10	PROPOSED GROUNDWATER MONITORING WELL
⊙ GP-1	EXISTING GAS PROBE
⊙ FC2	FINAL COVER EVALUATION POINT
⊙- - - -⊙	FINAL COVER EVALUATION LINE
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4 EXCAVATION SLOPES AND SLOPES OUTSIDE THE LIMIT OF WASTE (e.g., CHANNELS) ARE TYPICALLY 3H:1V.

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VOLUME 4 OF 6

Prepared for

Meadow Landfill, LLC

August 2024

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02/28/2025

Prepared by

Weaver Consultants Group, LLC
TBPE Registration No. F-3727
6420 Southwest Boulevard, Suite 206
Fort Worth, Texas 76109
817-735-9770

WCG Project No. 0120-809-11-05

This document is intended for permitting purposes only.

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN
APPENDIX IIIF
SURFACE WATER DRAINAGE PLAN

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

CHARLES R. MARSH
105073

02/28/2025

Prepared by

Weaver Consultants Group, LLC
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IIIF.4 – Perimeter Channel Plan
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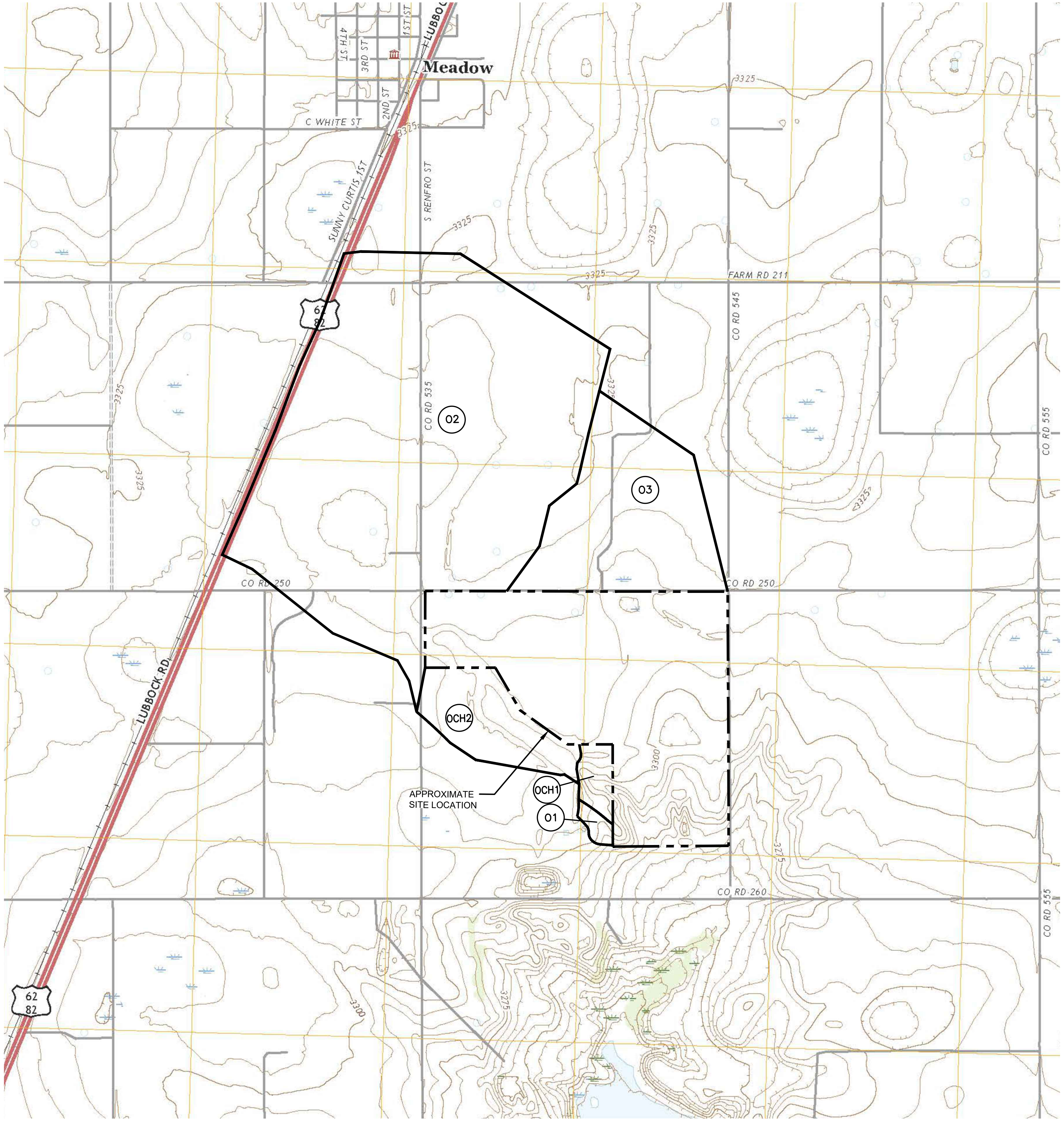
STATE OF TEXAS
CHARLES R. MARSH
105073
LICENSED PROFESSIONAL ENGINEER
02/28/2025



0 1000 2000
SCALE IN FEET

LEGEND

— · —	PROPOSED PERMIT BOUNDARY
——	DRAINAGE AREA BOUNDARY
(01)	DRAINAGE AREA DESIGNATION
△1	INDICATES REVISION (SEE LIST OF REVISIONS)

ROAD CLASSIFICATION

Expressway	—	Local Connector	—
Secondary Hwy	—	Local Road	—
Ramp	—	4WD	- - -
Interstate Route		US Route	
State Route			

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02/28/2025

MEADOW, TX

2022

NOTES:

1. REPRODUCED FROM 7.5 MINUTE, MEADOW, TEXAS QUADRANGLE USGS MAP DATED 2022.

DRAINAGE AREA NO.	AREA (ACRES)
01	6.39
02	686.24
03	174.65
OCH1	17.02
OCH2	71.93

△1 UPSTREAM UNNAMED RICH LAKE TRIBUTARY CATCHMENT

LIST OF REVISIONS:

1. ADDED CALLOUT IDENTIFYING AREA CONTRIBUTING TO UNNAMED RICH LAKE TRIBUTARY.

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120-809-11
CAD: FIG 4.3-OFFSITE DRAINAGE AREA.DWG

DRAWN BY: JDW
DESIGN BY: SSM
REVIEWED BY: KDG

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

MAJOR PERMIT AMENDMENT OFFSITE DRAINAGE AREA MAP

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

FIGURE 4.3

O:\0120\809\EXPANSION 2023\PART III\IIIF\FIGURES\FIG 4.3-OFFSITE DRAINAGE AREA MAP.dwg, jwilson, 1:2

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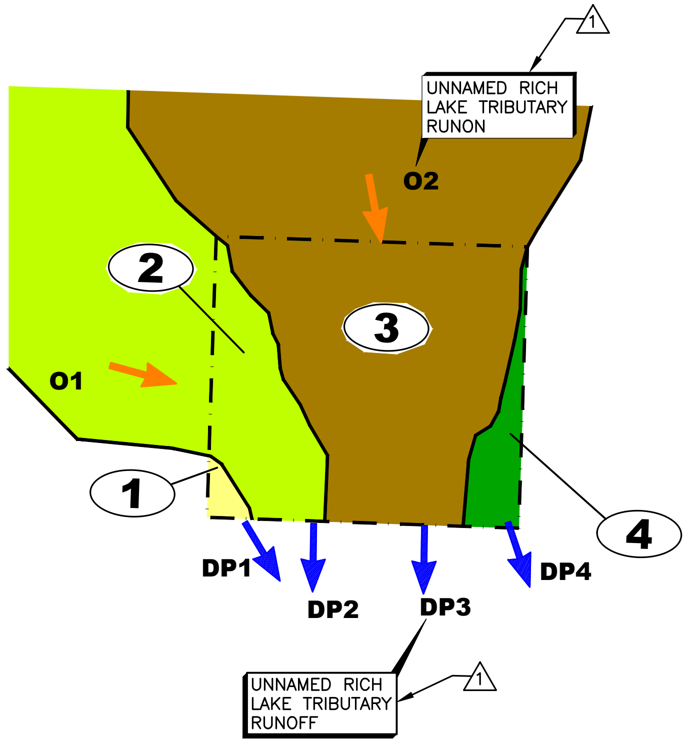
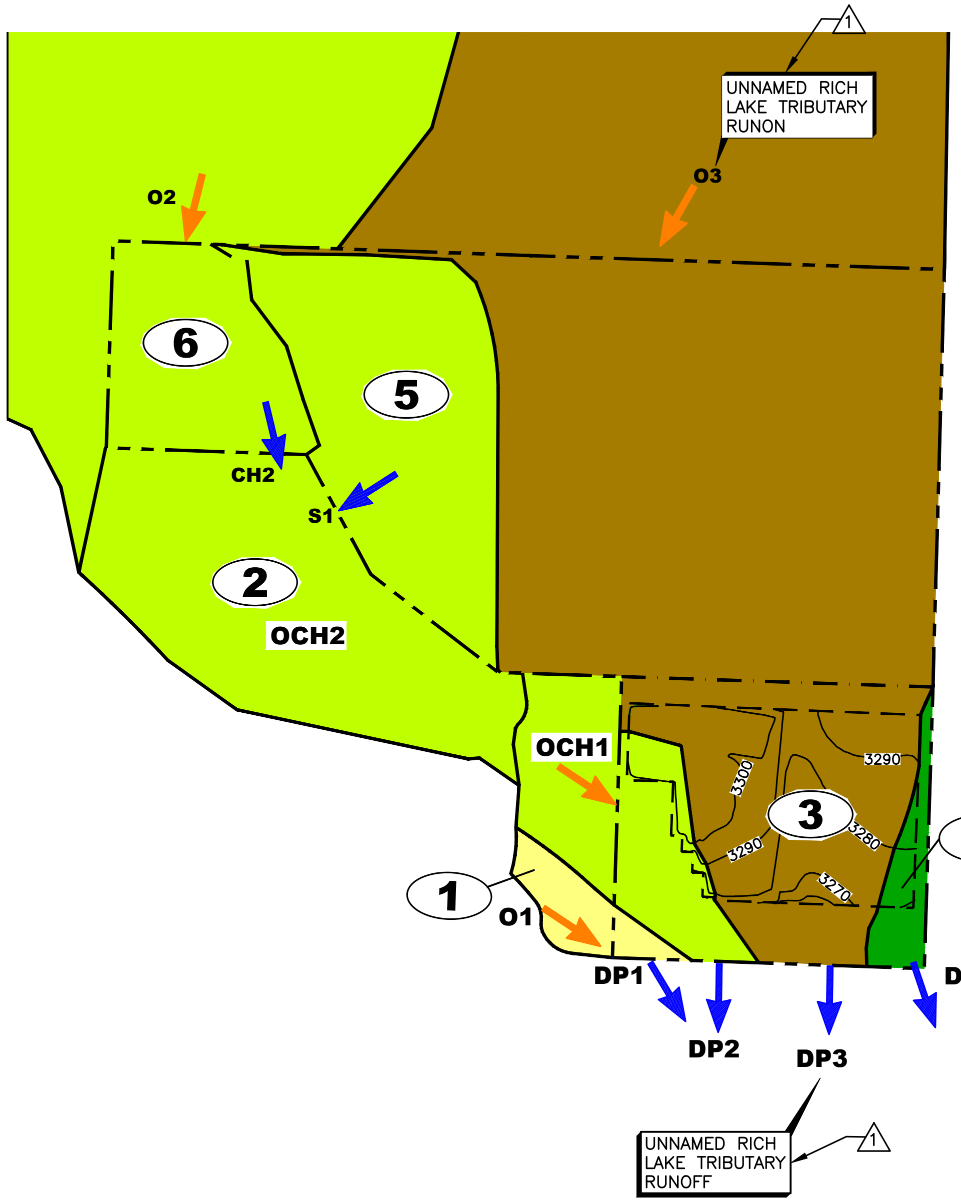


EXISTING PERMITTED DRAINAGE PATTERNS[1]



UPDATED PERMITTED DRAINAGE PATTERNS[1]

DISCHARGE POINT AREAS

CH2 = 717.98 ACRES

S1 = 59.53 ACRES

DP1 = 8.04 ACRES

DP2 = 881.19 ACRES

DP3 = 397.48 ACRES

DP4 = 7.38 ACRES

OFF–SITE AREAS

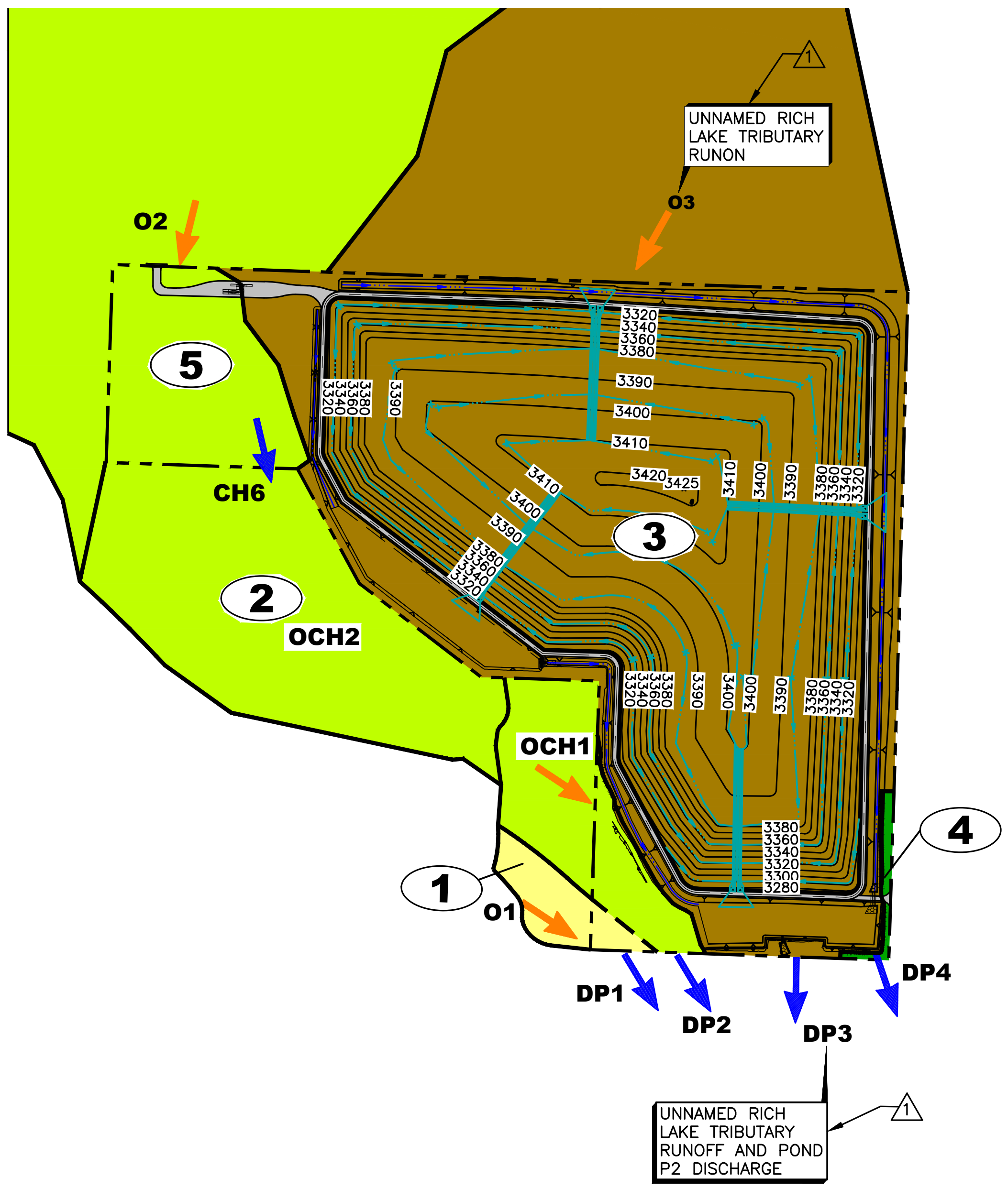
O1 = 6.39 ACRES

O2 = 686.24 ACRES

O3 = 174.65 ACRES

OCH1 = 866.46 ACRES (SEE NOTE 2)

OCH2 = 849.44 ACRES (SEE NOTE 3)



POST–DEVELOPMENT DRAINAGE PATTERNS

DISCHARGE POINT AREAS

CH6 = 717.98 ACRES

DP1 = 8.04 ACRES

DP2 = 815.27 ACRES

DP3 = 468.96 ACRES

DP4 = 1.84 ACRES

OFF–SITE AREAS

O1 = 6.39 ACRES

O2 = 686.24 ACRES

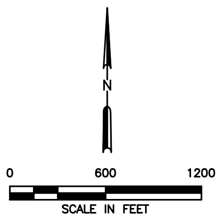
O3 = 174.65 ACRES

OCH1 = 806.93 ACRES (SEE NOTE 4)

OCH2 = 789.91 ACRES (SEE NOTE 5)

LEGEND

— — —— — —	PROPOSED PERMIT BOUNDARY
— - — - — -	PERMITTED PERMIT BOUNDARY
——100——	ELEVATION OF FINAL COVER SYSTEM
————	DRAINAGE AREA BOUNDARY
1	DRAINAGE AREA DESIGNATION
→	UPLAND DRAINAGE ENTERING THE SITE
→	STORMWATER DISCHARGE POINT
△	INDICATES REVISION (SEE LIST OF REVISIONS)



LIST OF REVISIONS:

1. ADDED RUNON/RUNOFF CALLOUTS FOR UNNAMED RICH LAKE TRIBUTARY LOCATIONS.

NOTES:

1. REFER TO SECTION 4.3.1 FOR A DISCUSSION ON THE EXISTING PERMITTED CONDITION AND UPDATED PERMITTED CONDITION.
2. DISCHARGE POINT OCH1 INCLUDES ACREAGE FROM DISCHARGE POINTS CH2, S1, AND OFFSITE AREAS OCH1 AND OCH2.
3. DISCHARGE POINT OCH2 INCLUDES ACREAGE FROM DISCHARGE POINTS CH2, AND S1 AND OFFSITE AREAS OCH2.
4. DISCHARGE POINT OCH1 INCLUDES ACREAGE FROM DISCHARGE POINTS CH6 AND OFFSITE AREAS OCH1 AND OCH2.
5. DISCHARGE POINT OCH2 INCLUDES ACREAGE FROM DISCHARGE POINTS CH6 AND OFFSITE AREA OCH2.

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DATE: 08/2024
FILE: 0120–809–11
CAD: 4.4–DRAINAGE PATTERNS.DWG

DRAWN BY: RAA
DESIGN BY: CMW
REVIEWED BY: CRM

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MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

MAJOR PERMIT AMENDMENT
SITE DRAINAGE PATTERNS

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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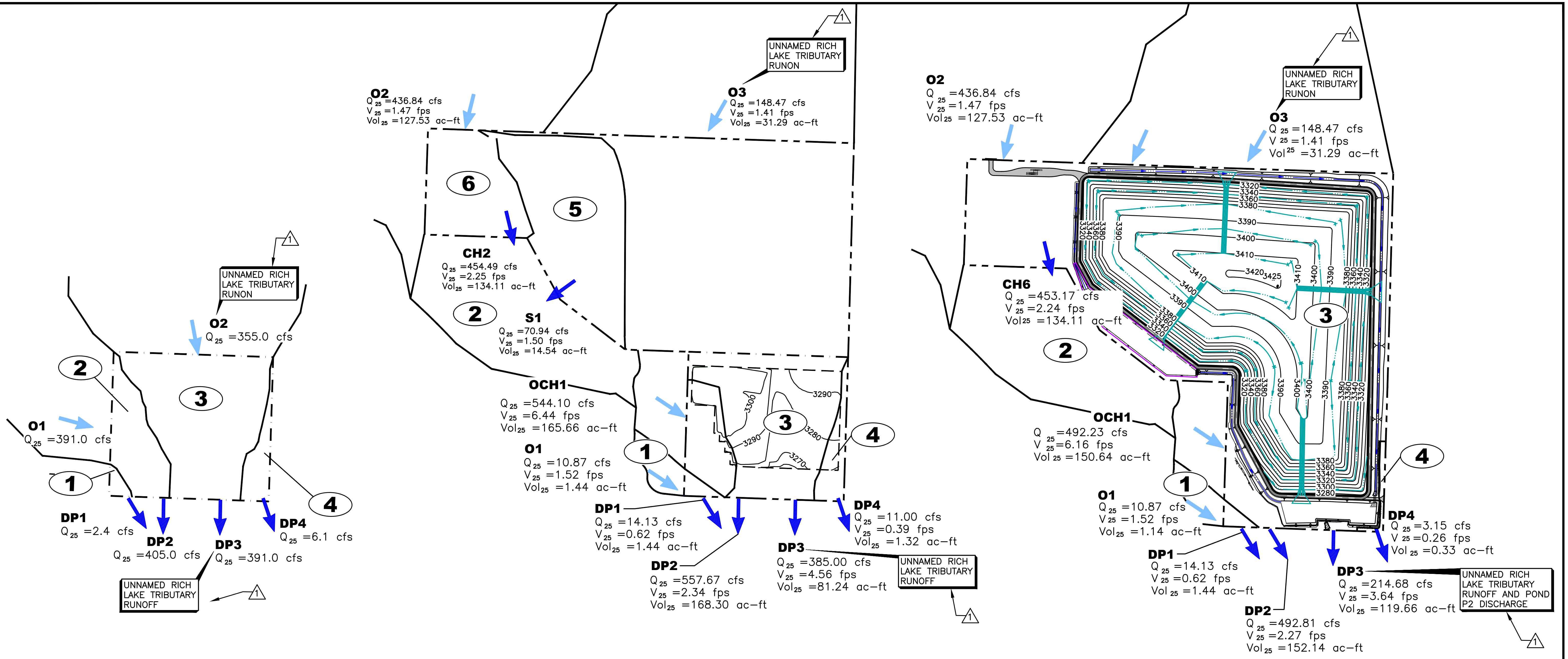
FIGURE 4.4



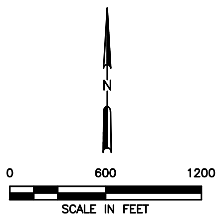
EXISTING PERMITTED DRAINAGE PATTERNS[1]

UPDATED PERMITTED DRAINAGE PATTERNS[1]

POST–DEVELOPMENT DRAINAGE PATTERNS

LEGEND

— — - — — PROPOSED PERMIT BOUNDARY
— - — - — PERMITTED PERMIT BOUNDARY
——100—— ELEVATION OF FINAL COVER SYSTEM
———— DRAINAGE AREA BOUNDARY
① DRAINAGE AREA DESIGNATION
→ UPLAND DRAINAGE ENTERING THE SITE
→ STORMWATER DISCHARGE POINT
△ INDICATES REVISION (SEE LIST OF REVISIONS)



LIST OF REVISIONS:

1. ADDED RUNON/RUNOFF CALLOUTS FOR UNNAMED RICH LAKE TRIBUTARY LOCATIONS.

NOTES:

1. REFER TO SECTION 4.3.1 FOR A DISCUSSION ON THE EXISTING PERMITTED CONDITION AND UPDATED PERMITTED CONDITION.

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DATE: 08/2024
FILE: 0120–809–11
CAD: 4–SITE PLAN.DWG

DRAWN BY: RAA
DESIGN BY: CMW
REVIEWED BY: CRM

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REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

MAJOR PERMIT AMENDMENT
SITE DRAINAGE PATTERNS
RUN–ON/RUNOFF

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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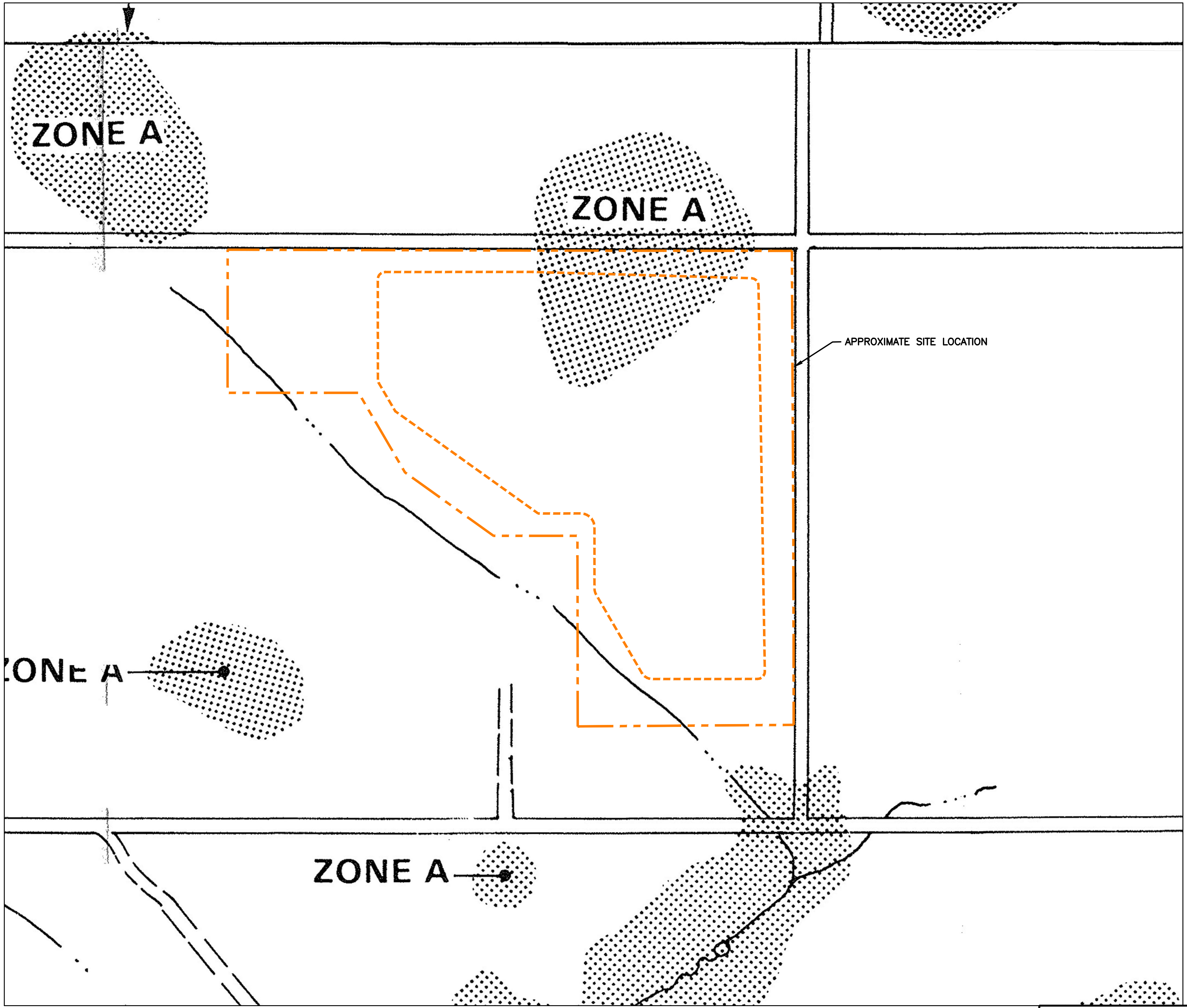
FIGURE 4.5

0:\0120\809\EXPANSION 2023\PART III\IIIF\FIGURES\FIG 4.5–RUN–ON RUN–OFF.dwg, jwilson, 1:2



SCALE IN FEET: 0 — 500 — 1000

N

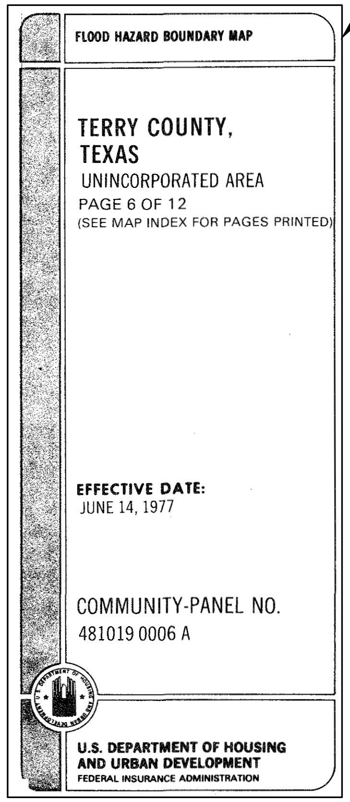
LEGEND

PROPOSED PERMIT BOUNDARY

PROPOSED LIMIT OF WASTE

SPECIAL FLOOD HAZARD AREA	ZONE A

△1 INDICATES REVISION (SEE LIST OF REVISIONS)



FLOOD HAZARD BOUNDARY MAP

TERRY COUNTY, TEXAS
UNINCORPORATED AREA
PAGE 6 OF 12
(SEE MAP INDEX FOR PAGES PRINTED)

EFFECTIVE DATE:
JUNE 14, 1977

COMMUNITY-PANEL NO.
481019 0006 A

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
FEDERAL INSURANCE ADMINISTRATION

LIST OF REVISIONS:

1. UPDATED LEGEND TO FIRM.

CHARLES R. MARSH
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02/28/2025

NOTE:

1. REPRODUCED FROM FEMA FIRM NUMBER 4810190006A FOR TERRY COUNTY, TEXAS AND UNCORPORATED AREAS, EFFECTIVE DATE JUNE 14, 1977.

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☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120–809–11
CAD: FIG 4.6–FIRM.DWG

DRAWN BY: RAA
DESIGN BY: CMW
REVIEWED BY: JBP

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MEADOW LANDFILL, LLC

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NO.	DATE	DESCRIPTION
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MAJOR PERMIT AMENDMENT FLOOD INSURANCE RATE MAP (FIRM)

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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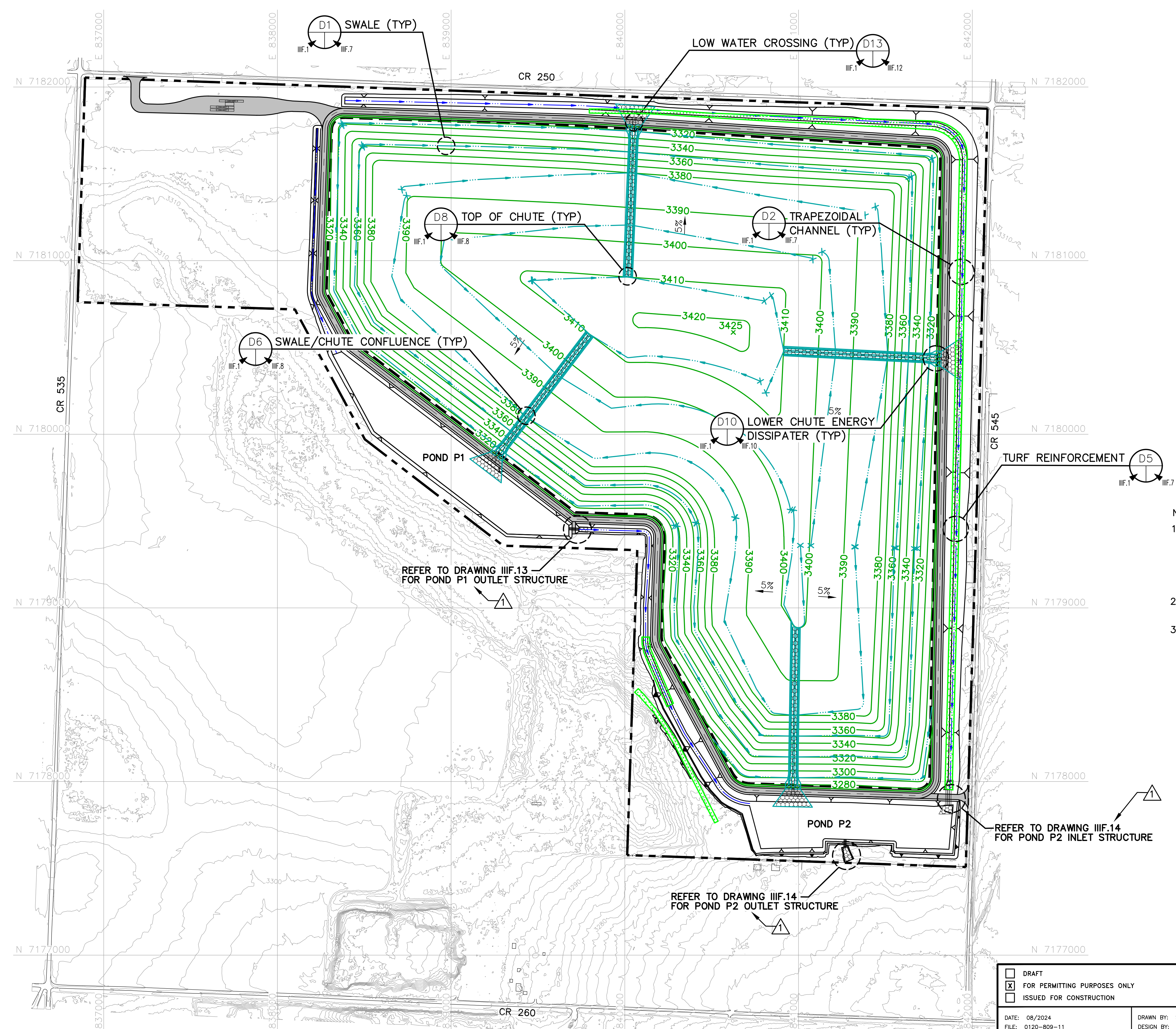
FIGURE 4.6

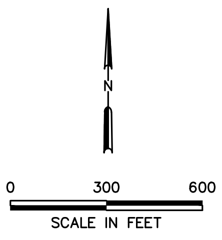
DRAWINGS

IIIF.1 – Drainage Structure Plan
IIIF.2 – Post-Project Drainage
IIIF.3 –Offsite Drainage Area Map
IIIF.4 – Perimeter Drainage Plan
IIIF.5 – Channels 1 and 2 Plan and Profile
IIIF.6 – Channels 1 and 2 Sections
IIIF.7 – Drainage Details
IIIF.8 – Drainage Details
IIIF.9 – Drainage Details
IIIF.10 – Drainage Details
IIIF.11 – Drainage Details
IIIF.12 – Drainage Details
IIIF.13 – Pond P1 Plan
IIIF.14 – Pond P2 Plan
IIIF.15 – Freeboard Summary Plan

STATE OF TEXAS
CHARLES R. MARSH
105073
LICENSED
PROFESSIONAL ENGINEER

02/28/2025





CHARLES R. MARSH
105073
02/28/2025

LEGEND

— · —	PROPOSED PERMIT BOUNDARY
— — —	PROPOSED LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
3300	EXISTING CONTOUR
3400	FINAL COVER CONTOUR
→	DRAINAGE SWALE
▨	DRAINAGE LETDOWN
→	CHANNEL CENTERLINE
🟩	TURF REINFORCEMENT MATTING
△1	INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.

LIST OF REVISIONS:

1. REVISED AND ADDED CULVERT CALLOUT REFERENCES.

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DATE: 08/2024
FILE: 0120-809-11
CAD: IIIF.1-DRAINAGE STRUCTURE PLAN.DWG

DRAWN BY: SRF
DESIGN BY: CMW
REVIEWED BY: CRM

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

MAJOR PERMIT AMENDMENT DRAINAGE STRUCTURE PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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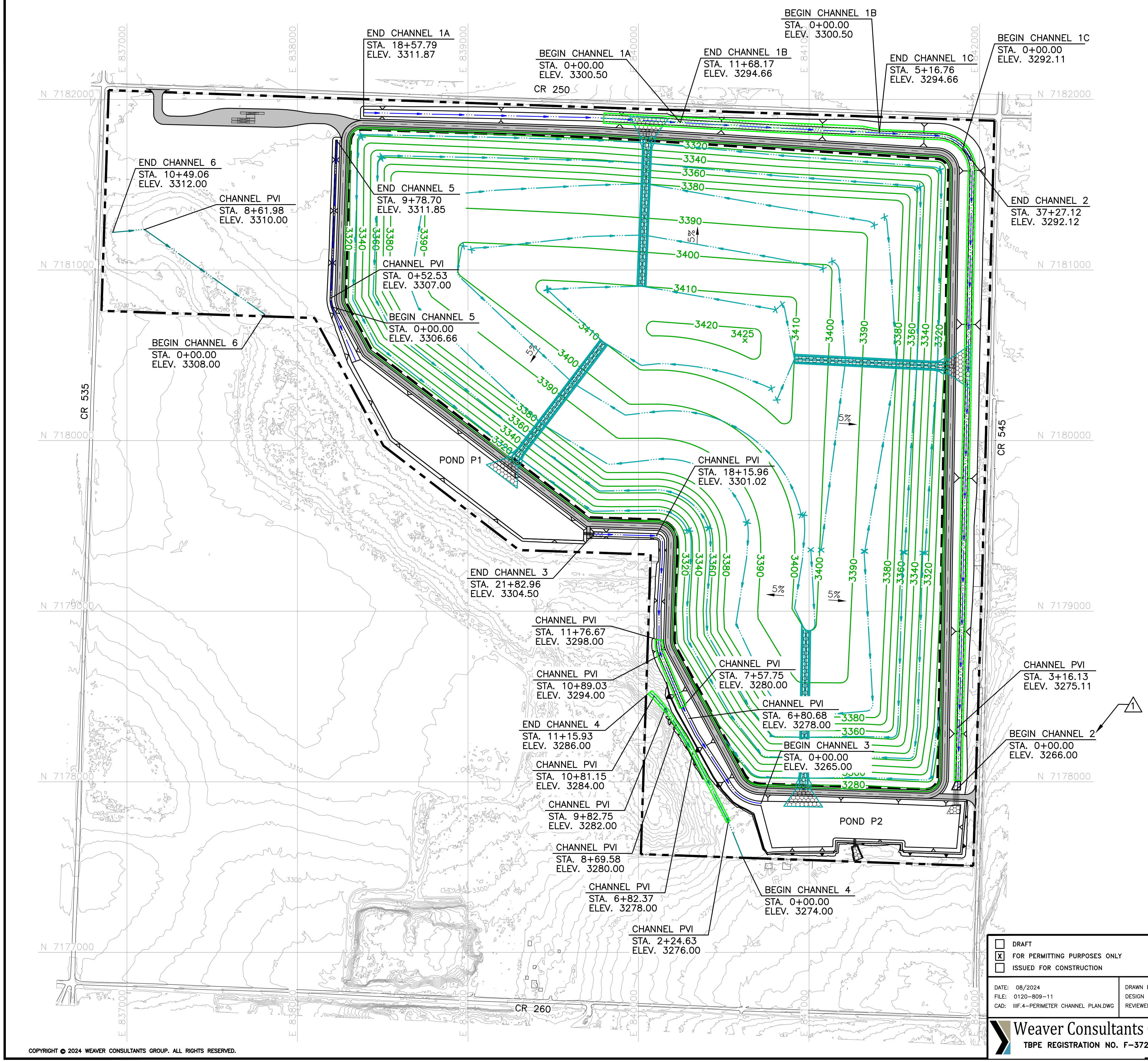
DRAWING IIIF.1

O:\0120\809\EXPANSION 2023\PART III\IIIF\IIIF.1-DRAINAGE STRUCTURE PLAN.dwg, jwilson, 1:2



N

0 300 600
SCALE IN FEET

STATE OF TEXAS
CHARLES R. MARSH
105073
LICENSED PROFESSIONAL ENGINEER
02/28/2025

LEGEND

— · — · —	PROPOSED PERMIT BOUNDARY
— — — —	PROPOSED LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
3400	EXISTING CONTOUR
3400	FINAL COVER CONTOUR
— · · —	DRAINAGE SWALE
▨	DRAINAGE LETDOWN
— · · →	CHANNEL CENTERLINE
▨	TURF REINFORCEMENT MATTING
△	INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.

LIST OF REVISIONS:

1. UPDATED CHANNEL 2 ELEVATION.

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DATE: 08/2024
FILE: 0120-809-11
CAD: IIIF.4-PERIMETER CHANNEL PLAN.DWG

DRAWN BY: SRF
DESIGN BY: CMW
REVIEWED BY: CRM

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

MAJOR PERMIT AMENDMENT PERIMETER CHANNEL PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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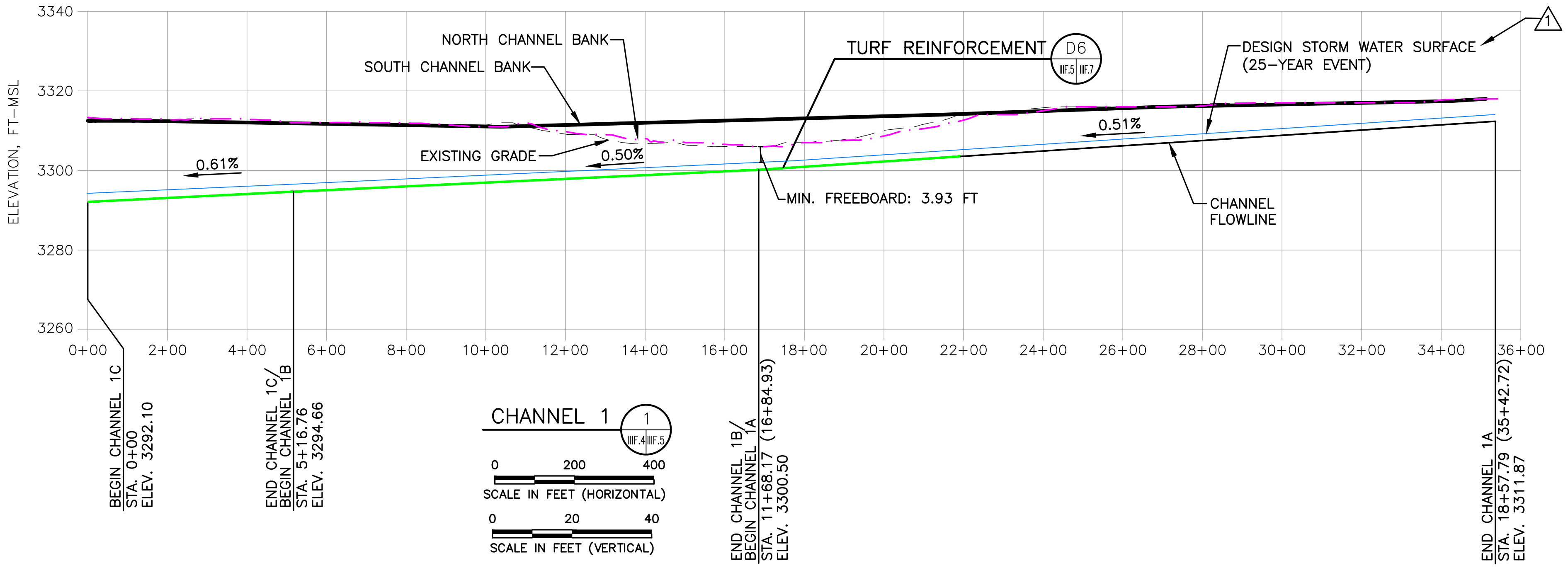
DRAWING IIIF.4



2

25-YEAR CHANNEL 1 INFORMATION

SECTION	CHANNEL STATION FROM	CHANNEL STATION TO	BOTTOM WIDTH (FT)	PEAK INFLOW (CFS)	SLOPE (%)	FLOW DEPTH (FT.)	VELOCITY (FT/S)
CH1A	0+00	18+57.79	40	386.84	0.61	1.69	5.08
CH1B	0+00	11+68.17	35	363.60	0.50	1.86	4.82
CH1C	0+00	5+16.76	25	352.93	0.51	2.17	5.16

NOTE: NORMAL DEPTH CALCULATION DOES NOT ACCOUNT FOR BACK WATER WHICH WILL INCREASE FLOW DEPTH (SEE PROFILE) AND DECREASE VELOCITY.

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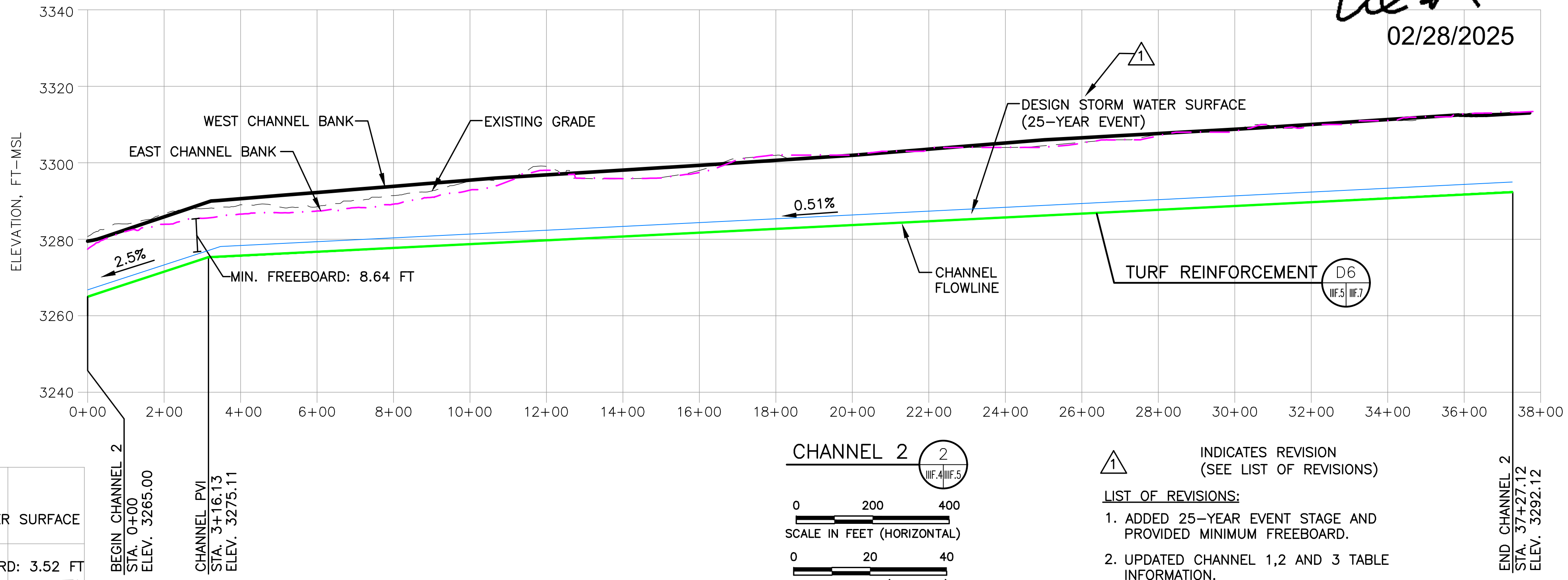
02/28/2025

2

25-YEAR CHANNEL 3 INFORMATION

CHANNEL STATION FROM	CHANNEL STATION TO	BOTTOM WIDTH (FT)	PEAK INFLOW (CFS)	SLOPE (%)	FLOW DEPTH (FT.)	VELOCITY (FT/S)
0+00	6+80.68	25	50.79	1.91	0.48	4.02
6+80.68	7+57.75	25	50.79	2.60	0.44	4.43
7+57.75	10+89.03	25	50.79	4.23	0.38	5.16
10+89.03	11+76.67	25	50.79	5.28	0.35	5.52
11+76.67	18+15.96	25	50.79	0.47	0.72	2.59
18+15.96	21+82.96	25	50.79	0.95	0.59	3.24

NOTE: NORMAL DEPTH CALCULATION DOES NOT ACCOUNT FOR BACK WATER WHICH WILL INCREASE FLOW DEPTH (SEE PROFILE) AND DECREASE VELOCITY.



1 INDICATES REVISION (SEE LIST OF REVISIONS)

LIST OF REVISIONS:

1. ADDED 25-YEAR EVENT STAGE AND PROVIDED MINIMUM FREEBOARD.
2. UPDATED CHANNEL 1,2 AND 3 TABLE INFORMATION.

NOTES:

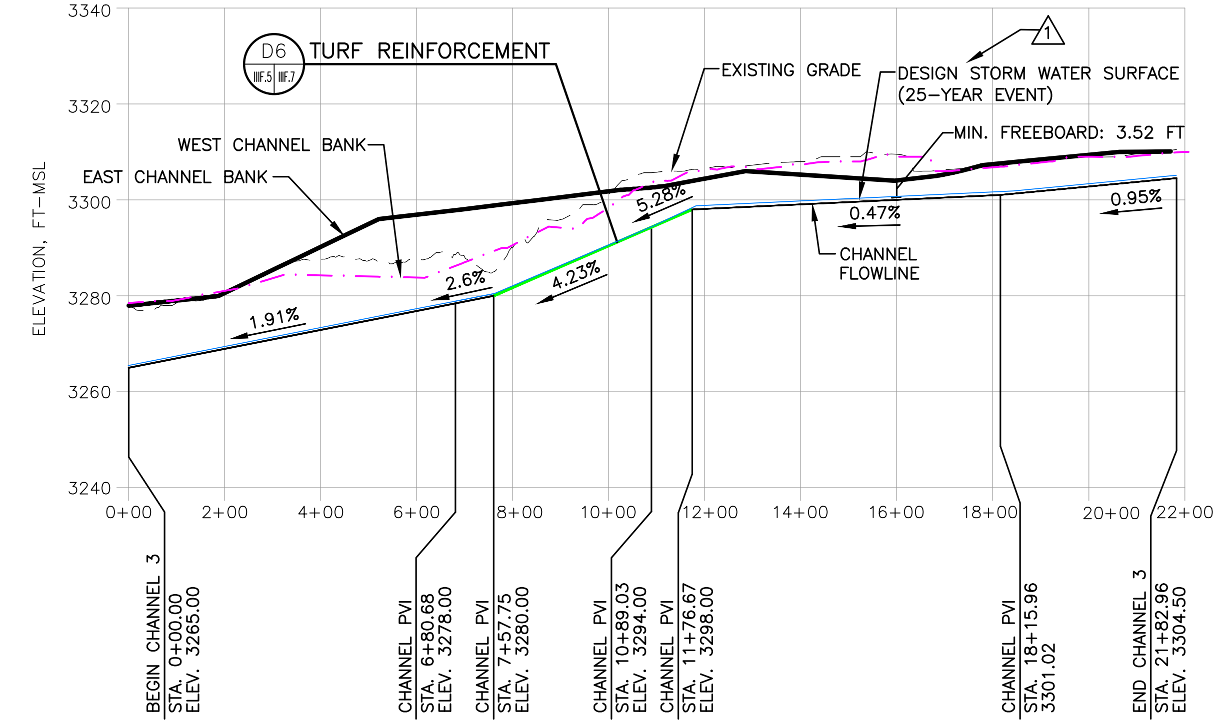
1. REFER TO DRAWING IIIF.4 FOR PROFILE LOCATIONS.
2. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
3. HYDRAULIC CALCULATIONS INCLUDED IN APPENDIX IIIF-B.
4. GABIONS SHALL BE USED FOR VELOCITIES OF 13 FT/SEC OR HIGHER.
5. CULVERT CALCULATIONS INCLUDED IN APPENDIX IIIF-B.

2

25-YEAR CHANNEL 2 INFORMATION

CHANNEL STATION FROM	CHANNEL STATION TO	BOTTOM WIDTH (FT)	PEAK INFLOW (CFS)	SLOPE (%)	FLOW DEPTH (FT.)	VELOCITY (FT/S)
0+00	3+16.13	25	499.54	2.50	1.68	9.88
3+16.13	37+27.12	25	499.54	0.51	2.63	5.76

NOTE: NORMAL DEPTH CALCULATION DOES NOT ACCOUNT FOR BACK WATER WHICH WILL INCREASE FLOW DEPTH (SEE PROFILE) AND DECREASE VELOCITY.



CHANNEL 3 3 IIIF.4 IIIF.5

0 200 400
SCALE IN FEET (HORIZONTAL)

0 20 40
SCALE IN FEET (VERTICAL)

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DATE: 07/2024
FILE: 0120-809-11
CAD: IIIF.5_6-PERIMETER CHANNEL PROFILES.DWG

DRAWN BY: SRF
DESIGN BY: CMW
REVIEWED BY: CRM

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

MAJOR PERMIT AMENDMENT
PERIMETER CHANNEL PROFILES

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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DRAWING IIIF.5

O:\0120\809\EXPANSION 2023\PART III\IIIF\IIIF.5_6-PERIMETER CHANNEL PROFILES.dwg, jwilson, 1:2

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105073
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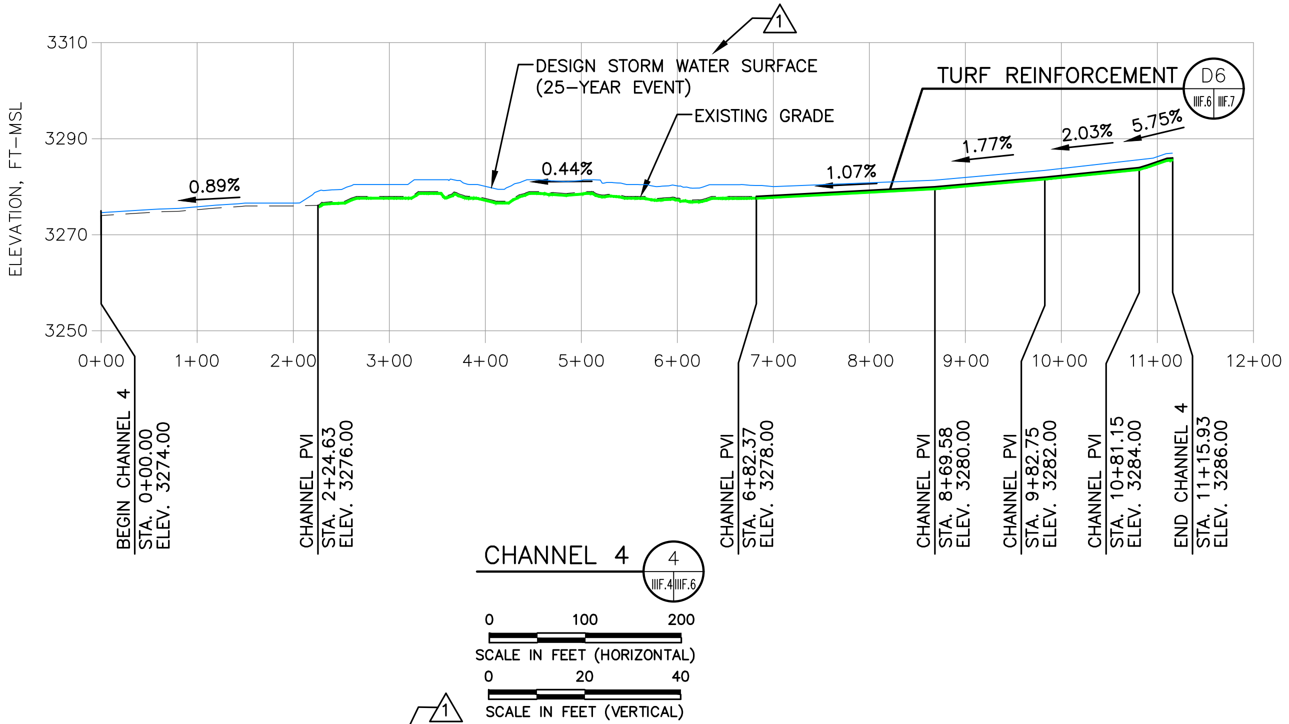
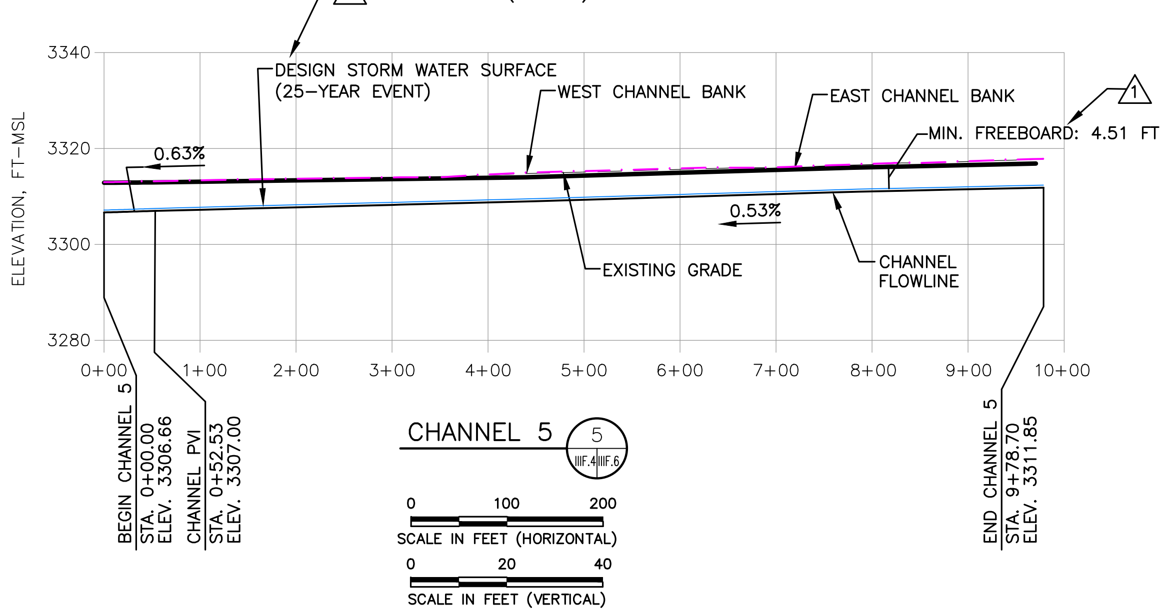
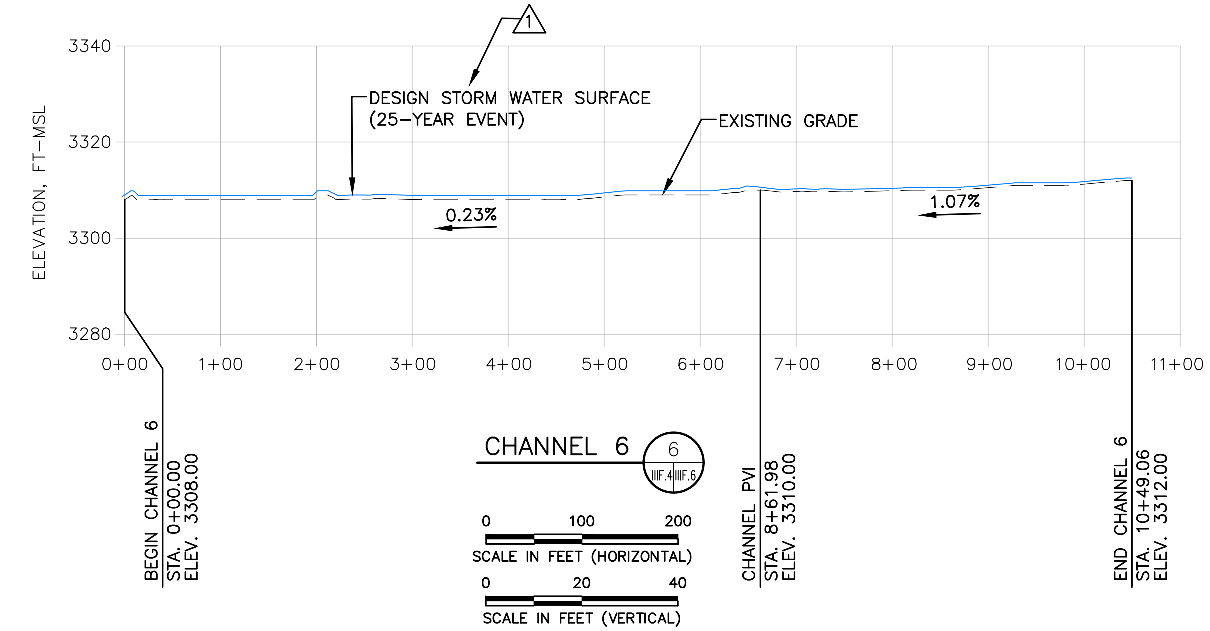


CHANNEL 4



CHANNEL 5



CHANNEL 6

25-YEAR CHANNEL 4 INFORMATION

CHANNEL STATION		BOTTOM WIDTH (FT)	PEAK INFLOW (CFS)	SLOPE (%)	FLOW DEPTH (FT.)	VELOCITY (FT/S)
FROM	TO					
0+00	2+24.63	244	492.81	0.89	0.60	3.27
2+24.63	6+82.37	31	492.81	0.44	2.45	5.25
6+82.37	8+69.58	31	492.81	1.07	1.90	7.07
8+69.58	9+82.75	42	492.81	1.77	1.38	7.54
9+82.75	10+81.15	24	492.81	2.03	1.65	8.03
10+81.15	11+15.93	40	492.81	5.75	0.98	10.59

NOTE: NORMAL DEPTH CALCULATION DOES NOT ACCOUNT FOR BACK WATER WHICH WILL INCREASE FLOW DEPTH (SEE PROFILE) AND DECREASE VELOCITY.

NOTES:

1. REFER TO DRAWING IIIF.4 FOR PROFILE LOCATIONS.
2. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
3. HYDRAULIC CALCULATIONS INCLUDED IN APPENDIX IIIF-B.
4. GABIONS SHALL BE USED FOR VELOCITIES OF 13 FT/SEC OR HIGHER.
5. CULVERT CALCULATIONS INCLUDED IN APPENDIX IIIF-B.

25-YEAR CHANNEL 5 INFORMATION

CHANNEL STATION		BOTTOM WIDTH (FT)	PEAK INFLOW (CFS)	SLOPE (%)	FLOW DEPTH (FT.)	VELOCITY (FT/S)
FROM	TO					
0+00	0+52.53	10	12.62	0.63	0.49	2.24
0+52.53	9+78.70	10	12.62	0.53	0.52	2.12

NOTE: NORMAL DEPTH CALCULATION DOES NOT ACCOUNT FOR BACK WATER WHICH WILL INCREASE FLOW DEPTH (SEE PROFILE) AND DECREASE VELOCITY.

△1 INDICATES REVISION (SEE LIST OF REVISIONS)

LIST OF REVISIONS:

1. ADDED 25-YEAR EVENT STAGE AND PROVIDED MINIMUM FREEBOARD.

25-YEAR CHANNEL 6 INFORMATION

CHANNEL STATION		BOTTOM WIDTH (FT)	PEAK INFLOW (CFS)	SLOPE (%)	FLOW DEPTH (FT.)	VELOCITY (FT/S)
FROM	TO					
0+00	8+61.98	248	453.17	0.23	0.84	2.01
8+61.98	10+49.06	247	453.17	1.07	0.53	3.24

NOTE: NORMAL DEPTH CALCULATION DOES NOT ACCOUNT FOR BACK WATER WHICH WILL INCREASE FLOW DEPTH (SEE PROFILE) AND DECREASE VELOCITY.

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120-809-11
CAD: IIIF.5_6-PERIMETER CHANNEL PROFILES.DWG

DRAWN BY: SRF
DESIGN BY: CMW
REVIEWED BY: CRM

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

MAJOR PERMIT AMENDMENT
PERIMETER CHANNEL PROFILES

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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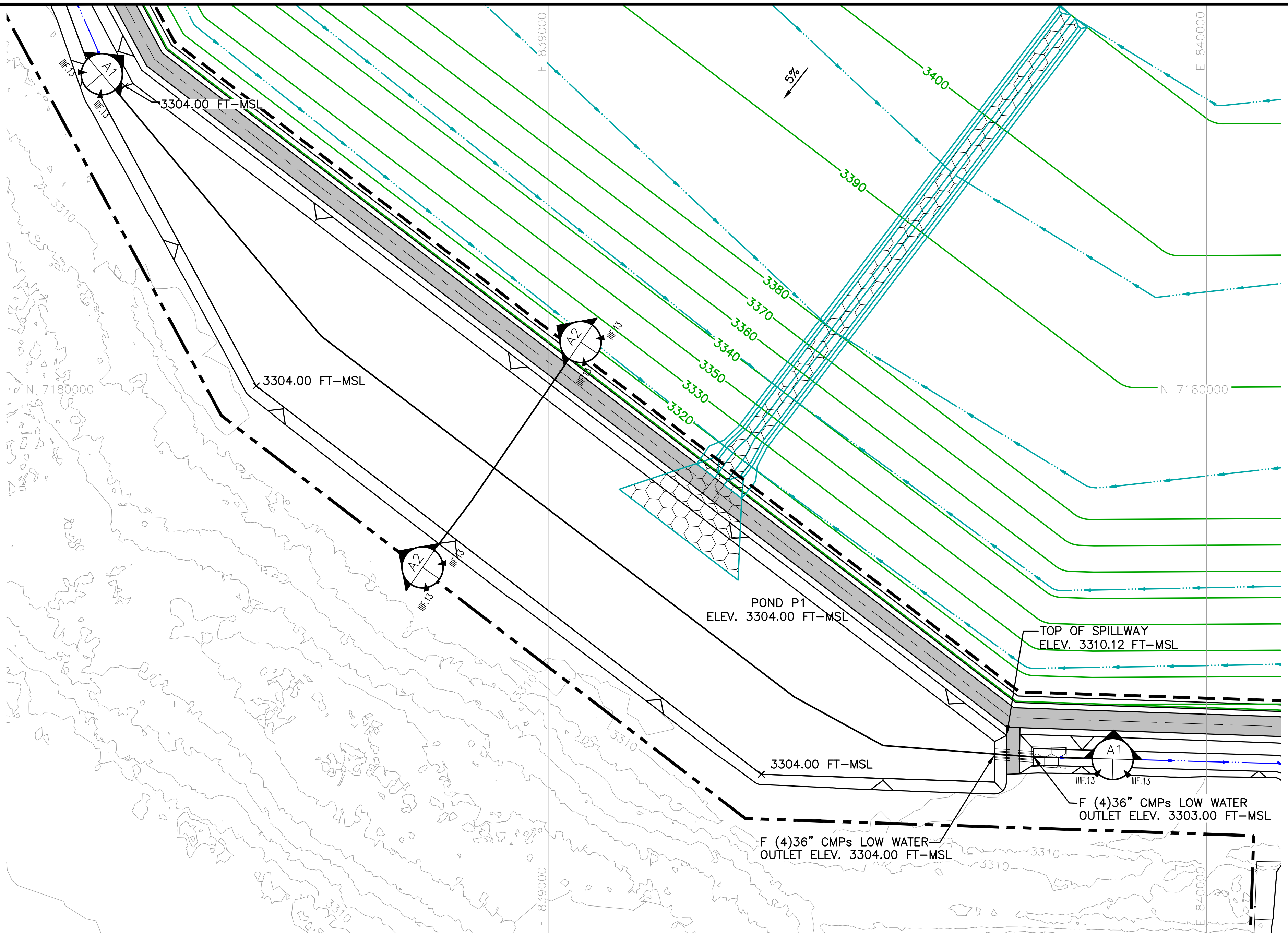
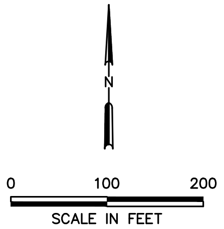
DRAWING IIIF.6

O:\0120\809\EXPANSION 2023\PART III\IIIF\IIIF.5_6-PERIMETER CHANNEL PROFILES.dwg, jwilson, 1:2





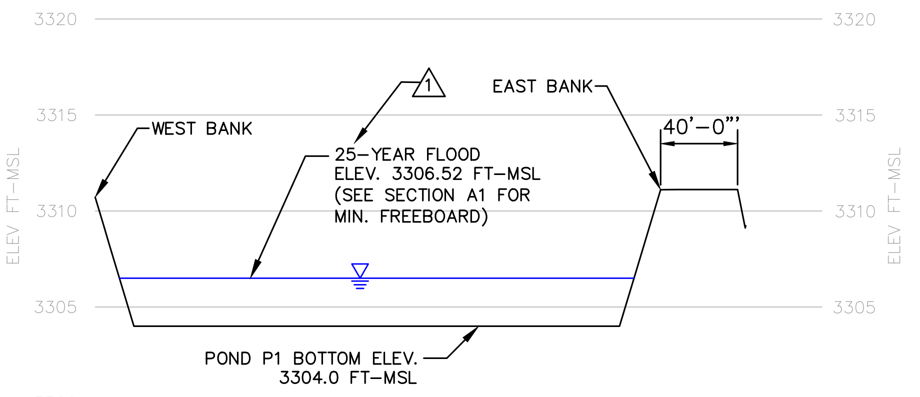
CHARLES R. MARSH
105073
02/28/2025

LEGEND

▬ ▪ ▬	PROPOSED PERMIT BOUNDARY
▬ ▬	PROPOSED LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
3400	EXISTING CONTOUR
3400	FINAL COVER CONTOUR
	DRAINAGE SWALE
	DRAINAGE LETDOWN
	CHANNEL CENTERLINE
△1	INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.

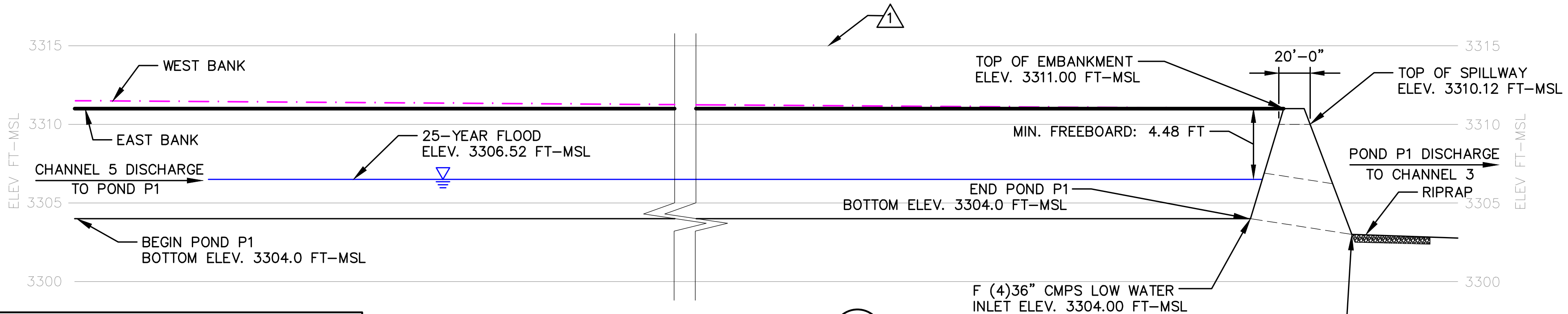


LONGITUDINAL SECTION A2 IIIF.13 IIIF.13 △2

0 50 100
HORIZONTAL SCALE IN FEET
0 5 10
VERTICAL SCALE IN FEET

LIST OF REVISIONS:

1. ADDED 25–YEAR YEAR STORM STAGE.
2. ADDED PROFILE.



LONGITUDINAL SECTION A1 IIIF.13 IIIF.13

0 50 100
HORIZONTAL SCALE IN FEET
0 5 10
VERTICAL SCALE IN FEET

DETENTION POND DESIGN SUMMARY

POND BOTTOM	3304.00 FT–MSL
TOP OF EMBANKMENT	3311.00 FT–MSL
SPILLWAY ELEVATION	3310.12 FT–MSL
25–YEAR PEAK STAGE	3306.52 FT–MSL
25–YEAR STORAGE VOLUME	18.87 AC–FT
LOW WATER OUTLET	(4)36" CMPs
OUTLET UPSTREAM ELEVATION	3304.00 FT–MSL
OUTLET DOWNSTREAM ELEVATION	3303.00 FT–MSL

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DATE: 08/2024
FILE: 0120–809–11
CAD: IIIF.13–POND P1 PLAN.DWG

DRAWN BY: SRF
DESIGN BY: CMW
REVIEWED BY: CRM

Weaver Consultants Group
TBPE REGISTRATION NO. F–3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

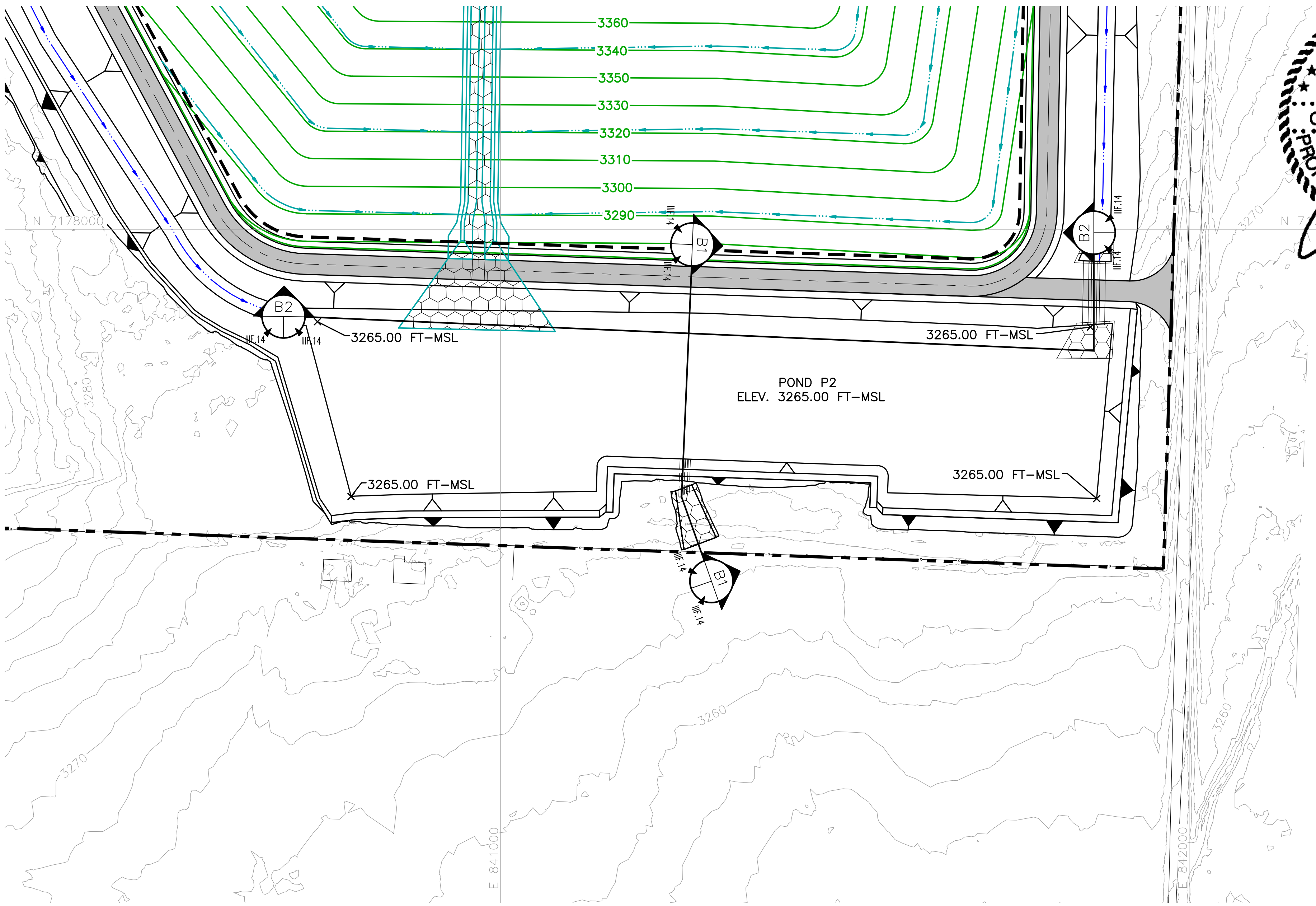
NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

MAJOR PERMIT AMENDMENT
POND P1 PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

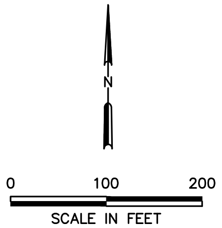
WWW.WCGRP.COM

DRAWING IIIF.13



CHARLES R. MARSH
105073

02/28/2025

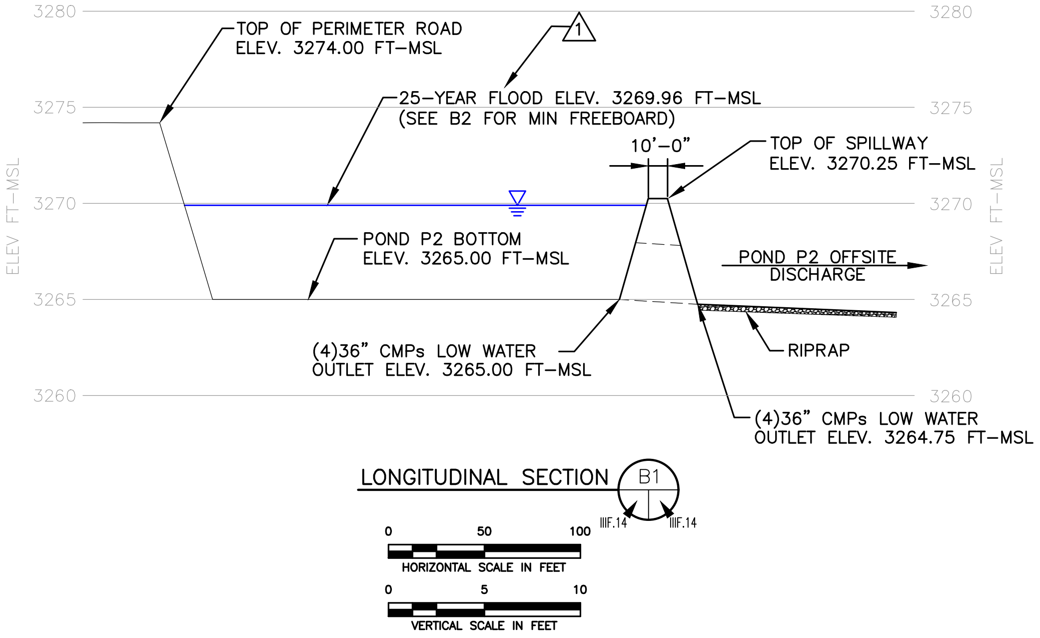


LEGEND

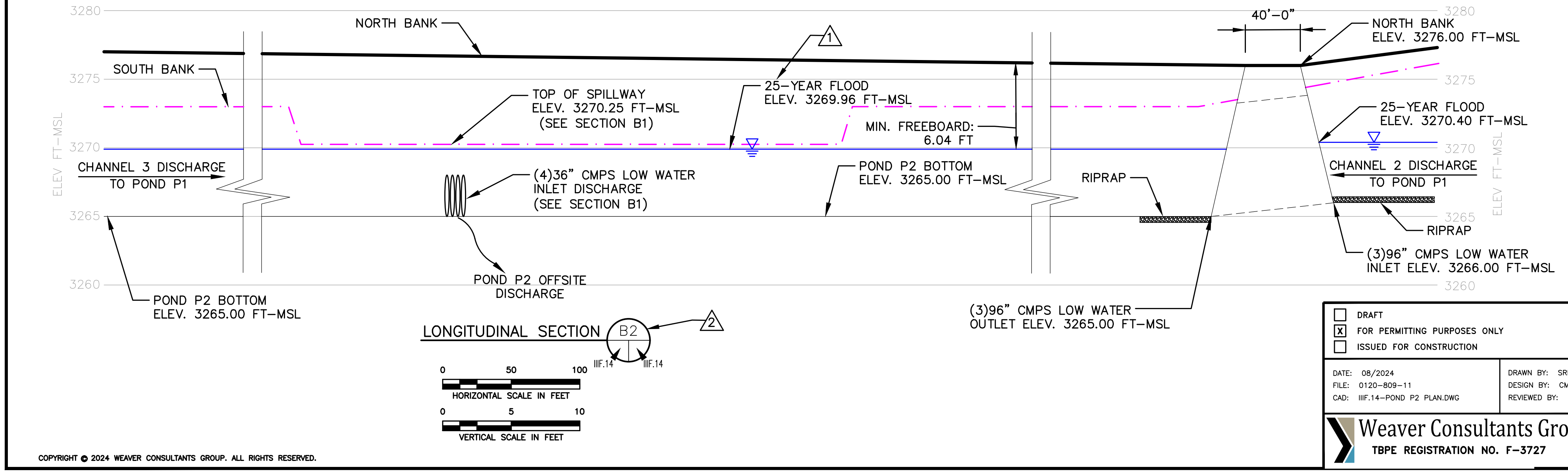
━ ━ · ━	PROPOSED PERMIT BOUNDARY
━ ━ ━ ━	PROPOSED LIMIT OF WASTE
N 7180000 ────	STATE PLANE COORDINATE SYSTEM
──3400──	EXISTING CONTOUR
──3380──	FINAL COVER CONTOUR
────	DRAINAGE SWALE
▨	DRAINAGE LETDOWN
──→──	CHANNEL CENTERLINE
△1	INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.



LONGITUDINAL SECTION B1



LONGITUDINAL SECTION B2

LIST OF REVISIONS:

1. ADDED 25–YEAR YEAR STORM STAGE.
2. ADDED PROFILE.

DETENTION POND DESIGN SUMMARY	
POND BOTTOM	3265.00 FT–MSL
TOP OF EMBANKMENT	3274.00 FT–MSL
SPILLWAY ELEVATION	3270.25 FT–MSL
25–YEAR PEAK STAGE	3269.96 FT–MSL
25–YEAR STORAGE VOLUME	33.05 AC–FT
LOW WATER OUTLET	(4)36" CMPs
OUTLET UPSTREAM ELEVATION	3265.00 FT–MSL
OUTLET DOWNSTREAM ELEVATION	3264.75 FT–MSL

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DATE: 08/2024
FILE: 0120–809–11
CAD: IIIF.14–POND P2 PLAN.DWG

DRAWN BY: SRF
DESIGN BY: CMW
REVIEWED BY: CRM

Weaver Consultants Group
TBPE REGISTRATION NO. F–3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

MAJOR PERMIT AMENDMENT
POND P2 PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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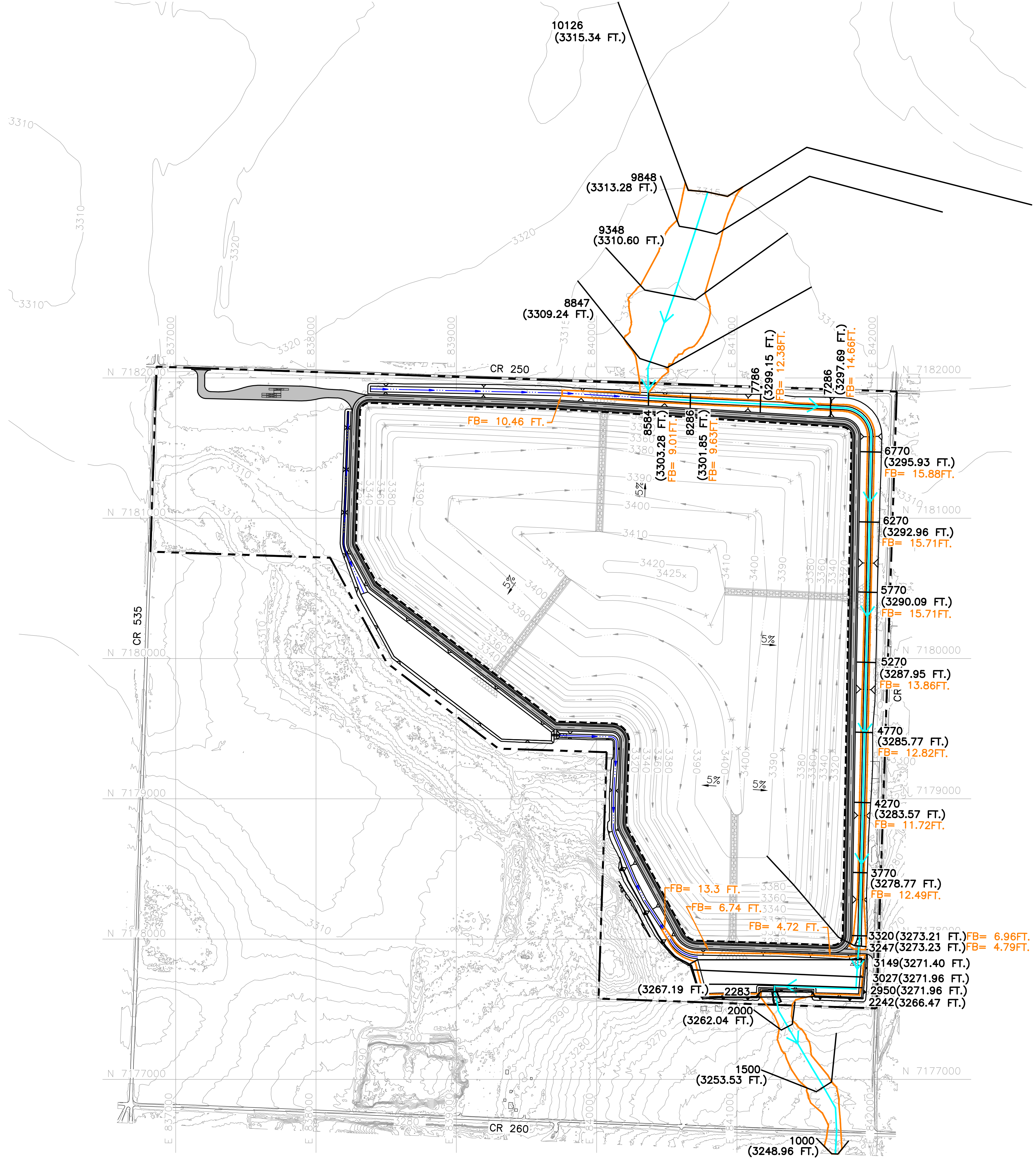
DRAWING IIIF.14

O:\0120\809\EXPANSION 2023\PART III\IIIF\IIIF.14–POND P2 PLAN.dwg, jwilson, 1:2



N

0 400 800
SCALE IN FEET

CHARLES R. MARSH
105073
02/28/2025

LEGEND

PROPOSED PERMIT BOUNDARY
PROPOSED LIMIT OF WASTE
N 7180000 — STATE PLANE COORDINATE SYSTEM
3300 — EXISTING CONTOUR
3400 — FINAL COVER CONTOUR
DRAINAGE SWALE
DRAINAGE LETDOWN
CHANNEL CENTERLINE
5770 (3290.09 FT.) FB= 15.71FT. — HEC–RAS CROSS SECTION, 100–YEAR FLOODPLAIN ELEVATION, AND DESIGNED FREEBOARD
PROPOSED UNNAMED RICH LAKE TRIBUTARY FLOWLINE
POST–PROJECT 100–YEAR FLOODPLAIN
1 — INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM USGS CONTOUR DATA AND UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022 AND BASED ON NAVD 88 VERTICAL DATUM. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.

LIST OF REVISIONS:

1. ADDED DRAWING FOR 100–YEAR FLOODPLAIN FREEBOARD SUMMARY.

1

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 02/2025
FILE: 0120–809–11
CAD: IIIF.15 FREEBOARD PLAN.DWG

DRAWN BY: RAA
DESIGN BY: VG
REVIEWED BY: CRM

Weaver Consultants Group
TBPE REGISTRATION NO. F–3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISIONS

MAJOR PERMIT AMENDMENT FREEBOARD SUMMARY PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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DRAWING IIIF.15

O:\0120\809\EXPANSION 2023\PART III\IIIF\IIIF.15 FREEBOARD PLAN.dwg, jwilson, 1:2

APPENDIX IIIF-B

PERIMETER CHANNEL, DETENTION POND, AND CULVERT DESIGN

Includes pages IIIF-B-1 through IIIF-B-~~16~~17

STATE OF TEXAS
CHARLES R. MARSH
105073
LICENSED
PROFESSIONAL ENGINEER

02/28/2025

Prep By: CMW
Date: 2/14/2025

CITY OF MEADOW LANDFILL
0120-809-11-05
PERIMETER CHANNEL HYDRAULIC ANALYSIS

Chkd By: JPI / CRM
Date: 2/14/2025

Channel[2]	Station[2]		Flow Rate[3]	Bottom	Bottom	Left Side	Right Side	Manning's	Normal	Flow Vel.	Froude No.	Vel. Head	Energy	Flow Area[1]	Top width of
	From	To	(cfs)	Slope (ft/ft)	Width (ft)	Slope (ft/ft)	Slope (ft/ft)	n-Value	Depth (ft)	(fps)		(ft)	Head (ft)	(sq.ft.)	Flow[1] (ft)
CH1A	0+00.00	18+57.79	386.84	0.0061	40	3	3	0.03	1.69	5.08	0.726	0.40	2.09	76.22	50.15
CH1B	0+00.00	11+68.17	363.60	0.0050	35	3	3	0.03	1.86	4.82	0.664	0.36	2.22	75.47	46.16
CH1C	0+00.00	5+16.76	352.93	0.0051	25	3	3	0.03	2.17	5.16	0.679	0.41	2.58	28.33	38.01
CH2	0+00.00	3+16.13	499.54	~~0.0051~~ 0.0250	25	3	3	0.03	~~2.63~~ 1.68	~~5.76~~ 9.88	~~0.697~~ 1.452	~~0.52~~ 1.52	~~3.15~~ 3.20	~~86.67~~ 50.54	~~40.81~~ 35.09
	3+16.13	37+27.12	499.54	~~0.0320~~ 0.0051	25	3	3	0.03	~~1.57~~ 2.63	~~10.73~~ 5.76	~~1.626~~ 0.697	~~1.79~~ 0.52	~~3.36~~ 3.15	~~46.56~~ 86.67	~~34.40~~ 40.81
CH3	0+00.00	6+80.68	50.79	0.0191	25	3	3	0.03	0.48	4.02	1.054	0.25	0.73	12.62	27.86
	6+80.68	7+57.75	50.79	0.0260	25	3	3	0.03	0.44	4.43	1.213	0.31	0.74	11.46	27.61
	7+57.75	10+89.03	50.79	0.0423	25	3	3	0.03	0.38	5.16	1.512	0.41	0.79	9.85	27.26
	10+89.03	11+76.67	50.79	0.0528	25	3	3	0.03	0.35	5.52	1.672	0.47	0.83	9.20	27.12
	11+76.67	18+15.96	50.79	~~0.0154~~ 0.0047	25	3	3	0.03	~~0.51~~ 0.72	~~3.76~~ 2.59	~~0.956~~ 0.558	~~0.22~~ 0.10	~~0.73~~ 0.83	~~13.50~~ 19.63	~~28.05~~ 29.34
	18+15.96	21+82.96	50.79	~~0.0046~~ 0.0095	25	3	3	0.03	~~0.73~~ 0.59	~~2.57~~ 3.24	~~0.552~~ 0.769	~~0.10~~ 0.16	~~0.83~~ 0.75	~~19.76~~ 15.70	~~29.36~~ 28.52
CH4	0+00.00	2+24.63	492.81	0.0089	244	7	15	0.03	0.60	3.27	0.754	0.17	0.77	150.64	257.22
	2+24.63	6+82.37	492.81	0.0044	31	3	3	0.03	2.45	5.25	0.645	0.43	2.88	93.90	45.69
	6+82.37	8+69.58	492.81	0.0107	31	3	3	0.03	1.90	7.07	0.972	0.78	2.68	69.72	42.40
	8+69.58	9+82.75	492.81	0.0177	42	4	4	0.03	1.38	7.54	1.198	0.88	2.26	65.34	53.00
	9+82.75	10+81.15	492.81	0.0203	24	7	9	0.03	1.65	8.03	1.282	1.00	2.65	61.40	50.41
	10+81.15	11+15.93	492.81	0.0575	40	7	8.5	0.03	0.98	10.59	2.033	1.74	2.72	46.53	55.16
CH5	0+00.00	0+52.53	12.62	0.0063	10	3	3	0.03	0.49	2.24	0.600	0.08	0.57	5.63	12.94
	0+52.53	9+78.70	12.62	0.0053	10	3	3	0.03	0.52	2.12	0.554	0.07	0.59	5.96	13.09
CH6	0+00.00	8+61.98	453.17	0.0023	248	28	24	0.03	0.84	2.01	0.402	0.06	0.90	225.97	291.56
	8+61.98	10+49.06	453.17	0.0107	247	32	28	0.03	0.53	3.24	0.807	0.16	0.69	139.81	278.90

Note:
1) Calculations were performed using the HYDROCALC HYDRAULIC FOR WINDOWS Computer Program developed by Dodson and Associates (Version 2.0.1, 1996-2010).
2) Refer to Drawing IIIF.4 for channel locations.
3) Flow rates shown are the peak flow rates obtained from the HEC-HMS model. See HEC-HMS Output-Post Project Conditions in Appendix IIIF-A.

Prep. By: CMW
Date: 2/14/2025

CITY OF MEADOW LANDFILL
0120-809-11-05
DETENTION POND OUTLET STRUCTURE AND CULVERT
EROSION PROTECTION CALCULATIONS

Chkd By: JPI/CRM
Date: 2/14/2025

Required: Determine the minimum length and median diameter of riprap required at the detention pond outlet structures and creek culverts to control erosion in the detention pond outlet channels.

Reference:

1. Haan, Barfield, and Hayes, *Design Hydrology and Sedimentology for Small Catchments* , 1994.
2. Dodson's and Associates, Inc., *ProHec-1 Plus Program Documentation,* 1995.
3. Freeman, Gary E., J. Craig Fischenich, Gabion for Streambank Erosion Control, 2000. EMRRP Technical Notes Collection (ERDC TN-EMRRP-SR-22), U.S. Army Engineer Research and Development Center, Vicksburg, MS.

Solution: The riprap will be designed for the 25-year flow rates at the detention pond outlet structures and culverts. The flow at the outlet structures and culverts can be divided into two categories:

1. Flow over the Spillway/Road

Erosion protection calculations for the drainage structures will be based on flow through low water outlets/culverts only.

Flow Structure Spillway Topslope	25-Year Flow Rate (cfs)	25-Year Velocity (ft/s)	25-Year Flow Depth (ft)	25-Year Foude Number	25-Year Velocity Head (ft)	25-Year Energy Head (ft)	25-Year Flow Area (sq. ft.)	25-Year Top Width (ft)
P1	--	--	--	--	--	--	--	--
P2	--	--	--	--	--	--	--	--

Flow Structure Spillway Sideslope	25-Year Flow Rate (cfs)	25-Year Velocity (ft/s)	25-Year Flow Depth (ft)	25-Year Foude Number	25-Year Velocity Head (ft)	25-Year Energy Head (ft)	25-Year Flow Area (sq. ft.)	25-Year Top Width (ft)
P1	--	--	--	--	--	--	--	--
P2	--	--	--	--	--	--	--	--

2. Flow through the Low Water Outlet

The flow rate through the low water outlet (LWO) is summarized below.

Flow Structure	Pond Bottom Elev (ft-msl)	LWO Invert Elev. Upstream (ft-msl)	LWO Invert Elev. Downstream (ft-msl)	LWO Diameter (in)	25-Year Flow Rate[2] (cfs)	25-Year Outlet Velocity[1] (ft/s)
P1	3304.00	3304.00	3303.00	36	11.74	5.53
P2	3265.00	3265.00	3264.75	36	53.67	7.59
C3	3265.00	3266.00	3265.00	96	166.50	9.13

[1] Velocities through the low water outlets were calculated using the HYDROCALC HYDRAULICS FOR WINDOWS program developed by Dodson and Associates (Version 1.2a, 1996).

[2] The flowrates for all low water outlets are the peak discharges for the respective areas as calculated by HEC-HMS since the spillway crest is not overtopped in the 25-year event. The total 25-year flowrate discharging P1 is 46.94 cfs / 4 pipes = 11.74 cfs per pipe ~~and~~, P2 is 214.68 cfs / 4 pipes = 53.67 cfs per pipe, and C3 is 499.54 cfs / 3 pipes = 166.51 cfs per pipe.

The flowrate through the low water outlet is used to design the riprap apron. The nomograph used for design of the length of the riprap and the median diameter are shown on page IIIF-B-12.

The minimum riprap length and diameter for each outlet is summarized below. The length of the riprap is increased by 20 percent to provide for a conservative design.

Pond	Riprap Design Flowrate (cfs)	Pipe Diameter (in)	Riprap Length (ft)	Adjusted Length L x 1.2 (ft)	Median Rock Diameter (ft)
P1	11.7	36	10	12	0.25
P2	53.7	36	15	18	0.25
C3	166.5	96	30	36	0.50

Apron width required for the ponds (e.g., width of erosion protection in outlet channel) are:
W_{req}=LWO diameter + 0.4*(RipRap Length)

Pond	W_{req} (ft)	$W_{provided}$ (ft)
P1	7.0	17.0
P2	9.0	19.0
C3	15.0	30.0

The median diameter of riprap is intended to determine the minimum diameter of the riprap that will be used. As an alternative, 2-foot thick gabions with a d_{50} of 6-inches can be used.

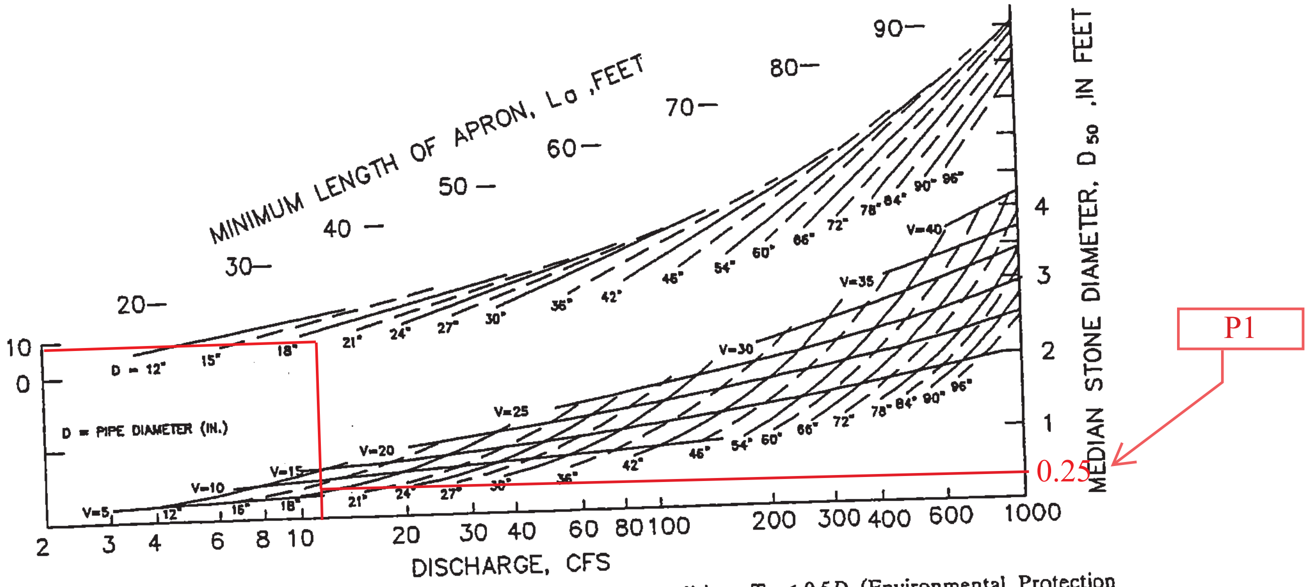


Figure 5.24 Design of outlet protection—minimum tailwater condition, $T_w < 0.5D$ (Environmental Protection Agency, 1976).

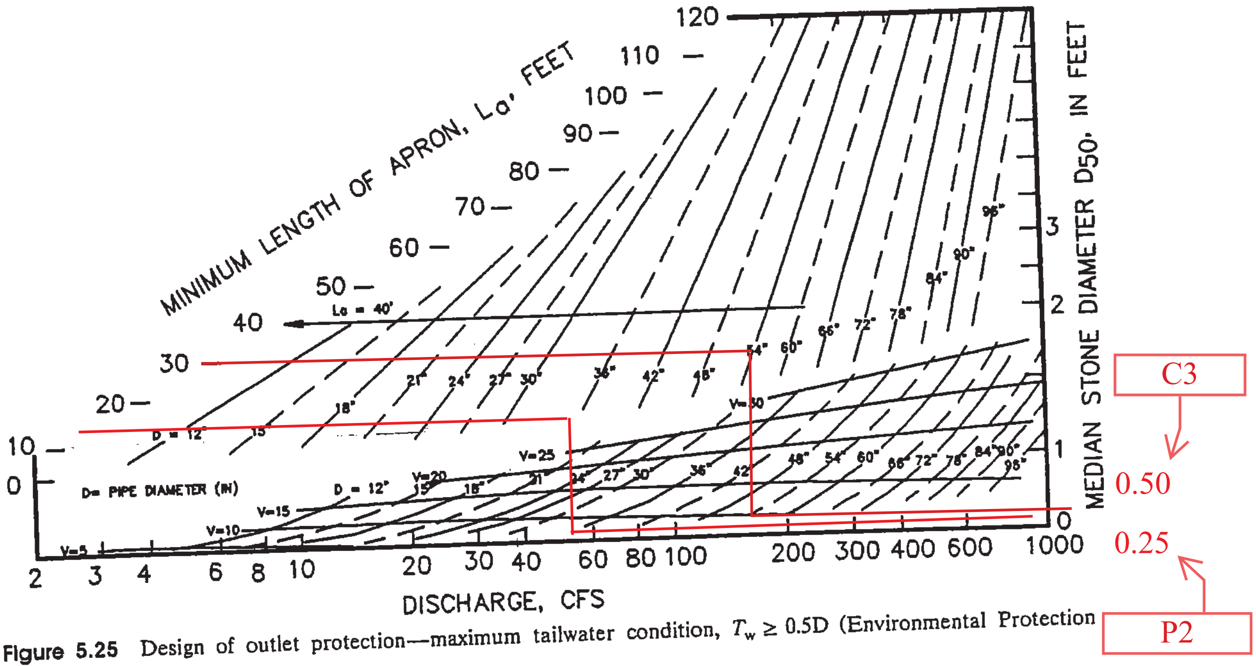
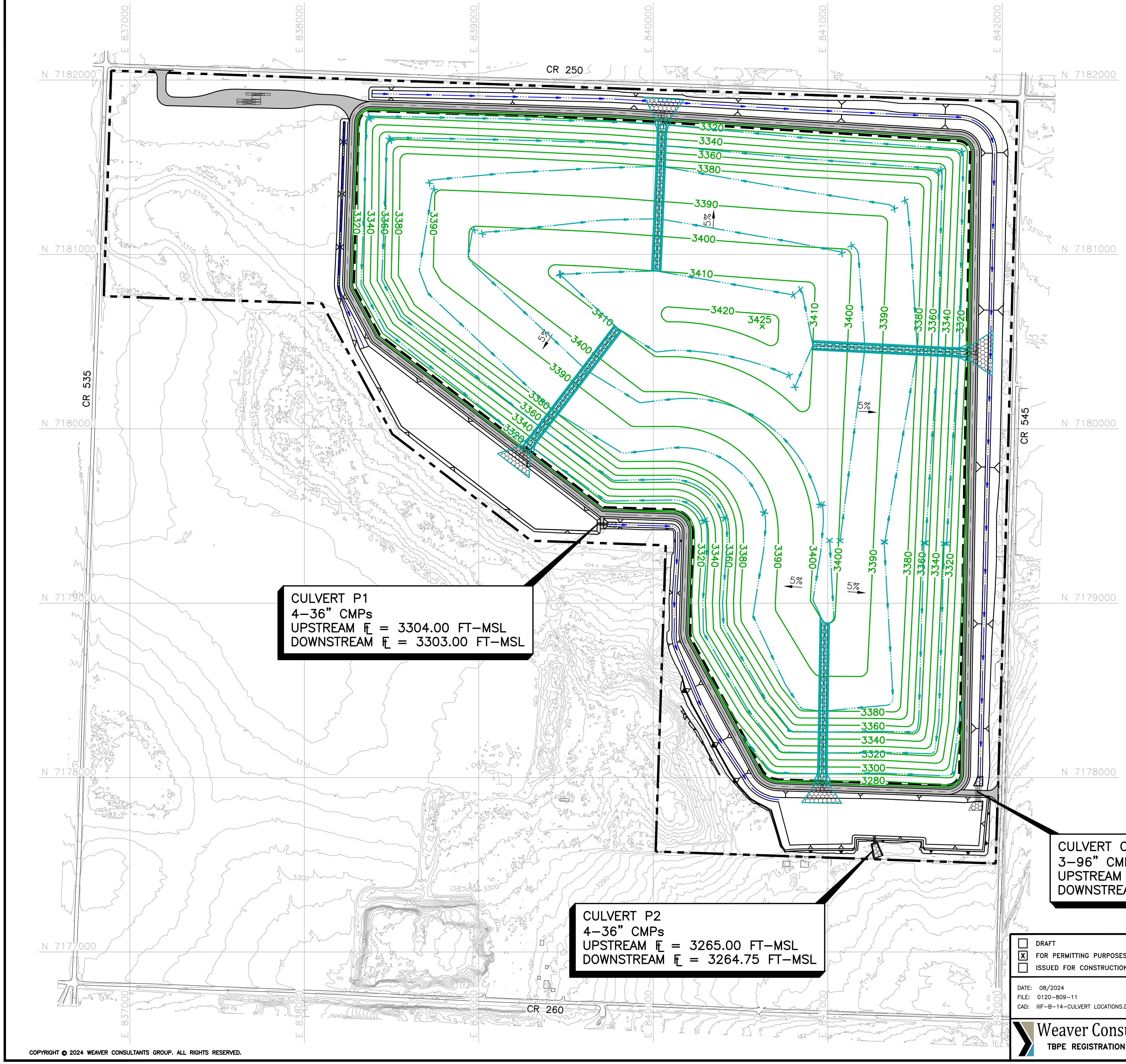


Figure 5.25 Design of outlet protection—maximum tailwater condition, $T_w \geq 0.5D$ (Environmental Protection Agency, 1976).

into the riser 3 ft below its top, what discharge will pass through the four holes with the water level at 1, 2, 4, and 8 ft above the riser? (c) What is the total discharge through the pipe? (d) How might the orifices be sized to provide better stormwater control? (e) Explain whether you would expect two rows (each consisting of four holes) of 8-in.-diameter holes to provide better results? Assume that one row is 2 ft below the riser invert and the other row is 4 ft below the riser invert.

(5.6) A gravel roadway is constructed in a low-lying area such that the roadway is frequently overtopped as a result of severe storms. The roadway is 40 ft wide, and its elevation is 36 ft. (a) If the water level upstream of the roadway is 2 ft above the crest of the roadway, what is the discharge across the roadway? (b) If the roadway is paved, what upstream depth would be required to carry the same flow? (c) Would paving reduce flooding problems?



CULVERT P1
4–36" CMPs
UPSTREAM ℄ = 3304.00 FT–MSL
DOWNSTREAM ℄ = 3303.00 FT–MSL

CULVERT P2
4–36" CMPs
UPSTREAM ℄ = 3265.00 FT–MSL
DOWNSTREAM ℄ = 3264.75 FT–MSL

CULVERT C3 △1
3–96" CMPs
UPSTREAM ℄ = 3266.00 FT–MSL
DOWNSTREAM ℄ = 3265.00 FT–MSL

N

0 300 600
SCALE IN FEET

LEGEND

— · —	PROPOSED PERMIT BOUNDARY
— — —	PROPOSED LIMIT OF WASTE
N 7180000 ——	STATE PLANE COORDINATE SYSTEM
—3400—	EXISTING CONTOUR
—3400—	FINAL COVER CONTOUR
—→—	DRAINAGE SWALE
▨	DRAINAGE LETDOWN
—·→—	CHANNEL CENTERLINE
△1	INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.

LIST OF REVISIONS:

1. ADDED CALLOUT FOR CULVERT C3.

CHARLES R. MARSH
105073
02/28/2025

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120-809-11
CAD: IIIF-B-14-CULVERT LOCATIONS.DWG

DRAWN BY: SRF
DESIGN BY: CMW
REVIEWED BY: CRM

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

MAJOR PERMIT AMENDMENT
CULVERT LOCATIONS

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

DRAWING IIIF–B–14

O:\0120\809\EXPANSION 2023\PART III\IIIF-B\IIIF-B-14-CULVERT LOCATIONS.dwg, jwilson, 1:2

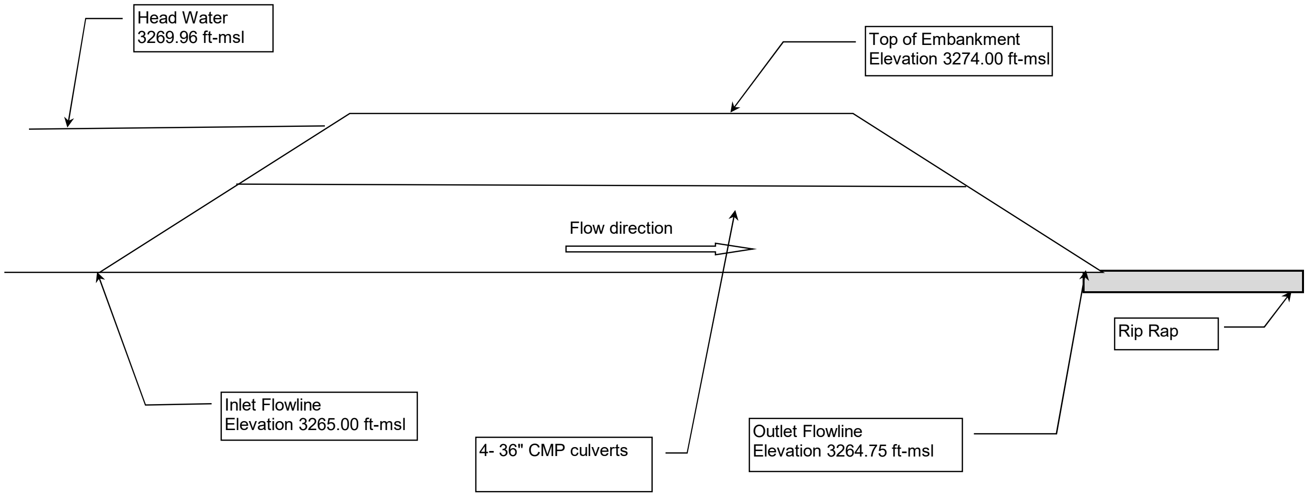
CITY OF MEADOW LANDFILL
0120-809-11-05
CULVERT DESIGN

For proposed 36" ~~RCP~~ CMP culverts at downstream end of P2

Total Flow=	214.68	cfs
No. of Culverts=	4	
Culvert Span=	--	inches
Culvert Rise=	--	inches
Culvert Diameter=	36	inches

Culvert ID	Culvert Span	Culvert Span (ft)	FHWA Chart Number	FHWA Scale Number	Culvert Diameter (ft)	Manning's Coefficient	Entrance Loss Coefficient	Culvert Length (ft)	Downstream Invert Elevation (ft msl)	Upstream Invert Elevation (ft msl)	Flow Rate (cfs)	Tailwater Depth[2] (ft)	Headwater Inlet Control (ft)	Headwater Outlet Control (ft)	Normal Depth (ft)	Critical Depth (ft)	Depth at Outlet (ft)	Outlet Velocity (fps)
P2	--	--	2	3	3	0.024	0.8	41.50	3264.75	3265.00	53.67	1.07	4.93	4.06	3.00	2.38	3.00	7.59

1. Calculations were performed using the HYDROCALC Hydraulics for Windows program developed by Dodson and Associates (Version 2.0, 1996-2010).
2. Tailwater depth is assumed to be the 25-year, 24-hour normal depth in the channel downstream of the culvert.



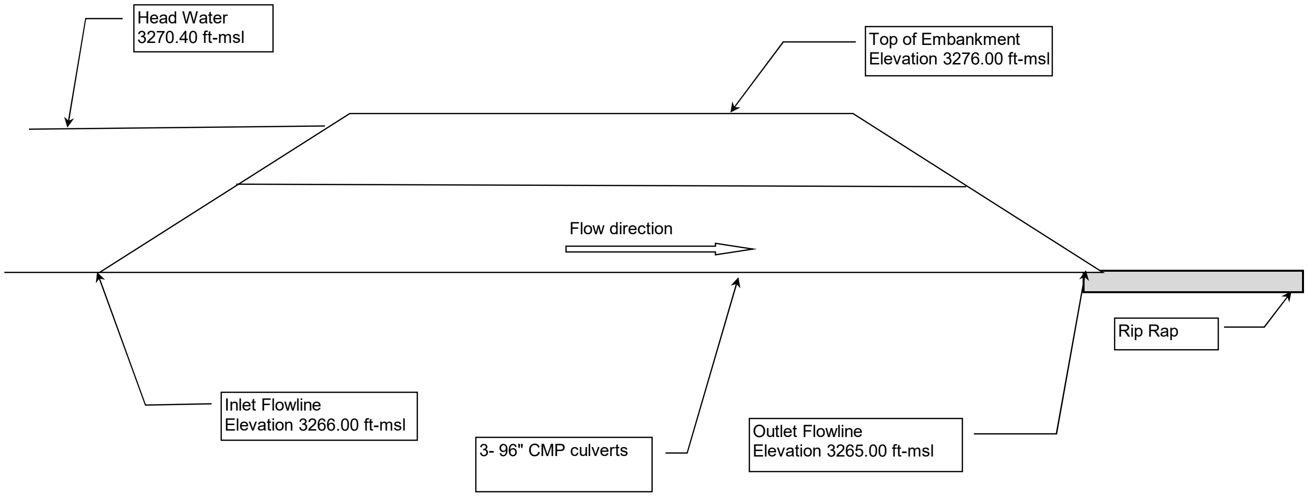
CITY OF MEADOW LANDFILL
0120-809-11-05
CULVERT DESIGN

For proposed 96" CMP culverts at downstream end of Channel 2.

Total Flow=	499.54	cfs
No. of Culverts=	3	
Culvert Span=	--	inches
Culvert Rise=	--	inches
Culvert Diameter=	96	inches

Culvert ID	Culvert Span	Culvert Span (ft)	FHWA Chart Number	FHWA Scale Number	Culvert Diameter (ft)	Manning's Coefficient	Entrance Loss Coefficient	Culvert Length (ft)	Downstream Invert Elevation (ft msl)	Upstream Invert Elevation (ft msl)	Flow Rate (cfs)	Tailwater Depth[2] (ft)	Headwater Inlet Control (ft)	Headwater Outlet Control (ft)	Normal Depth (ft)	Critical Depth (ft)	Depth at Outlet (ft)	Outlet Velocity (fps)
C3	--	--	3	2	8	0.024	0.7	92.30	3265.00	3266.00	166.51	4.00	4.40	0.00	3.13	3.22	3.13	9.13

1. Calculations were performed using the HYDROCALC Hydraulics for Windows program developed by Dodson and Associates (Version 2.0, 1996-2010).
2. Tailwater depth is assumed to be the 25-year, 24-hour normal depth in the channel downstream of the culvert.



APPENDIX IIIF-D

EROSION LAYER EVALUATION

Includes pages IIIF-D-1 through IIIF-D-33

STATE OF TEXAS
CHARLES R. MARSH
105073
LICENSED
PROFESSIONAL ENGINEER

02/28/2025

CITY OF MEADOW LANDFILL
0120-809-11-05
EROSION LAYER EVALUATION

Case	Slope		
	Slope	Length	L_s
	(%)	(ft)	
1. Typical Top Slope	5	250	0.90
2. Longest Top Slope	5	350	1.00
3. Typical Side Slope	25	120	6.50
4. Longest Side Slope	25	132	6.75

The plant cover or cropping management factor, C, represents the percentage of soil loss that would occur if the surface were partially protected by some combination of cover and management practices. C Factor for Permanent Pasture, Range, and Idle Land with No Appreciable Canopy has the following relation with percent ground cover (GC) (from Ref 3, p.11) .

% GC	C Factor
0	0.45
20	0.2
40	0.1
60	0.042
80	0.013
95	0.0030

[1] Linear Interpolation was utlized for % GC between reported values.

C Factor = 0.013 (For ~~90~~ 80% Ground Cover)

The erosion control practice factor, P, measures the effect of control practices that reduce the erosion potential of the runoff by influencing drainage patterns, runoff concentration , and runoff velocity. Contouring for this site will be done only to establish vegetation.

P = 1.00

2 Slope Condition Soil loss calculations

	R	K	L_s	C	P	A (tons/ac/yr)
1. Typical Top Slope 5% slope 250 ft length	115	0.3	0.90	0.013	1.00	0.4
2. Longest Top Slope 5% slope 350 ft length	115	0.3	1.00	0.013	1.00	0.4
3. Typical Side Slope 25% slope 120 ft length	115	0.3	6.50	0.013	1.00	2.9
4. Longest Side Slope 25% slope 132 ft length	115	0.3	6.75	0.013	1.00	3.0

APPENDIX IIIF-F

EROSION CONTROL PLAN FOR ALL PHASES OF LANDFILL OPERATION

Includes pages IIIF-F-1 through IIIF-F-15

STATE OF TEXAS
CHARLES R. MARSH
105073
LICENSED
PROFESSIONAL ENGINEER

02/28/2025

For example, as stated in Section 4.18.3 of the current Site Operating Plan (SOP), intermediate cover areas are inspected weekly and within 72 hours of a rainfall event of 0.5 inches or more, or as soon as the areas are accessible, for proper placement, thickness, erosion, and compaction. Additionally, Section 4.23 of the SOP also requires inspections of perimeter channels and ponds to ensure they are functioning as designed (e.g., excess sediment removed, outlet structures intact, and erosion control measures intact, etc.) on a weekly basis and after a rainfall event of 0.5 inches or more, or as soon as the areas are accessible.

During the inspection of structural controls (e.g., vegetation over intermediate cover areas), if significant soil loss is identified in a given intermediate cover area, impacted areas will be replenished with additional soil. Prior to application of temporary erosion controls and seeding, the area will be graded to eliminate preferential path ways or any other uneven surface due to settlement to prevent concentrated flow over the intermediate cover areas. Soil for replenishment of cover areas will be borrowed from sedimentation ponds or any other soil source. If sediment collected from ~~wet retention pond(s) (e.g., Pond NP or~~ temporary sedimentation pond(s) is used for erosion layer replenishment, it will be stockpiled outside the ponds to dry out prior to being used for intermediate cover layer replenishment. Soil borrowed from other soil sources may be used as intermediate cover layer and erosion layer replenishment soil.

2.5 Construction Activities on Top Dome Surfaces and External Side Slopes with Intermediate Cover

Occasionally, top dome surfaces and external side slopes that have been stabilized through the use of swales, letdown structures, and compliance with the minimum required vegetation cover specification will be disturbed due to various construction activities such as the installation or repair of a landfill gas system, regrading of an area due to ponded water caused by uneven waste settlement, the repair of erosion rills, or damage due to an extreme storm event or natural disaster. Each of these events will be documented in the Site Operating Record. Recorded information will include the date of construction, approximate area disturbed, and the date re-seeding of the disturbed area occurred. In accordance with Title 30 TAC §330.165(g), previously stabilized surfaces will be repaired within 5 days of detection of the disturbance of these surfaces.

3.0 Erosion Control Plan for Daily Cover Areas and Intermediate Cover Areas for Non-External Side Slopes

BMPs will be employed to control erosion. BMPs will include the use of temporary rock riprap, silt fences, straw bales, check dams, interceptor swales and berms,

APPENDIX IIIF-G

EXCERPTS FROM CLOMR

STATE OF TEXAS
CHARLES R. MARSH
105073
LICENSED PROFESSIONAL ENGINEER
02/28/2025

Includes pages IIIF-G-1 through IIIF-G-~~15~~14

Note:
Appendix IIIF-G incorporates excerpts from the July 10, 2024 Conditional Letter of Map Revision (CLOMR) submittal to Terry County and the Federal Emergency Management Agency (FEMA), and is limited in presentation to the overall Table of Contents for the CLOMR application, Introduction and Background, Scope, and relevant figures. Appendix IIIF-G is intended to provide an overview of the CLOMR process undertaken for the permit by the applicant only.

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

VOLUME 5 OF 6

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

AARON K. EVANS
11143

02/28/2025

Prepared by

Weaver Consultants Group, LLC
TBPE Registration No. F-3727
6420 Southwest Boulevard, Suite 206
Fort Worth, Texas 76109
817-735-9770

WCG Project No. 0120-809-11-05

This document is intended for permitting purposes only.

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOT PERMIT AMMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN
APPENDIX IIIG
GEOLOGY REPORT

Prepared for

Meadow Landfill, LLC.

August 2024

Revised February 2025

AARON K. EVANS
11143

02/28/2025

Weaver Consultants Group, LLC
TBPE Registration No. F-3727
6420 Southwest Blvd., Suite 206
Fort Worth, Texas 76109
817-735-9770

WCG Project No. 0120-809-11-05

This document intended for permitting purposes only.

GEOLOGY REPORT CERTIFICATION

Site Information

Site: City of Meadow Landfill

Site Location: Terry County

MSW Permit No.: 2293C

Qualified Groundwater Scientist Statement

I, Aaron K. Evans, am a Texas-licensed professional geoscientist and a qualified groundwater scientist as defined in Title 30 TAC §330.3(120). I have prepared the Geology Report which constitutes Appendix IIIG of this permit application. In my professional opinion, the Geology Report is in compliance with the requirements specified in Title 30 TAC §§330.63(e). This report has been completed specifically for the City of Meadow Landfill. The only warranty made by me in connection with this report is that I have used that degree of care and skill ordinarily exercised under similar conditions by reputable members of my profession, practicing in the same or similar locality. No other warranty, expressed or implied, is intended.

Firm/Address:
Weaver Consultants Group, LLC
6420 Southwest Blvd., Suite 206
Fort Worth, Texas 76109

AARON K. EVANS
11143

Signature:
Aaron K. Evans, P.G., Texas License No. 11143

Date: 02/28/2025

Table 2-1
Regional Stratigraphy in the Vicinity of the City of Meadow Landfill

System	Group	Formation / Unit	Lithologic Characteristics	Aquifer	Approximate Formation Depth and Thickness (in Feet)	
Quaternary		Windblown Sand & Playa Deposits	Sand, silt, clay, and caliche.		Depth:	Outcrops regionally
					Thickness:	10' in Site Area
Tertiary		Ogallala	Sand, silt, clay, gravel, and caliche with chert and sandstone.	Ogallala	Depth:	Outcrops in Site area
					Thickness:	~~~130’~~ ~110’ in Site area
Cretaceous	Washita	Duck Creek	Shale, limestone, clay, and sand.	Edwards-Trinity High Plains	Depth:	~~~130'~~ ~110’ in Site area
	Fredericksburg	Kiamichi	Shale with limestone and sandstone.			
	Trinity	Edwards	Shale, clay, and limestone.			
		Comanche Peak	Limestone and shale.		Thickness:	~~~190'~~ ~250’ in Site area
		Walnut	Sandstone, shale, and limestone.			
		Antlers	Sandstone, sandy, conglomerate, siltstone, and clay.			
Triassic	Dockum	Cooper Canyon	Siltstone and mudstone with sandstone and conglomerate.	Dockum	Depth:	~~~320'~~ ~360’ in Site area
		Trujillo	Sandstone and conglomerate with shale.			
		Tecovas	Mudstone and Sandstone.		Thickness:	1,500' Regionally
		Santa Rosa	Sandstone and conglomerate.			

Notes: Modified from Deeds et al. (TWDB, 2015), and Fallin, J. A. Tony (TWDB, 1989).

Lithologic characteristics from Deeds et al. (TWDB, 2015), and Fallin, J. A. Tony (TWDB, 1989).

Approximate formation depths and thicknesses estimated from Deed et al. (TWDB, 2015), and Fallin, J.A. Tony (TWBD, 1989), and local well logs.

2.3 Geologic Processes

2.3.1 Fault and Seismic Data

Seismic impact zone and fault investigations are discussed in the location restrictions in Parts I/II, Appendix I/IIC. As discussed in these sections, no geologic processes, including active faults or seismic impact zones, are located within one mile of the site.

2.3.2 Erosional Processes

Erosional processes in the landfill area are limited to those produced by the Meadow Landfill drainage system which include rill and channel erosion and sheet flow. Erosion from natural drainage processes is minimal in the vicinity of the site. No adverse effects from natural erosional processes are anticipated and no mass wasting has been observed.

2.3.3 Wetlands Identification

Details regarding jurisdictional wetland areas are provided in the location restriction demonstrations in Appendix I/IIC.

2.4 Regional Aquifers

According to the Texas Water Development Board (TWDB), regional aquifers in the facility area consist of the Tertiary-age Ogallala Aquifer and the underlying Cretaceous-age Edwards-Trinity High Plains Aquifer which are components of the greater High Plains Aquifer System that extends across the majority of west Texas and into eastern New Mexico (Deeds et al., 2015 and Fallin, J.A. Tony, 1989). ~~(TWDB, 2015).~~

The Ogallala and Edwards-Trinity aquifers are hydraulically connected in limited areas regionally where Edwards-Trinity sediments exhibit higher permeability at contact with the overlying Ogallala sediments ~~(TWDB, 2015)~~. (Deeds et al., 2015). According to the TWDB, the closest extent of observed higher permeability Edwards-Trinity sediments to the site is within the adjacent Gaines and Lubbock counties where cross-flow of groundwater is observed between the Ogallala and Edwards-Trinity High Plains aquifers (Deeds et al., 2015 and Fallin, J.A. Tony, 1989). The Edwards-Trinity acts as an aquitard to the overlying saturated Ogallala Aquifer in areas where Edwards-Trinity sediments are fine-grained and exhibit low permeability. According to the TWDB and area water well logs, there are approximately 250-feet of Edwards-Trinity sediments beneath the Site and throughout most of Terry County with the uppermost approximately 180-feet characterized as low permeability clay and shale aquitard sediments and the lowermost approximately 70-feet characterized as low permeability limestone sediments (Deeds et al., 2015 and Fallin, J.A. Tony, 1989). ~~the Edwards-Trinity is comprised of low permeability clay and shale sediments beneath the Site.~~ Approximately 1,500 feet of low permeability Triassic-age Dockum Group sediments underlay the Edwards-Trinity beneath the Site (Deeds et al., 2015 and Fallin, J.A. Tony, 1989). ~~(TWDB, 2015).~~ The Dockum Group is composed predominately of fine-grained siltstone and mudstone sediments that comprises an aquiclude to the overlying Ogallala and Edward-Trinity aquifers in the Site area (Deeds et al., 2015). ~~(TWDB, 2015).~~

2.4.1 Ogallala Aquifer

The Ogallala Aquifer is classified by the TWDB as a major Texas aquifer (Ashworth, 1995). The Ogallala is comprised of predominately interbedded sand/sandstone facies with caliche, silts, clays, and gravels (BEG, 1974) (Gustavson, 1996). According to the TWDB and area water well logs, the Ogallala Aquifer is observed to be about 500-feet thick regionally with an approximate thickness of ~~120~~110-feet in the immediate Site area (Deeds et al., 2015). ~~(TWDB, 2015).~~ Ogallala groundwater is present under semi-confined water-table conditions regionally with a saturated thickness of approximately 25-feet in the Site area (Bell & Morrison, 1978). As illustrated in Figure IIIG-A-4, the regional Ogallala Aquifer groundwater flow generally follows the regional dip of the formation toward the south-southeast with a potentiometric head elevation of approximately 3,250 ft-msl locally (Deeds et al., 2015 and Fallin, J.A. Tony, 1989). ~~(TWDB, 2015).~~ The primary source of recharge to the aquifer is precipitation infiltration on outcrop and through overlying transmissive Quaternary sediments (where present).

Hydraulic properties and groundwater quality in the Ogallala Aquifer are summarized in Table 2-2. According to the TWDB, the aquifer produces substantial amounts of fresh to moderately saline water.

2.4.2 Edwards-Trinity High Plains Aquifer

TWDB classifies the Edwards-Trinity High Plains (ETHP) Aquifer as a minor Texas aquifer (Ashworth, 1995). Occurrence, sedimentary composition, and saturation of the Edwards-Trinity varies regionally. According to the TWDB, sediments of the Edwards-Trinity vary regionally (where present) and are characterized with an approximate thickness of 180-feet of low permeability clay and shale above approximately 70 feet of low permeability limestone in the Site area (Deeds et al., 2015 and Fallin, J.A. Tony, 1989). ~~(TWDB, 2015).~~ Where present regionally, ~~G~~groundwater in the ETHP Aquifer is present under mostly confined conditions, being overlain nearly completely by Ogallala Formation sediments. As shown in Figure IIIG-A-5, groundwater flow is generally to the east-southeast following the dip of the host formation, with an approximate potentiometric head of 3,200 ft-msl locally (Deeds et al., 2015). ~~(TWDB, 2015)~~. The primary source of recharge for the ETHP is percolation from the overlying Ogallala Aquifer.

Hydraulic properties and groundwater quality in the ETHP Aquifer is summarized in Table 2-2. The ETHP Aquifer produces small to moderate amounts of generally saline water (Bruun and Jackson, 2016).

2.4.3 Dockum Aquifer

The Dockum Aquifer is classified as a minor Texas aquifer by the TWDB, comprised of sandstone, siltstone, mudstone, and shale originally deposited in fluvial and lacustrine environments (Hopkins, 1993). Dockum groundwater is present under confined conditions regionally and is commonly delineated into Upper and Lower aquifer components in geologic literature. According to the TWDB and regional well logs, the Dockum Aquifer strata is approximately 1,500 feet thick with upper contact depth of about ~~320~~ 360 feet below ground surface (ft-bgs) in the site area (Deeds et al., 2015 and Fallin, J.A. Tony, 1989). ~~(TWDB, 2015).~~ As illustrated in Figure IIIG-A-6 and Figure IIIG-A-7, where present, groundwater flow in both the Upper and Lower components of the Dockum Aquifer follows the regional trend of the host formation towards the south-southeast with a local potentiometric head elevation of approximately 3,180 ft-msl in the Upper Dockum Aquifer locally. The

3.1.3 Caprock

Beneath the Surficial Sediments lies the Caprock stratum. The Caprock is comprised of upper Ogallala Formation sediments that are continuous across the permit boundary. The Caprock is comprised predominately of dry to moist, loose to very dense, caliche intermixed and interbedded with lesser sands, silts, and clays, and occasional clay lenses, chert gravel, and calcite. The Caprock caliche sediments are highly variable in hardness and structure and observed as predominately loose to poorly consolidated caliche with lesser hard friable poorly consolidated caliche, and occasional microcrystalline calcite seams. The Caprock exhibits an average thickness of approximately 50 feet across the site. Due to the variable intermixed and interbedded nature of overall Caprock sediment composition and structure, in-situ soil core samples suitable for laboratory permeability testing where difficult to obtain. However, an in-situ sample of appreciable length was able to be collected from a clay layer within the Caprock Stratum at boring PWCG-5A. Laboratory soil testing indicate a Caprock stratum vertical permeability of $2.3x10^{-7}$ cm/sec for ~~an~~ the in-situ clay sample collected from boring PWCG-5A. Regionally, the caliche-rich Caprock sediments of the Ogallala Formation are characterized as low permeability where unconsolidated to poorly consolidated and impermeable where indurated. The low permeability of the Caprock is also supported by the confined condition of the Uppermost Aquifer observed at all expansion piezometers across the site.

3.1.4 Lower Sand

Beneath the Caprock lies the Lower Sand stratum. The Lower Sand is comprised of Ogallala Formation sediments that are continuous beneath the permit boundary. The Lower Sand contains the facility's uppermost monitorable groundwater zone which is hydraulically separated from any potential underlying groundwater zones by the Basal Clay stratum. A total of 12 expansion boreholes (PWCG-3, PWCG-5A, PWCG-6, PWCG-7A, WCG-9, WCG-11, WCG-19, WCG-20, WCG-22, WCG-25, WCG-26, and WCG-27) were advanced to significant depth to penetrate through the Lower Sand and into the underlying Basal Clay aquiclude. The observations and data from these 12 deep boreholes were used to determine the total thickness of the Lower Sand stratum and delineate the underlying Basal Clay stratum which comprises the Lower Confining Unit beneath the Site.

The Lower Sand stratum comprises the Uppermost Aquifer beneath the proposed expansion area and is comprised predominately of dry to wet, dense to very dense, silt sand and sandy silt, with lesser occurrences of caliche, chert gravel, and clay.

Lower Sand sediments exhibit thicknesses ranging from 7.5 to 54 feet with an average thickness of approximately 25 feet across the site. Laboratory soil testing indicates a vertical permeability of $2.8x10^{-3}$ cm/sec for an in-situ Lower Sand stratum Uppermost Aquifer sample collected from boring PWC-1A. Field slug test data from piezometers screened within the Lower Sand indicate an Uppermost Aquifer horizontal permeability ranging from $1.37x10^{-4}$ to $2.96x10^{-3}$ cm/sec with an arithmetic mean horizontal permeability of $1.08x10^{-3}$ cm/sec.

3.1.5 Basal Clay

Lower Sand sediments are underlain by low permeability fine-grained, dry to moist, clayey sediments of the Basal Clay stratum that function as the Lower Confining Unit to groundwater within the overlying Lower Sand stratum.

Twelve deep borings were advanced to depths ranging from 2 to 20 feet into the Basal Clay stratum (PWCG-3, PWCG-5A, PWCG-6, PWCG-7A, WCG-9, WCG-11, WCG-19,

4.4 Contaminant Pathways

The landfill liner is founded in the Caprock Stratum sediments which function as a massive upper confining unit to groundwater within saturated Lower Sand Stratum sediments that comprise the Uppermost Aquifer beneath the Site. The Caprock sediments are also characterized as an upper confining unit to Ogallala Aquifer groundwater regionally. In the unlikely occurrence of a release of leachate from the landfill unit, the pollutants would be isolated to the localized area in subsurface at the point of release. However, given enough time, the most probable pathway for the migration of pollutants will occur vertically through the vadose zone and laterally into the uppermost saturated aquifer strata~~ at the point of release~~. Once within the Uppermost Aquifer, pollutants would be transported within the Lower Sand stratum, above the Basal Clay stratum Lower Confining Unit, and down gradient in the direction of groundwater flow toward the permitted Point of Compliance and network of groundwater detection monitor wells. However, pollutant migration through Caprock sediments could take decades or longer before reaching the Uppermost Aquifer.

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APPENDIX IIIG-A

REGIONAL GEOLOGIC DATA

AARON K. EVANS
11143

02/28/2025

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FIGURE IIIG-A-1 – Regional Geologic Map
FIGURE IIIG-A-2 – Regional Structural Features Map
FIGURE IIIG-A-3 – Regional Geologic Cross Sections
FIGURE IIIG-A-4 – Regional Ogallala Aquifer Potentiometric Surface Map
FIGURE IIIG-A-5 – Regional ETHP Aquifer Potentiometric Surface Map
FIGURE IIIG-A-6 – Regional Upper Dockum Aquifer Potentiometric Surface Map
FIGURE IIIG-A-7 – Regional Lower Dockum Aquifer Potentiometric Surface Map
FIGURE IIIG-A-8 – Water Well Location Map
FIGURE IIIG-A-9 – Oil and Gas Well Location Map

ERIS Water Well Report	IIIG-A-10
Oil & Gas Well Plugging Reports	IIIG-A-82

STATE OF TEXAS
AARON K. EVANS
11143
LICENSED
PROFESSIONAL GEOSCIENTIST

02/28/2025

OIL & GAS WELL PLUGGING REPORT

Plugging Record

RECEIVED
RRC OF TEXAS
MAY 13 2013
OIL & GAS WELL COMPLIANCE
AUSTIN, TX

RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION

FORM W-3
Rev. 12/92
FOD1296

API NO. (If available) 42-445-32282

FILE IN DUPLICATE WITH DISTRICT OFFICE OF DISTRICT IN WHICH WELL IS LOCATED WITHIN THIRTY DAYS AFTER PLUGGING

RECEIVED
RRC OF TEXAS
APR 08 2013
O&G
Midland

1. RRC District: 8A
4. RRC Lease or ID Number: 69936
2. FIELD NAME (as per RRC Records): MOUND LAKE, N.(FUSSELMAN)
3. Lease Name: RICH LAKE UNIT
5. Well Number: 1
6. OPERATOR: RAW OIL AND GAS, INC.
6a. Original Form W-1 Filed in Name of: Raw Oil + Gas, Inc.
10. County: TERRY
7. ADDRESS: 1415 BUDDY HOLLY AVE. LUBBOCK, TX 79401
6b. Any Subsequent W-1's Filed in Name of: N/A
11. Date Drilling Permit Issued: 4/20/11
8. Location of Well, Relative to Nearest Lease Boundaries of Lease on which this Well is located.: 1383 Feet From East Line and 1032 Feet From South Line of the Rich Lake Unit Lease
12. Permit Number: 714437
9a. SECTION, BLOCK, AND SURVEY: SECTION 19, BLK 4X, C&M RR CO. A-5
9b. Distance and Direction From Nearest Town in this County: 10 MILE NE OF BROWNFIELD
13. Date Drilling Commenced: 12/28/11
16. Type Well (Oil, Gas, Dry): OIL
Total Depth: 11825
17. If Multiple Completion List All Field Names and Oil Lease or Gas ID No.'s: N/A

GAS ID or OIL LEASE #	Oil—O Gas—G	WELL #
----	---	---

14. Date Drilling Completed: 2/2/12
18. If Gas, Amt of Cond on Hand at time of Plugging:
15. Date Well Plugged: 1/2/12 13

CEMENTING TO PLUG AND ABANDON DATA:	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7	PLUG #8
*19. Cementing Date	12/20/12	12/21/12	12/21/12	12/21/12	12/21/12	12/28/12	1/2/12 13	
20. Size of Hole or Pipe in which Plug Placed (inches)	5.5	5.5	5.5	5.5	5.5	8.625	8.625	
21. Depth to Bottom of Tubing or Drill Pipe (ft)	11460	9089	8050	6976	4300	2809	511	
*22 Sacks of Cement Used (each plug)	20	40	25	40	40	55	160	
*23 Slurry Volume Pumped (cu ft)	26	52	33	52	52	73	211	
*24 Calculated Top of Plug (ft.)	11260	8690	7800	6575			Surface	
25. Measured Top of Plug (if tagged) (ft)	---	---	---	---	3953	2642	0	
*26. Slurry Wt #/Gal.	14.8	14.8	14.8	14.8	14.8	14.8	14.8	
*27 Type Cement	C	C	C	C	C	C	C	

28. CASING AND TUBING RECORD AFTER PLUGGING

SIZE	WT.#/FT.	PUT IN WELL (ft.)	LEFT IN WELL (ft.)	HOLE SIZE (in.)
13-3/8	48	461	461	17 1/2
8-5/8	32	4622	4622	11
5-1/2	17	11825	8925	7 7/8
5 1/2	17	7994	DV Tool	7 7/8

29. Was any Non-Drillable Material (Other than Casing) Left in This Well? ☐ Yes ☒ No

29a. If answer to above is "Yes" state depth to top of "junk" left in hole and briefly describe non-drillable material. (Use Reverse Side of Form if more space is needed)

30. LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS

FROM 11512 TO 11544 FROM TO
FROM TO FROM TO
FROM TO FROM TO
FROM TO FROM TO
FROM TO FROM TO

RECEIVED
CENTRAL RECORDS
FEB 24 2014
AUSTIN, TEXAS

I have knowledge that the cementing operations, as reflected by the information found on this form, were performed as indicated by such information.

* Designates items to be completed by Cementing Company. Items not so designated shall be completed by Operator

Signature of Cementer or Authorized Representative

Basic Energy Services
Name of Cementing Company

CERTIFICATE

I declare under penalties prescribed in Sec 91.143, Texas Natural Resources Code, that I am authorized to make this report, that this report was prepared by me or under my supervision and direction, and that data and facts stated therein are true, correct, and complete, to the best of my knowledge.

Brett Bednarz — REPRESENTATIVE OF COMPANY
Engineer — TITLE
2-15-13 — DATE
Phone 806-771-7766 — A/C NUMBER

Brett Bednarz
SIGNATURE: REPRESENTATIVE OF RAILROAD COMMISSION

19

Witnessed by John Turner
RRC VR 5-9-13

cm 2-20-14

2-20-14 cm

31. Was well filled with Mud-Laden Fluid, according to the regulations of the Railroad Commission ☒ Yes ☐ No

32. How was Mud Applied? **TUBING**

33. Mud Weight **10**

24. Total Depth 11825

Depth of Deepest Fresh Water 400'

Other Fresh Water Zones by T.D.W.R.

TOP	BOTTOM

35. Have all Abandoned Wells on this Lease been Plugged according to RRC Rules? ☒ Yes ☐ No

36. If NO, Explain

37. Name and Address of Cementing or Service company who mixed and pumped cement plugs in this well.
Basic Energy Services. P.O. Box 61877, Midland, Texas 79711

Date RRC District Office notified of plugging

38. Name(s) and Address(es) of Surface Owner of Well Site
City of Meadow
- James Smith
806-539-2327

39. Was Notice Given Before Plugging to Each of the Above?
Yes

FILL IN BELOW FOR DRY HOLES ONLY

40. For Dry Holes, this Form must be accompanied by either a Driller's, Electric, Radioactivity or Acoustical/Sonic Log or such Log must be released to a Commercial Log Service.

☒ Log Attached ☐ Log released to Date

Type Logs:
☐ Driller's ☒ Electric ☐ Radioactivity ☐ Acoustical/Sonic

41. Date FORM P-8 (Special Clearance) Filed?

42 Amount of Oil produced prior to Plugging 2706 bbls*
* File FORM P-1 (Oil Production Report) for month this oil was produced

R R C USE ONLY

Nearest Field ______

REMARKS
SET CIBP @ 11460'
CUT AND PULL 5.5" CASING @ 2,900'
~~Approved W-3A attached~~
Job# 12-4901 Witnessed by Byron Tumbow

12/20/12 CIBP @ 11460'; RIH w/wireline @ 11460 & load with mud; [illegible] mix & spot 25sx on top of CIBP (per Joe Collins)

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN
APPENDIX IIIH
GROUNDWATER SAMPLING AND ANALYSIS PLAN

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

AARON K. EVANS
11143
LICENSED PROFESSIONAL GEOSCIENTIST

02/28/2025

Prepared by

Weaver Consultants Group, LLC
TBPE Registration No. F-3727
6420 Southwest Blvd., Suite 206
Fort Worth, Texas 76109
817-735-9770

WCG Project No. 0120-809-11-05

This document intended for permitting purposes only.

2.1.2 Existing Groundwater Monitoring Network

The facility is an existing Type IAE Arid Exempt landfill (MSW Permit No. 2293) with no permitted groundwater monitoring system.

2.1.3 Proposed Groundwater Monitoring Network Design

The proposed groundwater monitoring network design is illustrated on Figure IIIH-A-1 (Proposed Groundwater Monitoring System Network) and Figure IIIH-A-2 (Groundwater Monitor Well Details) in Appendix IIIH-A. A monitor well and observation well installation and conversion schedule is provided in Table 2-1.

The proposed monitoring system design utilizes two background monitor wells (MW-1 and MW-1P), ~~20~~21 Point of Compliance (POC) monitor wells (MW-2, MW-2P, MW-3, MW-4, MW-5, MW-6, MW-7, MW-8, MW-9, MW-10, MW-11, MW-12, MW-13, MW-14, MW-15, MW-16, MW-17, MW-18, MW-19, ~~and~~ MW-20, and MW-22), and ~~two~~one observation well~~s~~ (~~OW-21 and~~ OW-22).

Monitor wells MW-1 and MW-1P will be converted from existing piezometers PWCG-5A and PWCG-5B; respectively. These two wells are hydrogeologically upgradient from the landfill and will serve as background wells. Monitor well MW-1 (formerly PWCG-5A) is screened within basal Uppermost Aquifer groundwater above the Lower Confining Unit. Paired monitor well MW-1P (formerly PWCG-5B) is screened within a shallower perched Uppermost Aquifer groundwater zone. Both wells will monitor saturated intervals within the Uppermost Aquifer at their location.

Monitor wells MW-2 and MW-2P will be converted from existing piezometers PWCG-4A and PWCG-4B; respectively. These two wells are hydrogeologically downgradient from the landfill and will serve as the facility's southernmost POC wells. Monitor well MW-2 (formerly PWCG-4A) is screened within basal Uppermost Aquifer groundwater above the Lower Confining Unit. Paired monitor well MW-2P (formerly PWCG-4B) is screened within a shallower perched Uppermost Aquifer groundwater zone. Both wells will monitor saturated intervals within the continuous Uppermost Aquifer at their location.

POC monitor wells MW-7, ~~and~~ MW-12, and MW-21 will be converted from existing piezometers PWCG-3, ~~and~~ PWCG-2, and PWCG-6; respectively. A total of 16 POC monitor wells (MW-3, MW-4, MW-5, MW-6, MW-8, MW-9, MW-10, MW-11, MW-13, MW-14, MW-15, MW-16, MW-17, MW-18, MW-19 and MW-20) will also be installed to monitor groundwater encountered within the Uppermost Aquifer at their location. The facility's seven relict piezometers (PB-107, PB-116, PB-134, PMW-2, PMW-6, PMW-9, and PMW-21) and 2023 expansion piezometers PWCG-7A and PWCG-7B, will be plugged and abandoned.

Piezometer conversions and new monitor well installations will be completed in accordance with the schedule provided in Table 2-1. Piezometer pluggings will be completed prior expansion area waste placement. Following well conversion or installation, quarterly background data collection monitoring will begin in accordance with Section 5.3. Facility monitor wells will be gauged, purged, and sampled in accordance with Section 3. Observation wells OW-20 and OW-21 will be gauged to obtain static groundwater elevations in conjunction with routine groundwater monitoring events.

Table 2-1
Groundwater Monitoring Network

Well Name	Gradient Position	Current Condition	Installation/Conversion Schedule
MW-1	BG	Existing PWCG-5A	Convert prior to waste placement in expansion area
MW-1P	BG	Existing PWCG-5B	Convert prior to waste placement in expansion area
MW-2	POC	Existing PWCG-4A	Convert prior to waste placement in expansion area
MW-2P	POC	Existing PWCG-4B	Convert prior to waste placement in expansion area
MW-3	POC	Future MW	Install prior to waste placement in expansion area
MW-4	POC	Future MW	Install prior to waste placement in expansion area
MW-5	POC	Future MW	Install prior to waste placement in expansion area
MW-6	POC	Future MW	Install prior to waste placement in expansion area
MW-7	POC	Existing PWCG-3	Convert prior to waste placement in expansion area
MW-8	POC	Future MW	Install prior to waste placement in Sector 12 or 13
MW-9	POC	Future MW	Install prior to waste placement in Sectors 11 through 13
MW-10	POC	Future MW	Install prior to waste placement in Sectors 5, 6, 10, 11, 12, or 13
MW-11	POC	Future MW	Install prior to waste placement in Sectors 4, 5, 6, 10, 11, 12, or 13
MW-12	POC	Existing PWCG-2	Convert prior to waste placement in Sectors 3 through 11
MW-13	POC	Future MW	Install prior to waste placement in Sectors 3 through 10
MW-14	POC	Future MW	Install prior to waste placement in Sectors 1 through 10
MW-15	POC	Future MW	Install prior to waste placement in Sectors 1 through 9
MW-16	POC	Future MW	Install prior to waste placement in Sectors 1 through 6
MW-17	POC	Future MW	Install prior to waste placement in Sectors 1 through 6
MW-18	POC	Future MW	Install prior to waste placement in Sectors 1 through 6
MW-19	POC	Future MW	Install prior to waste placement in Sectors 1 through 6
MW-20	POC	Future MW	Install prior to waste placement in Sectors 1 through ~~5~~6
~~O~~MW-21	~~BG~~POC	Existing PWCG-~~1~~6	Convert prior to waste placement in ~~expansion area~~Sectors 1 through 6
OW-22	~~BG~~OW	Existing PWCG-~~6~~1	Convert prior to waste placement in expansion area

NOTES: MW = Monitor Well.
POC = Point of compliance well located hydraulically downgradient from landfill unit.
BG = Background well located hydraulically upgradient from the landfill unit.
OW = Observation Well.

satisfy either the criteria of §330.409(i)(1) - (4), inclusive or comply with §330.409(i)(5).

The facility will submit an annual assessment monitoring report within 60 days after the facility's second semiannual groundwater sampling event that includes the following information determined since the previously submitted report:

- a statement whether a statistically significant level above a groundwater protection standard established in subsection (h) or (i) of §330.409 has occurred in any well during the previous calendar year period and the status of any statistically significant level events.
- the results of all groundwater monitoring, testing, and analytical work obtained or prepared in accordance with the requirements of this chapter, including a summary of background groundwater quality values, groundwater monitoring analyses, statistical calculations, graphs, and drawings;
- 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 Assessment Monitoring Program. The owner or operator shall also include in the report all documentation used to determine the groundwater flow rate and direction and groundwater flow;
- 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;
- recommendation for any changes; and
- any other items requested by the Executive Director.

6.4 Corrective Action Monitoring

Detection of assessment monitoring constituents at statistically significant levels, as defined in Title 30 TAC §330.409, could result in corrective action monitoring. Groundwater monitoring for the purpose of corrective action assessment and remediation will be conducted in accordance with Title 30 TAC §330.411 through §330.415, and in consultation with TCEQ. At a minimum, the assessment will address the following:

- a characterization of the contaminated groundwater, including concentrations of assessment constituents as defined in 30 TAC §330.409;
- the concentration limit for each constituent found in the groundwater;
- detailed plans and an engineering report describing the corrective action to be taken;
- a description of how the groundwater monitoring program will demonstrate the adequacy of the corrective action; and
- a schedule for submittal of the above information provided the owner or operator obtains written authorization from the executive director prior to submittal of the complete permit application.

7 GROUNDWATER ANALYTICAL RESULTS AND POTENTIAL RESPONSE ACTIONS

7.1 Groundwater Quality

Title 30 TAC §330.63(f)(5-7) require a comparison of the facility's groundwater analytical data to the specific constituents referenced in Title 30 TAC §330.419(a) and listed in 40 CFR, Part 258, Appendix I. The City of Meadow Landfill was historically a Type IAE Arid Exempt facility (MSW Permit No. 2293) with no prior groundwater monitoring system or GWSAP. Therefore, no groundwater detection monitoring data exists for the facility at this time.

7.2 Potential Contaminant Migration

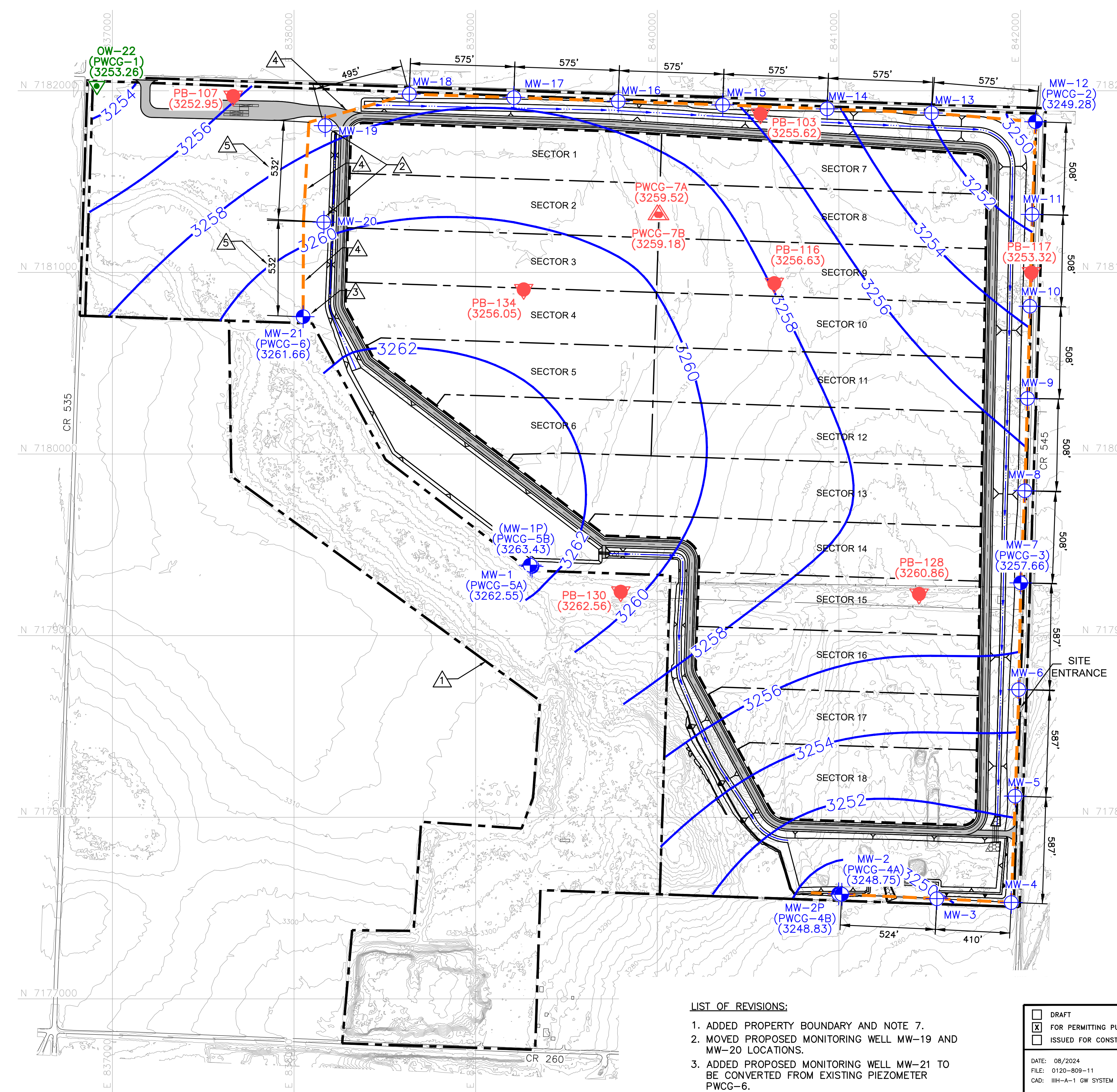
In the unlikely occurrence of a release of leachate from the landfill unit, the most probable pathway for the migration of pollutants will occur vertically through the vadose zone and laterally into the Uppermost Aquifer at the point of release. Once within the Uppermost Aquifer, pollutants would be transported within the Aquifer strata, above the Lower Confining Unit, and down gradient in the direction of groundwater flow toward the permitted Point of Compliance and network of groundwater detection monitor wells. Site-specific geology and hydrogeology are further discussed in Appendix IIIG (Geology Report) of the SDP. Potential containment migration is further discussed in Appendix IIIG, Section 4.4.

APPENDIX IIIH-A

GROUNDWATER MONITORING SYSTEM

STATE OF TEXAS
AARON K. EVANS
11143
LICENSED
PROFESSIONAL GEOSCIENTIST

02/28/2025



AARON K. EVANS
11143
02/28/2025

LEGEND

	PROPERTY BOUNDARY
	PROPOSED PERMIT BOUNDARY
	PROPOSED LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
350	EXISTING CONTOUR
MW–1 (PWCG–5A) (3262.55)	PROPOSED GROUNDWATER MONITOR WELL (TO BE CONVERTED FROM EXISTING PIEZOMETER) WITH FORMER PIEZOMETER NAME POSTED IN PARENTHESIS
OW–22 (PWCG–1) (3253.26)	PROPOSED GROUNDWATER OBSERVATION WELL (TO BE CONVERTED FROM EXISTING PIEZOMETER) WITH FORMER PIEZOMETER NAME POSTED IN PARENTHESIS
MW–3	PROPOSED NEW GROUNDWATER MONITOR WELL (TO BE INSTALLED)
PWCG–7A (3259.52)	EXISTING 2023 EXPANSION PIEZOMETER (TO BE REMOVED)
PB–116 (3256.63)	EXISTING RELICT GROUNDWATER PIEZOMETER (TO BE REMOVED) (SEE NOTE 5)
3260	GROUNDWATER POTENTIOMETRIC SURFACE CONTOUR IN FT–MSL
	PROPOSED POINT OF COMPLIANCE
508'	INTERWELL SPACING ALONG POINT OF COMPLIANCE IN LINEAR FEET
1	INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. PIEZOMETER LOCATION COORDINATES OBTAINED FROM AUGUST 2023 AS–BUILT SURVEY BY WEAVER CONSULTANTS GROUP.
3. GROUNDWATER POTENTIOMETRIC SURFACE ELEVATIONS MEASURED BY WEAVER CONSULTANTS GROUP IN SEPTEMBER 2023 AND POSTED AT EACH MEASUREMENT LOCATION IN FT–MSL.
4. GROUNDWATER POTENTIOMETRIC SURFACE CONTOURS ARE INTERPOLATED BETWEEN MEASUREMENT LOCATIONS; ACTUAL CONDITIONS MAY VARY.
5. NO GEOSCIENTIST OR ENGINEER CERTIFIED LITHOLOGIC LOGS, DETAILS, OR OTHER INFORMATION IS AVAILABLE FOR THE EXISTING RELICT GROUNDWATER PIEZOMETERS; THEIR LOCATIONS AND MEASURED POTENTIOMETRIC SURFACE ELEVATIONS ARE SHOWN FOR INFORMATION PURPOSES BUT ARE NOT INCORPORATED INTO POTENTIOMETRIC CONTOURS SHOWN.
6. PROPOSED MONITOR WELLS WILL BE INSTALLED, OR CONVERTED FROM EXISTING PIEZOMETERS, AS LANDFILL IS DEVELOPED IN ACCORDANCE WITH SECTION 2.0 AND FIGURE IIIH–A–2 OF THE FACILITY'S GWSAP.
7. 1 DEED DESIGNATIONS THAT FORM THE PROPERTY BOUNDARY ARE SHOWN ON PAGE I/II–13–6. LEGAL DESCRIPTIONS OF THE PARCELS OF LAND CAN BE FOUND IN PART I/II–13.

LIST OF REVISIONS:

1. ADDED PROPERTY BOUNDARY AND NOTE 7.
2. MOVED PROPOSED MONITORING WELL MW–19 AND MW–20 LOCATIONS.
3. ADDED PROPOSED MONITORING WELL MW–21 TO BE CONVERTED FROM EXISTING PIEZOMETER PWCG–6.
4. REVISED PROPOSED POINT OF COMPLIANCE.
5. REVISED INTERWELL SPACING DIMENSIONS.

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120–809–11
CAD: IIIH–A–1 GW SYSTEM DWG

DRAWN BY: DCS
DESIGN BY: AKE
REVIEWED BY: AKE

Weaver Consultants Group
TBPE REGISTRATION NO. F–3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

MAJOR PERMIT AMMENDMENT
PROPOSED GROUNDWATER MONITORING SYSTEM NETWORK

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

FIGURE IIIH–A–1

	WELL NAME (FORMER NAME LISTED IN PARENTHESIS)	BACKGROUND (BG) OR POINT OF COMPLIANCE (POC) WELL?	INSTALL DATE	SITE GRID COORDINATES		TOP OF CASING ELEVATION	GROUND ELEVATION	WELL CONSTRUCTION DEPTHS				WELL CONSTRUCTION ELEVATIONS				GROUNDWATER ELEVATION^3
				NORTHING	EASTING			TOP OF FILTER PACK	TOP OF SCREEN	BOTTOM OF SCREEN	BOTTOM OF FILTER PACK	TOP OF FILTER PACK	TOP OF SCREEN	BOTTOM OF SCREEN	BOTTOM OF FILTER PACK	
	WELLS TO BE CONVERTED FROM EXISTING EXPANSION PIEZOMETERS															
	MW-1 (PWCG-5A)	BG	Aug-23	7179381.82	839309.31	3312.19	3309.1	90.0	93.0	103.0	103.0	3219.1	3216.1	3206.1	3206.1	3262.55
	MW-1P (PWCG-5B)	BG	Aug-23	7179389.37	839298.83	3312.08	3309.0	73.0	75.0	80.0	80.0	3236.0	3234.0	3229.0	3229.0	3263.43
	MW-2 (PWCG-4A)	POC	Aug-23	7177577.27	841014.12	3270.51	3267.1	37.0	40.0	50.0	50.0	3230.1	3227.1	3217.1	3217.1	3248.75
	MW-2P (PWCG-4B)	POC	Aug-23	7177579.69	840996.83	3270.11	3267.1	26.0	28.0	32.0	32.0	3241.1	3239.1	3235.1	3235.1	3248.83
	MW-7 (PWCG-3)	POC	Aug-23	7179290.62	841999.62	3298.84	3295.9	52.0	57.0	67.0	67.0	3243.9	3238.9	3228.9	3228.9	3257.66
	MW-12 (PWCG-2)	POC	Aug-23	7181829.44	842081.66	3317.74	3314.8	75.0	77.0	87.0	90.0	3239.8	3237.8	3227.8	3224.8	3249.28
△1	MW-21 (PWCG-6)	POC	Aug-23	7180756.96	838049.09	3314.86	3311.7	70.0	72.0	82.0	82.0	3241.7	3239.7	3229.7	3229.7	3261.66
△1	OW-22 (PWCG-1)	NOT APPLICABLE	Aug-23	7182024.79	836913.78	3319.34	3316.3	80.0	85.0	95.0	95.0	3236.3	3231.3	3221.3	3221.3	3253.26
	NEW MONITOR WELLS - TO BE INSTALLED															
	MW-3	POC	TBD	7177551	841539	3271.0	3268.0	35.0	38.0	48.0	48.0	3233.0	3230.0	3220.0	3220.0	3250.0
	MW-4	POC	TBD	7177530	841949	3267.0	3264.0	31.0	34.0	44.0	44.0	3233.0	3230.0	3220.0	3220.0	3251.0
	MW-5	POC	TBD	7178116	841970	3279.0	3276.0	43.0	46.0	56.0	56.0	3233.0	3230.0	3220.0	3220.0	3253.0
	MW-6	POC	TBD	7178703	841990	3291.0	3288.0	55.0	58.0	68.0	68.0	3233.0	3230.0	3220.0	3220.0	3255.0
	MW-8	POC	TBD	7179797	842023	3305.0	3302.0	59.0	62.0	72.0	72.0	3243.0	3240.0	3230.0	3230.0	3257.0
	MW-9	POC	TBD	7180305	842038	3307.0	3304.0	61.0	64.0	74.0	74.0	3243.0	3240.0	3230.0	3230.0	3255.0
	MW-10	POC	TBD	7182025	837485	3311.0	3308.0	65.0	68.0	78.0	78.0	3243.0	3240.0	3230.0	3230.0	3253.0
	MW-11	POC	TBD	7181319	842064	3313.0	3310.0	67.0	70.0	80.0	80.0	3243.0	3240.0	3230.0	3230.0	3252.0
	MW-13	POC	TBD	7181878	841510	3317.0	3314.0	71.0	74.0	84.0	84.0	3243.0	3240.0	3230.0	3230.0	3252.0
	MW-14	POC	TBD	7181900	840935	3315.0	3312.0	79.0	82.0	92.0	92.0	3233.0	3230.0	3220.0	3220.0	3254.0
	MW-15	POC	TBD	7181922	840360	3313.0	3310.0	67.0	70.0	80.0	80.0	3243.0	3240.0	3230.0	3230.0	3256.0
	MW-16	POC	TBD	7181942	839785	3315.0	3312.0	59.0	62.0	72.0	72.0	3253.0	3250.0	3240.0	3240.0	3257.0
	MW-17	POC	TBD	7181962	839210	3319.0	3316.0	63.0	66.0	76.0	76.0	3253.0	3250.0	3240.0	3240.0	3258.0
	MW-18	POC	TBD	7181981	838635	3321.0	3318.0	65.0	68.0	78.0	78.0	3253.0	3250.0	3240.0	3240.0	3258.0
△2	MW-19	POC	TBD	7181808	838171	3321.0	3318.0	65.0	68.0	78.0	78.0	3253.0	3250.0	3240.0	3240.0	3257.0
△2	MW-20	POC	TBD	7181276	838165	3319.0	3316.0	63.0	66.0	76.0	76.0	3253.0	3250.0	3240.0	3240.0	3255.0

NOTES:

1. ELEVATIONS LISTED IN FEET ABOVE MEAN SEA LEVEL (FT-MSL); DEPTHS LISTED IN FEET BELOW GROUND SURFACE (FT-BGS).
2. EXISTING WELL COORDINATES, TOP OF CASING ELEVATIONS, AND GROUND ELEVATIONS OBTAINED FROM ASBUILT SURVEY CONDUCTED BY WEAVER CONSULTANTS GROUP IN AUGUST 2023.
3. GROUNDWATER ELEVATIONS GAUGED BY WEAVER CONSULTANTS GROUP IN SEPTEMBER 2023.
4. MONITOR WELLS MW-1P AND MW-2P SCREENED IN PERCHED UPPERMOST AQUIFER GROUNDWATER ADJACENT PAIRED DEEPER WELLS MW-1 and MW-2; RESPECTIVELY.
5. OBSERVATION WELLS TO BE RETAINED IN SYSTEM FOR GROUNDWATER GAUGING PURPOSES INDICATED BY "OW" DESIGNATION.
6. DETAILS FOR PROPOSED FUTURE WELLS ESTIMATED FROM EXISTING SUBSURFACE INVESTIGATION DATA; ACTUAL DETAILS TO BE DETERMINED AT TIME OF INSTALLATION BASED ON SUBSURFACE CONDITIONS ENCOUNTERED.
7. WELLS ARE TO BE CONVERTED, INSTALLED, OR REMOVED IN ACCORDANCE WITH SECTION 2.0 OF THE GWSAP.
8. TBD = TO BE DETERMINED.

AARON K. EVANS
11143

02/28/2025

△1 INDICATES REVISION
(SEE LIST OF REVISIONS)

LIST OF REVISIONS:

1. REVISED PROPOSED PIEZOMETER TO WELL CONVERSION DESIGNATIONS.
2. UPDATED DETAILS FOR PROPOSED WELLS MW-19 AND MW-20.

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☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120-809-11
CAD: IIIH-A-2-WELL DETAILS.DWG

DRAWN BY: SRF
DESIGN BY: DCS
REVIEWED BY: AKE

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

MAJOR PERMIT AMMENDMENT

GROUNDWATER MONITOR
WELL DETAILS

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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FIGURE IIIH-A-2

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

VOLUME 6 OF 6

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

KYLE D. GOULD
106018

02/28/2025

Prepared by

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817-735-9770

Project No. 0120-809-11-05

This document is intended for permitting purposes only.

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN
APPENDIX III I
LANDFILL GAS MANAGEMENT PLAN

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

COLIN G. MCINNES
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02/28/2025

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WCG Project No. 0120-809-11-05

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on-site occupied structures. LFG migration may be controlled by various options which are discussed in Section 5. The site will comply with Title 30 TAC §330.55(a) requirements by obtaining the necessary air permit or authorization for the proposed expansion.

The LFG monitoring postclosure care period program will continue for a period of 30 years after final closure of the facility or until the owner or operator receives written authorization from TCEQ to revise or discontinue the program. The request to revise or discontinue LFG monitoring program will be based on a demonstration along with collected data by the owner or operator that there is no potential for gas migration along the property boundary or into on-site structures.

phases of the landfill. Existing LFG extraction wells in areas receiving additional waste will be extended and/or replaced with a new well as necessary based on the additional waste fill.

Each extraction well and horizontal collector will be equipped with a control valve and monitoring port similar to the detail shown on Figure III I-F-4 of Appendix III I-F. These control valves and monitoring ports, used in conjunction with controls on the blower, will allow the site to regulate vacuum and LFG levels at each individual extraction well/horizontal collector. This will allow the site to make adjustments in order to effectively reduce the potential for subsurface migration and odors, as well as to protect the integrity of the final cover system.

It is expected that the GCCS (if required) will be installed prior to final cover placement and the LFG extraction wells will be connected to the geomembrane with a boot when the final cover system is installed. If installation of a LFG extraction well is required after the final cover installation, the geomembrane cover will be cut and removed in the work area prior to LFG extraction well installation and then the geomembrane boot will be installed.

The as-built information for each phase of the GCCS installation will be maintained in the site operating record. The as-built information will document the location of the extraction wells, piping, and related GCCS components. The GCCS will be installed as described in this section; as such, no additional authorization (i.e. permit modification) will be required to install each phase of the GCCS unless there is a significant change in the number of extraction wells or the layout of GCCS.

Following each GCCS installation, an as-built GCCS drawing will be submitted to the TCEQ to incorporate each GCCS installation into the existing permit in the form of revision to Appendix III I-F. The new drawing will be placed behind the existing Figure III I-F-2. In addition, the existing site layout will also be submitted in the form of revision to Figure III I-F-2 of Appendix III I-F to update the existing GCCS conditions. The TCEQ MSW Section will be notified of any changes to the gas collection and control system as stated above. However, if the TCEQ MSW Section determines a permit modification is required upon receipt of the notification, then the site will submit a permit modification.

6.3 GCCS Operation and Maintenance

The operation and maintenance of the proposed GCCS will be performed consistent with industry guidelines and practices. Wellhead and system monitoring will be performed on a routine basis to monitor overall system performance. As needed, system adjustments will be made to optimize the extraction of LFG from the landfill to control LFG migration, odors, and greenhouse gases.

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN
APPENDIX IIIJ
CLOSURE PLAN

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

DAVID E. POE
81734

02/28/2025

Prepared by

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WCG Project No. 0120-809-11-06

This document is intended for permitting purposes only.

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Final Cover System Quality Control Plan

APPENDIX IIIJ-B
GCL Alternative Final Cover Demonstration

APPENDIX IIIJ-C
Closure Plan for Municipal Solid Waste Type I Landfill Units and
Final Facility Closure (Form 20720)

STATE OF TEXAS
DAVID E. POE
81734
LICENSED
PROFESSIONAL ENGINEER
02/28/2025

FIGURES

Figures

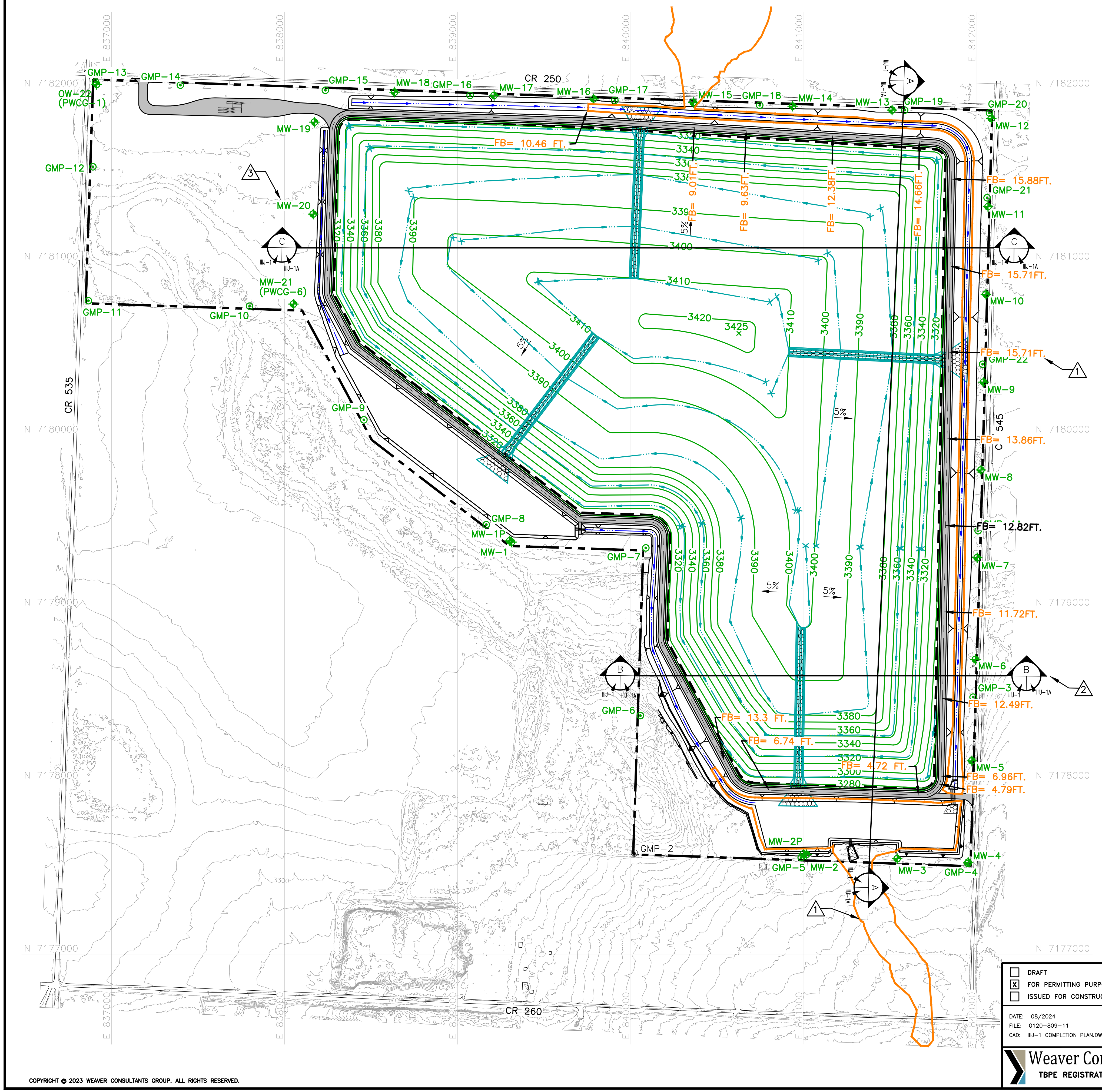
Figure IIIJ-1 – ~~Landfill~~ Completion Plan

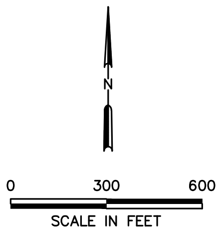
Figure IIIJ-1A – Landfill Sections

Figure IIIJ-2 – Final Closure Schedule

STATE OF TEXAS
DAVID E. POE
81734
LICENSED
PROFESSIONAL ENGINEER

02/28/2025





DAVID E. POE
81734
02/28/2025

LEGEND

— · — · —	PROPOSED PERMIT BOUNDARY
— — —	PROPOSED LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
3300	EXISTING CONTOUR
3400	FINAL COVER CONTOUR
	DRAINAGE SWALE
	DRAINAGE LETDOWN
	CHANNEL CENTERLINE
△1	POST-PROJECT 100-YEAR FLOODPLAIN
MW-1	PROPOSED OBSERVATION/GROUNDWATER MONITORING WELL
GMP-5	PROPOSED LANDFILL GAS MONITORING PROBE
GMP-2	EXISTING LANDFILL GAS MONITORING PROBE
△1 FB= 15.71FT.	DESIGNED FREEBOARD
△	INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PROPERTY AND PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.

LIST OF REVISIONS:

1. ADDED 100-YEAR FLOODPLAIN AND DESIGNED FREEBOARD.
2. ADDED SECTIONS.
3. REVISED MONITORING WELL NETWORK.

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☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120-809-11
CAD: IIIJ-1 COMPLETION PLAN.DWG

DRAWN BY: JDW
DESIGN BY: BPY
REVIEWED BY: DEP

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

MAJOR PERMIT AMENDMENT COMPLETION PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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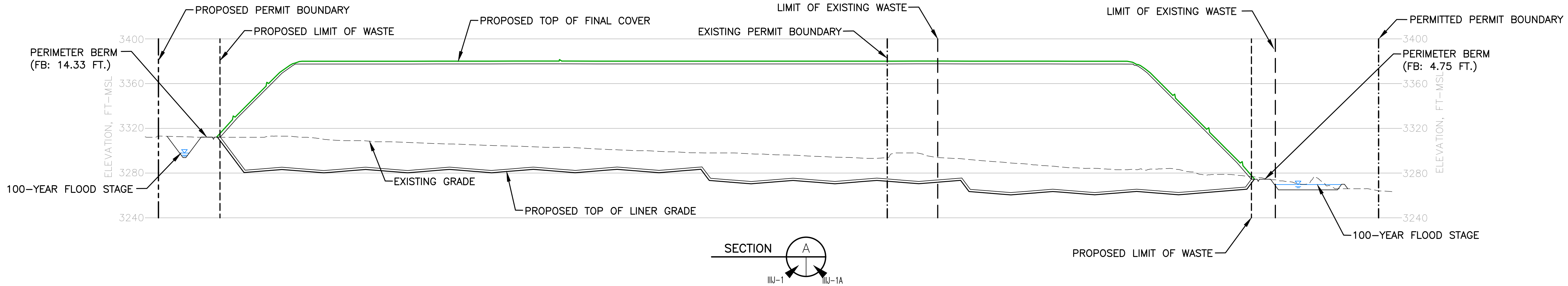
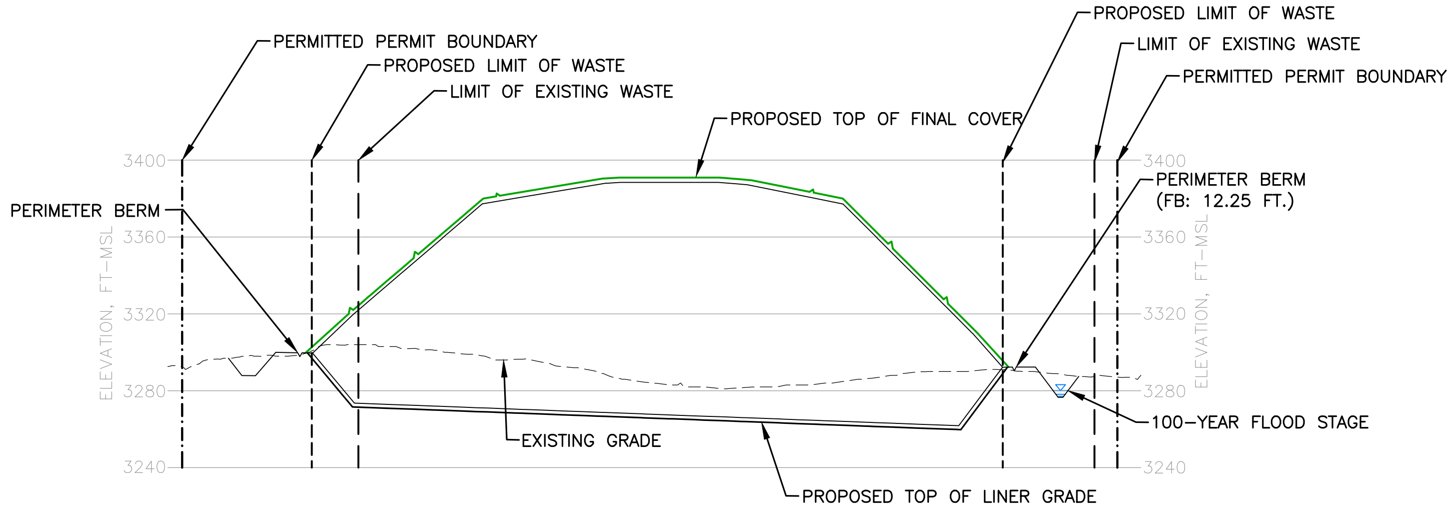
FIGURE IIIJ-1

O:\0120\809\EXPANSION 2023\PART III\IIIJ\IIIJ-1-COMPLETION PLAN.dwg, jwilson, 1:2



SECTION A
IIIJ-1 IIIJ-1A

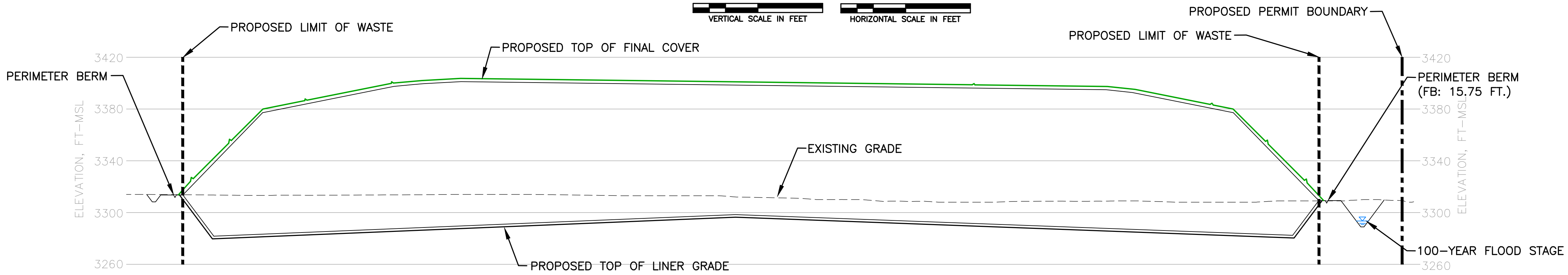
0 50 100 VERTICAL SCALE IN FEET
0 200 400 HORIZONTAL SCALE IN FEET



SECTION B
IIIJ-1 IIIJ-1A

0 50 100 VERTICAL SCALE IN FEET
0 200 400 HORIZONTAL SCALE IN FEET

DAVID E. POE
81734
02/28/2025



SECTION C
IIIJ-1 IIIJ-1A

0 50 100 VERTICAL SCALE IN FEET
0 200 400 HORIZONTAL SCALE IN FEET

LEGEND

— · — · —	PERMITTED PERMIT BOUNDARY
—— – ——	PROPOSED PERMIT BOUNDARY
— — —	PERMITTED LIMIT OF WASTE
- - - -	PROPOSED LIMIT OF WASTE
- - - -	EXISTING GRADE
🟩	TOP OF FINAL COVER
——	TOP OF WASTE
△	INDICATES REVISION (SEE LIST OF REVISIONS)

LIST OF REVISIONS:

1. NEW DRAWING ADDED.

△1

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 02/2025
FILE: 0120–809–11
CAD: IIIJ–1A–TYPICAL SECTION.DWG

DRAWN BY: SRF
DESIGN BY: JBM
REVIEWED BY: KDG

Weaver Consultants Group
TBPE REGISTRATION NO. F–3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

MAJOR PERMIT AMENDMENT LANDFILL SECTIONS

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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FIGURE IIIJ–1A

O:\0120\809\EXPANSION 2023\PART III\IIIJ\IIIJ–1A–SECTIONS A–C.dwg, jwilson, 1:2

2 FINAL COVER SYSTEM

2.1 Introduction

The final cover system for the City of Meadow Landfill has been developed to incorporate the requirements of Title 30 TAC §330.457(f)(4). The rules state that the owner or operator of an MSW landfill unit shall complete closure activities for the unit in accordance with the approved closure plan within 180 days following the initiation of closure activities (closure activities for MSW landfill units shall begin no later than 30 days after the date on which the unit receives the known final receipt of wastes, or, if the unit has remaining capacity and there is a reasonable likelihood that the unit will receive additional wastes, no later than one year after the most recent receipt of wastes). Closure will include installation of a final cover system and storm water runoff controls. The storm water runoff controls are addressed in Appendix IIIF – Surface Water Drainage Plan. The final cover system design is discussed below and is also detailed in Appendix IIIA-A. Cross-sections are provided in Appendix IIIA-B.

2.2 Final Cover System Design

The final cover system will consist of a composite final cover system for the Subtitle D areas. The final cover system will provide a low maintenance cover, protect against erosion, reduce rainfall percolation through the cover system and subsequently minimize leachate generation within the landfill. As depicted on Figure IIIJ-1 (and Drawing A.2 – Landfill Completion Plan in Appendix IIIA-A), a maximum slope of 5 percent is provided for the top slopes. Typical sideslopes of 4H:1V are provided to control erosion and facilitate drainage of the landfill.

Composite Final Cover System

- A 12-inch-thick earthen material erosion layer capable of sustaining vegetative growth. The vegetation will consist of native or introduced grasses, as well as a mixture of wild flowers, and other flowering plants capable of providing 80 percent coverage over the final cover. The minimum vegetation coverage will be established at closure and maintained throughout the post-closure care period.

- A geocomposite drainage layer (250-mil-thick geonet with 6 oz/sy geotextile(s) heat bonded to the top for top slopes and heat bonded to both sides for side slopes).
- A 40-mil, smooth or textured (topslope) and textured (sideslope), linear low-density polyethylene (LLDPE) geomembrane.
- An 18-inch-thick compacted clay infiltration layer with a coefficient of permeability of less than or equal to 1x10^{-5} cm/s. A geosynthetic clay liner (GCL) may be installed as an alternative to the compacted clay infiltration layer.

The low permeability components of the final cover (geomembrane, 18-inch-thick clay infiltration layer, or GCL) are designed to minimize infiltration of surface water into the underlying waste material. Details of the final cover systems are shown in Appendix IIIA-A. Material specifications, construction, and testing procedures are provided in Appendix IIIJ-A – Final Cover System Quality Control Plan (FCSQCP).

Vegetation will be established over the installed final cover system to minimize the erosion potential of the cover slopes. The erosion layer was evaluated using the Universal Soil Loss Equation (USLE) developed by the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). The evaluation is presented in Appendix IIIF.

Landfill gas generated will be managed as discussed in Appendix III I – Landfill Gas Management Plan. If required, the landfill gas system will collect the gas generated by deposited waste and control gas emissions from the site.

Permanent final cover erosion control structures including swales and chutes will be constructed on the final cover. The maximum swale spacing on the final cover is 350 feet for the top slope and 132 feet for the side slopes. The final cover design also consists of 5% top slopes and 25% side slopes. The non-swale side slopes will not exceed 25%. The design of the final cover system erosion control structures is provided in Appendix ~~IIIF-B~~IIIF-C. A soil loss and sheet flow velocity demonstration for the erosion layer is included in Appendix IIIF-D. Procedures to comply with 330.165(g) and (h) for final cover repair and maintenance are included in Appendix IV, Sections 4.18.4 and 4.18.5, resepectively.

2.3 Installation Methods and Procedures

The final cover system will be constructed in accordance with the requirements listed on the permit drawings in Appendix IIIA-A and the Final Cover System Quality Control Plan (FCSQCP) presented in Appendix IIIJ-A. Testing and evaluation of the final cover system during construction will be in accordance with Appendix IIIJ-A – FCSQCP.

- Engineering plans will be developed to address site closure at the time of discontinued waste filling.
- A revised final closure plan will be developed and submitted to the TCEQ for approval.
- The final waste received will be placed and properly compacted.
- Excavations will be filled with suitable material, and the site will be graded to promote runoff and prevent ponding.
- The top of the landfill will be regraded and reshaped as needed to provide the proper slope for positive drainage.
- The final cover system will be constructed according to specifications.
- Following application of final cover, the site will be vegetated with appropriate grasses to minimize erosion. The established grasses will provide a minimum of ~~90~~80 percent coverage of the final cover system.
- A surface water management system will be constructed to minimize erosion.
- A closure certification will be prepared by an independent licensed professional engineer and submitted to TCEQ for approval.
- All proper notices and documentation will be filed with the appropriate agencies.

3.2.1 Estimate of Largest Active Disposal Area

Consistent with Title 30 TAC §330.503(a), the largest area that could be open within the next year is shown on Figure IIIL.1 and is listed in Appendix IIIL – Closure and Post Closure Care Cost Estimate. Consistent with this rule and TCEQ guidelines for financial assurance to complete closure and postclosure activities, financial assurance will be posted for the current active area as discussed in Appendix IIIL – Closure and Postclosure Care Cost Estimate. The entire site will also need to be administratively closed.

Supporting calculations are presented in Appendix IIIL – Closure and Postclosure Care Cost Estimate.

3.2.2 Estimate of Maximum Inventory of Waste Ever On Site

The estimate of maximum inventory of waste (defined as waste and daily cover) ever on site over the active life of the facility is approximately 29,500,000 cubic yards. Supporting calculations are included in Appendix IIIM – Site Life Calculations.

Total landfill volume estimates are developed based on AutoCAD surfaces developed from the top of protective cover (in the bottom of the landfill) and the bottom of the intermediate cover over which the final cover system is constructed and incorporate both bottom liner and final cover foundation grades and contours. Intermediate cover (other than the intermediate cover installed over the final slopes and used as the foundation for the final cover system) is assumed (for these calculations) to have been removed and incorporated back into the landfill operations as daily cover.

3.3 Leachate Storage Tanks, Evaporation Ponds, and Piping

The leachate storage tanks, evaporation ponds, and piping will continue to operate throughout the active life of the site and the postclosure period. Once the postclosure period has ended, the following steps will be taken to decommission the leachate storage tanks and piping.

- The remaining leachate will be transferred to a properly permitted offsite treatment or disposal facility.
- General cleanup of the site, including areas around the leachate storage tank and evaporation pond (i.e., washdown of the concrete truck loading pad, etc.) will be performed.

The tanks will be demolished and the debris will be disposed of at a permitted disposal facility. The leachate pond liners shall be removed and disposed into the landfill or transported off site for disposal at a licensed facility. Plastic piping may be reused in other landfill applications, transported off-site for reuse at another Republic landfill or for recycling or disposal at a licensed facility. Pond and piping removal will include inspection of the pipe and liner foundations, and removal and disposal of visibly stained soils to the landfill or off-site to a licensed facility.

3.4 Liquid Waste Bulking Facility Closure

If the Liquid Waste Bulking Facility is constructed, it will operate throughout the active life of the City of Meadow Landfill. During closure of the site, the following steps will be taken to decommission the Liquid Waste Bulking Facility.

- The final waste received or stored at the facility will be solidified and transferred to the landfill for disposal.
- General cleanup of the site, including all areas around the Liquid Waste Bulking Facility (i.e., removal of bulking agents, washdown of floor, etc.) will be performed.
- The facility equipment will be dismantled and removed from the site.
- The concrete mixing basins will be demolished and the concrete debris will be disposed of. Any soil below the basins that is visually stained will be excavated and disposed of in the landfill. In accordance with 30 TAC §330.459(c), the executive director may require an investigation into the nature and extent of any release and an assessment of measures necessary to correct any impacts to groundwater in the event there is evidence of a release from the facility. Additional closure and certification requirements are set forth in Appendix IVC, Section 9 of the application.

A description of the Liquid Waste Bulking Facility closure procedures will be included in the closure certification report.

3.5 Citizens Convenience Center Closure

If the Citizens Convenience Center is constructed, it will likely operate throughout the active life of the facility. During closure of the site, the Citizens Convenience Center will be decommissioned. Closure activity will include a general cleanup of the area. All roll-offs will be emptied at the landfill working face and removed from the site. Recyclables staged at the Citizens Convenience Center will be transported offsite for recycling, disposed into the landfill or transported and disposed at an off-site facility.

4 SCHEDULE OF ~~UNIT CLOSURE AND~~ FACILITY FINAL CLOSURE

4.1 Final Closure Requirements

The site will be closed in an orderly fashion consistent with Title 30 TAC §330.457 and §330.461-implementing the following steps:

- No later than ~~45~~90 days prior to initiation of final closure activities for the municipal solid waste landfill (MSWLF) ~~unit~~facility, the Executive Director of TCEQ will be notified of the intent to close the ~~unit~~facility and that a notice of the intent to close the unit has been placed in the operating record.
- No later than 90 days prior to initiation of final facility closure, a public notice of facility closure which contains the name, address, and physical location of the facility, the permit number, and the last date of intended receipt of waste, will be provided in the newspaper of the largest circulation in the vicinity of the facility. Meadow Landfill, LLC will also make available a copy of the approved final closure and postclosure plan at the landfill office for public access and review. Additional copies (as needed) of the closure and post-closure plans will be made available by owner for public access and review.
- Consistent with Title 30 TAC §330.461(b) and following notification of the Executive Director of TCEQ, a minimum of one sign will be posted at the main entrance and all other frequently used points of access for the facility notifying all persons utilizing the facility of the closure date or date after which further receipt of waste is prohibited. In addition, access control is provided by perimeter fencing and a locked gate following the closure date to prevent unauthorized disposal or dumping of solid waste at the facility.
- Final closure activities will commence for the MSWLF ~~unit~~facility no later than 30 days after the date the MSWLF ~~unit~~facility receives the known final receipt of wastes. If the MSWLF ~~unit~~facility has remaining capacity and there is a reasonable likelihood that the MSWLF ~~unit~~facility will receive additional wastes, final closure activities will commence no later than 1 year after the most recent receipt of wastes.
- Final closure activities of the MSWLF ~~unit~~facility will be completed in accordance with the Closure Plan (this appendix) within 180 days following the initiation of closure activities as defined in Title 30 TAC §330.457(f)(3) and will include closure of all facilities described in Section 3 of this appendix. If necessary, as noted in Title 30 TAC §330.457(f)(4), a request for an extension of the completion of final closure activities may be submitted and granted by the

Executive Director. The request will include all applicable documentation necessary to demonstrate that final closure will take longer than 180 days and all steps have been taken and will continue to be taken to prevent threats to human health and the environment from the unclosed site.

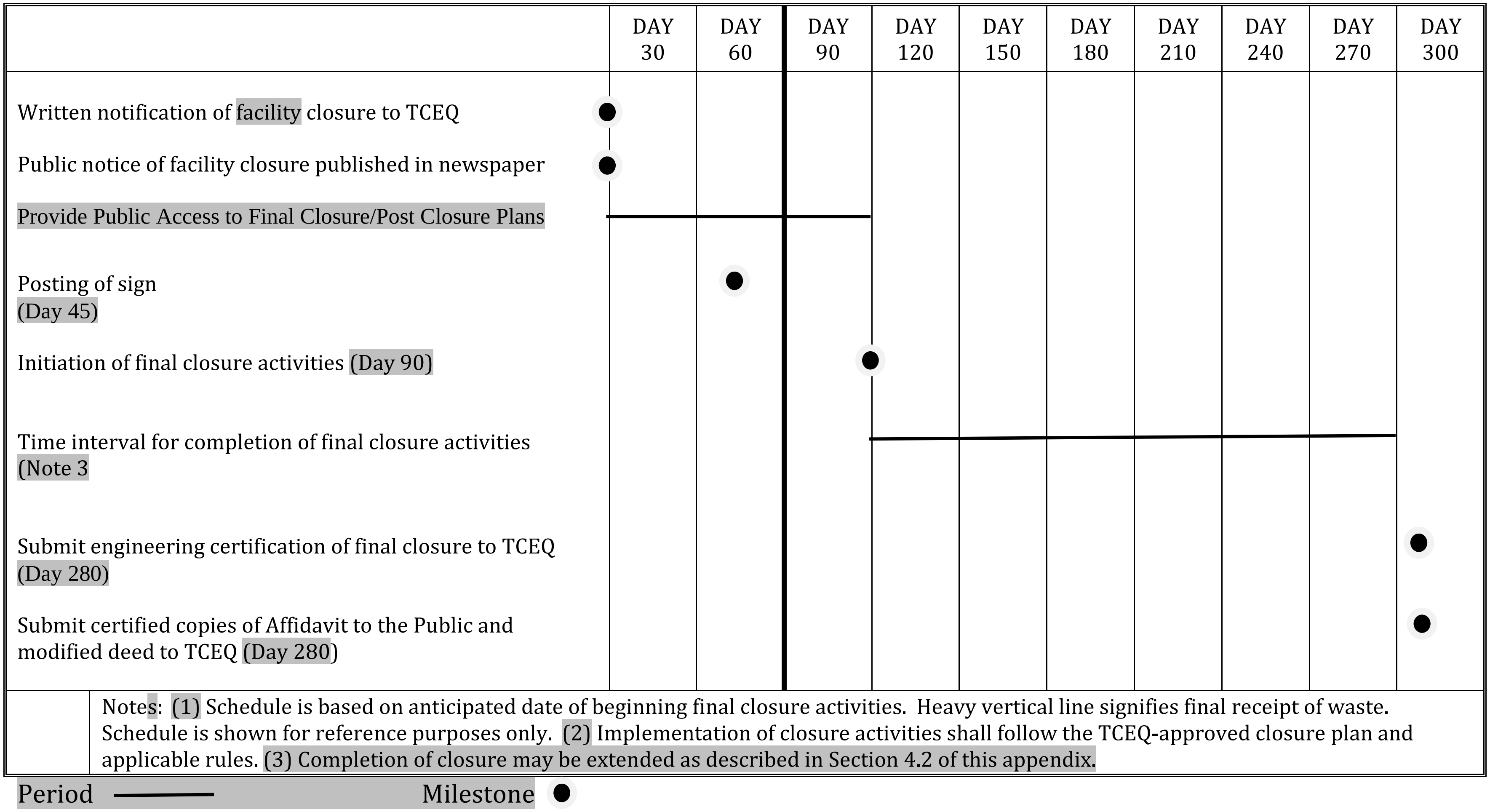
- Following completion of final closure activities of the MSWLF unit, the facility will comply with the post-closure care requirements specified in Title 30 TAC §330.463(b). Within ten days after completion of final closure activities, a documented certification, signed by an independent licensed professional engineer, will be submitted to the Executive Director of the TCEQ for review and approval. This certification will verify that final closure has been completed in accordance with the approved final closure plan and will include all applicable documentation necessary for certification of final closure. Once approved, this certification will be placed in the Site Operating Record.
- Within 10 days after completion of final closure activities of the facility, a certified copy of an Affidavit to the Public (most current format provided by the TCEQ will be used) will be submitted to the Executive Director of the TCEQ by registered mail and placed in the facility's site operating record. In addition, a certified notation will be recorded on the deed to the facility that will in perpetuity notify any potential purchaser of the property that the land has been used as a landfill facility and the use of the land is restricted according to the provisions specified in ~~Title 30 TAC §330.465~~ Section 4 of Appendix IIIK – Postclosure Care Plan. Within 10 days after completion of final closure activities of the facility, a certified copy of the modified deed will be submitted to the Executive Director and placed in the operating record.

Following receipt of the required final closure documents and an inspection report from the TCEQ Regional Office verifying proper closure of the MSWLF facility according to this Closure Plan (this appendix), the Executive Director may acknowledge the termination of operation and closure of the facility and deem it properly closed. The steps in the closure process are depicted on Figure IIIJ-3 – Final Closure Schedule. Consistent with Title 30 TAC §330.461(c)(2), a professional engineer certification will be submitted to TCEQ within 10 days of completion of closure. In accordance with Title 30 TAC §330.463(b), the postclosure care period begins immediately upon the date of final closure.

4.2 Provisions for Extending Closure Period

If the City of Meadow Landfill has remaining capacity at the time of its closure, final closure activities will begin no later than one year after the most recent receipt of wastes. A request for an extension beyond the one-year deadline for the initiation of final closure may be submitted to the Executive Director for review and approval and will include all applicable documentation to demonstrate that the unit or site

City of Meadow Landfill
Figure IIIJ-2 – Final Closure Schedule



Notes: (1) Schedule is based on anticipated date of beginning final closure activities. Heavy vertical line signifies final receipt of waste. Schedule is shown for reference purposes only. (2) Implementation of closure activities shall follow the TCEQ-approved closure plan and applicable rules. (3) Completion of closure may be extended as described in Section 4.2 of this appendix.

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN
APPENDIX IIIJ-A
FINAL COVER SYSTEM QUALITY CONTROL PLAN

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

DAVID E. POE
81734

02/28/2025

Prepared by

Weaver Consultants Group, LLC
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817-735-9770

WCG Project No. 0120-809-11-05

This document is intended for permitting purposes only.

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APPENDIX IIIJ-A-A
Final Cover Drainage Layer Design

DAVID E. POE
81734

02/28/2025

Earthwork

This is a construction activity involving the use of soil materials as defined in the construction drawings and specifications and Section 2 of this plan.

Film Tear Bond (FTB)

A failure in the geomembrane sheet material on either side of the seam and not within the seam itself.

Final Cover System Evaluation Report (FCSER)

Upon completion of closure activities, the certification will be in the form of the FCSER which will be signed by the POR and include all the documentation necessary for certification of closure. The FCSER described in this appendix will provide the necessary "certification" of the final cover system construction as a component of the overall final closure described in Appendix IIIJ, Section 8, but is not intended to supersede the closure and certification requirements set forth in Appendix IIIJ, Section 8 and Title 30 TAC §330.641(c)(2).

Fish Mouth

A semi-conical opening of the seam that is formed by an edge wrinkle in one sheet of the geomembrane.

Geomembrane Liner (GM)

This is a synthetic lining material, also referred to as geomembrane, membrane liner, or sheet. The term Flexible Membrane Liner (FML) is also used for GM.

Geosynthetics Contractor

This individual is also referred to as the "contractor" or "installer", and is the person or firm responsible for geosynthetic construction. This definition applies to any person installing FML or other geosynthetic materials, even if not his primary function.

Independent Testing Laboratory

A laboratory that is independent of ownership or control by the permittee or any party to the construction of the final cover or the manufacturer of the final cover products used.

Manufacturing Quality Assurance (MQA)

A planned system of activities that provides assurance that the raw materials were constructed (manufactured) as specified.

Manufacturing Quality Control (MQC)

A planned system of inspection that is used to directly monitor and control the manufacture of a material.

5 CONSTRUCTION QUALITY ASSURANCE FOR EROSION LAYER

5.1 General Requirements

The erosion layer will consist of a minimum of 12 inches of earthen material and will be capable of sustaining native and introduced vegetative growth and must be seeded immediately after completion of the final cover. Temporary or permanent erosion control materials may be used to minimize erosion and aid establishment of vegetation. The physical characteristics of the erosion layer will be evaluated through visual observation (and laboratory testing if deemed necessary by the POR) before construction and visual observation during construction. Additional testing during construction will be at the discretion of the POR.

The erosion layer may be placed using any appropriate equipment capable of completing the work and should only receive the minimal compaction effort required for stability. Under no circumstances will the construction equipment come in direct contact with the installed geosynthetics. Equipment used to install the erosion layer must meet the requirements of Section 4.5.

The thickness of the erosion layer will be verified with surveying procedures at a minimum of one survey point per 10,000 square feet of constructed area by a qualified surveyor with a minimum of one reference point. The survey results for the erosion layer will be included in the FCSER.

During construction the CQA monitor will:

- Verify that grade control is performed prior to work.
- Verify that underlying geosynthetic installations are not damaged during placement operations or by survey grade controls. Mark damaged geosynthetics and verify that damage is repaired.
- Monitor haul-road thickness over installed geosynthetics and verify that equipment hauling and material placement meet equipment specifications. (See Section 4.5).
- The POR will coordinate with the project surveyor to perform a thickness verification survey of the erosion layer materials upon completion of placement operations. Verify corrective action measures as determined by

the verification survey. Thickness surveying to determine minimum erosion layer thickness will be performed similar to the infiltration layer thickness verification discussed in Section 2 and shown in Table 2-1.

5.2 Vegetation Establishment and Monitoring

Vegetation for the site will be native and introduced grasses with root depths of 6 inches to 8 inches. The erosion layer shall also include a mixture of Bermuda, vetch, rye, wheat grass, wildflowers, and flowering plants. The seeding is specified in Appendix IIIF-D, pages IIIF-D-28 through IIIF-D-34. The seeding is specified by TxDOT for temporary and permanent erosion control for Terry County, Texas (Lubbock).

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 will 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 or the soil will be replaced with soil that will support the grasses.

After 6 months of growth, areas that have not achieved the required minimum coverage as specified in the Erosion and Sedimentation Control Plan (Appendix IIIF, Section 2.2) will be addressed by reseeding or replacement of soil, or both, as described above.

APPENDIX IIIJ-A-A

FINAL COVER DRAINAGE LAYER DESIGN

Includes pages IIIJ-A-A-1 through IIIJ-A-A-51

STATE OF TEXAS
DAVID E. POE
81734
LICENSED
PROFESSIONAL ENGINEER

02/28/2025

Calculate the Design Transmissivity (T_{DES}) and permeability of the final cover geocomposite drainage layer:

Table 2.3 - Required Transmissivity

Fill Condition	P^1 (psf)	t^2 (in)	T^3 (m^2/s)	ORF^4	$T_{DES}{}^5$ (m^2/s)	k^6 (cm/s)
Closed (topslope)	120	0.250	2.13E-03	5.06	4.21E-04	6.63

[1] P is the pressure on the final cover drainage layer due to the weight of erosion layer from Table 2.1.

[2] t is the drainage layer thickness from Table 2.1.

[3] T is obtained from the specified transmissivity values for a representative geocomposite drainage layer (250-mil-thick geonet with 6 oz/sy polypropylene geotextile) as shown on Sheet IIIJ-A-A-13.

[4] ORF is the Overall Reduction Factor obtained from Table 2.2.

[5] T_{DES} is the design transmissivity value calculated using the following equation:

$$T_{DES} = T / (FS\ Factor)$$

[6] k is the hydraulic conductivity and calculated using the following equation:

$$k = T_{DES} / t$$

~~2.2 Use HELP to demonstrate that the drainage geocomposite is adequate to keep the erosion layer from becoming completely saturated and verify that the erosion layer will not be impacted by uplift.~~

~~Compare the maximum head on the liner to the thickness of the geocomposite:~~

~~$t_{erosion}$~~ ~~>~~ ~~h_{max}~~

~~(Thickness of the erosion layer)~~ ~~(Maximum Head Estimated by HELP Model. Refer to page IIIJ-A-A-17)~~

~~12.0 in~~ ~~>~~ ~~8.538 in~~

~~Since the maximum head on the final cover geomembrane is less than the thickness of the erosion layer, the erosion will not become completely saturated. Therefore, the maximum spacing of 405 feet between the drain pipes located on the topslope is acceptable. As shown on Sheet IIIJ-A-A-14, the distance between the pipes on the topslope is equal to no more than 405 feet.~~

2.2 Verify that the erosion layer will not be impacted by uplift.

Uplift may occur if the depth of water in the geocomposite exceeds the thickness of the geocomposite. ~~As noted above, the maximum water depth on the geomembrane is 6.191 inches.~~ If this occurs, the potential for uplift exists. It is conservatively assumed that the erosion layer is fully saturated. Therefore, to prevent uplift, the weight of erosion layer must be higher than the uplift exerted by the maximum head ~~in drainage geocomposite~~ on the final cover geomembrane (12 inches).

Maximum Head ~~Estimated by HELP Model~~, h_{max}= 12 inches ~~(refer to page IIIJ-A-A-17)~~
Unit Weight of Erosion Layer, γ_{EL}= 120 pcf
Unit Weight of Water, γ_W= 62.4 pcf
Thickness of Erosion Layer, h_{EL}= 12 inches

Uplift Force, UF= $h_{max} \times \gamma_W$ psf
Weight of Erosion Layer, W_{EL}= $h_{EL} \times \gamma_{EL}$ psf

UF= (12/12)*62.4 (psf)
W_{EL}= 1 ft x 120 pcf (psf)

UF= 62.4 psf
W_{EL}= 120 psf

Factor of Safety, FS= W_{EL} / UF

FS= 120 / 62.4
FS= 1.9

Conclusion:

A factor of safety of more than one indicates that the erosion layer will not be impacted by uplift force caused by the maximum head on the final cover geomembrane. ~~in the geocomposite estimated by the HELP Model.~~ Therefore, the erosion layer is stable as designed. As shown on page IIIJ-A-A-17, under normal conditions the head in the geocomposite is 0.003 inches which is less than the thickness of the geocomposite. Therefore, the thickness of the water on the geomembrane will not exceed the thickness of the geocomposite under normal conditions.

2.3 Determine pipe size required to convey the design flow for the specified pipe length and pipe outlet spacing.

Maximum flow to a collection pipe has been estimated by using the HELP model.
From the HELP model, the lateral drainage collected per unit length of drainage geocomposite is:

Lateral Drainage Collected $d_{collected}$=	0.115	ft/day, (drainage collected expressed as depth from HELP)
L (5%)=	340	ft (topslope length between the pipe and the grade break)
q_p =	$d_{collected}$ * 1 * L	cfs
q_p =	0.00045	cfs (Flow per Unit Length of Pipe, q_p)

Maximum Flow to Collection Pipe for Various Pipe Lengths:

$Q_{max} = L_{p\text{-}max} \times q_p$

Pipe Length, $L_{p\text{-}max}$ (ft)	Flow per Unit Length of Pipe, q_p (cfs/ft)	Maximum Pipe Flow, Q_{max}[1] (cfs)
< 350	0.00045	0.158
350-950	0.00045	0.430
950-1,700	0.00045	0.769

[1] Maximum pipe flow is calculated using the maximum pipe length in each range.

Collection Pipe Size:

Use Manning's Equation to determine the pipe size.

Pipe Capacity (Q_{pc}):

$$Q_{pc} = \frac{1.49AR^{2/3}S^{1/2}}{n}$$

(from Chapter 10 of Ref 2)

where:

Q_{pc}: Full Flow Pipe Capacity (cfs)
d: Diameter (inches), HDPE ADS Collection Pipe Diameter
A: Flow area (sf), Cross Section Pipe
P: Perimeter (ft)
R: Hydraulic radius (ft) = Cross Section (A) / Perimeter (P)
S: Pipe slope (ft/ft)
n: Manning's Roughness Coefficient

Pipe Capacity for Different Pipe Sizes

d (inches)	A (sf)	P (ft)	R (ft)	S (ft/ft)	n	Q_{pc} (cfs)
4	0.09	1.05	0.08	0.005	0.010	0.171
6	0.19	1.57	0.12	0.005	0.010	0.474
8	0.32	2.09	0.15	0.005	0.010	0.943

Fullness Ratio of Pipe (f):

$f = Q_{max}/Q_{pc}$ (Ratio of maximum calculated flow (Q_{max}) to total flow capacity (Q_{pc}) for pipe)

Fullness ratio of pipe (f)					
Fill Condition	Pipe Length (ft)	d (inches)	Q_{max} (cfs)	Q_{pc} (cfs)	f
Closed (topslope)	< 350	4	0.158	0.171	0.93
	350-950	6	0.430	0.474	0.91
	950-1,700	8	0.769	0.943	0.82

Conclusion: A pipe size of 4 inches is acceptable for the topslope area for pipes lengths of 350 feet and shorter. A pipe size of 6 inches is acceptable for pipe lengths between 350 and 950 feet. A pipe size of 8 inches is acceptable for pipe lengths between 950 and 1,700 feet.

A minimum open area of 1 square inch per foot of drainage pipe is recommended by the U.S. Soil Conservation Service and the U.S. Bureau of Reclamation. Therefore, the number of 0.5 in diameter holes per foot will be 6 and total slot area provided by the manufacturer will provide documentation that minimum of 1 square inch of total slot area is provided per linear foot of pipe.

3. Topslope/Sideslope Transition

3.1 Estimate the percolation into the drainage geocomposite from the erosion layer.

Calculate the flow entering the geocomposite from unit area of erosion layer (q_f):

k_{cover} = 1.2E-04 cm/s

q_f = k_{cover} * i (i is the gradient of water percolating within the drainage layer, and it is equal to 1 for vertical percolation.)

q_f = 1.2E-4 cm/s * 1 / (30.48 cm/ 1 ft)

q_f = 3.94E-06 cfs/sf

Calculate the maximum flow in drainage geocomposite on 4H:1V sideslope.
Consider the flow coming from the topdeck:

L (4H:1V)= 85 ft (estimated)
L (5%)= 185 ft, topdeck length between the topdeck pipe and the grade break (estimated)
L (total)= 270 ft
q_p = q_f * L (total)
q_p = 0.00106 sf/s (per unit width)

3.2 Determine the capacity of the sideslope drainage geocomposite based on the estimated transmissivity and compare to the estimated flow rate that occurs due to infiltration.

T_{DES}	>	q_p
(flow capacity of the drainage geocomposite per unit width. Refer to Section 1.1)		(estimated flow in the drainage geocomposite per unit width)
0.00123 sf/s (cf/s·ft)	>	0.00106 sf/s (cf/s·ft)

Since the capacity of the drainage geocomposite is greater than the estimated flow in the geocomposite, the actual flow depth is contained within the geocomposite and the design is acceptable.

3.3 Determine pipe size required to convey the design flow for the specified pipe length and pipe outlet spacing.

Maximum flow to a collection pipe has been estimated by using the HELP model.
From the HELP model, the lateral drainage collected per unit length of drainage geocomposite is:

Sideslope:

Lateral Drainage Collected $d_{collected}$= 0.070 ft/day, (drainage collected expressed as depth from HELP)
L (4H:1V)= 85 ft (sideslope length between the pipe and the grade break)
$q_{p\ (Sideslope)}$ = $d_{collected}$ * 1 * L cfs
$q_{p\ (Sideslope)}$ = 0.00007 cfs (Flow per Unit Length of Pipe, q_p)

Topslope:

Lateral Drainage Collected $d_{collected}$= 0.107 ft/day, (drainage collected expressed as depth from HELP)
L (5%)= 180 ft (topslope length between the pipe and the grade break)
$q_{p\ (topslope)}$ = $d_{collected}$ * 1 * L cfs
$q_{p\ (topslope)}$ = 0.00022 cfs (Flow per Unit Length of Pipe, q_p)

Total: $q_{p\ (Total)}$ = 0.00029 cfs

Maximum Flow to Collection Pipe for Various Pipe Lengths:

$Q_{max} = L_{p\text{-}max} \times q_p$

Pipe Length, $L_{p\text{-}max}$ (ft)	Flow per Unit Length of Pipe, q_p (cfs/ft)	Maximum Pipe Flow, Q_{max}[1] (cfs)
< 550	0.00029	0.161
550-1,500	0.00029	0.439
1,500-1,700	0.00029	0.497

[1] Maximum pipe flow is calculated using the maximum pipe length in each range.

Capacity of the collection pipe:

Use Manning's Equation to determine the pipe capacity.

Pipe Capacity (Q_{pc}):

$$Q_{pc} = \frac{1.49AR^{2/3}S^{1/2}}{n}$$

(from Chapter 10 of Ref 2)

where:

Q_{pc}: Full Flow Pipe Capacity (cfs)
d: Diameter (inches), HDPE ADS collection pipe
A: Flow area (sf), Cross section of pipe
P: Perimeter (ft)
R: Hydraulic radius (ft) = Cross section (A) / Perimeter (P)
S: Pipe slope (ft/ft)
n: Manning's roughness coefficient

Pipe Capacity						
d (inches)	A (sf)	P (ft)	R (ft)	S (ft/ft)	n	Q_{pc} (cfs)
4	0.09	1.05	0.08	0.005	0.010	0.171
6	0.19	1.57	0.12	0.005	0.010	0.474
8	0.32	2.09	0.15	0.005	0.010	0.943

Fullness Ratio of Pipe (f):

$f = Q_{max}/Q_{pc}$ **(Ratio of maximum calculated flow (Q_{max}) to total flow capacity (Q_{pc}) for pipe)**

Fullness Ratio of Pipe (f)					
Fill Condition	Pipe Length (ft)	d (inches)	Q_{max} (cfs)	Q_{pc} (cfs)	f
Closed (transition)	< 550	4	0.161	0.171	0.94
	550-1,500	6	0.439	0.474	0.93
	1,500-1,700	7	0.497	0.943	0.53

Conclusion: A pipe size of 4 inches is acceptable for the topslope area for pipes lengths of 550 feet and shorter. A pipe size of 6 inches is acceptable for pipe lengths between 550 and 1,500 feet. A pipe size of 8 inches is acceptable for pipe lengths between 1,500 and 1,700 feet.

A minimum open area of 1 square inch per foot of drainage pipe is recommended by the U.S. Soil Conservation Service and the U.S. Bureau of Reclamation. Therefore, the number of 0.5 in diameter holes per foot will be 6 and total slot area provided by the manufacturer will provide documentation that minimum of 1 square inch of total slot area is provided per linear foot of pipe.

Prep By: SSM
Date: 2/14/2025

CITY OF MEADOW LANDFILL
0120-809-11-05
HELP VERSION 3.07 SUMMARY SHEET

Chkd By: BPY/DEP
Date: 2/14/2025

		CLOSED SIDESLOPE (25%)	CLOSED TOPSLOPE (5%)	CLOSED SIDESLOPE TRANSITION	CLOSED TOPSLOPE TRANSITION
GENERAL	Case No.	1	2	3	4
INFORMATION	Output Page	IIIJ-A-A-18	IIIJ-A-A-25	IIIJ-A-A-32	IIIJ-A-A-39
	No. of Years	30	30	30	30
	Ground Cover	GOOD	GOOD	GOOD	GOOD
	SCS Runoff Curve No.	82.4	~~80.7~~ 80.6	~~82.8~~ 81.7	81.3
	Model Area (acre)	1.0	1.0	1.0	1.0
	Runoff Area (%)	100	100	100	100
	Maximum Leaf Area Index	4.5	4.5	4.5	4.5
	Evaporative Zone Depth (inch)	12	12	12	12
EROSION	Thickness (in)	12	12	12	12
LAYER	Porosity (vol/vol)	0.3980	0.3980	0.3980	0.3980
(Texture = 10)	Field Capacity (vol/vol)	0.2440	0.2440	0.2440	0.2440
	Wilting Point (vol/vol)	0.1360	0.1360	0.1360	0.1360
	Init. Moisture Content (vol/vol)	0.2440	0.2440	0.2440	0.2440
	Hyd. Conductivity (cm/s)	1.2E-04	1.2E-04	1.2E-04	1.2E-04
DRAINAGE	Thickness (in)	0.250	0.250	0.250	0.250
LAYER	Porosity (vol/vol)	0.8500	0.8500	0.8500	0.8500
(Texture = 0)	Field Capacity (vol/vol)	0.0100	0.0100	0.0100	0.0100
	Wilting Point (vol/vol)	0.0050	0.0050	0.0050	0.0050
	Init. Moisture Content (vol/vol)	0.0100	0.0100	0.0100	0.0100
	Hyd. Conductivity (cm/s)	19.43	6.63	19.43	6.63
	Slope (%)	25	5	~~5~~ 25	5
	Slope Length (ft)	140	~~340~~ 350	~~85~~ 270	185
FLEXIBLE	Thickness (in)	0.04	0.04	0.04	0.04
MEMBRANE	Hyd. Conductivity (cm/s)	4.0E-13	4.0E-13	4.0E-13	4.0E-13
LINER	Pinhole Density (holes/acre)	0	0	0	0
(Texture = 36)	Install. Defects (holes/acre)	0	0	0	0
	Placement Quality	GOOD	GOOD	GOOD	GOOD
INFILTRATION	Thickness (in)	18	18	18	18
LAYER	Porosity (vol/vol)	0.4270	0.4270	0.4270	0.4270
(Texture = 0)	Field Capacity (vol/vol)	0.4180	0.4180	0.4180	0.4180
	Wilting Point (vol/vol)	0.3670	0.3670	0.3670	0.3670
	Init. Moisture Content (vol/vol)	0.4270	0.4270	0.4270	0.4270
	Hyd. Conductivity (cm/s)	1.0E-05	1.0E-05	1.0E-05	1.0E-05
PRECIPITATION	Average Annual (in)	17.93	17.93	17.93	17.93
RUNOFF	Average Annual (in)	0.360	~~0.227~~ 0.224	~~0.383~~ 0.323	0.260
EVAPOTRANSPIRATION	Average Annual (in)	16.59	~~16.61~~ 16.60	~~16.59~~ 16.62	16.57
LATERAL	Average Annual (cf/year)	3,692	~~4,109~~ 4,137	~~3,614~~ 3,725	4,138
DRAINAGE COLLECTED[1]	Peak Daily (cf/day)	2,908	~~5,001~~ 4,858	~~2,873~~ 3,067	4,677
LATERAL DRAINAGE	Peak Daily (in)	0.801	~~1.378~~ 1.338	~~0.791~~ 0.845	1.288
DEPTH	Peak Daily (ft)	0.067	~~0.115~~ 0.112	~~0.066~~ 0.070	0.107
HEAD ON FINAL	Average Annual (in)	0.000	0.003	0.000	0.001
COVER GEOMEMBRANE	Peak Daily (in)	0.008	~~8.538~~ 8.931	~~0.005~~ 0.017	0.949

[1] This is the lateral drainage collected in the drainage geocomposite in the final cover system.

```
******************************************************************************
******************************************************************************
**                                                                          **
**                                                                          **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**                HELP MODEL VERSION 3.07  (1 NOVEMBER 1997)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
**                                                                          **
******************************************************************************
******************************************************************************


PRECIPITATION DATA FILE:    C:\TOP\DATA4.D4
TEMPERATURE DATA FILE:      c:\TOP\DATA7.D7
SOLAR RADIATION DATA FILE:  C:\TOP\DATA13.D13
EVAPOTRANSPIRATION DATA:    C:\TOP\DATA11.D11
SOIL AND DESIGN DATA FILE:  C:\TOP\DATA10.D10
OUTPUT DATA FILE:           C:\TOP\OUTPUT1.OUT


TIME:  14:35     DATE:   2/11/2025


******************************************************************************

     TITLE:  CITY OF MEADOW LANDFILL - FC PIPE DESIGN TS

******************************************************************************


     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER
              WERE SPECIFIED BY THE USER.


                                   LAYER  1
                                   --------

                     TYPE 1 - VERTICAL PERCOLATION LAYER
                         MATERIAL TEXTURE NUMBER  10
           THICKNESS                   =     12.00   INCHES
```

```
  POROSITY                    =      0.3980 VOL/VOL
  FIELD CAPACITY              =      0.2440 VOL/VOL
  WILTING POINT               =      0.1360 VOL/VOL
  INITIAL SOIL WATER CONTENT  =      0.2440 VOL/VOL
  EFFECTIVE SAT. HYD. COND.   =  0.119999997000E-03 CM/SEC
NOTE:  SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY  5.00
         FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.



                          LAYER  2
                          --------

              TYPE 2 - LATERAL DRAINAGE LAYER
                MATERIAL TEXTURE NUMBER   0
  THICKNESS                   =      0.25   INCHES
  POROSITY                    =      0.8500 VOL/VOL
  FIELD CAPACITY              =      0.0100 VOL/VOL
  WILTING POINT               =      0.0050 VOL/VOL
  INITIAL SOIL WATER CONTENT  =      0.0100 VOL/VOL
  EFFECTIVE SAT. HYD. COND.   =   6.63000011000     CM/SEC
  SLOPE                       =      5.00   PERCENT
  DRAINAGE LENGTH             =    350.0    FEET



                          LAYER  3
                          --------

              TYPE 4 - FLEXIBLE MEMBRANE LINER
                MATERIAL TEXTURE NUMBER  36
  THICKNESS                   =      0.04   INCHES
  POROSITY                    =      0.0000 VOL/VOL
  FIELD CAPACITY              =      0.0000 VOL/VOL
  WILTING POINT               =      0.0000 VOL/VOL
  INITIAL SOIL WATER CONTENT  =      0.0000 VOL/VOL
  EFFECTIVE SAT. HYD. COND.   =  0.399999993000E-12 CM/SEC
  FML PINHOLE DENSITY         =      0.00   HOLES/ACRE
  FML INSTALLATION DEFECTS    =      0.00   HOLES/ACRE
  FML PLACEMENT QUALITY       =  3 - GOOD



                          LAYER  4
                          --------

                TYPE 3 - BARRIER SOIL LINER
```

```
              MATERIAL TEXTURE NUMBER   0
   THICKNESS                 =    18.00   INCHES
   POROSITY                  =     0.4270 VOL/VOL
   FIELD CAPACITY            =     0.4180 VOL/VOL
   WILTING POINT             =     0.3670 VOL/VOL
   INITIAL SOIL WATER CONTENT  =     0.4270 VOL/VOL
   EFFECTIVE SAT. HYD. COND.   =  0.999999975000E-05 CM/SEC




          GENERAL DESIGN AND EVAPORATIVE ZONE DATA
          ----------------------------------------

 NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
        SOIL DATA BASE USING SOIL TEXTURE #10 WITH A
        GOOD STAND OF GRASS, A SURFACE SLOPE OF  5.%
        AND A SLOPE LENGTH OF  350. FEET.

SCS RUNOFF CURVE NUMBER            =     80.60
FRACTION OF AREA ALLOWING RUNOFF   =    100.0    PERCENT
AREA PROJECTED ON HORIZONTAL PLANE  =      1.000  ACRES
EVAPORATIVE ZONE DEPTH             =     12.0    INCHES
INITIAL WATER IN EVAPORATIVE ZONE  =      2.928  INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE  =      4.776  INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE  =      1.632  INCHES
INITIAL SNOW WATER                 =      0.000  INCHES
INITIAL WATER IN LAYER MATERIALS   =     10.616  INCHES
TOTAL INITIAL WATER                =     10.616  INCHES
TOTAL SUBSURFACE INFLOW            =      0.00   INCHES/YEAR




           EVAPOTRANSPIRATION AND WEATHER DATA
           -----------------------------------

 NOTE:  EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
        MIDLAND               TEXAS

     STATION LATITUDE                       =  32.00 DEGREES
     MAXIMUM LEAF AREA INDEX                =   4.50
     START OF GROWING SEASON (JULIAN DATE)  =     67
     END OF GROWING SEASON (JULIAN DATE)    =    317
     EVAPORATIVE ZONE DEPTH                 =  12.0  INCHES
     AVERAGE ANNUAL WIND SPEED              =  11.10 MPH
     AVERAGE 1ST QUARTER RELATIVE HUMIDITY  =  52.00 %
     AVERAGE 2ND QUARTER RELATIVE HUMIDITY  =  50.00 %
     AVERAGE 3RD QUARTER RELATIVE HUMIDITY  =  55.00 %
```

```
             AVERAGE 4TH QUARTER RELATIVE HUMIDITY  =  58.00 %


         NOTE:  PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
                  COEFFICIENTS FOR    ABILENE             TEXAS

                  NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

     JAN/JUL     FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
     -------     -------     -------     -------     -------     -------
       0.69        0.62        1.07        1.31        2.20        2.67
       1.94        1.80        2.56        1.57        0.88        0.74


         NOTE:  TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
                  COEFFICIENTS FOR    MIDLAND             TEXAS

             NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

     JAN/JUL     FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
     -------     -------     -------     -------     -------     -------
      40.90       44.80       52.70       60.60       70.00       78.30
      80.60       79.30       72.00       61.80       49.90       41.90


         NOTE:  SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
                  COEFFICIENTS FOR    MIDLAND             TEXAS
                    AND STATION LATITUDE  =  32.00 DEGREES



*******************************************************************************

         AVERAGE MONTHLY VALUES IN INCHES FOR YEARS    1 THROUGH   30
-------------------------------------------------------------------------------

                         JAN/JUL  FEB/AUG  MAR/SEP  APR/OCT  MAY/NOV  JUN/DEC
                         -------  -------  -------  -------  -------  -------
  PRECIPITATION
  -------------
    TOTALS                 0.69     0.55     1.29     1.32     1.96     2.54
                           2.67     1.56     2.49     1.40     0.90     0.57

    STD. DEVIATIONS        0.64     0.33     1.02     0.82     1.05     2.04
```

```
                        1.97     1.09     1.58     1.26     0.60     0.60

  RUNOFF
  ------
    TOTALS              0.000    0.000    0.001    0.000    0.003    0.077
                        0.108    0.002    0.023    0.009    0.000    0.000

    STD. DEVIATIONS     0.000    0.000    0.004    0.000    0.007    0.199
                        0.271    0.006    0.065    0.038    0.000    0.000

  EVAPOTRANSPIRATION
  ------------------
    TOTALS              0.640    0.558    0.966    1.809    1.907    2.186
                        2.313    1.511    2.227    0.999    0.844    0.645

    STD. DEVIATIONS     0.400    0.392    0.728    0.913    1.031    1.534
                        1.482    1.010    1.344    0.712    0.461    0.428

  LATERAL DRAINAGE COLLECTED FROM LAYER  2
  ----------------------------------------
    TOTALS              0.0330   0.0096   0.0824   0.0251   0.0064   0.2496
                        0.3142   0.0182   0.1616   0.2012   0.0270   0.0115

    STD. DEVIATIONS     0.0986   0.0397   0.2103   0.0849   0.0237   0.5628
                        0.5775   0.0955   0.4132   0.6134   0.0642   0.0373

  PERCOLATION/LEAKAGE THROUGH LAYER  4
  ------------------------------------
    TOTALS              0.0000   0.0000   0.0000   0.0000   0.0000   0.0000
                        0.0000   0.0000   0.0000   0.0000   0.0000   0.0000

    STD. DEVIATIONS     0.0000   0.0000   0.0000   0.0000   0.0000   0.0000
                        0.0000   0.0000   0.0000   0.0000   0.0000   0.0000


-------------------------------------------------------------------------------
             AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)
-------------------------------------------------------------------------------


  DAILY AVERAGE HEAD ON TOP OF LAYER  3
  -------------------------------------
    AVERAGES            0.0002   0.0001   0.0007   0.0002   0.0000   0.0082
                        0.0161   0.0002   0.0024   0.0032   0.0002   0.0001

    STD. DEVIATIONS     0.0006   0.0003   0.0022   0.0005   0.0001   0.0252
                        0.0442   0.0009   0.0066   0.0106   0.0004   0.0002

*******************************************************************************
```

```
******************************************************************************

     AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS    1 THROUGH   30
------------------------------------------------------------------------------
                                      INCHES           CU. FEET      PERCENT
                                 -------------------  -------------  ---------
 PRECIPITATION                  17.93    (   4.448)     65096.8     100.00

 RUNOFF                          0.224   (  0.3376)       811.47      1.247

 EVAPOTRANSPIRATION             16.604   (  3.7495)     60271.22     92.587

 LATERAL DRAINAGE COLLECTED      1.13977 (  1.01585)     4137.376    6.35573
   FROM LAYER  2

 PERCOLATION/LEAKAGE THROUGH     0.00000 (  0.00000)        0.003     0.00000
   LAYER  4

 AVERAGE HEAD ON TOP             0.003 (    0.004)
   OF LAYER  3

 CHANGE IN WATER STORAGE        -0.034   (  0.6826)      -123.28     -0.189

******************************************************************************


*****************************************************************************

           PEAK DAILY VALUES FOR YEARS    1 THROUGH   30
   ------------------------------------------------------------------------
                                                  (INCHES)      (CU. FT.)
                                                 ----------   -------------
        PRECIPITATION                              4.67        16952.100

        RUNOFF                                     1.192        4326.7114

        DRAINAGE COLLECTED FROM LAYER  2           1.33830      4858.04053

        PERCOLATION/LEAKAGE THROUGH LAYER  4       0.000002        0.00617

        AVERAGE HEAD ON TOP OF LAYER  3            4.997

        MAXIMUM HEAD ON TOP OF LAYER  3            8.931

        LOCATION OF MAXIMUM HEAD IN LAYER  2
              (DISTANCE FROM DRAIN)               36.4 FEET
```

```
      SNOW WATER                                     0.94          3414.2761


      MAXIMUM VEG. SOIL WATER (VOL/VOL)                      0.3628

      MINIMUM VEG. SOIL WATER (VOL/VOL)                      0.1360


       ***  Maximum heads are computed using McEnroe's equations.  ***

            Reference:  Maximum Saturated Depth over Landfill Liner
                        by Bruce M. McEnroe, University of Kansas
                        ASCE Journal of Environmental Engineering
                        Vol. 119, No. 2, March 1993, pp. 262-270.


******************************************************************************




******************************************************************************

                   FINAL WATER STORAGE AT END OF YEAR   30
        ----------------------------------------------------------------------
                    LAYER        (INCHES)       (VOL/VOL)
                    -----        --------       ---------
                      1            1.9091         0.1591

                      2            0.0025         0.0100

                      3            0.0000         0.0000

                      4            7.6860         0.4270

                  SNOW WATER       0.000

******************************************************************************
******************************************************************************
```

```
*******************************************************************************
*******************************************************************************
**                                                                           **
**                                                                           **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE                **
**                HELP MODEL VERSION 3.07  (1 NOVEMBER 1997)                 **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                    **
**                    USAE WATERWAYS EXPERIMENT STATION                      **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY               **
**                                                                           **
**                                                                           **
*******************************************************************************
*******************************************************************************


PRECIPITATION DATA FILE:    C:\TSS\DATA4.D4
TEMPERATURE DATA FILE:      c:\TSS\DATA7.D7
SOLAR RADIATION DATA FILE:  C:\TSS\DATA13.D13
EVAPOTRANSPIRATION DATA:    C:\TSS\DATA11.D11
SOIL AND DESIGN DATA FILE:  C:\TSS\DATA10.D10
OUTPUT DATA FILE:           C:\TSS\OUTPUT1.OUT


TIME:  14:41     DATE:   2/11/2025



*******************************************************************************

     TITLE:  CITY OF MEADOW LANDFILL - FC PIPE DESIGN TRANSITION SS

*******************************************************************************



     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER
              WERE SPECIFIED BY THE USER.



                                   LAYER  1
                                   --------

                     TYPE 1 - VERTICAL PERCOLATION LAYER
                         MATERIAL TEXTURE NUMBER  10
           THICKNESS                    =    12.00   INCHES
```

```
  POROSITY                      =      0.3980 VOL/VOL
  FIELD CAPACITY                =      0.2440 VOL/VOL
  WILTING POINT                 =      0.1360 VOL/VOL
  INITIAL SOIL WATER CONTENT    =      0.2440 VOL/VOL
  EFFECTIVE SAT. HYD. COND.     =  0.119999997000E-03 CM/SEC
NOTE:  SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY  5.00
         FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.




                          LAYER  2
                          --------

              TYPE 2 - LATERAL DRAINAGE LAYER
                MATERIAL TEXTURE NUMBER   0
  THICKNESS                     =      0.25   INCHES
  POROSITY                      =      0.8500 VOL/VOL
  FIELD CAPACITY                =      0.0100 VOL/VOL
  WILTING POINT                 =      0.0050 VOL/VOL
  INITIAL SOIL WATER CONTENT    =      0.0100 VOL/VOL
  EFFECTIVE SAT. HYD. COND.     =   19.4300003000     CM/SEC
  SLOPE                         =     25.00   PERCENT
  DRAINAGE LENGTH               =    270.0    FEET




                          LAYER  3
                          --------

              TYPE 4 - FLEXIBLE MEMBRANE LINER
                MATERIAL TEXTURE NUMBER  36
  THICKNESS                     =      0.04   INCHES
  POROSITY                      =      0.0000 VOL/VOL
  FIELD CAPACITY                =      0.0000 VOL/VOL
  WILTING POINT                 =      0.0000 VOL/VOL
  INITIAL SOIL WATER CONTENT    =      0.0000 VOL/VOL
  EFFECTIVE SAT. HYD. COND.     =  0.399999993000E-12 CM/SEC
  FML PINHOLE DENSITY           =      0.00   HOLES/ACRE
  FML INSTALLATION DEFECTS      =      0.00   HOLES/ACRE
  FML PLACEMENT QUALITY         =  3 - GOOD




                          LAYER  4
                          --------

                TYPE 3 - BARRIER SOIL LINER
```

```
              MATERIAL TEXTURE NUMBER   0
   THICKNESS                   =     18.00   INCHES
   POROSITY                    =      0.4270 VOL/VOL
   FIELD CAPACITY              =      0.4180 VOL/VOL
   WILTING POINT               =      0.3670 VOL/VOL
   INITIAL SOIL WATER CONTENT  =      0.4270 VOL/VOL
   EFFECTIVE SAT. HYD. COND.   =  0.999999975000E-05 CM/SEC




          GENERAL DESIGN AND EVAPORATIVE ZONE DATA
          ----------------------------------------

 NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
          SOIL DATA BASE USING SOIL TEXTURE #10 WITH A
          GOOD STAND OF GRASS, A SURFACE SLOPE OF 25.%
          AND A SLOPE LENGTH OF  270. FEET.

SCS RUNOFF CURVE NUMBER              =     81.70
FRACTION OF AREA ALLOWING RUNOFF     =    100.0    PERCENT
AREA PROJECTED ON HORIZONTAL PLANE   =      1.000  ACRES
EVAPORATIVE ZONE DEPTH               =     12.0    INCHES
INITIAL WATER IN EVAPORATIVE ZONE    =      2.928  INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE   =      4.776  INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE   =      1.632  INCHES
INITIAL SNOW WATER                   =      0.000  INCHES
INITIAL WATER IN LAYER MATERIALS     =     10.616  INCHES
TOTAL INITIAL WATER                  =     10.616  INCHES
TOTAL SUBSURFACE INFLOW              =      0.00   INCHES/YEAR




           EVAPOTRANSPIRATION AND WEATHER DATA
           -----------------------------------

 NOTE:  EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
          MIDLAND               TEXAS

     STATION LATITUDE                        =  32.00 DEGREES
     MAXIMUM LEAF AREA INDEX                 =   4.50
     START OF GROWING SEASON (JULIAN DATE)   =     67
     END OF GROWING SEASON (JULIAN DATE)     =    317
     EVAPORATIVE ZONE DEPTH                  =  12.0  INCHES
     AVERAGE ANNUAL WIND SPEED               =  11.10 MPH
     AVERAGE 1ST QUARTER RELATIVE HUMIDITY   =  52.00 %
     AVERAGE 2ND QUARTER RELATIVE HUMIDITY   =  50.00 %
     AVERAGE 3RD QUARTER RELATIVE HUMIDITY   =  55.00 %
```

```
             AVERAGE 4TH QUARTER RELATIVE HUMIDITY  =  58.00 %


         NOTE:  PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
                  COEFFICIENTS FOR    ABILENE             TEXAS

                  NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

     JAN/JUL     FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
     -------     -------     -------     -------     -------     -------
       0.69        0.62        1.07        1.31        2.20        2.67
       1.94        1.80        2.56        1.57        0.88        0.74


         NOTE:  TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
                  COEFFICIENTS FOR    MIDLAND             TEXAS

             NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

     JAN/JUL     FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
     -------     -------     -------     -------     -------     -------
      43.70       47.70       55.00       64.10       72.10       79.80
      81.70       80.60       74.20       64.40       52.30       46.00


         NOTE:  SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
                  COEFFICIENTS FOR    MIDLAND             TEXAS
                    AND STATION LATITUDE  =  32.00 DEGREES




*******************************************************************************

         AVERAGE MONTHLY VALUES IN INCHES FOR YEARS    1 THROUGH   30
-------------------------------------------------------------------------------

                         JAN/JUL  FEB/AUG  MAR/SEP  APR/OCT  MAY/NOV  JUN/DEC
                         -------  -------  -------  -------  -------  -------
  PRECIPITATION
  -------------
    TOTALS                 0.69     0.55     1.29     1.32     1.96     2.54
                           2.67     1.56     2.49     1.40     0.90     0.57

    STD. DEVIATIONS        0.64     0.33     1.02     0.82     1.05     2.04
```

```
                             1.97     1.09     1.58     1.26     0.60     0.60

  RUNOFF
  ------
    TOTALS                   0.000    0.000    0.002    0.000    0.006    0.101
                             0.153    0.003    0.042    0.016    0.000    0.000

    STD. DEVIATIONS          0.000    0.000    0.007    0.001    0.013    0.235
                             0.354    0.009    0.107    0.059    0.001    0.000

  EVAPOTRANSPIRATION
  ------------------
    TOTALS                   0.636    0.548    0.990    1.819    1.879    2.181
                             2.324    1.520    2.231    1.006    0.843    0.642

    STD. DEVIATIONS          0.393    0.393    0.719    0.919    1.012    1.523
                             1.499    1.019    1.348    0.743    0.465    0.422

  LATERAL DRAINAGE COLLECTED FROM LAYER  2
  ----------------------------------------
    TOTALS                   0.0366   0.0194   0.0757   0.0178   0.0062   0.2354
                             0.2584   0.0138   0.1398   0.1929   0.0240   0.0061

    STD. DEVIATIONS          0.1077   0.0636   0.2063   0.0614   0.0312   0.5461
                             0.4804   0.0735   0.3714   0.5889   0.0705   0.0208

  PERCOLATION/LEAKAGE THROUGH LAYER  4
  ------------------------------------
    TOTALS                   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000
                             0.0000   0.0000   0.0000   0.0000   0.0000   0.0000

    STD. DEVIATIONS          0.0000   0.0000   0.0000   0.0000   0.0000   0.0000
                             0.0000   0.0000   0.0000   0.0000   0.0000   0.0000


-------------------------------------------------------------------------------
             AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)
-------------------------------------------------------------------------------


  DAILY AVERAGE HEAD ON TOP OF LAYER  3
  -------------------------------------
    AVERAGES                 0.0000   0.0000   0.0000   0.0000   0.0000   0.0001
                             0.0001   0.0000   0.0001   0.0001   0.0000   0.0000

    STD. DEVIATIONS          0.0000   0.0000   0.0001   0.0000   0.0000   0.0002
                             0.0002   0.0000   0.0001   0.0002   0.0000   0.0000

*******************************************************************************
```

```
********************************************************************************

     AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS    1 THROUGH   30
--------------------------------------------------------------------------------
                                     INCHES            CU. FEET       PERCENT
                               -------------------   -------------   ---------
 PRECIPITATION                  17.93    (   4.448)      65096.8     100.00

 RUNOFF                          0.323   (  0.4294)       1171.08      1.799

 EVAPOTRANSPIRATION             16.617   (  3.7350)      60320.96     92.663

 LATERAL DRAINAGE COLLECTED      1.02630 (  0.94270)      3725.484    5.72299
   FROM LAYER  2

 PERCOLATION/LEAKAGE THROUGH     0.00000 (  0.00000)         0.001     0.00000
   LAYER  4

 AVERAGE HEAD ON TOP             0.000 (    0.000)
   OF LAYER  3

 CHANGE IN WATER STORAGE        -0.033   (  0.6786)       -120.74     -0.185

********************************************************************************


↑
******************************************************************************

                PEAK DAILY VALUES FOR YEARS    1 THROUGH   30
   ------------------------------------------------------------------------
                                                (INCHES)      (CU. FT.)
                                               ----------    -------------
      PRECIPITATION                              4.67         16952.100

      RUNOFF                                     1.305         4738.6367

      DRAINAGE COLLECTED FROM LAYER  2           0.84502       3067.43286

      PERCOLATION/LEAKAGE THROUGH LAYER  4       0.000000         0.00005

      AVERAGE HEAD ON TOP OF LAYER  3            0.010

      MAXIMUM HEAD ON TOP OF LAYER  3            0.017

      LOCATION OF MAXIMUM HEAD IN LAYER  2
            (DISTANCE FROM DRAIN)                0.0 FEET
```

```
      SNOW WATER                                 0.94          3403.5652


      MAXIMUM VEG. SOIL WATER (VOL/VOL)                  0.3592

      MINIMUM VEG. SOIL WATER (VOL/VOL)                  0.1360


       ***  Maximum heads are computed using McEnroe's equations.  ***

            Reference:  Maximum Saturated Depth over Landfill Liner
                        by Bruce M. McEnroe, University of Kansas
                        ASCE Journal of Environmental Engineering
                        Vol. 119, No. 2, March 1993, pp. 262-270.


******************************************************************************





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                   FINAL WATER STORAGE AT END OF YEAR   30
    ----------------------------------------------------------------------
                    LAYER        (INCHES)       (VOL/VOL)
                    -----        --------       ---------
                      1            1.9302         0.1608

                      2            0.0025         0.0100

                      3            0.0000         0.0000

                      4            7.6860         0.4270

                  SNOW WATER       0.000

******************************************************************************
******************************************************************************
```

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

PART III – SITE DEVELOPMENT PLAN
APPENDIX IIIJ-B
GCL ALTERNATIVE FINAL COVER DEMONSTRATION

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

DAVID E. POE
81734

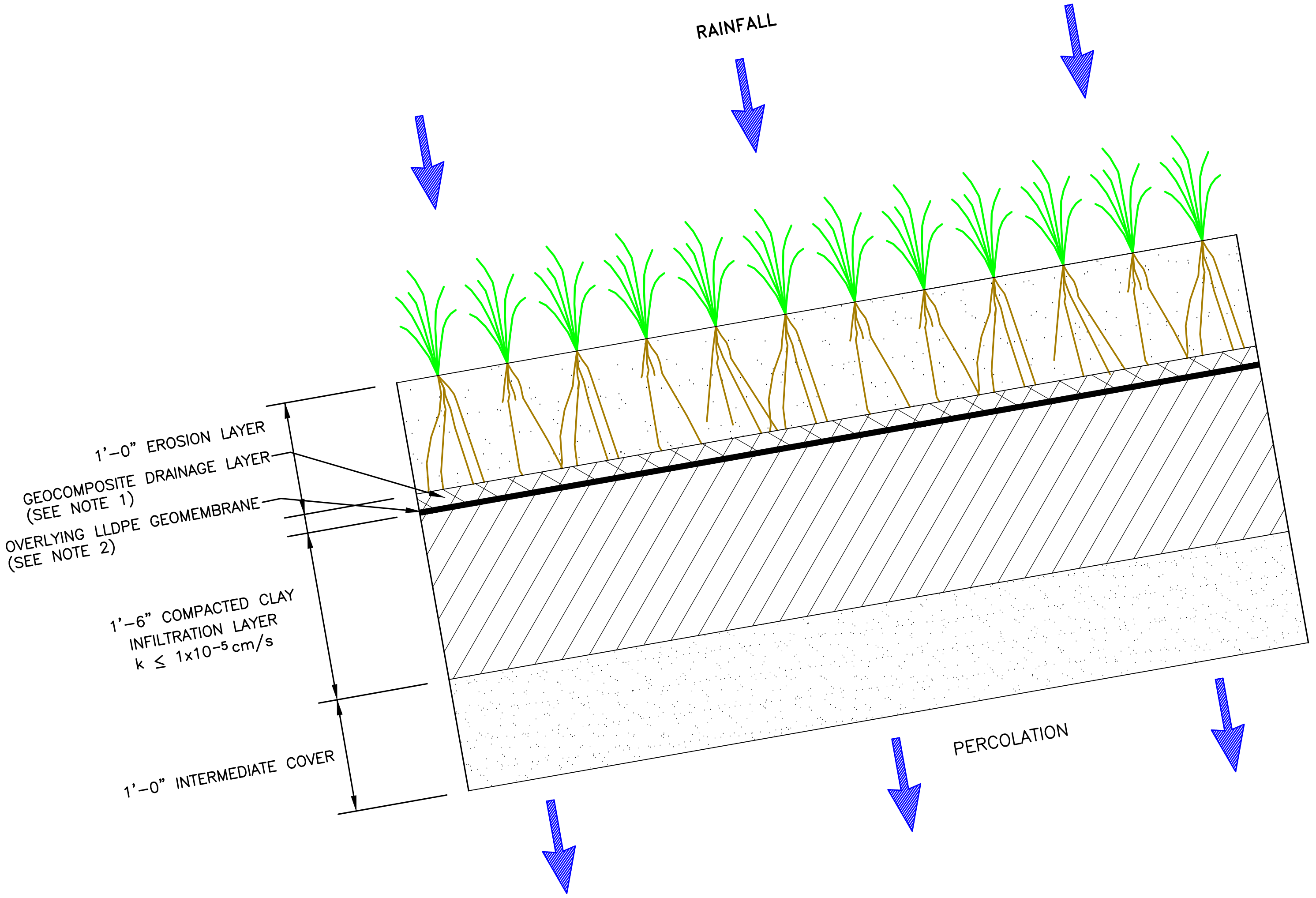
Prepared by

02/28/2025

Weaver Consultants Group, LLC
TBPE Registration No. F-3727
6420 Southwest Boulevard, Suite 206
Fort Worth, Texas 76109
817-735-9770

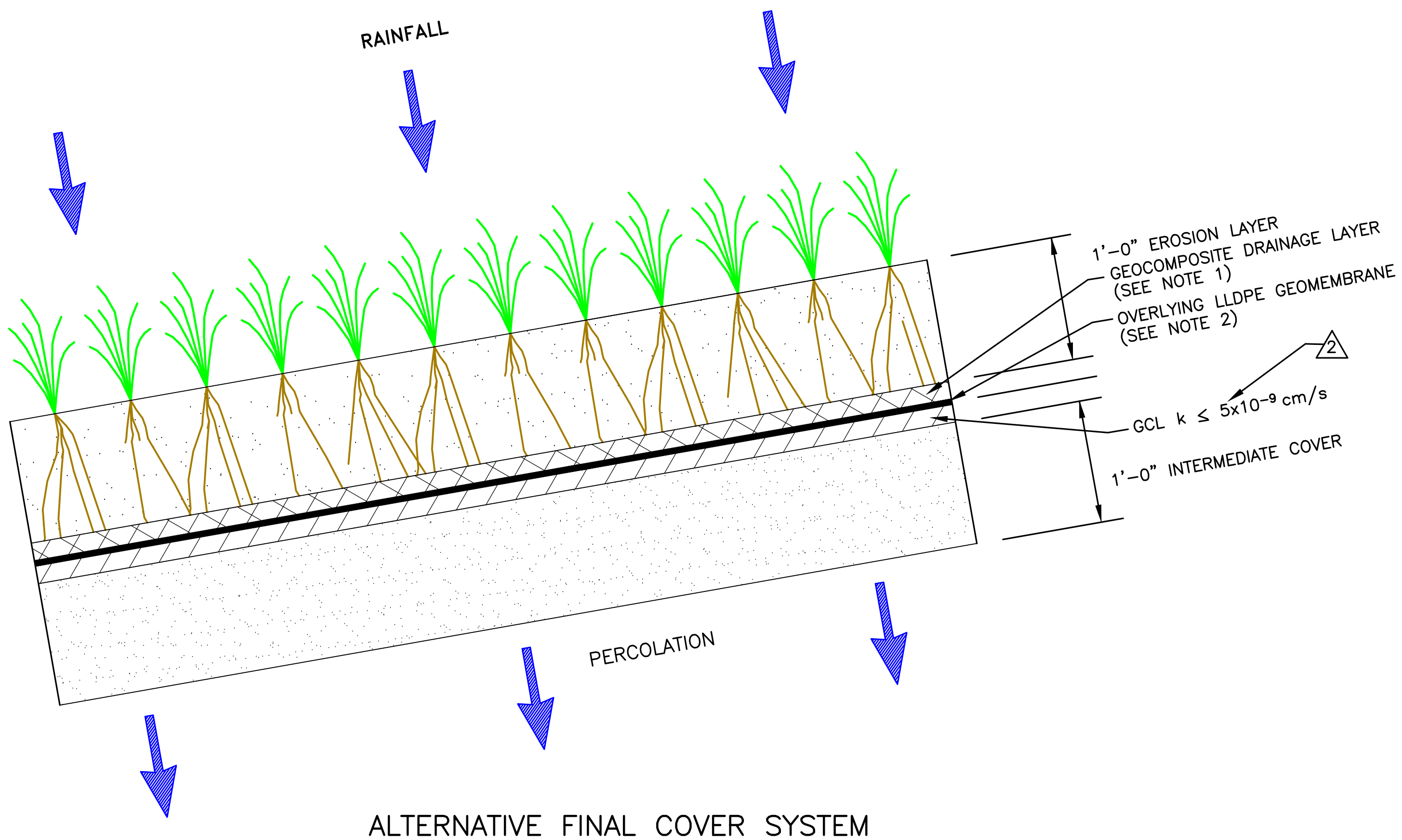
WBC Project No. 0120-809-11-05

AVERAGE ANNUAL RAINFALL = 17.93 IN/YEAR



COMPOSITE FINAL COVER SYSTEM

	TOP SLOPE	SIDE SLOPE
AVERAGE ANNUAL PERCOLATION (IN/YEAR)=	0.00008	0.00000
PEAK DAILY PERCOLATION (IN/DAY)=	0.00035	0.000001 △1



ALTERNATIVE FINAL COVER SYSTEM

	TOP SLOPE	SIDE SLOPE
AVERAGE ANNUAL PERCOLATION (IN/YEAR)=	0.00000	0.00000
PEAK DAILY PERCOLATION (IN/DAY)=	0.000006 △1	0.000000

LEGEND

△ INDICATES REVISION
(SEE LIST OF REVISIONS)

NOTES:

1. THE FINAL COVER GEOCOMPOSITE DRAINAGE LAYER DESIGN IS INCLUDED IN APPENDIX IIIJ–A–A AND DESIGN CONSISTS OF SINGLE–SIDED GEOCOMPOSITE FOR THE TOP SLOPES AND DOUBLE–SIDED GEOCOMPOSITE FOR THE SIDE SLOPES.
2. THE OVERLYING LLDPE GEOMEMBRANE LINER DESIGN CONSISTS OF SMOOTH OR TEXTURED 40–MIL LLDPE FOR THE TOP SLOPES AND TEXTURED 40–MIL LLDPE FOR THE SIDE SLOPES.
3. THIS GRAPHIC IS DEVELOPED TO COMPARE THE COMPOSITE FINAL COVER SYSTEM AND ALTERNATIVE FINAL COVER SYSTEM PERCOLATION RATES THROUGH THE BOTTOM OF THE INFILTRATION AND GCL LAYERS, RESPECTIVELY.

LIST OF REVISIONS:

1. UPDATED PERCOLATION RATES.
2. UPDATED GCL HYDRAULIC CONDUCTIVITY.

DAVID E. POE
81734
02/28/2025

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120–076–11
CAD: FIG IIIJ–B.1–DEMO. COMPARISON.DWG

DRAWN BY: JDW
DESIGN BY: BPY
REVIEWED BY: DEP

Weaver Consultants Group
TBPE REGISTRATION NO. F–3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

MAJOR PERMIT AMENDMENT
ALTERNATIVE FINAL COVER
DEMONSTRATION COMPARISON

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

FIGURE IIIJ–B.1

O:\0120\809\EXPANSION 2023\PART III\IIIJ\IIIJ–B\IIIJ–B.1–FC COMPARISON.dwg, jwilson, 1:2

APPENDIX IIIJ-B-1

HELP MODEL ANALYSIS

Includes pages IIIJ-B-1-1 through IIIJ-B-1-31

STATE OF TEXAS
DAVID E. POE
81734
LICENSED
PROFESSIONAL ENGINEER

02/28/2025

Prep By: SSM
Date: 2/14/2025

CITY OF MEADOW LANDFILL
0120-076-11-106
HELP VERSION 3.07 SUMMARY SHEET
AFC DEMONSTRATION

Chkd By: BPY/DEP
Date: 2/14/2025

		COMPOSITE FINAL COVER		GCL ALTERNATIVE FINAL COVER	
		TOP SLOPE	SIDE SLOPE	TOP SLOPE	SIDE SLOPE
GENERAL	Case No.	1	2	3	4
INFORMATION	Output Page	IIIJ-B-1-3	IIIJ-B-1-10	IIIJ-B-1-18	IIIJ-B-1-25
	No. of Years	30	30	30	30
	Ground Cover	GOOD	GOOD	GOOD	GOOD
	SCS Runoff Curve No.	~~80.7~~ 80.6	82.4	~~80.7~~ 80.6	82.4
	Model Area (acre)	1	1	1	1
	Runoff Area (%)	100	100	100	100
	Maximum Leaf Area Index	4.5	4.5	4.5	4.5
	Evaporative Zone Depth (inch)	12	12	12	12
EROSION	Thickness (in)	12	12	12	12
LAYER	Porosity (vol/vol)	0.3980	0.3980	0.3980	0.3980
(Texture = 10)	Field Capacity (vol/vol)	0.2440	0.2440	0.2440	0.2440
	Wilting Point (vol/vol)	0.1360	0.1360	0.1360	0.1360
	Init. Moisture Content (vol/vol)	0.2440	0.2440	0.2440	0.2440
	Hyd. Conductivity (cm/s)	1.2E-04	1.2E-04	1.2E-04	1.2E-04
DRAINAGE	Thickness (in)	0.25	0.25	0.25	0.25
LAYER	Porosity (vol/vol)	0.8500	0.8500	0.8500	0.8500
(Texture = 0)	Field Capacity (vol/vol)	0.0100	0.0100	0.0100	0.0100
	Wilting Point (vol/vol)	0.0050	0.0050	0.0050	0.0050
	Init. Moisture Content (vol/vol)	0.0100	0.0100	0.0100	0.0100
	Hyd. Conductivity (cm/s)	6.63	19.43	6.63	19.43
	Slope (%)	5	25	5	25
	Slope Length (ft)	~~340~~ 350	140	~~340~~ 350	140
FLEXIBLE MEMBRANE	Thickness (in)	0.04	0.04	0.04	0.04
LINER	Hyd. Conductivity (cm/s)	4.0E-13	4.0E-13	4.0E-13	4.0E-13
(Texture = 36)	Pinhole Density (holes/acre)	1	1	1	1
	Installation Defects (holes/acre)	4	4	4	4
	Placement Quality	GOOD	GOOD	GOOD	GOOD
INFILTRATION	Thickness (in)	18	18		
LAYER	Porosity (vol/vol)	0.4270	0.4270		
(Texture = 0)	Field Capacity (vol/vol)	0.4180	0.4180		
	Wilting Point (vol/vol)	0.3670	0.3670		
	Init. Moisture Content (vol/vol)	0.4270	0.4270		
	Hyd. Conductivity (cm/s)	1.0E-05	1.0E-05		
GEOSYNTHETIC CLAY	Thickness (in)			0.25	0.25
LINER	Porosity (vol/vol)			0.7500	0.7500
(Texture = 17)	Field Capacity (vol/vol)			0.7470	0.7470
	Wilting Point (vol/vol)			0.4000	0.4000
	Init. Moisture Content (vol/vol)			0.7500	0.7500
	Hyd. Conductivity (cm/s)			~~3.0E-09~~ 5.0E-09	~~3.0E-09~~ 5.0E-09
PRECIPITATION	Average Annual (in)	17.93	17.93	17.93	17.93
RUNOFF	Average Annual (in)	~~0.230~~ 0.223	0.360	~~0.230~~ 0.223	~~0.366~~ 0.356
EVAPOTRANSPIRATION	Average Annual (in)	~~16.52~~ 16.60	16.59	~~16.53~~ 16.60	~~16.60~~ 16.66
INFILTRATION RATE	Average Annual (in/year)	0.00008	0.00000	0.00000	0.00000
THROUGH FINAL COVER	Peak Daily (in/day)	0.00035	~~0.000000~~ 0.000001	~~0.000004~~ 0.000006	0.000000

```
******************************************************************************
******************************************************************************
**                                                                          **
**                                                                          **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**                HELP MODEL VERSION 3.07  (1 NOVEMBER 1997)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
**                                                                          **
******************************************************************************
******************************************************************************


PRECIPITATION DATA FILE:    C:\COMPTS\DATA4.D4
TEMPERATURE DATA FILE:      c:\COMPTS\DATA7.D7
SOLAR RADIATION DATA FILE:  C:\COMPTS\DATA13.D13
EVAPOTRANSPIRATION DATA:    C:\COMPTS\DATA11.D11
SOIL AND DESIGN DATA FILE:  C:\COMPTS\DATA10.D10
OUTPUT DATA FILE:           C:\COMPTS\CL85.OUT


TIME:  17:40     DATE:   2/11/2025


******************************************************************************

     TITLE:  CITY OF MEADOW LANDFILL - COMPOSITE FINAL COVER TS

******************************************************************************


     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER
              WERE SPECIFIED BY THE USER.


                                   LAYER  1
                                   --------

                     TYPE 1 - VERTICAL PERCOLATION LAYER
                         MATERIAL TEXTURE NUMBER  10
           THICKNESS                  =     12.00   INCHES
```

```
  POROSITY                    =      0.3980 VOL/VOL
  FIELD CAPACITY              =      0.2440 VOL/VOL
  WILTING POINT               =      0.1360 VOL/VOL
  INITIAL SOIL WATER CONTENT  =      0.2440 VOL/VOL
  EFFECTIVE SAT. HYD. COND.   =  0.119999997000E-03 CM/SEC
NOTE:  SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY  5.00
         FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.



                          LAYER  2
                          --------

              TYPE 2 - LATERAL DRAINAGE LAYER
                MATERIAL TEXTURE NUMBER   0
  THICKNESS                   =      0.25   INCHES
  POROSITY                    =      0.8500 VOL/VOL
  FIELD CAPACITY              =      0.0100 VOL/VOL
  WILTING POINT               =      0.0050 VOL/VOL
  INITIAL SOIL WATER CONTENT  =      0.0100 VOL/VOL
  EFFECTIVE SAT. HYD. COND.   =   6.63000011000     CM/SEC
  SLOPE                       =      5.00   PERCENT
  DRAINAGE LENGTH             =    350.0    FEET



                          LAYER  3
                          --------

              TYPE 4 - FLEXIBLE MEMBRANE LINER
                MATERIAL TEXTURE NUMBER  36
  THICKNESS                   =      0.04   INCHES
  POROSITY                    =      0.0000 VOL/VOL
  FIELD CAPACITY              =      0.0000 VOL/VOL
  WILTING POINT               =      0.0000 VOL/VOL
  INITIAL SOIL WATER CONTENT  =      0.0000 VOL/VOL
  EFFECTIVE SAT. HYD. COND.   =  0.399999993000E-12 CM/SEC
  FML PINHOLE DENSITY         =      1.00   HOLES/ACRE
  FML INSTALLATION DEFECTS    =      4.00   HOLES/ACRE
  FML PLACEMENT QUALITY       =  3 - GOOD



                          LAYER  4
                          --------

                TYPE 3 - BARRIER SOIL LINER
```

```
                MATERIAL TEXTURE NUMBER   0
   THICKNESS                  =     18.00   INCHES
   POROSITY                   =      0.4270 VOL/VOL
   FIELD CAPACITY             =      0.4180 VOL/VOL
   WILTING POINT              =      0.3670 VOL/VOL
   INITIAL SOIL WATER CONTENT  =      0.4270 VOL/VOL
   EFFECTIVE SAT. HYD. COND.   =  0.999999975000E-05 CM/SEC




          GENERAL DESIGN AND EVAPORATIVE ZONE DATA
          ----------------------------------------

 NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
         SOIL DATA BASE USING SOIL TEXTURE #10 WITH A
         GOOD STAND OF GRASS, A SURFACE SLOPE OF  5.%
         AND A SLOPE LENGTH OF  350. FEET.

SCS RUNOFF CURVE NUMBER            =     80.60
FRACTION OF AREA ALLOWING RUNOFF    =    100.0    PERCENT
AREA PROJECTED ON HORIZONTAL PLANE  =      1.000  ACRES
EVAPORATIVE ZONE DEPTH             =     12.0    INCHES
INITIAL WATER IN EVAPORATIVE ZONE   =      2.928  INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE  =      4.776  INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE  =      1.632  INCHES
INITIAL SNOW WATER                 =      0.000  INCHES
INITIAL WATER IN LAYER MATERIALS    =     10.616  INCHES
TOTAL INITIAL WATER                =     10.616  INCHES
TOTAL SUBSURFACE INFLOW            =      0.00   INCHES/YEAR



           EVAPOTRANSPIRATION AND WEATHER DATA
           -----------------------------------

 NOTE:  EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
         MIDLAND               TEXAS

      STATION LATITUDE                        =  32.00 DEGREES
      MAXIMUM LEAF AREA INDEX                 =   4.50
      START OF GROWING SEASON (JULIAN DATE)  =     67
      END OF GROWING SEASON (JULIAN DATE)    =    317
      EVAPORATIVE ZONE DEPTH                  =  12.0  INCHES
      AVERAGE ANNUAL WIND SPEED               =  11.10 MPH
      AVERAGE 1ST QUARTER RELATIVE HUMIDITY  =  52.00 %
      AVERAGE 2ND QUARTER RELATIVE HUMIDITY  =  50.00 %
      AVERAGE 3RD QUARTER RELATIVE HUMIDITY  =  55.00 %
```

```
             AVERAGE 4TH QUARTER RELATIVE HUMIDITY  =  58.00 %


         NOTE:  PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
                  COEFFICIENTS FOR    ABILENE             TEXAS

                  NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

     JAN/JUL     FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
     -------     -------     -------     -------     -------     -------
       0.69        0.62        1.07        1.31        2.20        2.67
       1.94        1.80        2.56        1.57        0.88        0.74


         NOTE:  TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
                  COEFFICIENTS FOR    MIDLAND             TEXAS

             NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

     JAN/JUL     FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
     -------     -------     -------     -------     -------     -------
      40.90       44.80       52.70       60.60       70.00       78.30
      80.60       79.30       72.00       61.80       49.90       41.90


         NOTE:  SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
                  COEFFICIENTS FOR    MIDLAND             TEXAS
                    AND STATION LATITUDE  =  32.00 DEGREES




*******************************************************************************

         AVERAGE MONTHLY VALUES IN INCHES FOR YEARS    1 THROUGH   30
-------------------------------------------------------------------------------

                         JAN/JUL  FEB/AUG  MAR/SEP  APR/OCT  MAY/NOV  JUN/DEC
                         -------  -------  -------  -------  -------  -------
  PRECIPITATION
  -------------
    TOTALS                 0.69     0.55     1.29     1.32     1.96     2.54
                           2.67     1.56     2.49     1.40     0.90     0.57

    STD. DEVIATIONS        0.64     0.33     1.02     0.82     1.05     2.04
```

```
                          1.97     1.09     1.58     1.26     0.60     0.60

  RUNOFF
  ------
    TOTALS                0.000    0.000    0.001    0.000    0.003    0.077
                          0.108    0.002    0.023    0.009    0.000    0.000

    STD. DEVIATIONS       0.000    0.000    0.004    0.000    0.007    0.199
                          0.271    0.006    0.065    0.038    0.000    0.000

  EVAPOTRANSPIRATION
  ------------------
    TOTALS                0.639    0.557    0.973    1.797    1.910    2.188
                          2.312    1.512    2.228    0.991    0.845    0.649

    STD. DEVIATIONS       0.396    0.393    0.752    0.912    1.033    1.538
                          1.478    1.010    1.346    0.712    0.459    0.432

  LATERAL DRAINAGE COLLECTED FROM LAYER  2
  ----------------------------------------
    TOTALS                0.0325   0.0100   0.0829   0.0260   0.0067   0.2477
                          0.3150   0.0178   0.1614   0.2010   0.0271   0.0156

    STD. DEVIATIONS       0.0979   0.0419   0.2100   0.0886   0.0236   0.5575
                          0.5807   0.0956   0.4124   0.6135   0.0642   0.0510

  PERCOLATION/LEAKAGE THROUGH LAYER  4
  ------------------------------------
    TOTALS                0.0000   0.0000   0.0000   0.0000   0.0000   0.0000
                          0.0000   0.0000   0.0000   0.0000   0.0000   0.0000

    STD. DEVIATIONS       0.0000   0.0000   0.0000   0.0000   0.0000   0.0001
                          0.0001   0.0000   0.0000   0.0000   0.0000   0.0000


-------------------------------------------------------------------------------
             AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)
-------------------------------------------------------------------------------


  DAILY AVERAGE HEAD ON TOP OF LAYER  3
  -------------------------------------
    AVERAGES              0.0002   0.0001   0.0006   0.0002   0.0000   0.0082
                          0.0162   0.0002   0.0024   0.0032   0.0002   0.0001

    STD. DEVIATIONS       0.0006   0.0003   0.0020   0.0006   0.0001   0.0252
                          0.0442   0.0009   0.0066   0.0106   0.0004   0.0003

*******************************************************************************
```

```
******************************************************************************

     AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS    1 THROUGH   30
------------------------------------------------------------------------------
                                    INCHES           CU. FEET       PERCENT
                              -------------------   -------------   ---------
 PRECIPITATION                 17.93    (   4.448)      65096.8     100.00

 RUNOFF                         0.223   (  0.3377)        810.99      1.246

 EVAPOTRANSPIRATION            16.600   (  3.7486)      60256.67     92.565

 LATERAL DRAINAGE COLLECTED     1.14384 (  1.00911)      4152.128    6.37839
   FROM LAYER  2

 PERCOLATION/LEAKAGE THROUGH    0.00008 (  0.00011)         0.278     0.00043
   LAYER  4

 AVERAGE HEAD ON TOP            0.003 (    0.004)
   OF LAYER  3

 CHANGE IN WATER STORAGE       -0.034   (  0.6729)       -123.29     -0.189

******************************************************************************


↑
*****************************************************************************

                PEAK DAILY VALUES FOR YEARS    1 THROUGH   30
   ------------------------------------------------------------------------
                                                 (INCHES)      (CU. FT.)
                                                ----------    -------------
      PRECIPITATION                               4.67         16952.100

      RUNOFF                                      1.192         4326.7114

      DRAINAGE COLLECTED FROM LAYER  2            1.33830       4858.03906

      PERCOLATION/LEAKAGE THROUGH LAYER  4        0.000345         1.25319

      AVERAGE HEAD ON TOP OF LAYER  3             4.995

      MAXIMUM HEAD ON TOP OF LAYER  3             8.928

      LOCATION OF MAXIMUM HEAD IN LAYER  2
            (DISTANCE FROM DRAIN)                36.4 FEET
```

```
      SNOW WATER                                  0.94          3414.2761


      MAXIMUM VEG. SOIL WATER (VOL/VOL)                  0.3628

      MINIMUM VEG. SOIL WATER (VOL/VOL)                  0.1360


       ***  Maximum heads are computed using McEnroe's equations.  ***

            Reference:  Maximum Saturated Depth over Landfill Liner
                        by Bruce M. McEnroe, University of Kansas
                        ASCE Journal of Environmental Engineering
                        Vol. 119, No. 2, March 1993, pp. 262-270.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                  FINAL WATER STORAGE AT END OF YEAR   30
    ----------------------------------------------------------------------
                   LAYER        (INCHES)       (VOL/VOL)
                   -----        --------       ---------
                     1            1.9091         0.1591

                     2            0.0025         0.0100

                     3            0.0000         0.0000

                     4            7.6860         0.4270

                  SNOW WATER      0.000

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```

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**                                                                          **
**                                                                          **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**                HELP MODEL VERSION 3.07  (1 NOVEMBER 1997)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
**                                                                          **
******************************************************************************
******************************************************************************


PRECIPITATION DATA FILE:    C:\ALTTS\DATA4.D4
TEMPERATURE DATA FILE:      c:\ALTTS\DATA7.D7
SOLAR RADIATION DATA FILE:  C:\ALTTS\DATA13.D13
EVAPOTRANSPIRATION DATA:    C:\ALTTS\DATA11.D11
SOIL AND DESIGN DATA FILE:  C:\ALTTS\DATA10.D10
OUTPUT DATA FILE:           C:\ALTTS\CL85.OUT


TIME:  17:55     DATE:   2/11/2025


******************************************************************************

     TITLE:  CITY OF MEADOW LANDFILL - ALTERNATIVE FINAL COVER TS

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     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER
              WERE SPECIFIED BY THE USER.


                                   LAYER  1
                                   --------

                     TYPE 1 - VERTICAL PERCOLATION LAYER
                         MATERIAL TEXTURE NUMBER  10
           THICKNESS                   =     12.00   INCHES
```

```
  POROSITY                    =      0.3980 VOL/VOL
  FIELD CAPACITY              =      0.2440 VOL/VOL
  WILTING POINT               =      0.1360 VOL/VOL
  INITIAL SOIL WATER CONTENT  =      0.2440 VOL/VOL
  EFFECTIVE SAT. HYD. COND.   =  0.119999997000E-03 CM/SEC
NOTE:  SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY  5.00
         FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.



                          LAYER  2
                          --------

              TYPE 2 - LATERAL DRAINAGE LAYER
                MATERIAL TEXTURE NUMBER   0
  THICKNESS                   =      0.25   INCHES
  POROSITY                    =      0.8500 VOL/VOL
  FIELD CAPACITY              =      0.0100 VOL/VOL
  WILTING POINT               =      0.0050 VOL/VOL
  INITIAL SOIL WATER CONTENT  =      0.0100 VOL/VOL
  EFFECTIVE SAT. HYD. COND.   =   6.63000011000     CM/SEC
  SLOPE                       =      5.00   PERCENT
  DRAINAGE LENGTH             =    350.0    FEET



                          LAYER  3
                          --------

              TYPE 4 - FLEXIBLE MEMBRANE LINER
                MATERIAL TEXTURE NUMBER  36
  THICKNESS                   =      0.04   INCHES
  POROSITY                    =      0.0000 VOL/VOL
  FIELD CAPACITY              =      0.0000 VOL/VOL
  WILTING POINT               =      0.0000 VOL/VOL
  INITIAL SOIL WATER CONTENT  =      0.0000 VOL/VOL
  EFFECTIVE SAT. HYD. COND.   =  0.399999993000E-12 CM/SEC
  FML PINHOLE DENSITY         =      1.00   HOLES/ACRE
  FML INSTALLATION DEFECTS    =      4.00   HOLES/ACRE
  FML PLACEMENT QUALITY       =  3 - GOOD



                          LAYER  4
                          --------

                TYPE 3 - BARRIER SOIL LINER
```

```
                 MATERIAL TEXTURE NUMBER   0
   THICKNESS                   =      0.25   INCHES
   POROSITY                    =      0.7500 VOL/VOL
   FIELD CAPACITY              =      0.7470 VOL/VOL
   WILTING POINT               =      0.4000 VOL/VOL
   INITIAL SOIL WATER CONTENT  =      0.7500 VOL/VOL
   EFFECTIVE SAT. HYD. COND.   =  0.499999997000E-08 CM/SEC
```

```
           GENERAL DESIGN AND EVAPORATIVE ZONE DATA
           ----------------------------------------

 NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
          SOIL DATA BASE USING SOIL TEXTURE #10 WITH A
          GOOD STAND OF GRASS, A SURFACE SLOPE OF  5.%
          AND A SLOPE LENGTH OF  350. FEET.

SCS RUNOFF CURVE NUMBER              =     80.60
FRACTION OF AREA ALLOWING RUNOFF     =    100.0    PERCENT
AREA PROJECTED ON HORIZONTAL PLANE   =      1.000  ACRES
EVAPORATIVE ZONE DEPTH               =     12.0    INCHES
INITIAL WATER IN EVAPORATIVE ZONE    =      2.928  INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE   =      4.776  INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE   =      1.632  INCHES
INITIAL SNOW WATER                   =      0.000  INCHES
INITIAL WATER IN LAYER MATERIALS     =      3.118  INCHES
TOTAL INITIAL WATER                  =      3.118  INCHES
TOTAL SUBSURFACE INFLOW              =      0.00   INCHES/YEAR
```

```
            EVAPOTRANSPIRATION AND WEATHER DATA
            ----------------------------------

 NOTE:  EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
          MIDLAND              TEXAS

     STATION LATITUDE                        =  32.00 DEGREES
     MAXIMUM LEAF AREA INDEX                 =   4.50
     START OF GROWING SEASON (JULIAN DATE)   =    67
     END OF GROWING SEASON (JULIAN DATE)     =   317
     EVAPORATIVE ZONE DEPTH                  =  12.0  INCHES
     AVERAGE ANNUAL WIND SPEED               =  11.10 MPH
     AVERAGE 1ST QUARTER RELATIVE HUMIDITY   =  52.00 %
     AVERAGE 2ND QUARTER RELATIVE HUMIDITY   =  50.00 %
     AVERAGE 3RD QUARTER RELATIVE HUMIDITY   =  55.00 %
```

```
             AVERAGE 4TH QUARTER RELATIVE HUMIDITY  =  58.00 %


         NOTE:  PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
                  COEFFICIENTS FOR    ABILENE             TEXAS

                  NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

     JAN/JUL     FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
     -------     -------     -------     -------     -------     -------
       0.69        0.62        1.07        1.31        2.20        2.67
       1.94        1.80        2.56        1.57        0.88        0.74


         NOTE:  TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
                  COEFFICIENTS FOR    MIDLAND             TEXAS

             NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

     JAN/JUL     FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
     -------     -------     -------     -------     -------     -------
      40.90       44.80       52.70       60.60       70.00       78.30
      80.60       79.30       72.00       61.80       49.90       41.90


         NOTE:  SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
                  COEFFICIENTS FOR    MIDLAND             TEXAS
                    AND STATION LATITUDE  =  32.00 DEGREES




*******************************************************************************

         AVERAGE MONTHLY VALUES IN INCHES FOR YEARS    1 THROUGH   30
-------------------------------------------------------------------------------

                         JAN/JUL  FEB/AUG  MAR/SEP  APR/OCT  MAY/NOV  JUN/DEC
                         -------  -------  -------  -------  -------  -------
  PRECIPITATION
  -------------
    TOTALS                 0.69     0.55     1.29     1.32     1.96     2.54
                           2.67     1.56     2.49     1.40     0.90     0.57

    STD. DEVIATIONS        0.64     0.33     1.02     0.82     1.05     2.04
```

```
                         1.97     1.09     1.58     1.26     0.60     0.60

 RUNOFF
 ------
   TOTALS                0.000    0.000    0.001    0.000    0.003    0.077
                         0.108    0.002    0.023    0.009    0.000    0.000

   STD. DEVIATIONS       0.000    0.000    0.004    0.000    0.007    0.199
                         0.271    0.006    0.065    0.038    0.000    0.000

 EVAPOTRANSPIRATION
 ------------------
   TOTALS                0.639    0.555    0.972    1.801    1.909    2.188
                         2.312    1.511    2.227    0.990    0.845    0.649

   STD. DEVIATIONS       0.396    0.392    0.751    0.911    1.032    1.537
                         1.479    1.010    1.344    0.713    0.459    0.432

 LATERAL DRAINAGE COLLECTED FROM LAYER  2
 ----------------------------------------
   TOTALS                0.0326   0.0099   0.0827   0.0254   0.0071   0.2473
                         0.3154   0.0181   0.1621   0.2016   0.0269   0.0154

   STD. DEVIATIONS       0.0985   0.0400   0.2100   0.0849   0.0239   0.5569
                         0.5801   0.0955   0.4131   0.6134   0.0641   0.0508

 PERCOLATION/LEAKAGE THROUGH LAYER  4
 ------------------------------------
   TOTALS                0.0000   0.0000   0.0000   0.0000   0.0000   0.0000
                         0.0000   0.0000   0.0000   0.0000   0.0000   0.0000

   STD. DEVIATIONS       0.0000   0.0000   0.0000   0.0000   0.0000   0.0000
                         0.0000   0.0000   0.0000   0.0000   0.0000   0.0000


-------------------------------------------------------------------------------
             AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)
-------------------------------------------------------------------------------


 DAILY AVERAGE HEAD ON TOP OF LAYER  3
 -------------------------------------
   AVERAGES              0.0002   0.0001   0.0007   0.0002   0.0000   0.0081
                         0.0162   0.0002   0.0024   0.0032   0.0002   0.0001

   STD. DEVIATIONS       0.0006   0.0003   0.0022   0.0005   0.0001   0.0252
                         0.0442   0.0009   0.0066   0.0106   0.0004   0.0003

*******************************************************************************
```

```
******************************************************************************

    AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS    1 THROUGH   30
------------------------------------------------------------------------------
                                     INCHES            CU. FEET       PERCENT
                               -------------------   -------------   ---------
 PRECIPITATION                  17.93    (   4.448)      65096.8     100.00

 RUNOFF                          0.223   (  0.3377)        811.04      1.246

 EVAPOTRANSPIRATION             16.599   (  3.7457)      60255.12     92.562

 LATERAL DRAINAGE COLLECTED      1.14433 (  1.00891)      4153.902    6.38112
   FROM LAYER  2

 PERCOLATION/LEAKAGE THROUGH     0.00000 (  0.00000)         0.005     0.00001
   LAYER  4

 AVERAGE HEAD ON TOP             0.003 (    0.004)
   OF LAYER  3

 CHANGE IN WATER STORAGE        -0.034   (  0.6724)       -123.28     -0.189

******************************************************************************


*****************************************************************************

                PEAK DAILY VALUES FOR YEARS    1 THROUGH   30
   ------------------------------------------------------------------------
                                                (INCHES)      (CU. FT.)
                                               ----------   -------------
      PRECIPITATION                              4.67         16952.100

      RUNOFF                                     1.192         4326.7114

      DRAINAGE COLLECTED FROM LAYER  2           1.33830       4858.03857

      PERCOLATION/LEAKAGE THROUGH LAYER  4       0.000006         0.02030

      AVERAGE HEAD ON TOP OF LAYER  3            4.997

      MAXIMUM HEAD ON TOP OF LAYER  3            8.930

      LOCATION OF MAXIMUM HEAD IN LAYER  2
            (DISTANCE FROM DRAIN)               36.4 FEET
```

```
      SNOW WATER                                  0.94          3414.2761


      MAXIMUM VEG. SOIL WATER (VOL/VOL)                    0.3628

      MINIMUM VEG. SOIL WATER (VOL/VOL)                    0.1360


       ***  Maximum heads are computed using McEnroe's equations.  ***

            Reference:  Maximum Saturated Depth over Landfill Liner
                        by Bruce M. McEnroe, University of Kansas
                        ASCE Journal of Environmental Engineering
                        Vol. 119, No. 2, March 1993, pp. 262-270.


******************************************************************************




↑
******************************************************************************

                   FINAL WATER STORAGE AT END OF YEAR   30
    ----------------------------------------------------------------------
                    LAYER        (INCHES)       (VOL/VOL)
                    -----        --------       ---------
                      1            1.9091         0.1591

                      2            0.0025         0.0100

                      3            0.0000         0.0000

                      4            0.1875         0.7500

                  SNOW WATER       0.000

******************************************************************************
******************************************************************************
```

```
*******************************************************************************
*******************************************************************************
**                                                                           **
**                                                                           **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE                **
**                HELP MODEL VERSION 3.07  (1 NOVEMBER 1997)                 **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                    **
**                    USAE WATERWAYS EXPERIMENT STATION                      **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY               **
**                                                                           **
**                                                                           **
*******************************************************************************
*******************************************************************************



PRECIPITATION DATA FILE:    C:\ALTSS\DATA4.D4
TEMPERATURE DATA FILE:      c:\ALTSS\DATA7.D7
SOLAR RADIATION DATA FILE:  C:\ALTSS\DATA13.D13
EVAPOTRANSPIRATION DATA:    C:\ALTSS\DATA11.D11
SOIL AND DESIGN DATA FILE:  C:\ALTSS\DATA10.D10
OUTPUT DATA FILE:           C:\ALTSS\CL85.OUT



TIME:  18: 4     DATE:   2/11/2025




*******************************************************************************

     TITLE:  ROYAL OAKS LANDFILL - FINAL COVER (SIDESLOPE)

*******************************************************************************



     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER
              WERE SPECIFIED BY THE USER.



                                   LAYER  1
                                   --------

                     TYPE 1 - VERTICAL PERCOLATION LAYER
                         MATERIAL TEXTURE NUMBER  10
           THICKNESS                   =     12.00   INCHES
```

```
  POROSITY                    =      0.3980 VOL/VOL
  FIELD CAPACITY              =      0.2440 VOL/VOL
  WILTING POINT               =      0.1360 VOL/VOL
  INITIAL SOIL WATER CONTENT  =      0.2440 VOL/VOL
  EFFECTIVE SAT. HYD. COND.   =  0.119999997000E-03 CM/SEC
NOTE:  SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY  5.00
         FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.




                          LAYER  2
                          --------

              TYPE 2 - LATERAL DRAINAGE LAYER
                MATERIAL TEXTURE NUMBER   0
  THICKNESS                   =      0.25   INCHES
  POROSITY                    =      0.8500 VOL/VOL
  FIELD CAPACITY              =      0.0100 VOL/VOL
  WILTING POINT               =      0.0050 VOL/VOL
  INITIAL SOIL WATER CONTENT  =      0.0100 VOL/VOL
  EFFECTIVE SAT. HYD. COND.   =   6.63000011000     CM/SEC
  SLOPE                       =     25.00   PERCENT
  DRAINAGE LENGTH             =    140.0    FEET




                          LAYER  3
                          --------

              TYPE 4 - FLEXIBLE MEMBRANE LINER
                MATERIAL TEXTURE NUMBER  36
  THICKNESS                   =      0.04   INCHES
  POROSITY                    =      0.0000 VOL/VOL
  FIELD CAPACITY              =      0.0000 VOL/VOL
  WILTING POINT               =      0.0000 VOL/VOL
  INITIAL SOIL WATER CONTENT  =      0.0000 VOL/VOL
  EFFECTIVE SAT. HYD. COND.   =  0.399999993000E-12 CM/SEC
  FML PINHOLE DENSITY         =      1.00   HOLES/ACRE
  FML INSTALLATION DEFECTS    =      4.00   HOLES/ACRE
  FML PLACEMENT QUALITY       =  3 - GOOD




                          LAYER  4
                          --------

                TYPE 3 - BARRIER SOIL LINER
```

```
                 MATERIAL TEXTURE NUMBER   0
   THICKNESS                  =      0.25   INCHES
   POROSITY                   =      0.7500 VOL/VOL
   FIELD CAPACITY             =      0.7470 VOL/VOL
   WILTING POINT              =      0.4000 VOL/VOL
   INITIAL SOIL WATER CONTENT  =      0.7500 VOL/VOL
   EFFECTIVE SAT. HYD. COND.   =  0.499999997000E-08 CM/SEC




           GENERAL DESIGN AND EVAPORATIVE ZONE DATA
           ----------------------------------------

 NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
          SOIL DATA BASE USING SOIL TEXTURE #10 WITH A
          GOOD STAND OF GRASS, A SURFACE SLOPE OF 25.%
          AND A SLOPE LENGTH OF  140. FEET.

SCS RUNOFF CURVE NUMBER             =     82.40
FRACTION OF AREA ALLOWING RUNOFF    =    100.0    PERCENT
AREA PROJECTED ON HORIZONTAL PLANE  =      1.000  ACRES
EVAPORATIVE ZONE DEPTH              =     12.0    INCHES
INITIAL WATER IN EVAPORATIVE ZONE   =      2.928  INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE  =      4.776  INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE  =      1.632  INCHES
INITIAL SNOW WATER                  =      0.000  INCHES
INITIAL WATER IN LAYER MATERIALS    =      3.118  INCHES
TOTAL INITIAL WATER                 =      3.118  INCHES
TOTAL SUBSURFACE INFLOW             =      0.00   INCHES/YEAR



            EVAPOTRANSPIRATION AND WEATHER DATA
            -----------------------------------

 NOTE:  EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
          MIDLAND               TEXAS

     STATION LATITUDE                        =  32.00 DEGREES
     MAXIMUM LEAF AREA INDEX                 =   4.50
     START OF GROWING SEASON (JULIAN DATE)   =     67
     END OF GROWING SEASON (JULIAN DATE)     =    317
     EVAPORATIVE ZONE DEPTH                  =  12.0  INCHES
     AVERAGE ANNUAL WIND SPEED               =  11.10 MPH
     AVERAGE 1ST QUARTER RELATIVE HUMIDITY   =  52.00 %
     AVERAGE 2ND QUARTER RELATIVE HUMIDITY   =  50.00 %
     AVERAGE 3RD QUARTER RELATIVE HUMIDITY   =  55.00 %
```

```
             AVERAGE 4TH QUARTER RELATIVE HUMIDITY  =  58.00 %


         NOTE:  PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
                   COEFFICIENTS FOR    ABILENE             TEXAS

                   NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

     JAN/JUL     FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
     -------     -------     -------     -------     -------     -------
       0.69        0.62        1.07        1.31        2.20        2.67
       1.94        1.80        2.56        1.57        0.88        0.74


         NOTE:  TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
                   COEFFICIENTS FOR    MIDLAND             TEXAS

              NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

     JAN/JUL     FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
     -------     -------     -------     -------     -------     -------
      40.90       44.80       52.70       60.60       70.00       78.30
      80.60       79.30       72.00       61.80       49.90       41.90


         NOTE:  SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
                   COEFFICIENTS FOR    MIDLAND             TEXAS
                     AND STATION LATITUDE  =  32.00 DEGREES




******************************************************************************

         AVERAGE MONTHLY VALUES IN INCHES FOR YEARS    1 THROUGH   30
------------------------------------------------------------------------------

                         JAN/JUL  FEB/AUG  MAR/SEP  APR/OCT  MAY/NOV  JUN/DEC
                         -------  -------  -------  -------  -------  -------
  PRECIPITATION
  -------------
    TOTALS                 0.69     0.55     1.29     1.32     1.96     2.54
                           2.67     1.56     2.49     1.40     0.90     0.57

    STD. DEVIATIONS        0.64     0.33     1.02     0.82     1.05     2.04
```

```
                        1.97     1.09     1.58     1.26     0.60     0.60

  RUNOFF
  ------
    TOTALS              0.000    0.000    0.003    0.000    0.007    0.111
                        0.166    0.004    0.047    0.018    0.000    0.000

    STD. DEVIATIONS     0.000    0.000    0.009    0.001    0.016    0.250
                        0.372    0.012    0.117    0.068    0.002    0.000

  EVAPOTRANSPIRATION
  ------------------
    TOTALS              0.630    0.563    0.980    1.820    1.911    2.192
                        2.333    1.524    2.237    0.982    0.855    0.632

    STD. DEVIATIONS     0.397    0.392    0.718    0.918    1.030    1.550
                        1.517    1.018    1.354    0.704    0.473    0.432

  LATERAL DRAINAGE COLLECTED FROM LAYER  2
  ----------------------------------------
    TOTALS              0.0328   0.0115   0.0681   0.0176   0.0034   0.2046
                        0.2279   0.0144   0.1250   0.1934   0.0285   0.0248

    STD. DEVIATIONS     0.0937   0.0490   0.1864   0.0520   0.0170   0.4789
                        0.4397   0.0778   0.3336   0.5883   0.0707   0.1194

  PERCOLATION/LEAKAGE THROUGH LAYER  4
  ------------------------------------
    TOTALS              0.0000   0.0000   0.0000   0.0000   0.0000   0.0000
                        0.0000   0.0000   0.0000   0.0000   0.0000   0.0000

    STD. DEVIATIONS     0.0000   0.0000   0.0000   0.0000   0.0000   0.0000
                        0.0000   0.0000   0.0000   0.0000   0.0000   0.0000


-------------------------------------------------------------------------------
             AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)
-------------------------------------------------------------------------------


  DAILY AVERAGE HEAD ON TOP OF LAYER  3
  -------------------------------------
    AVERAGES            0.0000   0.0000   0.0000   0.0000   0.0000   0.0001
                        0.0001   0.0000   0.0001   0.0001   0.0000   0.0000

    STD. DEVIATIONS     0.0000   0.0000   0.0001   0.0000   0.0000   0.0003
                        0.0002   0.0000   0.0002   0.0003   0.0000   0.0001

*******************************************************************************
```

```
*******************************************************************************

     AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS    1 THROUGH   30
-------------------------------------------------------------------------------
                                     INCHES            CU. FEET       PERCENT
                               -------------------   -------------   ---------
 PRECIPITATION                  17.93    (   4.448)      65096.8     100.00

 RUNOFF                          0.356   (  0.4559)       1291.98      1.985

 EVAPOTRANSPIRATION             16.659   (  3.7857)      60471.92     92.895

 LATERAL DRAINAGE COLLECTED      0.95209 (  0.85990)      3456.088    5.30915
   FROM LAYER  2

 PERCOLATION/LEAKAGE THROUGH     0.00000 (  0.00000)         0.001     0.00000
   LAYER  4

 AVERAGE HEAD ON TOP             0.000 (    0.000)
   OF LAYER  3

 CHANGE IN WATER STORAGE        -0.034   (  0.6903)       -123.19     -0.189

*******************************************************************************


******************************************************************************

                PEAK DAILY VALUES FOR YEARS    1 THROUGH   30
   ------------------------------------------------------------------------
                                                (INCHES)      (CU. FT.)
                                               ----------   -------------
      PRECIPITATION                              4.67         16952.100

      RUNOFF                                     1.381         5014.1909

      DRAINAGE COLLECTED FROM LAYER  2           0.81036       2941.60718

      PERCOLATION/LEAKAGE THROUGH LAYER  4       0.000000         0.00007

      AVERAGE HEAD ON TOP OF LAYER  3            0.013

      MAXIMUM HEAD ON TOP OF LAYER  3            0.040

      LOCATION OF MAXIMUM HEAD IN LAYER  2
            (DISTANCE FROM DRAIN)                0.0 FEET
```

```
      SNOW WATER                                     0.94          3414.2761


      MAXIMUM VEG. SOIL WATER (VOL/VOL)                       0.3580

      MINIMUM VEG. SOIL WATER (VOL/VOL)                       0.1360


       ***  Maximum heads are computed using McEnroe's equations.  ***

            Reference:  Maximum Saturated Depth over Landfill Liner
                        by Bruce M. McEnroe, University of Kansas
                        ASCE Journal of Environmental Engineering
                        Vol. 119, No. 2, March 1993, pp. 262-270.


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                  FINAL WATER STORAGE AT END OF YEAR   30
    ----------------------------------------------------------------------
                   LAYER        (INCHES)       (VOL/VOL)
                   -----        --------       ---------
                     1            1.9099         0.1592

                     2            0.0025         0.0100

                     3            0.0000         0.0000

                     4            0.1875         0.7500

                  SNOW WATER      0.000

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APPENDIX IIIJ-C

CLOSURE PLAN FOR MUNICIPAL SOLID WASTE TYPE I LANDFILL UNITS AND FINAL FACILITY CLOSURE (FORM 20720)

STATE OF TEXAS
DAVID E. POE
81734
LICENSED
PROFESSIONAL ENGINEER

02/28/2025

Texas Commission on Environmental Quality

Closure Plan for Municipal Solid Waste Type I Landfill Units and Final Facility Closure

This form is for use by applicants or site operators of Municipal Solid Waste (MSW) Type I landfills to detail the plan for closure of a landfill unit, closure of associated storage or processing units, and final closure of the facility to meet the requirements in 30 TAC Chapter 330, §330.63(h) and 30 TAC Chapter 330 Subchapter K for a MSW Type I facility.

If you need assistance in completing this form, please contact the MSW Permits Section in the Waste Permits Division at (512) 239-2335.

I. General Information

Facility Name: **City of Meadow Landfill**

MSW Permit No.: **2293C**

Site Operator/Permittee Name: **Meadow Landfill, LLC, 663 County Road 545, Meadow, TX 70745**

II. Landfill and Other Waste Management Units and Operations Requiring Closure at the Facility

A. Facility Units

Table 1. Description of Landfill Units.

Name or Descriptor of Unit	Operating Status of Unit	Type of Liner System Under Unit	Above Grade Class 1 Disposal Cells in this Unit	Below Grade Class 1 Disposal Cells in this Unit	Other Class 1 Disposal Cells in this Unit (describe)	Size of Unit's Waste Footprint (acres)	Maximum Inventory of Waste Ever in Unit (indicate cubic yards or tons)	Other Necessary Information that Pertains to the Unit
MSW Landfill	Active	Subtitle D	☐	☐	☐	210.7	29,500,000 CY	Waste = Waste plus Daily Cover
			☐	☐	☐			
			☐	☐	☐			
Totals						210.7	29,500,000	

Table 2. Description of Waste Storage or Processing Units or Operations Associated with this Permit.

Type of Storage or Processing Unit or Operation (individual units may be closed at any time prior to or during the final facility closure as described in this plan)	Operational Status of Unit	Size of the Area Used for the Storage or Processing Unit or Operation (Acres)	Maximum Inventory of Waste Ever in Storage or Processing Unit or Operation (indicate cubic yards or tons)	Other Information (enter other necessary information that pertains to the unit)
Citizens Convenience Center	Future	1.00	400 ☒cubic yards ☐tons	
Liquid Waste Bulking Facility	Future	1.00	480 ☒cubic yards ☐tons	
Totals		2.00	800 CY	

B. Waste Inventory Summary

Table 3. Maximum Inventory of Wastes Ever On Site.

Item	Quantity (indicate cubic yards or tons)
Maximum inventory of waste in landfill units (total from Table 1)	29,500,000 ☒cubic yards or ☐tons
Maximum inventory of waste in storage or processing units or operations (total from Table 2)	880 ☒cubic yards or ☐tons
Total Maximum Inventory of Wastes ever on site over the active life of the MSW facility (sum of totals from Tables 1 and 2)	29,500,640 ☒cubic yards or ☐tons

C. Drawings Showing Details of the Waste Management Units at Closure

Table 4. Location of the Drawings showing Details of the Waste Management Units at Closure (outlines, dimensions, maximum elevations of waste and final cover of landfill units, and waste storage or processing units or operations at closure of the facility).

Drawing Location in the SDP	Drawing Figure Number	Drawing Title	Waste Management Units Details Shown
Part III, App. IIIA-A	A.1	Bottom of Liner Plan	e.g., outlines, waste footprints, and dimensions of the landfill unit(s)
Part III, App. IIIA-A	A.2	Landfill Completion Plan	e.g., maximum elevations of waste and final cover of the landfill unit(s)

III. Description of the Final Cover System Design

A. Types and Descriptions of the Final Cover Systems

Table 5. Types and Descriptions of the Final Cover Systems Permitted or Proposed for Closure of the Landfill Units.

Landfill Unit Name or Descriptor	Type of Final Cover System	Final Cover System Components Description	Other Information (Enter other information as applicable)
MSW Landfill – Subtitle D Area	GCL Alternative	Comprised of GCL, geomembrane (LLDPE), geocomposite drainage layer, and a 12” vegetated erosion layer.	
MSW Landfill – Subtitle D Area	Regulatory Composite Final Cover	Comprised of an 18” low permeability ($1x10^{-5}$ cm/s) soil infiltration layer, geomembrane (LLDPE), geocomposite drainage layer, and a 12” vegetated erosion layer.	

B. Design Details

Table 6. Design Details of the Final Cover Top and Side Slopes for the Landfill Units.

Landfill Unit Name or Descriptor	Maximum Final Elevation of Waste (feet above mean sea level [ft-msl])	Maximum Elevation of Top of Final Cover (ft-msl)	Minimum Grade of the Final Cover Top Slope (%)	Maximum Grade of the Final Cover Side Slope (%)	Other Information (enter other information as applicable, e.g. above-grade Class 1 Cell Dikes)
MSW Landfill	3,423	3,425	5%	25%	

C. Final Cover Drainage Features

Storm water drainage and erosion and sediment control features incorporated on the final cover of the landfill units to protect the integrity and effectiveness of the final cover system include *(please list and describe the drainage features to be installed on the final cover at or prior to closure for each landfill unit, or list the drainage features and provide cross references on the location(s) of the descriptive and details (drawing) information in other parts of the SDP)*:

Storm water drainage features incorporated into the project include vegetative cover on the landfill side and topslopes, sideslope drainage swales, reinforced downchutes, perimeter ditches, and stormwater detention basins. Drainage feature design calculations are presented in Part III, Appendix IIIF – Surface Water Drainage Plan of the application.

D. Final Cover Vegetation or Other Ground Cover Material

The final cover will be seeded and/or sodded with native plants immediately following the application of the final cover in order to minimize erosion. Other materials, including **NA**, may be incorporated over the final cover soil surface to ensure sufficient coverage of the ground surface to minimize erosion. The estimated percent ground cover to minimize soil loss and maintain long-term erosional stability of the final cover top and side slopes is: 80%. The minimum material specifications for other ground cover materials are summarized in the table below.

For a landfill with water balance final cover design, the percentage vegetation cover (excluding other ground cover types) will not be less than that assumed in the water balance final cover model.

Table 7. Minimum Specification for Ground Cover Materials Other Than Vegetation, if Applicable.

Other Ground Cover Material	Maximum Particle Size (inches)	Minimum Particle Size (inches)	Material Placement Method	Thickness of Layer (inches)	Percentage Coverage (%)	Other (specify)
NA						

E. Final Contour Map

Figure **A.2 (Part III, App. IIIA-A)**, a facility final contour map is attached. The map shows the final contours of the landfill units and the entire facility at closure.

Figures **B.1 through B.9 (Part III, App. IIIA-B),** showing the cross–sections of the landfill units at closure are also provided.

The facility final contour and cross-section maps/drawings depict the following information:

(1) Final constructed contours of the landfill at closure.

(2) Top slopes and side slopes of the landfill units.

(3) Surface drainage features.

(4) 100-year floodplain, as applicable.

(5) Constructed features providing protection of/from the 100-year floodplain.

(6) Other (specify):

IV. Description of the Final Cover System Installation Procedure

A. Mode of Installation

Table 8. Mode of Final Cover Installation on the Landfill Units.

Landfill Unit Name or Descriptor	Largest Area of Unit Ever Requiring Final Cover (Acres)	Check this Column if Final Cover will be Placed in Installments as Permitted Elevation is Reached	Check this Column if Final Cover will be Placed when Entire Unit Area Reaches Permitted Elevation	Final Cover Installation Status
MSW Landfill	210.7 (see note in Table 9)	☐	☒	Yet to be installed
		☐	☐	
		☐	☐	
		☐	☐	

B. Installation Drawings for Final Cover and Drainage Features

The following attached plan and cross-section drawings show the final cover design details, the largest area requiring final cover, details of the sequence of installation of the final cover system, and all drainage features.

Table 9. List of Attached Installation Drawings for Final Cover and Drainage Features.

Drawing No.	Drawing Title	Description of Information Contained in Drawing
Drawings B.1 to B.9 (Part III, App. IIIA-B)	Varies	(e.g., final cover cross section details with references to base drawings)
Drawing IIIL.1 (Part III, App. IIIL – Closure and Postclosure Care Cost Estimates	Largest Area to Require Final Cover	(e.g., the largest area ever requiring final cover). Note that the largest area value will be reviewed periodically and adjusted as necessary along with the closure/postclosure care cost estimates and financial assurance demonstration.
Drawing I/IIA.4 to Drawing I/IIA.8 (Part I/II App I/IIA)	Varies	(e.g., details of the sequence final cover system installation)
Drawings IIIF.1 to IIIF.14 (Part III, App. IIIF – Surface Water Drainage Plan)	Varies	(e.g., details of all drainage features on the final cover)
NA		Other: describe as applicable

C. Final Cover Quality Control Plan

A final cover quality control plan (FCQCP), **Part III, Appendix IIIJ-A**, is attached. The FCQCP describes the final cover system design, construction, and evaluation protocol and processes, including the personnel, materials, methods, sampling and testing standards, procedures, and practices to be used in procuring, handling, installing, and evaluating all elements of the final cover system. It establishes the material requirements; personnel qualifications and roles; installation requirements; quality control and quality assurance monitoring, testing, documentation, and reporting programs to be used during construction of each component of the final cover system to assure and to verify that the final cover system is constructed as designed and in accordance with applicable rules and technical standards.

D. Documentation and Reporting of Final Cover System Construction and Testing

The professional of record will document all aspects and stages of the final cover installation, including materials used, equipment and construction methods, and the type and rate of sampling and quality control testing performed. Following completion of construction of the final cover, the site operator/permittee will submit to the TCEQ executive director, a Final Cover System Evaluation Report (FCSER) for each landfill unit.

V. Closure Activities and Completion Schedules for Each Landfill Unit and for the Final Facility Closure

A. Closure of a Landfill Unit

The following activities will be conducted to satisfy the closure criteria for a landfill unit:

(1) Closure Notification to the TCEQ Executive Director:

The site operator will inform the executive director of the TCEQ, in writing, of the intent to close the unit no later than 45 days prior to the initiation of closure activities and place this notice of intent in the operating record.

(2) Stoppage of Waste Acceptance and Commencement of Other Closure Activities for the Unit:

The site operator will stop accepting waste upon receiving the known final receipt of waste. The site operator will ensure that the permitted top elevations of the in-place waste, as depicted in/derived from the unit’s final contour map approved by the TCEQ executive director, are not exceeded at any section or part of the landfill unit. The site operator will begin closure activities for the unit no later than:

- Thirty days after the date on which the unit receives the known final receipt of wastes; or

- One year after the most recent receipt of wastes if the unit has remaining capacity and there is a reasonable likelihood that the unit will receive additional wastes.

(3) Request for Extension Beyond the 1-Year Deadline for Commencing Closure Activities for a Unit:

The site operator may submit a written request to the executive director of the TCEQ for review and approval for an extension beyond the one-year deadline for the initiation of closure. The request will include the following:

(a) All applicable documentation necessary to demonstrate that the unit has the capacity to receive additional waste; and

(b) All documentation necessary to demonstrate that the site operator has taken and will continue to take all steps necessary to prevent threats to human health and the environment from the MSW landfill unit.

(4) Construction of Final Cover:

The site operator will construct the permitted final cover over the waste mass utilizing methods, procedures, and specifications described in the FCQCP. The final constructed contours, elevations, and slopes of the installed final cover will match the permitted final cover contours, elevations, and slopes shown in closure drawings contained in this closure plan.

(5) Construction of Drainage Features:

The site operator will construct the drainage structures shown in drawings referenced or contained in this closure plan or in the facility surface water drainage report.

(6) Completion of Outstanding or Replacement of Damaged Groundwater or Landfill Gas Monitoring Components:

The site operator will complete installation of any outstanding or replacement of any damaged groundwater or landfill gas monitoring system components and landfill gas control systems as needed to maintain current and effective groundwater or landfill gas monitoring and control systems.

(7) Submittal of Final Cover System Evaluation Report (FCSER) to the TCEQ Executive Director:

Following completion of construction of the final cover for the subject landfill unit, the site operator will submit to the TCEQ executive director for review and acceptance, a FCSER for the unit.

(8) Completion of Closure Activities for the Landfill Unit:

The site operator will complete closure activities for the unit within 180 days following the start of closure activities, unless the executive director of the TCEQ grants an extension as described in Item V.A.8(a) below.

(a) Request for Extension of the Completion of Closure Activities for the Landfill Unit:

The site operator may submit a written request for an extension for the completion of closure activities to the TCEQ for review and approval. The extension request will include:

- All applicable documentation necessary to demonstrate that closure will, of necessity, take longer than 180 days; and
- All applicable documentation necessary to document that all steps have been taken and will continue to be taken to prevent threats to human health and the environment from the unclosed MSW landfill unit.

(9) Submittal of Engineer’s Certification of Closure to the TCEQ Executive Director and Request of Closure Inspection to TCEQ Regional Office:

Following completion of all closure activities for the landfill unit, the site operator will submit:

(a) Closure Inspection

A written request to the local TCEQ regional office for a closure inspection of the unit.

(b) Closure Certification

A certification, signed by an independent licensed professional engineer, to the executive director of the TCEQ for review and approval verifying that closure has been completed in accordance with this closure plan. The site operator will submit the certification via registered mail, and the submittal will contain all applicable documentation necessary for certification of closure of the unit, including:

- A final cover system evaluation report (FCSER) documenting the installation of the final cover. The FCSER may be submitted as a separate document for review and approval following the completion of the final cover installation. In that case, the certification of closure will be submitted subsequently;
- A final contour map as described under Section III.E that includes the relevant unit; and
- Copy of the letter to the TCEQ regional office requesting a closure inspection of the relevant unit.

(10) TCEQ's Acknowledgement of Termination of Operation and Closure of a Unit:

Upon receipt, the TCEQ executive director will review the closure documents for completeness and accuracy; and following receipt of the closure inspection report from the agency's regional office verifying proper closure of the MSW landfill unit according to this closure plan, the executive director will, in writing, acknowledge the termination of operation and closure of the unit and deem it properly closed. Thereafter, the site operator will comply with the post-closure care requirements described in the post-closure care plan for the unit.

(11) Deed Recordation for Disposed Regulated Asbestos Containing Materials (RACM):

Upon closure of the unit that accepted RACM, the site operator will place a specific notation that the unit accepted RACM in the deed records for the facility with a diagram identifying the RACM disposal areas. Concurrently, the site operator will submit to the TCEQ executive director, a notice of the deed recordation and a copy of the diagram identifying the asbestos disposal areas.

(12) Placement of all Closure Documentation in the Site Operating Record:

Once approved, the closure certification and all other documentation of closure will be placed in the site operating record.

(13) Closure Schedule for the Landfill Unit:

A closure schedule is provided on Figure III J-2 of Appendix III J. The schedule shows all the closure activities listed within Section V.A and the timelines for commencing and completing each activity. Also, the schedule shows that closure activities for the landfill unit will be completed within 180 days following the initiation of closure activities as required, unless an extension is granted by the TCEQ executive director.

(14) Other: (enter as applicable).

Not Applicable.

B. Closure of the Waste Storage or Processing Units or Operations

Closure of the waste storage or processing units or operations authorized under this permit will include removal of all waste, waste residues, and any recovered materials. The facility units and operations will either be dismantled and removed off-site or decontaminated. The site operator will dispose at the landfill or evacuate all materials (including feedstock, in process, and processed) to an authorized facility and disinfect all leachate handling units, tipping areas, processing areas, and post-processing areas. If there is evidence of a release from a unit or operation, the site operator will conduct an investigation, as approved by the TCEQ executive director, into the nature and extent of the release and an assessment of measures necessary to correct an impact to groundwater.

C. Final Closure of the Facility

In addition to the closure activities listed in Section V.A above for closing a landfill unit, the site operator will conduct the following activities for the closure of the entire facility:

(1) Publish Final Closure Notice and Place the closure Plan in a Public Place:

No later than 90 days prior to the initiation of the final facility closure, the site operator will:

(a) Publication of Notice:

The site operator will publish notice in the newspaper(s) of largest circulation in the vicinity of the facility to inform the public of the final closure of the facility. This notice will include:

- The name of the facility;
- The address, and physical location of the facility;
- The facility's permit number; and
- The last date of intended receipt of waste.

(b) Place Copies of the Closure Plan in a Public Place:

The site operator will also make available an adequate number of copies of the approved final closure and post-closure plans for public access and review at the **Meadow City Offices 906 1st St., Meadow, TX 79345** (state public place within the area, including address, where the plan will be available for public access and review).

(2) Submit Written Notice of "Intent to Close the Facility" to the TCEQ Executive Director:

The site operator will provide written notification to the TCEQ executive director of the intent to close the facility. This notice will be provided to the executive director no later than 90 days prior to the initiation of the final facility closure, and thereafter be placed in the site operating record.

(3) Post Signs and Install Barriers:

Upon notifying the executive director of the intent to close the facility and no later than 90 days prior to the initiation of final facility closure, the site operator will:

(a) Post Final Closure Signs:

The site operator will post a minimum of one sign at the main entrance and all other frequently used points of access for the facility notifying all persons who may utilize the facility of the date of closing for the entire facility and the prohibition against further receipt of waste materials after the stated date.

(b) Install Barriers:

Also, the site/operator will install suitable barriers at all gates or access points to adequately prevent the unauthorized dumping of solid waste at the closed facility.

(4) Filling of "Affidavit to the Public" and Performance of the Final Deed Recording:

Upon closure of all the landfill units or upon final closure of the facility, the site operator will:

(a) File Affidavit

File with the county deed records an "Affidavit to the Public" in a form provided by the TCEQ executive director that includes an updated metes and bounds description of the extent of the disposal areas at the facility and the restrictions to future use of the land in accordance with applicable provisions under 30 TAC Chapter 330, Subchapter T.

(b) Record a Notation on the Deed

Record a certified notation on the deed to the facility property, or on some other instrument that is normally examined during title search, that will in perpetuity notify any potential purchaser of the property that the land has been used as a landfill facility and use of the land is restricted according to the provisions under 30 TAC Chapter 330, Subchapter T.

(c) Place Documents in the Operating Record

Place a copy of the "Affidavit to the Public" and a copy of the modified deed in the site operating record.

(5) Submittal of a Copy of the “Affidavit to the Public” and the “Modified Deed” to the TCEQ Executive Director:

Within ten days after completion of final closure activities of the facility, the site operator will submit the following to the TCEQ executive director by registered mail:

(a) A certified copy of the "Affidavit to the Public";

(b) A certified copy of the modified deed to the facility property; and

(c) A certification, signed by an independent licensed professional engineer, verifying that final facility closure has been completed in accordance with the approved closure plan. The submittal will contain all applicable documentation necessary for certification of final facility closure, including:

- Final Cover System Evaluation Report (FCSER) documenting the installation of the final cover. The FCSER may be submitted earlier as a separate document for review and approval following the completion of the final cover installation. In that case, the certification of closure will be submitted subsequently;
- A final contour map as described under Item III.G above;
- Copy of a letter to the TCEQ regional office requesting a final closure inspection of the facility; and
- Copies of documents verifying newspaper publication of the notice of the final facility closure.

(6) Other

Additional items relating to the schedule for final facility closure, and additional closure activities specific to the final closure of this facility include:
Not Applicable.

(7) TCEQ's Acceptance of Termination of Operation and Closure of a Landfill Facility:

Following the TCEQ executive director's receipt and completion of the review of the professional engineer's certification of the completion of facility closure and the final closure documents, and receipt of the inspection report from the agency's regional office verifying proper closure of the facility according to this closure plan, the executive director will, in writing, accept the termination of operation and closure of the facility and deem it properly closed. Thereafter, the site operator will comply with the post closure care requirements described in the post closure plan for the facility.

(8) Final Closure Schedule for the Facility:

The attached Figure **IIIJ-2 (Part III, Appendix IIIJ)**, Final Closure Schedule, provides the closure schedule for the final facility closure. It incorporates the schedule for closure of a unit as discussed in Section V.A and also shows the commencement and completion timelines for the final closure activities listed within this Section.

VI. Summary of Attachments

A. Drawings and Maps

The following Drawings and Maps are attached as part of this plan.

- Figure **A.2 (Landfill Completion Plan included in Part III, App. IIIA-A)**, Final Contour Map.
- Figures **B.1 through B.9 (included in Part III, App. IIA-B)**, Cross-Section Drawings of the Landfill Units at Closure.
- Figures **IIIF.1 through IIIF.14 (included in Part III, App. IIIF)**, Final Cover and Drainage Features Installation Drawings.
- Other Drawings/Maps: Figures **IIIL.1 (Part III, App. IIIL – Closure and Postclosure Care Cost Estimates)**

B. Documents

- Attachment **Part III, App. IIIJ-A**, Final Cover Quality Control Plan (FCQCP).
- Attachment **Part III, App. IIIJ-Closure Plan, Section 4)**, Final Closure Schedule Chart.
- Attachment, Landfill Unit Closure Schedule Chart, (Not Applicable)
- Other: Attachment Not Applicable

C. Additional Items Attached (enter as applicable)

Not Applicable.

VII. Professional Engineer's Statement, Seal, and Signature

Name: **Kyle Gould, P.E.**

Title: **Senior Engineer**

Date: **02/2025**

Company Name: **Weaver Consultants Group, LLC**

Firm Registration Number: **F-3727**

Professional Engineer's Seal

STATE OF TEXAS

KYLE D. GOULD

106018

LICENSED PROFESSIONAL ENGINEER

02/28/2025

Signature

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN
APPENDIX IIIK
POSTCLOSURE CARE PLAN

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

STATE OF TEXAS
KYLE D. GOULD
106018
LICENSED PROFESSIONAL ENGINEER
02/28/2025

Prepared by

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817-735-9970

WCG Project No. 0120-809-11-06

This document is intended for permitting purposes only.

- Maintain and operate the leachate collection system in accordance with Title 30 TAC §330.331 and §330.333 and the EPA's Design Criteria (i.e., less than 1 foot of leachate over the liner, or approved equivalent design). Leachate collection sump levels will be measured on a quarterly basis. Site personnel will verify that the leachate level is maintained within the sump as discussed in Appendix IIIC, Table 3-5. The leachate collection system will be operated consistent with Appendix IIIC – Leachate and Contaminated Water Management Plan, which includes procedures for the operation of the leachate collection sump, storage tanks, evaporation pond, and the disposal of leachate. Meadow Landfill, LLC may submit a demonstration to the TCEQ that leachate will no longer pose a threat to human health and the environment. If the demonstration is approved by the TCEQ, Meadow Landfill, LLC will be allowed to discontinue the maintenance and operation of the leachate collection system. Alternatively, if there is a significant increase in leachate generation, inspection frequency will be increased to ensure compliance. Refer to Section 3.4 of Appendix IIIJ for the procedures to decommission the leachate storage tank and piping.
- Maintain the groundwater monitoring system in accordance with Subchapter J of Title 30 TAC and monitor groundwater in accordance with an approved Groundwater Sampling and Analysis Plan (refer to Appendix IIIH for the minimum monitoring frequency requirements). However, Meadow Landfill, LLC may request TCEQ approval of (1) an alternative monitoring frequency, and/or (2) an alternative list of parameters to be monitored.
- Maintain and operate the perimeter landfill gas monitoring system in accordance with Subchapter I of Title 30 TAC. In accordance with Title 30 TAC §330.371(b)(2), the minimum monitoring frequency will be quarterly. However, City of Meadow Landfill may request TCEQ approval of an alternate monitoring frequency.
- Maintain and operate the landfill gas collection and/or control system in accordance with applicable regulations.
- In accordance with 30 TAC §330.463(a)(3), the executive director may require an investigation into the nature and extent of a release if there is evidence of a release from a municipal solid waste unit and an assessment of measures necessary to correct an impact to groundwater.

2.2 Decreasing Postclosure Period

The length of the postclosure care maintenance period may be decreased by the TCEQ if Meadow Landfill, LLC submits a documented certification signed by an independent licensed professional engineer and if the documented certification is approved by the TCEQ. The certification will include all applicable documentation demonstrating that the reduced period is sufficient to protect human health and the environment. Applicable documentation may include data from monitoring of groundwater, surface water, leachate levels, ~~and~~ landfill gas, or documentation that all waste and waste residues have been removed during closure.

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN
APPENDIX IIIL
CLOSURE AND POSTCLOSURE CARE COST ESTIMATES

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

KYLE D. GOULD
106018

02/28/2025

Prepared by

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WCG Project No. 0120-809-11-05

This document intended for permitting purposes only.

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Closure Cost Estimate Form for Municipal Solid Waste Type I Landfill (Form 20721)

APPENDIX IIIL-B
Post-Closure Cost Estimate Form for Municipal Solid Waste Type I Landfill (Form 20723)

APPENDIX IIIL-C
Existing Financial Assurance Documentation

KYLE D. GOULD
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02/28/2025

2 CLOSURE COST ESTIMATE

This cost estimate shows the cost of hiring a third party to close the largest waste fill area (at the time of permit amendment approval) that has not received final cover. As shown on Figure IIIL.1, the closure area was determined to be 45.0 acres. The 45.0-acre area shown on Figure IIIL.1 includes the existing trench fill area without final cover. The closure cost estimate includes: 1) engineering costs required to administratively close the facility; 2) construction costs involved with the construction of the final cover systems, the landfill gas monitoring system (if required), and other activities required to close the facility, and 3) contingencies and other administrative costs that may be incurred during closure activities. A summary of closure cost estimate is presented on Table IIIL-1. The costs will be adjusted annually as indicated in Section 4.

An assessment will be completed each year to verify that the Closure Cost Estimate shown in Table IIIL-1 is consistent with the current permit conditions and the projected permit conditions for the upcoming 12-month period. The assessment will verify that the closure costs are based on the current active and inactive areas and that all other permit conditions are addressed by the Closure Cost Estimate (e.g., the number of groundwater monitor wells and landfill gas probes (if required) in the estimate match the wells and probes that are either in-place or need to be installed to match the number of wells and probes listed in the permit for the current phase of development).

The estimates will be updated, if needed, consistent with the procedures noted in Section 4. Continuous financial assurance coverage for closure of the facility will be provided until the facility reaches postclosure status and the requirements of the facility's final closure plan have been approved by the Executive Director. Approval documentation will be placed in the Site Operating Record. Additional information regarding the closure cost estimate is summarized below.

2.1 Engineering Costs

The cost estimates for hiring a third party is based on closing the largest area (at the time of permit amendment approval) scheduled to receive final cover, which is 45.0 acres. An area of 45.0 acres is used for the closure estimates presented in this appendix. This area is illustrated on Figure IIIL.1. A boundary survey will be required for the filing of the affidavit of closure, deed recording of any area of the site that has received waste, and publishing the public notice of closure activities. A topographic survey ~~will~~ may be required to determine the existing height and top slope of the landfill so that permit compliance can be evaluated and the final closure systems, drainage system, and final grading can be engineered. An inspection of the site is included to identify any disposal areas requiring closure, drainage and erosion protection improvements, and identify any potential regulatory deficiencies. The site evaluation also includes the costs for a third party consultant to develop preliminary engineering report that identifies the status of the site. The report will identify all areas of work necessary to close the landfill. The engineering costs include the cost to develop construction plans and closure schedules, closure testing and inspections, and TPDES permit document preparation. In addition, administration costs (i.e., for construction contracts and contract administration) have also been included.

2.2 Construction Costs

As shown on Figure IIIL.1, construction costs include construction of the final cover system, and drainage improvements, ~~and completion of the LFG system~~ for the 45.0-acre area. LFG system installation will not apply to the existing trench fill area. The final cover system is detailed in Appendix IIIA-A. The construction costs include site grading and drainage including the final grading of the site, drainage improvements, and erosion and sedimentation controls for proper closure of the site.

2.3 Data Used to Develop Closure Cost Estimates

Consistent with Title 30 TAC §330.503 a detailed written cost estimate in current dollars is provided on Table IIIL-1. The cost data used to develop these estimates are based on current market conditions and were derived from similar projects completed by Meadow Landfill, LLC, its parent company Republic Services (Republic), and Weaver Consultants Group, LLC (WCG).

As shown in Table 16-1 in Parts I/II, Republic operates over 30 landfills in Texas and over 220 nationally. Over the last few years, Republic has completed several landfill closure projects and routinely constructs final cover systems as their landfill sites continue to develop.

WCG has been involved in many of the projects discussed above and similar projects in Texas. In addition, WCG has developed third-party closure cost estimates for over 25 sites in Texas (and numerous others nationally). Each of these estimates has been approved by TCEQ and similar state regulatory agencies.

Through the successful completion of these numerous closure related projects, Republic and WCG have gained a broad-based understanding of costs associated with landfill closures. The closure cost estimates listed in Table IIIL-1 are consistent with unit cost data used to develop closure cost estimates at other sites and are based on the extensive experience of Meadow Landfill, LLC, Republic, and WCG with each of the closure cost items.

KYLE D. GOULD
106018
08/05/2024

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TABLE 1
CITY OF MEADOW LANDFILL - CLOSURE COST

Area Requiring Final Cover	45.0	ac			
Trench Final Cover Area	45.0	ac	Infilltration Layer Thickness	1.5	ft (Trench Area)
Composite Topslope Area	0.0	ac	Infilltration Layer Thickness	1.5	ft (Comp. Area)
Composite Sideslope Area	0.0	ac	Erosion Layer Thickness	0.5	ft (Trench Area)
Permit Boundary Area	337.9	ac	Erosion Layer Thickness	1.0	ft (Comp. Area)

	Description	**Quantity**	**Unit[1]**	**Unit Cost [2]**	**Proposed Total Cost (2024)**
1.0	**ENGINEERING**				
1.1	Topographic Survey	1	LS	$ 5,180	**$ 5,180**
1.2	Boundary Survey for Affidavit	337.9	AC	$ 67	**$ 22,754**
1.3	Site Evaluation	337.9	AC	$ 730	**$ 246,795**
1.4	Development of Plans	45.0	AC	$ 616	**$ 27,739**
	Subtotal				**$ 302,468**
1.5a	Contract Administration		5%		**$ 15,123**
1.5b	Admin. Cost for Certification of Final Cover and Affidavit to the Public		5%		**$ 15,123**
1.6	Closure Inspection	45.0	AC	$ 1,886	**$ 84,848**
1.7	Permits	1	LS	$ 7,252	**$ 7,252**
1.8	Groundwater Consultant	N/A			
ENGINEERING TOTAL					**$ 417,564**
2.0	**CONSTRUCTION**				
2.1A	Final Cover System For Trench Fill Area				
	2.1A.1 Infiltration Layer	108,900	CY	$ 6.01	**$ 654,489**
	2.1A.2 Erosion Layer	36,300	CY	$ 3.89	**$ 141,207**
2.1B	Final Cover System For Composite Area				
	2.1B.1 Infiltration Layer	0	CY	$ 6.01	**$ -**
	2.1B.2 Erosion Layer	0	CY	$ 3.89	**$ -**
	2.1B.3 Flexible Membrane Cover				
	2.1B.3.1 Smooth (Topslopes)	0	SF	$ 0.37	**$ -**
	2.1B.3.2 Textured (Sideslopes)	0	SF	$ 0.44	**$ -**
	2.1B.4 Geocomposite				
	2.1B.4.1 Single-Sided (Topslopes)	0	SF	$ 0.41	**$ -**
	2.1B.4.2 Double-Sided (Sideslopes)	0	SF	$ 0.54	**$ -**
	2.1B.5 Installation of Gas Vents	0	VENT	$ 8,138	**$ -**
2.2	Revegetation	45.0	AC	$ 1,031	**$ 46,387**
2.3	Site Grading and Drainage	45.0	AC	$ 1,715	**$ 77,156**
2.4	Removal of Evaporation Ponds	1.0	LS	$ 60,000	**$ 60,000**
CONSTRUCTION TOTAL					**$ 979,239**
ENGINEERING AND CONSTRUCTION SUBTOTAL					**$ 1,396,803**
CONTINGENCY			10%		**$ 139,680**
CONTRACT PERFORMANCE BOND			2.0%		**$ 27,936**
THIRD PARTY ADMINISTRATION AND PROJECT MANAGEMENT COSTS			2.5%		**$ 34,920**
TOTAL CLOSURE COST					**$ 1,599,339**

[1] N/A = not applicable, LS = lump sum, AC = acres, CY = cubic yards, SF = square feet.

[2] Unit Costs are in 2024 dollars. Unit costs are based on current market conditions, typical engineering costs, and industry standards related to construction and reflect input from Republic Services and Weaver Consultants Group, LLC.

KYLE D. GOULD
106018

02/28/2025

TABLE 1
CITY OF MEADOW LANDFILL - CLOSURE COST

Area Requiring Final Cover	45.0	ac			
Trench Final Cover Area	45.0	ac	Infiltration Layer Thickness	45.0	ft (Trench Area
Composite Topslope Area	0.0	ac	Infiltration Layer Thickness	0.0	ft (Comp. Area)
Composite Sideslope Area	0.0	ac	Erosion Layer Thickness	0.0	ft (Trench Area
Permit Boundary Area	337.9	ac	Erosion Layer Thickness	337.9	ft (Comp. Area)

Description		Quantity	Unit[1]	2024 Unit Cost[2]	Inflation Factor[3]	2024 Unit Cost	Proposed Total (2024)
1.0 ENGINEERING							
1.1	Topographic Survey	1	LS	$ 5,180	1.000	$ 5,180	**$ 5,180**
1.2	Boundary Survey for Affidavit	337.9	AC	$ 67	1.000	$ 67	**$ 22,754**
1.3	Site Evaluation	337.9	AC	$ 730	1.000	$ 730	**$ 246,795**
1.4	Development of Plans	45	AC	$ 616	1.000	$ 616	**$ 27,739**
Subtotal							**$ 302,468**
1.5a	Contract Administration	1	5%		1.000		**$ 15,123**
1.5b	Admin. Cost for Certification of Final Cover and Affidavit to the Public	1	5%		1.000		**$ 15,123**
1.6	Closure Inspection	45.0	AC	$ 1,886	1.000	$ 1,886	**$ 84,848**
1.7	TPDES and other Permits	1	LS	$ 7,252	1.000	$ 7,252	**$ 7,252**
1.8	Additional Costs						**$ -**
1.9	**ENGINEERING COSTS SUBTOTAL**						**$ 424,816**
2.0 CONSTRUCTION[4]							
2.1	Mobilization of Personnel and Equipment		5%				**$ -**
2.2	Final Cover System						**$ -**
	2.2.1 Final Cover - Side Slope Cover - Not Used						**$ -**
	2.2.2 Final Cover - Top Slope Cover						**$ -**
	2.2.2a Infiltration Layer - Compacted Clay	108,900	CY	$ 6.01	1.000	$ 6.01	**$ 654,489**
	2.2.1g Erosion Layer	36,300	CY	$ 3.89	1.000	$ 3.89	**$ 141,207**
	2.2.1h Vegetation	45.0	AC	$ 1,031	1.000	$ 1,031	**$ 46,387**
2.3	Site Grading	45.0	AC	$ 1,715	1.000	$ 1,715	**$ 77,156**
2.4	Site Fencing and Security	-	LF	$ -	1.000	$ -	**$ -**
2.5	Landfill Gas Monitoring and Control System	-	Wells	$ -	1.000	$ -	**$ -**
2.6	Groundwater Monitoring System	-	LS	$ -	1.000	$ -	**$ -**
2.7	Leachate Management	-	LS	$ -	1.000	$ -	**$ -**
2.8	Stormwater Management	-	LS	$ -	1.000	$ -	**$ -**
2.9	Additional Construction Cost Items						
2.10	**CONSTRUCTION COSTS SUBTOTAL**						**$ 919,239**
3.0 STORAGE AND PROCESSING UNIT CLOSURE COSTS							**-**
4.0 SUM OF CLOSURE COST SUBTOTALS							**$ 1,344,055**
5.0 CONTINGENCY				10% of Item 4			**$ 134,405**
6.0 CONTRACT PERFORMANCE BOND				2.0% of Item 4			**$ 26,881**
7.0 THIRD PARTY ADMINISTRATION AND PROJECT MANAGEMENT COSTS				2.5% of Item 4			**$ 33,601**
8.0 TOTAL CLOSURE COST							**$ 1,538,943**

[1] N/A = not applicable, LS = lump sum, AC = acres, CY = cubic yards, SF = square feet.

[2] Unit Costs are in 2024 dollars. Unit costs are based on current market conditions, typical engineering costs and industry standards related to construction, and reflect input from Republic Services and Weaver Consultants Group, LLC.

[3] Inflation factor is a product of the annual percentage change for each year as published by the TCEQ. Inflation factor will be used during future updating of CPC Cost Estimates.

[4] Table will be expanded in the future to incorporate additional line items for new components that are required for landfill closure.

3 POSTCLOSURE CARE COST ESTIMATE

The postclosure care period has been established by TCEQ regulations to be 30 years. This detailed cost estimate shows the cost of hiring a third party to conduct routine maintenance and monitoring during the postclosure period. During this period, continuous maintenance must be ongoing to assure the integrity and effectiveness of the final cover system, monitoring systems, leachate collection system, drainage system, and landfill gas system. The leachate collection system and landfill gas system will not be applicable to the existing trench fill area. A summary of postclosure cost estimate is presented on Table IIIL-5. The costs will be adjusted annually as indicated in Section 4. An assessment will be completed each year to verify that the Postclosure Cost Estimate shown in Table IIIL-5 is consistent with the current permit conditions and the projected permit conditions for the upcoming 12-month period. The assessment will verify that the postclosure costs are based on the current active area and that all other permit conditions are addressed by the Postclosure Cost Estimate (e.g., verify the LFG O&M cost estimate is updated to match the number of wells that will need to be maintained during the postclosure period). Continuous financial assurance coverage for the postclosure care period of the facility will be provided until the facility is released from the postclosure care period by the Executive Director, in accordance with the requirements of the facility's postclosure care plan. The estimates will be adjusted, as needed, consistent with the procedures noted in Section 4.

3.1 Engineering Costs

As shown on Table IIIL-5, engineering postclosure estimates include the cost of annual site inspections, corrective plans and specifications, and site compliance monitoring. The estimates are based on the largest area with waste in-place. Site inspections will be performed annually and will include identification of areas experiencing settlement or subsidence, identification of erosion or other drainage-related problems, and inspection of the leachate collection system, gas control and monitoring system, and the groundwater monitoring system. The leachate collection system and landfill gas system will not be applicable to the existing trench fill area. Correctional plans and specifications include the costs for an engineering consultant to prepare construction plans and specifications to correct problems identified during the site inspections. Future ~~G~~gas monitoring and groundwater sampling and analysis will be performed as outlined in the Postclosure Care Plan (Appendix IIIK).

3.2 Construction Costs

Postclosure construction/maintenance estimates include the costs to correct problems determined by the engineering site inspections and as specified by the engineer's correctional plans and specifications. These costs will also include any ongoing site maintenance that is needed throughout the postclosure period. These costs include cover and drainage maintenance, as well as annual seeding and mowing costs. The (future) leachate disposal costs include leachate removal from the area with a leachate collection system. Future ~~P~~postclosure landfill gas control system O&M costs includes regular calibration and maintenance of regulatory equipment, such as valves and flow meters, associated system components of the active collection system and condensate disposal for the completely developed site.

A justification for the postclosure landfill gas (LFG) system operation and maintenance (O&M) cost estimate (for future revised CPC estimate) provided in Table IIIL-5 is discussed below. The following summary information can be found in Tables IIIL-2, IIIL-3, and IIIL-4.

- Table IIIL-2 – Estimated Routine O&M Costs. This table estimates the annual and 30-year cost for the routine O&M activities.
- Table IIIL-3 – Estimated Non-Routine O&M Costs. This table presents a summary of non-routine tasks and their associated costs. The estimates are based on the tasks required to replace or repair components on the flare/blower system.
- Table IIIL-4 – Summary of Estimated O&M Costs. This table provides a summary of the information listed in Tables IIIL-2 and IIIL-3.

Table IIIL-2
Estimated Routine Operation and Maintenance (O&M) Costs Typical Landfill Gas Collection and Control System

Number of Extraction Wells	Annual Routine O&M Cost	30-year Routine O&M Cost
20	$25,500	$765,000
40	$32,000	$960,000
60	$38,500	$1,155,000
80	$45,000	$1,350,000
100	$51,500	$1,545,000
200	$64,500	$1,935,000
300	$77,500	$2,325,000
400	$96,500	$2,895,000
500	$109,500	$3,285,000
600	$122,500	$3,675,000
700	$135,500	$4,065,000
800	$148,500	$4,455,000

Annual routine maintenance includes the following items (i.e., once the threshold requiring a LFG system is reached):

- Routine monitoring includes:
    - Balancing of the LFG extraction wells and monitoring of the blower/flare facility
    - Monitoring includes methane (% by volume), oxygen (% by volume), carbon dioxide (% by volume), pressures, and LFG temperature
    - Surface emissions and well field monitoring required under current NSPS regulations
- Maintenance of the GCCS will consist of:
    - Repair or replacement of sample ports
    - Repair or replacement of lateral valves
    - Adjusting and/or replacing flex joints
    - Adjusting and/or replacing flex tubing
    - Adjusting pipe supports to account for differential settlement
- Maintenance of a flare station includes:
    - Rotation of the blower operation
    - Maintaining vegetative growth inside the flare facility
    - Replacement of filters
    - Testing voltage output and operation of the blower(s)
    - Lubricating the blower bearings
    - Checking for blower belt wear and adjusting belt tension
    - Inspecting the flame arrestor and all safety shut-down features
    - Replacing recorder paper
    - Checking flare pilot system and pilot gas fuel tank levels
    - Checking flare controller set points and automatic louvers in accordance with the manufacturer’s recommendations and schedules
    - Pump repairs to condensate sumps

Power costs are also included.

In addition, consistent with Title 30 TAC §330.507 an assessment will be completed each year to verify that the postclosure cost estimates shown in Table IIIL-5 are consistent with the current permit conditions and the projected permit conditions for the upcoming 12-month period. The assessment will verify that the postclosure costs are based on the current active and inactive areas and that all other permit conditions are addressed by the Postclosure Cost Estimate. This assessment will also address the appropriateness of the unit cost data.

Upon completion of closure activities and initiation of the postclosure care period, the facility may submit a request to the TCEQ Financial Assurance Unit to revise the postclosure cost estimate. The request shall update postclosure costs for inflation and to reflect the number of years remaining in the postclosure care period. Financial assurance will be maintained for a minimum 10-year postclosure care period regardless of the number of years remaining in the facility's 30-year postclosure care period. Correspondence with the TCEQ Financial Assurance Unit will be maintained in the Site Operating Record for the facility.

REPLACE ENTIRE PAGE

TABLE 2
CITY OF MEADOW LANDFILL - POSTCLOSURE CARE COST

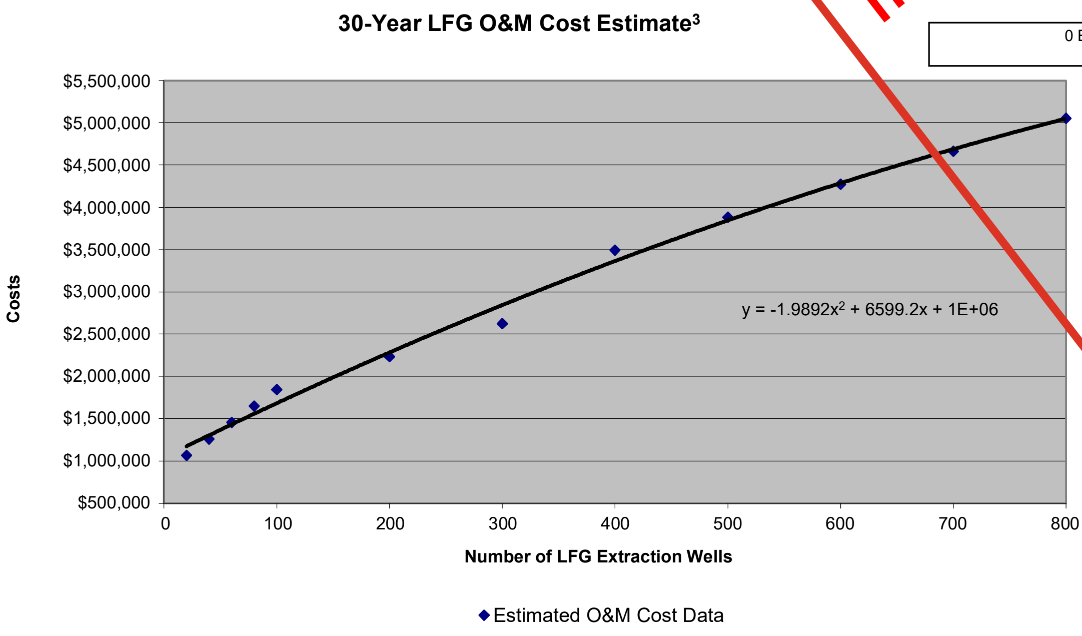
Permitted Waste Footprint	210.7	ac	Solid Waste Fill Area	45	ac
Area with leachate collection system	0.0	ac	Post Closure Care Period	30	yrs
Groundwater Monitoring Wells	0	wells	Gas Montoring Events	4	/yr
Gas Probes	2	probes	GW Monitoring Events	2	/yr
Area to be administratively closed	337.9	ac	Leachate Generation	0	gal/ac

Description	Quantity	Unit[1]	Unit Cost [2]	Annual Cost	Proposed Total Cost
1.0 ENGINEERING					
1.1 Postclosure Care Plan	N/A				
1.2 Site Inspection and Recordkeeping (annual)	337.9	ACRE	$ 10.36	$ 3,501	**$ 105,019**
1.3 Correctional Plans and Specifications (annual)	337.9	ACRE	$ 14.14	$ 4,778	**$ 143,347**
1.4 Site Monitoring					
1.4.1 Groundwater Monitoring (semiannual)	0	WELLS	$ 1,373	$ -	**$ -**
1.4.2 Gas Monitoring (quarterly)	4	EVENTS	$ 140	$ 559	**$ 16,783**
ENGINEERING SUBTOTAL				$ 8,838	**$ 265,150**
2.0 CONSTRUCTION / MAINTENANCE	45	AC	$ 363	$ 16,317	**$ 489,510**
3.0 LEACHATE DISPOSAL/MAINTENANCE	-	GAL	$ 0.026	$ -	**$ -**
4.0 LFG SYSTEM MAINTENANCE[3]	0	LS (see below)		$ -	**$ -**
SUBTOTAL				$ 25,155	**$ 754,660**
5.0 CONTINGENCY	1	10%		$ 2,516	**$ 75,466**
SUBTOTAL				$ 27,671	**$ 830,126**
6.0 THIRD PARTY ADMINISTRATION AND PROJECT MANAGEMENT	1	2.5%		$ 692	**$ 20,753**
TOTAL POSTCLOSURE CARE COST				$ 28,363	**$ 850,879**

[1] N/A = not applicable, AC = acres, GAL = gallons.

[2] Unit Costs are in 2024 dollars. Unit costs are based on current market conditions, typical engineering costs, and industry standards related to construction and reflect input from Republic Services and Weaver Consultants Group, LLC.

[3] LFG O&M is not applicable until sufficient footprint is developed requiring extraction wells.



0 Extraction Wells
$0.00

KYLE D. GOULD
106018
08/05/2024

TABLE 2
CITY OF MEADOW LANDFILL - POST-CLOSURE CARE COST

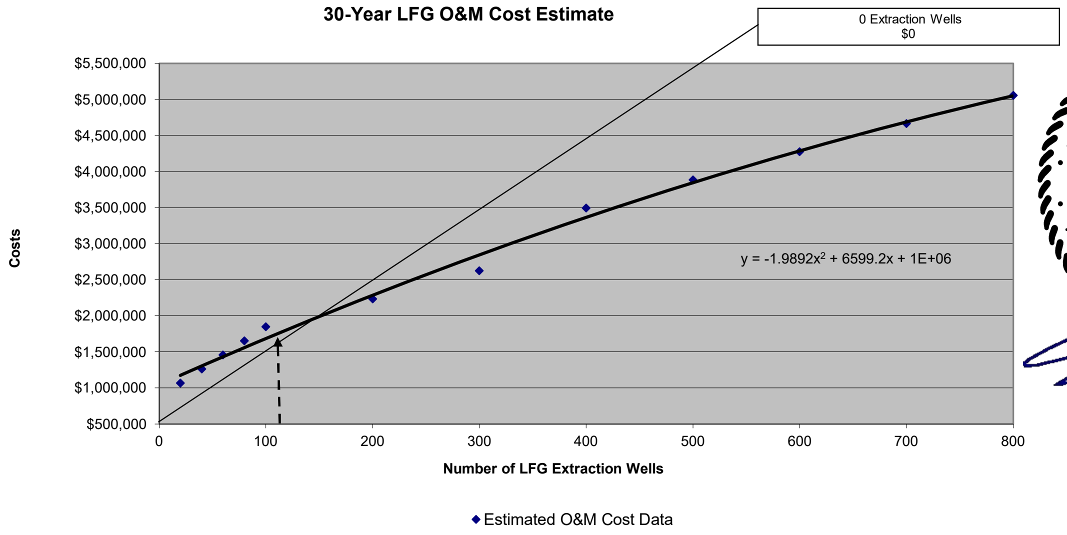
Permitted Waste Footprint	210.7	ac	Solid Waste Fill Area	45
Area with leachate collection system	0	ac	Post Closure Care Period	30
Groundwater Monitoring Wells	0	wells	Gas Monitoring Events	4
Gas Probes	2	probes	GW Monitoring Events	2
Area to be administratively closed	337.9	ac	Leachate Generation	0

Description		Quantity	Unit[1]	2024 Unit Cost[2]	Inflation Factor[3]	2024 Unit Cost	
1.0	**ENGINEERING**						
1.1	Site Inspection and Recordkeeping (annual)	337.9	AC	$ 10.00	1.000	$ 10.00	$ 3,379
1.2	Correctional Plans and Specifications (annual)	337.9	AC	$ 14.00	1.000	$ 14.00	$ 4,731
1.3	Site Monitoring						
1.3.1	Groundwater Monitoring System						
1.3.1(a)	Groundwater Monitoring (semiannual)	-	WELLS	$ -	1.000	$ -	$ -
1.3.2	LFG Monitoring System						
1.3.2(a)	LFG Monitoring (quarterly)	4	EA	$ 350	1.000	$ 350	$ 1,400
1.3.2(b)	LFG Plugging and Abandonment	-	WELLS	$ -	1.000	$ -	$ -
1.3.3	Surface Water Monitoring (quarterly)						
1.3.3(a)	Surface Water Monitoring (quarterly)	-	EA	$ -	1.000	$ -	$ -
1.4	Additional Engineering Cost Items						$ -
1.5	**ENGINEERING SUBTOTAL**						**$ 9,510**
2.0	**CONSTRUCTION / MAINTENANCE**						
2.1	Cap and Sideslope Repairs and Revegetation	45	AC	$ 210	1.000	$ 210	$ 9,450
2.2	Mowing and Vegetation Management	1	LS	$ 5,500	1.000	$ 5,500	$ 5,500
2.3	Groundwater Monitoring System Maintenance	0	LS	$ -	1.000	$ -	$ -
2.4	LFG Monitoring Probes Maintenance	0	LS	$ -	1.000	$ -	$ -
2.5	LFG Collection System Operations and Maintenance	0	LS	$ -	1.000	$ -	$ -
2.6	Perimeter Fence and Gates Maintenance	1	LS	$ 1,200	1.000	$ 1,200	$ 1,200
2.7	Access Roads Maintenance	1	LS	$ 2,000	1.000	$ 2,000	$ 2,000
2.9	Additional Construction and Maintenance Cost Items	-	-	-			
2.10	**CONSTRUCTION AND MAINTENANCE COSTS SUBTOTAL**						**$ 18,150**
3.0	**LEACHATE MANAGEMENT SYTEM OPERATION/MAINTENANCE/DISPOSAL**						
3.1	Leachate Management System Operation and Maintenance	0	LS	$ -	1.000	$ -	$ -
3.2	Leachate Disposal	0.0	AC	$ -	1.000	$ -	$ -
3.4	Additional Leachate Management Cost Items						$ -
3.5	**LEACHATE MANAGEMENT COSTS SUBTOTAL**						**$ -**
4.0	**SUM OF ENGINEERING, CONSTRUCTION, AND LEACHATE MANAGEMENT COSTS**						**$ 27,660**
5.0	**CONTINGENCY**			10%	of Item 4		**$ 2,766**
6.0	**THIRD PARTY ADMINISTRATION AND PROJECT MANAGEMENT**			2.5%	of Item 4		**$ 691**
7.0	**TOTAL POST-CLOSURE COST**						
7.1	**TOTAL ANNUAL POST-CLOSURE COST**						**$ 31,117**
7.2	**30 YEAR POST-CLOSURE COSTS**						**$ 933,512**

[1] N/A = not applicable, LS = lump sum, AC = acres, CY = cubic yards, SF = square feet, GAL = gallon

[2] Unit Costs are in 2024 dollars. Unit costs are based on current market conditions, typical engineering costs and industry standards related to construction, and reflect input from Republic Services and Weaver Consultants Group, LLC.

[3] Inflation factor is a product of the annual percentage change for each year as published by the TCEQ. Inflation factor will be used during future updating of CPC Cost Estimates



STATE OF TEXAS
KYLE D. GOULD
106018
LICENSED PROFESSIONAL ENGINEER

02/28/2025

4 COST ESTIMATE ADJUSTMENTS

During the active life of the site, Meadow Landfill will annually adjust the cost estimates for inflation and for changes to the facility conditions that increase the cost of closure. The adjustment may be made by recalculating the maximum costs of closure and postclosure in current dollars, or by using an inflation factor derived from the most recent Implicit Price Deflator for Gross National Product published by the United States Department of Commence in its Survey of Current Business. The inflation factor is the result of dividing the latest published annual deflator by the deflator for the previous year. The first adjustment is made by multiplying the closure and postclosure cost estimates by the inflation factor. The result is the adjusted closure and postclosure cost estimates. Subsequent adjustments are made by multiplying the latest adjusted closure and postclosure estimates by the latest inflation factor.

An increase in the closure or postclosure cost estimate and the amount of financial assurance will be made if changes to the final closure or postclosure care plan or the landfill conditions increase the maximum cost. If only the maximum area requiring closure changes (i.e., increases due to liner construction), a permit modification to change the closure and postclosure care cost estimates will be submitted to TCEQ.

A reduction in the closure or postclosure care cost estimate and the amount of financial assurance may be submitted if the cost estimate exceeds the maximum costs of closure at any time during the remaining life of the unit or postclosure care remaining over the postclosure care period. Meadow Landfill, LLC, will submit written notice to the Executive Director of the detailed justification for the reduction of the cost estimates and the amount of financial assurance. A reduction in the cost estimate and financial assurance will be considered a permit modification.

In the event that the facility were to enter into corrective action during the postclosure period, Meadow Landfill, LLC, will submit a corrective action cost estimate to the TCEQ in accordance with Title 30 TAC §330.509.

In accordance with Title 30 TAC §330.503 and §330.507, the closure and post-closure cost estimates will be reviewed and updated on an annual basis if the facility's permit conditions have changed (e.g, that the areas requiring closure or post-closure care do not match the current estimate, inflation costs), or if the landfill conditions increase the maximum cost of closure or post-closure (e.g., new cell construction, storage or processing units addition or revisions) at any time during the remaining active life of the unit. In accordance with Title 30 TAC §330.503(a) and §330.463(b)(3)(D), evidence of any additional financial assurance resulting from the annual revision of cost-estimates will be provided to the TCEQ.

APPENDIX IIIL-A

CLOSURE COST ESTIMATE FORM FOR MUNICIPAL SOLID WASTE TYPE I LANDFILL (FORM 20721)

KYLE D. GOULD
106018

02/28/2025

Texas Commission on Environmental Quality

Closure Cost Estimate Form for Municipal Solid Waste Type I Landfills

This form is for use by applicants or site operators to provide cost estimates for closure of MSW Type I landfills to meet the requirements in 30 Texas Administrative Code (TAC) Chapter 330, Section 330.63(j) and 30 TAC Chapter 330 Subchapter L. The costs to be provided herein are cost estimates for hiring a third party to close the largest waste fill area that could potentially be open in the year to follow and those areas that have not received final cover. If you need assistance in completing this form, please contact the MSW Permits Section in the Waste Permits Division at (512) 239-2335.

Facility Name: City of Meadow Landfill

MSW Permit No.: 2293C

Site Operator/Permittee Name and Mailing Address: Meadow Landfill, LLC, 663 County Road 545, Meadow, TX 79345

Total Closure Cost Estimate (2024 Dollar Amount): ~~$1,559,339~~ $1,538,943

I. Professional Engineer's Statement, Seal, and Signature

I am a licensed professional engineer in the State of Texas. To the best of my knowledge, this Closure Cost Estimate has been completed in substantial conformance with the facility Closure Plan and, in my professional opinion, is in compliance with Title 30 of the Texas Administrative Code, Chapter 330.

Name: Kyle D. Gould

Title: Senior Engineer

Date: ~~8/2024~~2/2025

Company Name: Weaver Consultants Group, LLC

Firm Registration Number: F-3727

Professional Engineer's Seal

KYLE D. GOULD
106018

02/28/2025

Professional Engineer's Signature

II. Annual Review of Permit Conditions, Cost Estimates, Inflation Factor, and Financial Assurance

The permittee/site operator acknowledges that he/she will:

(1) Review the facility’s permit conditions on an annual basis and verify that the current active and inactive waste fill areas of the landfill match the areas on which closure cost estimates are based.

(2) Request in writing via a permit modification application for an increase in the closure cost estimate and the amount of financial assurance provided if changes to the closure plan or the landfill conditions increase the maximum cost of closure at any time during the remaining active life of the landfill.

(3) Request in writing via a permit modification application for a reduction in the cost estimate and the amount of financial assurance provided if the cost estimate exceeds the maximum cost of closure at any time during the remaining active life of the landfill. The permit modification application will include a description of the situation and a detailed justification for the reduction of the closure cost estimate and the amount of financial assurance.

(4) Establish financial assurance for closure of the unit in an amount no less than the current closure cost estimate in accordance with 30 TAC Chapter 37, Subchapter R.

(5) Adjust the current cost estimate for inflation within 60 days prior to the anniversary date of the first establishment of the financial assurance mechanism.

(6) Provide annual inflation adjustments to the closure costs and financial assurance during the active life of the facility, until the facility is officially placed under the post closure care period and all requirements of the final closure plan have been approved in writing by the TCEQ executive director. The adjustment will be made using an inflation factor derived from the most recent annual Implicit Price Deflator for Gross National Product published by the United States Department of Commerce in its Survey of Current Business, as specified in paragraphs (1) and (2) of 30 TAC §37.131. The inflation factor is the result of dividing the latest published annual Deflator by the Deflator for the previous year.

(7) Provide continuous financial assurance coverage for closure until the facility is officially placed under the post-closure care period.

III. Description of the Closure Cost Estimates Worksheet

The following descriptions of the items on the closure cost estimates worksheet provide guidance for identifying the minimum work or cost elements and estimating the unit or lump sum cost of each item as applicable. Enter additional detail for each item in the field following the item as necessary and as site-specific condition warrants. The cost items are grouped under closure costs for engineering, construction, and storage and processing units. Include attachments to detail any additional work and associated costs necessary to close the site that is not already included as a line item on the worksheet. Reference the attachments and list the work or cost items in the fields under "Additional Engineering Cost Items Not Listed on the Worksheet," "Additional Construction Cost Items Not Listed on the Worksheet," or "Additional Storage and Processing Units Items Not Listed on the Worksheet" as applicable. Provide the total cost of the additional work or cost items in each cost category on the worksheet line that precedes the cost subtotal for each cost group.

1. Engineering Costs

The engineering tasks have been subdivided into seven items and are described below. Other related costs may be added as site-specific issues warrant.

1.1. Topographic Survey

A topographic survey will be required to verify the existing elevation and slopes of the landfill to ensure conformance with the final cover system, drainage system, and final grading designs.

Enter additional topographic survey work or cost element details as site-specific conditions warrant: **$5,180**

1.2. Boundary Survey

The metes and bounds description is required for filing of the affidavit of closure and deed recording of any area of the site which has received waste. Other activities to be included here are publication of the public notice of closing activities.

Enter additional boundary survey work or cost element details as site-specific conditions warrant: **$22,754**

1.3. Site Evaluation

The evaluation includes a site inspection to identify waste disposal areas, analyze drainage and erosion protection needs, and to determine other site operational features that are not in compliance with the permit. The site evaluation also includes verifying the need for new or relocation of existing groundwater monitoring wells and landfill gas monitoring probes, analysis of groundwater samples, and review of site operating record. The third party consultant who performed the site evaluation will prepare and submit an engineering report to the executive director to document the status of the site. The report will identify all areas of work and the associated implementation costs necessary to safely close the landfill operations with recommendations on how to fulfill these needs.

Enter additional site evaluation work or cost element details as site-specific conditions warrant: **$246,795**

1.4. Development of Plans

The final closure, plan the final cover system design and specifications, grading and drainage plans, specification for revegetation, design of any other improvements to bring the site into compliance with the permit, the closure schedule, and coordination with the TCEQ and provision of closure notice to the public.

Enter additional development of plans work or cost element details as site-specific conditions warrant: **$27,739**

1.5. Contract Administration (bidding and award)

The third-party consultant will advertise the project, receive the bids, evaluate the bids, award the closure construction contract and administer the contract during construction.

Enter additional contract administration work or cost element details as site-specific conditions warrant: **$30,246**

1.6. Closure Inspection and Testing

The professional of record will observe closure construction, perform cover thickness and permeability verification, and prepare an evaluation report upon completion of closure.

Enter additional closure inspection or testing work or cost element details as site-specific conditions warrant: **$84,848**

1.7. TPDES and other Permits

The third-party consultant will prepare plans, specifications, and other documents necessary for compliance with applicable federal and state laws and requirements, including the Clean Water Act, for the proper closure of the site.

Enter additional TPES or other permits work or cost element details as site-specific conditions warrant: **$7,252**

1.8. Additional Engineering Cost Items Not Listed on the Worksheet

List the Attachment(s) detailing any additional engineering cost items necessary to close the site that is not already included as a line item on the worksheet: Also, reference these Attachments in the “Units” column on this line of the worksheet. Provide the total cost of all additional engineering cost items in the “Cost” column.

Groundwater Monitoring Well Consultant : NA

The existing groundwater monitoring system is adequate. There should be no cost associated with this item.

1.9. Engineering Costs Subtotal: ~~$417,564~~ $424,816

1.9.1. Enter the sum of engineering costs in Items 1.1 through 1.8.

2. Construction Costs

Closure construction costs include those for construction of the final cover system, site grading, and drainage improvements. Other costs may be added as site-specific issues warrant.

2.1. Mobilization

2.1.1. Mobilization of Personnel and Equipment

The cost of mobilizing personnel and construction heavy equipment must be included as part of the construction costs.

Enter additional work or cost element details for mobilization of personnel and equipment as site-specific conditions warrant:

Included in overall cost of construction work.

2.2. Final Cover System

The owner or operator must install a final cover system that is designed to minimize infiltration and erosion. The final cover system is subdivided into the sideslope cover and cap cover with their associated components to facilitate cost calculations. If an alternative final cover is proposed, the closure cost estimate will still be based on a design that utilizes the conventional composite cover system.

Enter additional final cover system work or cost element details as site-specific conditions warrant: $795,696 – Included in item 2.1A and 2.1B on Table 1.

2.2.1. Side Slope Cover

Enter information for Items 2.2.1a through 2.2.1h.

2.2.2. Top Slope Cover

Enter information for Items 2.2.2a through 2.2.2h.

2.2.3. Cells for Class 1 Nonhazardous Industrial Waste

2.3. Site Grading

Site grading includes the final grading of the site, including the landfill cap and sideslopes.

Enter additional site grading work or cost element details as site-specific conditions warrant: $77,156

2.4. Site Fencing and Security

Site fencing and security must be included for the area which has received waste and have no existing approved fencing.

Enter additional site fencing and security work or cost element details as site-specific conditions warrant:

The site has adequate existing fencing.

2.5. Landfill Gas Monitoring and Control Systems

Enter information for Items 2.5.1 through 2.5.6.

Final installation of the landfill gas monitoring and control systems must include the installation costs of pipes and appurtenances. In the event of a forced closure, the systems may not have been completed, thus, the estimated costs to complete the landfill gas monitoring and control system must be provided.

Enter additional landfill gas monitoring and control systems work or cost element details as site-specific conditions warrant:

No landfill gas system is required.

2.6. Groundwater Monitoring System

2.6.1. Monitor Well Installation

Upon closure of the site, it may be necessary to relocate the compliance boundary. This requires the installation of new monitor wells.

Enter additional groundwater monitoring system work or cost element details as site-specific conditions warrant:

No existing groundwater monitoring system.

2.6.2. Piezometer and Monitor Well Plugging and Abandonment

Piezometer or monitor well abandonment is the cost of abandoning (plugging) piezometers or monitor wells that are no longer needed. Determine the number of piezometers or monitor wells to be abandoned and include the total cost.

Enter additional plugging and abandonment work or cost element details as site-specific conditions warrant:

No plugging of piezometers or monitoring wells is required.

2.7. Leachate Management

2.7.1. Completion of Existing Leachate Collection System

In the event of a forced closure, there may be circumstances where the leachate collection system has not been completed. In this event, the leachate collection system must be closed with a permanent outfalls and permanent cleanouts installed.

Enter additional leachate management work or cost element details as site-specific conditions warrant:

There is not an existing leachate system.

2.8. Stormwater Management

2.8.1. Stormwater Drainage Management System

To reduce the potential long-term impacts of the landfill on surface water quality, drainage features must be incorporated into the final cover design to direct runoff, minimize erosion, control sediments, and avoid ponding of stormwater. The drainage system construction costs must be included.

Enter additional stormwater drainage management work or cost element details as site-specific conditions warrant:

Included in overall cost of final cover system construction.

2.9. Additional Construction Cost Items Not Listed on Worksheet

List the Attachments detailing any additional construction cost items necessary to close the site that is not already included as a line item on the worksheet: Also, reference these Attachments in the "Units" column on this line of the worksheet. Provide the total cost of all additional construction cost items in the "Cost" column.

2.10. Construction Costs Subtotal: $979,239

2.10.1. Enter the sum of construction costs in Items 2.1 through 2.9.

3. Storage and Processing Unit Closure Costs

For landfills that incorporate storage and/or processing operations that are not separately authorized, all waste and processed and unprocessed materials associated with storage and/or processing units must be removed during the closure process.

3.1. Waste Disposal

The cost of disposal of waste at an authorized facility. *Enter additional waste disposal work or cost element information as necessary.*

~~Included in Item 2.9.1.~~ Not Applicable

3.2. Material Removal and Disinfection

The cost of removal, including transportation, of any remaining processed and unprocessed materials to an authorized off-site location. *Enter additional material removal and disinfection work or cost element information as necessary.*

~~Included in Item 2.9.1.~~ Not Applicable

3.3. Demolition and Disposal

The cost of dismantling and/or disinfection of storage and/or processing units and disposal, as applicable. *Enter additional demolition and disposal work or cost element information as necessary.*

~~Included in Item 2.9.1.~~ Not Applicable

3.4. Additional Storage and Processing Unit Closure Cost Items Not Listed in Worksheet

List the Attachments detailing any additional storage and processing unit closure cost items necessary to close the site that is not already included as a line item on the worksheet. Also, reference these Attachments in the "Units" column on this line of the worksheet. Provide the total cost of all additional storage and processing unit closure cost items in the "Cost" column.

3.5. Storage and Processing Unit Closure Costs Subtotal: Not Applicable

4. Sum of Cost Subtotals: ~~$1,396,803~~ $1,344,055

4.1. Enter the sum of engineering, construction, and storage and processing unit closure cost subtotals from lines 1.9.1, 2.10.1, and 3.5.1.

5. Contingency: ~~$133,680~~ $134,405

5.1. Add an amount equal to at least 10 percent of the sum of cost subtotals to cover unanticipated events during implementation of closure activities.

6. Contract Performance Bond: ~~$27,936~~ $26,881

6.1. Add an amount equal to at least 2 percent of the sum of cost subtotals for purchase of a surety bond to guarantee satisfactory completion of the closure activities.

7. Third Party Administration and Project Management Costs: ~~$34,920~~ $33,601

7.1. Add an amount equal to at least 2.5 percent of the sum of cost subtotals to cover the cost for a third party hired by TCEQ to administer the closure activities.

8. Total Closure Cost: ~~$1,599,339~~ $1,538,943

8.1. Enter the sum of the amounts on lines 4.1, 5.1, 6.1, and 7.1.

IV. Closure Cost Estimates Worksheet

A. Landfill Data

Total Permitted Waste Disposal Area: 210.7 acres

Largest Area Requiring Final Cover in the year to follow: 45.0 acres

Total Filled Area with Constructed Final Cover: 0 acres

Total Area Certified Closed: 0 acres

Number of Monitor Wells to be Installed for Closure: 0

Number of Gas Probes to be Installed for Closure: 0

Total Acreage Needing LFG Collection and Control System: 0 acres

The unit or lump sum cost for each item is based on the work items and cost elements described in Section III of this Closure Cost Estimate document:

Yes ☒ No ☐ Partially ☐

(if "No" or "Partially" is checked, please include attachments describing the additional work items and detailing the unit, quantities, and costs for the additional items)

B. Facility Drawings and Financial Assurance Documentation

- Facility drawings
  - Attach facility drawings showing the closure areas to which the closure cost estimates apply.
- Financial assurance documentation
  - For an existing facility, attach a copy of the documentation required to demonstrate financial assurance as specified in 30 TAC Chapter 37, Subchapter R.
  - For a new facility, a copy of the required documentation shall be submitted 60 days prior to the initial receipt of waste.

C. Attachments

- Additional Engineering, Construction, and Storage and Processing Units Cost Items Details

Closure Cost Estimate for MSW Type I Landfill

Facility Name: City of Meadow Landfill — Revision No.: 1

Permit No: 2293C — Date: ~~8/2024~~2/2025

D. Closure Cost Estimates Worksheet

If any item listed in this worksheet is not applicable to the subject facility, enter "NA" (Not Applicable) in the affected field.

Table 1. Closure Cost Estimates Worksheet.

Item No.	Item Description	Units[1]	Quantity	Unit Cost	Cost	Source of Unit Cost Estimate[2]
1. Engineering Costs						
1.1	Topographic Survey	Lump Sum	1	$5,180	$5,180	Third Party Estimate
1.2	Boundary Survey	Acres	337.9	$67	$22,754	Third Party Estimate
1.3	Site Evaluation	Acres	337.9	$730	$246,795	Third Party Estimate
1.4	Development of Plans	Acres	45.0	$616	$27,739	Third Party Estimate
1.5	Contract Administration (bidding and award)	Percent	10%	NA	$30,246	Third Party Estimate
1.6	Closure Inspection and Testing	Acres	45.0	$1,886	$84,848	Third Party Estimate
1.7	TPDES and other Permits	Lump Sum	1	$7,252	$7,252	Third Party Estimate
1.8	Additional Engineering Cost Items (describe in attachments)	NA	NA	NA	NA	NA
1.9 Engineering Costs Subtotal						
1.9.1	Engineering Costs Subtotal	NA	NA	NA	~~417,564~~ 424,816	NA
2. Construction Costs						
2.1 Mobilization						
2.1.1	Mobilization of Personnel and Equipment	Lump Sum	NA	NA	NA	NA
2.2 Final Cover System						
2.2.1 Side Slope Cover						
2.2.1a	Infiltration Layer – Compacted Clay	Cubic Yards	NA	~~$6.01~~ NA	NA	Estimate from Recent Construction Experiences
2.2.1b	Infiltration Layer – Geosynthetic Clay Liner	Square Feet	NA	NA	NA	NA

Closure Cost Estimate for MSW Type I Landfill

Facility Name: City of Meadow Landfill　Revision No.: 1

Permit No: 2293C　Date: ~~8/2024~~2/2025

Item No.	Item Description	Units[1]	Quantity	Unit Cost	Cost	Source of Unit Cost Estimate[2]
2.2.1c	Flexible Membrane Cover – HDPE	Square Feet	NA	NA	NA	NA
2.2.1d	Flexible Membrane Cover – LLDPE	Square Feet	NA	~~$0.44~~ NA	NA	Estimate from Recent Construction Experiences
2.2.1e	Drainage Layer – Aggregate	Cubic Yards	NA	NA	NA	NA
2.2.1f	Drainage Layer – Drainage Geocomposite Material	Square Feet	NA	~~$0.54~~ NA	NA	Estimate from Recent Construction Experiences
2.2.1g	Erosion Layer	Cubic Yards	NA	~~$3.89~~ NA	NA	Estimate from Recent Construction Experiences
2.2.1h	Vegetation	Acres	NA	~~$1,031~~ NA	NA	Estimate from Recent Construction Experiences
2.2.2 Top Slope Cover						
2.2.2a	Infiltration Layer – Compacted Clay	Cubic Yards	108,900	$6.01	$654,489	Estimate from Recent Construction Experiences
2.2.2b	Infiltration Layer – Geosynthetic Clay Liner	Square Feet	NA	NA	NA	NA
2.2.2c	Flexible Membrane Cover – HDPE	Square Feet	NA	NA	NA	NA
2.2.2d	Flexible Membrane Cover – LLDPE	Square Feet	NA	~~$0.37~~ NA	NA	Estimate from Recent Construction Experiences
2.2.2e	Drainage Layer – Aggregate	Cubic Yards	NA	NA	NA	NA
2.2.2f	Drainage Layer – Drainage Geocomposite Material	Square Feet	NA	~~$0.41~~ NA	NA	Estimate from Recent Construction Experiences
2.2.2g	Erosion Layer	Cubic Yards	36,300	$3.89	$141,207	Estimate from Recent Construction Experiences
2.2.2h	Vegetation	Acres	45.0	$1,031	$46,387	Estimate from Recent Construction Experiences
2.2.3 Cells for Class 1 Nonhazardous Industrial Waste						
2.2.3a	Dike Construction	specify	NA	NA	NA	NA

Closure Cost Estimate for MSW Type I Landfill

Facility Name: City of Meadow Landfill | Revision No.: 1

Permit No: 2293C | Date: ~~8/2024~~2/2025

Item No.	Item Description	Units[1]	Quantity	Unit Cost	Cost	Source of Unit Cost Estimate[2]
2.3 Site Grading						
2.3.1	Site Grading	Acres	45.0	$1,715	$77,156	Estimate from Recent Construction Experiences
2.4 Site Fencing and Security						
2.4.1	Site Fencing and Security	specify	NA	NA	NA	NA
2.5 Landfill Gas Monitoring and Control System						
2.5.1	Gas Control Wells	specify	NA	NA	NA	NA
2.5.2	Gas Header Piping	specify	NA	NA	NA	NA
2.5.3	Gas Lateral Piping	specify	NA	NA	NA	NA
2.5.4	Flare Station	Lump Sum	NA	NA	NA	NA
2.5.5	Condensate Sumps	specify	NA	NA	NA	NA
2.5.6	Completion of LFG Monitoring System	Wells	NA	NA	NA	NA
2.6 Groundwater Monitoring System						
2.6.1	Groundwater Monitoring Well Installation	Each	NA	NA	NA	NA
2.6.2	Piezometer and Monitor Well Plugging and Abandonment	Each	NA	NA	NA	NA
2.7 Leachate Management						
2.7.1	Completion of Leachate Management System	specify	NA	NA	NA	NA
2.8 Stormwater Management						
2.8.1	Stormwater Drainage Management System	specify	NA	NA	NA	NA
2.9 Other Cost Items						
2.9.1	Additional Construction Cost Items (describe in attachments)	LS	1	~~$60,000~~ NA	~~$60,000~~ NA	Estimate from Recent Construction Experiences
2.10 Construction Costs Subtotal						
2.10.1	Construction Costs Subtotal	NA	NA	NA	$979,239	NA

Closure Cost Estimate for MSW Type I Landfill

Facility Name: City of Meadow Landfill Revision No.: 1

Permit No: 2293C Date: ~~8/2024~~2/2025

Item No.	Item Description	Units[1]	Quantity	Unit Cost	Cost	Source of Unit Cost Estimate[2]
3. Storage and Processing Unit Closure Costs						
3.1	Waste Disposal	☐ Tons ☐ Cubic Yards	NA	NA	NA	NA
3.2	Material Removal and Disinfection	specify	NA	NA	NA	NA
3.3	Demolition and Disposal Units	specify	NA	NA	NA	NA
3.4	Additional Storage and Processing Unit Closure Cost Items (describe in attachments)	identify attachments	NA	NA	NA	NA
3.5 Storage and Processing Unit Closure Costs Subtotal						
3.5.1	Storage and Processing Unit Closure Costs Subtotal	NA	NA	NA	NA	NA
4. Sum of Engineering, Construction, and Storage and Processing Unit Closure Costs						
4.1	Sum of Engineering, Construction, and Storage and Processing Unit Closure Cost Subtotals	NA	NA	NA	~~$1,396,803~~ $1,344,055	NA
5. Contingency						
5.1	Contingency (10% of Sum of Engineering, Construction, and Storage and Processing Unit Closure Cost Subtotals)	NA	NA	NA	~~$139,680~~ $134,405	NA
6. Contract Performance Bond						
6.1	Contract Performance Bond (2% of Sum of Engineering, Construction, and Storage and Processing Unit Closure Cost Subtotals)	NA	NA	NA	~~$27,936~~ $26,881	NA
7. Third Party Administration and Project Management Costs						
7.1	Third Party Administration and Project Management Costs (2.5% of Sum of Engineering, Construction, and Storage and Processing Unit Closure Cost Subtotals)	NA	NA	NA	~~$34,920~~ $33,601	NA

Closure Cost Estimate for MSW Type I Landfill

Facility Name: City of Meadow Landfill | Revision No.: 1

Permit No: 2293C | Date: ~~8/2024~~2/2025

Item No.	Item Description	Units[1]	Quantity	Unit Cost	Cost	Source of Unit Cost Estimate[2]
8. Total Closure Costs						
8.1	Total Closure Costs (sum of amounts in Sections 4, 5, 6, and 7)	NA	NA	NA	~~$1,599,339~~ $1,538,943	NA

---

[1] For items marked "specify," the responsible professional engineer will enter appropriate unit of measurement

[2] Sources of Unit Costs for Cost Estimates table may include:
- (1) Published Cost Estimator Manuals (e.g., RS Means);
- (2) Third Party Quotes (e.g., Environmental Field Services Contractors);
- (3) Verifiable Data based on Actual Operations; or
- (4) Other sources of cost acceptable to the executive director of the TCEQ.

APPENDIX IIIL-B

POST-CLOSURE COST ESTIMATE FORM FOR MUNICIPAL SOLID WASTE TYPE I LANDFILL (FORM 20723)

STATE OF TEXAS
KYLE D. GOULD
106018
LICENSED
PROFESSIONAL ENGINEER

02/28/2025

Texas Commission on Environmental Quality

Post-Closure Care Cost Estimate Form for Municipal Solid Waste Type I Landfills

This form is for use by applicants or site operators to provide post-closure care cost estimates for post-closure care of MSW Type I landfills to meet the requirements in 30 Texas Administrative Code (TAC) Chapter 330, Section 330.63(j) and 30 TAC Chapter 330 Subchapter L. The costs to be provided herein are cost estimates for hiring a third party to conduct post-closure care of the largest waste fill area that has been certified closed in writing by the TCEQ executive director.

If you need assistance in completing this form, please contact the MSW Permits Section in the Waste Permits Division at (512) 239-2335.

I. General Information

Facility Name: City of Meadow Landfill

MSW Permit No.: 2293C

Date: ~~8/2024~~ 2/2025

Revision Number: 1

Site Operator/Permittee Name and Mailing Address: Meadow Landfill, LLC, 663 County Road 545, Meadow, TX 79345

Total Post-Closure Care Cost Estimate (2024 Dollar Amount): ~~$850,879~~ $933,512

II. Professional Engineer’s Statement, Seal, and Signature

I am a licensed professional engineer in the State of Texas. To the best of my knowledge, this Post- Closure Care Cost Estimate has been completed in substantial conformance with the facility Post-Closure Care Plan and, in my professional opinion, is in compliance with Title 30 of the Texas Administrative Code, Chapter 330.

Name: Kyle D. Gould

Title: Senior Engineer

Date: ~~8/2024~~ 2/2025

Company Name: Weaver Consultants Group, LLC

Firm Registration Number: F-3727

Professional Engineer’s Seal

KYLE D. GOULD
106018

Signature

02/28/2025

III. Annual Review of Permit Conditions, Cost Estimates, Adjustments for Inflation, and Financial Assurance

The site operator/permittee acknowledges that he/she will:

1. Revise and increase the post-closure care cost estimate and the amount of financial assurance provided whenever changes in the post-closure care plan or the landfill conditions increase the maximum cost of post-closure care at any time during the remaining active life of the landfill and until the facility is officially released from the post-closure care period in writing by the executive director.
2. Request a reduction in the post-closure care cost estimate and the amount of financial assurance as a permit modification whenever the post-closure care cost estimate exceeds the maximum cost of post-closure care remaining over the post-closure period. The permit modification will include a detailed justification for the reduction of the post-closure care cost estimate and the amount of financial assurance.
3. Establish financial assurance for post-closure care of the unit in an amount no less than the current post-closure care cost estimate in accordance with 30 TAC Chapter 37
4. Adjust the current post-closure care cost estimate for inflation within 60 days prior to the anniversary date of the first establishment of the financial assurance mechanism.
5. Provide annual inflation adjustments to the post-closure care costs and financial assurance during the active life of the facility and during the post closure care period. The adjustment will be made using an inflation factor derived from the most recent annual Implicit Price Deflator for Gross National Product published by the United States Department of Commerce in its Survey of Current Business, as specified in 30 TAC Chapter 37. The inflation factor is the result of dividing the latest published annual Deflator by the Deflator for the previous year.
6. Provide continuous financial assurance coverage for post-closure care until the facility is officially released in writing by the executive director from the post-closure care period in accordance with all requirements of the post-closure care plan.

IV. Description of Worksheet Items of the Post-Closure Care Cost Estimates

The following descriptions of the worksheet items provide guidance for identifying the minimum work or cost elements for estimating the unit or lump sum cost of each item as applicable. Enter additional detail for each item in the field following the item as necessary and as site-specific conditions warrant. The cost items are grouped under post-closure care costs for engineering, construction, and leachate management. Include attachments to detail any additional work and associated costs necessary for the post-closure care of the unit or facility that is not already included as a line item on the worksheet. Reference the attachments and list the work or cost items in the fields under "Additional Engineering Cost Items Not Listed on the Worksheet," "Additional Construction Cost Items Not Listed on the Worksheet," or Additional Leachate Management Costs Not Listed on the Worksheet" as applicable. Provide the total cost of additional work or cost items in each cost category on the worksheet line that precedes the cost subtotal for each cost group.

1. Engineering Costs

1.1. Site Inspection and Recordkeeping

Regularly scheduled and event-driven site inspection must be performed to identify areas experiencing settlement, subsidence, erosion, or other drainage related problems, and note the conditions of the environmental control and monitoring systems, including leachate collection, groundwater monitoring, and landfill gas monitoring systems. *Enter additional site inspection and recordkeeping work or cost element detail as site-specific conditions warrant.*

$105,019

Site inspections will identify any potential areas experiencing settlement and erosion over the entire area to be administratively closed. The inspection will also document the condition of the LCS, LFG, groundwater monitoring system, and other landfill systems.

1.2. Correctional Plans and Specifications

The cost for an engineering consultant to prepare corrective measure construction plans and specifications to correct problems identified during site inspections. *Enter additional work or cost element details for correctional plans and specifications as site-specific conditions warrant.*

$143,347

Includes preparation of plans and specifications to correct problems identified during inspections in area of waste in-place.

1.3. Site Monitoring

The cost of performing semiannual groundwater (including costs for sampling and analyzing parameters, and assessment and reporting) and quarterly landfill gas monitoring (including costs for sampling and reporting) and the monitoring of other site-specific systems at the landfill during the postclosure period. *Enter additional site monitoring work or cost element details as site-specific conditions warrant.*

$16,783

After development of the footprint under Permit No. MSW-2293C then, this will also include the cost for semi-annual groundwater monitoring.

1.4. Additional Engineering Cost Items Not Listed on the Worksheet

List the Attachments detailing additional post-closure care engineering cost items not already included as a line item on the worksheet. (Also, reference these Attachments in the "Units" column of this line of the worksheet. Provide the total cost of all additional engineering cost items in the "Cost" column).

NA

2. Construction Costs

2.1. Cap and Sideslopes Repairs and Revegetation

The cost of repair of the cap and cap drainage control structures due to erosion or structural integrity failures and maintaining final cover vegetation to minimize erosion. *Enter additional cap and sideslopes repair and revegetation work or cost element details as site-specific conditions warrant.*

Included in Item 2.0 on Table 2.

2.2. Mowing and Vegetation Control

The cost of controlling vegetation growth on the final cover and other areas of the landfill. *Enter additional mowing and vegetation control work or cost element details as site-specific conditions warrant.*

Included in Item 2.0 on Table 2.

2.3. Groundwater Monitoring System Maintenance

The cost of repairs/replacement and routine maintenance. *Enter additional groundwater monitoring system maintenance work or cost element details as site-specific conditions warrant.*

N/A no groundwater monitoring system.

2.4. LFG Monitoring Probes Maintenance

The cost of repairs/replacement and routine maintenance. Enter additional LFG monitoring probes maintenance work or cost element details as site-specific conditions warrant.

LFG O&M is not applicable until sufficient footprint is developed.

2.5. LFG Collection System Maintenance

The cost of repairs and routine maintenance. *Enter additional LFG collection system maintenance work or cost element details as site-specific conditions warrant.*

After a sufficient footprint has been developed under the Permit No. MSW-2293C requiring an LFG Collection System then, the chart for LFG O&M (provided on Table 2) will be applicable.

2.6. Perimeter Fence and Gates Maintenance

The cost of maintaining perimeter fence and gates to restrict unauthorized access to the closed landfill. *Enter additional perimeter fence and gates maintenance work or cost element details as site-specific conditions warrant.*

Included in Item 2.0 on Table 2.

2.7. Access and Rights of Way Maintenance

The cost of maintaining the access roads and other rights of way to the closed landfill to conduct inspections, environmental sampling, routing maintenance and other post-closure activities. *Enter additional access and rights of way maintenance work or cost element details as site-specific conditions warrant.*

Included in Item 2.0 on Table 2.

2.8. Drainage System Cleanout and Repairs

The cost to include costs for maintaining and repairing ditches, conveyance structures, and ponds/basins. *Enter additional drainage system cleanout and repairs work or cost element details as site-specific conditions warrant.*

Included in Item 2.0 on Table 2.

2.9. Additional Construction and Maintenance Cost Items Not Listed on the Worksheet

List the Attachments detailing any additional construction and maintenance cost items necessary for post-closure care that are not already covered on the worksheet. (Also, reference these Attachments in the "Units" column on this line of the worksheet. Provide the total cost of all additional construction and maintenance cost items in the "Cost" column.)

Included in Item 2.0 on Table 2.

3. Leachate Management Costs

3.1. Leachate Collection and Removal System Operation and Maintenance

The cost of operation, routine maintenance and repairs. *Enter additional work or cost element details for leachate collection and removal system operation and maintenance as site-specific conditions warrant.*

NA

3.2. Leachate Disposal

The cost of leachate disposal off-site. *Enter additional work or cost element details for leachate disposal as site-specific conditions warrant*.

NA

3.3. Additional leachate management cost items not listed on the worksheet.

List the Attachments detailing any additional leachate management cost items necessary for post-closure care that are not already covered on the worksheet. (Also, reference these Attachments in the "Units" column on this line of the worksheet. Provide the total cost of all additional leachate management cost items in the "Cost" column.)

NA

4. Sum of Cost Subtotals

Enter the sum of engineering, construction, and storage and leachate management post-closure care cost subtotals from lines 1.5.1, 2.10.1, and 3.5.1.

~~$754,660~~ $829,800

5. Contingency

The cost added to cover unanticipated events during implementation of post-closure activities. (Enter additional work or cost element information as necessary)

~~$75,466~~ $82,980

6. Third Party Administration and Project Management Costs

The cost for the third party hired by TCEQ to administer the post-closure activities. (Enter additional work or cost element information as necessary)

$20,753

V. Post-Closure Care Cost Estimates Worksheet

Post-Closure Care Period – 30 years

Total Permitted Acreage: 337.9 acres

Total Permitted Waste Footprint: 210.7 acres

Number of Groundwater Monitoring Wells: 0

Number of GW Monitoring Events: 2/year

Number of Gas Probes: 2

Number of LFG Monitoring Events: 4/year

The unit or lump sum cost for each item is based on the work items and cost elements described in Section III of this Post-Closure Cost Estimate document:

Yes ☒ No ☐ Partially ☐

If “No” or “Partially” is checked, please attach a written description of work items and cost elements which form the bases of unit or lump sum cost for the affected items.

(NOTE: If any item listed in this worksheet is not applicable to the subject facility, enter Not Applicable (N/A) in the affected fields)

Attachments

Additional Engineering, Construction, and Leachate Management Cost Items Details.

Table 1: Post-Closure Care Cost Estimates

Item No.	Item Description	Units	Annual Qty.	Unit Cost	Annual Cost	Source of Unit Cost Estimate[i]
1.0 Engineering Costs						
1.1	Site Inspection and Recordkeeping[ii]	Acre	337.9	~~$10.36~~ $10.00	~~$3,501~~ $3,379	WCG routinely provides this type of service.
1.2	Correctional Plans and Specifications	Acre	337.9	~~$14.14~~ $14.00	~~$4,778~~ $4,731	WCG routinely provides this type of service.
1.3 Site Monitoring						
1.3.1 Groundwater Monitoring System						
1.3.1(a)	Sampling and Analysis of GW Monitoring Wells (Quantity = 2 x Number of wells)	Wells	~~0~~ NA	~~$1,373~~ NA	~~$0~~ NA	WCG routinely provides this type of service.
1.3.1(b)	Piezometers/Well Abandonment	Each	NA	NA	NA	NA
1.3.2 LFG Monitoring System						
1.3.2(a)	LFG Quarterly Monitoring (Quarterly)	Events/ Year	4	~~$139.86~~ $350	~~$559~~ $1,400	WCG routinely provides this type of service.
1.3.2(b)	LFG Probe Plugging and Abandonment	Each	NA	NA	NA	NA
1.4 Additional Engineering Cost Items (Detail in Attachments)						
1.4.1	Additional Engineering Cost Items (describe in attachments)	Identify attachments	NA	NA	NA	NA
1.5 Engineering Costs Subtotal						

Item No.	Item Description	Units	Annual Qty.	Unit Cost	Annual Cost	Source of Unit Cost Estimate[i]
1.5.1	Engineering Costs Subtotal	NA	NA	NA	~~$8,838~~ $9,510	NA
2.0 Construction and Maintenance Costs						
2.1	Cap and Sideslopes Repairs and Revegetation	~~Acres~~ LS	45	~~$363~~ $210	~~$16,317~~ $9,450	Ongoing postclosure maintenance projects.
2.2	Mowing and Vegetation Management	~~Acres~~ LS	~~Included in 2.1~~ 1	$5,500	$5,500	Ongoing postclosure maintenance projects.
2.3	Groundwater Monitoring System Maintenance	specify	Included in monitoring.			
2.4	LFG Monitoring Probes Maintenance	specify	Included in monitoring.			
2.5	LFG Collection System Maintenance	specify	0	NA	NA	NA
2.6	Perimeter Fence and Gates Maintenance	~~specify~~ LS	~~NA~~ 1	$1,200	$1,200	Ongoing postclosure maintenance projects.
2.7	Access Roads Maintenance	~~specify~~ LS	~~NA~~ 1	$2,000	$2,000	Ongoing postclosure maintenance projects.
2.8	Drainage System Cleanout/Repairs	specify	NA	NA	NA	NA
2.9 Additional Construction and Maintenance Cost Items (Details in Attachments)						
2.9.1	Additional Construction and Maintenance Cost Items (details in attachments)	Identify attachments	NA	NA	NA	NA

Post-Closure Care Cost Estimate for MSW Type I Landfills

Facility Name: City of Meadow Landfill
Permit No: 2293C

Revision No.: 1
Date: ~~8/2024~~ 2/2025

Item No.	Item Description	Units	Annual Qty.	Unit Cost	Annual Cost	Source of Unit Cost Estimate[i]
2.10 Construction and Maintenance Costs Subtotal						
2.10.1	Construction and Maintenance Costs Subtotal	NA	NA	NA	$16,317	NA
3.0 Leachate Management						
3.1	Leachate Management System Operation and Maintenance	specify	NA	NA	NA	NA
3.2	Leachate Disposal	Gals	NA	~~$.026~~ NA	NA	Estimate from Recent Construction Experiences
3.3 Additional Leachate Management Cost Items (Details in Attachments)						
3.4	Additional Leachate Management Cost Items (details in attachments)	LS	NA	NA	NA	NA
3.5 Leachate Management Costs Subtotal						
3.5.1	Leachate Management Costs Subtotal	NA	NA	NA	0	NA
4.0 Sum of Engineering, Construction, and Leachate Management Costs						
4.1	Sum of Engineering, Construction, and Leachate Management Cost Subtotals	NA	NA	NA	~~$25,155~~ $27,660	NA
5.0 Contingency						
5.1	Contingency (10% of Sum of Engineering, Construction, and Leachate Management Cost Subtotals)	NA	NA	NA	~~$2,516~~ $2,766	NA

Post-Closure Care Cost Estimate for MSW Type I Landfills

Facility Name: City of Meadow Landfill — Revision No.: 1

Permit No: 2293C — Date: ~~8/2024~~ 2/2025

Item No.	Item Description	Units	Annual Qty.	Unit Cost	Annual Cost	Source of Unit Cost Estimate[i]
6.0 Third Party Administration and Project Management Costs						
6.1	Third Party Administration and Project Management Costs (2.5% of Sum of Engineering, Construction, and Leachate Management Cost Subtotals)	NA	NA	NA	$691~~2~~	NA
7. Total Post-Closure Cost						
7.1	Total Annual Post-Closure Cost (Sum of amounts in Sections 4, 5, and 6)	NA	NA	NA	~~$28,363~~ $31,117	NA
7.2	30 Year Post-Closure Costs (Total Annual Post-Closure Cost x 30)	NA	NA	NA	~~$850,879~~ $933,512	NA

---

[i] Sources of Unit Cost Estimates may include:
  (1) Published Cost Estimator Manuals (e.g., RS Means);
  (2) Third Party Quotes (e.g., Environmental Field Services Contractors); or
  (3) Verifiable Data based on Actual Operations

[ii] Example Description for Item No. 1.1 – "Includes costs for site inspection performed at least annually for identification of areas experiencing settlement or subsidence, erosion or other drainage-related problems, inspection of the leachate collection system, gas monitoring system and LFG monitoring system."

APPENDIX IIIL-C

EXISTING FINANCIAL ASSURANCE DOCUMENTATION

USI®

USI Insurance Services
601 Union Street
Suite 1000
Seattle, WA 98101
www.usi.com
Tel: 206.441.6300

June 26, 2024

FedEx Priority Overnight

Brian Danko
Republic Services
1408 N MLK Blvd.
Lubbock, TX 79403
352-518-7397

RE: $ 491,164.24 Closure/Post Closure Bond
for City of Meadow Landfill/Lubbock LF
for Meadow Landfill, LLC
Evergreen National Indemnity Company
Bond # 880438

Please find enclosed increase Penalty Rider increasing the bond:
from $ 491,164.24 to $ 508,846.15 the effective date of change,
4/1/2024 has been used for the above captioned bond per your request.

You will need to send the enclosed original documents to the respective Obligee at your earliest convenience along with any other required paperwork.

Should you require further assistance or if you have any questions, please do not hesitate to contact us at 206-731-1200 or email us at [redacted]

Sincerely,

Amber

Amber Engel
Surety Department

INCREASE PENALTY RIDER

BOND AMOUNT $491,164.24 BOND NO. 880438

To be attached and form a part of Bond No. 880438, executed by Evergreen National Indemnity Company as surety, on behalf of Meadow Landfill, LLC as current principal of record, and in favor of Texas Commission on Environmental Quality, as Obligee for Texas Commission on Environmental Quality Closure/Post Closure Bond for Meadow Landfill, and in the amount of Four Hundred Ninety One Thousand One Hundred Sixty Four Dollars and 24/100 ($491,164.24).

In consideration of the agreed premium charged for this bond, it is understood and agreed that Evergreen National Indemnity Company hereby consents that effective from the 1st Day of April, 2024, said bond shall be amended as follows:

THE BOND PENALTY SHALL BE INCREASED:

FROM: Four Hundred Ninety One Thousand One Hundred Sixty Four Dollars and 24/100 ($491,164.24)

TO: Five Hundred Eight Thousand Eight Hundred Forty Six Dollars and 15/100 ($508,846.15) Closure $356,449.04 / Post Closure $152,397.11

The INCREASE of said bond penalty shall be effective as of the 1st Day of April, 2024.

Signed, sealed and dated this 27th Day of June, 2024

Meadow Landfill, LLC
PRINCIPAL

BY_______________________
Kathleen M. Mitchell, ATTORNEY-IN-FACT

Evergreen National Indemnity Company
SURETY

BY_______________________
Amber Engel, ATTORNEY-IN-FACT

REPUBLIC
SERVICES

POWER OF ATTORNEY

REPUBLIC SERVICES, INC., a Delaware corporation having its principal place of business at 18500 N. Allied Way, Phoenix, Arizona 85054, hereby makes, constitutes and appoints KIBBLE & PRENTICE HOLDING COMPANY dba USI INSURANCE SERVICES NORTHWEST, acting through and by any one of Debbie Lindstrom, Kathleen M. Mitchell, Scott C. Alderman, Amber Engel, Jamie Armfield, Holly E. Ulfers, or Roxana Palacios, its true and lawful attorney to sign and seal any and all surety bonds, bid bonds, performance bonds and payment bonds at or below the monetary threshold of Five Million Dollars ($5,000,000.00) on behalf of REPUBLIC SERVICES, INC. and its subsidiaries, relating to the provision of solid waste collection, transportation, transfer, recycling, disposal and/or energy services by REPUBLIC SERVICES, INC. and its subsidiaries and affix its corporate seal to and deliver for and on behalf as surety thereon or otherwise, bonds of any of the following classes, to wit:

1. Surety bonds, bid bonds, performance bonds and payment bonds to the United States of America or agency thereof, including those required or permitted under the laws or regulations relating to Customs or Internal Revenue; license and permit bonds or other indemnity bonds under the laws, ordinances or regulations of any state, city, town, village, board, other body organization, public or private; bonds to transportation companies; lost instrument bonds; lease bonds; worker's compensation bonds; miscellaneous surety bonds; and bonds on behalf of notaries public, sheriffs, deputy sheriffs and similar public officials.

2. Surety bonds, bid bonds, performance bonds and payment bonds on behalf of REPUBLIC SERVICES, INC. and its subsidiaries in connection with bids, proposals or contracts.

REPUBLIC SERVICES, INC. hereby agrees to ratify and confirm whatsoever KIBBLE & PRENTICE HOLDING COMPANY dba USI INSURANCE SERVICES NORTHWEST shall lawfully do pursuant to this power of attorney, and until notice or revocation has been given by REPUBLIC SERVICES, INC., the acts of said attorney shall be binding on the undersigned.

IN WITNESS WHEREOF, this Power of Attorney has been signed this 24th day of May, 2023 on behalf of REPUBLIC SERVICES, INC. by its Assistant Secretary, Adrienne W. Wilhoit.

REPUBLIC SERVICES, INC.,
a Delaware corporation

Adrienne W. Wilhoit

STATE OF ARIZONA

COUNTY OF MARICOPA

Subscribed and sworn to before me this 24th day of May, 2023 by Kiara Gonzalez, Notary Public.

KIARA GONZALEZ
Notary Public - Arizona
Maricopa County
Commission # 598922
My Comm. Expires Feb 2, 2025

Notary Public

CERTIFICATE

I, the undersigned, John B. Nickerson, Assistant Secretary of Republic Services, Inc., a Delaware corporation, do hereby certify that the foregoing Power of Attorney is true, correct, remains in full force and effect, and has not been revoked.

IN WITNESS WHEREOF, this Certification has been signed this 27th day of June, 2024 on behalf of REPUBLIC SERVICES, INC. by its Assistant Secretary, John B. Nickerson.

John B. Nickerson

EVERGREEN NATIONAL INDEMNITY COMPANY

Independence, Ohio

POWER OF ATTORNEY

Bond No. 880438

KNOW ALL MEN BY THESE PRESENTS: That the Evergreen National Indemnity Company, a corporation in the State of Ohio does hereby nominate, constitute and appoint:

Amber Engel

its true and lawful Attorney(s)-In-Fact to make, execute, attest, seal and deliver for and on its behalf, as Surety, and as its act and deed, where required, any and all bonds, undertakings, recognizances and written obligations in the nature thereof.

This Power of Attorney is granted and is signed by facsimile pursuant to the following Resolution adopted by its Board of Directors on the 23rd day of July, 2004:

> "RESOLVED, That any two officers of the Company have the authority to make, execute and deliver a Power of Attorney constituting as Attorney(s)-in-fact such persons, firms, or corporations as may be selected from time to time.
> FURTHER RESOLVED, that the signatures of such officers and the Seal of the Company may be affixed to any such Power of Attorney or any certificate relating thereto by facsimile; and any such Power of Attorney or certificate bearing such facsimile signatures or facsimile seal shall be valid and binding upon the Company; and any such powers so executed and certified by facsimile signatures and facsimile seal shall be valid and binding upon the Company in the future with respect to any bond or undertaking to which it is attached."

IN WITNESS WHEREOF, the Evergreen National Indemnity Company has caused its corporate seal to be affixed hereunto, and these presents to be signed by its duly authorized officers this 1st day of April, 2022.

EVERGREEN NATIONAL INDEMNITY COMPANY

By: ____________________
Matthew T. Tucker , President

By: ____________________
David A. Canzone, CFO

Notary Public)
State of Ohio) SS:

On this 1st day of April, 2022, before the subscriber, a Notary for the State of Ohio, duly commissioned and qualified, personally came Matthew T. Tucker and David A. Canzone of the Evergreen National Indemnity Company, to me personally known to be the individuals and officers described herein, and who executed the preceding instrument and acknowledged the execution of the same and being by me duly sworn, deposed and said that they are the officers of said Company aforesaid, and that the seal affixed to the preceding instrument is the Corporate Seal of said Company, and the said Corporate Seal and signatures as officers were duly affixed and subscribed to the said instrument by the authority and direction of said Corporation, and that the resolution of said Company, referred to in the preceding instrument, is now in force.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal at Cleveland, Ohio, the day and year above written.

Julie K Bowers
Notary Public
In and For the State of Ohio
My Commission Expires
August 13, 2024

Julie K. Bowers
____
Julie K. Bowers, Notary Public
My Commission Expires August 13, 2024

State of Ohio) SS:

I, the undersigned, Secretary of the Evergreen National Indemnity Company, a stock corporation of the State of Ohio, DO HEREBY CERTIFY that the foregoing Power of Attorney remains in full force and has not been revoked; and furthermore that the Resolution of the Board of Directors, set forth herein above, is now in force.

Signed and sealed in Independence, Ohio, this 27th day of June, 20 24.

____
Wan C. Collier, Secretary

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT

PART III – SITE DEVELOPMENT PLAN
APPENDIX IIIM
SITE LIFE CALCULATIONS

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

KYLE D. GOULD
106018

02/28/2025

Prepared by

Weaver Consultants Group, LLC
TPBE Registration No. F-3727
6420 Southwest Blvd., Suite 206
Fort Worth, TX 76109
817-735-9770

WCG Project No. 0120-809-11-06

This document is intended for permitting purposes only.

FIGURES

Sheet IIIM-6 Remaining Capacity

Sheet IIIM-6A Bottom of Waste Contours

Sheet IIIM-6B Intermediate Cover Grades

STATE OF TEXAS
KYLE D. GOULD
106018
LICENSED
PROFESSIONAL ENGINEER

02/28/2025

1 SITE LIFE

1.1 Solid Waste Generation

The following estimate has been developed to provide an assessment of the solid waste generation rate for the City of Meadow Landfill. It is important to note that the included estimate is based on numerous assumptions and may vary as market conditions change.

Historically, the waste inflow rate at City of Meadow Landfill has varied from 29 tons per day to 39 tons per day as listed below.

Fiscal Year	Actual Waste Inflow[1]	Typical Daily Waste Inflow Rate Based on a 286-Day Operating Schedule
2019	11,016 tons per year	39 tons per day
2020	9,647 tons per year	34 tons per day
2021	9,924 tons per year	35 tons per day
2022	8,350 tons per year	29 tons per day
2023[2]	10 tons per year	--
2024[2]	10 tons per year	--

[1] Information obtained from the TCEQ MSW Annual Reports filed by the City of Meadow Landfill.
[2] The landfill is currently mothballed and only accepts 10 tons per year.

The landfill was previously permitted as a Type I AE and Type IV AE facility, limiting their acceptance rate to 40 tons per day (20 tons per day Type I Waste and 20 tons per day Type IV waste). With this Major Permit Amendment Application, the landfill will be permitted as a Type I facility and will accept more waste. The City of Meadow Landfill estimates that the waste inflow will increase to 107,250 tons per year (375 tons per day based on a 286-day operating schedule) in 2024. After 2024, the waste inflow rate is assumed to increase consistent with the projected growth rate for the facility's general service area which for this analysis is assumed to be the City of Meadow and ~~Cochran, Dawson, Gaines, Hockley,~~ Lubbock~~, Lynn,~~ and Terry~~, and Yoakum~~ counties.

Using this methodology, the expected maximum annual waste acceptance rate is 244,745 tons per year (856 tons per day based on a 286-day operating schedule). The above projections are based on current market conditions and may vary as market conditions change. Over the life of the facility, the expected average daily volume of incoming waste is projected to be approximately 578 tons per day (165,308 tons per year based on a 286-day operating schedule).

Site life calculations based on the City of Meadow Landfill projections are shown on pages IIIM-3 through IIIM-5.

1.2 Population Equivalent

Using the average waste inflow rate of 165,308 tons per year discussed in Section 1.1 (an average daily volume of 578 tons per day based on a 286-day operating schedule) and assuming 5 pounds of waste is generated per capita per day, the population equivalent is:

$$\frac{(165{,}308\ \text{tons/year}) \times (2{,}000\ \text{pounds/ton})}{(5\ \text{pounds/person/day}) \times (365\ \text{days/year})} = 181{,}160\ \text{persons}$$

1.3 Landfill Capacity

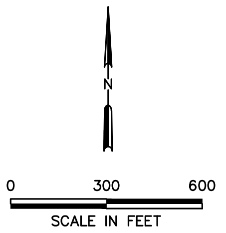
The estimated total capacity of waste (defined as waste and daily cover) ever on site over the active life of the facility is approximately 29.5 million cubic yards. The total volume available for solid waste and daily cover after December 14, 2022 (date of topographic information) is estimated to be 28,356,013 cubic yards. The current volume of waste (defined as waste and daily cover) in-place as of December 14, 2022 is approximately 1.144 million cubic yards.

Total landfill volumes are estimated based on comparison of AutoCAD surfaces developed for the top of protective cover surface (at the base of landfill) and the bottom of intermediate cover surface (at top of landfill) over which the final cover system is installed. The calculations assume that the bottom of the protective cover (at the base of the landfill) is installed above the top of liner grades shown on Drawing I/II.A-8 – Top of Liner Plan. The installation grades of the barrier system (clay versus GCL) are adjusted during liner design that the top of liner grades coincide with the grades shown on Drawing I/II.A-8, and hence the total calculated landfill capacity does not change between clay and GCL barrier liners.

1.4 Site Life Calculations

The site life calculations are presented on pages IIIM-3 through IIIM-5. In summary, the site life is projected to be approximately 97.0 years, which would result in the site's closure during the year 2121~~0~~.

REMAINING CAPACITY – 28,356,013 CY AS OF DECEMBER 14, 2022
ESTIMATED AVERAGE WASTE DEPTH – 87 FEET
MIDPOINT OF AVERAGE DEPTH – 43 FEET (87 FT/2)



KYLE D. GOULD
106018
02/28/2025

LEGEND

— · — · —	PERMIT BOUNDARY
— — — —	LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
3300	EXISTING CONTOUR
3400	FUTURE BOTTOM OF WASTE CONTOUR
3400	TOP OF INTERMEDIATE COVER CONTOUR
— · → —	CHANNEL CENTERLINE
+88	DEPTH OF REMAINING FILL (FEET)
△1	INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

1. EXISTING CONTOURS AND ELEVATIONS ARE CREATED FROM GROUND SURVEY AND UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON DECEMBER 14, 2022 AND COMBINED WITH THE PUBLIC "TEXAS WEST CENTRAL LIDAR" DATASET, COLLECTED BY THE UNITED STATES GEOLOGICAL SURVEY BETWEEN FEBRUARY 1, 2018 AND MAY 27, 2018, PROVIDED BY THE TEXAS NATURAL RESOURCES INFORMATION SYSTEM DATAHUB. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00.
2. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.

LIST OF REVISIONS:

1. REVISED CALLOUT.

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120-809-11
CAD: SHEET IIIM-6-REMAINING CAPACITY.DWG

DRAWN BY: RAA
DESIGN BY: MB
REVIEWED BY: CRM

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

MAJOR PERMIT AMENDMENT
REMAINING CAPACITY

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

SHEET IIIM-6

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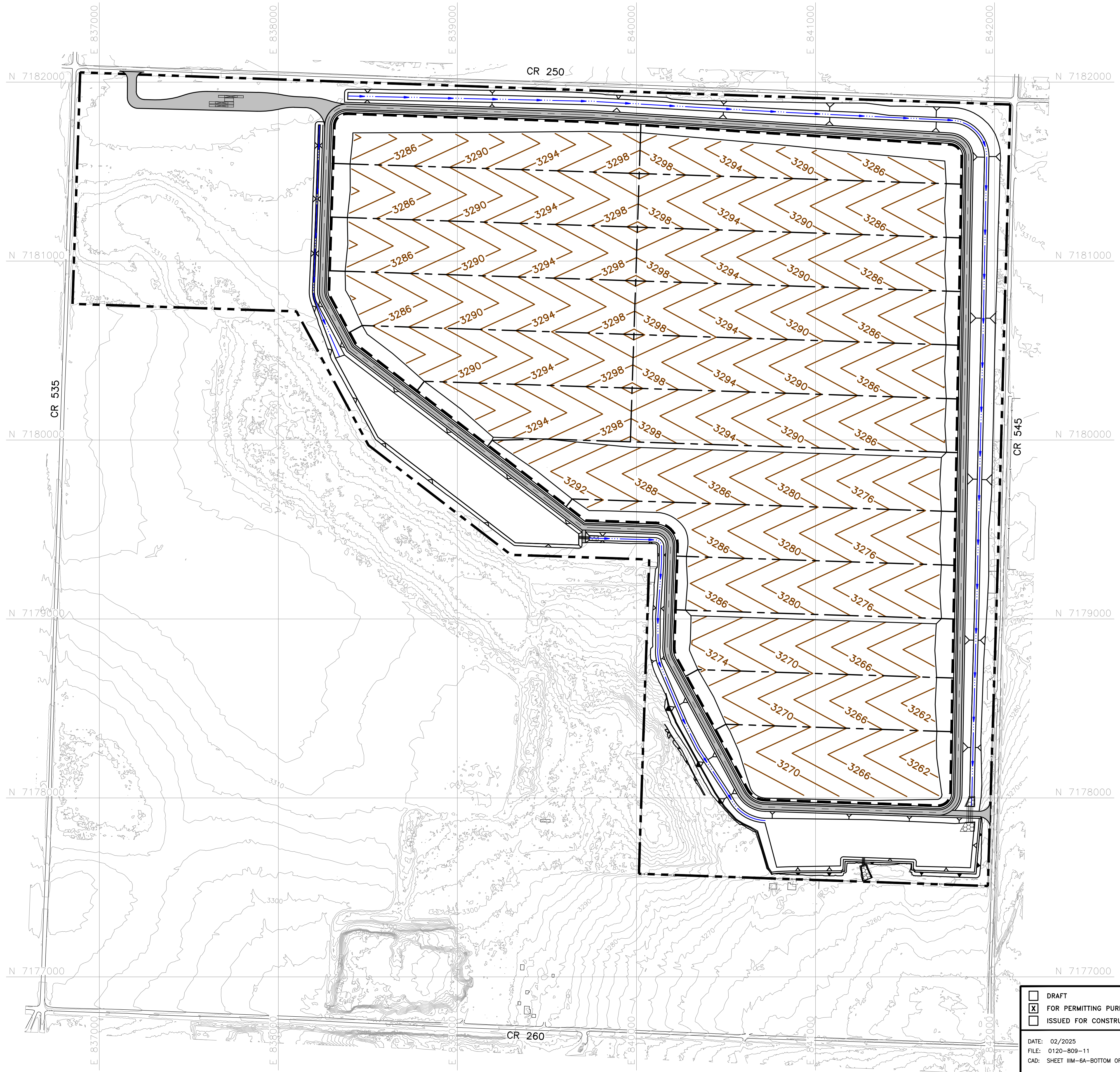
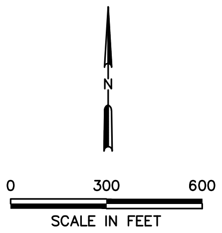




KYLE D. GOULD
106018
02/28/2025

LEGEND

PERMIT BOUNDARY
LIMIT OF WASTE
N 7180000 STATE PLANE COORDINATE SYSTEM
3300 EXISTING CONTOUR
3400 FUTURE BOTTOM OF WASTE CONTOUR
CHANNEL CENTERLINE
△1 INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

1. EXISTING CONTOURS AND ELEVATIONS ARE CREATED FROM GROUND SURVEY AND UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON DECEMBER 14, 2022 AND COMBINED WITH THE PUBLIC "TEXAS WEST CENTRAL LIDAR" DATASET, COLLECTED BY THE UNITED STATES GEOLOGICAL SURVEY BETWEEN FEBRUARY 1, 2018 AND MAY 27, 2018, PROVIDED BY THE TEXAS NATURAL RESOURCES INFORMATION SYSTEM DATAHUB. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00.
2. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.

LIST OF REVISIONS:

1. NEW DRAWING ADDED.

△1

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 02/2025
FILE: 0120-809-11
CAD: SHEET IIIM-6A-BOTTOM OF WASTE.DWG

DRAWN BY: RAA
DESIGN BY: MB
REVIEWED BY: CRM

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

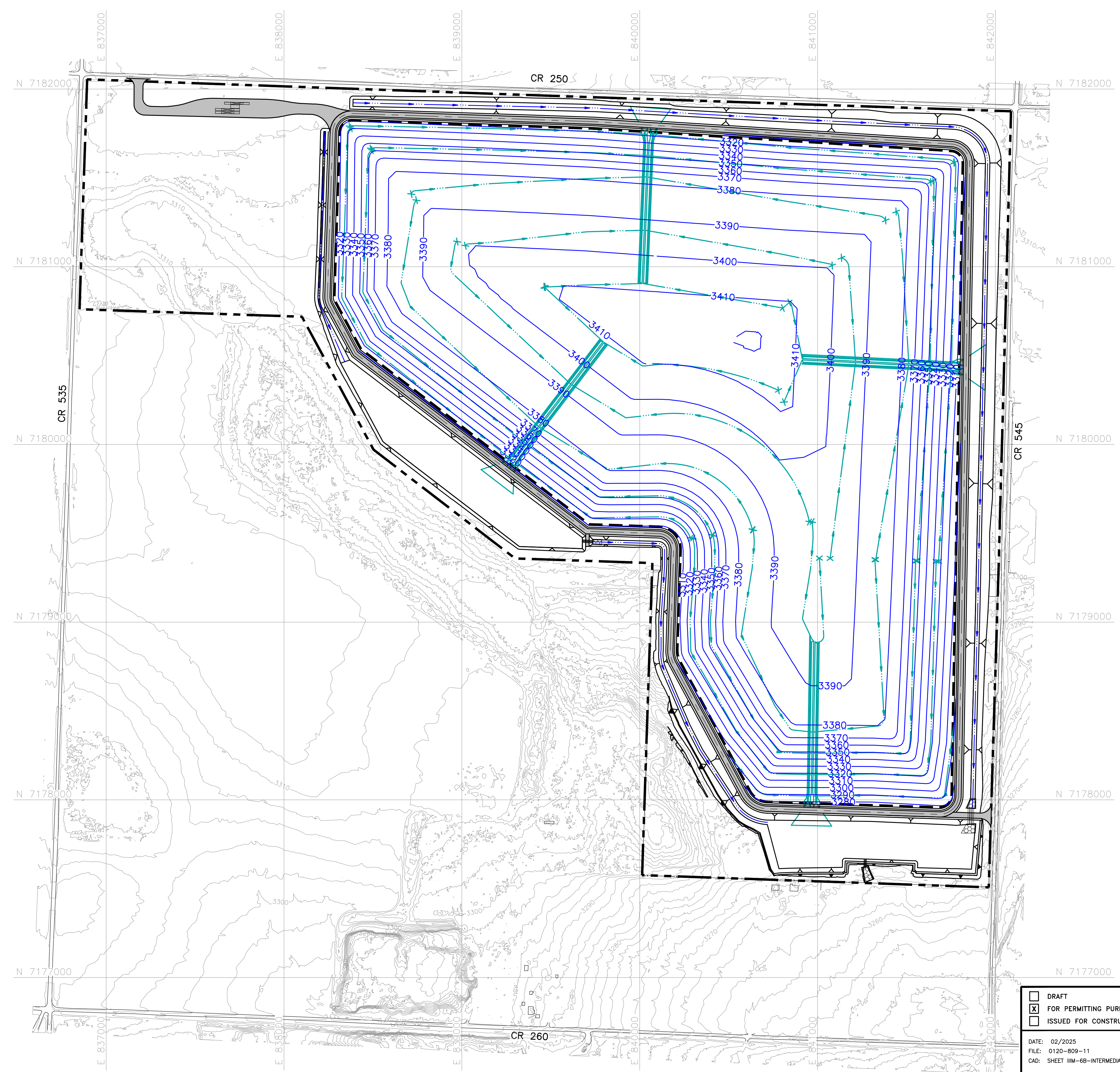
MAJOR PERMIT AMENDMENT
BOTTOM OF WASTE CONTOURS

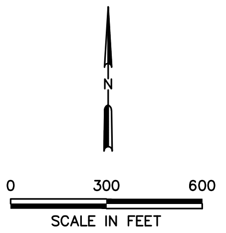
CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

SHEET IIIM-6A

O:\0120\809\EXPANSION 2023\PART III\IIIM\SHEET IIIM-6A-BOTTOM OF WASTE.dwg, jwilson, 1:2





KYLE D. GOULD
106018
02/28/2025

LEGEND

— · — · —	PERMIT BOUNDARY
— — —	LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
3300	EXISTING CONTOUR
3400	TOP OF INTERMEDIATE COVER CONTOUR
—▸—·—	CHANNEL CENTERLINE
△	INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

1. EXISTING CONTOURS AND ELEVATIONS ARE CREATED FROM GROUND SURVEY AND UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON DECEMBER 14, 2022 AND COMBINED WITH THE PUBLIC "TEXAS WEST CENTRAL LIDAR" DATASET, COLLECTED BY THE UNITED STATES GEOLOGICAL SURVEY BETWEEN FEBRUARY 1, 2018 AND MAY 27, 2018, PROVIDED BY THE TEXAS NATURAL RESOURCES INFORMATION SYSTEM DATAHUB. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00.
2. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.

LIST OF REVISIONS:

1. NEW DRAWING ADDED.

△1

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 02/2025
FILE: 0120-809-11
CAD: SHEET IIIM-6B-INTERMEDIATE CVR.DWG

DRAWN BY: RAA
DESIGN BY: MB
REVIEWED BY: CRM

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

MAJOR PERMIT AMENDMENT
INTERMEDIATE COVER GRADES

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

SHEET IIIM-6B

O:\0120\809\EXPANSION 2023\PART III\IIIM\SHEET IIIM-6B-INTERMEDIATE COVER.dwg, jwilson, 1:2

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PART IV – SITE OPERATING PLAN

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

STATE OF TEXAS
KYLE D. GOULD
106018
LICENSED PROFESSIONAL ENGINEER

02/28/2025

Prepared by

Weaver Consultants Group, LLC
TPBE Registration No. F-3727
6420 Southwest Blvd., Suite 206
Fort Worth, Texas 76109
817-735-9770

WCG Project No. 0120-809-11-06

This document is intended for permitting purposes only.

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KYLE D. GOULD
106018

02/28/2025

1 INTRODUCTION

This Site Operating Plan (SOP) has been prepared for the City of Meadow Landfill consistent with Title 30 TAC §330.65. The purpose of this SOP is to provide guidance to site management and operating personnel to meet the general and site-specific requirements of §330, Subchapters D and E. This document also provides a guide for site management to maintain the facility in compliance with the engineering design and applicable regulatory requirements of the TCEQ. The plan may also serve as a reference source and assist in personnel training. This SOP, the permit, and the current TCEQ regulations will be kept onsite throughout the facility's operating life.

In accordance with 30 TAC §330.121(a), the approved site development plan, the site operating plan, the final closure plan, the post-closure maintenance plan, the landfill gas management plan, and all other documents and plans required by the MSW Rules shall become operational requirements and shall be considered a part of the operating record of the facility. Any deviation from the permit and incorporated plans or other related documents associated with the permit is a violation of the MSW Rules.

Consistent with §330.127(3), the operating procedures and instructions outlined in this SOP will be followed and will be considered a part of the operating record of the facility. Landfill operations will be conducted in a professional manner by trained and qualified personnel who will be responsible for placement of waste in approved disposal cells utilizing equipment and procedures and standard industry practices to ensure protection of operating personnel, human health, and the environment.

Wherever the term “executive director” or “TCEQ” is used in this SOP, these terms shall refer to the executive director of the TCEQ or the designated representative of the TCEQ. References to information in the permit or permit application for this facility shall refer to the most current version of these documents, including any later approved amendments, modifications, or revisions.

If any questions arise regarding this SOP, City of Meadow Landfill personnel should consult with:

1. Texas Commission on Environmental Quality
   Municipal Solid Waste Section
   Austin, Texas
   Telephone: (512) 239-2335

2. Texas Commission on Environmental Quality, Region 2
   Lubbock, Texas
   Telephone: (806) 796-7092

3. Texas General Land Office
   Spill Reporting Telephone: 1-800-832-8224

4 OPERATIONAL PROCEDURES

4.1 Access Control

Public access to the waste fill area is controlled by the entrance facilities, which houses the Scale Operators, located in the northwestern portion of the facility. The site entrance facilities are staffed during hours of operation. The Scale Operators control access and monitor all vehicles entering and exiting the site.

4.1.1 Site Security

Site security measures are designed to prevent unauthorized persons from entering the site, to protect the facility and its equipment from possible damage caused by trespassers, and to prevent disruption of facility operations caused by unauthorized site entry.

Unauthorized access to the site is minimized by controlling access with perimeter fencing (minimum 4-foot-high, three-strand barbed wire fences), and gated entrance. The access control plan is provided to prevent the entry of livestock, to protect the public from exposure to potential health and safety hazards, and to discourage unauthorized entry or uncontrolled disposal of solid waste or hazardous materials. Access controls (fencing and gates) will be inspected weekly and documented in the Site Operating Record. Maintenance will be performed on the fencing and gates as necessary.

In the event of a breach of the access controls (e.g., a portion of a fence is impacted in a way that it no longer prevents access to the site), the TCEQ Regional Office and any local pollution agency with jurisdiction that has requested to be notified will be notified within 24 hours of detection of the breach. The breached area will be temporarily repaired within 24 hours of detection and will be permanently repaired by the time specified to the TCEQ Regional Office when it was reported in the initial breach report. In this case, the TCEQ Regional Office will also be notified when the permanent repair is completed. If a permanent repair can be made within 8 hours of detection, no notification to the TCEQ Regional Office is required. Temporary repairs may consist of a barbed wire fence, a 3-foot-high earthen berm, construction equipment (e.g., bulldozers, dumptrucks, etc.) blocking the breach, a security guard posted in the area of the breach or other barriers.

reducing traffic at the MSW working face. The Citizens Convenience Center is located over an impervious area. Citizens will be directed to the Convenience Center by site personnel at the entrance facility. Signs will be posted to assist citizens traveling to the Convenience Center. Waste material is offloaded from the small-vehicles to roll-off containers. The size of the roll-off containers will range between 20 and 40 cubic yards. The site then hauls the roll-off containers periodically to the MSW working face for disposal. The Citizens Convenience Center will not accept sharps. The maximum amount of waste stored at the Convenience Center is 200 cubic yards. The roll-off containers will be emptied at least at the end of each day the site is open or more frequently if needed. Storage for recycling may also occur in this area including electronics, whole tires, and white goods and other non-putrescible recyclables. Recyclable materials will be placed on the ground, palletized, or in containers or bins at the Citizens Convenience Center as not to impede citizen traffic accessing the rolloff containers used for waste disposal. Individual areas for recyclable materials storage are not designated in the plans, although all storage of recyclables (with exception of soil and rock stockpiled and used in landfill operations) will be confined to the area designated as the Citizens Convenience Center on Drawing I/IIA.9.

- Liquid Waste Bulking Facility. The liquid waste bulking facility area will accept liquid wastes as outlined in Appendix IVD.

4.2.2 Waste Excluded from Disposal at the Site

The following wastes are specifically excluded from disposal at the site:

- Liquid wastes that do not pass the paint filter test, except as allowed under Section 4.20.1 of this SOP
- Waste classified as hazardous by the TCEQ (refer to Section 6 for more information)
- Grease trap wastes, except as allowed under Section 4.20.1 of this SOP
- Waste prohibited by the TCEQ (see 30 TAC §330.15(e)) and unauthorized wastes (prohibited waste and unauthorized waste are used interchangeably)

4.2.3 Waste Unloading Procedures

Scale Operators, Equipment Operators, Laborers, and Spotters will monitor the incoming waste. The combined efforts of the trained landfill staff will assure that each load of waste disposed at the landfill is inspected per Title 30 TAC §330.127(5)(A). Scale Operators control site access and monitor incoming vehicles for unauthorized or prohibited wastes by (1) receiving manifests and other shipping documents, (2) recording incoming waste loads, and (3) interviewing the driver, if necessary. Any nonconforming issues will be reported to the Operations Manager or his designee. If the non-conforming issues involve Special or Industrial wastes, the Operations Manager or his designee will review Sections 4.20 and 6.2 of the SOP to verify that all requirements for acceptance of Special and Industrial waste have been met before the material is accepted for disposal. The procedures for handling prohibited waste that is not discovered until after it is unloaded are discussed in Section 6.2.

Equipment Operators, Spotters, Laborers, or other field personnel will be present at all areas where waste is being unloaded to monitor unloading of waste. These personnel 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 be trained to

4.7 Landfill Markers and Benchmark

Landfill markers will be installed to clearly mark significant features as described in §330.143(b). The markers will be steel, plastic, or wooden posts (or other TCEQ-approved material) and will extend at least 6 feet above the ground surface. The markers will not be obscured by vegetation and will be placed in sufficient numbers to clearly show the required boundaries. Markers will be installed with an offset where markers otherwise would not be visible. Markers that are removed or destroyed will be replaced within 15 days of their removal or destruction. Landfill markers will be inspected monthly to ensure they are installed and maintained in accordance with the requirements of this SOP and will be maintained and repaired if necessary. Refer to Section 4.23 of this SOP for site inspection and maintenance schedule. Inspection results and repairs will be documented in the Site Operating Record. Markers will be repainted if needed to retain visibility.

The landfill markers color scheme is listed below.

Landfill Markers

Marker	Color
Site Boundary	Black
Buffer Zone	Yellow
Easements and Right-of-Way	Green
Grid System	White
SLER/GLER	Red
Floodplain	Blue

The site boundary markers will be placed at each corner of the site and along each boundary line spaced no greater than 300 feet apart unless the area is inaccessible, in which case offset markers will be permissible. Fencing will be placed within these markers as required. The buffer zone markers will be placed along each buffer zone boundary at all corners and between corners at intervals of 300 feet unless the area is inaccessible, in which are offsets will be permissible.

The easement and right-of-way markers will be spaced no greater than 300 feet apart. The markers will be placed along the centerline of an easement and along the boundary of a right-of-way at each corner within the site and at the intersection of the permit boundary.

The landfill grid is based on the state plane coordinate system. At a minimum, the grid system envisioned by this section will be established in the area that will receive waste over the next three year period. The landfill grid system markers will be spaced no greater than 100 feet apart measured along perpendicular lines. Intermediate markers will be installed in the case where markers cannot be seen from opposite boundaries. The grid system markers will be maintained during the active life of the site. Placement of the landfill grid system markers may be made along a buffer zone boundary.

The SLER/GLER markers locations will be reported in the respective SLER and GLER submitted to the TCEQ and will be placed so that all areas for which a SLER/GLER has been submitted and approved by the TCEQ are readily determinable. Such markers are to provide site workers with immediate knowledge of the extent of approved disposal areas. These markers will be located so that they are not destroyed during operations ~~unless~~until operations extend into the next ~~SLER/GLER~~constructed area. The location of these markers will be tied into the landfill grid system. SLER/GLER markers will not be placed inside the ~~evaluated~~constructed areas.

Flood protection markers will be installed for areas within the facility that are within the 100-year floodplain. The areas subject to flooding will be clearly marked by means of permanent posts not more than 300 feet apart or closer, if necessary, to retain visual continuity.

A permanent benchmark has been established at the site, as shown in Parts I/II, Appendix I/IIA, Drawing I/IIA.1 – General Site Plan. The benchmark elevation has been surveyed from a known United States Coast and Geodetic Survey benchmark or other reliable benchmark. The benchmark is a bronze survey marker set in concrete and stamped with an elevation and survey date.

4.8 Control of Waste Spilled on Route to the Site

The Operations Manager or his designee will take steps to encourage vehicles hauling waste to the working face arrive on-site with a tarpaulin, net, or other means to properly secure the load. The adequacy of covers or containment of incoming wastes will be checked at the facility entrance. The Scale House Attendant will visually inspect each vehicle entering the site to verify that the load is secured. A sign will be posted at the entrance indicating that vehicles shall be covered (or secured) or an additional fee will be charged. Vehicles attempting to enter the site with unsecured loads will be documented and the list can be provided to law enforcement officials, if necessary. An additional fee will be demanded from unsecured vehicles.

The Operations Manager or his designee will be responsible for the cleanup of waste materials (e.g., solid waste material that has left the vehicle) along and within the right-of-way of all public access roads serving the site for a distance of two miles in either direction from the entrance to the site. Cleanup for the spilled solid waste materials will be performed at least once per day that the site is open for waste acceptance. Laborers performing litter and spilled solid waste materials collection will be required to wear appropriate safety equipment. A log shall be maintained to document the date and time the roads are checked and whether litter was observed and when it was collected.

The Operations Manager or his designee will consult with TxDOT officials (or other applicable local agencies with maintenance authority over the roads) concerning cleanup of state highways and right-of-ways consistent with §330.145. The TxDOT

The Operations Manager or his designee will evaluate the perimeter of the site on days when the site is open for waste acceptance to assess the performance of site operations to control odors.

4.11 Disease Vector Control

Facility personnel will control on-site populations of vectors such as an insect, snake, rodent, birds, or animal capable of mechanically or biologically transferring a pathogen from one organism to another. The primary means of control will be to prevent, inhibit, or deter vectors from coming into contact with deposited waste through proper waste compaction and daily cover application. Waste deposited at a working face area will be promptly compacted in accordance with Section 4.17. Daily cover and/or ADC will be applied at the end of each operating day in accordance with Section 4.18.2. A schedule of inspections is provided in Section 4.23 (refer to daily cover item).

Documentation of these inspections will be maintained in the Site Operating Record. If site inspections identify the need for additional vector controls, the site will implement a control program by contracting with a licensed commercial pesticide applicator, or other qualified pest control specialist to perform the following services:

1. Develop a pest management program for the vectors identified.
2. Implement the additional vector management practices.
3. Assist in the development of vector specific awareness training materials for site personnel.
4. Assist the site in distributing these training materials and providing any necessary training activities on vector awareness and control for site personnel.

The site has a bird abatement program that incorporates the use of pyrotechnic devices (if permissible under the local conditions), or an alternative bird abatement program, to control birds at the active working face area. Bird abatement programs used in lieu of pyrotechnics (as set forth in this application) will be approved by the executive director prior to implementation. The most recent revision of the bird abatement plan will be maintained in the Site Operating Record.

4.12 Maintenance of Site Access

The facility will install a paved entrance road at CR 250. In addition, the landfill access roads are constructed with a crushed-stone surface or similar material surface to provide for all weather access area from the unloading areas to public access roads (i.e., mud on vehicles will “spin off” on the access roads within the landfill before the vehicle returns to the public access road). During wet weather conditions, the Operations Manager or his designee will routinely inspect the site species. If endangered or threatened species are encountered during site operations, Texas Parks and Wildlife and U.S. Fish and Wildlife Department will be notified.

4.15 Control of Landfill Gas

The control and monitoring of landfill gas for the City of Meadow Landfill will be in accordance with the Landfill Gas Management Plan (Part III, Appendix III I). The Landfill Gas Management Plan was developed in accordance with §330.371 and provides for required reports and other submittals to be included in the Site Operating Record and submitted to the Executive Director (refer to Section 4.10 for additional information).

As noted in the Landfill Gas (LFG) Management Plan, monitoring for the presence of methane gas at the site will be conducted on a quarterly basis. In particular, the LFG monitoring probes will be monitored for the possibility of subsurface perimeter methane concentrations exceeding the lower explosive limit (LEL). Additionally, on-site structures will be checked to ensure that methane concentrations do not exceed 25 percent of the LEL. The allowable limits and details of gas recovery are more fully described in the Landfill Gas Management Plan.

Monitoring for combustible gas concentrations will be performed quarterly within all site structures and at the LFG monitoring probes. Required reports and other submittals will be included in the Site Operating Record and submitted to the executive director. In the event that methane levels that exceed allowable limits are detected (25% of the LEL for methane in facility structures or 100% of the LEL at LFG monitoring probes), the TCEQ and other parties identified in the Landfill Gas Management Plan will be notified and steps will be implemented to protect human health, in accordance with the contingency plan presented in the Landfill Gas Management Plan. Documentation of the LFG measurements and of the protective measures implemented will be placed in the Site Operating Record within seven (7) days. A remediation plan for any methane gas exceedances as described in the Landfill Gas Management Plan will be implemented within 60 days of the methane detection. This remediation plan will be submitted to TCEQ to describe the proposed remediation activities.

4.16 Treatment of Oil, Gas, and Water Wells

~~There are no known water wells or oil wells (existing or abandoned) on the site.~~ Existing and abandoned onsite oil, gas and water wells are discussed in Parts I/II Section 2.5 and Part III, Appendix IIIG, Section 2.5 and their locations are plotted on Parts I/II Figure I/II-4.3 and Appendix IIIG figures IIIG-A-8 and IIIG-A-9. Any water wells located within the limits of waste footprint or within the perimeter groundwater monitoring system will be plugged and abandoned prior to development of the landfill expansion area waste disposal cells. If a water well is proposed in the future, a permit modification will be submitted to the TCEQ to meet the requirements of §330.161. Any additional wells encountered will be plugged in accordance with all applicable rules and regulations of the TCEQ, the Railroad Commission of Texas, or other applicable State agencies.

Therefore, if an abandoned oil, gas, or water well is located, the Operations Manager will provide written notification to the TCEQ's Executive Director of their location within 30 days after discovery during the course of facility development. If any wells are encountered, they will be exposed, the casing cut to a minimum of 2 feet below the excavation, and the well capped and plugged in accordance with all applicable rules and regulations of the TCEQ, the Railroad Commission of Texas, or other applicable state agency.

The Operations Manager or his designee will provide written notification to the Executive Director of the location of any and all existing or abandoned water wells within the facility upon discovery during site development. Within 30 days of such a discovery, the Operations Manager or his designee will provide written notification and certification to the Executive Director of the TCEQ that all such wells have been capped, plugged, and closed in accordance with all applicable rules and regulations of the TCEQ or other applicable state agency. If a water well is proposed in the future, a permit modification will be submitted to the TCEQ to meet the requirements of §330.161. Water wells that will be used to supply the facility may remain in use provided they are not affected by landfill operations.

For crude oil or natural gas wells, or other wells associated with mineral recovery that are under the jurisdiction of the Railroad Commission of Texas, within 30 days after the plugging of any such well, the Operations Manager will provide the Executive Director of the TCEQ with written certification that all such wells have been properly capped, plugged, and closed in accordance with all applicable rules and regulations of the Railroad Commission of Texas.

A copy of the well plugging report to be submitted to the appropriate state agency will also be submitted to the executive director of the TCEQ within 30 days after the well has been plugged. Plugging reports for former onsite oil and gas wells are provided in Part III, Appendix IIIG-A.

In the event that an abandoned well causes a change to the liner installation plan, a permit modification will be submitted to the Executive Director in accordance with §330.131(d).

4.17 Compaction of Solid Waste

Compaction of incoming waste facilitates efficient use of available space, minimizes settlement and consolidation, and promotes proper application of daily, intermediate, and final cover. Landfill compactor(s) or similar equipment will be used to compact waste at City of Meadow Landfill. Unless otherwise documented in the Site Operating Record, the Operations Manager or his designee will instruct the Equipment Operators to spread waste in lifts that are approximately two feet thick. The compactor will typically make two to four passes to compact the waste. A pass is defined as one direction of travel. The Equipment Operators will be trained to determine whether the compaction equipment is functioning as designed to ensure

2. A special waste arrives and the waste material does not match the description on the waste manifest or other shipping document.
3. A special waste arrives and the waste differs from the approved waste based upon QA/QC review or other monitoring.
4. The volume of the waste is not consistent with the information on the shipping documents.

The Scale Operators, Operations Manager, Special Waste Analyst, or Environmental Manager will attempt to resolve any waste discrepancies. If the discrepancy can be resolved, the waste may be accepted and the discrepancy form will be filed to document the resolution of the discrepancy in the Site Operating Record. If the discrepancy cannot be resolved, the waste shipment will be rejected and a discrepancy form prepared and filed for the rejected waste shipment.

In addition, the special wastes identified in Sections 4.20.1 through 4.20.7 may be accepted at the facility without prior written authorization in accordance with §330.171(c).

4.20.1 Sludges

Sludges, grease trap waste, grit trap waste or liquid waste from municipal sources will be accepted if the material has been treated or processed and has passed the paint filter test and is certified to contain no free liquid, as prescribed in §330.171(c)(7). The material will be required to have passed a paint filter test, as documented on the Generator Waste Profile, prior to disposal at the working face of the landfill.

4.20.2 Dead Animals

The facility may receive dead animals or slaughterhouse wastes. Dead animals and slaughterhouse wastes will be buried at the working face and covered with a minimum of 3 feet of other solid waste or a minimum of 2 feet of soil immediately upon receipt. Additional waste or soil will be added over the dead animals if objectionable odors are created by the dead animals or slaughterhouse wastes.

4.20.3 Empty Containers

Empty containers, which have been used for pesticides, herbicides, fungicides, or rodenticides will be accepted and disposed of in accordance with Title 30 TAC §330.171(c)(5) and as outlined below. These containers will not be salvaged, unless via a state-sponsored recycling program.

1. These containers may be disposed of at the landfill working face provided that:
   (i) the containers are triple rinsed prior to receipt at the site; and

4.24 Visual Screening of Daily Operations

The facility will continue to operate the landfill in a manner that will provide the maximum screening practical within the requirements of the design. Existing vegetation in the buffer zones shall be maintained, where possible, to provide visual screening. As shown on Drawing I/IIA.14 (Access Control Plan) in Appendix I/IIA of Parts I/II, existing trees and vegetation provide a visual buffer for the site. The executive director may also require visual screening of deposited waste.

During below ground disposal operations, the landfill will not require visual screening of deposited waste. As the landfill is developed above ground, the landfill will construct final cover as the landfill reaches final contours. As the site is developed, the visual effect of the disposal activities will be minimized through the use of screening provided by fencing, planted vegetation, and natural vegetation located within the buffer zone.

4.25 Waste Relocation Plan

4.25.1 Introduction

Existing waste from the trench fill landfill will be excavated and relocated to an approved Subtitle D lined area to allow for future development of the landfill. An excavator and dump truck will be used to excavate the waste from the waste relocation area. The excavated waste will be transported to the working face for disposal. The following sections detail the waste removal procedures, waste inspection procedures, odor control, and notification and reporting requirements.

4.25.2 Waste Removal Procedures

The waste removal areas will be subject to the same requirements as the landfill's working face area. The waste removal area will be covered with daily cover (soil or an approved ADC), consistent with the requirements listed in Section 4.18.2.

It is anticipated that waste removal activities will occur in periodic events. If no waste is to be relocated for a period of 30 days or more; then, intermediate cover will be applied to the waste removal area, consistent with the requirements listed in Section 4.18.3. In addition, a contaminated water containment berm and stormwater diversion berm will be used in the waste removal area, consistent with the Stormwater Management Plan included in Appendix IIIC.

In summary, the facility will manage surface waters in the waste removal area of the landfill to minimize the amount of stormwater that will come in contact with waste. Contaminated water will be managed consistent with Appendix IIIC – Leachate and Contaminated Water Management Plan. Surface water will be controlled through the use of diversion berms, stormwater diversion ditches, and sumps. To promote runoff and prevent ponding, the operational cover will be graded and maintained. Only soil daily cover will be used during wet weather to ensure that washout of waste does not occur. Contaminated water will be contained by the containment berm at the waste removal area, as shown in Appendix IIIC, Appendix IIIC-C. At no time will contaminated water be allowed to discharge into waters of the United States. Storage and disposal of contaminated water is discussed in Appendix IIIC.

4.25.3 Waste Inspection Procedures

Equipment Operators or other field personnel will be present at the waste removal area to monitor waste removal activities. These personnel will be familiar with the rules and regulations governing the various types of waste that can or cannot be relocated to the working face and will be trained to identify prohibited wastes before being assigned to this task (refer to Part IV – Section 2.2 for training procedures). The personnel will also be trained and have a basic understanding of both industrial and hazardous waste and their transportation and disposal requirements. The spotters and equipment operators have the authority and responsibility to segregate prohibited wastes. In the event that prohibited waste is found, the Spotter or Equipment Operator will notify the Operations Manager and waste removal activities will be discontinued. At this point the Operations Manager or other site personnel will notify the TCEQ within 24 hours and seek guidance on how to properly dispose of the waste.

4.25.4 Odor Control

The following procedures will be implemented if odors become an issue during waste relocation activities.

- Minimize the size of the active waste removal area.
- Prevent ponded water, consistent with the procedures outlined in Part IV – SOP.
- Misters and chemical deodorizers when other controls do not reduce or eliminate significant odors.

The Operations Manager or his designee will evaluate the waste removal area on a daily basis to access the performance of the odor control measures implemented.

4.25.5 Foundation Inspection and Preparation

After waste removal, the excavated area will be inspected by a geotechnical engineer to confirm no waste is present, and the foundation soils are suitable for construction. It is reasonably anticipated that the soils and foundation conditions will be similar to those encountered across the site during cell construction. Construction specifications will be incorporated into the construction plans that address foundation inspection and preparation as described in Appendix IIIE, Section 4.3 – Landfill Excavation. The cell foundations within the historic fill areas will be constructed consistent with the requirements set forth in Appendix IIID – Liner Quality Control Plan and Appendix IIIE – Geotechnical Report.

6.2 Load Inspection Procedure

As noted in Section 4.2, Scale Operators, Equipment Operators, Spotters, and Laborers will monitor the incoming waste. Additionally, each load entering the landfill for disposal will be observed by the equipment operators at the working face during unloading and placement of waste into the active landfill. Should any indication of prohibited waste be detected, the Operations Manager, or his designee, will conduct a thorough evaluation of the load. The driver will be directed to a load inspection area located at or near the working face where the load will be discharged from the vehicle. The inspector will break up the waste pile and inspect the material for any prohibited waste.

Prohibited waste that is not discovered until after it is unloaded shall be promptly returned to the vehicle that delivered the waste. That party shall be responsible for the proper disposal of this rejected waste at a permitted facility. In the event the unauthorized waste is not discovered until after the vehicle that delivered it is gone, the waste shall be segregated and controlled to the extent possible (e.g., the unauthorized waste will be covered with soil and/or ADC and no additional filling will occur over the unauthorized waste until it is properly disposed of). Survey stakes or similar markings will be placed around the perimeter of the area that contains the unauthorized waste so that it is clear where the unauthorized waste is located. Alternately, the unauthorized waste may be segregated by placing the unauthorized waste in a roll-off or similar container.

An effort shall first be made to identify the entity that deposited the prohibited waste and have them return to the site and properly dispose of the waste. In the event that identification is not possible, City of Meadow Landfill will notify the TCEQ and seek guidance on how properly to dispose of the waste within 24 hours.

In addition to inspecting suspicious loads, random inspections will be undertaken. Random inspections will be supervised by the Operations Manager or designee. Staff (including Operations Manager, Operators, Equipment Operators and Laborers, and the Special Waste Analyst) conducting random inspections will receive training on the random inspection procedures in this plan and instruction on the recognition of regulated hazardous waste and PCB waste. Random inspections will be conducted at or near the working face to facilitate disposal of authorized waste after random inspections have been completed.

Except as provided herein, all waste loads will be subject to random inspections. At least one vehicle per day, that the site is in operation, shall be scheduled for a random inspection. The Operations Manager shall determine the procedure for the random selection of the waste hauling vehicle that will be selected. The following criteria shall be utilized in the development of the selection procedure:

- The random selection procedure shall objectively select a waste hauling vehicle each day that the facility accepts waste.

waste with at least six inches of soil cover. A water truck, bulldozer, or other equipment will be used to extinguish the burning waste load. The waste will be covered with an adequate amount of soil to ensure it is extinguished. The load will be inspected by the Operations Manager, or his designee, before disposal. During inspection, if the soil is removed, which would allow oxygen to contact the waste, the load will be observed for hot spots or flare-ups. No smoldering or smoking waste will be placed in the working face area for permanent burial until all hot spots or flare-ups have been extinguished.

If it is not possible to move a burning vehicle away from fuel storage or exposed waste, the local fire department shall be called at 911, if necessary. While awaiting the arrival of the local fire department, all reasonable measures should be employed to extinguish the fire and prevent it from spreading beyond the vehicle.

7.3 Accidental Fires

Open burning of waste at the site is not permissible per Title 30 TAC §330.15(d). All fires will be extinguished using the protocols stated in this section. Proper compaction and earthen cover will be used to minimize the potential for accidental fires.

7.4 Preventive Procedures

Fuel spills will be controlled and contained immediately. Containment will include but not limited to turning off the valve or connection causing the leak (if possible), using a backhoe or scraper to berm around the spill (if sufficient to require berming), covering with absorbent or soil to prevent migration, or other means to prevent the unnecessary migration of fuel from the area of the spill. Soil contaminated with spilled fuel will be excavated and, if authorized by TCEQ, disposed of at the active face. Contaminated soils may be excavated using a shovel for small areas or with heavy equipment as appropriate. Onsite brush and vegetation will be controlled through mowing at least annually to reduce the possibility of brush fires from spreading to the landfill or off-site.

The compaction of the waste as it is disposed, and the subsequent covering with daily soil cover or ADC, will reduce the potential for fires by reducing voids within the waste and the amount of oxygen available for combustion. The daily cover or ADC serves as a physical, non-combustible barrier to a fire.

In addition, equipment that is used at the working face will be routinely cleaned through the use of high-pressure water or steam cleaners. The high-pressure water or steam cleaning will remove combustible waste and caked material which can cause equipment overheating and increase fire potential. The amount of water used to clean the equipment will be minimized.

Each piece of heavy equipment at the site listed in Table 3.1 will carry a portable fire extinguisher. Fire extinguishers will be inspected and certified at least annually. Once any extinguisher has been used, it will be refilled or replaced as soon as his designee. Contaminated water will be managed as specified in the Leachate and Contaminated Water Management Plan. This option is applicable to the entire working face.

In each case listed above, after the Operations Manager or his designee confirms that the fire has been extinguished, waste filling operations in that area may resume. In the event that the fire cannot be controlled using the methods above, the local fire department will be called at 911 (refer to Section 7.11 for additional information regarding contacting the fire department).

7.7.3 Water Trucks or Storage Tank Requirements

A water source (either a water truck(s) or storage tank(s)) equipped with a water cannon will be maintained in a readily accessible location to assist the fighting of any potential working face fire. The water truck or storage tank may be used in the support of other landfill activities (e.g., dust suppression, compaction of earth fills).

Maximum Working Face Size (width by length)	No. of Water Trucks or Tanks[1] (minimum capacity of 2,000 gallons)
30 feet by 30 feet (or 900 sf)[2]	N/A[2]
150 feet by 175 feet (or 26,250 sf)	1 (or 2,000 gallons)
250 feet by 325 feet (or 81,250 sf)	1 (or 2,000 gallons)
375 feet by 450 feet (or 168,750 sf)	2 (or 4,000 gallons)
525 feet by 600 feet (or 315,000 sf)	3 (or 6,000 gallons)

[1] The tank or truck size will be based on the required volume. For example, a water truck that has a 4,000-gallon tank is acceptable for a working face size of 375 by 450 feet.

[2] When the facility accepts less than 40 tons per day, the maximum working face area will be 30 feet by 30 feet (900 square feet) and a stockpile of earthen material adequately sized to cover the working face with 6 inches of soil (17 cubic yards) will be maintained immediately adjacent to the working face.

The on-site stormwater detention ponds may also be used as a source of water for fire control. A minimum of 2,000 gallons of water will be available for firefighting purposes. Also, during periods of freezing temperatures measures will be taken to ensure that the tank(s) remain operational. Additionally, Republic may contract with the City of Meadow for water obtained from the fire hydrant system installed and operated within the city or installed at the site (future); obtain water from an adjacent landowner existing well; or install a dedicated potable or non-potable well in the future for operational water.

7.7.4 Soil Stockpile Requirements

A soil stockpile will be maintained within 1,000 feet of each working face. The stockpile will be used to (1) smother burning waste material at the working face or (2) placed over burning waste material that has been cut out of the working face. The stockpile will be sized to cover at least 25 percent of the size of each working face. In addition, enough earthen material (i.e., soil stockpiles and soil within borrow areas) will be maintained on-site to cover the entire working face within 24 hours. The earthen material requirements are listed in the following table.

Number of Feet Traveled for Truck (D_{TR}) in t:

$D_{TR} = \nu_A \times t$ = 1,056 fpm x 60 min = 63,360 ft

Distance of Stockpile from Working Face (D_S):

$D_s = (D_{TR} / (L / N_{TR}))$ = 63,360 ft / (25 loads/3 trucks) = 2,534 ft (round trip)
D_s = 2,534 ft / 2 = 1,267 ft

Therefore, in this case a 486 cy stockpile could be maintained within 1,267 feet of the working face. However, a minimum distance of 1,000 feet is specified.

Largest stockpile to be located within 1,000 feet for 25% coverage (refer to the table in Section 7.7.4).

Volume of Cover = V_c = 1,458 cy

Assume:

Truck Capacity = TR_c = 20 cy
Number of Trucks = N_{TR} = 3
Average Truck Velocity = ν_A = 12 mph = 1,056 fpm
Time to Cover Working Face = t = 60 min

Total Number of Loads (L):

$L = V_c / TR_c$ = 1,458 cy / 20 cy = 73 loads

Number of Feet Traveled for Truck (D_{TR}) in t:

$D_{TR} = \nu_A \times t$ = 1,056 fpm x 60 min = 63,360 ft

Distance of Stockpile from Working Face (D_S):

$D_s = (D_{TR} / (L / N_{TR}))$ = 63,360 ft / (73 loads/3 trucks) = 2,604 ft (round trip)
D_s = 2,604 ft / 2 = 1,302 ft

Therefore, in this case a 1,458 cy stockpile could be maintained within 1,302 feet of the working face. However, a minimum distance of 1,000 feet is specified. The calculations above conservatively assume an average truck velocity of 12 mph, in part to accommodate the loading and unloading of the trucks during soil transport. Actual average velocities during an emergency fire event would be greater.

A readily accessible water source and a soil stockpile within 1,000 feet will facilitate a quick response to fires at the working face. Any working face fire will be controlled quickly so that it will not spread. Because of the quick response provided by this plan, working face fires are not expected to encompass more than 10 percent to 15 percent of the working face. Therefore, by maintaining a soil stockpile within 1,000 feet of the working face, which is large enough to cover 25 percent of the working face, enough soil will be available to cover the area with burning waste, including a significant contingency.

Table 9.1
Record Keeping Requirements

Item	Rule Citation
All location restriction demonstrations	§330.125(b)(1)
Inspection logs and records, training procedures, and notification procedures relating to excluding the receipt of prohibited waste	§330.125(b)(2)
Inspection records and training procedures relating to fire prevention and site safety	§330.125(c)
All inspection documentation noted on Table 4.23 – Site Inspection and Maintenance List	§330.125(b)(12)
Fire Occurrence Notices	§330.129
Personnel training records and operator licenses. Training records (including operator licenses) for current employees will be kept for at least three years from the date the employee last worked at the facility.	§330.125(e), §330.125(f), §335.586(d), and §335.586(e)
Landfill Gas Management Plan	§330.159
Cover Application Logs (including documentation of soil stockpile and earthen material as noted in Section 4.18)	§330.165(h)
Results from gas monitoring events and any remediation plans relating to explosive and other gases	§330.125(b)(3)
Unit design documentation for the placement of leachate or gas condensate in the landfill	§330.125(b)(4)
Bird Abatement Plan	§330.151
Documentation of Vector Inspections	§330.151
Leachate sump level measurements	§330.125(b)(12)
Leachate disposal records	§330.125(b)(12)
All inspection logs and reports and all demonstrations, certifications, findings, monitoring, testing, and analytical data relating to groundwater monitoring and corrective action	§330.125(b)(5)
Closure plans and monitoring, testing, or analytical data relating to postclosure requirements	§330.125(b)(6)
Postclosure care plans and monitoring, testing, or analytical data relating to postclosure requirements	§330.125(b)(6)
Cost estimates and financial assurance documentation relating to financial assurance for closure and postclosure care	§330.125(b)(7)
Copies of all correspondence and responses relating to the operation of the facility, modifications to the permit, approvals, and other matters pertaining to technical assistance.	§330.125(b)(9)
Any and all documents, manifests, scale tickets, generator waste profile sheets, etc., involving special waste	§330.125(b)(10) §330.171(c)(3)(B)
A record of each unauthorized material removal event	§330.133(b)
Annual waste acceptance rate documentation including Quarterly and Annual Solid Waste Summary Reports required by §330.675	§330.125(h)
A record of alternate operations hours	§330.135(d)
Access control breach and repair notices	§330.131
Special Waste Operating Plan Compliance Documentation	§330.145(b)(11)
Special Waste Contingency Plan Compliance Documentation	§330.145(b)(11)
Other documents as specified by the approved permit or by the Executive Director of the TCEQ	§330.125(b)(12)
Monthly Marker Inspection Reports	§330.143(a)
For any spray-applied alternative daily cover (ADC) material, records of the application rate and total amount of ADC applied to the working face on those days in which ADC is applied.	§330.125(b)(11)
The Executive Director may set alternative schedules for recordkeeping and notification requirements ~~if contaminants migrate off-site as indicated by groundwater sampling~~, except for notification requirements for any proposed lateral expansion located within a six-mile radius of any airport runway end used by turbojet or piston-type aircraft or notification relating to landowners whose property overlies any part of the plume of contamination, if contaminants migrate off-site as indicated by groundwater sampling.	§330.125(g)

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PART IV – SITE OPERATING PLAN
APPENDIX IVB
ALTERNATIVE DAILY COVER OPERATING PLAN

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

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TBPE Registration No. F-3727
6420 Southwest Blvd., Suite 206
Fort Worth, Texas 76109
817-735-9770

WCG Project No. 0120-809-11-06

This document is intended for permitting purposes only.

2 MATERIAL CHARACTERISTICS

2.1 Description of ADC Material

Synthetic tarp ADC material may be used at the site. Synthetic tarps will consist of a high density woven polyethylene coated fabric. Panels of the fabric are heat welded together for the desired width. A series of high tensile strength nylon web straps are sewn around the perimeter of the synthetic tarps for added strength. The selected ADC tarp will have a minimum thickness of 20 mils (or approximately 0.02 inches). Typical specifications and an MSDS example for the types of synthetic tarps to be used as ADC are included in Appendix IVB-1.

2.2 Chemical Characteristics

Chemical characteristics of the ADC materials are included in Appendix IVB-1. The ADC materials are not reactive, ignitable, or corrosive under the expected conditions (e.g., high temperature, intense sunlight).

3 OPERATIONAL METHODS

This section discusses the operational procedures that will be used to employ the approved ADC material. Site personnel will verify that the waste fill area has been covered at the completion of each working day.

The synthetic tarp ADC will be applied by hand or mechanical means at the close of each day. This will prevent any undue stress on the material. Once the tarp is in place, it will be anchored at each corner and along the edges. If reusable tarps are used, the tarps will be removed within 24 hours of their application and prior to waste placement. If sacrificial tarps are utilized, they shall be subsequently covered with new waste or daily cover within 24 hours of their application. Tarps may be used in combination with soil to provide complete coverage of the working face. Tarps will overlap each other on the active face perimeter to ensure complete coverage. Upslope tarps will lap over down slope tarps in a shingle-type fashion to minimize stormwater infiltration into the underlying waste. When the ADC is not in use, it will be rolled up and stored in an area (within the working face containment berm) that it will not come in contact with any vehicle or equipment traffic.

Tarps will be inspected each day that they are used for ADC. Inspections will include looking for holes, tears, and the overall condition of the tarp. Holes larger than 4 inches in size and tears longer than 6 inches will be repaired with patches. A tarp will no longer be utilized (and will be replaced) once the overall condition reduces the effectiveness of the tarp to control vectors, fires, odors, and windblown waste.

APPENDIX IVB-1

SYNTHETIC TARPS

STATE OF TEXAS
KYLE D. GOULD
106018
LICENSED
PROFESSIONAL ENGINEER

02/28/2025

Viaflex
Protecting Earth. Promoting Industry.

VIAFLEX INC.

MSDS Notice

SUBJECT: Viaflex Inc. products

IN REFERENCE TO: MSDS sheets

DATE: July 11, 2023

The film, sheeting, and tape accessories produced and/or distributed by Viaflex Inc. are not classified as hazardous chemicals under the US Department of Labor, Occupational Safety and Health Administration's (OSHA) 1910.1200 regulation. Our materials meet the OSHA definition of manufactured "articles" (1910.1200(c)) that will not expose users to hazardous chemicals under normal and expected conditions of use and are therefore exempt from all requirements of the regulation.

US Federal OSHA defines an "article" as follows at 29 CFR 1910.x1200 (c): Article means a manufactured item other than a fluid or particle: (i) which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which under normal conditions of use does not release more than very small quantities, e.g., minute or trace amounts of a hazardous chemical (as determined under paragraph (d) of this section), and does not pose a physical hazard or health risk to employees.

Viaflex will continue to provide technical product data sheets for each of our products, however, we will no longer provide MSDS or SDS sheets for products that are not classified as hazardous chemicals as outlined in the Global Harmonized System (GHS) standard.

For more information on OSHA Hazard Communication (29 CFR 1910.1200), visit www.osha.gov.

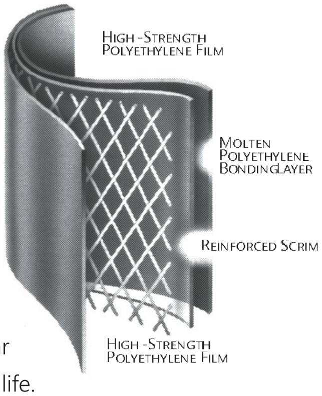
If you should have additional questions or concerns, please contact Viaflex at [redacted] or +1 (800) 635-3456.

DURA♦SKRIM® R20BV

FOUR-LAYER REINFORCED EXTRUSION LAMINATE - MEETS GRI-GM22

PRODUCT DESCRIPTION

DURA♦SKRIM® R20BV consist of two sheets of high-strength virgin polyethylene film laminated together with a third layer of molten polyethylene. The black outer layers contain carbon black to enhance outdoor life. A durable scrim reinforcement placed between these plies greatly enhances tear resistance and increases service life.



DURA♦SKRIM® R20BV is reinforced with a high strength scrim reinforcement laid in a diagonal pattern spaced 3/8" apart for uniform tear resistance in both machine and transverse directions with an additional machine direction scrim every 3" across the width for increased stability.

PRODUCT USE

DURA♦SKRIM® R20BV is used in more demanding applications requiring high tear and puncture resistance and is designed to withstand longer-term outdoor applications requiring up to 10 years of exposure depending upon geographical locations.

DURA♦SKRIM® R20BV is designed to meet the requirements of the Geosynthetics Research Institute; GRI-GM22 Standard Specification.

SIZE & PACKAGING

DURA♦SKRIM® R20BV is available in a variety of widths and fabricated panels up to 80,000 square feet. All panels are manufactured in a quality controlled environment and are accordion folded and tightly rolled on a heavy-duty core for ease of handling and time-saving installation.

Temporary Rain Shed Cover

PRODUCT	PART #
DURA♦SKRIM	R200BV

APPLICATIONS

Modular Tank Liners

Evaporation Covers

Remediation Liners

Earthen Liners

Interim Landfill Caps

Remediation Covers

Erosion Control Covers

DURA♦SKRIM® R20BV

FOUR-LAYER REINFORCED EXTRUSION LAMINATE - MEETS GRI-GM22

		DURA♦SKRIM R20BV			
		IMPERIAL		METRIC	
PROPERTIES	TEST METHOD	MINIMUM	TYPICAL	MINIMUM	TYPICAL
Appearance		Black/Black			
Thickness	ASTM D5199	17 Mil Average	20 Mil Nominal	0.43 mm Average	0.51 mm Nominal
Weight	ASTM D751	94 lbs/MSF	97 lbs/MSF	459 g/m^2	474 g/m^2
Construction		Extrusion laminated with scrim reinforcement			
[2] Grab Tensile	ASTM D7004	114 lbs	138 lbs	507 N	614 N
[2] Grab Tensile Elongation	ASTM D7004	15 %	17 %	15 %	17 %
[3] Tongue Tear	ASTM D5884	53 lbs	58 lbs	236 N	258 N
CBR Puncture Resistance	ASTM D6241	320 lbs	350 lbs	1423 N	1557 N
Mullen Burst	ASTM D751	130 psi	160 psi	896 kPa	1103 kPa
High Pressure OIT	ASTM D5885	1000 min	2600 min	1000 min	2600 min
WVTR	ASTM E96	N/A	0.009 grains/ft^2•hr	N/A	0.151 g/m^2•day
Perm Rating	ASTM E96	N/A	0.022 Perms	N/A	0.0145 g/m^2•day•mm Hg
Hydraulic Conductivity	ASTM E96	1.77x10^{-10} cm/sec			
Maximum Static Use Tempera-		180° F		82° C	
Minimum Static Use Tempera-		-70° F		-57° C	
Low Temperature Bend Test	ASTM D2136	-70° F			

[2] Tests are an average of primary reinforcement directions.
[3] Tests are an average of machine and transverse directions.

DURA♦SKRIM® R20BV consist of two sheets of high-strength virgin polyethylene film laminated together with a third layer of molten polyethylene. The black outer layers contain carbon black to enhance outdoor life. A durable scrim reinforcement placed between these plies greatly enhances tear resistance and increases service life. DURA♦SKRIM® R20BV is reinforced with a high strength scrim reinforcement laid in a diagonal pattern spaced 3/8" apart for uniform tear resistance in both machine and transverse directions with an additional machine direction scrim every 3" across the width for increased stability.

Scan QR Code to download technical data sheets.

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CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PART IV – SITE OPERATING PLAN
APPENDIX IVC
SPECIAL WASTE ACCEPTANCE PLAN

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

KYLE D. GOULD
106018

Prepared by

02/28/2025

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8 PERSONNEL TRAINING

Appropriate facility personnel will receive initial training on waste identification, screening, and management procedures. Refresher training will be provided to appropriate personnel on ~~a regular~~ an annual basis as set forth in Part IV, Section 6.4 – Training. The training will be conducted by either in-house staff or outside specialists familiar with proper waste management procedures and the requirements of this SWAP. Documentation of the training will be placed in the facility's Site Operating Record and personnel files.

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PART IV – SITE OPERATING PLAN
APPENDIX IVD
LIQUID WASTE BULKING FACILITY
OPERATING PLAN

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

KYLE D. GOULD
106018

02/28/2025

Prepared by

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KYLE D. GOULD
106018

02/28/2025

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1 INTRODUCTION (TITLE 30 TAC §330.201)

This Liquid Waste Bulking Facility Operating Plan has been prepared for the liquid waste bulking facility at the City of Meadow Landfill and contains the information required by Title 30 Texas Administrative Code (TAC) §330.201. This plan includes the following two options for ~~yard~~ liquid waste bulking. Either or both options may be utilized during site development.

- Option A – Bulking facility within future waste footprint - the liquid waste bulking facility will generally consist of a bulking agent storage area and a solidification area containing four separate mixing basins. The mixing basins will be constructed of concrete with secondary containment. Secondary containment consists of a geosynthetic clay liner beneath the mixing basins, containment of the 25-year, 24-hour storm event, and a 2-foot perimeter stormwater berm as an additional containment measure.

- Option B – Bulking facility within the existing waste footprint. The liquid waste bulking facility will be located within the waste footprint over a lined area. The liquid waste bulking facility will consist of a bulking agent storage area and a solidification area containing mixing/solidification tanks.

This operating plan includes provisions for facility management and facility operating personnel to meet the general and facility-specific requirements included in Subchapter E – Operational Standards for Municipal Solid Waste (MSW) Storage and Processing Units for the day-to-day operation of the facility. This operating plan will be retained onsite throughout the active life of the facility and until after certification of closure.

Since the liquid waste bulking facility will be located within the City of Meadow Landfill permit boundary, some requirements of Subchapter E are addressed in Part IV – SOP. Consistent with Title 30 TAC §330.201, this liquid waste bulking facility operating plan references the applicable section in the landfill SOP to minimize duplication and/or competing requirements. For example, the facility operating hours, sign requirements, and access road requirements listed in Sections 8.4, 8.5, and 8.7 of this plan all reference the landfill SOP. In addition, the waste acceptance procedures listed in Section 3 also reference the waste acceptance information listed in the landfill SOP and the facility Waste Acceptance Plan (WAP) included in Appendix IVA. The bulking facility will be operated within the parameters of the existing permit conditions (e.g., operating parameters listed in the existing SDP and SOP, waste acceptance rates, and traffic impact).

3 WASTE ACCEPTANCE AND ANALYSIS (TITLE 30 TAC §330.203 AND §330.205)

3.1 Properties and Characteristics of Waste (§330.203(a))

Typical liquid waste streams that will be accepted at the facility include, but are not limited to, sludges; septic tank pumpings (septic wastes); grease and grit trap wastes; Class 2 and 3 nonhazardous industrial wastes; Railroad Commission waste; wastes that are not classified as bulk liquids but do not pass the paint filter test; and other nonhazardous bulk liquids. These liquids will be transported to the facility by private or public haulers in vacuum trucks, tank trucks, and sealed containers. The liquids will originate from restaurants and food processing plants, car and truck washes, oil and gas related industrial operations, and other commercial and industrial facilities. Estimated volumes, processing and storage times for the above wastes are provided in the following table.

Waste Type	**Monthly Vol. (Gal)^{1,2}**	**Ave. Processing Time (Hrs)**	**Max. Storage Time (Hrs)**
Sludges	200k	24	168
Septic Waste	400k	24	72
Grease and Grit Trap Waste	300k	24	72
Class 2/3 Non-Haz Waste	300k	24	168
Railroad Commission Waste	500k	24	168
Other Liquid Wastes	500k	24	168

[1] Monthly volumes are estimates only and subject to change.

[2] The total volume shown in the table does not imply or impose limits of individual waste or total waste volumes.

As discussed in Section 4.20 of Part IV – SOP, special waste and industrial waste will be pre-characterized prior to acceptance of the waste material following the guidelines in Part IV – SOP, Section 4.20 and the WAP included in Appendix IVA.

As required by the SOP and WAP included in Appendix IVA, incoming liquid waste will be documented on a Special Waste Profile (SWP) Sheet. The pre-characterization by the generator will include analytical testing and/or process information as necessary to make the determination that the waste is nonhazardous. No waste material will be accepted at the site that is not pre-characterized or does not have the proper manifest(s). Regulated hazardous wastes that require authorization under Title 30 TAC Chapter 335 will not be accepted at the site.

General expected characteristics of the grease trap waste stream to be handled are:

Fats, oils and greases: 6 – 8%
Solids: 20 – 25%
Water: 65 – 75%
pH: 4.5 – 5.5
BOD_5/COD: 10,000 – 60,000 mg/l

Grit trap solids are dirt and sand, with occasional small amounts of large solids (e.g., gravel and rocks). The grit trap liquid fraction will likely contain some oil, normally in small quantities. This is petroleum oils from crankcase drippings, road oils, grease and oil washed from engines, and other similar sources. This liquid will normally have a low BOD_5 (Biological Oxygen Demand). Additionally some retail/commercial and industrial facilities have grit traps to collect sediment from floor washing activities.

Septic waste and portable toilet waste is typically composed of approximately 2 to 5 percent total solids with the remainder being water. BOD_5 and COD (Chemical Oxygen Demand) levels may be in the 3000-9000 mg/l range. Non-hazardous grease may be about 500 mg/l and the pH is in the range of 4.0 to 8.0.

The parameters listed above provide typical characteristics for the respective liquid waste. Parameters for the above waste streams are not limiting parameters that will impact or influence the design or operation of this liquid waste bulking facility. Liquid wastes that exhibit characteristics outside of the typical characteristic ranges may be accepted at the facility provided that they are reviewed and approved by site personnel prior to receipt. Wastes will be reviewed by the site's Special Waste Analyst and the Operations Manager or his designee to verify that the waste is not incompatible. In addition, Meadow Landfill, LLC will utilize the experience gained at this facility and others in verifying that wastes are not incompatible. In general, there are no incompatibilities with the diverse waste streams listed above. However, if a new or unique waste stream is introduced, the site may perform bench scale compatibility tests (e.g., pH, flammability, acid and base reaction, pit compatibility, etc.) on incoming wastes to verify that the wastes are not incompatible with other wastes or bulking agents. Bulking agents listed in Section 3.3 may be considered for use for solidifying any liquid wastes. Bulking agents are not limiting parameters that impact or influence the design or operation of this liquid waste bulking facility.

Documentation of the waste characterization process will be maintained at the facility in the Site Operating Record, as discussed in the SOP and WAP. Sampling and analysis completed will be done according to EPA-approved methods. Liquid wastes processed at the liquid waste bulking facility will be disposed of at the working face after the material is solidified. No other discharge of waste material will come from this facility.

3.2 Volume and Rate of Transfer (§330.203(b) and §330.205(a) and (b))

The solidification capacity, storage capacity, and maximum storage time for the yard waste bulking facility is summarized in the following table.

Criteria	Option ~~1~~A[2]	Option ~~2~~B[2]
Solidification Capacity Per Day	97,000 gallons	25,250 gallons
Storage Capacity	242,500 gallons	100,500 gallons
Maximum Storage Time	72 hours[1]	72 hours[1]

[1] Liquid wastes will be processed within 72 hours except certain liquid wastes as noted in Sections 5.1 and 8.10. Solidification of liquid waste being stored in the basins will be initiated within 24 hours.

[2] Capacity includes capacity in basin for liquid waste and bulking agents.

The City of Meadow Landfill will maintain documentation at the facility that all wastes leaving the liquid waste bulking facility for landfill disposal are being adequately managed by the site.

In the event of equipment failure or other operational breakdown expected to last longer than the allowable maximum storage time, acceptance of liquid waste will cease and any unprocessed liquid waste in the basins will be transported to another licensed or permitted facility.

Incoming loads of liquid waste will be inspected to verify that the contents and nature of the liquid waste is consistent with the Special Waste Profile. After the load has been determined to be acceptable, it will be directed to the solidification area for discharge into the solidification basins. Bulking agents will be added intermittently during the bulking process or once the solidification basin contains enough liquid waste. The bulking will be conducted in the solidification basin using an excavator or equivalent machinery to add and mix the bulking agent with the liquids. Bulking agents are listed in Section 3.3 and will be classified by the generator as being non-hazardous. The solidified liquid material must be able to pass a paint filter test, as described in EPA publication #SW-846, before it is transferred to the working face for disposal.

Operators at the liquid waste bulking facility will use radio communication with the working face operators prior to transporting loads of solidified liquids to ensure that all loads are disposed of in the proper manner. In the event the solidified liquid does not pass the paint filter test, additional bulking agents will be added and mixed until the desired solidification is achieved. Liquid waste as defined in Title 30 TAC §330.15(e)(6), except as allowed in §330.177, will not be disposed of at the landfill.

3.3 Bulking Agents

The bulking agent used in the liquid waste solidification process may be crushed cement/wood fiber wallboard, lime, fly ash, kiln dust, foundry dust, fines or dust from inert waste material, sawdust, wood chips, auto shredder fluff, agricultural by-products, soil, or other acceptable materials. All bulking agents will meet the waste acceptance limitations for disposal at the facility. Bulking agents will be stored on the all-weather surface area within secondary containment. The following is a brief description of selected bulking agents.

4 CONTAMINATED WATER MANAGEMENT (TITLE 30 TAC §330.207)

The City of Meadow Landfill will take the steps necessary to control and prevent the discharge of contaminated water from the liquid waste bulking facility. As noted in Part III – Site Development Plan, all liquids resulting from the operation of the City of Meadow Landfill will be disposed of in a manner that will not cause surface water or groundwater pollution. All water coming in contact with waste will be treated as contaminated water. Runon and runoff for the 25-year, 24-hour storm event will be controlled following the procedures set forth in the SDP. Surface water will be directed away from the mixing basins by site grading. The facility will be operated consistent with Title 30 TAC §330.15(h)(1)-(4) regarding discharge of solid wastes or pollutants into waters of the United States.

Secondary containment for the Option A bulking facility will be provided by maintaining 1 foot of freeboard in the basins and sloping the surrounding area toward the basins to contain rainfall for a 25-year, 24-hour storm event. The solidification basins for the liquid waste bulking facility will be constructed of concrete. The area under the concrete basins will be lined with a reinforced geosynthetic clay liner.

Secondary containment for the Option B bulking facility will be provided by an earthen berm. The secondary containment area has been designed to control runoff from the 25-year, 24-hour storm event within the secondary containment area and meet the 1-foot freeboard requirement in Title 30 TAC §330.207(b). Ponded water will be handled consistent with the procedures listed in Section 4.19 of the SOP. The solidification tanks will be covered while not in use with a portable synthetic cover, a fitted, rigid cover, or equivalent to prevent rainfall from entering the solidification tanks. Bulking agents will be stored within the secondary containment berm. The facility will be located over MSW unit areas with a composite liner. The facility may be relocated as needed, based on field conditions and/or site activities. As undeveloped areas are constructed, the liquid waste bulking facility may be relocated into newly constructed areas, as needed.

Prior to future relocation of the Option A basins (refer to Section 3.2 of this appendix), a permit modification complying with Title 30 TAC §305.70(d) shall be obtained addressing the relocated basin's design and installation. A permit modification will not be required for relocation of the Option B basins, as they are operated over existing Subtitle D liner systems which provide environmental containment for the basins.

5 STORAGE REQUIREMENTS (TITLE 30 TAC §330.209 ~~THROUGH §330.211~~)

5.1 Waste Storage (§330.209(a))

Consistent with Title 30 TAC §330.241 and Section 8.10, the facility will only accumulate waste in quantities that can be solidified within such time as will preclude the creation of odors, insect breeding, or harborage of other vectors. Solidification of liquid waste in a basin will be completed within 24 hours from its addition into the basins; and, subject to the total processing time limit specified below, multiple liquid waste additions and multiple completions of solidification in a basin may be allowed before the basin is emptied. If a mixing basin is processing grease trap waste, grit trap waste, or septage, the maximum processing time (i.e., starting from the receipt of the first waste to the time the basin is emptied) is 72 hours. The maximum processing time (i.e., starting from the receipt of the first waste to the time the basin is emptied) for non-grease trap, grit trap, or septage waste material is 7 days provided that the waste material does not create nuisance odors, insect breeding, or harborage of vectors. If such accumulations occur beyond these specified time limits, additional liquid waste materials will not be received until the adverse conditions are abated.

As noted above, the liquid waste material will be processed in the mixing basins. The actual time the waste material is stored in the mixing basin is a function of the rate of incoming liquid waste material. Solidification of liquid waste being stored in the basins will be initiated within 24 hours. Typically, the mixing basin is "pre-loaded" with the bulking agent. The liquid waste is added until the mixing basin reaches its capacity. For certain types of liquid waste material, the incoming waste is relatively slow and will take a few days to fully load the mixing basin. The processing period will vary depending upon the type and quantity of waste in each mixing basin. However, the storage period for processed waste in the basin will not exceed 72 hours for grease trap waste, grit trap waste, and septage (and the processing period will not exceed 7 days for other waste types) or a shorter period if the liquid waste material being processed has the potential to create a nuisance odor condition at the site.

Prior to the end of the 72-hour or 7-day period, the bulked waste will be disposed of in the landfill or transported and processed at a permitted offsite facility in the event of an operational breakdown. Bulked wastes must be able to pass the paint filter test (EPA SW-846/9095) before the solidified material is transported to the landfill working face for disposal.

The solidification basins will be covered while not in use (i.e., empty; processing not taking place; or storage of processed, unprocessed, or partially processed waste material) with a portable synthetic daily cover, a fitted, rigid cover, or equivalent. By covering the solidification basins the waste will be stored in a manner that does not constitute a fire, safety, or health hazard or provide food or harborage for animals and vectors.

5.2 Approved Containers ~~(§330.211)~~

Liquid waste entering the facility is typically transported in vacuum trucks, tanker trucks, and sealed containers. These trucks are designed to prevent spillage or leakage during storage, handling, or transport.

The bulking facility will consist of concrete lined mixing basins or steel containers with secondary containment. The mixing basins will be equipped with a portable synthetic daily cover, a fitted rigid cover, or equivalent that will be able to close the basins during mixing or down time. The solidification basins will be maintained in a manner so that they do not constitute a nuisance and to retard the harborage, feeding, and propagation of vectors.

As noted in Section 4.23 of the SOP, the mixing basins will be inspected daily, when in use, for damage to the basin walls and floors and to verify there are no indications of leaks from the basins (i.e., sudden drop in static liquid level). Mixing basins will be repaired on an as needed basis to prevent leaks. Damage repairs and maintenance activities will be documented in the Site Operating Record.

6 RECORDKEEPING AND REPORTING REQUIREMENTS (TITLE 30 TAC §330.219)

6.1 Documents (§330.219(a) and (b))

The City of Meadow Landfill will maintain records on site as part of the Site Operating Record in accordance with Section 9 of the Site Operating Plan. Consistent with Title 30 TAC §330.219(a), copies of documents that are considered part of the operating record for the facility are listed in Section 9 of the SOP. In addition to the information listed in Section 9, the information listed below will also be maintained in the Site Operating Record.

Records to be Maintained in the Site Operating Record[1]	Frequency	Rule Citation
Documentation that wastes leaving the facility are being adequately managed by other licensed or permitted facilities	As needed	§330.205(a)
As-built set of construction plans for the Liquid Waste Bulking Facility	As needed	§330.219(a)
Additional analytical testing performed at the facility to verify compliance with this plan.	As needed	§330.219(b)(5)

[1] Also refer to Section 9 of the Site Operating Plan.

These documents will be made available for inspection by TCEQ representatives upon request.

6.2 Report Signatories (§330.219(c))

~~The City of Meadow Landfill personnel or a~~An authorized representative of the City of Meadow Landfill will sign all reports and other information requested by the Executive Director as described in Title 30 TAC §305.44(a). For a person to be an authorized representative of the City of Meadow Landfill, the authorization must: (1) be made in writing as described in Title 30 TAC §305.44(a), (2) specify either an individual or a position having responsibility for the overall operation of the City of Meadow Landfill, and (3) submitted in writing to the Executive Director.

If an authorization is no longer accurate because of a change in individuals or position, a new authorization must be submitted to the Executive Director prior to or with any submittal to be signed by an authorized representative. Any person signing a report will make the certification included in Title 30 TAC §305.44(b).

7 FIRE PREVENTION PROCEDURES (TITLE 30 TAC §330.221)

7.1 Fire Prevention Procedures

The following steps will be taken regularly by designated site personnel (according to assigned tasks and training) to prevent fires. Refer to Section 7 of the Site Operating Plan for additional fire prevention procedures.

- Open burning of waste is prohibited.
- Equipment used at the facility will be routinely cleaned through the use of water or steam cleaners. The water or steam cleaning will remove combustible waste and caked material which can cause equipment overheating and increase fire potential.
- Fuel spills will be contained and cleaned up immediately (refer to Section 7.4 of the SOP).
- Smoking is not allowed in the working areas of the site. Smoking is confined to designated areas only, away from the liquid waste bulking facility, fuel stations, and other fire-sensitive areas.
- In the event of an accidental fire, the fire will be extinguished by (1) smothering with soil, (2) applying water from a water truck, or (3) the use of a fire extinguisher. The facility will be equipped with fire extinguishers of a type, size, location, and number as recommended by the local fire department. Each fire extinguisher will be fully-charged and ready for use at all times. Each extinguisher will be inspected on an annual basis and recharged as necessary. These inspections will be performed by a qualified service company, and all extinguishers will display a current inspection tag. Inspection and recharging will be performed following each use. At a minimum, all applicable equipment will have fire extinguishers.

7.2 General Rules for Fires

The following rules will be implemented in the event of a fire at the liquid waste bulking facility. Refer to Section 7 of the SOP for additional fire safety rules.

- Contact the local Fire Department by calling 911.
- Immediately contact the Operations Supervisor.
- Alert other facility personnel.

8 OPERATIONAL PROCEDURES (TITLE 30 TAC §330.223 THROUGH §330.249)

8.1 Access Control (§330.223)

8.1.1 Facility Security

Facility security will be handled consistent with Section 4.1.1 of the SOP. Entry to the facility will be restricted to designated personnel, appropriate subcontractors, approved waste haulers, ~~the public,~~ TCEQ personnel, and properly identified persons whose entry onto the landfill property is authorized by facility management. Visitors (persons not referenced in above list) may be allowed ~~in~~ onto the site only when accompanied by a facility representative at the discretion of facility management or their designee.

8.1.2 Traffic Control

Traffic control will be handled consistent with Section 4.1.2 of the SOP. As discussed in the SOP, ~~solid waste collection~~ liquid waste transport vehicles are directed to the liquid waste bulking facility by signs located along the entrance road. These vehicles will deposit their loads within the facility and depart the site. Waste hauling vehicles will be directed to the appropriate unloading area. Roads not being used for access will be blocked or otherwise marked for no entry. An adequate turning radius for the vehicles utilizing the facility will be provided to maintain normal traffic flow.

8.2 Unloading of Waste (§330.225)

8.2.1 Waste Unloading Procedures

General waste unloading procedures are discussed in Section 4.2 of the SOP. As discussed in the SOP, incoming liquid waste transport vehicles will be directed to the liquid waste bulking facility by the Scale House Staff once the vehicle incoming weight has been recorded. Signs directing traffic from the scale house to the liquid waste bulking facility will be located, as needed, along the route to the liquid waste bulking facility. Personnel working at the liquid waste bulking facility will inspect the load and direct the transport vehicle to the proper solidification basin. The unloading of waste will be directed by personnel working at the liquid waste bulking facility.

Unloading of waste in unauthorized areas will be prohibited. Any waste which is identified as having been deposited in an unauthorized area will be immediately contained and moved to the unloading areas.

Prohibited waste will not be allowed to enter the site. All waste loads will be visually inspected and accompanied by a generator waste profile sheet prior to being approved to unload. In the event prohibited wastes are identified in the load, the entire load will be turned away from the gate and not allowed entrance to the facility.

8.2.2 Procedures for the Detection and Prevention of Hazardous and PCB Waste

Procedures for the detection and prevention of the disposal of regulated hazardous waste as defined in 40 CFR Part 261 and polychlorinated biphenyl (PCB) wastes as defined in 40 CFR Part 761 are provided in this section.

Visual inspections of all incoming waste will be conducted at ~~the sampling station or at another~~ a location where containment is provided and/or potential spills of unauthorized waste would be minimized (i.e., adjacent to the bulking facility).

Vehicles containing suspicious loads will be inspected. Suspicious loads may include:

- Drums or containers with warning labels
- Loads which have a visible emission, smoke, strong chemical odor, or cause physical symptoms (e.g., irritation of eyes, nose, throat, skin, nausea, dizziness, or headache)

The inspector will not inspect any vehicle that appears to present possible physical danger. The Operations Manager or his designee shall be contacted immediately if such a load enters the facility.

The inspections shall be conducted in a manner that allows the inspector to view the contents of the waste load. The inspector shall make an effort to view as much of the waste load as possible. The inspections will be conducted in an expeditious manner to minimize disruption to normal operations.

8.3 Spill Prevention and Control (§330.227)

The Option A bulking facility has been designed to control and contain spills and contaminated water. The areas around the liquid waste bulking facility slope toward the solidification basins to ensure any potential spills from vehicles will flow back into the solidification basins. The liquid waste bulking facility solidification basins will be covered while not in use with a portable synthetic daily cover, a fitted, rigid cover, or equivalent to prevent rainfall from entering the solidification tanks. Unenclosed containment areas (e.g., area within secondary containment berm) account for precipitation from a 25-year, 24-hour storm. The solidification basins will be constructed of concrete. The area under the concrete basins will be lined with a reinforced geosynthetic clay liner.

The solidification area pad will be constructed above natural grade. A containment berm will be constructed around the perimeter of the pad to contain stormwater and potential spills from vehicles. Stormwater on the pad will be drained through a pipe. If a spill occurs, a valve at the drain pipe will be closed and the liquid will be pumped to the basins for solidification.

The Option B bulking facility has been designed to control and contain spills and contaminated water. Liquid waste collected in the secondary containment area will be pumped to the mixing basins where it will be processed for disposal. Water collected in the solidification basins will be mixed with the liquid waste and bulking agents or treated as contaminated water. The solidification tanks will be covered while not in use with a portable synthetic daily cover, a fitted, rigid cover, or equivalent to prevent rainfall from entering the solidification tanks. Bulking agents will be stored within the secondary containment berm. Unenclosed containment areas (e.g., area within secondary containment berm) account for precipitation from a 25-year, 24-hour storm.

The liquid waste bulking tanks will be over areas that have been developed as disposal areas with a composite liner. The facility may be relocated as needed, based on field conditions and/or site activities. As undeveloped areas are constructed, the liquid waste bulking facility may be relocated into newly constructed areas, as needed. The facility will not be located within the landfill working face containment berm.

Berms described above for Options A and B will be constructed of earthen materials (soils) obtained from on-site borrow areas or stockpiles.

8.4 Operating Hours (§330.229)

The liquid waste bulking facility may operate during the waste acceptance hours of the City of Meadow Landfill (refer to Section 4.3 of the SOP).

8.5 Facility Sign (§330.231)

Facility signs will be placed in accordance with the City of Meadow Landfill's approved SOP (refer to Section 4.4 of the SOP).

8.6 Control of Windblown Material and Litter (§330.233)

Windblown material and litter will be collected and properly managed to control unhealthy, unsafe, or unsightly conditions by the following methods:

- Bulking agents will be stored on the all-weather surface area within secondary containment. If stormwater run-off or wind becomes an issue, the bulking stockpile will be reconfigured (~~e.g.~~i.e., reduced in size or reshaped). Water sprayed onto the bulking agents stockpiles may also be used to control dust.
- Solidification basin lids may be used to cover the solidification basins during the mixing process.

8.7 Materials Along the Route to the Facility (§330.235)

This requirement is addressed in Section 4.8 of the SOP.

8.8 Facility Access Roads (§330.223(b) and §330.237)

As discussed in Section 4.12 of the SOP, the City of Meadow Landfill has an existing paved entrance road. The access road to the liquid waste bulking facility will be an all-weather surface that provides for all weather access. The all-weather surface access and internal roads will provide mud control for the waste hauling vehicles prior to exiting the facility and returning to public access roads. It is not anticipated that mud or other debris will be tracked offsite, given the all-weather surface that exists on these roads. The entrance, access, and internal roads will be maintained in a safe condition. The availability and adequacy of the facility access roads is evaluated in the Engineering Study included in Part I/II, Appendix D.

8.9 Noise Pollution and Visual Screening (§330.239)

Liquid waste solidification will occur within the permit boundary. The proposed location of the liquid waste bulking facility is over 125 feet from the landfill permit boundary. Future relocations of the liquid waste bulking facility will also be a minimum 125 feet from the landfill permit boundary.

8.10 Overloading and Breakdown (§330.241)

The facility will only accumulate waste in quantities that can be processed within such time as will preclude the creation of odors, insect breeding, or harborage of other vectors. If the mixing basins are processing grease trap waste, grit trap waste, or septage, the maximum time waste material will be stored is 72 hours. The maximum time other waste material will be allowed to be stored is 7 days provided that the waste material does not create nuisance odors, insect breeding, or harborage of vectors. Solidification of liquid waste being stored in the basins will be initiated within 24 hours. If accumulations occur beyond these specified time limits, additional liquid waste materials will not be received until the adverse conditions are abated.

If a significant work stoppage (longer than 24 hours) should occur at the facility due to a mechanical breakdown or other causes, the site will accordingly restrict the receiving of liquid waste materials. Under such circumstances, incoming liquid waste shall be diverted (rejected at the scalehouse). If the work stoppage is anticipated to last long enough to create objectionable odors, insect breeding, or harborage of vectors, steps shall be taken to remove the accumulated waste materials from the liquid waste bulking facility to an approved permitted offsite disposal facility.

8.11 Sanitation (§330.243)

When in use, the solidification basins will be washed down on a weekly basis at the completion of processing. During times when the facility is operating on a continuous basis, the liquid waste bulking area will be washed down at least two times per week. Wash water will drain to the mixing basin and may be solidified or removed from the mixing basins and transferred via TCEQ-registered trucks to a permitted wastewater treatment plant or a registered or permitted facility capable of handling liquid waste. The wash water will be removed or solidified on the same day it is generated.

8.12 Ventilation and Air Pollution Control (§330.245)

No significant air pollution emissions are expected to result from the operation of the facility. Any emissions must not cause or contribute to air pollution as defined in the Texas Clean Air Act. The liquid waste bulking facility is covered under the City of Meadow Landfill Standard Air Permit for the site.

The operator will prevent nuisance odors from leaving the boundary of the facility. If nuisance odors are found to be passing the facility boundary, the site will immediately take action to abate the nuisance. Odors are controlled by large buffer areas to the facility from the permit boundary and solidification basin lids which will limit the liquid waste exposure to the environment. Per Section 5.2 of this appendix, ~~T~~the solidification basins will be covered while not in use with a portable synthetic daily cover, a fitted, rigid cover, or equivalent to prevent nuisance odors. Options to abate odors may include, but are not limited to, systematically removing waste until the odor is eliminated or the use of appropriate mister equipment. Abatement equipment will be cleaned and maintained per manufacturer recommendations so that the equipment efficiently can be adequately maintained. In addition, site personnel may also develop a plan to identify specific waste streams that are causing the odor. These waste streams will be processed under an accelerated schedule (i.e., prior to delivery of the waste to the site or proactive processing for odor at the time of delivery into the solidification basin) to prevent odors.

8.13 Health and Safety (§330.247)

Facility personnel will be trained in appropriate sections of the facility's health and safety plan in accordance with the procedures outlined in Section 2 of this plan and as set forth in Section 2 of the SOP.

9 FACILITY CLOSURE

9.1 Option A Bulking Facility

Upon closure of the facility, any remaining waste will be solidified and transported to the working face for disposal. The solidification facility will be washed down and all bulking agents and related equipment will be removed from the facility. Any remaining bulking agents on site at the time of closure may be incorporated into the landfill operations (disposed of within the landfill or used as daily cover, depending on composition), incorporated into on-site filling activities (if non-waste and suitable for use as clean soil or mixing with soil and use), or transported off site for use by others or disposal.

The concrete mixing basins will be demolished and the concrete debris will be disposed of on-site. Mixing basins may be disposed of at the MSW working face. Any soil below the basins that is visually stained will be excavated and disposed of in the landfill. In addition, the area under the liquid waste bulking facility will be sampled. Four shallow (0 to 6-inch depth) grab soil samples will be collected and placed into appropriate laboratory-prepared soil containers. The soil samples will be analyzed at a NELAC certified laboratory for TPH (method TX 1005), BTEX (EPA method 8260B), and RCRA metals (EPA methods 6010B and 7471A). The analytical results will be compared to the Texas Risk Reduction Program (TRRP) commercial soil Protective Concentration Levels (PCLs). If the sample results indicate no PCL exceedances, the solidification area will be backfilled to adjacent grade. If the sample results exceed a PCL, the facility will obtain TCEQ approval of a work plan designed to remove and dispose of the soil exceedances. The work plan will:

- identify the areas that are contaminated above TRRP commercial soil PCLs and quantify the estimated volume of soil material that will be removed;
- identify the methods to be used for soil excavation and disposal; and
- include a detailed sampling plan that will be implemented to verify that the contaminated soils exceeding TRRP commercial soil PCLs have been removed.

Verification that the work plan has been successfully implemented will be included in the Closure Certification Report. A description of the liquid waste bulking facility closure procedures (including soil sample results and verification that the work plan has been successfully implemented, if required) will be included in the Closure Certification Report. The report will be included in the Site Operating Record.

9.2 Option B Bulking Facility

As noted in previous sections, the facility will be located within the existing waste footprint. However, the facility will only be located over areas with intermediate cover. Therefore, before the site reaches the permitted grades within the vicinity of the facility, the facility will be relocated or closed. Facility relocation activities will include the relocation of the steel mixing basis, facility equipment, and bulking agents to a new location where secondary containment has been established. All visible stained soil in the area will be excavated and hauled to the working face for disposal before the secondary containment berms are decommissioned.

Facility closure activities will include the removal and disposal of the steel mixing basins and any other equipment associated with this facility. All liquid wastes will be ~~treated~~solidified and disposed of in the landfill or an off-site permitted disposal facility. Any stored bulking agent material will be transported to the working face for disposal. The facility area will be inspected during the ~~decompressing~~ decommissioning process. All visible stained soil in the area will be excavated and hauled to the working face for disposal before the secondary containment berms are decommissioned. A notice will be sent to the TCEQ and placed in the Site Operating Record noting the specific steps taken to decommission the facility.

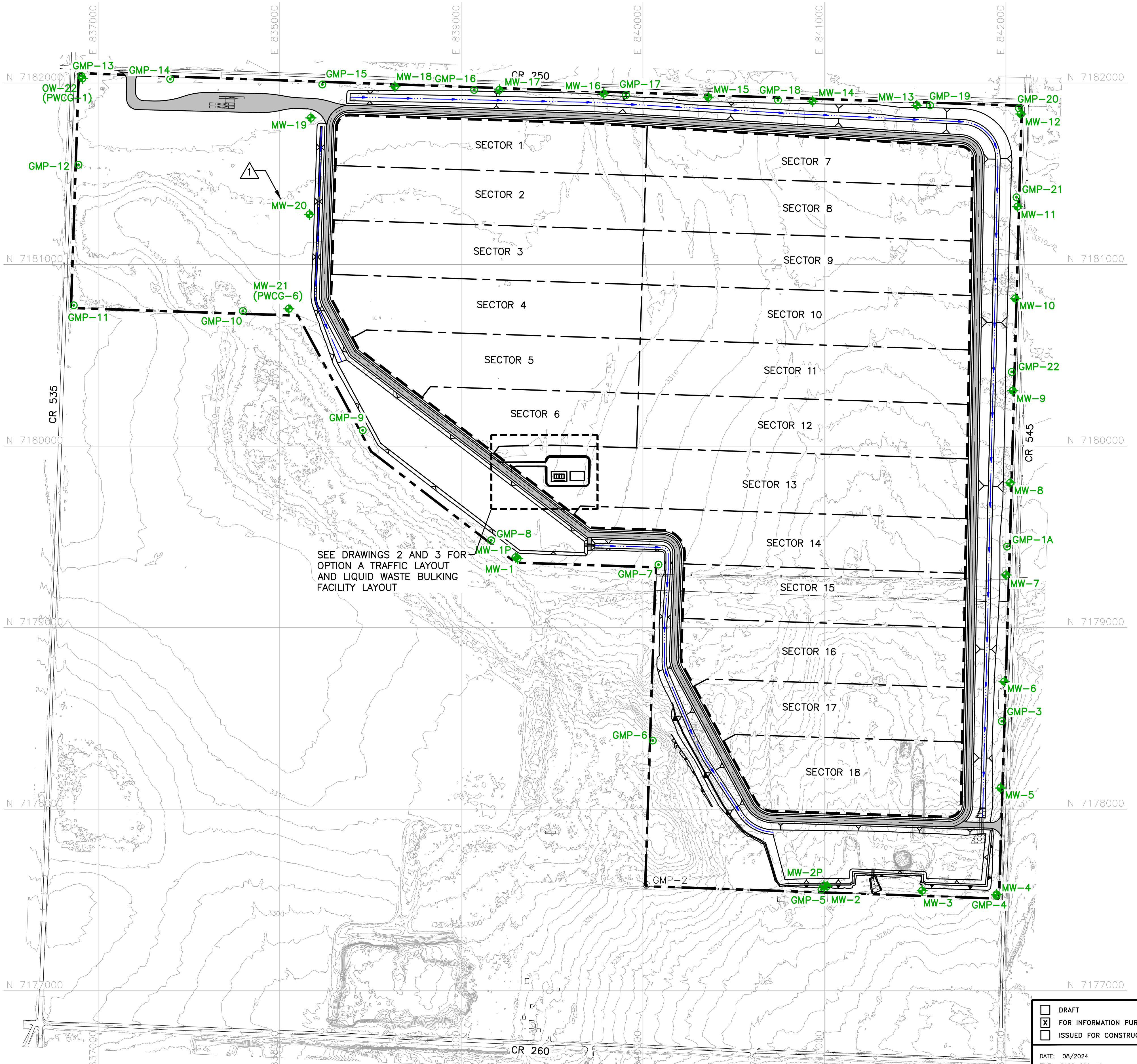
Verification that the work plan has been successfully implemented will be included in the Closure Certification Report. A description of the liquid waste bulking facility closure procedures ~~(including soil sample results~~ and verification that the work plan has been successfully implemented~~, if required)~~ will be included in the Closure Certification Report. The report will be included in the Site Operating Record.

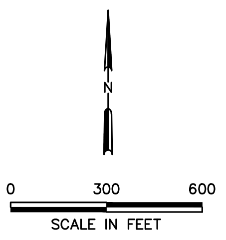
APPENDIX IVD-A

LIQUID WASTE BULKING FACILITY DRAWINGS

STATE OF TEXAS
KYLE D. GOULD
106018
LICENSED
PROFESSIONAL ENGINEER

02/28/2025





KYLE D. GOULD
106018
02/28/2025

LEGEND

- PROPOSED PERMIT BOUNDARY
- PROPOSED LIMIT OF WASTE
- N 7180000 STATE PLANE COORDINATE SYSTEM
- 350 EXISTING CONTOUR
- SECTOR BOUNDARY
- 1 INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.
4. THE OPTION B LIQUID WASTE BULKING FACILITY WILL BE LOCATED WITHIN THE PROPOSED LIMIT OF WASTE. HOWEVER, THE FACILITY WILL ONLY BE LOCATED OVER AREAS THAT HAVE BEEN DEVELOPED AS DISPOSAL AREAS WITH A COMPOSITE LINER. THE FACILITY MAY BE RELOCATED AS NEEDED, BASED ON FIELD CONDITIONS AND/OR SITE ACTIVITIES. AS UNDEVELOPED AREAS ARE CONSTRUCTED, THE FACILITY MAY BE RELOCATED INTO THE NEWLY CONSTRUCTED AREAS AS NEEDED. REFER TO DRAWING 4 FOR OPTION B LIQUID WASTE BULKING FACILITY LAYOUT.

LIST OF REVISIONS:

1. REVISED MONITORING WELL NETWORK.

☐ DRAFT
☒ FOR INFORMATION PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120-809-11
CAD: 1-SITE PLAN.DWG

DRAWN BY: SRF
DESIGN BY: MB
REVIEWED BY: CRM

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

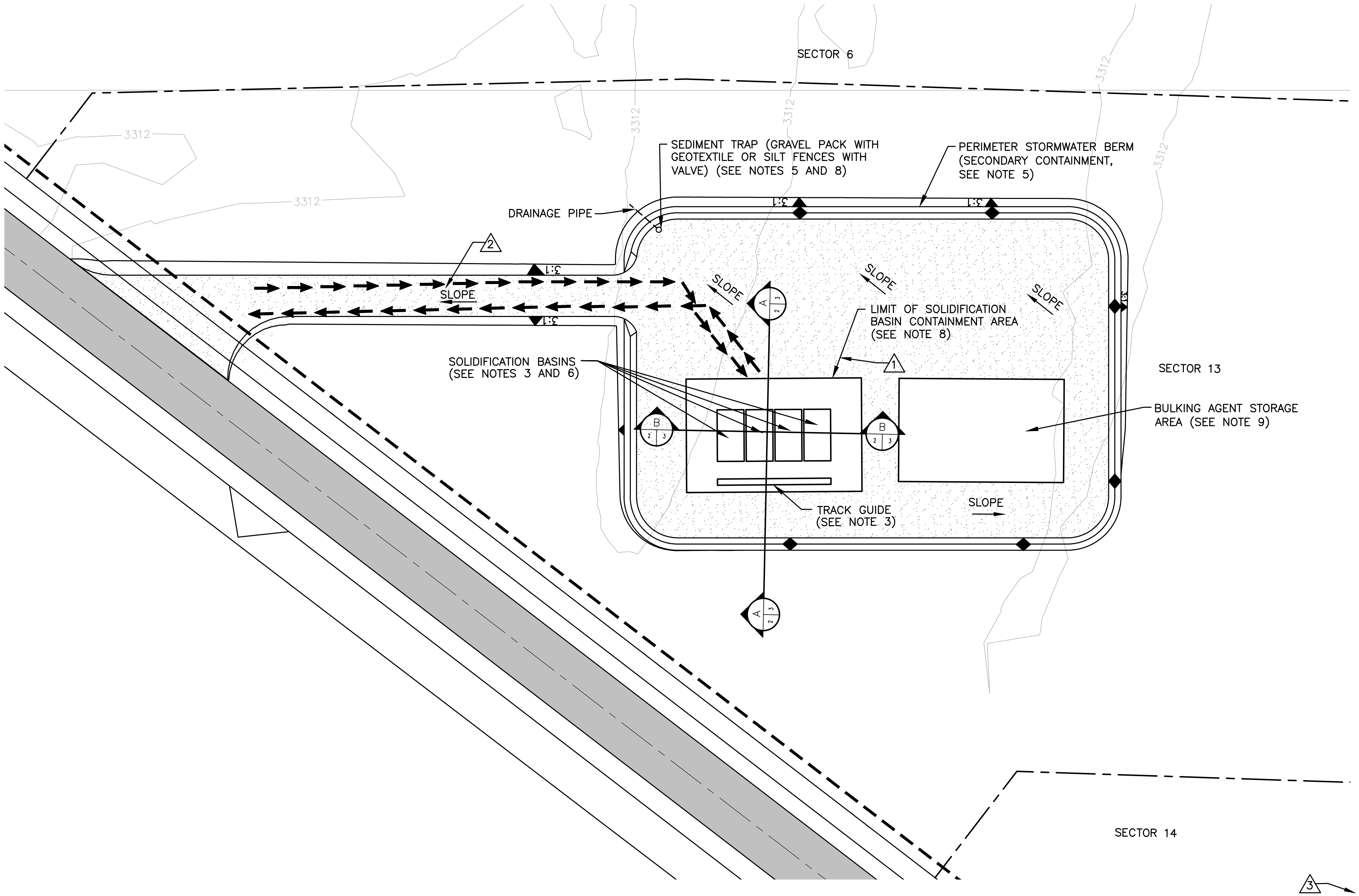
SITE PLAN

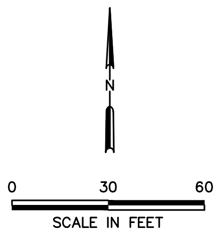
CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

DRAWING 1

O:\0120\809\EXPANSION 2023\WD\1-SITE PLAN.dwg, jwilson, 1:2





KYLE D. GOULD
106018
02/28/2025

LEGEND

— — —	PROPOSED LIMIT OF WASTE
N 7179500	STATE PLANE COORDINATE SYSTEM
3310	EXISTING CONTOUR
— - —	SECTOR BOUNDARY
➜	TRAFFIC FLOW
▨	ALL WEATHER ROAD AND PAD
△	INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. THE SOLIDIFICATION BASINS WILL HAVE PERIMETER RAILS THAT MEET ALL OSHA REQUIREMENTS. A TRACK GUIDE WILL BE INSTALLED ON ONE SIDE OF THE SOLIDIFICATION BASINS TO ALLOW MIXING EQUIPMENT TO MOVE SAFELY ALONG THE SOLIDIFICATION BASINS. IN ADDITION, PIPE WHEEL STOPS OR CURBING WILL BE INSTALLED ON THE UNLOADING SIDE OF THE BASINS TO PREVENT VEHICLES AND EQUIPMENT FROM ENTERING THE BASINS.
4. ACCESS TO THE LIQUID WASTE OPERATION AREA WILL BE PROVIDED BY THE ALL WEATHER ROAD MANUEVERING AREA.
5. A SECONDARY CONTAINMENT AREA WILL BE ESTABLISHED WITHIN THE MANUEVERING PAD AREA TO CAPTURE ANY SPILLAGE FROM THE TRANSPORT TRUCKS IF AN ACCIDENT OCCURS. LIQUID WASTE COLLECTED IN THE SECONDARY CONTAINMENT AREA WILL BE PUMPED INTO THE MIXING BASINS WHERE IT WILL BE PROCESSED FOR DISPOSAL.
6. SOLIDIFICATION BASINS ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY. THE NUMBER OF BASINS AND THE SEQUENCE OF CONSTRUCTION MAY VARY. HOWEVER, THE LOCATION OF THE BASINS WILL BE CONSISTENT WITH THE CONFIGURATION SHOWN.
7. SOLIDIFICATION BASIN LIDS WILL BE USED OVER THE SOLIDIFICATION BASINS TO REDUCE AIRBORNE PARTICLES AND ODORS.
8. △3 THE SOLIDIFICATION BASIN CONTAINMENT AREA WILL SLOPE TOWARD THE SOLIDIFICATION BASINS. THE REMAINDER OF THE ROAD AND PAD AREA (SECONDARY CONTAINMENT) WILL SLOPE AWAY FROM THE SOLIDIFICATION BASINS TO THE SEDIMENT TRAP. STORMWATER ON THE PAD AREA WILL CONTROLLED THROUGH THE SEDIMENT TRAP.
9. STORAGE MAY CONSIST OF A SILO AND/OR CONCRETE BUNKERS THAT MINIMIZE THE STORED BULKING AGENT'S EXPOSURE TO WIND. TYPICAL LOCATION IS SHOWN. IN ADDITION, BULKING AGENTS MAY ALSO BE STORED IN SOLIDIFICATION BASINS THAT ARE NOT BEING USED FOR SOLIDIFICATION.
10. △4 IN GENERAL, THE SEDIMENT TRAP WILL DISCHARGE UNCONTAMINATED STORMWATER AWAY FROM THE BULKING FACILITY. IN THE EVENT OF A SPILL, THE VALVE WILL BE CLOSED AND CONTAMINATED WATER WILL BE PUMPED INTO THE BASINS FOR SOLIDIFICATION.

LIST OF REVISIONS:

1. REPOSITIONED LEADER.
2. PROVIDED SLOPE CALLOUTS.
3. REVISED NOTE 8.
4. ADDED NOTE 10.

☐ DRAFT
☒ FOR INFORMATION PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120-809-11
CAD: 2-FACILITY PLAN.DWG

DRAWN BY: SRF
DESIGN BY: MB
REVIEWED BY: CRM

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

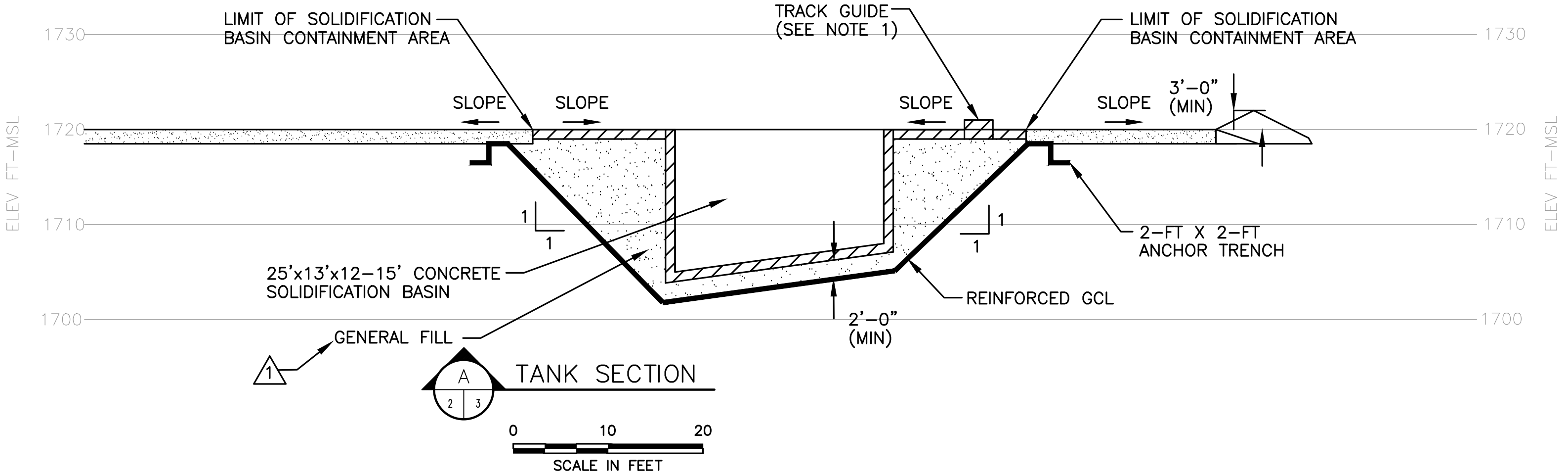
LIQUID WASTE BULKING FACILITY PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

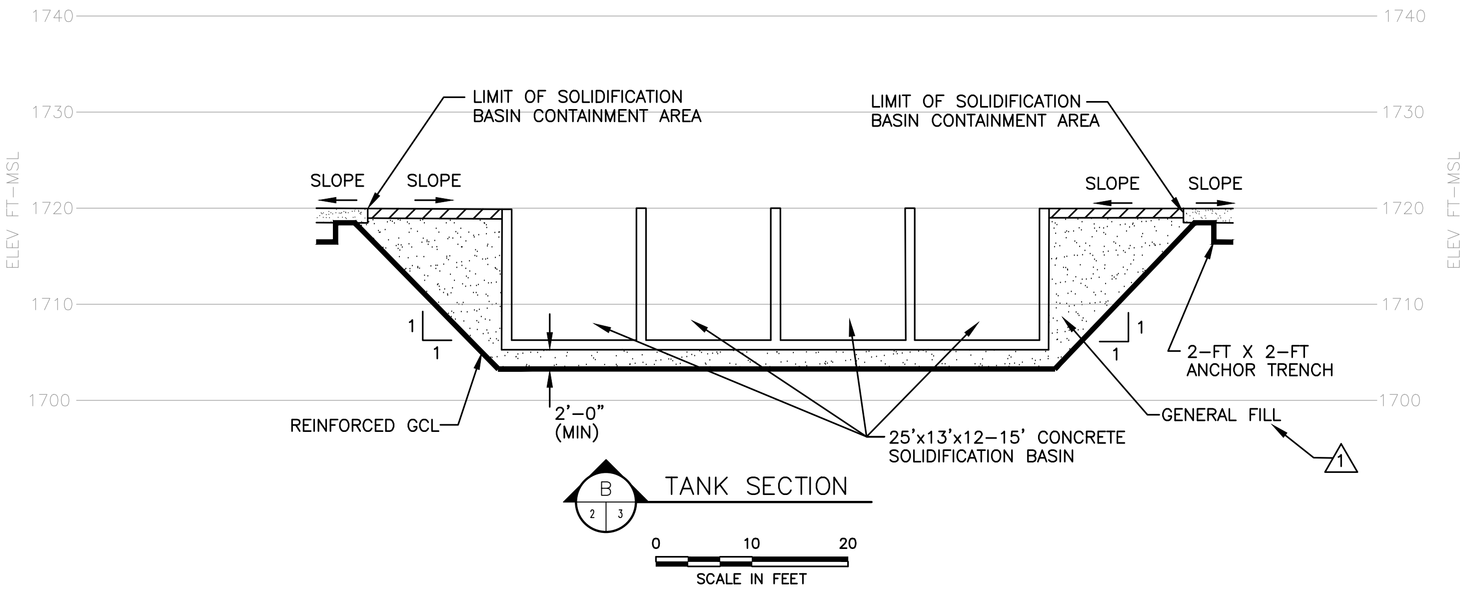
WWW.WCGRP.COM

DRAWING 2

O:\0120\809\EXPANSION 2023\WD\2-FACILITY PLAN.dwg, jwilson, 1:2



TANK SECTION



TANK SECTION

NOTES:

1. TRACK GUIDES WILL ALLOW MIXING EQUIPMENT TO MOVE SAFELY ALONG THE LENGTH OF THE SOLIDIFICATION BASINS.
2. THE PRE-MANUFACTURED LIQUID WASTE BULKING FACILITY BUILDING IS OPTIONAL. IF THE SITE CHOOSES NOT TO INSTALL A BUILDING, THE LIQUID WASTE BULKING SOLIDIFICATION AREA IS DESIGNED SO THAT THE VOLUME PROVIDED BY THE SOLIDIFICATION AREA IS GREATER THAN THE VOLUME OF THE 25-YR, 24 HR STORM EVENT AND 1 FOOT OF FREEBOARD. SEE THE SOLIDIFICATION BASIN AREA CONTAINMENT VOLUME CALCULATIONS.

KYLE D. GOULD
106018
02/28/2025

SOLIDIFICATION BASIN AREA CONTAINMENT VOLUME CALCULATIONS

SOLIDIFICATION AREA CONTAINMENT WILL PROVIDE STORAGE TO CONTAIN THE 25-YEAR, 24-HOUR STORM EVENT (7.88 INCHES).

VOLUME OF 25-YR, 24-HR STORM = 7.88 INCHES x STORAGE AREA
= (7.88"/12") x 4,675 ft^2
STORAGE = 3,070 ft^3

VOLUME PROVIDED BY THE SOLIDIFICATION AREA:
VOLUME OF SOLIDIFICATION AREA=(25 ft. X 13 ft. X 13.5 ft.) x 4 basins
=4,387.5 ft^3 x 4
TOTAL CAPACITY=17,550 ft^3

VOLUME OF LIQUID IN THE SOLIDIFICATION AREA AT WORKING CAPACITY:
VOLUME OF WORKING CAPACITY=(25 ft. X 13 ft. X 10 ft.) x 4 basins
=3,250 ft^3 x 4
WORKING CAPACITY=13,000 ft^3

VOLUME NEEDED FOR THE REQUIRED 1 FOOT OF FREEBOARD PER TANK:
VOLUME OF 1 FOOT FREEBOARD=(25 ft. X 13 ft. X 1 ft.) x 4 basins
=325 ft^3 x 4
FREEBOARD=1,300 ft^3

VOLUME PROVIDED FOR THE 25-YR, 24-HR STORM EVENT AND 1 FOOT OF FREEBOARD PER TANK:
=TOTAL CAPACITY – WORKING CAPACITY
=17,550 ft^3 – 13,000 ft^3
=4,550 ft^3

VOLUME PROVIDED (4,550 ft^3) > VOLUME REQUIRED (STORAGE + FREEBOARD)
VOLUME PROVIDED (4,550 ft^3) > VOLUME REQUIRED (3,070 ft^3 + 1,300 ft^3)
VOLUME PROVIDED (4,550 ft^3) > VOLUME REQUIRED (4,370 ft^3)

THE VOLUME PROVIDED BY THE SOLIDIFICATION AREA IS GREATER THAN THE VOLUME OF THE 25-YR, 24 HR STORM EVENT AND 1 FOOT OF FREEBOARD.

LEGEND

△1 INDICATES REVISION (SEE LIST OF REVISIONS)

LIST OF REVISIONS:

1. ADDED CALLOUT FOR GENERAL FILL.

☐ DRAFT
☒ FOR INFORMATION PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120-809-11
CAD: 3-BULKING FACILITY SECTIONS.DWG

DRAWN BY: SRF
DESIGN BY: MB
REVIEWED BY: CRM

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

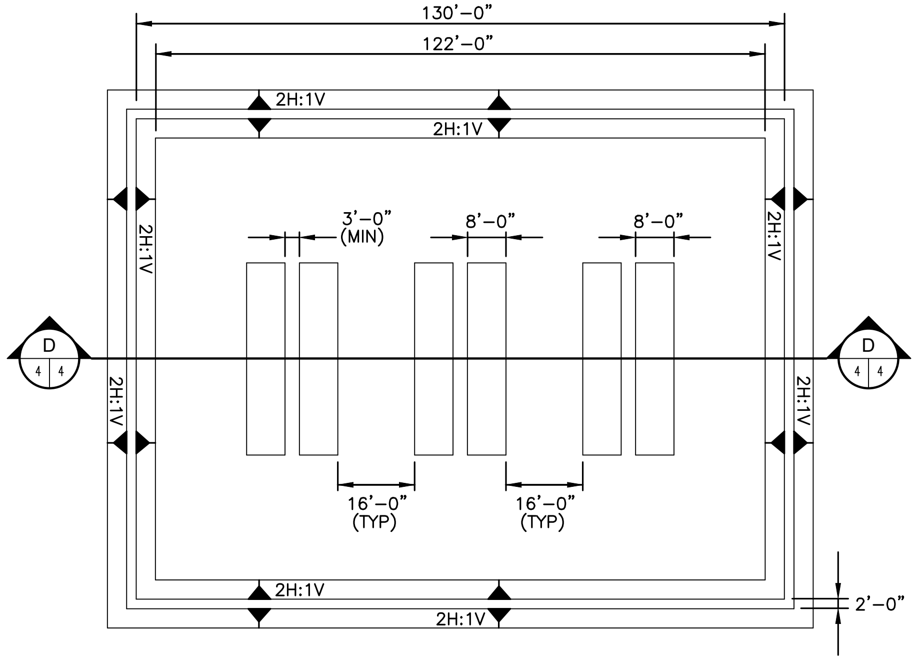
OPTION A
BULKING FACILITY SECTIONS

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

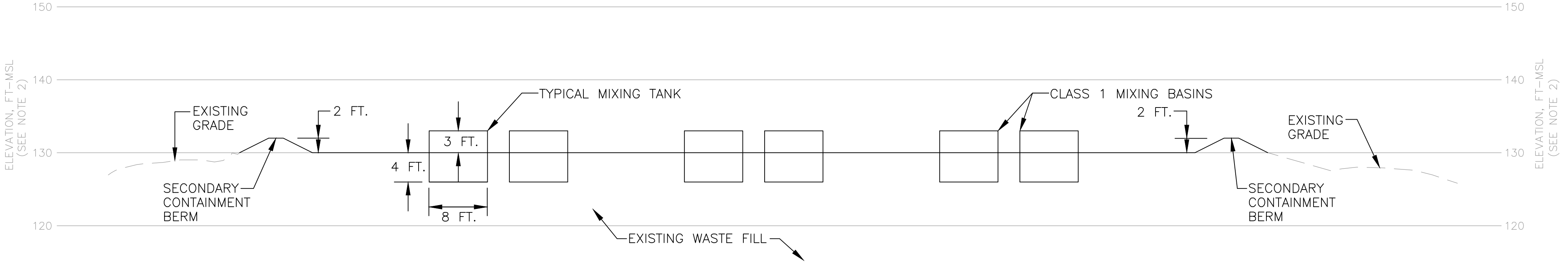
DRAWING 3

O:\0120\809\EXPANSION 2023\VD\3-TANK SECTIONS.dwg, jwilson, 1:2



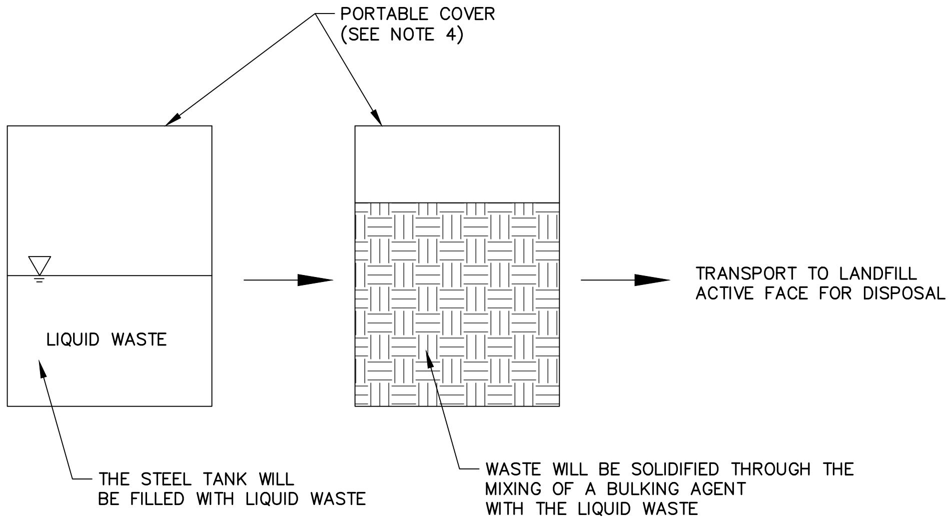
LIQUID WASTE BULKING FACILITY
TYPICAL SECONDARY CONTAINMENT AREA PLAN (C 4/4)

0 20 40 SCALE IN FEET



LIQUID WASTE BULKING FACILITY
TYPICAL SECONDARY CONTAINMENT AREA SECTION (D 4/4)

0 10 20 SCALE IN FEET



FLOW DIAGRAM

SECONDARY CONTAINMENT VOLUME CALCULATIONS FOR MIXING TANK

LIQUID WASTE BULKING FACILITY AREA SECONDARY CONTAINMENT WILL PROVIDE STORAGE TO CONTAIN EITHER THE VOLUME OF THE LARGEST TANK (16,755 GALLONS) OR THE 25–YEAR, 24 HOUR STORM EVENT (7.88 INCHES), WHICHEVER IS LARGER.

VOLUME OF LARGEST TANK = 16,755 gal x $\frac{1\ ft^3}{7.481\ gal}$ = 2240 ft^3

VOLUME OF 25–YEAR 24 HR STORM = 7.88 INCHES x STORAGE AREA
= (7.88"/12") x (100 ft x 130 ft)
= 8,536 ft^3

PROVIDE STORAGE FOR 8,536 ft^3. VOLUME PROVIDED BY 1 FOOT OF THE CONTAINMENT BERM = 1 ft x 100 ft x 130 ft = 13,000 ft^3

VOLUME PROVIDED (13,000 ft^3) > VOLUME REQUIRED (8,536 ft^3)

THE VOLUME PROVIDED BY THE 2 FT. BERM IS GREATER THAN THE VOLUME OF TANK AND THE 25–YR, 24 HR STORM EVENT.

THE BERM PROVIDES FOR ONE FOOT OF FREEBOARD.

NOTES:

1. ALL SIZES AND DIMENSIONS ARE APPROXIMATE. THE SOLIDIFICATION AREA WILL BE NO LARGER THAN 130 FEET BY 130 FEET. STEEL BASINS WILL BE CONSTRUCTED OF 12 GAUGE STEEL (MINIMUM).
2. ELEVATIONS ARE SHOWN FOR SCALE PURPOSES ONLY, ACTUAL ELEVATIONS MAY VARY.
3. △1 BULKING AGENT MATERIAL WILL BE STORED WITHIN THE SECONDARY CONTAINMENT BERM.
4. THE BASINS OR TANKS WILL BE COVERED WHEN NOT IN USE WITH A PORTABLE SYNTHETIC DAILY COVER OR A FITTED, RIGID COVER TO EXCLUDE RAINFALL FROM FROM THE BASIN AND CONTROL ODOR AND VECTORS.

△ INDICATES REVISION (SEE LIST OF REVISIONS)

LIST OF REVISIONS:

1. REVISED NOTE 3.

STATE OF TEXAS
KYLE D. GOULD
106018
LICENSED PROFESSIONAL ENGINEER
02/28/2025

☐ DRAFT
☒ FOR INFORMATION PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120–809–11
CAD: 4–TANK SECTIONS.DWG
DRAWN BY: SRF
DESIGN BY: JPI
REVIEWED BY: CRM

Weaver Consultants Group
TBPE REGISTRATION NO. F–3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	SEE LIST OF REVISONS

OPTION B
LIQUID WASTE BULKING FACILITY PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

DRAWING 4

ATTACHMENT 3

REPLACEMENT PAGES (CLEAN VERSION)

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

VOLUME 1 OF 6

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

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Prepared by

02/28/2025

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WCG Project No. 0120-809-11-05

This document is intended for permitting purposes only.

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

APPLICATION TABLE OF CONTENTS

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

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STATE OF TEXAS
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02/28/2025

CITY OF MEADOW LANDFILL
MAJOR PERMIT AMENDMENT APPLICATION
TCEQ PERMIT NO. MSW-2293C

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STATE OF TEXAS
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CITY OF MEADOW LANDFILL
MAJOR PERMIT AMENDMENT APPLICATION
TCEQ PERMIT NO. MSW-2293C

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106018

02/28/2025

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

TCEQ APPLICATION FORMS AND MAILING LABELS

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

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Prepared by:

02/28/2025

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WCG Project No. 0120-809-11-05

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PART I APPLICATION FORM TCEQ-00650

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: Brian Danko Title: Environmental Manager

Email Address [redacted]

Signature: Brian Danko Date: 02/28/2025

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 Brian Danko

On this 28th day of February, 2025

My commission expires on the 11th day of August, 2026

Stacy M. Wilson

Notary Public in and for

Tarrant County, Texas (notary's jurisdiction, including county and state)

Note: Application Must Bear Signature & Seal of Notary Public

STACY M. WILSON
Notary Public, State of Texas
Comm. Expires 08-11-2026
Notary ID 133903285

WASTE ACCEPTANCE PLAN FORM TCEQ-20873

2. Types of Waste to be Accepted for Disposal at the Facility
   a. Indicate whether the following wastes will be accepted for disposal (check "Yes" for will accept or "No" for will not accept).
      i. ☑ Yes ☐ No Municipal solid waste [§330.3(88)]
      ii. ☑ Yes ☐ No Construction or demolition waste [§330.3(33)]
      iii. ☑ Yes ☐ No Brush [§330.3(18)]
      iv. ☑ Yes ☐ No Rubbish [§330.3(130)]
      v. ☑ Yes ☐ No Used or scrap tires that have been processed (such as by splitting, shredding, quartering or sidewall removal) in a manner acceptable to the executive director [§330.3(130)]
      vi. ☑ Yes ☐ No Class 2 nonhazardous industrial solid waste [§330.3(22), §330.173(i)]
      vii. ☑ Yes ☐ No Class 3 nonhazardous industrial solid waste [§330.3(23), §330.173(j)]
   b. Indicate whether the following special wastes will be accepted for disposal. These wastes must have been or are to be treated and the treated materials have been tested and are certified to contain no free liquids.
      i. ☑ Yes ☐ No Municipal wastewater treatment plant sludge. [§330.3(148)(D), §330.171(c)(7)]
      ii. ☑ Yes ☐ No Other types of domestic sewage treatment plant sludge [§330.3(148)(D), §330.171(c)(7)]
      iii. ☑ Yes ☐ No Municipal water-supply treatment plant sludge. [§330.3(148)(D), §330.171(c)(7)]
      iv. ☑ Yes ☐ No Septic tank pumping waste [§330.171(c)(7)]
      v. ☑ Yes ☐ No Grease trap waste. [§330.3(59), §330.171(c)(7)]
      vi. ☑ Yes ☐ No Grit trap waste [TAC §330.3(60), §330.171(c)(7)]
      vii. ☑ Yes ☐ No Waste from commercial or industrial wastewater treatment plants [§330.3(148)(G), §330.171(b)]
      viii. ☐ Yes ☑ No Other liquid waste. Explain ______________________ [§330.171(c)(7)]
      ix. Specify other special wastes to be accepted for disposal that are not listed above and for which free liquids may be an issue.

      ____

      ____
   c. Indicate whether the following Special Wastes will be accepted for disposal.
      i. ☑ Yes ☐ No Municipal hazardous waste from conditionally exempt small quantity generators [§330.171(c)(6), §330.3(32)].
      ii. ☐ Yes ☑ No Class 1 industrial nonhazardous solid waste (excluding waste that is Class 1 only because of asbestos content). May be accepted only at Type I landfills with a Class 1 cell [§330.3(21), §330.171(b), §330.3(148)(B), §330.173]; may not be accepted at arid exempt [AE] landfills [330.173(a)].
      iii. ☑ Yes ☐ No Waste that is Class 1 only because of asbestos content [§330.3(21), §330.171(b), §330.3(148)(B), §330.171(c)(3)(I), 30 TAC §330.171(c)(3)]

G. Storage and Processing Units

Indicate units that will store or process waste at the facility. Describe the wastes that will be stored or processed in these units. Provide the final disposition or use (e.g., landfill disposal, composting) of the processed materials. **Waste storage and processing authorized separately (such as a registered transfer station within the permit boundary of a landfill) should not be included on this form.**

Storage and processing units must be illustrated (or locations described) on site layout figures in Part II of the application.

Examples:

1. Unit: liquid stabilization unit, Purpose: process, Waste Type: liquid waste, Disposition: solidified material to be disposed in a properly authorized landfill; or
2. Unit: grease separation and dewatering unit, Purpose: process, Disposition: water to WWTP and grease to composter or Type I landfill.

Table 1. Waste storage and processing units.

Unit	Purpose	Waste Type Stored or Processed	Final Disposition or Use
Citizens Convenience Center	☑Store ☑Process	Accepted wastes except: (See Note 1)	Landfill disposal
Liquid Waste Bulking Facility	☑Store ☑Process	Accepted liquid wastes	Landfill disposal
Landfill Disposal Cells	☑Store ☐Process	All accepted wastes except un-bulked liquid wastes	Landfill disposal
	☐Store ☐Process		
	☐Store ☐Process		Note 1: Liquid and Special Wastes, medical sharps
	☐Store ☐Process		

H. Prohibited from Processing

The following wastes are prohibited from processing:

- Any wastes not authorized for processing above.
- Lead-acid storage batteries may not be incinerated. [§330.15(e)(1)]
- Used motor vehicle oil may not be incinerated. [§330.15(e)(2)]
- Regulated hazardous waste [40 CFR §261.3] that is not excluded from regulation as a hazardous waste [40 CFR §261.4(b)] or that was not generated by a conditionally exempt small-quantity generator. [§330.15(e)(7), §330.3(127)]

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PARTS I/II
GENERAL APPLICATION REQUIREMENTS

Prepared for

Meadow Landfill, LLC

August 2024
Revised August 2024

Revised February 2025

KYLE D. GOULD
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Prepared by

02/28/2025

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STATE OF TEXAS
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1 INTRODUCTION

This section addresses §330.59, §330.61, and §305.45.

The purpose of this Major Permit Amendment is to secure authorization to expand and reconfigure the waste disposal area of the existing City of Meadow Landfill, TCEQ Permit No. MSW-2293. The permitted 45-acre waste disposal area will be reconfigured, resulting in a net increase of approximately 165.7 acres (from 45 acres to 210.7 acres). The existing permit boundary of 72.9 acres will be expanded by approximately 265 acres to 337.9 acres. The maximum permitted final cover elevation will be increased from 3,300 ft-msl to 3,425 ft-msl. The landfill expansion and reconfiguration results in a capacity increase of 28,356,013 cubic yards (refer to Section 2.1 for a detailed project overview). This major permit amendment will provide for the long term disposal needs of Terry County and surrounding areas.

The City of Meadow Landfill has provided for the municipal solid waste (MSW) disposal needs of Terry County and surrounding areas for over 20 years. This major permit amendment will ensure that this critical service will continue for the landfill's service area.

The General Application Requirements section (Parts I/II) of this permit amendment application for the City of Meadow Landfill has been prepared consistent with the State of Texas requirements set forth in Title 30 Texas Administrative Code (TAC) §330.59, §330.61 and §305.45. Part II has been combined with Part I in accordance with Title 30 TAC §330.57(c)(2). Section 2, Supplementary Technical Report, presents an overview of the project and a detailed facility description as well as the types of waste that will be accepted at the facility. The remaining portions of Parts I/II present information on specific existing conditions on and around the site and regulatory matters related to the application process.

In accordance with Title 30 TAC §330.121(a), any deviation from the requirements set forth in this permit, incorporated plans or other related documents without prior approval is a violation of the rules.

conditions. As economic conditions and available landfill disposal capacity change, the landfill may accept waste from areas other than those identified above.

The quantity and types of waste accepted at the landfill and the site design and operations are discussed in the following subsections. Consistent with Title 30 TAC §330.61(b), the sources and characteristics of wastes are detailed in the following sections. In addition, waste screening and acceptance procedures are further discussed in Part IV – SOP.

2.1.1 Waste Acceptance Plan

The City of Meadow Landfill is currently operated as a Type IAE and Type IVAE municipal solid waste disposal facility. With this Major Permit Amendment Application, the landfill will be permitted and operated as a Type I municipal solid waste disposal facility. The facility accepts waste for disposal from both public and private entities within the City of Meadow, Terry County, and surrounding communities. The design and operation of the facility considers the characteristics of the waste types discussed in this section.

The major classifications of solid waste to be accepted at the City of Meadow Landfill include municipal solid waste, household waste, yard waste, commercial waste, industrial waste (nonhazardous), construction-demolition waste, and some special wastes. Each classification of waste is defined by Title 30 TAC §330.3 (note that not all of the special wastes listed in §330.3(148) will be accepted at this site – refer to Part IV for additional information).

Consistent with Title 30 TAC §330.15, the facility will not accept for disposal liquid waste (except those liquid wastes meeting the criteria for Special Waste in Part IV, Section 4.20 and Appendix IVC, and solidified according to Appendix IVD prior to disposal into the landfill), regulated hazardous waste, prohibited PCBs, untreated medical waste, and other wastes prohibited by TCEQ regulations.

Waste will only be disposed of in the 210.7-acre proposed solid waste disposal area described in this permit application. No other waste disposal activities will occur within the 337.9-acre City of Meadow Landfill permit boundary.

2.1.2 Disposal Rate and Volume of Waste

The following two subsections detail the volume of waste disposal capacity and the projected disposal rates.

Volume of Waste Disposal Capacity

The waste disposal capacity of the site is summarized in Table 2-1.

Table 2-1
Waste Disposal Capacity Summary

Item	Disposal Capacity[1]	
	Permit No. MSW-2293	Permit No. MSW-2293C
Consumed Airspace	1,082,287 cy	1,143,987 cy
Remaining Airspace	61,700 cy	28,356,013 cy
Airspace Gained by Expansion	---	28,356,013 cy
Total Capacity	**1,143,987 cy** [2]	**29,500,000 cy** [2]

[1] Disposal capacity is defined as waste and daily cover. The consumed airspace represents the waste that has been placed at the site as of December 14, 2022.

[2] The expansion will have 29,500,000 cy of airspace of which approximately 1,143,987 cy of existing waste in-place will be relocated.

Disposal Rate Projections

The disposal rate estimate is based on Meadow Landfill, LLC's knowledge of market conditions, both currently and after the permit is issued.

The disposal rate projections are discussed in detail in Appendix IIIM and summarized in Table 2-2.

Table 2-2
Solid Waste Disposal Rate Summary

Initial Waste Inflow	Average Daily Projected Waste Inflow	Maximum Projected Waste Inflow	Population Equivalent (persons)[1]	Site Life (years)[2]
107,250 tons/year 375 tons/day	165,308 tons/year 578 tons/day	244,745 tons/year 856 tons/day	181,160	97

1 Population equivalent based on average daily projected waste flow and 5 pounds/person/day (Refer to Appendix IIIM, Section 1.2).

2 Site life is defined as years landfill will receive waste.

Meadow Landfill, LLC's estimate for 2025 waste inflow is approximately 107,250 tons per year (375 tons per day based on a 286-day operating schedule). After 2025, the waste inflow rate is assumed to increase consistent with the projected growth rate for the facility's general service area.

Operating criteria for a range of waste acceptance rates are included in Part IV – SOP. The above projections are based on current market conditions and may vary as market conditions change. These waste acceptance rates are not a limiting parameter of this permit. The actual yearly waste acceptance rate is a rolling quantity based on the sum of the previous four quarters of waste acceptance (refer to Part IV – SOP for additional information).

The estimated maximum annual waste acceptance rate for the facility for 7 years is shown in the following table.

Table 2-2A
Maximum Estimated Waste Acceptance

Year	Waste Acceptance Rate (tons per year)
2025	107,250
2026	108,356
2027	109,473
2028	110,601
2029	111,742
2030	112,893
2031	114,057

The projected waste acceptance rate for other years is summarized in Part III, Appendix IIIM.

2.1.3 Solid Waste Containment System

The design objective of the containment system [final cover, Subtitle D liner, and leachate management systems] is to isolate the solid waste and remove leachate that may collect on the liner system. The Subtitle D liner system proposed for the landfill consists of a composite liner (compacted clay, 60-mil geomembrane liner, and drainage geocomposite). A generalized detail of the containment system for the City of Meadow Landfill is shown in Figure 2.1. Design information and the required QA/QC construction procedures for the individual components of the containment system are presented in Part III of this application.

Figure 2.1. The composite liner and cover systems will be designed to meet or exceed all state and federal regulations.

2.1.4 Site Development Plan

The Site Development Plan (SDP) is included in Part III of this application. The SDP sets forth the overall design and operating characteristics of the landfill. Drawings showing the proposed landfill configuration during site development are presented in Parts I/II, Appendix I/IIA – Facility Layout Maps. A summary of the landfill configuration is provided below (refer to Figures I/II-2.1 and I/II-2.2 for additional information).

- The proposed permit boundary will include an area of 337.9 acres. The permit boundary for the existing site (TCEQ Permit No. MSW-2293) is 72.9 acres. The legal description for the permit boundary is included in Section 13 of Parts I/II.

2.2 Regulatory Agency Coordination

Documentation of coordination with the following regulatory agencies is included in Appendix I/IIB:

- Federal Aviation Administration
- Texas Historical Commission
- Texas Department of Transportation
- Texas Parks and Wildlife Department
- U.S. Army Corps of Engineers
- U.S. Department of the Interior, Fish and Wildlife Service
- Southern Plains Association of Governments

2.3 Texas Historical Commission Review

As noted in Section 2.2, a Texas Historical Commission (THC) coordination letter is included in Appendix I/IIB. The Historical Commission concluded that no historic properties will be affected by the proposed expansion.

2.4 Southern Plains Association of Governments

The expansion and reconfiguration of the City of Meadow Landfill is consistent with the Southern Plains Association of Governments' (SPAG) Regional Solid Waste Plan. The continued development of the facility will provide a regional facility that will ensure long-term, cost-effective, and environmentally-suitable disposal capacity for the region. This is a major goal of the SPAG Regional Plan. A letter documenting that Parts I/II were submitted to the SPAG is provided in Appendix I/IIB.

2.5 Abandoned Oil and Water Wells

A search to identify water wells within a one-mile radius of the landfill permit boundary was completed in October 2023 by Environmental Risk Information Services (ERIS) and Weaver Consultants Group (WCG) and included a review of records from the Texas Water Development Board (TWDB), the TCEQ, and other database records. The results of this search are provided in Part III, Appendix IIIG, Section 2.5 and Appendix IIIG-A. The water well locations are plotted on Figure IIIG-A-8 (Water Well Location Map). Three registered water wells were located within 500-feet of the permit boundary. The closest registered water well is located approximately 83-feet west of the landfill permit boundary and is reportedly used for domestic purposes.

In addition to the database record searches, WCG completed a reconnaissance survey from area roadways to identify apparently unregistered water wells located within one mile of the landfill permit boundary. A total of 99 unregistered water wells were located by WCG reconnaissance, including 11 water wells located within the permit boundary (see Figure I/II-4.3). Any water wells located within the limits of waste footprint or within the perimeter groundwater monitoring system will be plugged and abandoned prior to development of the landfill expansion area waste disposal cells.

If an abandoned water well is located within the permit boundary during the course of facility development, the Landfill Manager will provide written notification to the TCEQ's Executive Director of their location within 30 days after discovery. As the site is developed, if any wells are encountered, the wells will be plugged in accordance with all applicable rules and regulations of the TCEQ, the Railroad Commission of Texas, or other applicable state agency and written certification provided to the Executive Director within 30 days after the plugging is complete.

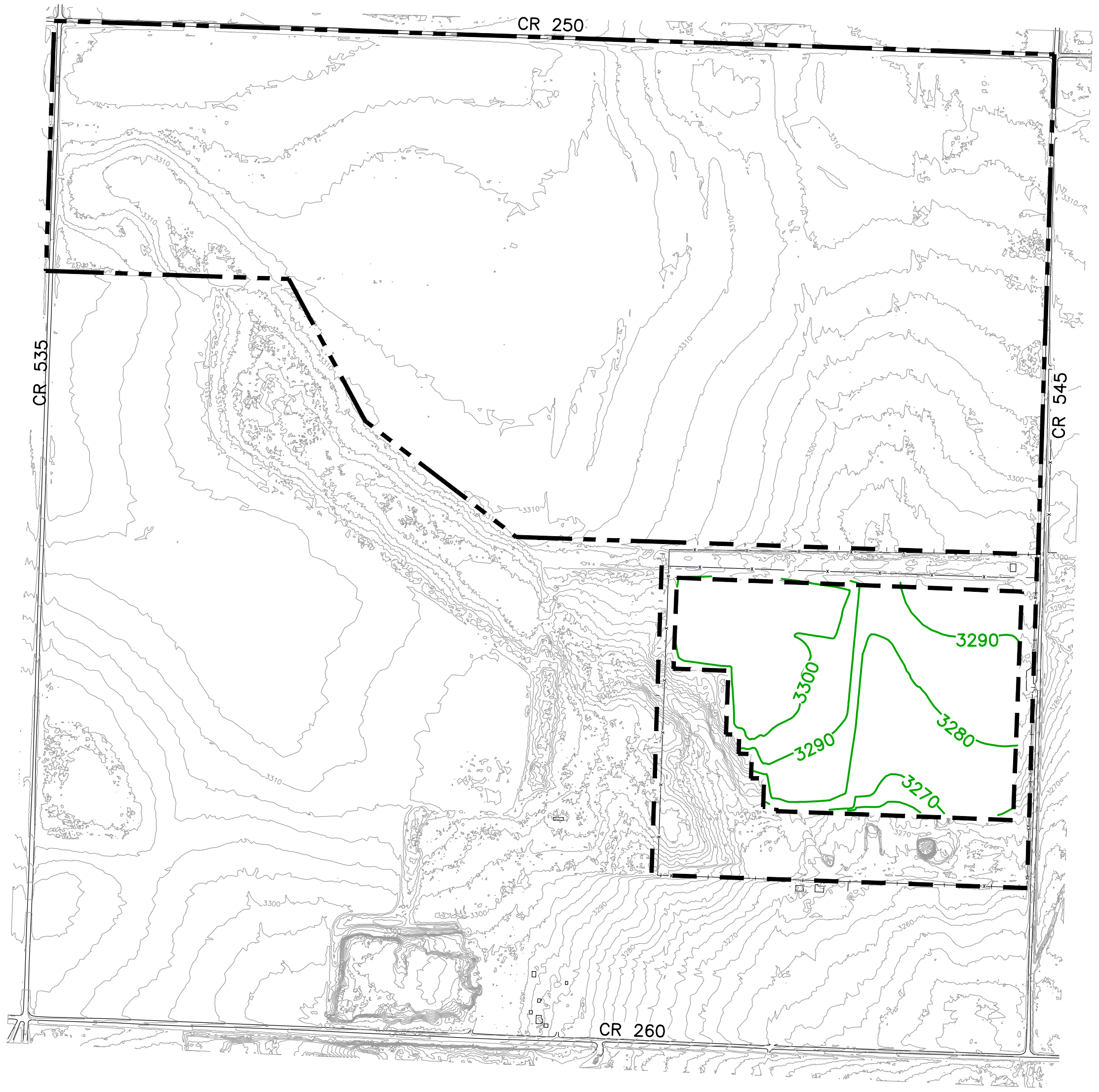
If crude oil, natural gas wells, or other wells associated with mineral recovery that are under the jurisdiction of the Railroad Commission of Texas are located within the permit boundary during the course of site development, within 30 days after the plugging of any such well, the Landfill Manager will provide the Executive Director of the TCEQ with written notice and shall provide to the Executive Director with certification that all such wells have been properly plugged, capped, and closed in accordance with all applicable rules and regulations of the Railroad Commission of Texas within 30 days after the plugging is complete.

A copy of the well plugging report to be submitted to the appropriate state agency will also be submitted to the Executive Director of the TCEQ within 30 days after the well has been plugged. Plugging reports for former onsite oil and gas wells are provided in Part III, Appendix IIIG-A.

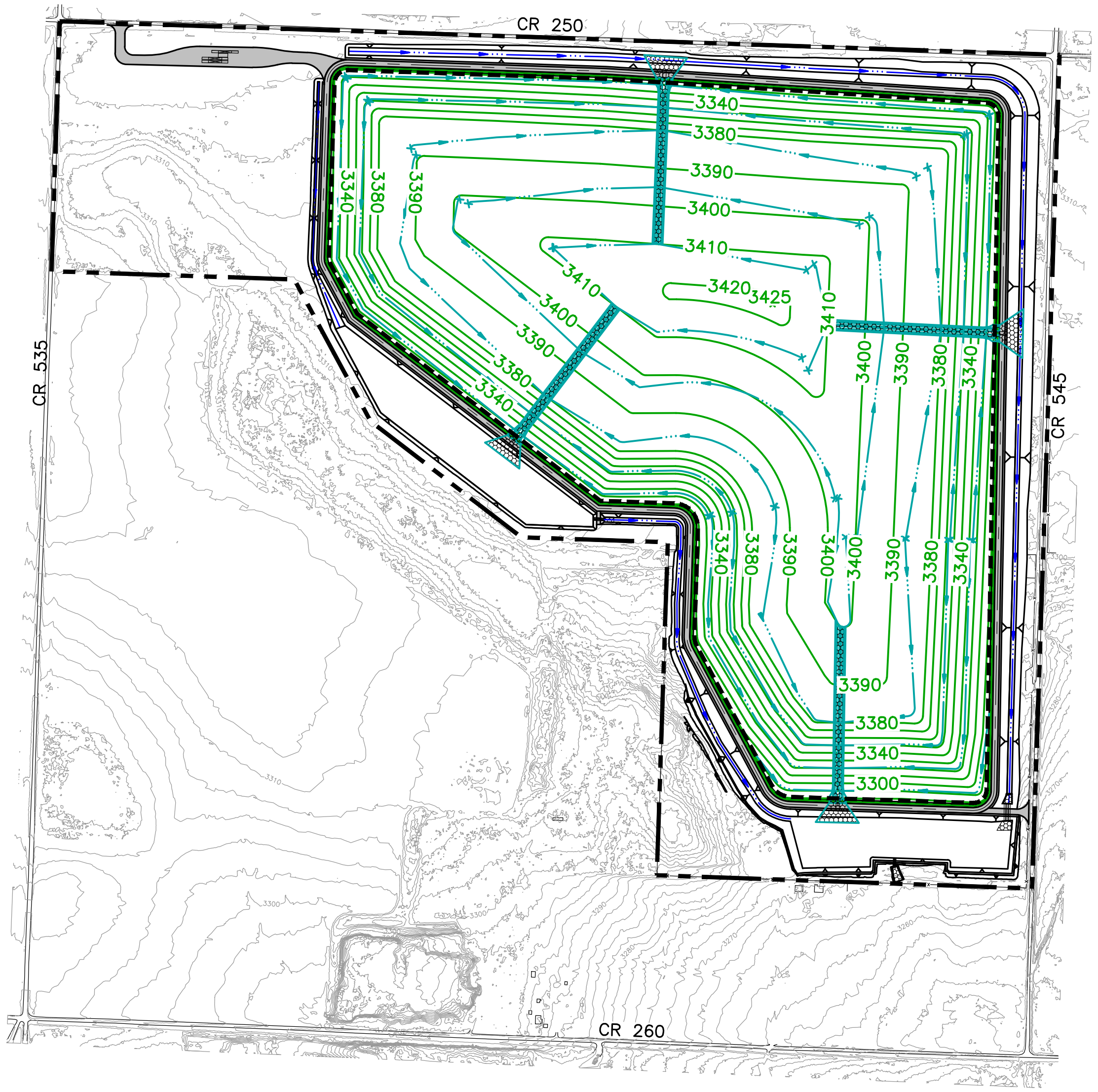
In the event that an abandoned well causes a change to the liner installation plan, a permit modification will be submitted to the Executive Director in accordance with Title 30 TAC §330.161(d).

2.6 Internet Posting

In accordance with Title 30 TAC §330.57(i), a complete copy of this permit application will be posted to the internet at the following publicly accessible website: https://www.tceq.texas.gov/permitting/waste_permits/wpd_pending_permit_apps. All future revisions or supplements to this permit application will also be posted at the same location. This internet posting is for informational purposes only.



PERMITTED LANDFILL COMPLETION PLAN
(TCEQ PERMIT NO. MSW–2293)



PROPOSED LANDFILL COMPLETION PLAN
(TCEQ PERMIT NO. MSW–2293C)

GENERAL INFORMATION

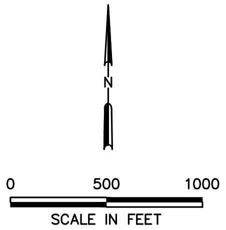
ITEM	EXISTING PERMIT (TCEQ PERMIT NO. MSW–2293)	PROPOSED PERMIT (TCEQ PERMIT NO. MSW–2293C)
PERMIT BOUNDARY	72.9 ACRES	337.9 ACRES
WASTE DISPOSAL AREA	45.0 ACRES	210.7 ACRES
PERMITTED TOP DECK ELEVATION	–––––	3380.0 (FT–MSL)
MAXIMUM PERMITTED ELEVATION	3307.0 (FT–MSL)	3425.0 (FT–MSL)

LEGEND

— · — · —	PROPOSED PERMIT BOUNDARY
— – — – —	PERMITTED PERMIT BOUNDARY
- - - - - -	PROPOSED LIMIT OF WASTE
— — — —	PERMITTED LIMIT OF WASTE
3300	EXISTING CONTOUR
3400	FINAL COVER CONTOUR
▨	DRAINAGE LETDOWN
×—→—	DRAINAGE SWALE

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.



KYLE D. GOULD
106018

02/28/2025

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120–809–11
CAD: 2.1–LANDFILL COMPLETION PLAN.DWG

DRAWN BY: JDW
DESIGN BY: SSM
REVIEWED BY: KDG

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

Weaver Consultants Group
TBPE REGISTRATION NO. F–3727

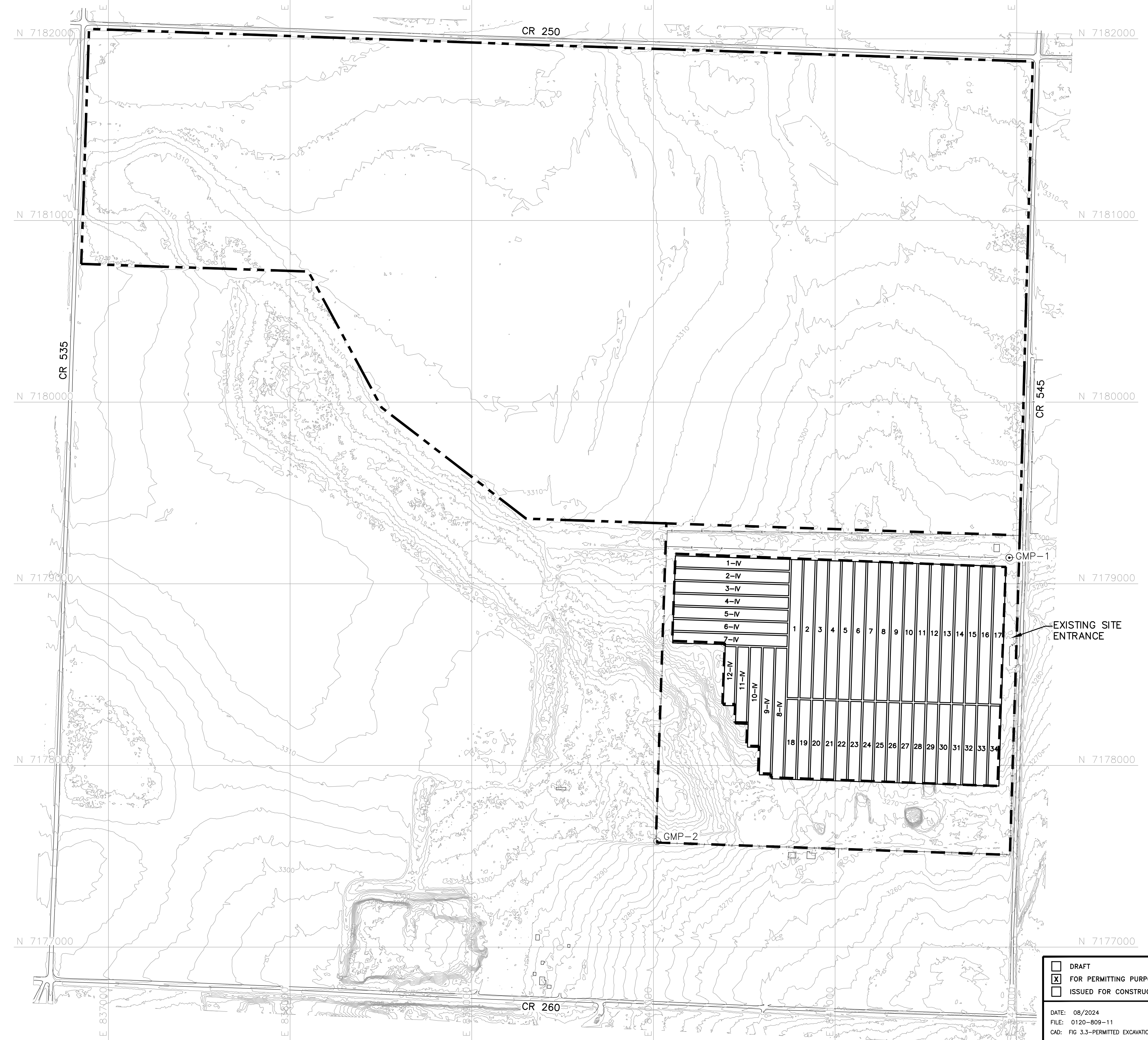
MAJOR PERMIT AMENDMENT
EXISTING AND PROPOSED
LANDFILL COMPLETION PLAN

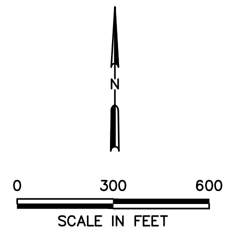
CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

FIGURE I/II–2.1

O:\0120\809\EXPANSION 2023\PARTS I–II\CLEAN 02–2025\2.1–EXISTING AND PROPOSED LANDFILL FINAL COVER PLAN.dwg, jwilson, 1:2





LEGEND

PROPOSED PERMIT BOUNDARY
PERMITTED PERMIT BOUNDARY
PERMITTED LIMIT OF WASTE
N 7180000 STATE PLANE COORDINATE SYSTEM
3300 EXISTING CONTOUR
GP-1 EXISTING LANDFILL GAS DETECTION PROBE
1 EXISTING TYPE I TRENCH
1-IV EXISTING TYPE IV TRENCH

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.
3. HISTORIC WASTE WILL BE EXCAVATED AND RELOCATED INTO THE SUBTITLE D-LINED DISPOSAL CELLS DURING LANDFILL DEVELOPMENT.

KYLE D. GOULD
106018

02/28/2025

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120-809-11
CAD: FIG 3.3-PERMITTED EXCAVATION PLAN.DWG

DRAWN BY: JDW
DESIGN BY: SSM
REVIEWED BY: KDG

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT
PERMITTED EXCAVATION PLAN
(TCEQ PERMIT NO. MSW-2293)

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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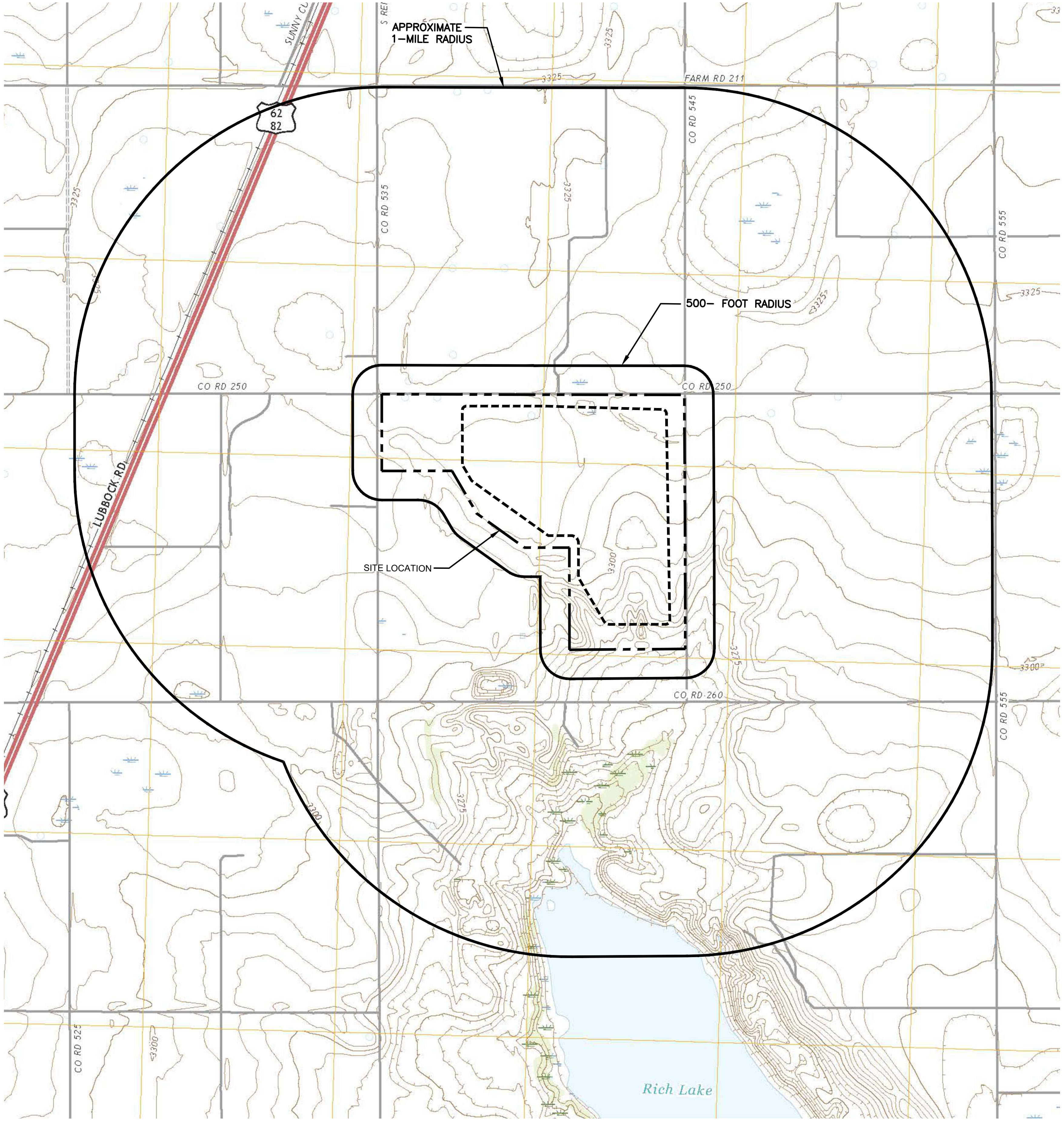
FIGURE I/II-3.3

O:\0120\809\EXPANSION 2023\PARTS I-II\CLEAN 02-2025\3.3-PERMITTED EXCAVATION PLAN.dwg, jwilson, 1:2



LEGEND

▬ ▬ ─ ─ ▬ PROPOSED PERMIT BOUNDARY
- - - - - - PROPOSED LIMIT OF WASTE

N

0 1000 2000
SCALE IN FEET

ROAD CLASSIFICATION

Expressway
Secondary Hwy
Ramp
Local Connector
Local Road
4WD
Interstate Route
US Route
State Route

MEADOW, TX
2022

NOTES:
1. THE PRIMARY SITE ACCESS ROADS WITHIN ONE MILE OF THE SITE INCLUDE U.S. HIGHWAY 62, COUNTY ROAD 250, COUNTY ROAD 545, AND COUNTY ROAD 250.
2. SEE FIGURE I/II–5.1 FOR PROPERTY OWNERS WITHIN 1/4–MILE OF THE SITE.
3. SEE SECTION 7.7 FOR DISCUSSION OF WATER WELLS. WATER WELLS LOCATED WITHIN 500 FEET OF THE PERMIT BOUNDARY ARE SHOWN ON FIGURE I/II–4.3. REFER TO APPENDIX IIIG FOR WATER WELLS WITHIN ONE MILE OF THE PERMIT BOUNDARY.
4. NO SPRINGS ARE DOCUMENTED WITHIN ONE MILE OF THE PERMIT BOUNDARY.
5. REFER TO FIGURE 4.3 FOR LOCATION OF THE NEAREST RESIDENCE.
6. REFER TO SECTION 8 FOR AIRPORTS LOCATED WITHIN 6 MILES OF THE PERMIT BOUNDARY.
7. REFER TO SECTION 13 FOR EASEMENT INFORMATION AND DRAWING I/IIA.11 FOR ACCESS CONTROL INFORMATION.
8. ALL TOPOGRAPHIC INFORMATION REPRODUCED FROM 7.5 MINUTE, MEADOW, TEXAS QUADRANGLE USGS MAP DATED 2022.

KYLE D. GOULD
106018

02/28/2025

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120–809–11
CAD: FIG 4.2–GENERAL TOPO.DWG

DRAWN BY: JDW
DESIGN BY: SSM
REVIEWED BY: KDG

Weaver Consultants Group
TBPE REGISTRATION NO. F–3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

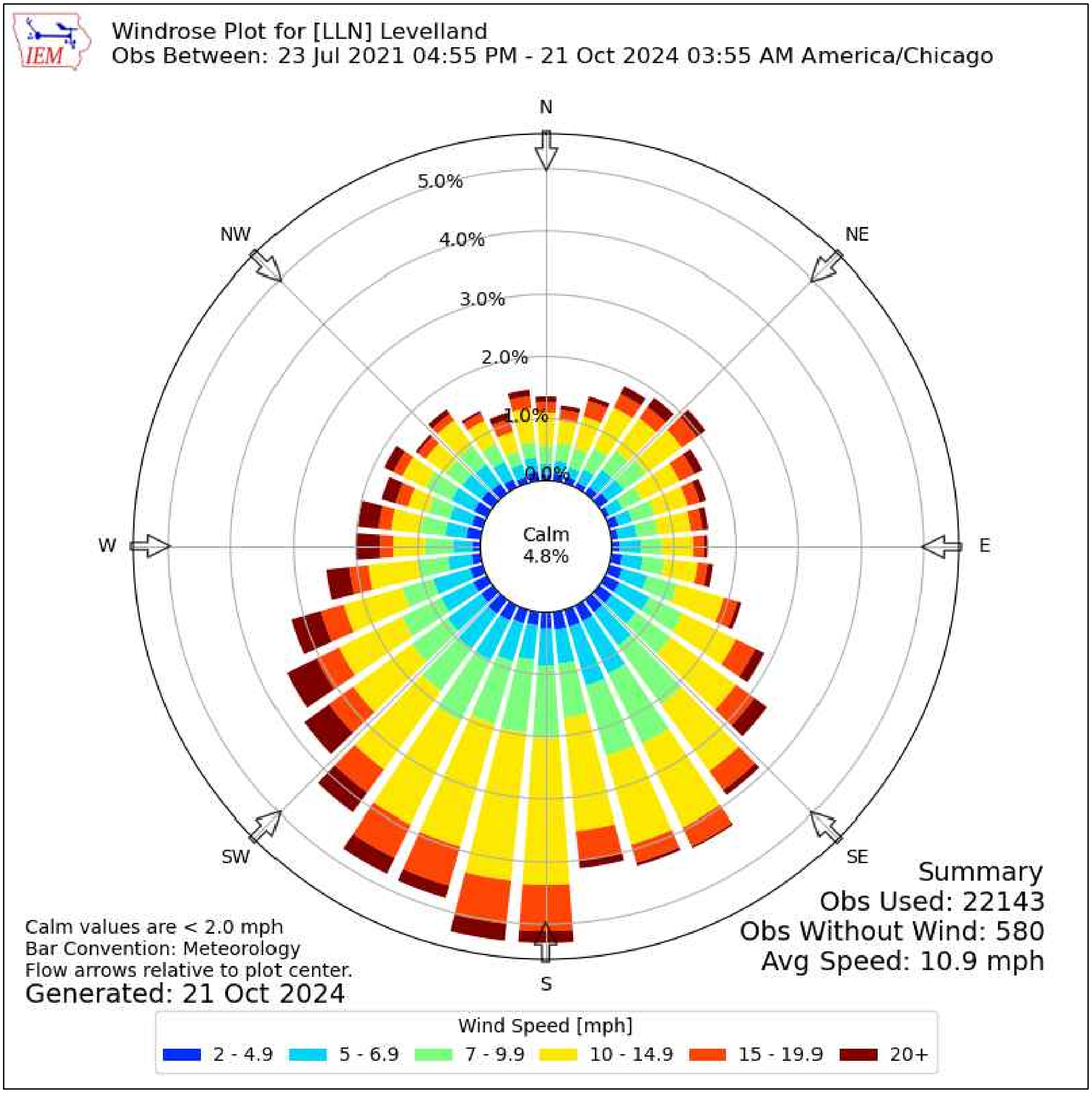
NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT
GENERAL TOPOGRAPHIC MAP

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

FIGURE I/II–4.2



NOTE:

1. THE WIND ROSE IS REPRODUCED FROM THE AUTOMATED SURFACE OBSERVING SYSTEM (ASOS) AT LEVELLAND AND GENERATED FROM THE IOWA ENVIRONMENTAL MESONET. THE ASOS IS A JOINT PROGRAM OF THE NATIONAL WEATHER SERVICE, THE FEDERAL AVIATION ADMINISTRATION AND THE DEPARTMENT OF DEFENSE.

KYLE D. GOULD
106018

02/28/2025

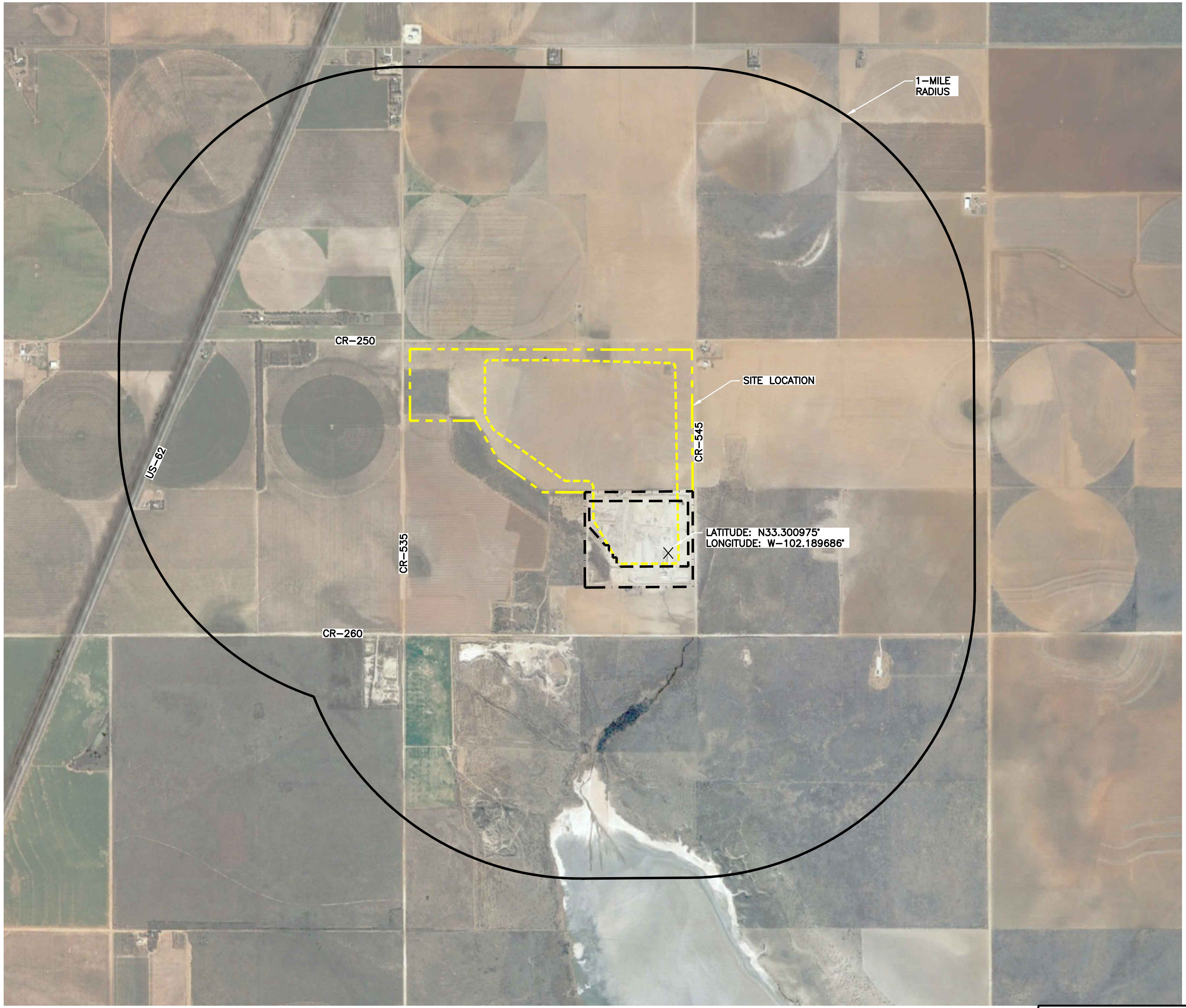
MAJOR PERMIT AMENDMENT
ASOS WIND ROSE

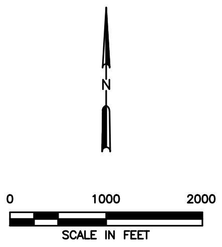
CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

DRAWN BY: RAA	DATE: 02/2025	FILE: 0120-809-11
REVIEWED BY: JBM	CAD: I/II-4-2 WIND ROSE.DWG	FIGURE I/II-4.2A

O:\0120\809\EXPANSION 2023\PARTS I-II\CLEAN 02-2025\4.2A-ASOS WIND ROSE.dwg, jwilson, 1:1





LEGEND

— · —	PROPOSED PERMIT BOUNDARY
— · —	PERMITTED PERMIT BOUNDARY
- - -	PROPOSED LIMIT OF WASTE
— —	PERMITTED LIMIT OF WASTE

NOTE:

1. AERIAL PHOTOGRAPH OBTAINED FROM GOOGLE EARTH DATED 2–5–2021.

KYLE D. GOULD
106018

02/28/2025

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120–809–11
CAD: FIG 6.1–AERIAL PHOTOGRAPH.DWG

DRAWN BY: JDW
DESIGN BY: SSM
REVIEWED BY: KDG

Weaver Consultants Group
TBPE REGISTRATION NO. F–3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT
AERIAL PHOTOGRAPH

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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FIGURE I/II–6.1

7.6 Land Use Conclusions

The use of this land for a municipal solid waste site represents a compatible land use for the following reasons.

- The site has been permitted as a landfill for over 20 years.
- The waste placement footprint represents only 210.7 acres out of a permit boundary of 337.9 acres.
- The site has not and will not affect area growth trends.
- The generally rural/undeveloped nature of the existing land uses in the area is compatible with the proposed expansion.

In summary, the existing site has long been established as a disposal facility. The expansion and reconfiguration of the City of Meadow Landfill will provide long term waste disposal for area communities at a facility that will continue to be developed to meet or exceed all regulatory requirements.

7.7 Water Wells Within 500 Feet

A search to identify water wells within a one-mile radius of the landfill permit boundary was completed in October 2023 by ERIS and WCG and included a review of records from the TWDB, the TCEQ, and other database records. The results of this search are provided in Part III, Appendix IIIG, Section 2.5 and Appendix IIIG-A. The water well locations are plotted on Figure IIIG-A-8 (Water Well Location Map). Three registered water wells were located within 500-feet of the permit boundary. The closest registered water well is located approximately 83-feet west of the landfill permit boundary and is reportedly used for domestic purposes.

In addition to the database record searches, WCG completed a reconnaissance survey from area roadways to identify apparently unregistered water wells located within one mile of the landfill permit boundary. A total of 99 unregistered water wells were located by WCG reconnaissance, including 10 water wells located within the permit boundary (see Figure I/II-4.3). Any water wells located within the limits of waste footprint or within the perimeter groundwater monitoring system will be plugged and abandoned prior to development of the landfill expansion area waste disposal cells.

10 GROUNDWATER AND SURFACE WATER STATEMENT

10.1 Groundwater Statement

This section addresses §330.61(k).

Groundwater conditions at the site were determined using data from groundwater piezometers and nearby water wells. Details and logs of on-site borings and piezometers, as well as potentiometric surface contour maps, are provided in Part III, Appendix IIIG.

The uppermost aquifer, for groundwater monitoring purposes, is contained within the site-specific Lower Sand Stratum (Ogallala Aquifer). The lower confining unit is comprised of low-permeability clay and shale sediments of the site-specific Basal Clay stratum which act as an aquiclude to restrict the downward vertical movement of Lower Sand groundwater. Regional Ogallala Aquifer groundwater flow generally follows the regional dip of the formation toward the south-southeast. The site-specific groundwater data indicate a groundwater flow regime toward the northwest, north, northeast, east, southeast, from a groundwater high located at the southeast proposed expansion area. Regional aquifer and site-specific groundwater data are provided and discussed in Appendix IIIG (Geology) and Appendix IIIH (Groundwater Sampling and Analysis Plan) of the Site Development Plan.

10.2 Surface Water Statement

The 337.9-acre City of Meadow Landfill permit boundary is located north of Rich Lake. The entire site drains south to an unnamed tributary which drains into Rich Lake. Rich Lake is approximately 1 mile south of the permit boundary and is part of the Colorado River Basin. Rich Lake drains to the south through a series of unnamed tributaries. The total drainage area of the Colorado watershed is approximately 250,000 square miles.

For the proposed landfill expansion and reconfiguration, the final cover system will include erosion control structures to effectively minimize erosion of final cover soils. The proposed drainage system also includes a perimeter channel system that will convey stormwater collected from the landfill area to one of two detention ponds. The stormwater detention ponds are designed to attenuate stormwater flow before stormwater is discharged into existing drainage features located downstream of the site. As discussed in Appendix IIIF, the site's stormwater management system is designed to not adversely alter existing permitted drainage patterns or have any adverse impact on offsite drainage features.

The facility has been designed to prevent discharge of pollutants into waters of the State or waters of the United States, as defined by the Texas Water Code and the

DEED FOR
REPUBLIC WASTE SERVICES OF TEXAS, LTD.
CALLED 159.87 AC
VOL. 764, PG. 673
O.P.R.T.C.T.

240262

NOTICE OF CONFIDENTIALITY RIGHTS:
IF YOU ARE A NATURAL PERSON, YOU MAY REMOVE OR STRIKE ANY OF THE FOLLOWING INFORMATION FROM THIS INSTRUMENT BEFORE IT IS FILED FOR RECORD IN THE PUBLIC RECORDS: YOUR SOCIAL SECURITY NUMBER OR YOUR DRIVER'S LICENSE NUMBER.

DEED BY SUBSTITUTE TRUSTEE

STATE OF TEXAS)

COUNTY OF TERRY)

WHEREAS on October 25, 2000, Ronnie G. Hitt, (herein called "Grantor") executed a certain deed of trust conveying to the State Director of the Farmers Home Administration for the State of Texas, and his successors in office as State Director or Acting State Director, Trustee, certain property hereinafter described for the purpose of securing and enforcing the payment to the United States of America of a certain note and other indebtedness as more fully described and provided for in said deed of trust which is recorded in Volume 656, Page 379, Official Public Records, Terry County, Texas, reference to which deed of trust and the record thereof is hereby made for all purposes; and

WHEREAS the said Trustee named in said deed of trust was unable to act as Trustee in said capacity; and

WHEREAS the United States of America, Beneficiary in said deed of trust, pursuant to and in accordance with the powers embodied in said deed of trust, did duly appoint the undersigned to serve as Substitute Trustee, and I, the duly named Substitute Trustee, at the request of the United States of America, the holder of said deed of trust, there having been default in the payment of the said note, after the posting of written notice thereof for twenty-one days prior to the date of sale at the Courthouse door in Brownfield, Terry County, Texas, in which county said real estate is situated, after serving written notice of the proposed sale by certified mail on each debtor obligated to pay such debt and on any persons shown of record to have an interest inferior to the interest of the United States of America in the property secured by said deed of trust, which notice stated the sale would be held at 10:00 a.m., or within three hours thereafter, on May 1, 2007, at the north door of the courthouse in said county, and after filing said notice of sale for record with the County Clerk of said county, did offer for sale at 10:01 a.m. at public auction on the first Tuesday in May 2007, the same being the 1st day of said month, at the north door of the courthouse in said County, that certain property, together with improvements thereon, with the rights, privileges and appurtenances thereto belonging, situated in said County, more particularly described as follows:

> 159.87 acre tract being the Northeast Quarter (NE/4) of Section 19, Block 4-X, C & M Ry. Co. Survey, Terry County, Texas, as described in Volume 552, Page 887, of the Deed Records of Terry County, Texas, and further described as follows:
>
> BEGINNING at ½" iron rod with cap set for the Northeast corner of this tract as the Northeast corner of said Section 19;
> THENCE S 0 deg. 02' 03" E along the east side of a graded county road and the East line of said Northeast Quarter, a distance of 2638.8 feet to a ½" iron rod with cap found at the Northeast corner of the Southeast Quarter of said Section 19 for the Southeast corner of this tract;
> THENCE West, along the North line of said Southeast Quarter, at a distance 35.0 feet pass a ½" iron rod with cap found in the West line of said county road, in all a distance of 2639.1 feet to a ½" iron rod with cap found at the Northwest corner of said Southeast Quarter and the Southwest corner of

said Northeast Quarter for the Southwest corner of this tract;
THENCE N 0 deg. 02' 30" W along the West line of said Northeast Quarter, at a distance of 2608.8 feet pass a ½" iron rod with cap set in the South line of a graded county road, in all a distance of 2638.8 feet to a ½" iron rod with cap set at the Northwest corner of said Northeast Quarter for the Northwest corner of this tact;
THENCE East, along the North line of said Northeast Quarter and said county road, a distance of 2639.1 feet to the Place of Beginning.

SUBJECT, HOWEVER, TO THE FOLLOWING:

1. Any discrepancies, conflicts, or shortages in area or boundary lines, or any encroachments or any protrusions, or any overlapping of improvements.

2. County Road established by jury view, width unknown, up to the Northeast corner of the Northeast Quarter of Section 19, Block 4-X, recorded in Volume 3, Page 5, Commissioner's Court Minutes, Terry County, Texas.

3. Visible and apparent easements and all underground easements, the existence of which may arise by virtue of use or unrecorded grant.

4. Reservation and/or conveyance of all oil, gas and other minerals by prior owners of record.

5. Unpaid ad valorem taxes.

WHEREUPON, the said tract of land was struck off to Republic Waste Services of Texas, Ltd., a Texas limited partnership, 1422 Hughes Avenue, San Angelo, Texas 76903, for the sum of $68,000.00, being the highest bid therefor.

NOW, THEREFORE, for and in consideration of the premises and of the sum of $68,000.00, (which amount is to be applied as a credit on the note and other indebtedness hereinabove referred to owing to the United States of America), the receipt of which is hereby acknowledged, I, the said Substitute Trustee, by virtue of the authority conferred upon me in writing by the said Beneficiary in said deed of trust as more fully shown by instrument dated March 14, 2007, recorded in Volume 745, Page 413, Official Public Records, Terry County, Texas, have BARGAINED, SOLD AND CONVEYED and by these presents do BARGAIN, SELL AND CONVEY unto Republic Waste Services of Texas, Ltd., a Texas limited partnership, its successors and assigns, forever, the above-described land and improvements thereon, together with all and singular the rights, privileges and appurtenances to the same in any manner belonging.

TO HAVE AND TO HOLD said property unto the said Republic Waste Services of Texas, Ltd., a Texas limited partnership, its successors and assigns, forever, in fee simple, and I, the said Substitute Trustee, as aforesaid, by virtue of the authority vested in me in said deed of trust, do hereby bind and obligate the said Grantor, his heirs and assigns, to forever warrant and defend the right and title of said property to Republic Waste Services of Texas, Ltd., a Texas limited partnership, its successors and assigns, against every person whomsoever lawfully claiming or to claim the same or any part thereof.

Dated this 1st day of May 2007.

Linda G. Turner

Linda G. Turner
Substitute Trustee

STATE OF TEXAS)

COUNTY OF TERRY)

This instrument was acknowledged before me on

May 10, 2007, by Linda G. Turner, as Substitute Trustee.

Debra Crutcher

Notary Public, State of Texas

SEAL

DEBRA CRUTCHER
NOTARY PUBLIC
STATE OF TEXAS
My Commission Expires 06-08-2010

AFFIDAVIT CONCERNING NOTICE OF THE SUBSTITUTE TRUSTEE'S SALE

(Ronnie G. Hitt - Borrower)

THE STATE OF TEXAS)
ss
COUNTY OF TERRY)

I, Linda G. Turner, being first duly sworn according to law do depose and say:

1. That I am the Substitute Trustee of that certain deed of trust dated October 25, 2000, executed by Ronnie G. Hitt, recorded in Volume 656, Page 379, Official Public Records, Terry County, Texas, which deed of trust secures a loan made under the Housing Act of 1949, 42 U.S.C. 1471 et seq., or the Consolidated Farm and Rural Development Act, 7 U.S.C. 1921 et seq.

2. That each of the persons obligated to pay the debt secured by said deed of trust was given at least 20 days' written notice by certified mail of his/her right to cure the default before the indebtedness was accelerated and before notice was given of the Substitute Trustee's sale.

3. That on April 3, 2007, I personally served written notice of the Substitute Trustee's sale by certified mail on each of the persons obligated to pay the debt secured by said deed of trust and that such notice was addressed to such persons at their last known address, as shown by the records of the holder of the debt.

4. If any person(s) (with a known address) were known to me to have an interest inferior to the interest of the United States of America in the property secured by said deed of trust, I personally mailed written notice of the Substitute Trustee's sale by certified mail to each of such person(s) at their known address on the same date specified in Paragraph 3 above.

5. That the Notice of the Substitute Trustee's Sale was filed with the County Clerk of Terry County, Texas, on April 3, 2007.

6. That the Notice of the Substitute Trustee's Sale was posted at the courthouse door in Brownfield, Terry County, Texas, on April 3, 2007.

7. That to the best of my knowledge and belief, none of the person(s) with a known ownership interest in the property which is the subject of the

Substitute Trustee's sale were in the Armed Forces of the United States of America on the date of the Substitute Trustee's sale and were subject to the provisions of the Soldiers' and Sailors' Civil Relief Act of 1940, 50 App. U.S.C. 510 et seq.

8. That to the best of my knowledge and belief, none of the person(s) with a known ownership interest in the property which is the subject of the Substitute Trustee's sale were deceased on the date of such sale.

9. That as of the date of the Substitute Trustee's sale, the present market value of the property was $56,000.00 and the total unpaid balance of the debt owed to the United States was $118,193.90.

Dated this 10th day of May, 2007.

Linda G. Turner

Linda G. Turner
Substitute Trustee

ACKNOWLEDGMENT

THE STATE OF TEXAS)

COUNTY OF TERRY)

This instrument was acknowledged and sworn to before me on May 10, 2007, by Linda G. Turner.

Debra Crutcher

Notary Public, State of Texas

DEBRA CRUTCHER
NOTARY PUBLIC
STATE OF TEXAS
My Commission Expires 06-08-2010

FILED FOR RECORD

AT 1:00 **O'CLOCK** P **M**
ON THE 27 **DAY OF** August
A.D., 2008.
Vol. 764 **Page** 673
in the Official Public Records of Terry County, Texas.

Deborah Reid, deputy
Ann Willis
COUNTY CLERK, TERRY COUNTY, TEXAS

BY Deborah Reid
DEPUTY

ANY PROVISION HEREIN WHICH RESTRICTS THE SALE, RENTAL OR USE OF THE DESCRIBED REAL PROPERTY BECAUSE OF COLOR OR RACE IS INVALID AND UNENFORCEABLE UNDER FEDERAL LAW.

STATE OF TEXAS
COUNTY OF TERRY
OFFICIAL PUBLIC RECORD

I hereby certify that this instrument was FILED on the date and at the time stamped hereon by me and was duly RECORDED in the Volume and Page of the named RECORDS of Terry County, Texas, as stamped hereon by me.

Ann Willis
COUNTY CLERK
TERRY COUNTY, TEXAS

Ed Rhodes
Republic Services
1150 Estate Drive Suite D
Abilene Texas 79602

pd $40.00

envelope provided

DEED FOR
CITY OF MEADOW
CALLED 80.00 AC
VOL. 652, PG. 473
O.P.R.T.C.T.

217437

WARRANTY DEED

Date: July 10, 2000

Grantor: Willie A. Nieman and wife, Betty Nieman

Grantor's Mailing Address: 1613 Paseo Circle, Brownfield, Texas 79316

Grantee: City of Meadow, a Texas Municipality

Grantee's Mailing Address: P.O. Box 156
Meadow, Texas 79345

Consideration: Twenty four thousand dollars and zero cents ($24,000.00) cash

Property (including any improvements):

> An 80.00 acre tract of land in the Southeast Quarter of Section 19, Block 4X, C & M Railroad Company Survey, Terry County, Texas being a portion of that tract of land described in Volume 428, Page 715 of the Deed Records of Terry County, Texas and further described as follows:
> BEGINNING at a 1/2" iron rod with cap set for the Northeast corner of this tract in the East shoulder of a graded county road at the Northeast corner of said Southeast Quarter from whence a railroad spike found in the centerline of F.M. Highway 211 at the Northeast corner of Section 20 Block 4X bears N 0°02'03" W a distance of 7918.9 feet;
> THENCE S 0°02'30" E, along said county road and the East line of said Southeast quarter, a distance of 1760.2 feet to a 1/2" iron rod with cap set in the centerline of said county road and the North line of that 53.333 acre tract of land described in Volume 466, Page 141 of said record for the Southeast corner of this tract;
> THENCE N 89°54'40" W, along the North line of said 53.333 acre tract, at a distance of 31.1 feet pass a 3/8" iron rod found in a North South fence line, in all a distance of 1981.5 feet to a 1/2" iron rod with cap set one foot North of an East-West fence line for the Southwest corner of this tract from whence a 1/2" iron rod found at the Northwest corner of said 53.333 acre tract bears N 89°54'40" W a distance of 650.2 feet;
> THENCE N 0°02'30" W , at a distance of 1620 feet pass an East-West fence line, in all a distance of 1757.2 feet to a 1/2" iron rod with cap set in the North line of said Southeast Quarter for the Northwest corner of this tract;
> THENCE N 90°00'00" E, along said North line, at a distance of 1946.5 feet pass a 1/2" iron rod with cap set in the West line of said county road, in all a distance of 1981.5 feet to the place of beginning.

Reservations from and Exceptions To Conveyance and Warranty:

Easements, right-of-way, and prescriptive rights, whether of record or not; all presently recorded instruments other than liens and conveyances, that affect the property; rights of adjoining owners in any walls and fences situated on a common boundary; any discrepancies, conflicts, or shortages in area or boundary lines; taxes for the current year, the payment of which Grantee assumes; and prior reservations and conveyances of oil, gas, and other minerals in, on and under that may be produced from said land which are of record in Terry County, Texas.

Grantor, for the Consideration and subject to the Reservations from Conveyance and the Exceptions to Conveyance and Warranty, grants, sells, and conveys to Grantee the Property, together with all and singular the rights and appurtenances thereto in any way belonging, to have and to hold it to Grantee and Grantee's heirs, successors, and assigns forever. Grantor binds Grantor and Grantor's heirs and successors to warrant and forever defend all and singular the Property to Grantee and Grantee's heirs, successors, and assigns against every person whomsoever lawfully claiming or to claim the same or any part thereof, except as to the Reservations and Exceptions to Conveyance and Warranty.

When the context requires, singular nouns and pronouns include the plural.

Betty L. Nieman

Willie A. Nieman

Betty Nieman, aka Betty L. Nieman

STATE OF TEXAS §

COUNTY OF TERRY §

This instrument was acknowledged before me on this the 12th day of July , 2000, by Willie A. Nieman and wife, Betty Nieman, aka Betty L. Nieman.

JIM PETE HALE
Notary Public, State of Texas
My Comm. Expires Oct. 31, 20[illegible]

Notary of Public, State of Texas

FILED FOR RECORD
AT 3:00 O'CLOCK P M
ON THE 17th DAY OF July
A.D., 2000.
Vol. 652 Page 473
In the Official Public Records of
Terry County, Texas.

Susan Pickett, deputy

Ann Willis
COUNTY CLERK, TERRY COUNTY, TEXAS

BY
DEPUTY

ANY PROVISION HEREIN WHICH RESTRICTS THE SALE, RENTAL OR USE OF THE DESCRIBED REAL PROPERTY BECAUSE OF COLOR OR RACE IS INVALID AND UNENFORCEABLE UNDER FEDERAL LAW.

STATE OF TEXAS
COUNTY OF TERRY
OFFICIAL PUBLIC RECORD

I hereby certify that this instrument was FILED on the date and at the time stamped hereon by me and was duly RECORDED in the Volume and Page of the named RECORDS of Terry County, Texas, as stamped hereon by me.

Ann Willis
COUNTY CLERK
TERRY COUNTY, TEXAS

JPH
11^00

DEED FOR
CITY OF MEADOW
CALLED 79.94 AC
VOL. 875, PG. 629
O.P.R.T.C.T.

TERRY, TX 2:24:42 PM #265887
KIM CARTER 10-15-2014 B-875 P-629

NOTICE OF CONFIDENTIALITY RIGHTS: IF YOU ARE A NATURAL PERSON, YOU MAY REMOVE OR STRIKE ANY OR ALL OF THE FOLLOWING INFORMATION FROM ANY INSTRUMENT THAT TRANSFERS AN INTEREST IN REAL PROPERTY BEFORE IT IS FILED FOR RECORD IN THE PUBLIC RECORDS: YOUR SOCIAL SECURITY NUMBER OR YOUR DRIVER'S LICENSE NUMBER.

GENERAL WARRANTY DEED

Date:	April 8th, 2014
Grantor:	**Clarence Nieman**
Grantor's Mailing Address (including county):	471 FM 179 Tahoka, Lynn County, Texas 79373
Grantee:	**City of Meadow**
Grantee's Mailing Address (including county):	906 1ST Street Meadow, Terry County, Texas 79345

Consideration: TEN AND NO/100 DOLLARS ($10.00) cash, and other good and valuable consideration the receipt and sufficiency of which is hereby fully acknowledged and confessed.

Property (including any improvements):

The property described in Exhibit "A" attached hereto and incorporated herein for all purposes.

TO HAVE AND TO HOLD the property described, together with all the rights and appurtenances lawfully accompanying it, by the Grantee and the Grantee's heirs, personal representatives, successors, and assigns forever. Grantor binds himself and Grantor's heirs, personal representatives, successors, and assigns to warrant and forever defend the property against every person lawfully claiming or to claim all or any part of the property; provided, however, it is expressly understood and agreed that this conveyance is made subject to all easements, exceptions, covenants, conditions, restrictions, reservations, and rights appearing of record.

When the context requires, singular nouns and pronouns include the plural.

Clearance Nieman

ACKNOWLEDGMENT

STATE OF TEXAS §
§
COUNTY OF TERRY §

This instrument was acknowledged before me on the 10th day of October, 2014, by Clearance Nieman.

NOTARY PUBLIC, STATE OF TEXAS

TERRI MCCLANAHAN
Notary Public, State of Texas
My Commission Expires
September 05, 2017

Exhibit A

LEGAL DESCRIPTION OF THE PROPERTY

THE NORTH HALF OF THE NORTHWEST QUARTER OF SECTION 19, BLOCK 4X, C. & M. RR. CO. SURVEY, TERRY COUNTY, TEXAS

METES AND BOUNDS DESCRIPTION OF A 79.94 ACRE TRACT OF LAND LOCATED IN THE NORTHWEST QUARTER OF SECTION 19, BLOCK 4X, C. & M. RAILROAD COMPANY SURVEY, TERRY COUNTY, TEXAS BEING THAT TRACT DESCRIBED AS THE NORTH HALF OF THE NORTHWEST QUARTER IN VOLUME 428, PAGE 715 OF THE DEED RECORDS OF TERRY COUNTY, TEXAS AND FURTHER DESCRIBED AS FOLLOWS:

BEGINNING AT A ½" IRON ROD FOUND FIVE FEET SOUTH OF THE CENTERLINE OF INTERSECTING GRADED COUNTY ROADS FOR THE NORTHWEST CORNER OF THIS TRACT AT THE NORTHWEST CORNER OF SAID SECTION 19;

THENCE S 90°00'00" E, ALONG THE NORTH LINE OF SAID NORTHWEST QUARTER AND SAID COUNTY ROAD, A DISTANCE OF 2639.10 FEET TO A ½" IRON ROD WITH CAP FOUND AT THE NORTHWEST CORNER OF THE NORTHEAST QUARTER OF SAID SECTION 19 AS DESCRIBED IN VOLUME 656 PAGE 374 OF SAID RECORDS FOR A CORNER OF THIS TRACT;

THENCE S 0°02'30" E, ALONG THE WEST LINE OF SAID NORTHEAST QUARTER, A DISTANCE OF 1319.42 FEET TO A ½" IRON ROD WITH CAP SET AT THE SOUTHEAST CORNER OF SAID NORTH HALF FOR THE SOUTHEAST CORNER OF THIS TRACT;

THENCE N 90°00'00" W, ALONG THE SOUTH LINE OF SAID NORTH HALF, AT A DISTANCE OF 1358.00 FEET PASS A SET ½" IRON ROD WITH CAP, AT A DISTANCE OF 1817.00 FEET PASS A SET ½" IRON ROD WITH CAP, AT A DISTANCE OF 2608.82 FEET PASS A ½" IRON ROD WITH CAP SET IN THE EAST LINE OF SAID COUNTY ROAD, IN ALL A DISTANCE OF 2639.10 FEET TO A ½" IRON ROD WITH CAP SET IN THE WEST LINE OF SAID NORTHWEST QUARTER AND SAID COUNTY ROAD AT THE SOUTHWEST CORNER OF SAID NORTH HALF FOR THE SOUTHWEST CORNER OF THIS TRACT;

THENCE N 0°02'30" W, ALONG SAID COUNTY ROAD AND SAID WEST LINE, A DISTANCE OF 1319.42 FEET TO THE PLACE OF BEGINNING.

FILED FOR RECORD
2014 OCT 15 PM 1:43
KIM CARTER
TERRY COUNTY CLERK
BY

DEED FOR
CITY OF MEADOW
CALLED 26.315 AC
VOL. 875, PG. 633
O.P.R.T.C.T.

TERRY, TX
KIM CARTER

2:29:42 PM #265888
10-15-2014 B-875 P-633

NOTICE OF CONFIDENTIALITY RIGHTS: IF YOU ARE A NATURAL PERSON, YOU MAY REMOVE OR STRIKE ANY OR ALL OF THE FOLLOWING INFORMATION FROM ANY INSTRUMENT THAT TRANSFERS AN INTEREST IN REAL PROPERTY BEFORE IT IS FILED FOR RECORD IN THE PUBLIC RECORDS: YOUR SOCIAL SECURITY NUMBER OR YOUR DRIVER'S LICENSE NUMBER.

GENERAL WARRANTY DEED

Date:	April 8th, 2014
Grantor:	**Willie Nieman**
Grantor's Mailing Address (including county):	**1309 E Hester St Brownfield, Terry County TX 79316-5823**
Grantee:	**City of Meadow**
Grantee's Mailing Address (including county):	**906 1ST Street Meadow, Terry County, Texas 79345**

Consideration: TEN AND NO/100 DOLLARS ($10.00) cash, and other good and valuable consideration the receipt and sufficiency of which is hereby fully acknowledged and confessed.

Property (including any improvements):

The property described in Exhibit "A" attached hereto and incorporated herein for all purposes.

TO HAVE AND TO HOLD the property described, together with all the rights and appurtenances lawfully accompanying it, by the Grantee and the Grantee's heirs, personal representatives, successors, and assigns forever. Grantor binds himself and Grantor's heirs, personal representatives, successors, and assigns to warrant and forever defend the property against every person lawfully claiming or to claim all or any part of the property; provided, however, it is expressly understood and agreed that this conveyance is made subject to all easements, exceptions, covenants, conditions, restrictions, reservations, and rights appearing of record.

When the context requires, singular nouns and pronouns include the plural.

Willie G Nieman

Willie Nieman

ACKNOWLEDGMENT

STATE OF TEXAS §
§
COUNTY OF TERRY §

This instrument was acknowledged before me on the 10th day of October, 2014, by Willie Nieman.

NOTARY PUBLIC, STATE OF TEXAS

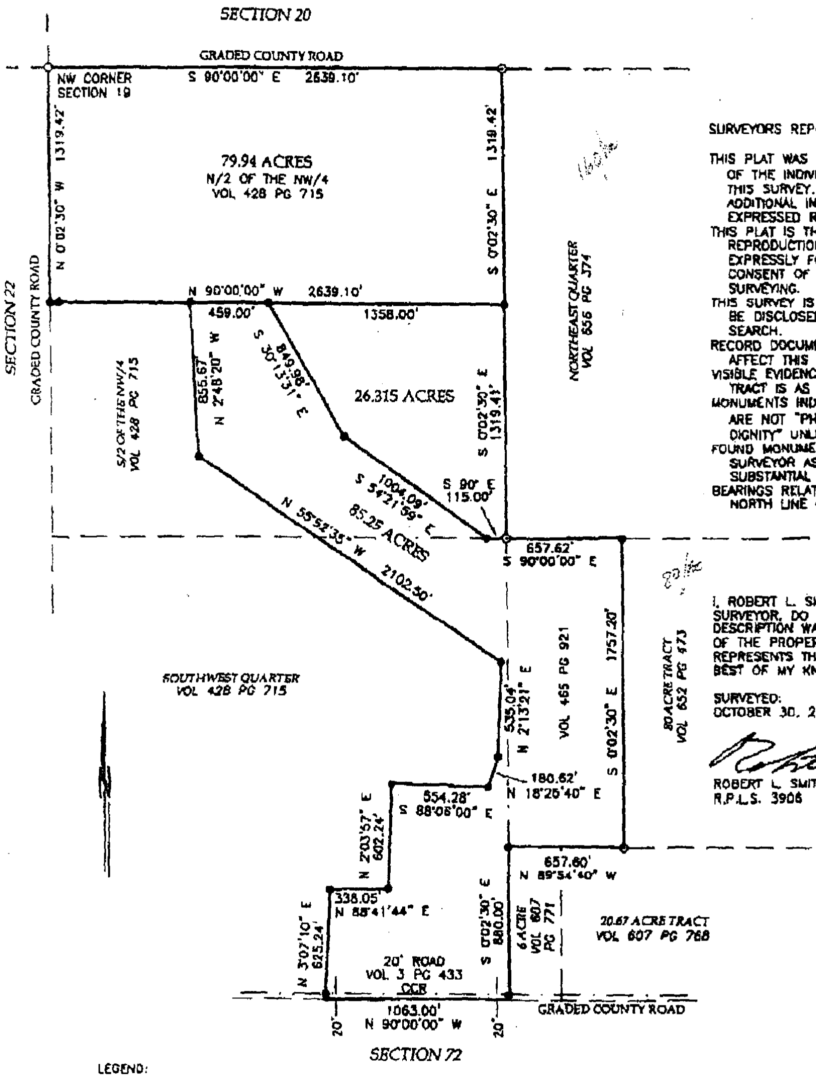
TERRI MCCLANAHAN
Notary Public, State of Texas
My Commission Expires
September 05, 2017

Exhibit A

LEGAL DESCRIPTION OF THE PROPERTY

BOUNDARY SURVEY OF THREE TRACTS OF LAND IN SECTION 19, BLOCK 4X, TERRY COUNTY, TEXAS

METES AND BOUNDS DESCRIPTIONS
ON SEPARATE DOCUMENTS



SURVEYORS REPORT:

THIS PLAT WAS PREPARED FOR THE EXCLUSIVE USE OF THE INDIVIDUAL AND/OR INSTITUTIONS NAMED ON THIS SURVEY. IT IS NON TRANSFERABLE TO ADDITIONAL INSTITUTIONS OR INDIVIDUALS WITHOUT EXPRESSED RECERTIFICATION BY SMITH SURVEYING.
THIS PLAT IS THE PROPERTY OF SMITH SURVEYING. REPRODUCTION OF THIS PLAT FOR ANY PURPOSE IS EXPRESSLY FORBIDDEN WITHOUT THE WRITTEN CONSENT OF AN AUTHORIZED AGENT OF SMITH SURVEYING.
THIS SURVEY IS SUBJECT TO ANY FACTS WHICH MAY BE DISCLOSED BY A FULL AND ACCURATE TITLE SEARCH.
RECORD DOCUMENTS OTHER THAN THOSE SHOWN MAY AFFECT THIS TRACT.
VISIBLE EVIDENCE OF CONDITIONS AFFECTING THIS TRACT IS AS SHOWN ON THIS PLAT.
MONUMENTS INDICATED AS FOUND BY THIS SURVEY ARE NOT "PHYSICAL MONUMENTS OF RECORD DIGNITY" UNLESS SO NOTED.
FOUND MONUMENTS ARE ACCEPTED BY THIS SURVEYOR AS CONTROLLING EVIDENCE DUE TO SUBSTANTIAL AGREEMENT WITH RECORD DOCUMENTS.
BEARINGS RELATIVE TO THE RECORD CALL OF THE NORTH LINE OF SECTION 19, BLOCK 4X.

I, ROBERT L. SMITH, REGISTERED PROFESSIONAL LAND SURVEYOR, DO HEREBY CERTIFY THAT THIS PLAT AND DESCRIPTION WAS PREPARED FROM AN ACTUAL SURVEY OF THE PROPERTY AND THAT THE INFORMATION HEREON REPRESENTS THE FINDINGS OF THIS SURVEY TO THE BEST OF MY KNOWLEDGE AND BELIEF.

SURVEYED:
OCTOBER 30, 2007

Robert L. Smith

ROBERT L. SMITH
R.P.L.S. 3906

ROBERT L. SMITH
3906

LEGEND:

SCALE: 1" = 800'
HEAVY LINES INDICATE LIMITS OF SURVEY.
⊙ = FOUND 1/2" IRON ROD WITH CAP (PMRD).
○ = FOUND 1/2" IRON ROD (CM).
● = SET 1/2" IRON ROD WITH CAP.
PMRD = PHYSICAL MONUMENT OF RECORD DIGNITY.
CM = CONTROLLING MONUMENT.
THIS PLAT INVALID UNLESS IT BEARS SURVEYOR'S ORIGINAL SIGNATURE.

T†t

SMITH SURVEYING
8310 GENOA AVE., STE A
LUBBOCK, TEXAS 79424
806-765-9543
PREPARED FOR: CITY OF MEADOW
REF: 070806rtk/recon
JOB# 07-0806r FB 92 PG 1 MFS

85.25 ACRE TRACT IN
SECTION 19, BLOCK 4X,
C. & M. RR. CO. SURVEY,
TERRY COUNTY, TEXAS

METES AND BOUNDS DESCRIPTION OF AN 85.25 ACRE TRACT OF LAND LOCATED IN SECTION 19, BLOCK 4X, C. & M. RAILROAD COMPANY SURVEY, TERRY COUNTY, TEXAS BEING A PORTION OF THOSE TRACTS DESCRIBED IN VOLUME 428, PAGE 715 AND VOLUME 465, PAGE 921 OF THE DEED RECORDS OF TERRY COUNTY, TEXAS AND FURTHER DESCRIBED AS FOLLOWS:

BEGINNING AT A ½" IRON ROD WITH CAP FOUND FOR A CORNER OF THIS TRACT AT THE SOUTHWEST CORNER OF THE NORTHEAST QUARTER OF SAID SECTION 19 AS DESCRIBED IN VOLUME 656 PAGE 374 OF SAID RECORDS;

THENCE S 90°00'00" E, ALONG THE SOUTH LINE OF SAID NORTHEAST QUARTER, A DISTANCE OF 657.62 FEET TO A ½" IRON ROD WITH CAP SET AT THE NORTHWEST CORNER OF THAT 80.00 ACRE TRACT DESCRIBED IN VOLUME 652 PAGE 473 OF SAID RECORDS FOR A NORTHEAST CORNER OF THIS TRACT;

THENCE S 0°02'30" E, ALONG THE WEST LINE OF SAID 80.00 ACRE TRACT, A DISTANCE OF 1757.20 FEET TO THE SOUTHWEST CORNER OF SAID 80.00 ACRE TRACT FOR A SOUTHEAST CORNER OF THIS TRACT FROM WHENCE A FOUND ½" IRON ROD WITH CAP BEARS SOUTHWEST A DISTANCE OF 0.20 FEET;

THENCE N 89°54'40" W, ALONG THE NORTH LINE OF THOSE TRACTS DESCRIBED IN VOLUME 607, PAGE 768 AND VOLUME 607, PAGE 771, AT A DISTANCE OF 650.50 FEET PASS A FOUND ½" IRON ROD, IN ALL A DISTANCE OF 657.60 FEET TO A ½" IRON ROD WITH CAP SET IN THE EAST LINE OF THE SOUTHWEST QUARTER OF SAID SECTION 19 FOR AN ELL CORNER OF THIS TRACT;

THENCE S 0°02'30" E, ALONG SAID EAST LINE, AT A DISTANCE OF 860.00 FEET PASS A ½" IRON ROD WITH CAP SET IN THE NORTH LINE OF A GRADED COUNTY ROAD, IN ALL A DISTANCE OF 880.00 FEET TO A POINT IN THE SOUTH LINE OF SAID SECTION 19 FOR A SOUTHEAST CORNER OF THIS TRACT,

THENCE N 90°00'00" W, ALONG SAID SOUTH LINE AND SAID COUNTY ROAD, A DISTANCE OF 1063.00 FEET TO THE SOUTHWEST CORNER OF THIS TRACT;

THENCE N 3°07'10" E, AT A DISTANCE OF 20.10 FEET PASS A ½" IRON ROD WITH CAP SET IN THE NORTH LINE OF SAID COUNTY ROAD, IN ALL A DISTANCE OF 625.24 FEET TO A ½" IRON ROD WITH CAP SET FOR CORNER OF THIS TRACT;

THENCE N 88°41'44" E A DISTANCE OF 338.05 FEET TO A ½" IRON ROD WITH CAP SET FOR AN ELL CORNER OF THIS TRACT;

THENCE N 2°03'57" E A DISTANCE OF 602.24 FEET TO A ½" IRON ROD WITH CAP SET FOR A CORNER OF THIS TRACT;

THENCE S 88°06'00" E A DISTANCE OF 554.28 FEET TO A ½" IRON ROD WITH CAP SET FOR AN ELL CORNER OF THIS TRACT;

THENCE N 18°25'40" E A DISTANCE OF 180.62 FEET TO A ½" IRON ROD WITH CAP SET FOR A CORNER OF THIS TRACT;

THENCE N 2°13'21" E A DISTANCE OF 535.04 FEET TO A ½" IRON ROD WITH CAP SET FOR AN ELL CORNER OF THIS TRACT;

THENCE N 55°52'35" W A DISTANCE OF 2102.50 FEET TO A ½" IRON ROD WITH CAP SET FOR A CORNER OF THIS TRACT;

THENCE N 2°48'20" W A DISTANCE OF 855.67 FEET TO A ½" IRON ROD WITH CAP SET IN THE NORTH LINE OF THE SOUTH HALF OF THE NORTHWEST QUARTER OF SAID SECTION 19 FOR THE NORTHWEST CORNER OF THIS TRACT;

THENCE S 90°00'00" E, ALONG SAID NORTH LINE, A DISTANCE OF 459.00 FEET TO A ½" IRON ROD WITH CAP SET FOR A NORTHEAST CORNER OF THIS TRACT;

THENCE S 30°13'31" E A DISTANCE OF 849.98 FEET TO A ½" IRON ROD WITH CAP SET FOR A CORNER OF THIS TRACT;

THENCE S 54°21'59" E A DISTANCE OF 1004.09 FEET TO A ½" IRON ROD WITH CAP SET IN THE NORTH LINE OF THE SOUTHWEST QUARTER OF SAID SECTION 19 FOR A CORNER OF THIS TRACT;

THENCE S 90°00'00" E, ALONG SAID NORTH LINE, A DISTANCE OF 115.00 FEET TO THE PLACE OF BEGINNING.

A 26.315 ACRE TRACT IN THE NORTHWEST QUARTER OF SECTION 19, BLOCK 4X, C. & M. RR. CO. SURVEY, TERRY COUNTY, TEXAS

METES AND BOUNDS DESCRIPTION OF A 26.315 ACRE TRACT OF LAND LOCATED IN THE NORTHWEST QUARTER OF SECTION 19, BLOCK 4X, C. & M. RAILROAD COMPANY SURVEY, TERRY COUNTY, TEXAS BEING A PORTION OF THAT TRACT DESCRIBED AS THE SOUTH HALF OF THE NORTHWEST QUARTER IN VOLUME 428, PAGE 715 OF THE DEED RECORDS OF TERRY COUNTY, TEXAS AND FURTHER DESCRIBED AS FOLLOWS:

BEGINNING AT A ½" IRON ROD WITH CAP FOUND FOR THE SOUTHEAST CORNER OF THIS TRACT AT THE SOUTHWEST CORNER OF THE NORTHEAST QUARTER OF SAID SECTION 19 AS DESCRIBED IN VOLUME 656 PAGE 374 OF SAID RECORDS;

THENCE N 90°00'00" W, ALONG THE SOUTH LINE OF SAID NORTHWEST QUARTER, A DISTANCE OF 115.00 FEET TO A ½" IRON ROD WITH CAP SET FOR A CORNER OF THIS TRACT;

THENCE N 54°21'59" W A DISTANCE OF 1004.09 FEET TO A ½" IRON ROD WITH CAP SET FOR A CORNER OF THIS TRACT;

THENCE N 30°13'31" W A DISTANCE OF 849.98 FEET TO A ½" IRON ROD WITH CAP SET IN THE NORTH LINE OF SAID SOUTH HALF FOR THE NORTHWEST FOR A CORNER OF THIS TRACT;

THENCE S 90°00'00" E, ALONG SAID NORTH LINE, A DISTANCE OF 1358.00 FEET TO A ½" IRON ROD WITH CAP SET IN THE WEST LINE OF SAID NORTHEAST QUARTER AT THE NORTHEAST CORNER OF SAID SOUTH HALF FOR THE NORTHEAST CORNER OF THIS TRACT;

THENCE S 0°02'30" E, ALONG THE WEST LINE OF SAID NORTHEAST QUARTER AND THE EAST LINE OF SAID SOUTH HALF, A DISTANCE OF 1319.41 FEET TO THE PLACE OF BEGINNING.

FILED FOR RECORD
2014 OCT 15 PM 1:43
KIM CARTER
TERRY COUNTY CLERK
BY

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

APPENDIX I/IIA
FACILITY LAYOUT MAPS

Prepared for

Meadow Landfill, LLC

July 2024

Revised February 2025

STATE OF TEXAS
KYLE D. GOULD
106018
LICENSED
PROFESSIONAL ENGINEER

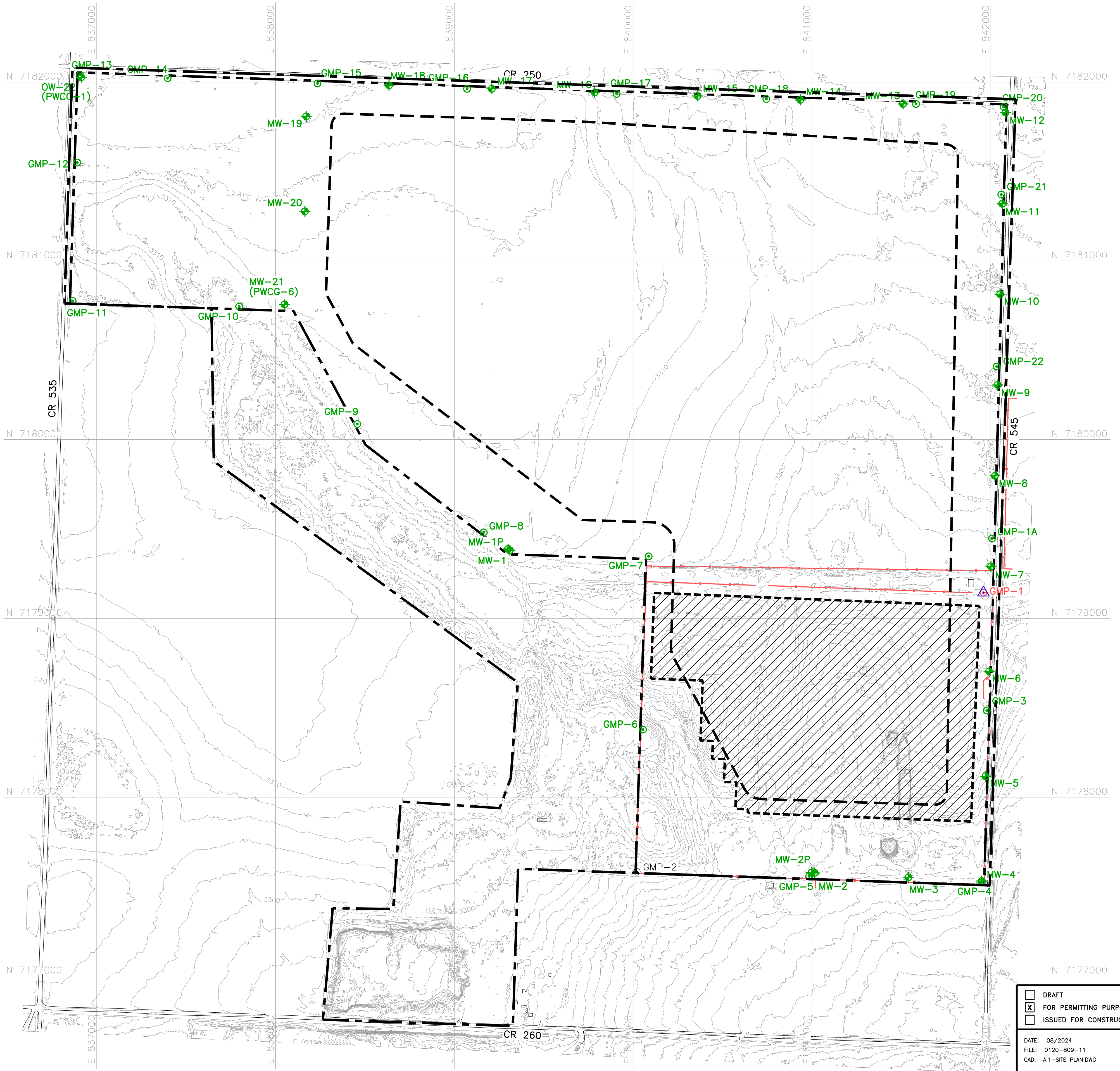
02/28/2025

Prepared by

Weaver Consultants Group, LLC
TBPE Registration No. F-3727
6420 Southwest Boulevard, Suite 206
Fort Worth, Texas 76109
817-735-9770

WCG Project No. 0120-809-11-05

This document intended for permitting purposes only.



N

0 300 600
SCALE IN FEET

KYLE D. GOULD
106018
02/28/2025

LEGEND

▬ ▬ - ▬ ▬	PROPERTY BOUNDARY
▬ - - ▬	PROPOSED PERMIT BOUNDARY
▬ ▬ ▬ ▬ ▬	PROPOSED LIMIT OF WASTE
N 7180000 ——	STATE PLANE COORDINATE SYSTEM
—350—	EXISTING CONTOUR
—×—×—×—	EXISTING FENCE
△	SITE BENCHMARK (SEE NOTE 4)
▨	HISTORIC WASTE TO BE RELOCATED (SEE NOTE 7)
⊙ GMP–2	EXISTING LANDFILL GAS MONITORING PROBE
⊙ GMP–1	EXISTING LANDFILL GAS MONITORING PROBE (TO BE DECOMMISSIONED)
⊕ MW–10	PROPOSED GROUNDWATER MONITORING WELL
⊙ GMP–21	PROPOSED GAS PROBE

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.
4. THE SITE BENCHMARK INFORMATION IS LISTED BELOW.

SITE BENCHMARK INFORMATION

MONUMENT	NORTHING	EASTING	ELEVATION (FT-MSL)
200	7179142.87	841959.98	3297.45

5. THE SEQUENCE OF SITE DEVELOPMENT IS PROVIDED ON DRAWINGS I/IIA.4 THROUGH I/IIA.7.
6. UNAUTHORIZED ACCESS TO THE EXISTING FILL AREA AND FACILITY IS CONTROLLED WITH PERIMETER FENCING (MINIMUM 4–FOOT HIGH, 3–STRAND BARBED WIRE FENCE), GATED ENTRANCE AND NATURAL BARRIERS (DENSE FOLIAGE, VEGETATION, AND WATERWAYS). REFER TO DRAWING I/IIA.10 FOR ACCESS CONTROL PLAN.
7. HISTORIC WASTE WILL BE EXCAVATED AND RELOCATED INTO THE SUBTITLE D–LINED DISPOSAL CELLS DURING LANDFILL DEVELOPMENT.
8. DEED DESIGNATIONS THAT FORM THE PROPERTY BOUNDARY ARE SHOWN ON PAGE I/II–13–6. LEGAL DESCRIPTIONS OF THE PARCELS OF LAND CAN BE FOUND IN PART I/II–13.

SHEET I/IIA-1

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120–809–11
CAD: A.1–SITE PLAN.DWG

DRAWN BY: JDW
DESIGN BY: CAM
REVIEWED BY: KDG

Weaver Consultants Group
TBPE REGISTRATION NO. F–3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT
SITE PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

DRAWING I/IIA.1

O:\0120\809\EXPANSION 2023\PARTS I–II\CLEAN 02–2025\A.1–SITE PLAN.dwg, jwilson, 1:2

SECTOR SUMMARY			
SECTOR	MAX LENGTH (FT)	MAX WIDTH (FT)	AREA (ACRES)
SECTOR 1	1710	279	10.9
SECTOR 2	1710	300	11.8
SECTOR 3	1710	300	11.8
SECTOR 4	1710	300	11.6
SECTOR 5	1585	300	10.2
SECTOR 6	1191	300	7.4
SECTOR 7	1799	271	10.0
SECTOR 8	1804	300	12.4
SECTOR 9	1808	300	12.4
SECTOR 10	1813	300	12.5
SECTOR 11	1818	300	12.5
SECTOR 12	1822	300	12.5
SECTOR 13	2607	330	18.5
SECTOR 14	2160	300	12.3
SECTOR 15	1553	300	10.7
SECTOR 16	1553	330	11.8
SECTOR 17	1482	300	9.8
SECTOR 18	1315	415	11.5

KYLE D. GOULD
106018
02/28/2025

N

0 300 600
SCALE IN FEET

LEGEND

—·—	PROPOSED PERMIT BOUNDARY
— —	PROPOSED LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
350	EXISTING CONTOUR
→·→	CHANNEL CENTERLINE
—·—	SECTOR BOUNDARY
➞	FILL DIRECTION (SEE NOTE 4)
▬	PERIMETER ACCESS ROAD
Y Y	3H:1V SLOPE (TYPICAL)
MW-1	PROPOSED OBSERVATION/GROUNDWATER MONITORING WELL
GMP-5	PROPOSED LANDFILL GAS MONITORING PROBE
GMP-2	EXISTING LANDFILL GAS MONITORING PROBE

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.
4. SECTOR DESIGNATIONS INDICATE GENERAL PROGRESSION OF LANDFILL OPERATIONS. FILL DIRECTION ARROWS INDICATE GENERAL DIRECTION OF FILL WITHIN A CELL.
5. TYPICAL CROSS SECTION PROVIDED IN DRAWING I/IIA.3 ADDITIONAL SECTION INFORMATION PROVIDED IN APPENDIX IIIA–B – LANDFILL UNIT CROSS SECTIONS.
6. SEE DRAWINGS I/IIA.4 THROUGH I/IIA.6 FOR DETAILED SECTOR DEVELOPMENT PLANS.
7. WIDTH OF THE BUFFER ZONE BETWEEN THE LIMITS OF WASTE AND THE PERMIT BOUNDARY VARIES; HOWEVER, THE BUFFER ZONE IS A MINIMUM OF 125 FEET FOR THE NEWLY PERMITTED AIRSPACE. REFER TO APPENDIX I/IIC FOR MORE INFORMATION REGARDING BUFFER ZONE.
8. EACH SECTOR WILL ACCEPT MUNICIPAL SOLID WASTE RESULTING FROM, OR INCIDENTAL TO, MUNICIPAL, COMMUNITY, COMMERCIAL, INSTITUTIONAL, RECREATIONAL AND INDUSTRIAL ACTIVITIES, INCLUDING GARBAGE, PUTRESCIBLE WASTES, RUBBISH, ASHES, BRUSH, STREET CLEANINGS, DEAD ANIMALS, ABANDONED AUTOMOBILES, CONSTRUCTION–DEMOLITION WASTE, YARD WASTE, CLASS 2 NON–HAZARDOUS INDUSTRIAL SOLID WASTE, CLASS 3 NON–HAZARDOUS INDUSTRIAL SOLID WASTE, AND CERTAIN SPECIAL WASTES.

SHEET I/IIA–2

☐ DRAFT
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DATE: 08/2024
FILE: 0120–809–11
CAD: 1–SITE PLAN.DWG

DRAWN BY: JDW
DESIGN BY: CAM
REVIEWED BY: KDG

Weaver Consultants Group
TBPE REGISTRATION NO. F–3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

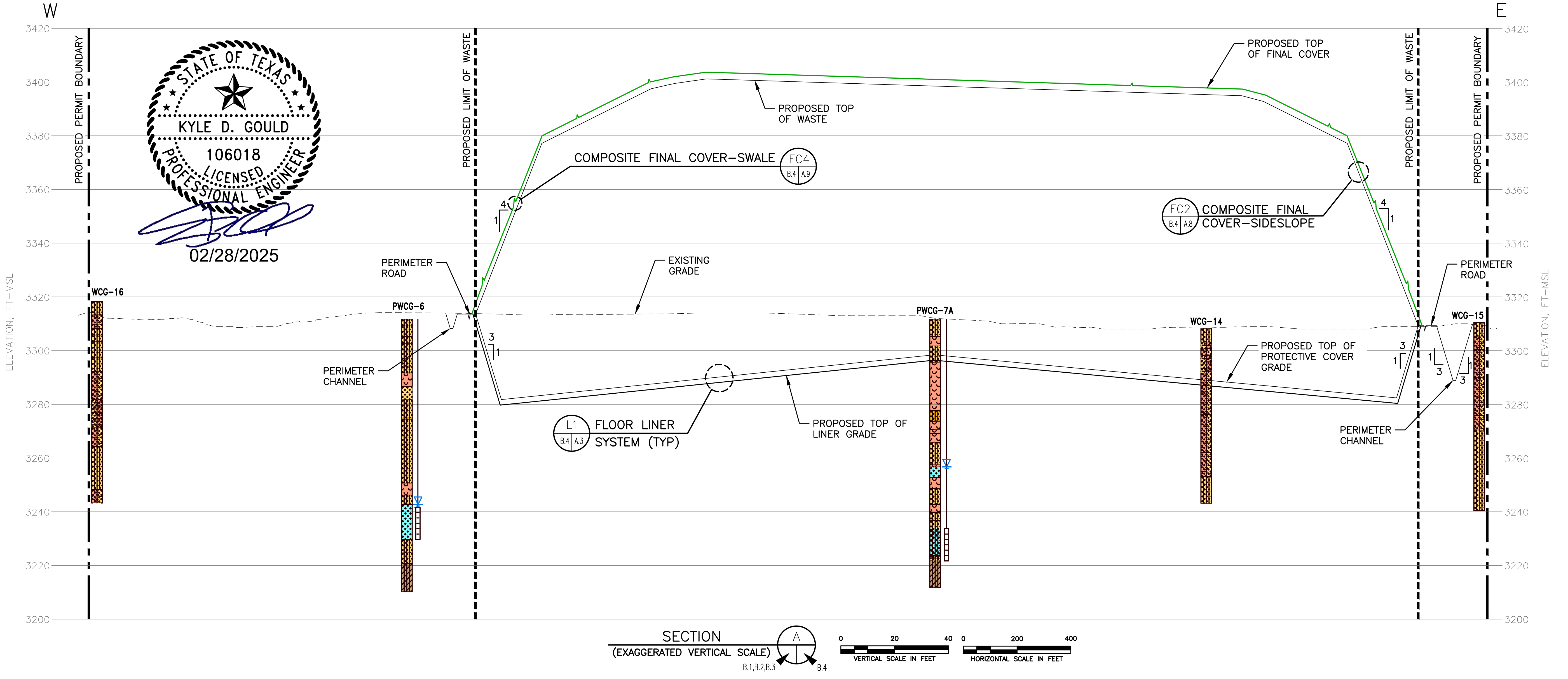
MAJOR PERMIT AMENDMENT
SECTOR DEVELOPMENT PLAN

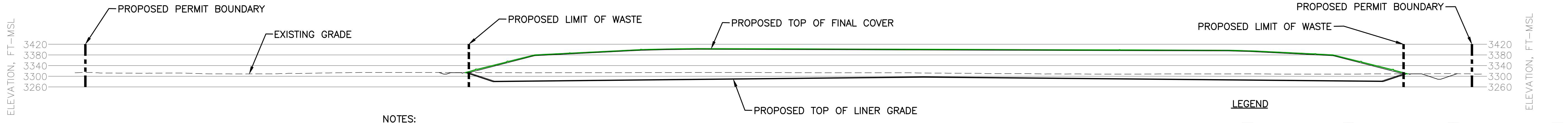
CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

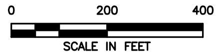
DRAWING I/IIA.2

KYLE D. GOULD
106018
02/28/2025



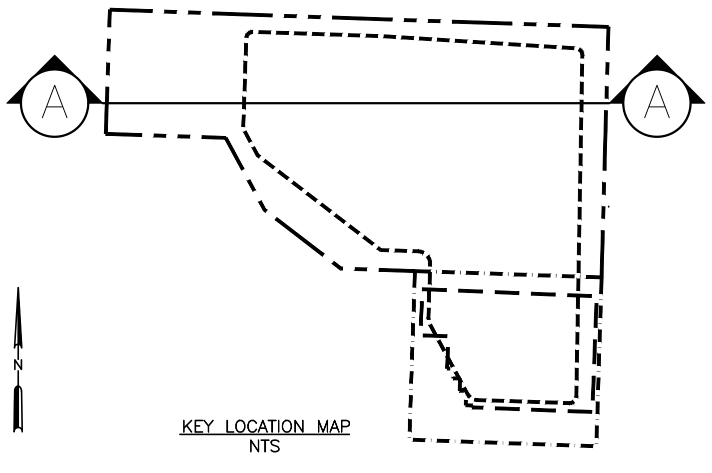


SECTION
(1H:1V)
A
B.1,B.2,B.3
B.4



NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. REFER TO APPENDIX IIIA-A FOR LINER, LEACHATE COLLECTION, AND FINAL COVER SYSTEM DETAILS.
3. SEE APPENDIX IIIG FOR BORING DATA. BORINGS PROJECTED INTO THE LINE OF SECTION. SEE DRAWING B.1 FOR LOCATION.
4. AS SHOWN IN APPENDIX I/IIC, THE BUFFER ZONE BETWEEN THE PERMIT BOUNDARY AND NEWLY PERMITTED (PERMIT NO. 2293C) WASTE DISPOSAL AIRSPACE IS AT LEAST 125-FEET.
5. REFER TO APPENDIX IIII, FOR DETAILS OF THE LANDFILL GAS MANAGEMENT PLAN.
6. DRAINAGE DESIGN INFORMATION IS PROVIDED IN APPENDIX IIIF-SURFACE WATER DRAINAGE PLAN.
7. ELEVATION OF DEEPEST EXCAVATION AT THE LCS SUMP IS 3250.0 FT-MSL.
8. EXISTING WASTE LOCATIONS ARE APPROXIMATE AND WAS REPRODUCED FROM DRAWINGS INCLUDED IN THE NO. 2293 PERMIT APPLICATION PREPARED BY WEAVER CONSULTANTS GROUP.



KEY LOCATION MAP
NTS

LEGEND

PERMITTED PERMIT BOUNDARY
PROPOSED PERMIT BOUNDARY
PERMITTED LIMIT OF WASTE
PROPOSED LIMIT OF WASTE
EXISTING GRADE
TOP OF FINAL COVER
TOP OF WASTE
STATIC GROUNDWATER ELEVATION (FT-MSL)

▨ Caliche
▨ Sandy Clay or Sandy Silty Clay
▨ Sand
▨ Sandstone with Caliche
▨ Sandy Silt or Sandy Clayey Clayey
▨ Caliche with Sandstone
▨ Shaley Clay or Shaley Sandy Clay
▨ Clayey Sand or Clayey Silty Sand
▨ Saturated Sand
▨ Silstone
▨ Caliche with Silstone
▨ Silty Clay or Silty Sandy Clay
▨ Silty Sand or Silty Clayey Sand
▨ Caliche with West Sandstone
▨ Silstone with Caliche
▨ Clay
▨ Earthen Fill
▨ Sand or Sandstone
▨ Clayey Silt or Clayey Sandy Silt
▨ Silty Sand

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DATE: 08/2024
FILE: 0023-404-11
CAD: A.3-CROSS SECTION B.DWG

DRAWN BY: JDW
DESIGN BY: CAM
REVIEWED BY: JBP

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT TYPICAL SECTION A

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

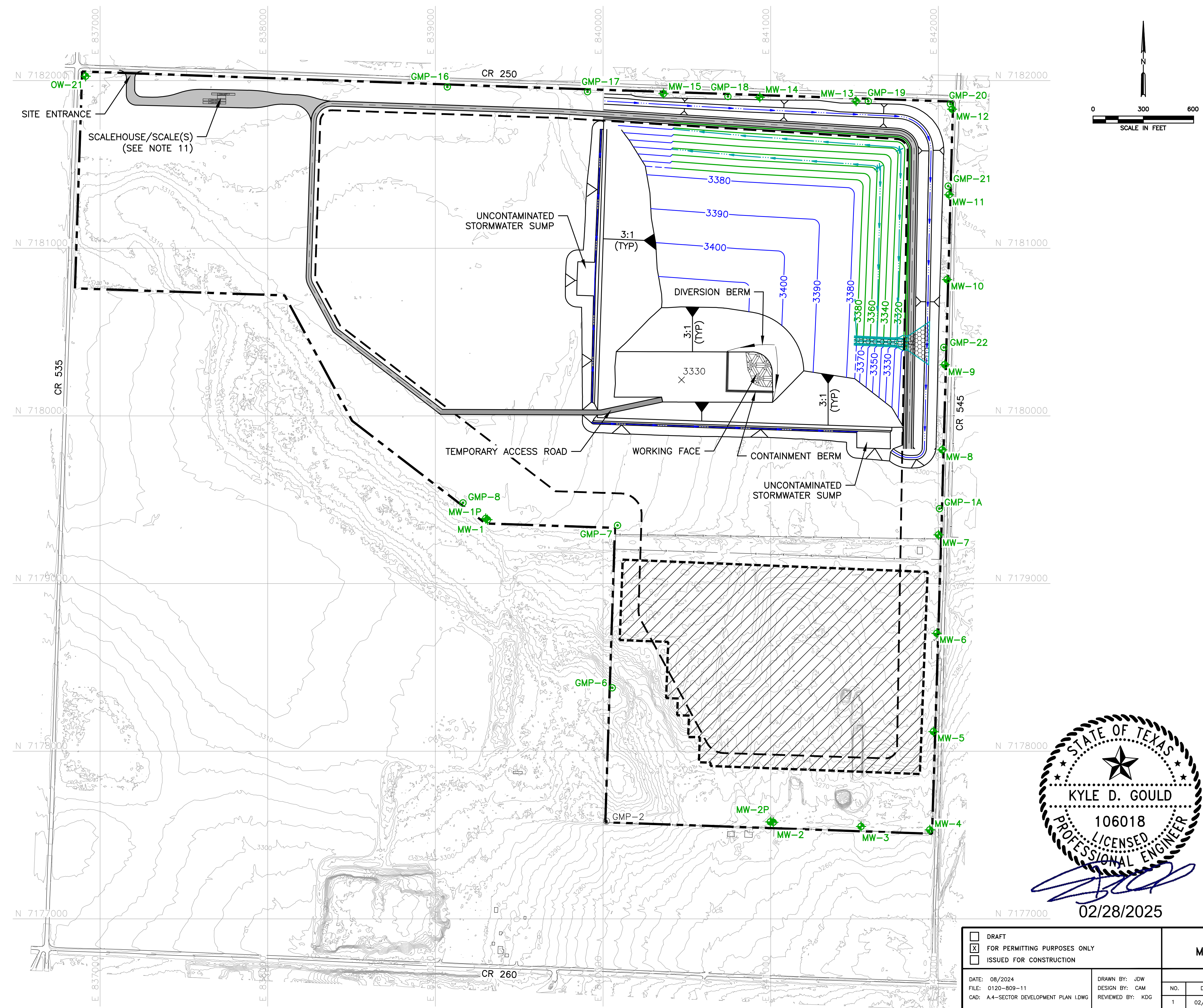
SHEET I/IIA-3

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

WWW.WCGRP.COM

DRAWING I/IIA.3

O:\0120\809\EXPANSION 2023\PARTS I-II\CLEAN 02-2025\A.3-CROSS SECTION.dwg, jwilson, 1:2



LEGEND

	PROPOSED PERMIT BOUNDARY
	PROPOSED LIMIT OF WASTE
N 7181000	STATE PLANE COORDINATE
3310	EXISTING CONTOUR
3340	FINAL COVER CONTOUR
3400	INTERMEDIATE CONTOUR
	DRAINAGE SWALE
MW-1	PROPOSED OBSERVATION/GROUNDWATER MONITORING WELL
GMP-5	PROPOSED LANDFILL GAS MONITORING PROBE
GMP-2	EXISTING LANDFILL GAS MONITORING PROBE
GMP-1	EXISTING LANDFILL GAS MONITORING PROBE (TO BE DECOMMISSIONED)
	EXISTING FENCE
	ACCESS ROAD
▨	HISTORIC WASTE TO BE RELOCATED

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. THE PROPERTY AND PERMIT BOUNDARY WAS REPRODUCED FROM A LEGAL DESCRIPTION PREPARED BY WEAVER CONSULTANTS GROUP.
3. REFER TO APPENDIX IIIC–LEACHATE AND CONTAMINATED WATER MANAGEMENT PLAN FOR CONTAMINATED WATER RUN–ON/RUN–OFF BERM DESIGN INFORMATION.
4. THE SECTOR DEVELOPMENT SHOWN ON THIS DRAWING SHOWS THE GENERAL SEQUENCE OF FILLING OPERATIONS. THE LOCATION OF THE ALL–WEATHER ACCESS ROAD FROM THE LANDFILL HAUL ROAD TO THE ACTIVE AREA WILL BE DETERMINED DURING SITE OPERATIONS.
5. INTERMEDIATE COVER CONSISTS OF A 12–INCH THICK SOIL LAYER. REFER TO PART IV – SITE OPERATING PLAN FOR ADDITIONAL SOIL COVER REQUIREMENTS.
6. LANDFILL HAUL ROAD WILL BE SURFACED WITH CRUSHED STONE TO PROVIDE ALL–WEATHER ACCESS.
7. REFER TO APPENDIX IIIF–SURFACE WATER DRAINAGE PLAN FOR THE EROSION AND SEDIMENTATION CONTROL PLAN. DRAINAGE STRUCTURES ARE SHOWN AS THE SITE DEVELOPS. ADDITIONALLY BMPs WILL BE USED TO CONTROL EROSION AS NEEDED.
8. REFER TO APPENDIX IIII FOR LANDFILL GAS MANAGEMENT PLAN.
9. UNCONTAMINATED STORMWATER THAT HAS NOT COME INTO CONTACT WITH WASTE WILL BE COLLECTED IN SUMPS AND PERIODICALLY REMOVED FROM EXCAVATED AREAS BY PUMPING TO PERIMETER DRAINAGE CHANNELS OR USED IN SITE OPERATIONS (E.G., DUST CONTROL, COMPACTING, ETC.).
10. TEMPORARY CHUTES AND SWALES WILL BE PLACED OVER THE INTERMEDIATE COVER AREA TO MINIMIZE EROSION AND HELP ESTABLISH VEGETATION FOR INTERMEDIATE COVER AREAS THAT WILL NOT RECEIVE WASTE OR FINAL COVER WITHIN 180 DAYS AFTER PLACEMENT (REFER TO APPENDIX IIIF–G FOR MORE INFORMATION). MULCH, HYDROSEEDING OR SIMILAR METHODS WILL BE USED TO ESTABLISH VEGETATION OVER THE INTERMEDIATE COVER AREAS. SWALE AND LETDOWN SPACING WILL MEET THE REQUIREMENTS OF THE EROSION CONTROL PLAN INCLUDED IN APPENDIX IIIF–G.
11. REFER TO DRAWING I/IIA.9 FOR DETAILED SITE ENTRANCE INFORMATION.
12. GROUNDWATER MONITORING WELLS WILL BE INSTALLED OR CONVERTED FROM EXISTING PIEZOMETERS IN PHASES IN ACCORDANCE WITH SECTION 2.0 OF APPENDIX IIIH, GROUNDWATER MONITORING, SAMPLING AND ANALYSIS PLAN.
13. GAS MONITORING PROBES WILL BE INSTALLED PRIOR TO PLACING NEW WASTE WITHIN 1,000 FEET OF THE PROPOSED PROBE LOCATION IN ACCORDANCE WITH APPENDIX III I, LANDFILL GAS MANAGEMENT PLAN.

KYLE D. GOULD
106018

02/28/2025

SHEET I/IIA-4

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120–809–11
CAD: A.4–SECTOR DEVELOPMENT PLAN I.DWG

DRAWN BY: JDW
DESIGN BY: CAM
REVIEWED BY: KDG

Weaver Consultants Group
TBPE REGISTRATION NO. F–3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

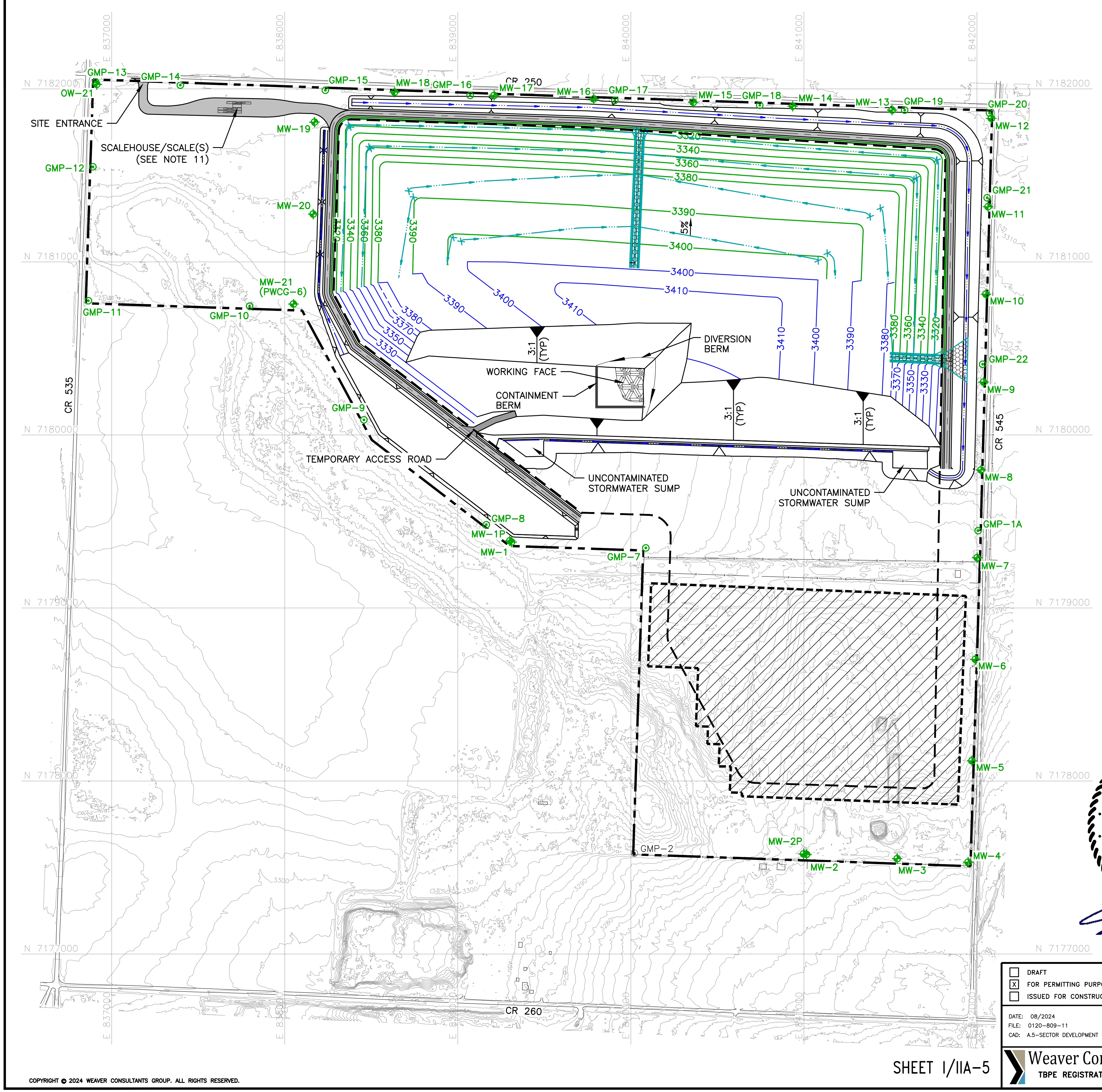
NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

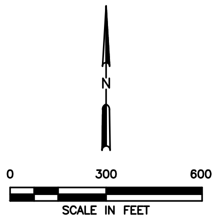
MAJOR PERMIT AMENDMENT
SECTOR DEVELOPMENT PLAN I

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

DRAWING I/IIA.4





LEGEND

— · — · —	PROPOSED PERMIT BOUNDARY
— — — —	PROPOSED LIMIT OF WASTE
N 7181000	STATE PLANE COORDINATE
3310	EXISTING CONTOUR
3340	FINAL COVER CONTOUR
3400	INTERMEDIATE CONTOUR
×—×—×	DRAINAGE SWALE
MW-1	PROPOSED OBSERVATION/GROUNDWATER MONITORING WELL
GMP-5	PROPOSED LANDFILL GAS MONITORING PROBE
GMP-2	EXISTING LANDFILL GAS MONITORING PROBE
GMP-1	EXISTING LANDFILL GAS MONITORING PROBE (TO BE DECOMMISSIONED)
—·—·—	EXISTING FENCE
▬	ACCESS ROAD
▨	HISTORIC WASTE TO BE RELOCATED

NOTES:

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2. THE PROPERTY AND PERMIT BOUNDARY WAS REPRODUCED FROM A LEGAL DESCRIPTION PREPARED BY WEAVER CONSULTANTS GROUP.
3. REFER TO APPENDIX IIIC–LEACHATE AND CONTAMINATED WATER MANAGEMENT PLAN FOR CONTAMINATED WATER RUN–ON/RUN–OFF BERM DESIGN INFORMATION.
4. THE SECTOR DEVELOPMENT SHOWN ON THIS DRAWING SHOWS THE GENERAL SEQUENCE OF FILLING OPERATIONS. THE LOCATION OF THE ALL–WEATHER ACCESS ROAD FROM THE LANDFILL HAUL ROAD TO THE ACTIVE AREA WILL BE DETERMINED DURING SITE OPERATIONS.
5. INTERMEDIATE COVER CONSISTS OF A 12–INCH THICK SOIL LAYER. REFER TO PART IV – SITE OPERATING PLAN FOR ADDITIONAL SOIL COVER REQUIREMENTS.
6. LANDFILL HAUL ROAD WILL BE SURFACED WITH CRUSHED STONE TO PROVIDE ALL–WEATHER ACCESS.
7. REFER TO APPENDIX IIIF–SURFACE WATER DRAINAGE PLAN FOR THE EROSION AND SEDIMENTATION CONTROL PLAN. DRAINAGE STRUCTURES ARE SHOWN AS THE SITE DEVELOPS. ADDITIONALLY BMPs WILL BE USED TO CONTROL EROSION AS NEEDED.
8. REFER TO APPENDIX IIII FOR LANDFILL GAS MANAGEMENT PLAN.
9. UNCONTAMINATED STORMWATER THAT HAS NOT COME INTO CONTACT WITH WASTE WILL BE COLLECTED IN SUMPS AND PERIODICALLY REMOVED FROM EXCAVATED AREAS BY PUMPING TO PERIMETER DRAINAGE CHANNELS OR USED IN SITE OPERATIONS (E.G., DUST CONTROL, COMPACTING, ETC.).
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11. REFER TO DRAWING I/IIA.9 FOR DETAILED SITE ENTRANCE INFORMATION.
12. GROUNDWATER MONITORING WELLS WILL BE INSTALLED OR CONVERTED FROM EXISTING PIEZOMETERS IN PHASES IN ACCORDANCE WITH SECTION 2.0 OF APPENDIX IIIH, GROUNDWATER MONITORING, SAMPLING AND ANALYSIS PLAN.
13. GAS MONITORING PROBES WILL BE INSTALLED PRIOR TO PLACING NEW WASTE WITHIN 1,000 FEET OF THE PROPOSED PROBE LOCATION IN ACCORDANCE WITH APPENDIX III I, LANDFILL GAS MANAGEMENT PLAN.

STATE OF TEXAS
KYLE D. GOULD
106018
LICENSED PROFESSIONAL ENGINEER

02/28/2025

SHEET I/IIA-5

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120–809–11
CAD: A.5–SECTOR DEVELOPMENT PLAN I.DWG

DRAWN BY: JDW
DESIGN BY: CAM
REVIEWED BY: KDG

Weaver Consultants Group
TBPE REGISTRATION NO. F–3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

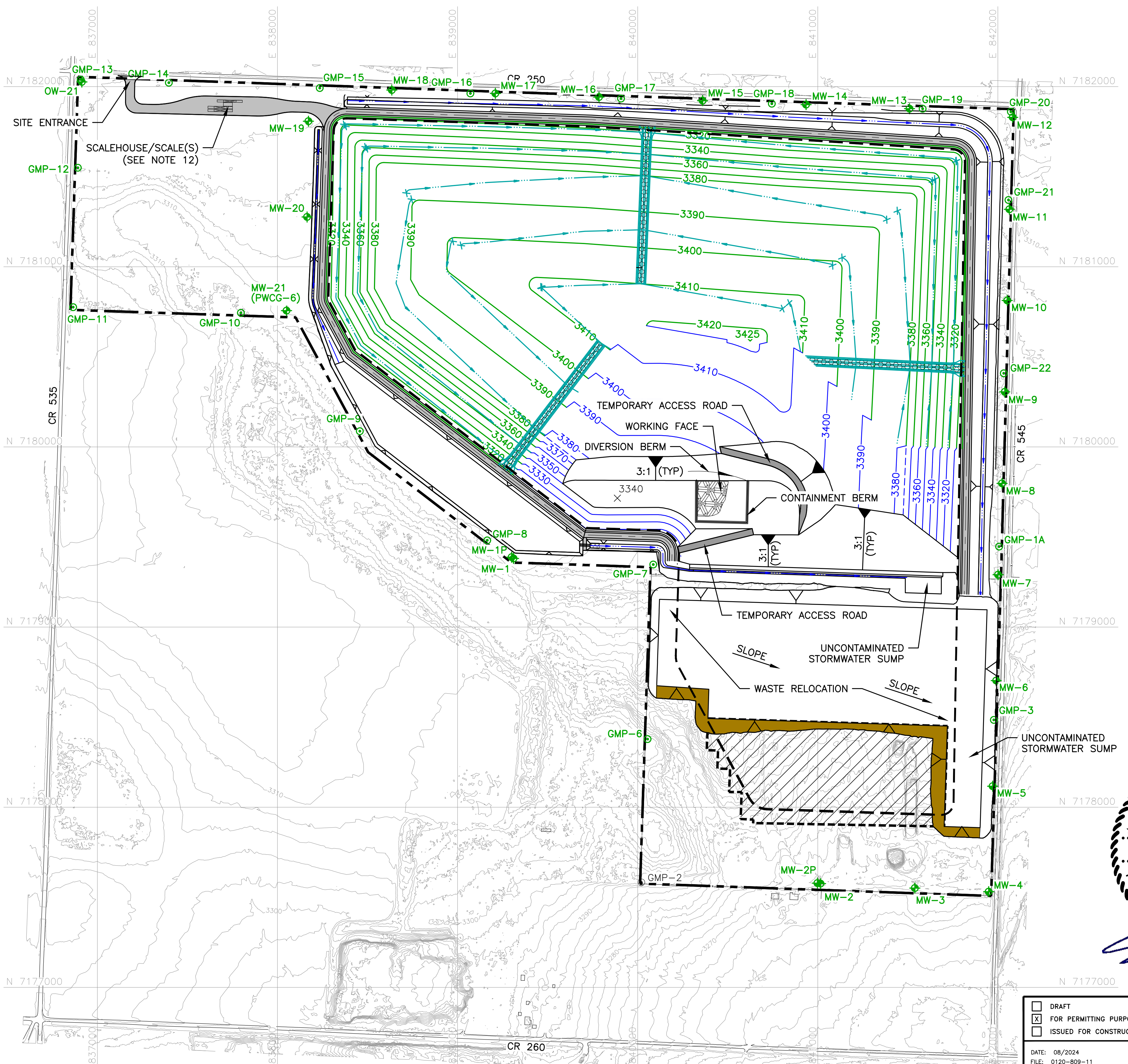
MAJOR PERMIT AMENDMENT
SECTOR DEVELOPMENT PLAN II

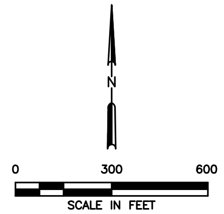
CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

DRAWING I/IIA.5

O:\0120\809\EXPANSION 2023\PARTS I–II\CLEAN 02–2025\A.5 Sequence Dev Plan II.dwg, jwilson, 1:2





LEGEND

— · — · —	PROPOSED PERMIT BOUNDARY
— — — —	PROPOSED LIMIT OF WASTE
N 7181000	STATE PLANE COORDINATE
3310	EXISTING CONTOUR
3340	FINAL COVER CONTOUR
3400	INTERMEDIATE CONTOUR
▨	DRAINAGE LETDOWN
×—→—	DRAINAGE SWALE
MW-1	PROPOSED OBSERVATION/GROUNDWATER MONITORING WELL
GMP-5	PROPOSED LANDFILL GAS MONITORING PROBE
GMP-2	EXISTING LANDFILL GAS MONITORING PROBE
————	EXISTING FENCE
▬	ACCESS ROAD
▬	TEMPORARY SIDESLOPE COVER (SEE NOTE 11)
▨	HISTORIC WASTE TO BE RELOCATED

NOTES:

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3. REFER TO APPENDIX IIIC–LEACHATE AND CONTAMINATED WATER MANAGEMENT PLAN FOR CONTAMINATED WATER RUN–ON/RUN–OFF BERM DESIGN INFORMATION.
4. THE SECTOR DEVELOPMENT SHOWN ON THIS DRAWING SHOWS THE GENERAL SEQUENCE OF FILLING OPERATIONS. THE LOCATION OF THE ALL–WEATHER ACCESS ROAD FROM THE LANDFILL HAUL ROAD TO THE ACTIVE AREA WILL BE DETERMINED DURING SITE OPERATIONS.
5. INTERMEDIATE COVER CONSISTS OF A 12–INCH THICK SOIL LAYER. REFER TO PART IV – SITE OPERATING PLAN FOR ADDITIONAL SOIL COVER REQUIREMENTS.
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8. REFER TO APPENDIX IIII FOR LANDFILL GAS MANAGEMENT PLAN.
9. UNCONTAMINATED STORMWATER THAT HAS NOT COME INTO CONTACT WITH WASTE WILL BE COLLECTED IN SUMPS AND PERIODICALLY REMOVED FROM EXCAVATED AREAS BY PUMPING TO PERIMETER DRAINAGE CHANNELS OR USED IN SITE OPERATIONS (E.G., DUST CONTROL, COMPACTING, ETC.).
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11. TEMPORARY AREAS AND SLOPES RESULTING FROM REMOVAL OF WASTE FROM THE EXISTING LANDFILL WILL HAVE DAILEY OR INTERMEDIATE COVER PLACED AS NEEDED.
12. REFER TO DRAWING I/IIA.9 FOR DETAILED SITE ENTRANCE INFORMATION.
12. GROUNDWATER MONITORING WELLS WILL BE INSTALLED OR CONVERTED FROM EXISTING PIEZOMETERS IN PHASES IN ACCORDANCE WITH SECTION 2.0 OF APPENDIX IIIH, GROUNDWATER MONITORING, SAMPLING AND ANALYSIS PLAN.
13. GAS MONITORING PROBES WILL BE INSTALLED PRIOR TO PLACING NEW WASTE WITHIN 1,000 FEET OF THE PROPOSED PROBE LOCATION IN ACCORDANCE WITH APPENDIX III I, LANDFILL GAS MANAGEMENT PLAN.

KYLE D. GOULD
106018

02/28/2025

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120–809–11
CAD: A.6–SECTOR DEVELOPMENT PLAN III.DWG

DRAWN BY: JDW
DESIGN BY: CAM
REVIEWED BY: KDG

Weaver Consultants Group
TBPE REGISTRATION NO. F–3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

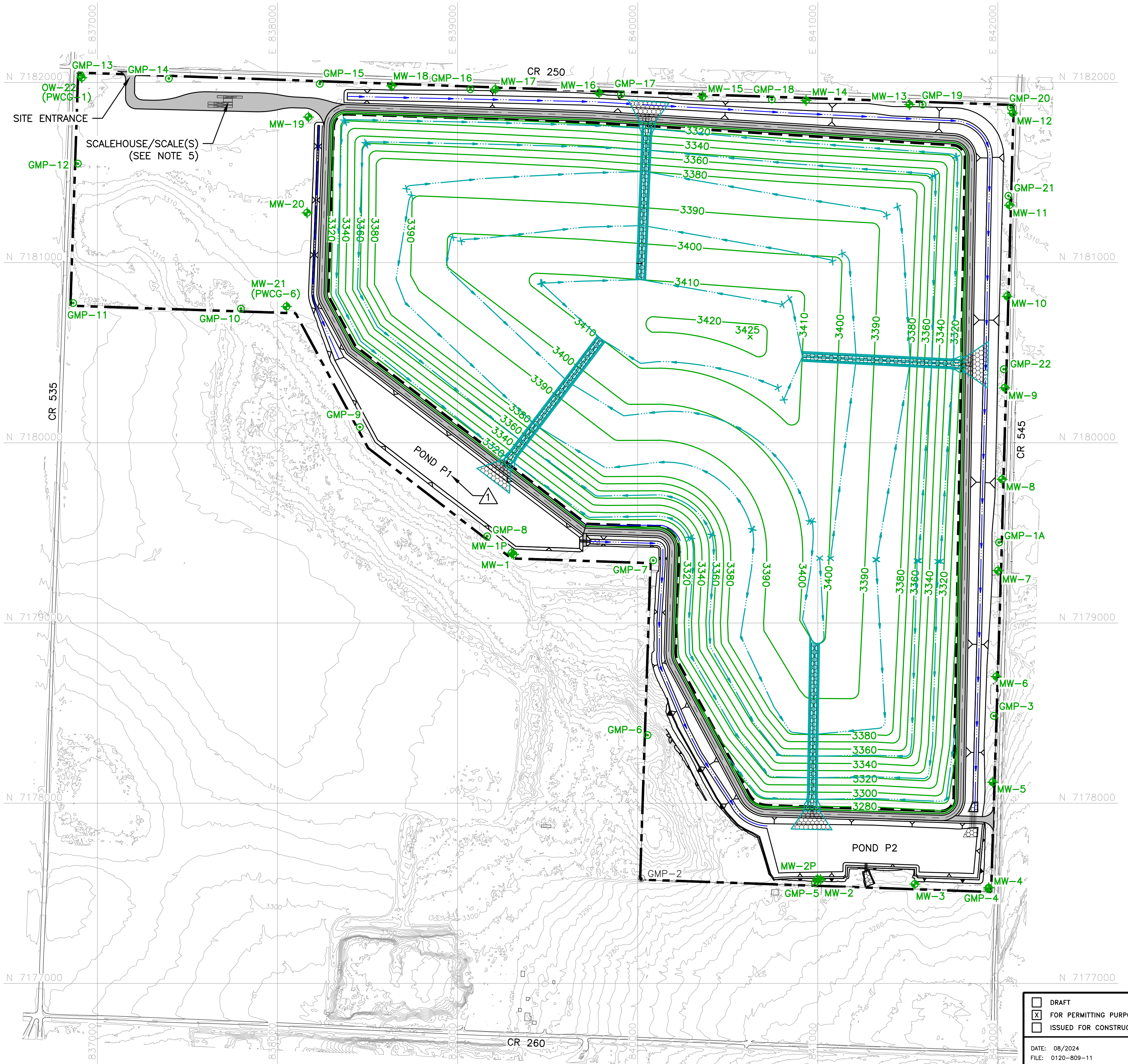
MAJOR PERMIT AMENDMENT
SECTOR DEVELOPMENT PLAN III

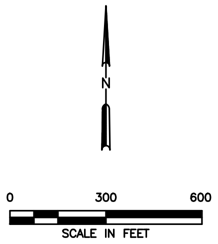
CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

DRAWING I/IIA.6

O:\0120\809\EXPANSION 2023\PARTS I–II\CLEAN 02–2025\A.6 Sequence Dev Plan III.dwg, jwilson, 1:2





LEGEND

▬ · ▬	PROPOSED PERMIT BOUNDARY
▬ ▬ ▬	PROPOSED LIMIT OF WASTE
N 7181000	STATE PLANE COORDINATE
3310	EXISTING CONTOUR
3340	FINAL COVER CONTOUR
▨	DRAINAGE LETDOWN
×—×	DRAINAGE SWALE
MW-1	PROPOSED OBSERVATION/GROUNDWATER MONITORING WELL
GMP-5	PROPOSED LANDFILL GAS MONITORING PROBE
GMP-2	EXISTING LANDFILL GAS MONITORING PROBE

NOTES:

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3. REFER TO APPENDIX IIIF–SURFACE WATER DRAINAGE PLAN FOR THE EROSION AND SEDIMENTATION CONTROL PLAN. DRAINAGE STRUCTURES ARE SHOWN AS THE SITE DEVELOPS. ADDITIONALLY BMPs WILL BE USED TO CONTROL EROSION AS NEEDED.
4. REFER TO APPENDIX IIII FOR LANDFILL GAS MANAGEMENT PLAN.
5. REFER TO DRAWING I/IIA.9 FOR DETAILED SITE ENTRANCE INFORMATION.
6. GROUNDWATER MONITORING WELLS WILL BE INSTALLED OR CONVERTED FROM EXISTING PIEZOMETERS IN PHASES IN ACCORDANCE WITH SECTION 2.0 OF APPENDIX IIIH, GROUNDWATER MONITORING, SAMPLING AND ANALYSIS PLAN.
7. GAS MONITORING PROBES WILL BE INSTALLED PRIOR TO PLACING NEW WASTE WITHIN 1,000 FEET OF THE PROPOSED PROBE LOCATION IN ACCORDANCE WITH APPENDIX III I, LANDFILL GAS MANAGEMENT PLAN.

STATE OF TEXAS
KYLE D. GOULD
106018
LICENSED
PROFESSIONAL ENGINEER

02/28/2025

SHEET I/IIA-7

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
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DATE: 08/2024
FILE: 0120-809-11
CAD: A.7-COMPLETION PLAN.DWG

DRAWN BY: JDW
DESIGN BY: CAM
REVIEWED BY: KDG

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

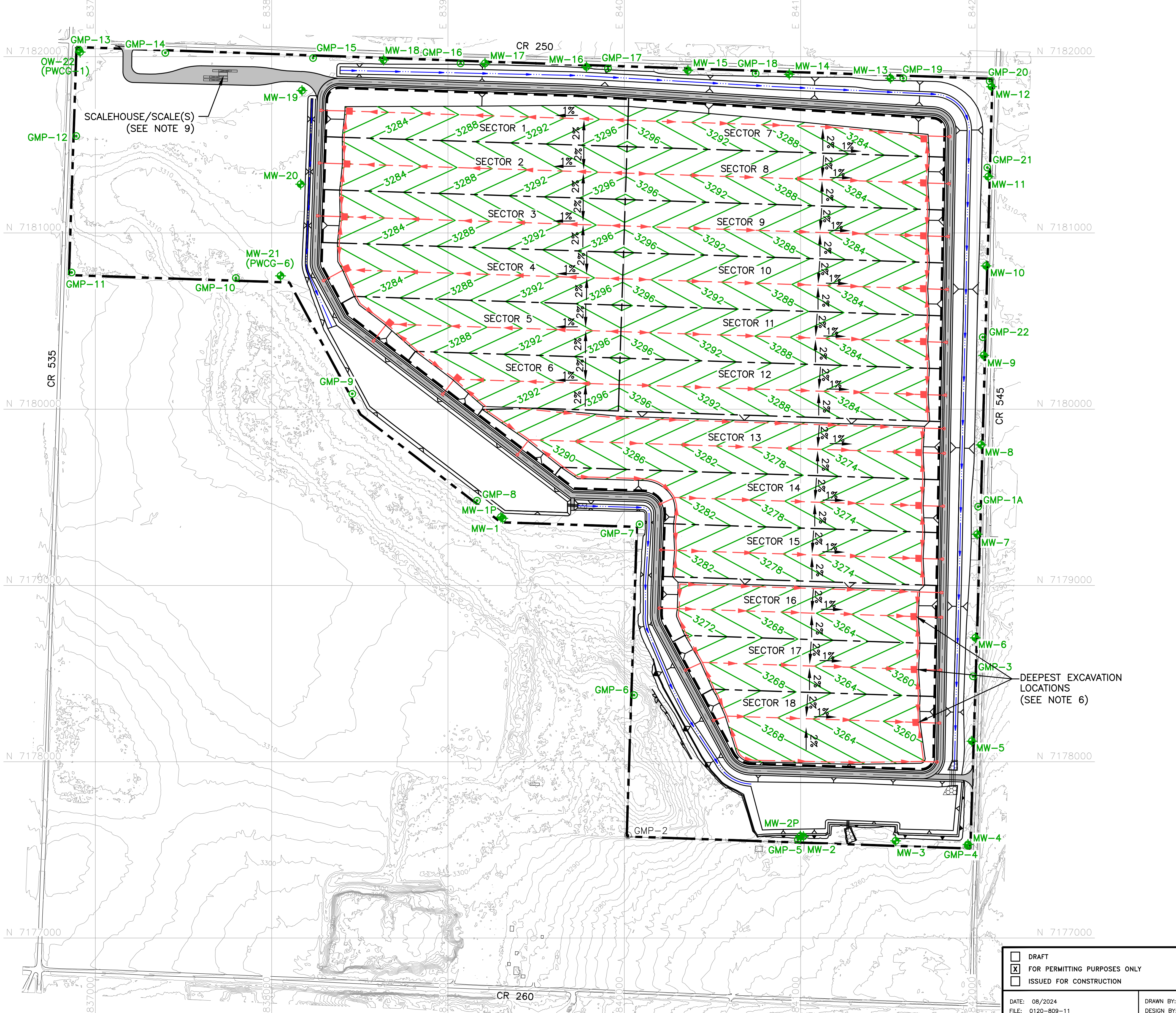
MAJOR PERMIT AMENDMENT
LANDFILL COMPLETION PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

DRAWING I/IIA.7

O:\0120\809\EXPANSION 2023\PARTS I-II\CLEAN 02-2025\A.7 Completion Plan.dwg, jwilson, 1:2



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SCALE IN FEET

KYLE D. GOULD
106018
02/28/2025

LEGEND

— · · —	PROPOSED PERMIT BOUNDARY
— — —	PROPOSED LIMIT OF WASTE
N 7180000 ——	STATE PLANE COORDINATE SYSTEM
—3300—	EXISTING CONTOUR
—3280—	TOP OF LINER CONTOUR (SEE NOTE 12)
— · —	SECTOR BOUNDARY
—◄—	LEACHATE COLLECTION PIPE
■	LEACHATE COLLECTION SUMP
—●	LEACHATE RISER PIPE
MW-1	PROPOSED GROUNDWATER MONITORING WELL
GMP-5	PROPOSED LANDFILL GAS MONITORING PROBE
GMP-1	EXISTING LANDFILL GAS MONITORING PROBE

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.
4. EXCAVATION SLOPES AND SLOPES OUTSIDE THE LIMIT OF WASTE (e.g., CHANNELS) ARE TYPICALLY 3H:1V.
5. REFER TO APPENDIX IIIC FOR LEACHATE STORAGE INFORMATION.
6. ELEVATION OF DEEPEST EXCAVATION AT THE LCS SUMP IS 3250.0 FT-MSL.
7. SEQUENCE OF SITE DEVELOPMENT IS PROVIDED IN PARTS I/II, APPENDIX I/IIA DRAWINGS I/IIA.4 THROUGH I/IIA.7.
8. REFER TO APPENDIX IIIF FOR DRAINAGE DESIGN INFORMATION.
9. REFER TO APPENDIX I/IIA.9 FOR DETAILED SITE ENTRANCE INFORMATION.
10. GROUNDWATER MONITORING WELLS WILL BE INSTALLED OR CONVERTED FROM EXISTING PIEZOMETERS IN PHASES IN ACCORDANCE WITH SECTION 2.0 OF APPENDIX IIIH, GROUNDWATER MONITORING, SAMPLING AND ANALYSIS PLAN.
11. GAS MONITORING PROBES WILL BE INSTALLED PRIOR TO PLACING NEW WASTE WITHIN 1,000 FEET OF THE PROPOSED PROBE LOCATION IN ACCORDANCE WITH APPENDIX III I, LANDFILL GAS MANAGEMENT PLAN.
12. TOP OF LINER CONTOURS REPRESENT ELEVATIONS OF THE GEOMEMBRANE PLACEMENT ON THE BOTTOM OF THE LANDFILL.

SHEET I/IIA-8

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120-809-11
CAD: A.8 TOP OF LINER PLAN.DWG

DRAWN BY: JDW
DESIGN BY: CAM
REVIEWED BY: KDG

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

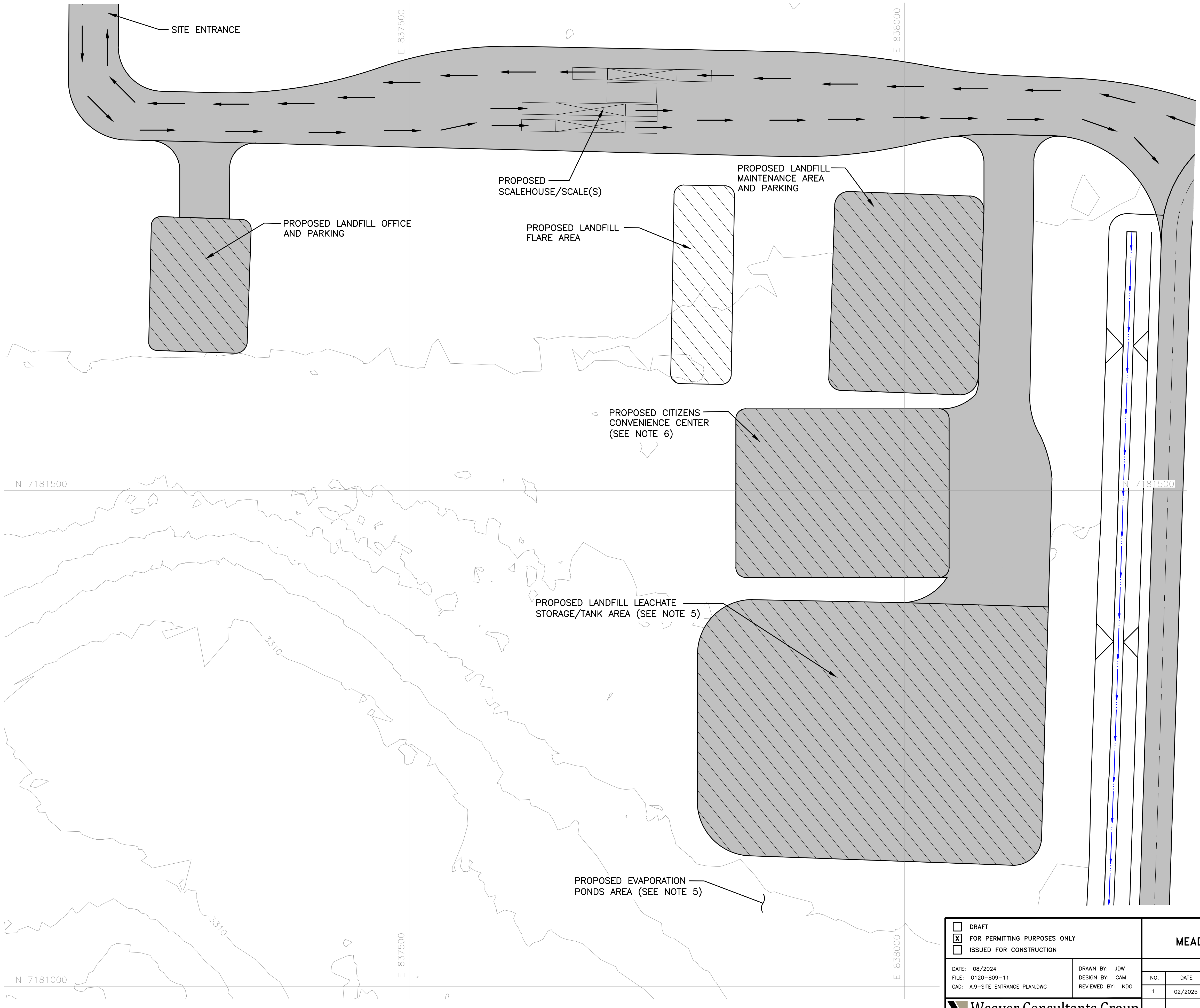
MAJOR PERMIT AMENDMENT
TOP OF LINER PLAN

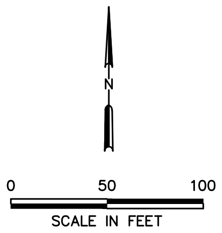
CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

DRAWING I/IIA.8

O:\0120\809\EXPANSION 2023\PARTS I-II\CLEAN 02-2025\A.8-TOP LINER PLAN.dwg, jwilson, 1:2





KYLE D. GOULD
106018

02/28/2025

LEGEND

N 7180000	STATE PLANE COORDINATE SYSTEM
3300	EXISTING CONTOUR
⟶	VEHICLE TRAFFIC DIRECTION
▨	PAVED AREA (SEE NOTE 2)

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. PAVED AREAS INSIDE THE PERMIT BOUNDARY HIGHLIGHTED. ALL WEATHER PAVING MAY BE PROVIDED USING ASPHALT, CONCRETE, OR GRAVEL OR A COMBINATION OF VARIOUS ALL WEATHER SURFACING.
3. ADDITIONAL INBOUND/OUTBOUND SCALES MAY BE ADDED TO THE SITE ENTRANCE TO FACILITATE CUSTOMER TRAFFIC.
4. PROPOSED SITE ENTRANCE FACILITIES SHOWN WILL BE PHASED IN AND CONSTRUCTED AS NEEDED. SOME OR ALL FACILITIES MAY OR MAY NOT BE CONSTRUCTED DEPENDENT ON LANDFILL DEVELOPMENT AND OPERATIONAL NEED.
5. REFER TO APPENDIX IIIC–D FOR LEACHATE STORAGE TANK AND EVAPORATION POND PLANS AND DETAILS.
6. RECYCLABLE ELECTRONICS, WHOLE TIRES, WHITE GOODS AND OTHER NON–PUTRESCIBLE RECYCLABLES WILL BE STAGED AT THE CITIZENS CONVENIENCE CENTER IN NON–DESIGNATED AREAS, AND STAGED IN A MANNER NOT TO IMPEDE CITIZEN ACCESS TO THE DISPOSAL ROLL–OFF CONTAINERS. THE RECYCLABLES WILL BE PERIODICALLY REMOVED FROM THE SITE BY RECYCLING VENDORS OR TRANSPORTED OFF–SITE FOR RECYCLING. RECYCLABLE MATERIALS WILL BE STORED ON THE GROUND, PALLETIZED, PLACED IN ROLL–OFF CONTAINERS OR BINS, OR OTHER APPROPRIATE STORAGE METHODS.

SHEET I/IIA-9

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DATE: 08/2024
FILE: 0120-809-11
CAD: A.9-SITE ENTRANCE PLAN.DWG

DRAWN BY: JDW
DESIGN BY: CAM
REVIEWED BY: KDG

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT PROPOSED SITE ENTRANCE FACILITY PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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DRAWING I/IIA.9

O:\0120\809\EXPANSION 2023\PARTS I-II\CLEAN 02-2025\A.9-Site Entrance Plan.dwg, jwilson, 1:2

KYLE D. GOULD
106018
02/28/2025

LEGEND

▬ ▬ · ▬	PROPOSED PERMIT BOUNDARY
▬ ▬ ▬	PROPOSED LIMIT OF WASTE
N 7181000	STATE PLANE COORDINATE
3310	EXISTING CONTOUR
3340	FINAL COVER CONTOUR
▨	DRAINAGE LETDOWN
×——	DRAINAGE SWALE
——	EXISTING/PROPOSED FENCE
▬	ACCESS ROAD
🟩	EXISTING TREES
✦ MW-1	PROPOSED OBSERVATION/GROUNDWATER MONITORING WELL
⊙ GMP-5	PROPOSED LANDFILL GAS MONITORING PROBE
⊙ GMP-2	EXISTING LANDFILL GAS MONITORING PROBE

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PROPERTY AND PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.
4. ACCESS TO THE SITE WILL BE CONTROLLED BY PERIMETER FENCING (MINIMUM 4-FEET HIGH, 3-STRAND BARBED WIRE FENCES), A GATED ENTRANCE, A GATED SECONDARY CONSTRUCTION ENTRANCE, AND NATURAL BARRIERS (e.g DENSE FOLIAGE AND VEGETATION). ADDITIONALLY, IN AREAS OF NATURAL BARRIERS, THE ACCESS CONTROL PLAN IS PROVIDED TO PREVENT THE ENTRY OF LIVESTOCK, TO PREVENT THE PUBLIC FROM EXPOSURE TO POTENTIAL HEALTH AND SAFETY HAZARDS, AND TO DISCOURAGE UNAUTHORIZED ENTRY OR UNCONTROLLED DISPOSAL OF SOLID WASTE OR HAZARDOUS MATERIALS. "NO TRESPASSING" SIGNS WILL BE ADDED TO DISCOURAGE UNAUTHORIZED ENTRY OR UNCONTROLLED DISPOSAL OF SOLID WASTE OR HAZARDOUS MATERIALS.
5. REFER TO DRAWING I/IIA.9 FOR DETAILED SITE ENTRANCE INFORMATION.
6. GROUNDWATER MONITORING WELLS WILL BE INSTALLED OR CONVERTED FROM EXISTING PIEZOMETERS IN PHASES IN ACCORDANCE WITH SECTION 2.0 OF APPENDIX IIIH, GROUNDWATER MONITORING, SAMPLING AND ANALYSIS PLAN.
7. GAS MONITORING PROBES WILL BE INSTALLED PRIOR TO PLACING NEW WASTE WITHIN 1,000 FEET OF THE PROPOSED PROBE LOCATION IN ACCORDANCE WITH APPENDIX III I, LANDFILL GAS MANAGEMENT PLAN.

SHEET I/IIA-10

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120-809-11
CAD: A.10-ACCESS CONTROL PLAN.DWG

DRAWN BY: JDW
DESIGN BY: CAM
REVIEWED BY: KDG

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT
ACCESS CONTROL PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

DRAWING I/IIA.10

O:\0120\809\EXPANSION 2023\PARTS I-II\CLEAN 02-2025\A.10 Access Control Plan.dwg, jwilson, 1:2

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PARTS I/IIC
LOCATION RESTRICTION DEMONSTRATIONS

Prepared for:

Meadow Landfill, LLC.

August 2024

Revised February 2025

KYLE D. GOULD
106018

Prepared by:

02/28/2025

Weaver Consultants Group, LLC
TBPE Registration No. F-3727
6420 Southwest Boulevard, Suite 206
Fort Worth, Texas 76109
817-735-9770

WCG Project No. 0120-809-11-05

This document intended for permitting purposes only.

2 EASEMENTS AND BUFFER ZONES

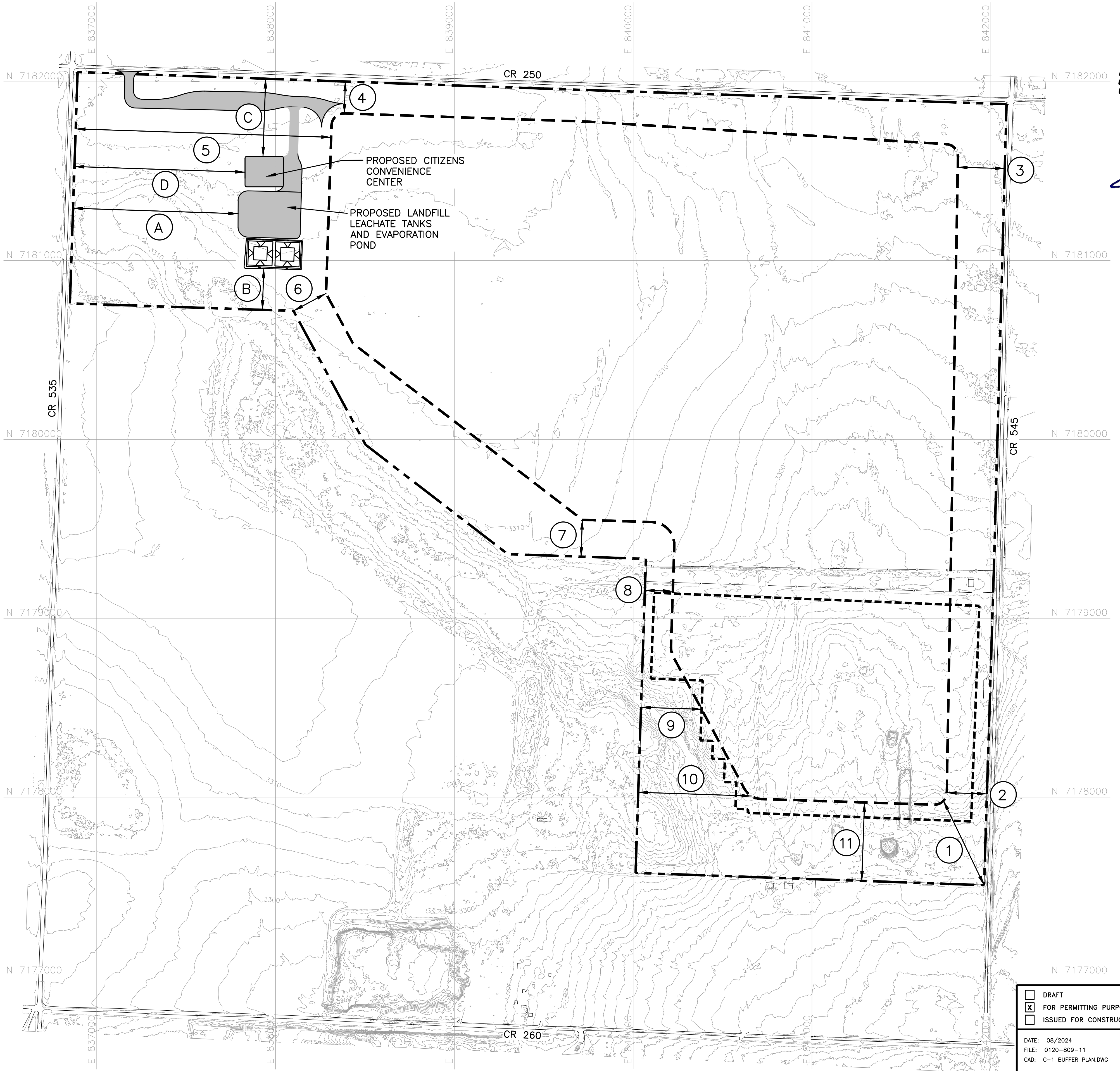
The easements and buffer zones location restrictions within Title 30 TAC §330.543 require that no solid waste disposal shall occur within 25 feet of the center line of any utility line or pipeline easement but no closer than the easement, unless otherwise authorized by the Executive Director. Also, all pipeline and utility easements shall be clearly marked with posts that extend at least six feet above ground level, spaced at intervals no greater than 300 feet. In addition, for vertical or lateral expansions, the owner or operator shall establish and maintain a 125-foot buffer zone for any newly permitted airspace.

The proposed buffer zones for the site are shown on Drawing I/IIC-1 and are discussed below.

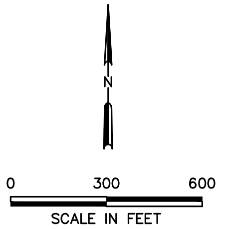
- **Limit of Existing Waste.** As shown on Drawing I/IIC-1, a buffer zone of at least 50 feet is maintained between the permit boundary and the limit of existing waste defined in TCEQ Permit No. 2293.
- **Proposed Limit of Waste.** As shown on Drawing I/IIC-1, a buffer zone of at least 125 feet is maintained between the permit boundary and the proposed new waste disposal airspace (labeled as "proposed limit of waste"), consistent with Title 30 TAC §330.543(b)(2)(B).
- **Leachate Storage Tank Area.** A buffer zone of over 50 feet is maintained between the permit boundary and the proposed leachate storage tank area.
- **Citizens Convenience Center.** A buffer zone of over 50 feet is maintained between the permit boundary and the proposed Citizens Convenience Center.

There are no easements located within the permit boundary at the site. No solid waste unloading, storage, disposal, or processing will occur within ~~25 feet of the centerline of~~ any easement, buffer zone, or right-of-way. In addition, all utility line and pipeline easements will be clearly marked in accordance with the Site Operating Plan.

Given the above, the site is in compliance with the easements and buffer zone location restrictions.



KYLE D. GOULD
106018
02/28/2025



LEGEND

— · —	PROPOSED PERMIT BOUNDARY
— — —	PROPOSED LIMIT OF WASTE (PERMIT NO. 2293C)
- - -	PERMITTED LIMIT OF WASTE (PERMIT NO. 2293)
N 7180000 ——	STATE PLANE COORDINATE SYSTEM
—350—	EXISTING CONTOUR

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.
4. PROPOSED FACILITIES WILL BE PLACED IN AND CONSTRUCTED AS NEEDED. FACILITIES MAY OR MAY NOT BE CONSTRUCTED DEPENDED ON LANDFILL DEVELOPMENT AND OPERATIONAL NEEDS.

BUFFER ZONE INFORMATION

LOCATION	BUFFER ZONE BETWEEN PERMIT BOUNDARY AND EXISTING LIMIT OF WASTE	BUFFER ZONE BETWEEN PERMIT BOUNDARY AND PROPOSED LIMIT OF WASTE
1	400 FEET	524 FEET
2	82 FEET	224 FEET
3	N/A	263 FEET
4	N/A	179 FEET
5	N/A	1,429 FEET
6	N/A	206 FEET
7	N/A	206 FEET
8	63 FEET	156 FEET
9	339 FEET	339 FEET
10	547 FEET	633 FEET
11	356 FEET	439 FEET

PROCESSING/DISPOSAL UNIT BUFFER ZONE INFORMATION (SEE NOTE 4)

LOCATION	BUFFER ZONE BETWEEN PERMIT BOUNDARY
A	924 FEET
B	232 FEET
C	435 FEET
D	955 FEET

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120-809-11
CAD: C-1 BUFFER PLAN.DWG

DRAWN BY: JDW
DESIGN BY: MB
REVIEWED BY: CRM

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT BUFFER ZONE PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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DRAWING I/IIC-1

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CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN
SITE DEVELOPMENT PLAN NARRATIVE

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

KYLE D. GOULD
106018

02/28/2025

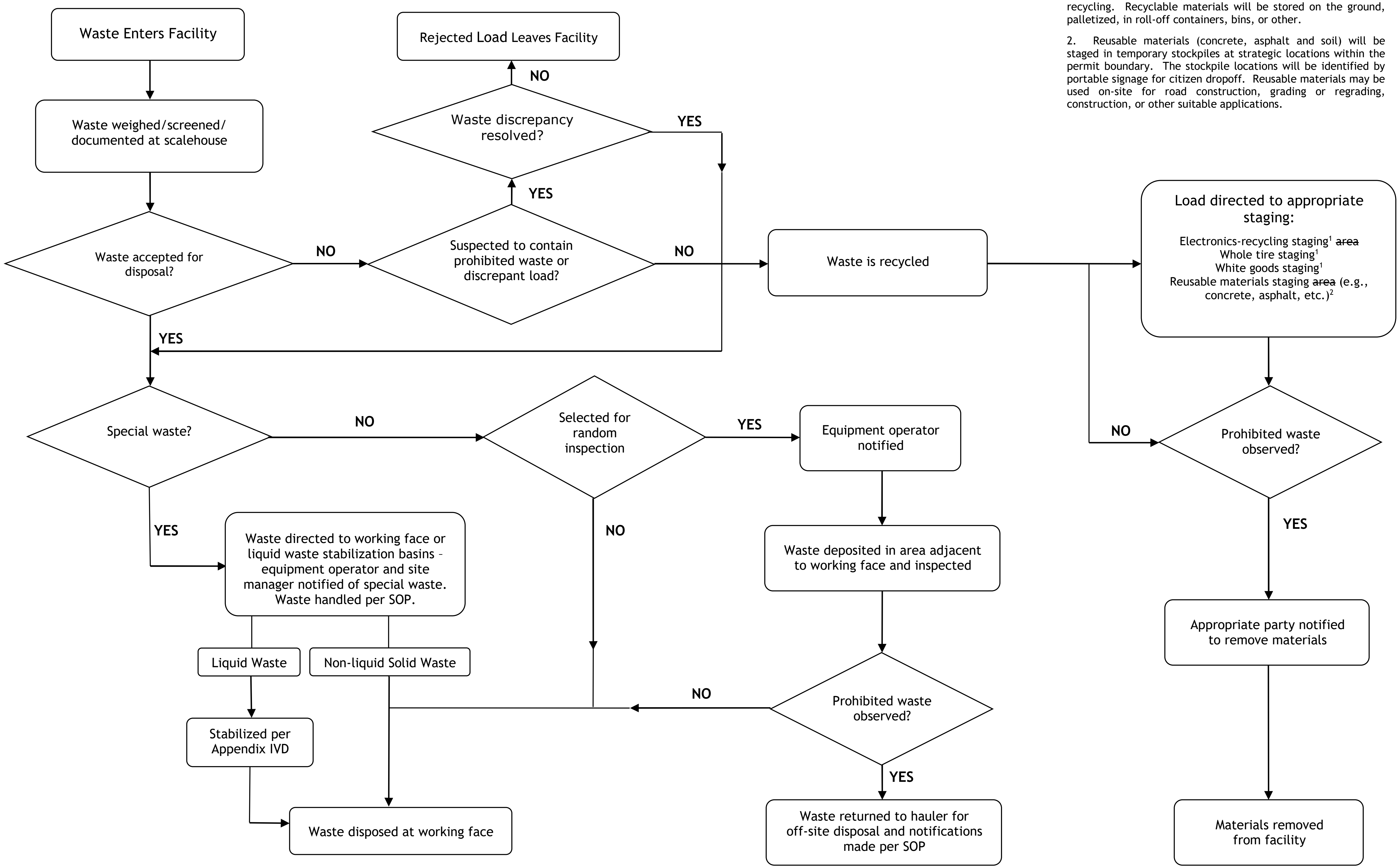
Prepared by

Weaver Consultants Group, LLC
TBPE Registration No. F-3727
6420 Southwest Blvd., Suite 206
Fort Worth, TX 76109
817-735-9770

WCG Project No. 0120-809-11-05

This document is intended for permitting purposes only.

Figure III-1
Waste Movement Flow Diagram



Notes

1. Recyclable Electronics, whole tires, white goods and other non-putrescible recyclables will be staged at the Citizens Convenience Center in non-designated areas, staged in a manner not to impede citizen access to the disposal roll-off containers. The recyclables will periodically be removed from the site by recycling vendors or transported off-site for recycling. Recyclable materials will be stored on the ground, palletized, in roll-off containers, bins, or other.

2. Reusable materials (concrete, asphalt and soil) will be staged in temporary stockpiles at strategic locations within the permit boundary. The stockpile locations will be identified by portable signage for citizen dropoff. Reusable materials may be used on-site for road construction, grading or regrading, construction, or other suitable applications.

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN
APPENDIX IIIA
LANDFILL UNIT DESIGN INFORMATION

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

KYLE D. GOULD
106018

02/28/2025

Prepared by

Weaver Consultants Group, LLC
TBPE Registration No. F-3727
6420 Southwest Boulevard, Suite 206
Fort Worth, Texas 76109
817-735-9770

WCG Project No. 0120-809-11-05

This document is intended for permitting purposes only.

- **Excavation Stability.** The stability of the proposed excavation slopes was evaluated at critical sections. The excavation slopes were analyzed using undrained strength parameters (total stress) as well as drained strength parameters (effective stress). The slope stability analysis resulted in an acceptable factor of safety for each analyzed condition. All factors of safety generated were greater than the minimum recommended factor of safety of 1.3 for short-term and 1.5 for long-term conditions.
- **Liner System Stability.** In addition to the generalized slope stability summarized above, the interfaces of the components of the liner systems were evaluated using infinite slope stability analysis. All the calculated factor of safety values for interface slope stability are acceptable.
- **Liner System Settlement and Strain Analysis.** The liner system was evaluated for settlement and strain due to loading of liner soil, waste, and cover soils. The maximum strain on the liner system, caused by the estimated differential settlement, is within the acceptable range for each liner system component and will not adversely affect the performance of the liner system.
- **Historic Waste Area Inspection and Liner Preparation.** The area of historic waste that is excavated in preparation for liner construction will be inspected and prepared as set forth in Part IV, Section 4.25. With the completion of waste removal and inspection by a geotechnical engineer (to evaluate the adequacy of waste removal and condition of foundation soils), the liner foundation will be prepared consistent with the requirements set forth in Appendix IIIE, Section 4.3 – Landfill Excavation.

3 EXISTING LINER SYSTEMS

The existing site under the TCEQ Permit No. MSW-2293 is a Type IAE and Type IVAE permitted to accept Type I and Type IV waste. The site at the time was qualified as arid exemption as specified in 30 TAC §330.5(b) and did not require a leachate collection system or liner.

As part of this major permit amendment application, the historic waste fill area will be excavated and relocated to the main disposal area within the City of Meadow Landfill. The estimated limits are based on the currently approved 2006 Major Permit Amendment and visual observations. The waste relocation plan is shown in Parts I/II, Sector Development Plans I through III. A Waste Relocation Plan is presented in Part IV, Section 4.25, which addresses waste removal procedures, waste inspection procedures and odor control procedures to be implemented during relocation of the historic waste.

As described in Part IV, Section 4.25, the historic waste fill area will be excavated and disposed into the newly constructed landfill and it's developed. Inspection and preparation of the excavated historic waste area for subsequent liner construction is addressed in Section 4.25.

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN
APPENDIX IIIA-A
LINER AND FINAL COVER SYSTEM DETAILS

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

KYLE D. GOULD
106018

02/28/2025

Prepared by

Weaver Consultants Group, LLC
TBPE Registration No. F-3727
6420 Southwest Boulevard, Suite 206
Fort Worth, Texas 76109
817-735-9770

WCG Project No. 0120-809-11-05

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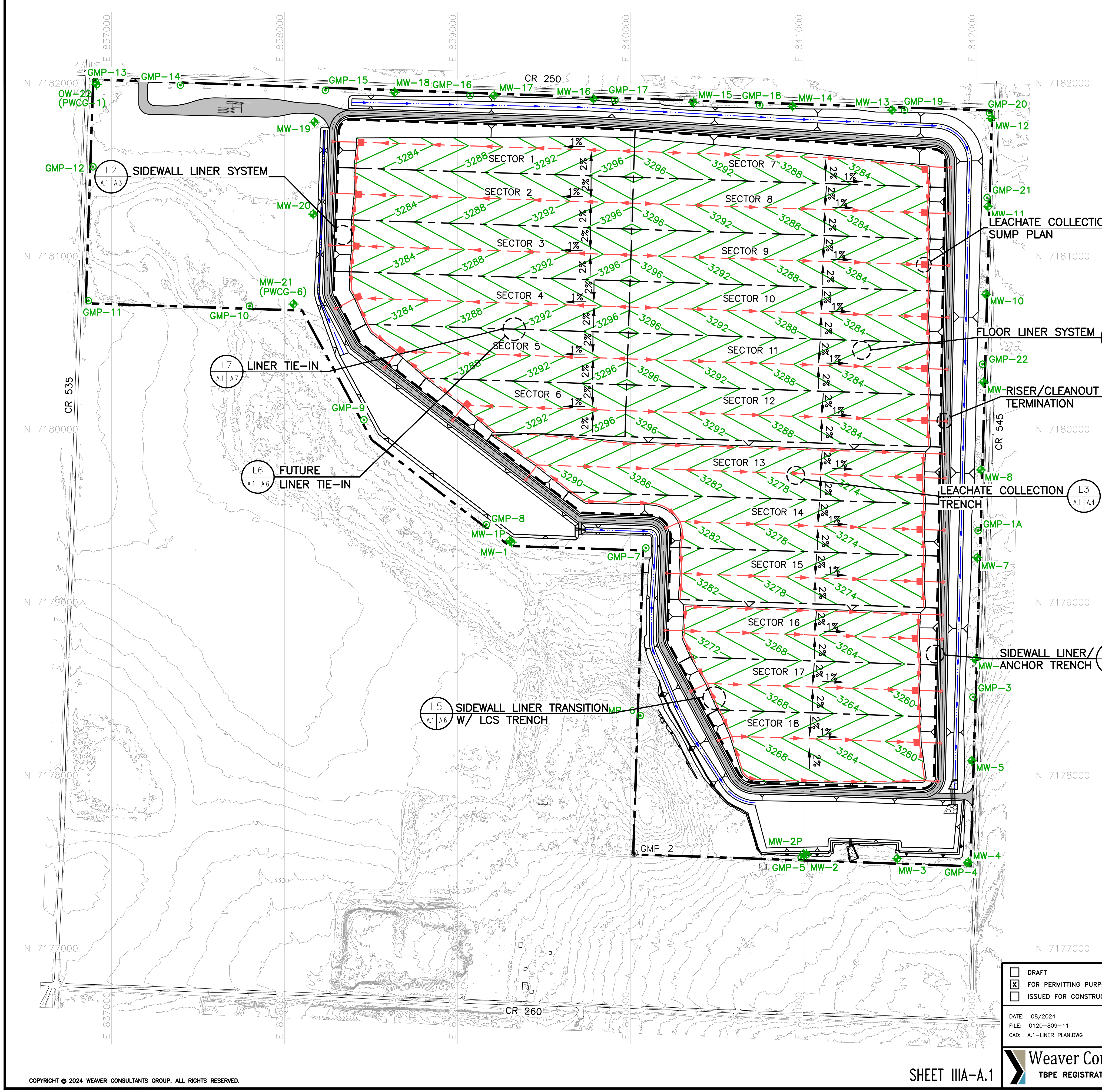

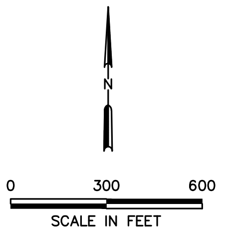

STATE OF TEXAS
KYLE D. GOULD
106018
LICENSED
PROFESSIONAL ENGINEER
02/28/2025

LEGEND

— · — · —	PROPOSED PERMIT BOUNDARY
— — —	PROPOSED LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
3300	EXISTING CONTOUR
560	PROPOSED EXCAVATION CONTOUR
— · —	SECTOR BOUNDARY
— · · —	CHANNEL CENTERLINE
— ◄ —	LEACHATE COLLECTION PIPE
■	LEACHATE COLLECTION SUMP
—●	LEACHATE RISER PIPE
⊙ GMP-2	EXISTING GAS PROBE
✚ MW-10	PROPOSED GROUNDWATER MONITORING WELL
⊙ GMP-1	GAS PROBE TO BE ABANDONED
⊙ GMP-21	PROPOSED GAS PROBE

NOTES:

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3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.
4. EXCAVATION SLOPES AND SLOPES OUTSIDE THE LIMIT OF WASTE (e.g., CHANNELS) ARE TYPICALLY 3H:1V.
5. REFER TO APPENDIX IIIC FOR LEACHATE STORAGE INFORMATION.
6. ELEVATION OF DEEPEST EXCAVATION AT THE LCS SUMP IS 3,250.0 FT-MSL.
7 SEQUENCE OF SITE DEVELOPMENT IS PROVIDED IN PARTS I/II, APPENDIX I/IIA DRAWINGS I/IIA.4 THROUGH I/IIA.6.
8. REFER TO APPENDIX IIIF FOR DRAINAGE DESIGN INFORMATION.

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120-809-11
CAD: A.1-LINER PLAN.DWG

DRAWN BY: RAA
DESIGN BY: JBM
REVIEWED BY: DEP

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT
BOTTOM OF LINER PLAN

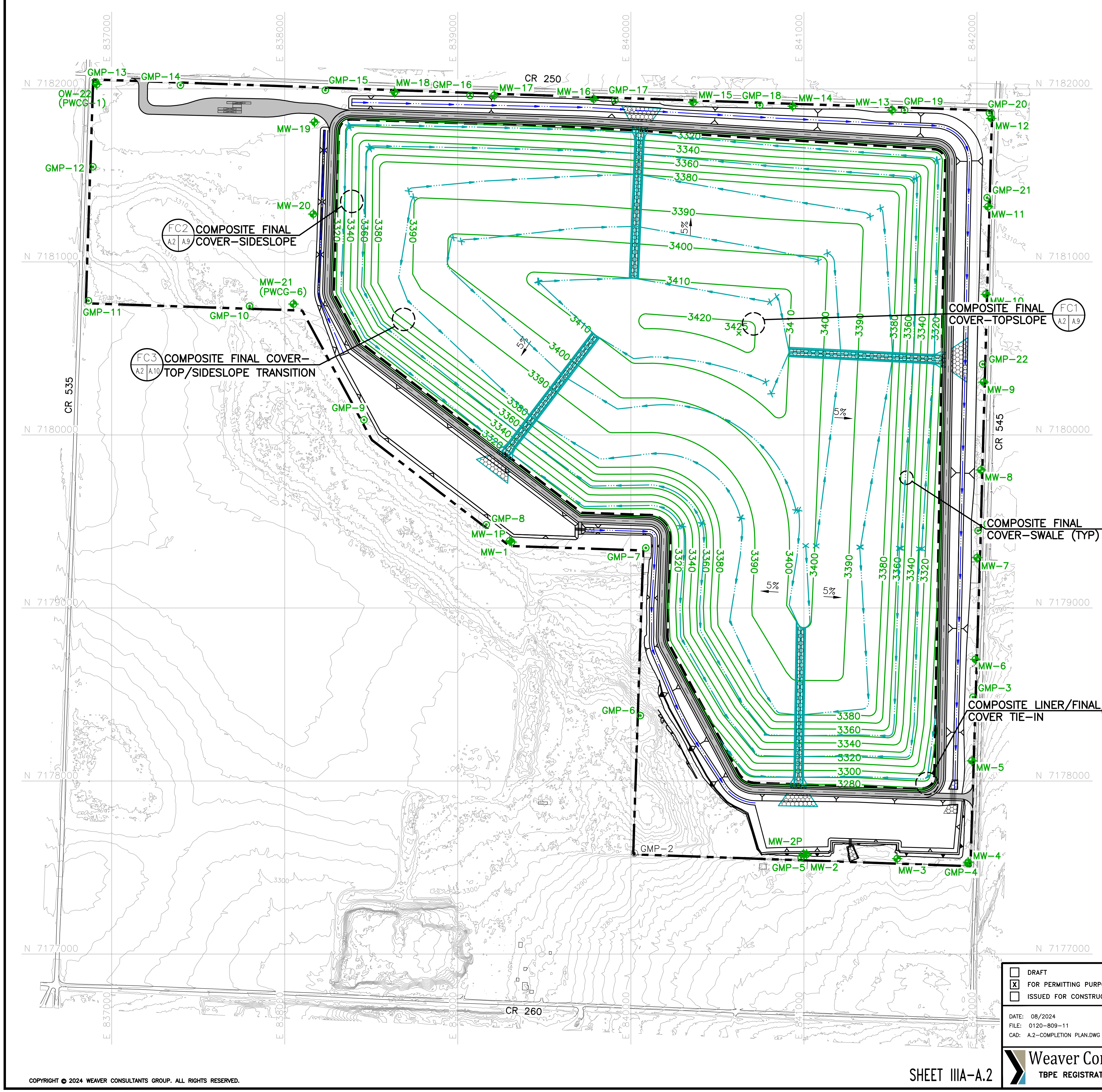
CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

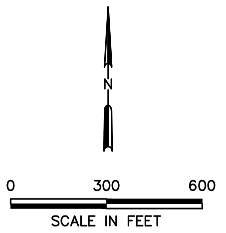
WWW.WCGRP.COM

DRAWING A.1

SHEET IIIA-A.1

O:\0120\809\EXPANSION 2023\PART III\IIIA\CLEAN 02-2025\A.1-TOP OF LINER PLAN.dwg, jwilson, 1:2





KYLE D. GOULD
106018
02/28/2025

LEGEND

━ ━ · ━	PROPOSED PERMIT BOUNDARY
━ ━ ━	PROPOSED LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
3300	EXISTING CONTOUR
3400	FINAL COVER CONTOUR
→	DRAINAGE SWALE
▨	DRAINAGE LETDOWN
→	CHANNEL CENTERLINE
⊙ GMP-2	EXISTING GAS PROBE
✚ MW-10	PROPOSED GROUNDWATER MONITORING WELL
⊙ GMP-1	GAS PROBE TO BE ABANDONED
⊙ GMP-21	PROPOSED GAS PROBE

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PROPERTY AND PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.
4. REFER TO APPENDIX IIIF-SURFACE WATER DRAINAGE PLAN FOR DRAINAGE DESIGN INFORMATION.
5. MAXIMUM FINAL COVER ELEVATION IS 3425.0 FT-MSL. MAXIMUM TOP OF WASTE ELEVATION IS 3421.5 FT-MSL.
6. TYPICAL SIDESLOPES ARE 4H:1V. TYPICAL TOPSLOPE IS 5%.

SHEET IIIA-A.2

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DATE: 08/2024
FILE: 0120-809-11
CAD: A.2-COMPLETION PLAN.DWG

DRAWN BY: RAA
DESIGN BY: JBM
REVIEWED BY: DEP

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
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MAJOR PERMIT AMENDMENT
LANDFILL COMPLETION PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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DRAWING A.2

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN
APPENDIX IIIA-B
LANDFILL UNIT CROSS SECTIONS

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

KYLE D. GOULD
106018

02/28/2025

Prepared by

Weaver Consultants Group, LLC
TBPE Registration No. F-3727
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Fort Worth, Texas 76109
817-735-9770

WCG Project No. 0120-809-11-05

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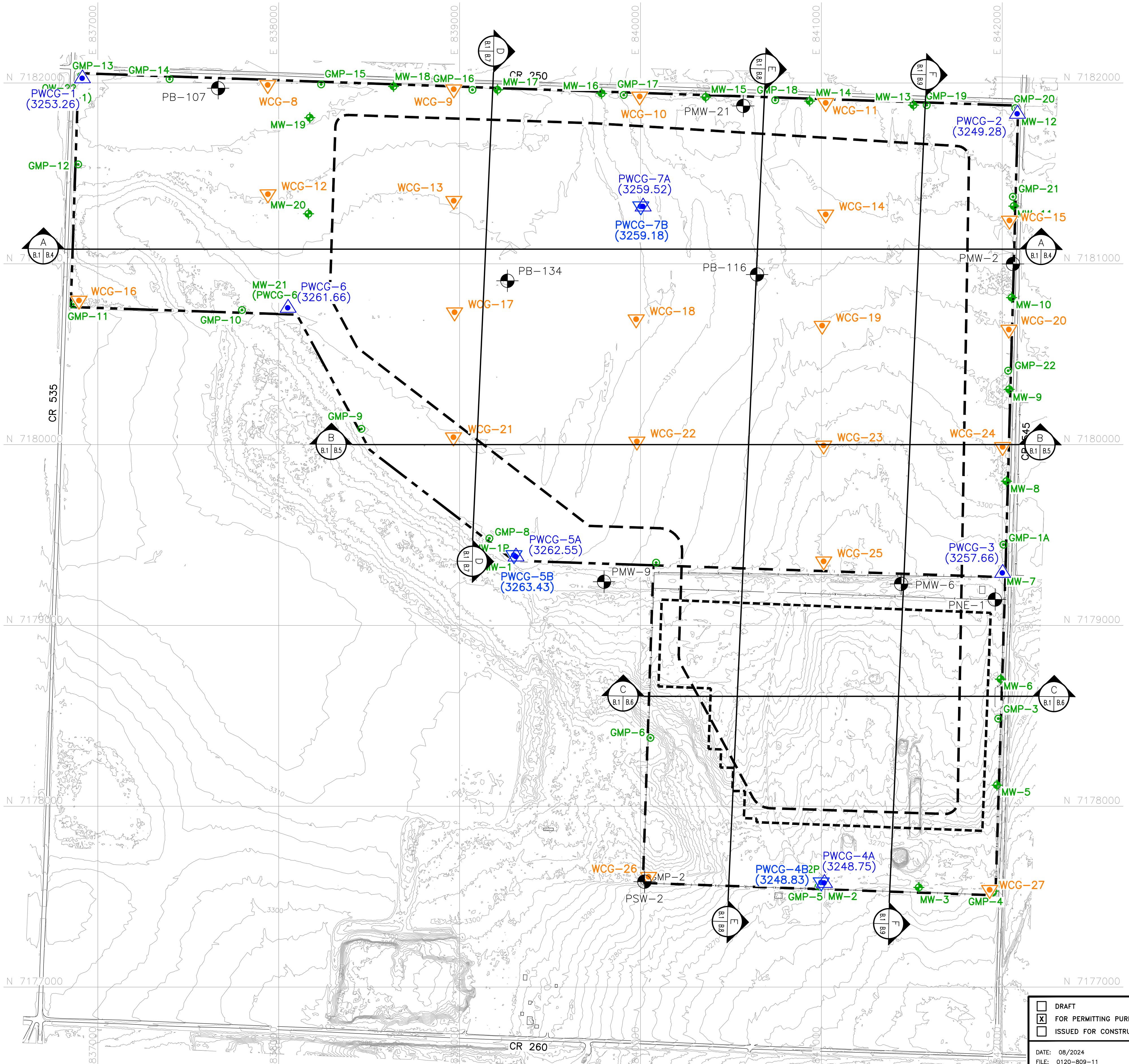

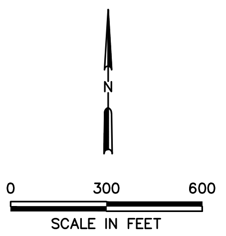

KYLE D. GOULD
106018
02/28/2025

LEGEND

— · —	PROPOSED PERMIT BOUNDARY
— · · —	PERMITTED PERMIT BOUNDARY
— — —	PROPOSED LIMIT OF WASTE
- - - -	PERMITTED LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
350	EXISTING CONTOUR
⊕ PMW–116	RELICT GROUNDWATER PIEZOMETER LOCATION
△ PWCG–4A (3248.75)	2023 UPPERMOST AQUIFER EXPANSION PIEZOMETER WITH GROUNDWATER ELEVATION POSTED IN FT–MSL
▽ PWCG–4B (3253.26)	2023 PERCHED ZONE EXPANSION PIEZOMETER WITH GROUNDWATER ELEVATION POSTED IN FT–MSL
▽ WCG–23	EXPANSION BOREHOLE LOCATION
⊙ GMP–2	EXISTING GAS PROBE
⊕ MW–10	PROPOSED GROUNDWATER MONITORING WELL
⊙ GMP–1	GAS PROBE TO BE ABANDONED
⊙ GMP–21	PROPOSED GAS PROBE

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.

SHEET IIIA–B.1

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DATE: 08/2024
FILE: 0120–809–11
CAD: B.1–SITE PLAN.DWG

DRAWN BY: RAA
DESIGN BY: MB
REVIEWED BY: CRM

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TBPE REGISTRATION NO. F–3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT
TYPICAL SECTION LOCATIONS

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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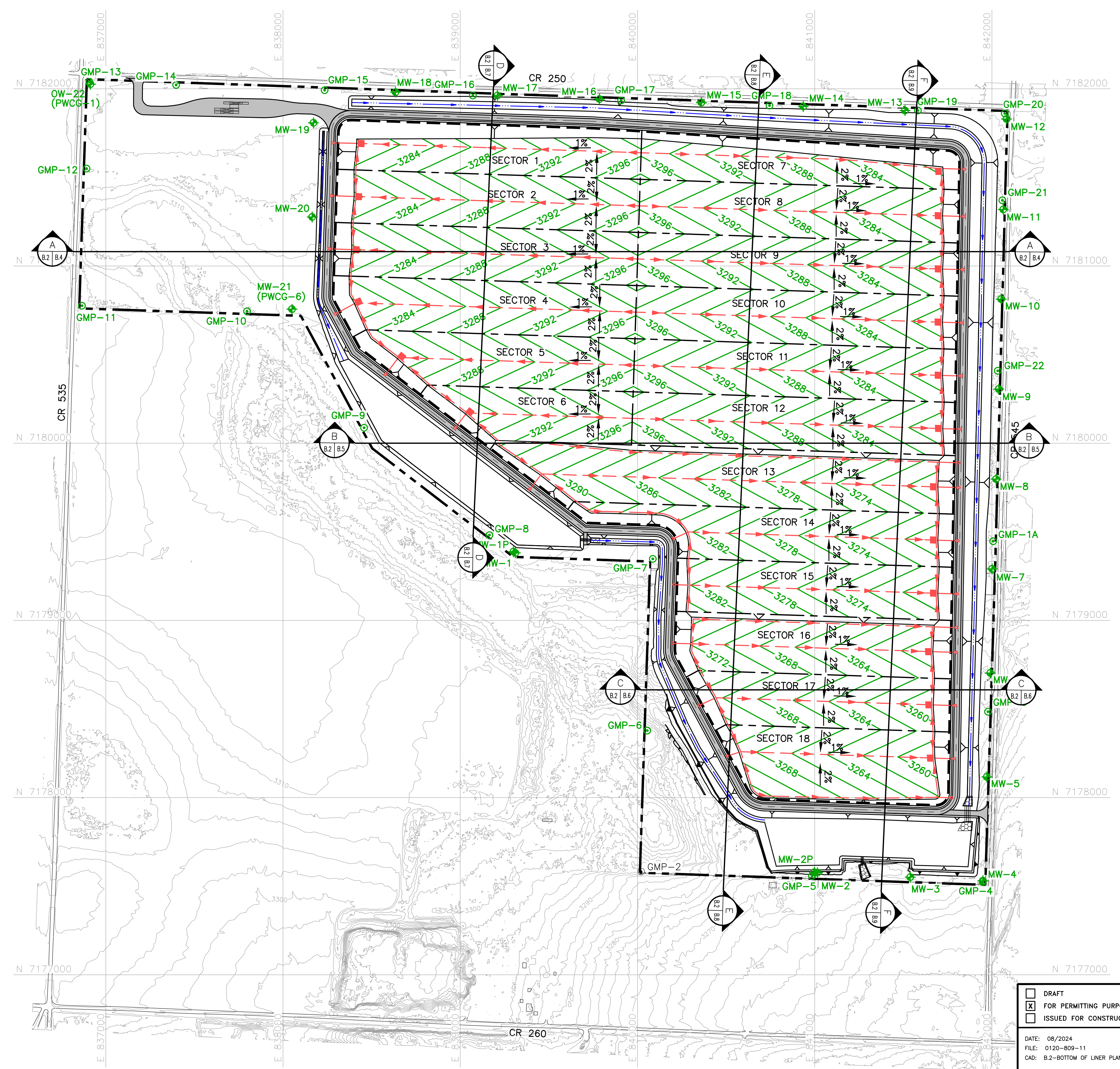
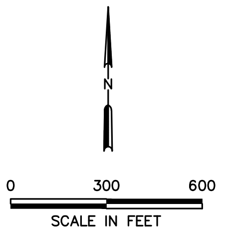
DRAWING B.1

O:\0120\809\EXPANSION 2023\PART III\IIIA\B\CLEAN 02–2025\B.1 – TYPICAL SECTION LOCATIONS.dwg, jwilson, 1:2





KYLE D. GOULD
106018
02/28/2025

LEGEND

— · · —	PROPOSED PERMIT BOUNDARY
— — —	PROPOSED LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
3300	EXISTING CONTOUR
560	PROPOSED EXCAVATION CONTOUR
— —	SECTOR BOUNDARY
— · · · —	CHANNEL CENTERLINE
◄ — ◄	LEACHATE COLLECTION PIPE
■	LEACHATE COLLECTION SUMP
—●	LEACHATE RISER PIPE
⊙ GMP-2	EXISTING GAS PROBE
⊕ MW-10	PROPOSED GROUNDWATER MONITORING WELL
⊙ GMP-1	GAS PROBE TO BE ABANDONED
⊙ GMP-21	PROPOSED GAS PROBE

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.
4. EXCAVATION SLOPES AND SLOPES OUTSIDE THE LIMIT OF WASTE (e.g., CHANNELS) ARE TYPICALLY 3H:1V.
5 REFER TO APPENDIX IIIC FOR LEACHATE STORAGE INFORMATION.
6. ELEVATION OF DEEPEST EXCAVATION AT THE LCS SUMP IS 3250.0 FT-MSL.
7. SEQUENCE OF SITE DEVELOPMENT IS PROVIDED IN PARTS I/II, APPENDIX I/IIA.
8. REFER TO APPENDIX IIIF FOR DRAINAGE DESIGN INFORMATION.

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DATE: 08/2024
FILE: 0120-809-11
CAD: B.2-BOTTOM OF LINER PLAN.DWG

DRAWN BY: RAA
DESIGN BY: JBM
REVIEWED BY: KDG

Weaver Consultants Group
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PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT
BOTTOM OF LINER PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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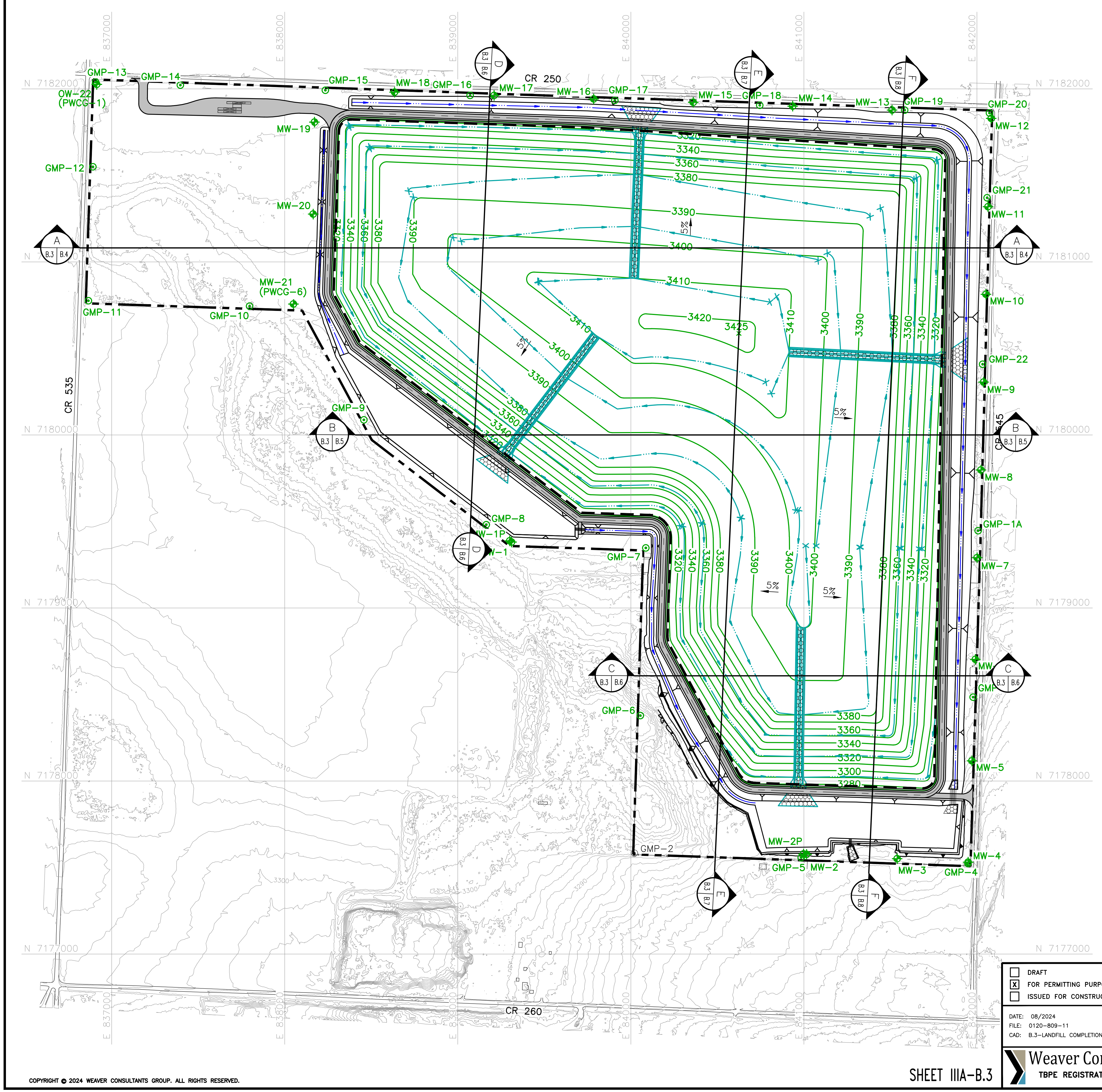
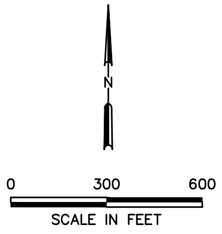
DRAWING B.2

SHEET IIIA-B.2

O:\0120\809\EXPANSION 2023\PART III\IIIA\B\CLEAN 02-2025\B.2- BOTTOM OF LINER PLAN.dwg, jwilson, 1:2





KYLE D. GOULD
106018
02/28/2025

LEGEND

— - —	PROPOSED PERMIT BOUNDARY
— — —	PROPOSED LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
3300	EXISTING CONTOUR
3400	FINAL COVER CONTOUR
→·→	DRAINAGE SWALE
▨	DRAINAGE LETDOWN
→	CHANNEL CENTERLINE
⊙ GMP-2	EXISTING GAS PROBE
◆ MW-10	PROPOSED GROUNDWATER MONITORING WELL
⊙ GMP-1	GAS PROBE TO BE ABANDONED
⊙ GMP-21	PROPOSED GAS PROBE

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PROPERTY AND PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.
4. REFER TO APPENDIX IIIF–SURFACE WATER DRAINAGE PLAN FOR DRAINAGE DESIGN INFORMATION.
5. MAXIMUM FINAL COVER ELEVATION IS 3425.0 FT–MSL. MAXIMUM TOP OF WASTE ELEVATION IS 3421.5 FT–MSL.
6. TYPICAL SIDESLOPES ARE 4H:1V. TYPICAL TOPSLOPE IS 5%.

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DATE: 08/2024
FILE: 0120–809–11
CAD: B.3–LANDFILL COMPLETION PLAN.DWG

DRAWN BY: SRF
DESIGN BY: JBM
REVIEWED BY: KDG

Weaver Consultants Group
TBPE REGISTRATION NO. F–3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT LANDFILL COMPLETION PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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DRAWING B.3

SHEET IIIA–B.3

O:\0120\809\EXPANSION 2023\PART III\IIIA\B\CLEAN 02–2025\B.3– LANDFILL COMPLETION PLAN.dwg, jwilson, 1:2

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

VOLUME 2 OF 6

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

KYLE D. GOULD
106018

02/28/2025

Prepared by

Weaver Consultants Group, LLC
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WCG Project No. 0120-809-11-05

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CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN
APPENDIX IIIB
ALTERNATIVE LINER POINT OF COMPLIANCE DEMONSTRATION

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

NEVZAT TURAN
84059
02/28/2025

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TBPE Registration No. F-3727
6420 Southwest Boulevard, Suite 206
Fort Worth, Texas 76109
817-735-9770

WCG Project No. 0120-809-11-05

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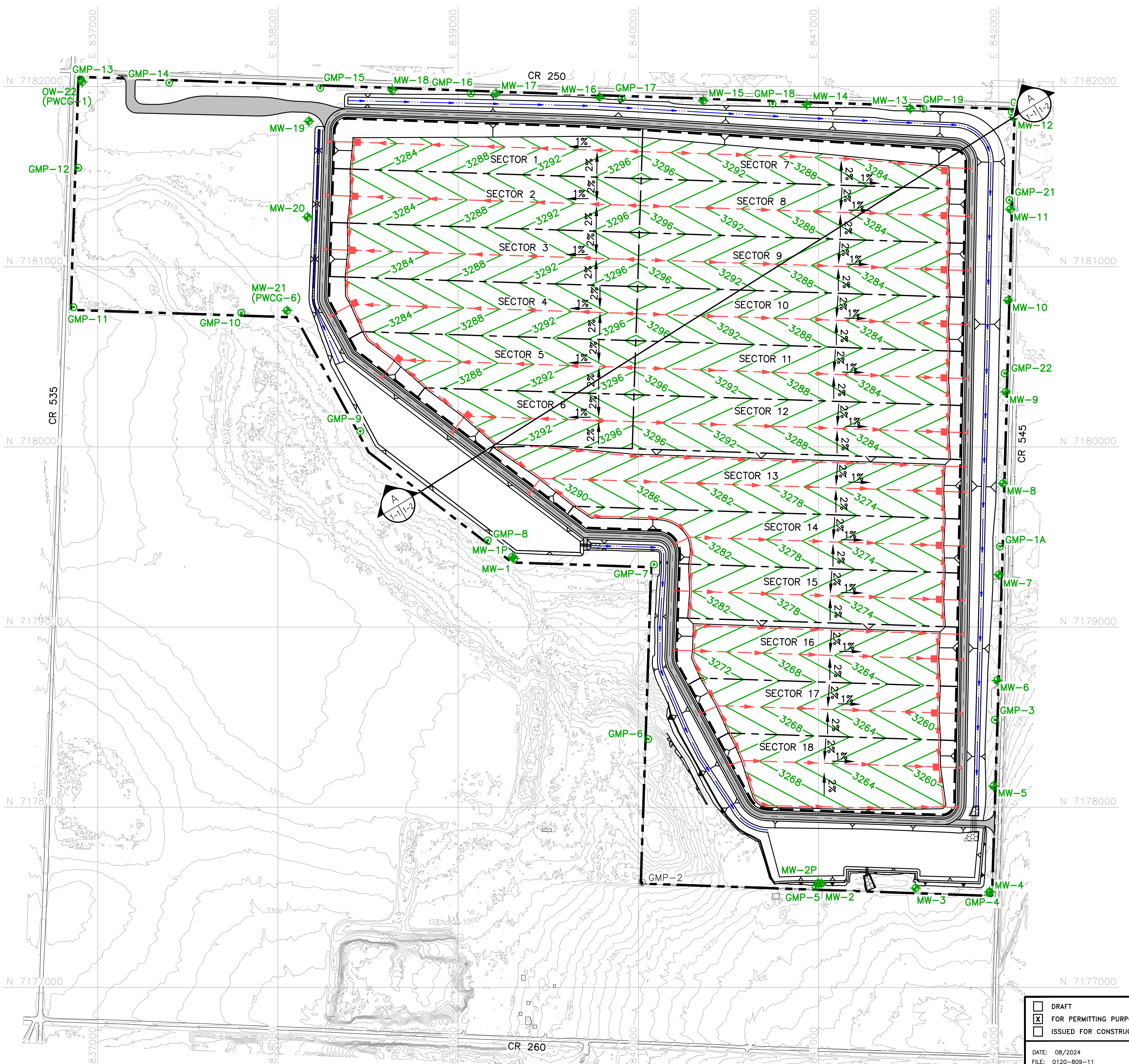

N

0 300 600
SCALE IN FEET

NEVZAT TURAN
84059
02/28/2025

LEGEND

— - — - —	PROPOSED PERMIT BOUNDARY
— — — —	PROPOSED LIMIT OF WASTE
N 7180000 ———	STATE PLANE COORDINATE SYSTEM
——3300——	EXISTING CONTOUR
——3280——	TOP OF LINER CONTOUR
——— - ———	SECTOR BOUNDARY
— ◄ — ◄ —	LEACHATE COLLECTION PIPE
■	LEACHATE COLLECTION SUMP
——●	LEACHATE RISER PIPE
⊕ MW-1	PROPOSED OBSERVATION/GROUNDWATER MONITORING WELL
⊙ GMP-5	PROPOSED LANDFILL GAS MONITORING PROBE
⊙ GMP-2	EXISTING LANDFILL GAS MONITORING PROBE

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.
4. EXCAVATION SLOPES AND SLOPES OUTSIDE THE LIMIT OF WASTE (e.g., CHANNELS) ARE TYPICALLY 3H:1V.
5. REFER TO APPENDIX IIIC FOR LEACHATE STORAGE INFORMATION.
6. ELEVATION OF DEEPEST EXCAVATION AT THE LCS SUMP IS 3251.0 FT-MSL.
7. SEQUENCE OF SITE DEVELOPMENT IS PROVIDED IN PARTS I/II, APPENDIX I/IIA DRAWINGS I/IIA.4 THROUGH I/IIA.7.

SHEET IIIB-2A

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DATE: 08/2024
FILE: 0120-809-11
CAD: FIG 1-1 TOP OF LINER PLAN.DWG

DRAWN BY: RAA
DESIGN BY: JPI
REVIEWED BY: NT

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT TOP OF LINER PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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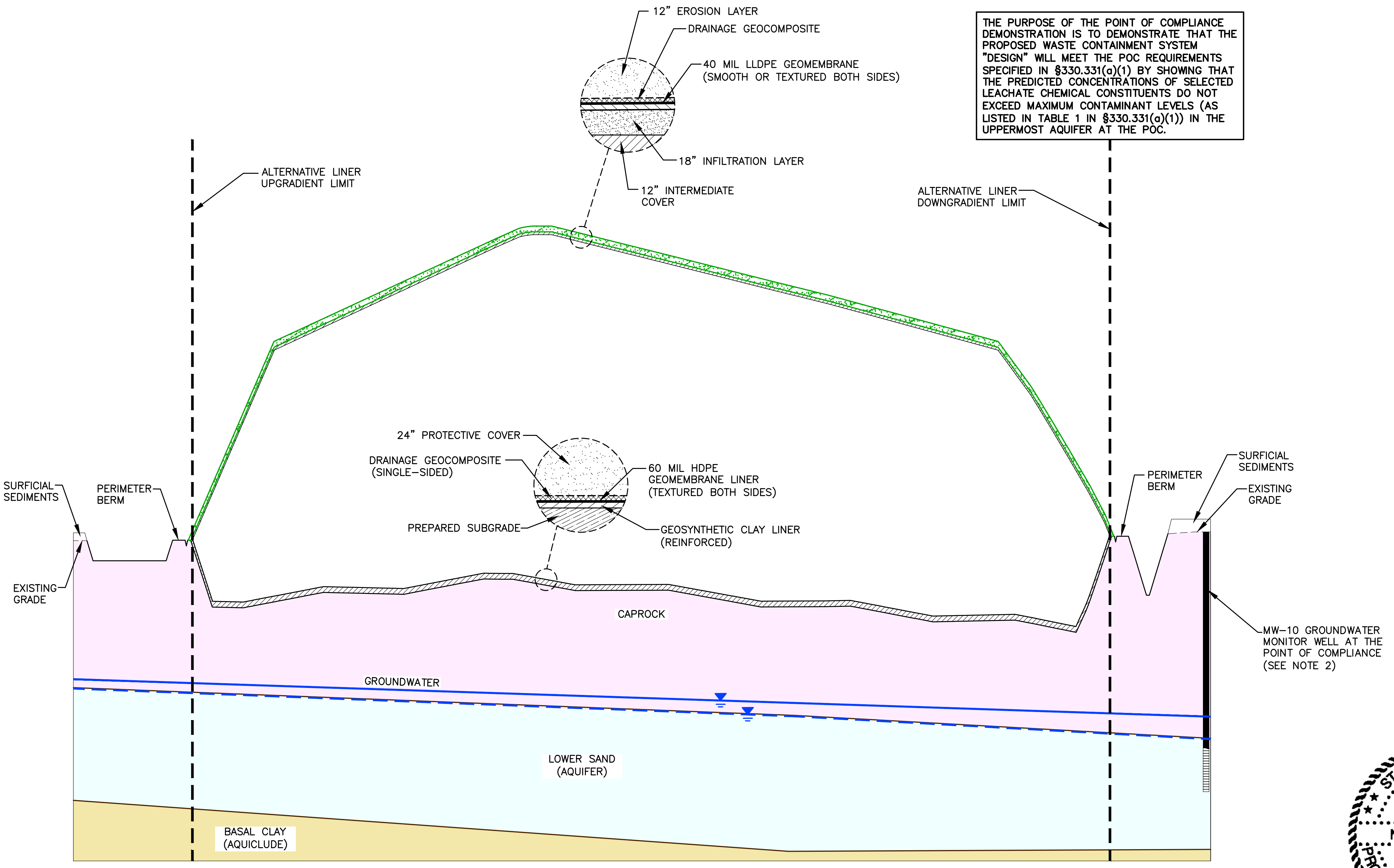
FIGURE 1-1

G:\0120\809\EXPANSION 2023\PART III\IIIB\CLEAN 02-2025\FIG 1-1 TOP OF LINER PLAN.dwg, jwilson, 1:2



THE PURPOSE OF THE POINT OF COMPLIANCE DEMONSTRATION IS TO DEMONSTRATE THAT THE PROPOSED WASTE CONTAINMENT SYSTEM "DESIGN" WILL MEET THE POC REQUIREMENTS SPECIFIED IN §330.331(a)(1) BY SHOWING THAT THE PREDICTED CONCENTRATIONS OF SELECTED LEACHATE CHEMICAL CONSTITUENTS DO NOT EXCEED MAXIMUM CONTAMINANT LEVELS (AS LISTED IN TABLE 1 IN §330.331(a)(1)) IN THE UPPERMOST AQUIFER AT THE POC.

TYPICAL SECTION A

0 200 400
HORIZONTAL SCALE IN FEET

0 20 40
VERTICAL SCALE IN FEET

LEGEND

- ― ― ― LIMITS OF WASTE
- ▽ APPROXIMATE GROUNDWATER POTENTIOMETRIC SURFACE (SEE NOTE 3)
- ▽ MODELED GROUNDWATER SURFACE (SEE NOTE 4)

NOTES:

1. TYPICAL GEOLOGIC PROFILE DEVELOPED FROM CROSS-SECTIONS INCLUDED IN APPENDIX IIIG.
2. THE MODEL IS DEVELOPED CONSERVATIVELY USING THE DOWNGRADIENT MONITORING WELL THAT IS CLOSEST TO THE LIMIT OF WASTE AND THE LARGEST TWO-DIMENSIONAL WASTE FILL AREA (I.E., LONGEST DISTANCE LEACHATE BETWEEN THE UPGRADIENT AND DOWNGRADIENT LIMIT OF WASTE).
3. GROUNDWATER ELEVATIONS MEASURED BY WCG IN APRIL 2024 AND POSTED BY MEASUREMENT LOCATIONS IN FT-MSL. GROUNDWATER CONTOURS INTERPOLATED BETWEEN MEASUREMENT LOCATIONS. ACTUAL GROUNDWATER ELEVATIONS MAY VARY FROM THOSE ILLUSTRATED IN THIS FIGURE.
4. DUE TO THE CONFINED NATURE OF THE AQUIFER ACROSS THE SITE, THE MODELED GROUNDWATER SURFACE REPRESENTS THE EXPECTED FLOW OF GROUNDWATER BETWEEN THE BASAL CLAY AQUICLUDE AND THE CAPROCK.

NEVZAT TURAN
84059
02/28/2025

SHEET IIIB-2B

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DATE: 08/2024
FILE: 0120-809-11
CAD: FIG 1-2 WASTE CONTAINMENT.DWG

DRAWN BY: SRF
DESIGN BY: JPI
REVIEWED BY: NT

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT
WASTE CONTAINMENT SYSTEM
ALTERNATIVE LINER

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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FIGURE 1-2

Table 2-1
Chemical Constituent MCLs and Current Groundwater Conditions

Constituent	MCL Listed in §330.331(a)(1) (mg/l)	Site Groundwater Concentrations[1] (mg/l)
Arsenic	0.05	0.0476
Barium	1.0	0.415
Benzene[2]	0.005	0.0005
Cadmium[2]	0.01	0.001
Carbon tetrachloride[2]	0.005	0.0025
Chromium (hexavalent)[2]	0.05	0.01
2,4-Dichlorophenoxy acetic acid	0.1	--
1,4-Dichlorobenzene[2]	0.075	0.001
1,2-Dichloroethane[2]	0.005	0.0005
1,1-Dichloroethylene	0.007	--
Endrin	0.0002	--
Fluoride	4	--
Lindane	0.004	--
Lead[2]	0.05	0.0284
Mercury	0.002	--
Methoxychlor	0.1	--
Nitrate	10	--
Selenium[2]	0.01	0.005
Silver[2]	0.05	0.005
Toxaphene	0.005	--
1,1,1-Trichloroethane	0.2	0.0005
Trichloroethylene[2]	0.005	--
2,4,5-Trichlorophenoxy acetic acid	0.01	--
Vinyl Chloride[2]	0.002	0.001

[1] Current Groundwater concentrations are reproduced from analytical testing performed in April 2023 by WCG within the uppermost aquifer. Refer to Section 2.2 for more information on the uppermost aquifer.

[2] For constituents not detected at reporting limits, one-half of the reporting limit is listed.

ignores travel time, absorption, and consumption of water that occurs within the in-situ subsurface soils. The in-situ caprock stratum is comprised of loose to very dense caliche with low hydraulic conductivity that is expected to allow no recharge to the uppermost aquifer. Therefore, no recharge was modeled for the offsite areas. It is assumed that no recharge occurs in Zone II (i.e., perimeter berm), located between the groundwater recharge zone and the limits of waste. The percolation zones are summarized in Table 3-1.

Table 3-1
Summary of Percolation Zones

Percolation Zone	Description
Zone I (Alternative Liner Area)	This percolation zone models the impact of percolation through the alternative liner system.
Zone II (Perimeter Berm)	This percolation zone represents the perimeter berm area. The berm is considered well-drained where no recharge occurs.
Zone III (Offsite Area)	This percolation zone models the in-situ soils offsite. The in-situ soils (caprock stratum) is classified as loose to very dense caliche where no recharge is expected to occur.

3.1.2 Sequence of Site Development

As shown on Figure 3-2, the alternative liner area is expected to receive waste between 2025 and 2121. Therefore, three timeframes are considered: (1) the active case, which represents the time period beginning when waste is first placed and is expected to last 1 year, (2) the interim case, which represents the time period between the active case until final cover is installed and is expected to last 96 years, and (3) the closed case, which represents the period after final cover is placed and is modeled for 30 years. Sequencing plans for the site are presented in Appendix I/IIA.

3.2 HELP Model Demonstration

3.2.1 HELP Model

The Hydrologic Evaluation of Landfill Performance (HELP) Model, Version 3.07, is a quasi-two-dimensional hydrologic model of water movement across, into, through, and out of the landfill. The model uses climate, soil, and landfill design data to perform a solution technique that accounts for the effects of surface storage, run-off, infiltration, percolation, soil moisture storage, evapotranspiration, and lateral drainage. The HELP Model was used to estimate the rate of percolation through the alternative liner system. The percolation rate was determined for various landfill configurations, as discussed in Section 3.2.2.

Fate and Transport Output

Fate and transport results and outputs are discussed in Section 4. The MT3DMS fate and transport modeling was performed for a period of 127 years (1 year active, 97 years interim, and 30 years closed landfill condition). The resulting DAF contours represent the ratio of dilution factor of 260 to represent the extent of 260 DAF contours, which stands for the minimum acceptable DAF value. The DAF contours are the result of attenuation of constituents due to (1) advective flow and (2) dispersion of constituents in the groundwater.

3.4.4 Parameter Selection

The following summarizes the model input key parameters.

- **Landfill Area Modeled.** The entire alternative liner area is modeled in the two-dimensional MODFLOW simulations as a section.
- **Time Frame.** The alternative liner area is expected to be in the active and interim condition (i.e., without final cover) for approximately 97 years. The modeling is performed for the duration from the initial placement of waste on the alternative liner area (starting the year of 2025 as shown on Figure 3-2) to the closure of the site, the year 2121 (final postclosure year 2151).
- **Percolation Rates.** The percolation rates were estimated as discussed in Section 3.3.
- **Subsurface Information.** The site geology and hydrogeology information is reproduced from Appendix IIIG. The key MODFLOW input parameters are listed in Table 3-4.
- **Groundwater.** Starting groundwater contours have been obtained from the groundwater contours generated based on the groundwater measurements obtained from the site on April 2024. The groundwater gradients for Sections A and B were selected using the groundwater contours presented on Figure 3-1.

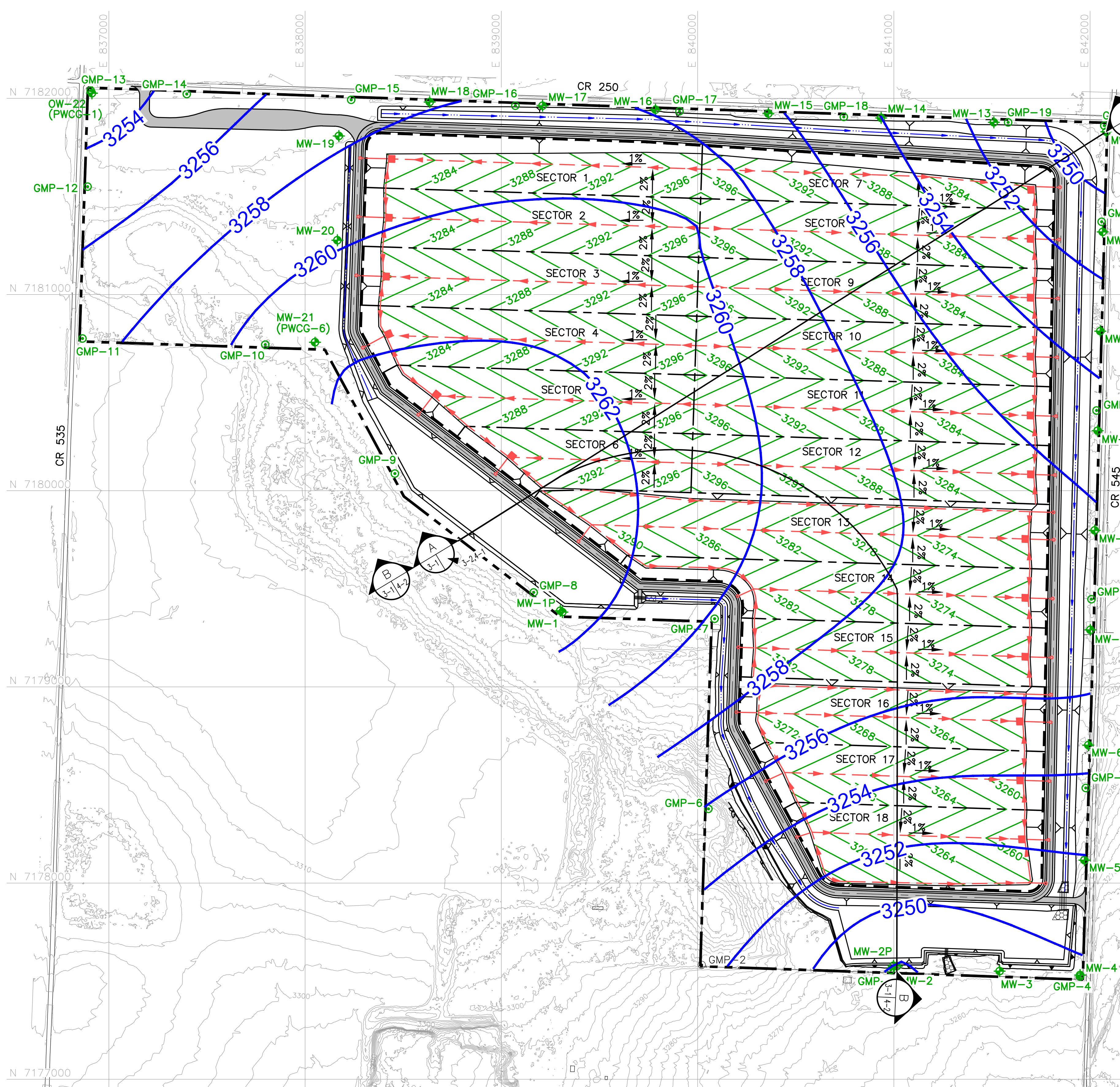
Table 3-4
MODFLOW Model Input Parameters

Layer	Maximum Hydraulic Conductivity (cm/s)[1]		Specific Storage (1/ft)[2]	Specific Yield[3]	Effective Porosity[1]	Total Porosity[3]
Lower Sand Layer	$K_{x,y}$	$1.08x10^{-3}$	$3.28x10^{-5}$	.30	.30	.45
	K_z	$2.80X10^{-3}$				

[1] Maximum hydraulic conductivity and effective values for subsurface soils obtained from Appendix IIIG.

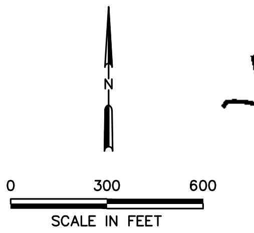
[2] Specific storage values for subsurface soils obtained from Domenico and Mifflin (1965).

[3] Specific yield and total porosity values for subsurface soils obtained from the Morrison and Johnson (1967).



SHEET IIIB-15A

GROUNDWATER GRADIENT	
SECTION A	0.0031
SECTION B	0.0033



NEVZAT TURAN
84059
02/28/2025

LEGEND

— · —	PROPOSED PERMIT BOUNDARY
— — —	PROPOSED LIMIT OF WASTE
N 7180000 ——	STATE PLANE COORDINATE SYSTEM
—3300—	EXISTING CONTOUR
—3280—	TOP OF LINER CONTOUR
— - —	SECTOR BOUNDARY
—◄—	LEACHATE COLLECTION PIPE
■	LEACHATE COLLECTION SUMP
—●	LEACHATE RISER PIPE
⊕ MW-1	PROPOSED OBSERVATION/GROUNDWATER MONITORING WELL
⊙ GMP-5	PROPOSED LANDFILL GAS MONITORING PROBE
⊙ GMP-2	EXISTING LANDFILL GAS MONITORING PROBE
—3260—	GROUNDWATER POTENTIOMETRIC SURFACE CONTOUR IN FT-MSL

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.
4. EXCAVATION SLOPES AND SLOPES OUTSIDE THE LIMIT OF WASTE (e.g., CHANNELS) ARE TYPICALLY 3H:1V.
5. REFER TO APPENDIX IIIC FOR LEACHATE STORAGE INFORMATION.
6. ELEVATION OF DEEPEST EXCAVATION AT THE LCS SUMP IS 3251.0 FT-MSL.
7. SEQUENCE OF SITE DEVELOPMENT IS PROVIDED IN PARTS I/II, APPENDIX I/IIA DRAWINGS I/IIA.4 THROUGH I/IIA.7.
8. GROUNDWATER POTENTIOMETRIC SURFACE CONTOURS ARE INTERPOLATED BETWEEN MEASUREMENT LOCATIONS; ACTUAL CONDITIONS MAY VARY.
9. GROUNDWATER ELEVATIONS MEASURED BY WCG IN APRIL 2024 AND POSTED BY MEASUREMENT LOCATIONS IN FT-MSL. GROUNDWATER CONTOURS INTERPOLATED BETWEEN MEASUREMENT LOCATIONS. ACTUAL GROUNDWATER ELEVATIONS MAY VARY FROM THOSE ILLUSTRATED IN THIS FIGURE.

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DATE: 08/2024
FILE: 0120-809-11
CAD: FIG 3-1 GROUNDWATER CONTOUR.DWG

DRAWN BY: RAA
DESIGN BY: JPI
REVIEWED BY: NT

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

MAJOR PERMIT AMENDMENT
APRIL 2024
GROUNDWATER CONTOUR MAP

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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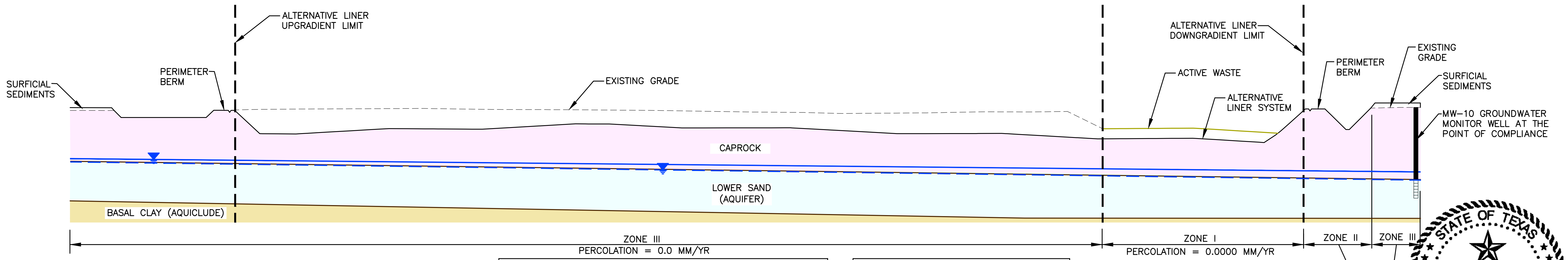
FIGURE 3-1

O:\0120\809\EXPANSION 2023\PART III\IIIB\CLEAN 02-2025\FIG 3-1 GROUNDWATER CONTOUR MAP.dwg, jwilson, 1:2



ACTIVE (1 YEAR) **YEAR 2025**

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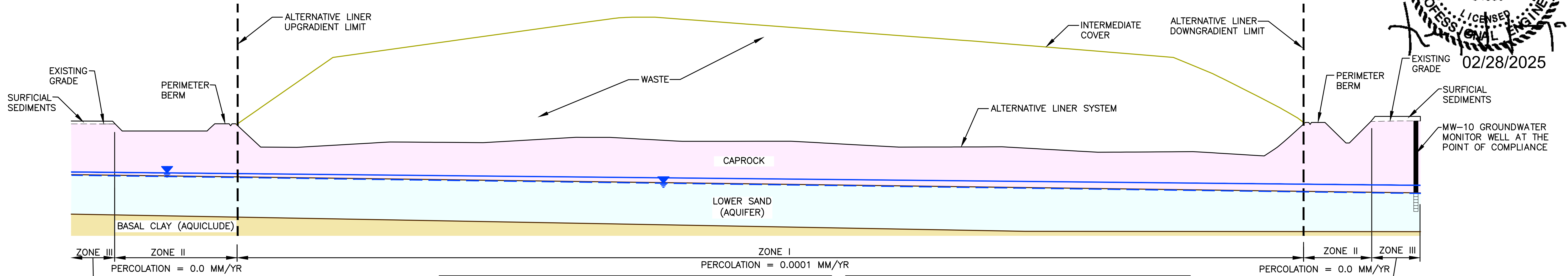
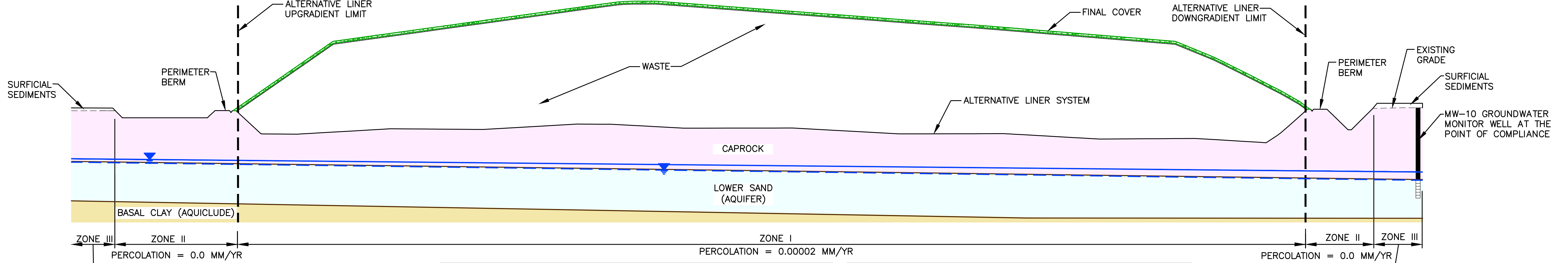
84059
02/28/2025



INTERIM (97 YEARS) **YEARS 2026-2121**



CLOSED (30 YEARS) **YEARS 2121-2151**

LEGEND

- — — — LIMITS OF WASTE
- APPROXIMATE GROUNDWATER POTENTIOMETRIC SURFACE
- MODELED GROUNDWATER SURFACE

SECTION A (A 3-1|3-2)

0 150 300
HORIZONTAL SCALE IN FEET

0 50 100
VERTICAL SCALE IN FEET

SHEET IIIB-15B

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FILE: 0120-809-11
CAD: FIG 3-2-SECTION A.DWG

DRAWN BY: SRF
DESIGN BY: JPI
REVIEWED BY: NT

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MEADOW LANDFILL, LLC

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MAJOR PERMIT AMENDMENT
TYPICAL SEQUENCE OF EVENTS

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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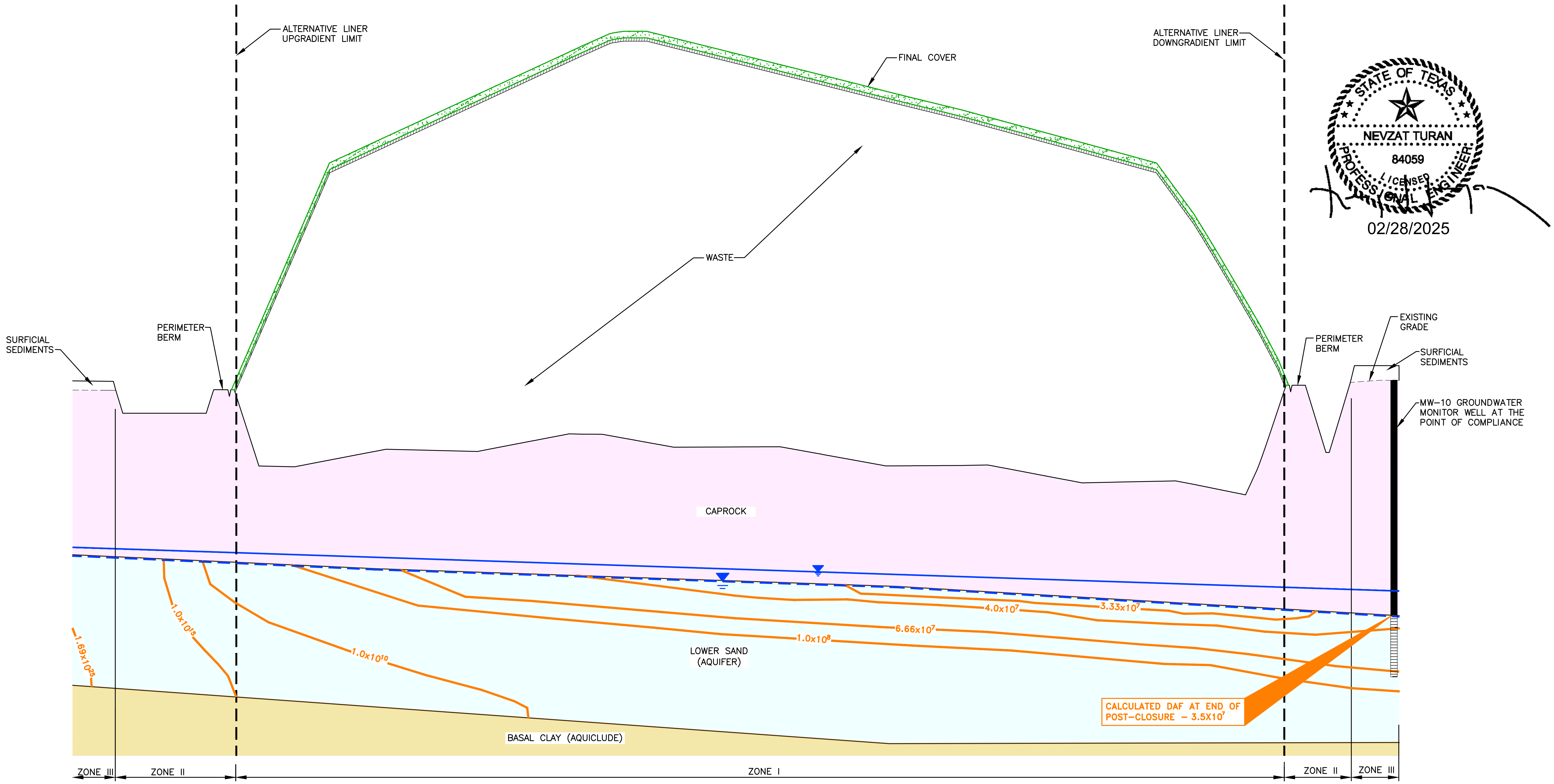
FIGURE 3-2

O:\0120\809\EXPANSION 2023\PART III\IIIB\CLEAN 02-2025\FIG 3-2 SECTION A.dwg, jwilson, 1:2



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NOTES:

1. TYPICAL GEOLOGIC PROFILE DEVELOPED FROM CROSS-SECTIONS INCLUDED IN APPENDIX IIIG.
2. THE MODEL IS DEVELOPED CONSERVATIVELY USING THE DOWNGRADIENT MONITORING WELL THAT IS CLOSEST TO THE LIMIT OF WASTE AND THE LARGEST TWO-DIMENSIONAL WASTE FILL AREA (I.E., LONGEST DISTANCE LEACHATE BETWEEN THE UPGRADIENT AND DOWNGRADIENT LIMIT OF WASTE).
3. GROUNDWATER ELEVATIONS MEASURED BY WCG IN APRIL 2024 AND POSTED BY MEASUREMENT LOCATIONS IN FT-MSL. GROUNDWATER CONTOURS INTERPOLATED BETWEEN MEASUREMENT LOCATIONS. ACTUAL GROUNDWATER ELEVATIONS MAY VARY FROM THOSE ILLUSTRATED IN THIS FIGURE.
4. DUE TO THE CONFINED NATURE OF THE AQUIFER ACROSS THE SITE, THE MODELED GROUNDWATER SURFACE REPRESENTS THE EXPECTED FLOW OF GROUNDWATER BETWEEN THE BASAL CLAY AQUICLUDE AND THE CAPROCK.

LEGEND

- – – – LIMITS OF WASTE
- ▼ APPROXIMATE GROUNDWATER POTENTIOMETRIC SURFACE (SEE NOTE 3)
- – ▼ – MODELED GROUNDWATER SURFACE (SEE NOTE 4)
- 1.0X10^15 DAF CONTOUR AT END OF POSTCLOSURE

SECTION A

A
3-1 | 4-1

0 150 300
HORIZONTAL SCALE IN FEET

0 15 30
VERTICAL SCALE IN FEET

SHEET IIIB-19A

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DATE: 08/2024
FILE: 0120-809-11
CAD: FIG 4-1-SECTION A MODFLOW.DWG

DRAWN BY: SRF
DESIGN BY: JPI
REVIEWED BY: NT

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TBPE REGISTRATION NO. F-3727

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MEADOW LANDFILL, LLC

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NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT
MODFLOW RESULTS
SECTION A

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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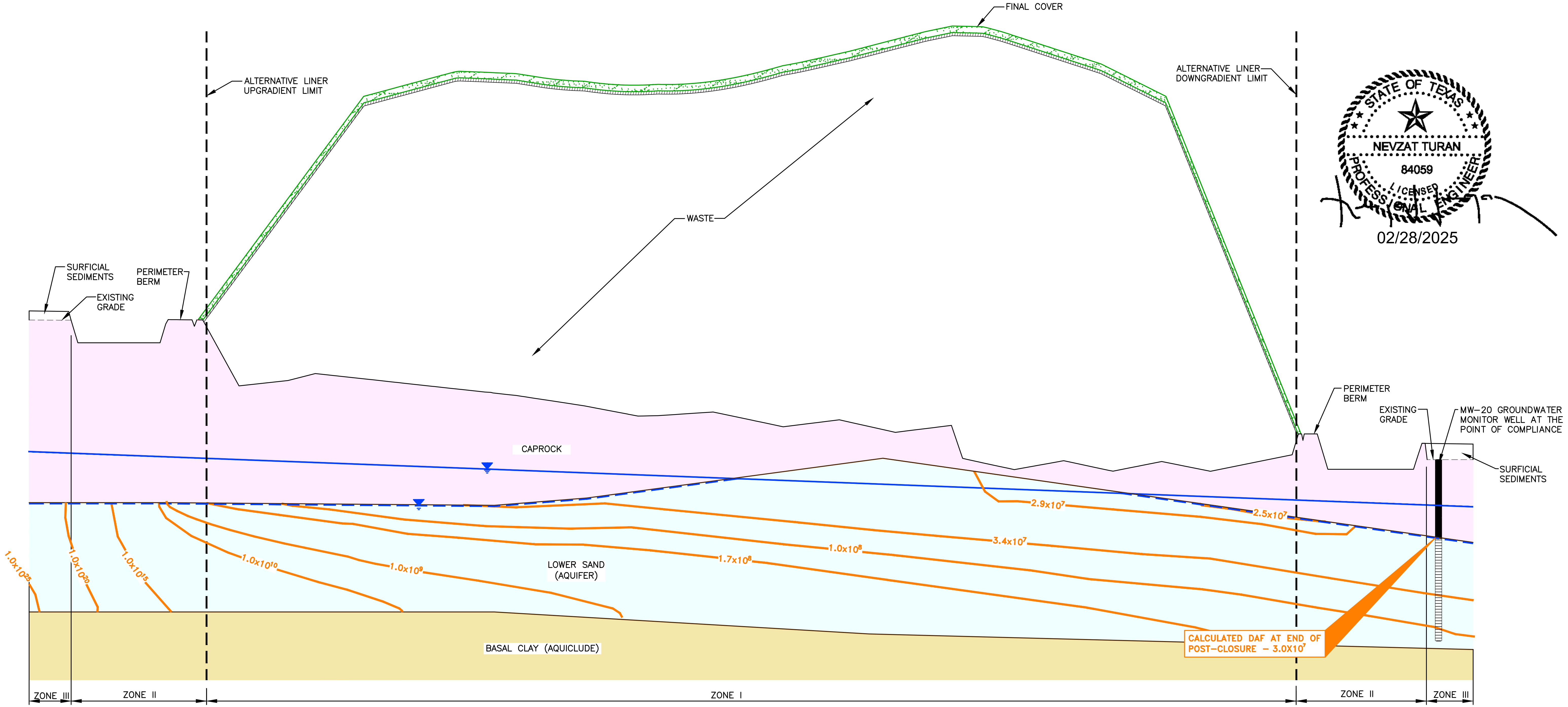
FIGURE 4-1

O:\0120\809\EXPANSION 2023\PART III\IIIB\CLEAN 02-2025\FIG 4-1 SECTION A MODFLOW RESULTS.dwg, jwilson, 1:2



NEVZAT TURAN
84059
02/28/2025

NOTES:

1. TYPICAL GEOLOGIC PROFILE DEVELOPED FROM CROSS–SECTIONS INCLUDED IN APPENDIX IIIG.
2. THE MODEL IS DEVELOPED CONSERVATIVELY USING THE DOWNGRADIENT MONITORING WELL THAT IS CLOSEST TO THE LIMIT OF WASTE AND THE LARGEST TWO–DIMENSIONAL WASTE FILL AREA (I.E., LONGEST DISTANCE LEACHATE BETWEEN THE UPGRADIENT AND DOWNGRADIENT LIMIT OF WASTE).
3. GROUNDWATER ELEVATIONS MEASURED BY WCG IN APRIL 2024 AND POSTED BY MEASUREMENT LOCATIONS IN FT–MSL. GROUNDWATER CONTOURS INTERPOLATED BETWEEN MEASUREMENT LOCATIONS. ACTUAL GROUNDWATER ELEVATIONS MAY VARY FROM THOSE ILLUSTRATED IN THIS FIGURE.
4. DUE TO THE CONFINED NATURE OF THE AQUIFER ACROSS THE SITE, THE MODELED GROUNDWATER SURFACE REPRESENTS THE EXPECTED FLOW OF GROUNDWATER BETWEEN THE BASAL CLAY AQUICLUDE AND THE CAPROCK.

LEGEND

— — — LIMITS OF WASTE
—▼— APPROXIMATE GROUNDWATER POTENTIOMETRIC SURFACE (SEE NOTE 3)
– –▼– – MODELED GROUNDWATER SURFACE (SEE NOTE 4)
—1.0X10^15— DAF CONTOUR AT END OF POSTCLOSURE

SECTION B
B
3–1|4–2

0 150 300
HORIZONTAL SCALE IN FEET
0 15 30
VERTICAL SCALE IN FEET

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DATE: 08/2024
FILE: 0120–809–11
CAD: FIG 4–2–SECTION B MODFLOW.DWG

DRAWN BY: SRF
DESIGN BY: JPI
REVIEWED BY: NT

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TBPE REGISTRATION NO. F–3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
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MAJOR PERMIT AMENDMENT
MODFLOW RESULTS
SECTION B

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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FIGURE 4–2

SHEET IIIB–19B

CITY OF MEADOW LANDFILL
TERRY COUNTY
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN
APPENDIX IIIC
LEACHATE AND CONTAMINATED WATER MANAGEMENT PLAN

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

NEVZAT TURAN
84059

Prepared by

02/28/2025

Weaver Consultants Group, LLC
TBPE Registration No. F-3727
6420 Southwest Blvd., Suite 206
Fort Worth, Texas 76109
817-735-9770

WCG Project No. 0120-809-11-05

This document is intended for permitting purposes only.

1 PURPOSE AND SCOPE

This appendix addresses §§330.305(g), 330.177, 330.207 and 330.333.

This Leachate and Contaminated Water Management Plan for the City of Meadow Landfill was prepared consistent with Title 30 Texas Administrative Code (TAC) §§330.305(c), 330.305(g), 330.177, 330.207, and 330.333. This plan provides the details of the collection, storage, and disposal of contaminated water, and leachate generated during the active and postclosure periods of the landfill.

The landfill will be developed with a Subtitle D liner system and the historic waste fill area will be relocated to Subtitle D lined areas. Refer to Section 4.25 of the Site Operating Plan for the waste relocation plan. The design details for the liner and final cover systems are included in Part III, Appendix IIIA-A – Liner and Final Cover System Details. The top of liner plan and landfill completion plan are also included in Part III, Appendix IIIA-A. Additionally, Figure 3-1 includes the top of liner plan showing the leachate collection system layout.

Leachate and contaminated water will be managed at the site in compliance with Title 30 TAC §330.55(b), including disposing of contaminated waters in a manner that does not cause surface water or groundwater contamination.

the diversion and containment berms required around the working face for a 25-year, 24-hour storm event are provided in Appendix IIIC-C.

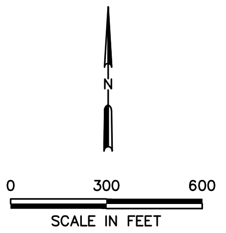
2.3 Stormwater Management

The City of Meadow Landfill will manage stormwater throughout the active life of the landfill to minimize the amount of stormwater that will come in contact with waste or leachate. Uncontaminated surface water will be controlled through the use of diversion berms and stormwater diversion ditches. To promote runoff and prevent ponding, the operational cover will be graded and maintained. The use of drainage swales, diversion berms, and the containment berm is illustrated in Parts I/II, Appendix I/IIA, Drawings I/IIA.4 through I/IIA.6 – Cell Development Plans.

Stormwater that comes into contact with waste will be considered contaminated water and handled consistent with Title 30 TAC §330.207. Contaminated water will be contained by the containment berm at the working face as shown in Appendix IIIC-C. At no time will contaminated water be allowed to discharge into waters of the United States nor will it be used for construction and/or operations (i.e., liner construction, dust control, etc.). Storage of contaminated water and its disposal are discussed in Sections 4 and 5 of this appendix, respectively.

The final cover has been designed to minimize infiltration and promote runoff. Uncontaminated surface water will be managed throughout the active life of the landfill to minimize infiltration into the filled areas and to minimize contact with solid waste. Also, daily and intermediate soil cover areas will be graded and maintained to promote runoff and prevent ponding as described in Part IV – Site Operating Plan (SOP).

Procedures for verifying the adequacy of daily cover placement to cover all waste material is discussed in Part IV – SOP, Section 4.18.2. Runoff generated from fill areas covered with a minimum 6 inches of earthen daily cover having no exposed waste or 12 inches of intermediate cover will be considered as uncontaminated and allowed to drain to the perimeter drainage system. In the event that the 6 inches of daily cover does not prevent stormwater from contacting solid waste or leachate, this stormwater will be collected and managed as contaminated and disposed of in an authorized manner. Uncontaminated surface water runoff will be diverted around the working face as shown in Appendix IIIC-C.



LEGEND

- PROPOSED PERMIT BOUNDARY
- PROPOSED LIMIT OF WASTE
- N 7180000 STATE PLANE COORDINATE SYSTEM
- 3300 EXISTING CONTOUR
- 3280 TOP OF LINER CONTOUR
- SECTOR BOUNDARY
- LEACHATE COLLECTION PIPE
- LEACHATE COLLECTION SUMP
- LEACHATE RISER PIPE
- △1 INDICATES REVISION (SEE LIST OF REVISIONS)

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.
4. ELEVATION OF DEEPEST EXCAVATION AT THE LCS SUMP IS 3250.0 FT–MSL.
5. REFER TO FIGURE 4–1 FOR THE LCS FORCEMAIN AND LCS STORAGE TANK INFORMATION.

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DATE: 08/2024
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CAD: 3–1 LEACHATE COLLECTION.DWG

DRAWN BY: JDW
DESIGN BY: JPI
REVIEWED BY: NT

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

Weaver Consultants Group
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MAJOR PERMIT AMENDMENT LEACHATE COLLECTION SYSTEM PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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FIGURE 3–1

SHEET IIIC–10A

Table 4-1
Sump Flow and Pump Operating Times

Sump Storage Summary			
Condition	Sectors 1 through 18[1]		
	Flow (gpd)	Pump Operating Time (hours/day)	Pump Capacity (gpm)
	Average[2]	Average[2]	
Active	353.9	0.6	10
Interim	880.3	1.5	10
Closed	187.1	0.3	10

[1] Sumps draining the largest LCS layer areas are shown. Refer to Appendix IIIC-B, Sheet IIIC-B-38 – Sump Drainage Areas for Sector layout and areas draining to each sump.

[2] Refer to Appendix IIIC-B, page IIIC-B-34 for sump design calculations.

4.2 Contaminated Water Management

Contaminated water will be contained at the working face as shown in Appendix IIIC-C. A vacuum truck or similar vehicle will remove contaminated water from this area. Contaminated water will then be transported via tanker trucks to a properly permitted offsite wastewater treatment facility. Contaminated water may be stored in the leachate tank or evaporation ponds; however, comingled contaminated water and leachate will not be recirculated (refer to Section 5.2).

4.3 Onsite Storage Tank(s) and Evaporation Ponds

The proposed minimum 21,000-gallon leachate storage tank and evaporation ponds will provide enough storage capacity for the leachate expected to be generated at the site. Contaminated water and landfill gas condensate will also be stored in the leachate tank or evaporation ponds as discussed in Sections 5.3 and 5.4. The storage tank and evaporation ponds will be emptied, as required, to maintain capacity for the leachate currently generated at the site. The leachate level in the tank will be managed to provide a minimum of 15,000 gallons of emergency backup storage capacity. The leachate level in the evaporation pond will be managed to provide a minimum of 2 feet of freeboard.

Leachate storage capacity calculations are provided in Appendix IIIC-D. The tank is equipped with a liquid-level sensor and a high-level alarm to prevent overfill. When the high level alarm is triggered, a light on the tank will start flashing, which will alert site personnel of the high level in the tank. Additionally, the alarm will activate an electronic signal that will be sent to the leachate sump pumps to shut them down until the issue is resolved. Site personnel will then take appropriate actions to reduce the leachate level in the tank. The storage tank will be emptied consistent with the leachate storage system operation plan detailed in Section 5.

The minimum 21,000-gallon tank will be dual contained or located within a secondary containment area consisting of a 2-foot-high (minimum) earthen berm. The design is sufficient to control and contain a worst case spill or release. As shown in Appendix IIIC-D, the design of the unenclosed containment area that surrounds the tank accounts for precipitation from the 25-year, 24-hour storm. Leachate spillage within the containment area, should it occur, will be pumped back into the storage tank, evaporation ponds, or transported by tanker trucks to a properly permitted wastewater treatment facility. In the event the leachate tank is damaged, the remaining leachate will be pumped into the evaporation ponds or transported by tanker trucks to a properly permitted wastewater treatment facility until the tank can be repaired.

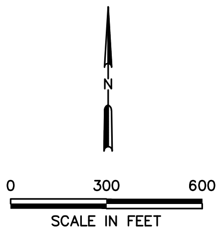
The evaporation ponds will be operated to maintain a minimum of 2 foot of freeboard. The limit of the maximum operating level (2 foot vertically down from the top of the pond) will be clearly marked with paint, or a bead of HDPE, or some other appropriate marking so that the operating level may be easily checked. The leachate level will be maintained at or below the maximum operating level. The level in the pond will be checked weekly and after rainfall events greater than four inches. If the leachate level exceeds the maximum operating level because of an excessive rainfall event, the pond content will be loaded into tanker trucks for off-site disposal or placed in the onsite leachate tank. The evaporation pond will be lined with a double liner system including geomembrane and geosynthetic clay composite liner using the same materials specified for the landfill liner and constructed in accordance with Appendix IIID – Liner Quality Control Plan. Design and calculations showing projected pond performance and design requirements are contained in Appendix IIID-D.

Table 4-2
Proposed Leachate Storage

Designation	Storage Capacity[1] (Total, gal)	Freeboard[2] (ft)	Overfill Protection	Construction	Dimensions	Secondary Containment Description	Leak Detection	Secondary Containment Capacity (gallons)	Discharge
Storage Tank L1[1]	Minimum 21,000 (total) 4,918 (working)	1	Yes, high level sensor within tank with actuated shutoff valve and visual alarm. Alarm set at or below freeboard height.	Single contained, dual contained or on concrete foundation. Closed top.	31-ft by 10-foot base 9-ft height	Dual contained tank or 2-foot-high containment berm	Visual inside secondary containment.	Minimum 21,000 (provides containment for working volume plus 1-ft freeboard)	Discharge by tanker truck
Evaporation Pond L2[2]	597,981 (working)	2	Maximum operating level will be marked and checked weekly or after rainfall events greater than four inches.	Primary 60-mil HDPE geomembrane overlaying a primary geosynethetic clay liner (GCL) and a secondary 60-mil HDPE geomembrane overlaying a secondary GCL.	135 ft by 135 ft top 10-ft deep	Secondary Liner System	Visual	Minimum (provides containment for working volume plus 2-ft freeboard)	Discharge by tanker truck
Evaporation Pond L3[2]	597,981 (working)	2	Maximum operating level will be marked and checked weekly or after rainfall events greater than four inches.	Primary 60-mil HDPE geomembrane overlaying a primary geosynethetic clay liner (GCL) and a secondary 60-mil HDPE geomembrane overlaying a secondary GCL.	135 ft by 135 ft top 10-ft deep	Secondary Liner System	Visual	Minimum (provides containment for working volume plus 2-ft freeboard)	Discharge by tanker truck

[1] Tank total storage capacity in table includes storage and freeboard volumes combined. Working storage capacity does not include freeboard storage.

[2] In all instances freeboard depth exceeds the 25-year, 24-hour storm event depth of 5.26 inches (reference: Appendix IIIC-C, Page IIIC-C-2).



LEGEND

- PROPOSED PERMIT BOUNDARY
- PROPOSED LIMIT OF WASTE
- N 7180000 STATE PLANE COORDINATE SYSTEM
- 3300 EXISTING CONTOUR
- 3280 TOP OF LINER CONTOUR
- SECTOR BOUNDARY
- LEACHATE COLLECTION PIPE
- 🟥 LEACHATE COLLECTION SUMP
- LEACHATE RISER PIPE
- PROPOSED FORCEMAIN

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.

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DATE: 08/2024
FILE: 0120-809-11
CAD: 4-1 LEACHATE STORAGE.DWG

DRAWN BY: JDW
DESIGN BY: JPI
REVIEWED BY: KDG

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT FORCEMAIN AND STORAGE TANK PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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FIGURE 4-1

SHEET IIIC-14A

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5 LEACHATE AND CONTAMINATED WATER DISPOSAL

5.1 Leachate Storage System Operation and Disposal

Leachate that is generated at the site will be conveyed to the leachate collection sumps. Leachate levels in the sumps are measured and recorded to evaluate leachate production and fluctuations. A form to record leachate measurements is kept in the Site Operating Record and is used to evaluate the effectiveness of the leachate monitoring and control facilities. The depth of leachate in the sump will be monitored by the pressure transducer which will be calibrated to provide direct read-out of the leachate level in the sump (e.g., typically the leachate level is shown on a continuous digital display at the sump, as the pressure transducers provide a constant determination of the leachate levels in the sump). As noted in Part IV – SOP, Section 4.23, the leachate levels for each sump will be recorded in the Site Operating Record once per week at a minimum. Leachate will be pumped from the leachate sumps and transferred to the leachate storage tank or evaporation ponds via the forcemain (see Figure 4-1 for location).

The storage tank and evaporation pond capacity calculations are presented in Appendix IIIC-D. As noted in Appendix IIIC-D, the storage tank(s) will provide approximately 4 days of leachate storage and the evaporation ponds will provide approximately 222 days of leachate storage.

The collected leachate will be transported by tanker trucks to a properly permitted off-site wastewater treatment facility or recirculated back into the landfill (refer to Section 5.2). For leachate that is transferred to tanker trucks, sampling and analysis will be based on the disposal facility's requirements.

The leachate tank will be equipped with a liquid-level indicator. Leachate levels in the storage tanks will be controlled to prevent capacity exceedance. The leachate levels in the ponds will be monitored as discussed in Section 4.3 to prevent capacity exceedance. The quantity of leachate pumped from the system is also recorded on a monthly basis. This information is maintained in the Site Operating Record. When the high level alarm is triggered, a light on the tank will start flashing, which will alert site personnel of the high level in the tank. Additionally, the alarm will activate an electronic signal that will be sent to the leachate sump pumps to shut them down until the issue is resolved. Site personnel will then take appropriate actions (e.g., increase leachate discharge via pumping or tanker trucks) to reduce the leachate level in the tank.

- Refer to Part IV – SOP, Section 4.10 for additional information regarding the plan to be followed if odors due to leachate recirculation become an issue.

Contaminated stormwater will not be recirculated into the waste.

5.3 Contaminated Water Disposal

Contaminated water that collects behind the containment berm will be pumped into tanker trucks and transported to the leachate tank, evaporation ponds, or a properly permitted treatment facility. Contaminated water will be removed as soon as practicable from the area inside the containment berm (refer to Section 4.23 of the SOP for additional information and record keeping requirements). Contaminated water may also be transported to the leachate storage tank or evaporation ponds. When contaminated water is stored in the leachate storage tank or evaporation ponds, no leachate recirculation will occur, and a sign will be posted on the tank stating "No Recirculation." When the tank or pond containing the contaminated water is emptied, the sign will be removed.

5.4 Landfill Gas Condensate

Consistent with Title 30 TAC §330.177 and §330.207(e), landfill gas condensate will be pumped to the onsite leachate storage tank or evaporation ponds. It will then be handled and disposed of consistent with Section 5.1 or recirculated consistent with Section 5.2.

APPENDIX IIIC-B

LEACHATE COLLECTION SYSTEM DESIGN CALCULATIONS

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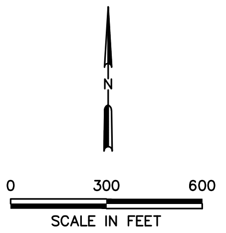
84059

02/28/2025

SECTOR SUMMARY	
SECTOR	AREA (ACRES)
SECTOR 1	10.9
SECTOR 2	11.8
SECTOR 3	11.8
SECTOR 4	11.6
SECTOR 5	10.2
SECTOR 6	7.4
SECTOR 7	10.0
SECTOR 8	12.4
SECTOR 9	12.4
SECTOR 10	12.5
SECTOR 11	12.5
SECTOR 12	12.5
SECTOR 13	18.5
SECTOR 14	12.3
SECTOR 15	10.7
SECTOR 16	11.8
SECTOR 17	9.8
SECTOR 18	11.5



LEGEND

— · — · —	PROPOSED PERMIT BOUNDARY
— — —	PROPOSED LIMIT OF WASTE
N 7180000 ———	STATE PLANE COORDINATE SYSTEM
—— 3300 ——	EXISTING CONTOUR
—— 3280 ——	TOP OF LINER CONTOUR
—— — ——	SECTOR BOUNDARY
— ◄ — ◄ —	LEACHATE COLLECTION PIPE
■	LEACHATE COLLECTION SUMP
——●	LEACHATE RISER PIPE

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.

NEVZAT TURAN
84059
02/28/2025

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☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120-809-11
CAD: IIIC-B-39 SUMP DRAINAGE.DWG

DRAWN BY: JDW
DESIGN BY: JPI
REVIEWED BY: BPY

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS		
NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT
SUMP DRAINAGE AREAS

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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SHEET IIIC-B-38

O:\0120\809\EXPANSION 2023\PART III\IIIC\B\CLEAN 02-2025\IIIC-B-38-SUMP DRAINAGE.dwg, jwilson, 1:2

APPENDIX IIIC-D

STORAGE TANK, EVAPORATION POND, AND FORCEMAIN CAPACITY CALCULATIONS

Includes pages IIIC-D-1 through IIIC-D-13

STATE OF TEXAS
NEVZAT TURAN
84059
LICENSED
PROFESSIONAL ENGINEER
02/28/2025

Prep By: JPI
Date: 2/28/2025

CITY OF MEADOW LANDFILL
0120-809-11-05
EVAPORATION POND CAPACITY CALCULATIONS

Chkd By: BPY/NT
Date: 2/28/2025

Required: Evaluate the evaporation pond to demonstrate the working capacity.

Method:

1. Calculate the working capacity of the evaporation pond.
2. Determine the leachate volume using predicted leachate generation values from the HELP model.

Solution:

1. **Calculate the working capacity of the evaporation pond.**

Each pond provides 2 feet of freeboard. The storage volume below elevation 3314 ft-msl is:

Containment Structure	Working Capacity [1] (ft^3)	Working Capacity [1] (gal)
Evaporation Pond L2	79,944	597,981
Evaporation Pond L3	79,944	597,981

[1]. In all instances freeboard depth exceeds the 25-year, 24-hour storm event depth of 5.26 inches.

2. **Determine the leachate volume using predicted leachate generation values from the HELP model.**

Results from the HELP model in Appendix IIIC-A.

Sectors 1-18:

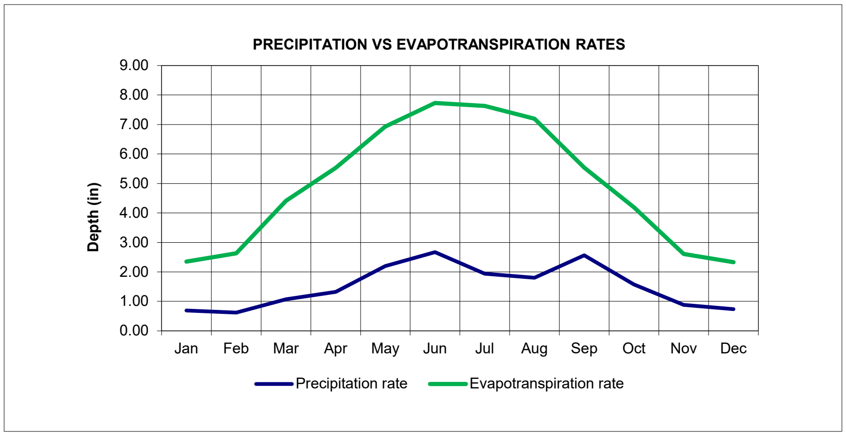
Condition	Average[1] cfy/ac	Average gpd/ac
Active, 10' Waste	0.0	0.0
Interim, 50' Waste	0.0	0.0
Interim, 100' Waste	1,287.5	26.4
Interim, 130' Waste	2,322.0	47.6
Closed, 130' Waste	493.5	10.1

[1]The leachate value is the sum of the leachate recirculated and the leachate collected for each condition, if applicable.

Assume the following fill scenarios:

Condition	Sectors 1 through 18	
	(ac)	(gpd)
Active, 10' Waste	14.0	0
Interim, 50 Waste	36.0	0
Interim, 100' Waste	76.6	2,021
Interim, 130' Waste	54.6	2,598
Closed	29.5	298
Total:	210.7	4,918

3. **Evaluate rainfall and evapotranspiration rates for the site to determine the impact on the evaporation ponds.**



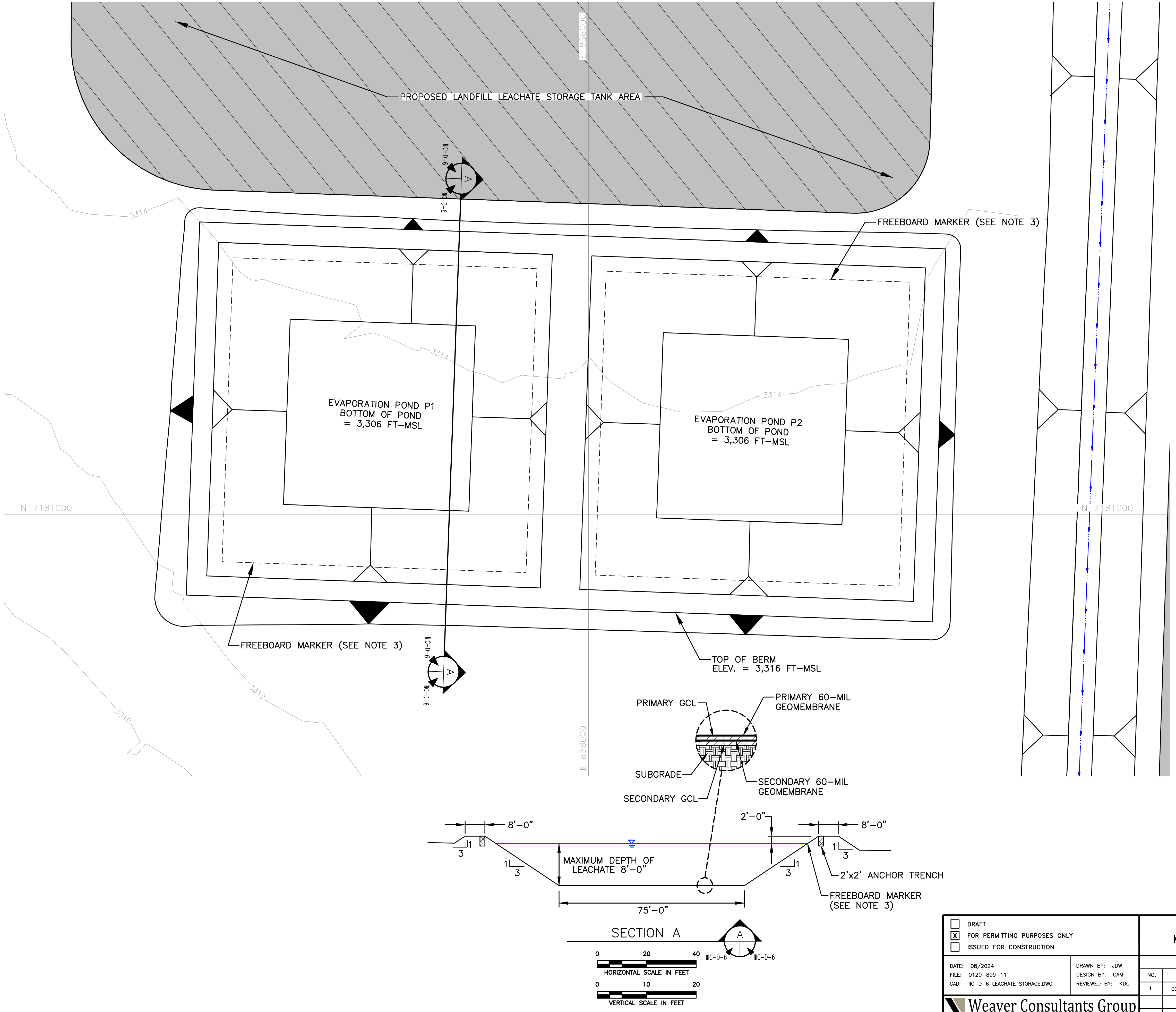
1 Mean monthly precipitation data from the National Oceanic Atmospheric Administration (NOAA) for the Brownfield #2, Texas weather station were used to determine the monthly precipitation rate.
2 Average monthly evapotranspiration data from the Texas A&M AgriLife Extension for the Lubbock Texas weather station was used to determine the monthly net evapotranspiration rate.

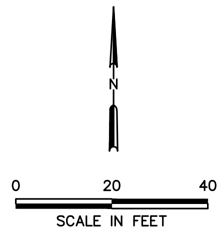
As shown on the table above, the monthly evapotranspiration rate is greater than the monthly precipitation rate for the site. Therefore, evaporation of leachate from the evaporation ponds will contribute to the sites leachate removal.

Conclusion:

Evaporation Pond Management Plan

Total Pond Working Capacity	Leachate Generation (gpd)	Management Plan
2 - 597,981 gallon ponds (1,195,962 total)	4,918	The 2 - 597,981 gallon evaporation ponds provides approximately 243 days of storage (121.5 days each). Leachate will be discharged in accordance with Section 5.1 of Appendix IIIC.





LEGEND

N 7180000 ———	STATE PLANE COORDINATE SYSTEM
—3300—	EXISTING CONTOUR
—▸—··—▸—	CHANNEL CENTERLINE

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. REFER TO LEACHATE POND CAPACITY CALCULATIONS FOR STORAGE INFORMATION.
3. 2 FEET VERTICALLY DOWN FROM THE TOP OF THE POND WILL BE CLEARLY MARKED WITH PAINT, OR A BEAD OF HDPE, OR SOME OTHER APPROPRIATE MARKING.
4. IN ALL INSTANCES FREEBOARD DEPTHS EXCEED THE 25-YEAR, 24-HOUR STORM EVENT DEPTH OF 5.26 INCHES.

NEVZAT TURAN
84059

02/28/2025

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DATE: 08/2024
FILE: 0120-809-11
CAD: IIIC-D-6 LEACHATE STORAGE.DWG

DRAWN BY: JDW
DESIGN BY: CAM
REVIEWED BY: KDG

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT
EVAPORATION POND DETAILS

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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SHEET IIIC-D-6

O:\0120\809\EXPANSION 2023\PART III\IIIC\D\CLEAN 02-2025\D-6 Leachate Storage Pond.dwg, jwilson, 1:2

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN
APPENDIX IIID
LINER QUALITY CONTROL PLAN

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

KYLE D. GOULD
106018

Prepared by

02/28/2025

Weaver Consultants Group, LLC
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6420 Southwest Boulevard, Suite 206
Fort Worth, TX 76109
817-735-9770

WCG Project No. 0120-809-11-05

This document intended for permitting purposes only.

CONTENTS (Continued)

7 DOCUMENTATION IIID-58
7.1 Preparation of SLER, GCLER, and GLER IIID-58
7.2 Reporting Requirements IIID-59

APPENDIX IIID-A
Highest Measured Groundwater Information

APPENDIX IIID-B
Ballast Demonstration

KYLE D. GOULD
106018

02/28/2025

1 INTRODUCTION

1.1 Purpose

This appendix addresses §330.63(d)(4)(G), §330.337, §330.339, and §330.341.

This Liner Quality Control Plan (LQCP) has been prepared to provide the Operator, Design Engineer, Construction Quality Assurance Professional of Record, and the Contractor the means to govern the construction quality and to satisfy the environmental protection requirements under current Texas Commission on Environmental Quality (TCEQ) Municipal Solid Waste Rules (MSWR), including the most up-to-date regulatory guidance. More specifically, the LQCP addresses the soil and geosynthetic components of the liner system. The provisions of this LQCP were developed based on the latest technical guidelines of the TCEQ, including quality control of construction, testing frequencies and procedures, and quality assurance of sampling and testing procedures.

This LQCP is divided into the following parts:

- Section 1 – Introduction
- Section 2 – Construction Quality Assurance for Earthwork and Drainage Aggregates
- Section 3 – Construction Quality Assurance for Geosynthetics
- Section 4 – Construction Quality Assurance for Geosynthetic Clay Liner
- Section 5 – Construction Quality Assurance for Piping
- Section 6 – Geotechnical Strength Testing Requirements
- Section 7 – Documentation

1.2 Definitions

Whenever the terms listed below are used, the intent and meaning will be interpreted as indicated.

Surveying will be performed to verify that the finished subgrade is to the lines and grades specified in design with a vertical tolerance of -0.2 feet to +0.0 feet to ensure that the soil liner will achieve a 2-foot minimum thickness. The surface slope of the top layer of composite liner will conform to the slope requirements of the leachate collection layer.

2.3.2 Soil Liner

The soil liner will consist of a minimum 2-foot-thick compacted clay liner (measured perpendicular to the subgrade surface) that will extend along the floor and side slopes of the landfill. The soil liner will be constructed in continuous, single, compacted lifts (6 inches thick) parallel to the floor and sideslope subgrades. A GCL may be used in lieu of the 2-foot-thick compacted clay liner. Details depicting the liner system are included in Appendix IIIA – Landfill Unit Design Information.

2.3.2.1 Soil Borrow Material

Adequate soil liner material will be available from proposed landfill excavations and/or on-site or off-site borrow sources. The liner soil will be free of debris, rock greater than 1 inch in diameter, vegetative matter, frozen materials, foreign objects, and organics. Laboratory tests will verify that materials are adequate to meet the compacted clay liner requirements listed in §330.339(c)(5) prior to liner construction.

Soils used in soil liners will have the following minimum values verified by testing in a soil laboratory prior to liner construction.

Table 2-1
Required Borrow Soil Properties

Test[1]	Specification
Coefficient of Permeability (Remolded Sample)[2]	1.0x10^{-7} cm/s or less
Plasticity Index	15 minimum
Liquid Limit	30 minimum
Percent Passing No. 200 Mesh Sieve	30 minimum
Percent Passing 1-inch Sieve	100

[1] Testing will be performed in accordance with the test methods and frequencies included in Section 2.4.

[2] The coefficient of permeability for remolded sample is run at a minimum of 95% of the maximum dry density at or above the optimum moisture content.

Representative preliminary sampling and testing will be performed on on-site soils to be used as liner material or on off-site borrow source material. The CQA monitor, Earthwork Contractor, and/or Operator will identify the clay material in on-site stockpiles or during excavation, and the clay material will be stockpiled separately, if stockpiling is required. Prior to construction of each new cell, conformance tests that include liquid limit, plasticity index, percent passing the No. 200 and 1-inch sieves, Standard Proctor (ASTM D 698) compaction test, and coefficient of

2.3.7 Surface Water Removal

The excavation may encounter water from storm events or groundwater. Soil liner will not be placed in standing water. The excavation area will therefore have a temporary sump area to collect water entering the excavation and be graded to allow drainage at planned areas. Portable pumps will be on site to dewater the sumps. Temporary earthen berms will be constructed to divert surface flow away from the excavation. Surface water that accumulates on the constructed soil liner or geosynthetics surface will be removed promptly after the end of a rainfall event. POR will inspect and approve the constructed area that received rainfall prior to placement of the overlying liner system component. The criteria for approval of the finished surface of the soil liner for geomembrane placement will follow the requirements of Section 3.3.3 and for geocomposite placement on top of geomembrane will follow the requirements of Section 3.5.3. Surface water from the site will be discharged per the site's TPDES permit requirement. Additional direction regarding addressing groundwater seepage observed at the excavation grades during cell construction is provided in Appendix IIIE, Section 4.3 – Landfill Excavation.

2.3.8 Liner Tie-In Construction

Newly constructed liners will be tied-in with any adjoining existing liners. Additionally, terminations will be constructed for future tie-ins along edges where the liner will be extended in the future. The tie-ins with existing clay liners will be constructed utilizing a sloped transition a minimum of 10 feet wide for the 2-foot-thick clay liner. Terminations for future tie-ins will be constructed by extending the clay liner approximately 10 feet past the limits for the cell under construction. The liner tie-in details are shown in Appendix IIIA – Landfill Unit Design Information. Waste and intermediate cover will not be deposited closer than 10 feet to the edge of any cell or 20 feet from the leading edge of a constructed clay liner (whichever is greater) where a future tie-in will be constructed. Red-colored markers (i.e., SLER markers) will be placed along the limits of the cells with constructed clay liners and tied to the site grid system in accordance with Title 30 TAC §330.143(b)(1).

2.4 Construction Testing

2.4.1 Standard Operating Procedures

Qualified CQA monitors will perform field and laboratory tests in accordance with applicable standards specified in this LQCP. All quality control testing and evaluation of soil liners will be performed during construction of the liner and must be complete before placement of the leachate collection system, except for the testing required for the final constructed lift, verification of liner thickness, or cover material thickness. Standard operating and test procedures will be utilized per the POR's direction. Sampling from the constructed soil liner lifts will be performed in accordance with ASTM D 1587. The sampling holes (e.g., samples for coefficient of

2.4.2 Test Frequencies

This LQCP establishes the minimum test frequencies for the soil liner construction quality assurance. The test frequencies for soil liner are listed in Table 2-2. Additional testing must be conducted whenever work or materials are suspect, marginal, or of poor quality. Additional testing may also be performed to provide additional data for engineering evaluation. The minimum number of tests is interpreted to mean minimum number of passing tests, and any tests that do not meet the requirements will not contribute to the total number of tests performed to satisfy the minimum test frequency.

Table 2-2
Required Tests and Observations on Soil Liner

Parameter	Frequency	Test Method	Passing Criteria
Field Density and Moisture	1 each per 8,000 SF per 6-inch parallel lift	ASTM D 6938 and ASTM D 2216[1]	95% Maximum Standard Proctor Dry Density. Standard Proctor optimum moisture content or greater determined during preconstruction testing.
Sieve Analysis (passing no. 200 and 1-inch)	1 test per 100,000 square feet per 6-inch parallel lift, with a minimum of 1 test per 6-inch lift	ASTM D 1140	30 percent minimum (#200) 100 percent minimum (1-inch)
Atterberg Limits	1 test per 100,000 square feet per 6-inch parallel lift, with a minimum of 1 test per 6-inch lift	ASTM D 4318	PI = 15 percent minimum LL = 30 percent minimum
Coefficient Permeability (Hydraulic Conductivity)[2, 3]	1 test per 100,000 square feet per 6-inch parallel lift, with a minimum of 1 test per 6-inch lift	ASTM D 5084 (Constant head with back pressure, flex wall), or Corps of Engineers EM 1110-2-1906, Appendix VII (Falling head permeameter)	1.0×10^{-7} cm/s or less
Thickness Verification	1 each 5,000 square feet with a minimum of 2 reference points by a qualified surveyor	Survey subgrade and top of soil liner and protective cover layer	2 feet minimum compacted soil liner thickness and 2 feet minimum protective cover thickness

[1] This method is not applicable if the field nuclear gauge reads both density and moisture.

[2] Field permeability testing performed in accordance with Title 30 TAC §330.339(c)(7), may be performed to augment this testing program if a permit modification is submitted and approved by the TCEQ.

[3] Permeability tests shall be run using tap water or 0.05 Normal (N) solution of calcium sulfate (CaSO4) and not distilled water.

2.4.3 Soil Liner Testing

CQA testing of the soil liner will be performed as the liner is being constructed. Sections of compacted soil liner which do not pass both the density and moisture requirements will be reworked with additional passes of the compactor until the section in question passes. All field density and moisture test results will be incorporated into the SLER.

- Shear strength (lb/in) 120 (90 for Textured)
- Shear elongation at break (%) 50
- Peel strength (lb/in) 91 (78 Extrusion Weld) & FTB
- Peel separation (%) 25

A passing extrusion or fusion welded seam will be achieved in peel when:

- Yield strength for all 5 specimens (10 tests for dual-track welds) is not less than the above minimum peel strength value (during FTB failure for all 5 specimens) and the average of all 5 specimens is not less than the minimum value.
- No greater than 25 percent of the seam width peels (separates) at any point for all 5 specimens (both inner and outer welds for dual-track welds).

A passing extrusion or fusion weld will be achieved in shear when:

- Yield strength for all 5 specimens is not less than the above minimum shear strength value and the average for all 5 specimens is not less than the minimum value.
- Break strain for all 5 specimens is at least 50 percent.

3.3.5 Repairs

Any portion of the geomembrane with a detected flaw, or which fails a nondestructive or destructive test, or where destructive tests were cut, or where nondestructive tests left cuts or holes, must be repaired in accordance with the specific liner construction specifications and consistent with all the applicable parts (e.g., material requirement, installation, testing, etc.) of this section. The CQA monitor must locate and record all repairs on the repair sheet and panel layout drawing. Repair techniques include the following:

- Patching – used to repair large holes, tears, large panel defects, undispersed raw materials, contamination by foreign matter, and destructive sample locations.
- Extrusion – used to repair small defects in the panels and seams. In general, this procedure will be used for defects less than -inch in the largest dimension.
- Capping – used to repair failed welds or to cover seams where welds or bonded sections cannot be nondestructively tested.
- Removal – used to replace areas with large defects where the preceding methods are not appropriate. Also used to remove excess material (wrinkles, fishmouths, intersections, etc.) from the installed geomembrane. Areas of removal will be patched or capped.

Geotextile Placement. During geotextile placement, the CQA monitor must:

- Observe the geotextile as it is deployed and record all defects and disposition of the defects (panel rejected, patch installed, etc.). Repairs are to be made in accordance with the specifications outlined in Section 3.4.4.
- Observe that equipment used does not damage the geotextile by handling, equipment transit, leakage of hydrocarbons, or other means.
- Observe that people working on the geotextile do not smoke, wear shoes that could damage the geotextile, or engage in activities that could damage the geotextile.
- Observe that the geotextile is securely anchored or thermal bonded.
- Observe that the geotextiles are anchored to prevent movement by the wind.
- Observe that the panels are overlapped a minimum of six inches.
- Examine the geotextile after installation to ensure that no potentially harmful foreign objects are present.
- Observe that seams (where required) are continuously sewn or thermal bonded in accordance with the manufacturer's recommendations and the project specifications outlined in this LQCP.

The CQA monitor must inform both the contractor and POR if the above conditions are not met.

3.4.4 Repairs

Repair procedures include:

- Patching – used to repair large holes, tears, and large defects.
- Removal – used to replace areas with large defects where the preceding method is not appropriate.

Holes, tears, and defects must be repaired in the following manner. Soil or other material which may have penetrated the defect must be removed completely prior to repair. If located on a slope, the defect must be patched using the same type of geotextile and continuously seamed into place. Should any tear, hole, or defect exceed 30 percent of the width of the roll, the roll will be cut off and the defect removed or the roll removed and replaced. If the defect is not located on a slope, the patch must be made using the same type of material seamed into place with a minimum of 24 inches overlap in all directions. Seams will be either thermal bonded or sewn in accordance with the manufacturer's recommendations.

- The reports will be signed and stamped by a professional engineer(s) licensed to practice in the state of Texas.

The as-built record drawings will accurately identify the constructed location of all work items, including the piping and anchor trenches. The POR will review and verify that as-built drawings are correct. As-built drawings will be included in the SLER, GCLER, and GLER as appropriate.

7.2 Reporting Requirements

The SLER, GCLER, and GLER will be signed and sealed by the POR and signed by the Site Manager and submitted in triplicate (including all attachments) to the MSW Permits Section of the Waste Permits Division of the TCEQ for review and acceptance. If the Executive Director provides no response, either written or verbal, within 14 days of receipt, the owner or operator may continue facility construction or operation. Any notice of deficiency received from the TCEQ will be promptly addressed and incorporated into the SLER/GCLER/GLER report. No solid waste will be placed over the constructed liner areas until the final acceptance is obtained from the TCEQ. Additionally, upon approval of this application if a new liner area is developed, prior to accepting any solid waste to the newly developed liner area, a pre-opening inspection will be requested. The TCEQ staff will conduct a pre-opening inspection within 14 days of the request. If the TCEQ does not provide a written or verbal response 14 days after conducting the pre-opening inspection, the newly developed liner area will be considered acceptable for solid waste placement, given that the SLER, GCLER, and GLER for the area are also submitted to the TCEQ in accordance with this section.

Title 30 TAC §330.341(d) requires that any constructed soil liner left uncovered or unprotected for a period of 6 months or longer must be inspected by the POR, and a letter report of findings be submitted to the executive director. The regulation also requires that any repairs be performed promptly, and a new SLER be submitted for the constructed soil liner requiring repairs. These requirements will be observed during soil liner construction.

If a layer of waste is not placed over the top of the installed protective cover within 6 months, then the POR will visually observe that the liner is not damaged (e.g., excessive erosion) due to prolonged exposure of the surface of the protective cover. Repairs will be done promptly, and the POR will report findings and measures taken to repair damage in a letter report to the executive director for review and acceptance.

APPENDIX IIID-A

HIGHEST MEASURED GROUNDWATER INFORMATION

Includes Pages IIID-A-1 and IIID-A-2

STATE OF TEXAS
KYLE D. GOULD
106018
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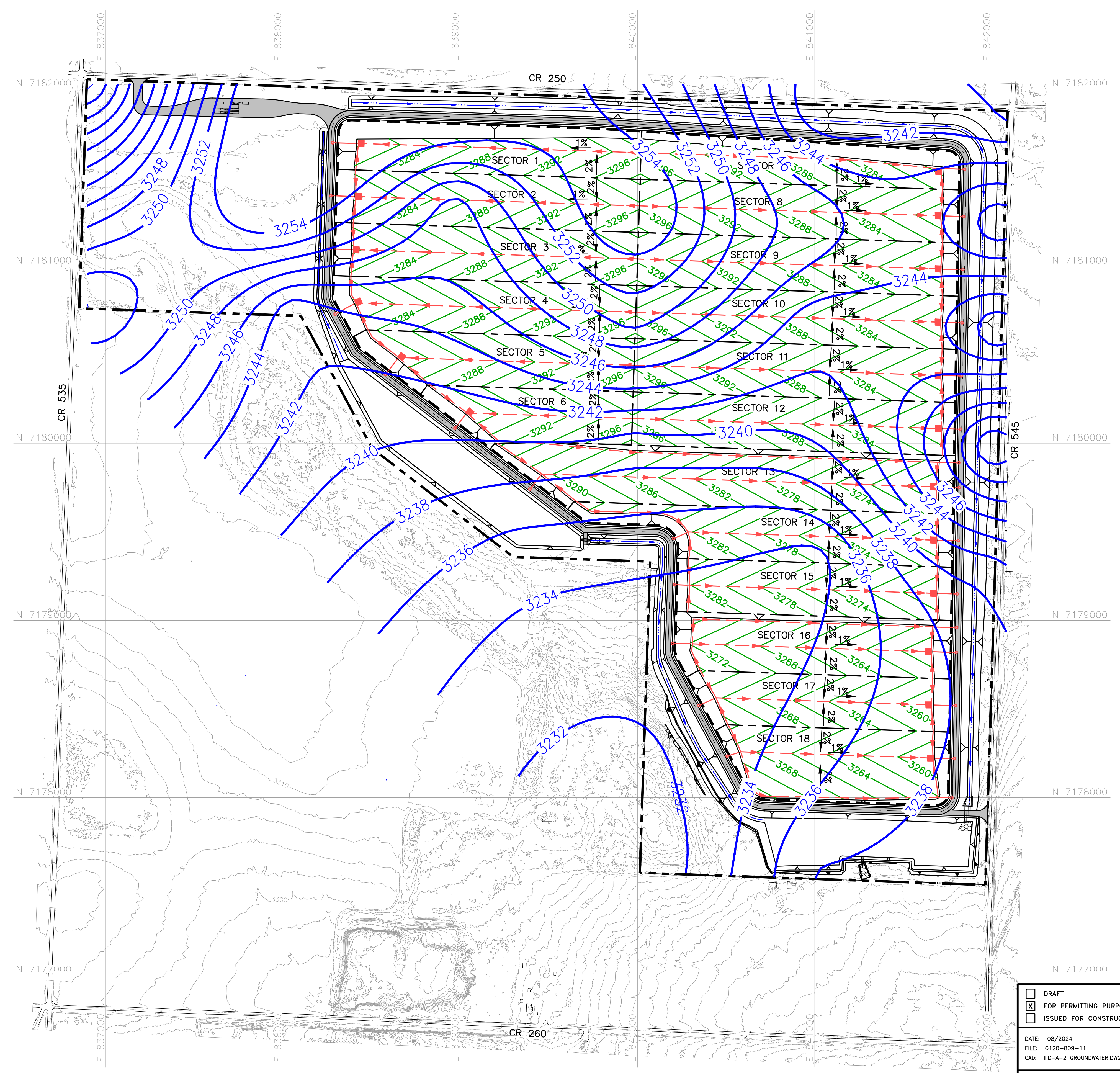
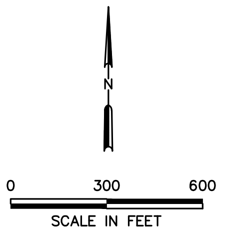
PROFESSIONAL ENGINEER

02/28/2025





KYLE D. GOULD
106018
02/28/2025

LEGEND

	PROPOSED PERMIT BOUNDARY
	PROPOSED LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
3300	EXISTING CONTOUR
560	PROPOSED EXCAVATION CONTOUR
	SECTOR BOUNDARY
	CHANNEL CENTERLINE
	LEACHATE COLLECTION PIPE
■	LEACHATE COLLECTION SUMP
	LEACHATE RISER PIPE
3250	TOP OF UPPERMOST AQUIFER HYDROSTRATIGRAPHIC STRUCTURAL CONTOUR IN FT–MSL (SEE NOTES 3 AND 4)

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.
3. TOP OF UPPERMOST AQUIFER HYDROSTRATIGRAPHIC STRUCTURAL CONTOUR REPRESENTS HIGHEST GROUNDWATER ELEVATION WITHIN THE UPPERMOST AQUIFER ZONE OF SATURATION AS OBSERVED AT TIME OF DRILLING AT EACH EXPANSION BOREHOLE LOCATION.
4. TOP OF UPPERMOST AQUIFER HYDROSTRATIGRAPHIC STRUCTURAL CONTOURS DO NOT REPRESENT GROUNDWATER POTENTIOMETRIC HEAD OR GROUNDWATER FLOW.
5. REFER TO APPENDIX IIID–B REGARDING THE IMPACTS OF THE HIGHEST MEASURED GROUNDWATER POTENTIOMETRIC HEAD CONTACTING THE EXCAVATION GRADES SHOWN IN THIS FIGURE, AND A DEMONSTRATION OF BALLASTING OF THE HIGHEST MEASURED GROUNDWATER.

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☒ FOR PERMITTING PURPOSES ONLY
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DATE: 08/2024
FILE: 0120–809–11
CAD: IIID–A–2 GROUNDWATER.DWG

DRAWN BY: JDW
DESIGN BY: JPI
REVIEWED BY: KDG

Weaver Consultants Group
TBPE REGISTRATION NO. F–3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT
TOP OF UPPERMOST AQUIFER
CONTOUR MAP

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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FIGURE IIID–A–2

APPENDIX IIID-B

BALLAST DEMONSTRATION

Includes pages IIID-B-1 through IIID-B-4

STATE OF TEXAS
KYLE D. GOULD
106018
LICENSED
PROFESSIONAL ENGINEER

02/28/2025

BALLAST THICKNESS CALCULATIONS

Introduction

This Ballast Demonstration has been prepared to demonstrate that the excavation and construction of disposal cells at the City of Meadow Landfill will be adequately ballasted against potential groundwater uplift during liner system construction (by the placement of the 2-foot-thick soil protective cover and 4-foot-thick gravel backfill in the sumps), and do not require ballasting by waste placement or the installation of an underdrain system to mitigate potential groundwater uplift. Note that this demonstration has been prepared assuming that the Highest Measured Groundwater Potentiometric Head Elevation shown on Figure IIIG-D-1B is connected to the landfill excavation grades overlain onto the map on Figure IIID-B-1, although previous drilling and laboratory testing of the upper confining unit does not support this conclusion of connectivity, hence the demonstration is conservative.

The ballast requirements evaluated in this appendix are based on the estimated maximum potentiometric head elevation contours shown on Figure IIIG-D-1B as overlain onto the design excavation grades on Figure IIID-B-1. As shown on Figure IIID-B-1, the groundwater contours are projected across the site to allow identification of areas of the landfill excavation grades at which the potentiometric groundwater head intersects the excavation grades. Based on review of the figure, the only area of landfill excavation grades identified as intersecting the potentiometric groundwater head is located along the southeast boundary of the landfill footprint. The area of ballasting evaluation is highlighted on Figure IIID-B-1 and expanded on Figure IIID-B-2 for use during the analysis.

Demonstration Calculations

The demonstration of ballasting is performed using the following two-step procedure:

1. The estimated maximum groundwater contours shown on Drawing IIID-B-1 are utilized to estimate the uplift pressures on the GCL and geomembrane liner shown for selected analysis points on Drawing IIID-B-2.
2. After Step 1 is complete, calculations are performed that demonstrate the protective cover soils and sump gravel backfill provide adequate ballast

to offset the hydraulic uplift pressures on the bottom liner. Calculations are shown on sheet IIID-B-4.

The evaluation points on Figure IIID-B-2 were selected to adequately evaluate the relatively small area of bottom liner installation (estimated at less than 10 acres) both inside and outside of the area potentially impacted by groundwater. Note that the protective cover component of the bottom liner system will be installed in all areas of cell construction and is not limited to the study area for this demonstration. Also note that ballasting is completed during construction of the bottom liner system, prior to certification of the bottom liner, with the demonstration of ballasting included in the future Geomembrane Liner Evaluation Report (GLER) submitted to the TCEQ at the end of cell construction and prior to waste placement into the cell.

The following procedure will be followed in developing this demonstration at the time of design and construction of the area addressed by this demonstration:

A. The Highest Measured Potentiometric Head Elevation Map will be updated (if new readings demonstrate that the groundwater potentiometric level has risen. In no instance will the potentiometric head elevations be lowered from prior readings.

B. At each evaluation point, determine the uplift pressure acting on the GCL and geomembrane liner using the unit weight of water times the vertical distance from the geomembrane liner to the highest measured potentiometric surface elevation.

$$P_{H2O}=\gamma_{H2O}*H$$

where: γ_{H2O} = unit weight of water (pcf)
H = vertical distance from the bottom of the liner (ft)
P_{H2O} = uplift pressure on the base of the liner (psf)

C. At each evaluation point, determine the resisting pressure for vertical uplift.

Determine the vertical resisting pressure at the evaluation points using the unit weight of the protective cover layer times the thickness of the protective cover layer.

$$\Sigma R_{i,v} = \Sigma(\gamma_i * T_{i,})$$

where: $T_{i,v}$ = thickness of ballast component (protective cover) in vertical direction
= unit weight (pcf) of ballast component (protective cover)

$R_{i,v}$ = resisting pressure (psf) provided by each ballast component (protective cover) in vertical direction

D. Evaluate the factor of safety in the vertical direction at each evaluation point as a ratio of the total resisting pressure to uplift pressure.

The factor of safety (FS) against uplift due to the hydrostatic pressure acting at the geomembrane liner in the vertical direction is calculated as the resisting pressure determined in B divided by the uplift pressure determined in A.

E. If the factor of safety is less than 1.2, additional ballast will be necessary to offset the hydrostatic forces. The ballast thickness in Table IIID-B-1 will be increased until a minimum factor of safety of 1.2 is achieved.

As ballasting will be provided by the placement of additional protective cover soil (only) the use of a factor of safety of 1.2 against uplift pressure is appropriate. Note that any required additional protective cover ballast will be installed to the lateral limits set by the evaluation points used in the analysis, with the thickened protective cover extending to evaluation points achieving the required minimum factor of safety of 1.2 without additional protective cover.

Conclusion

Based on the demonstration presented herein, the bottom liner system will intercept the highest measured potentiometric head level in a very limited area of the landfill (less than 10 acres) and will rise above the proposed liner excavation grades by less than 4.6 feet (as shown for analysis point S1 (sump) in Table IIID-B-1). The placement of protective cover over the GCL and geomembrane will provide adequate ballasting to provide a factor of safety exceeding 1.2 (actual values of 1.56 or greater) across the study area.

Additionally, in the event of future updates to the Highest Measured Groundwater Potentiometric Head Elevation Map, the conclusions presented in this demonstration (Table IIID-B-1) can be updated, and if necessary additional protective cover soil incorporated into the cell design and placed at the time of construction, and the demonstration of ballast adequacy presented in the GLER prepared for the project.

Prep By: DEP
Date: 2/28/2025

Chkd By: KDG, DEP
Date: 2/28/2025

TABLE IIID-B-1
CITY OF MEADOW LANDFILL
APPENDIX IIID-B
BALLAST DEMONSTRATION

Unit Weight of Water = 62.4 pcf
Moist Unit Weight of Protective Cover Soil = 120 pcf (Note that sump gravel backfill conservatively assumed same unit weight for analysis)
Thickness of Protective Cover - Normal = 2.0 ft
Thickness of Gravel in Sump - Normal = 4.0 ft

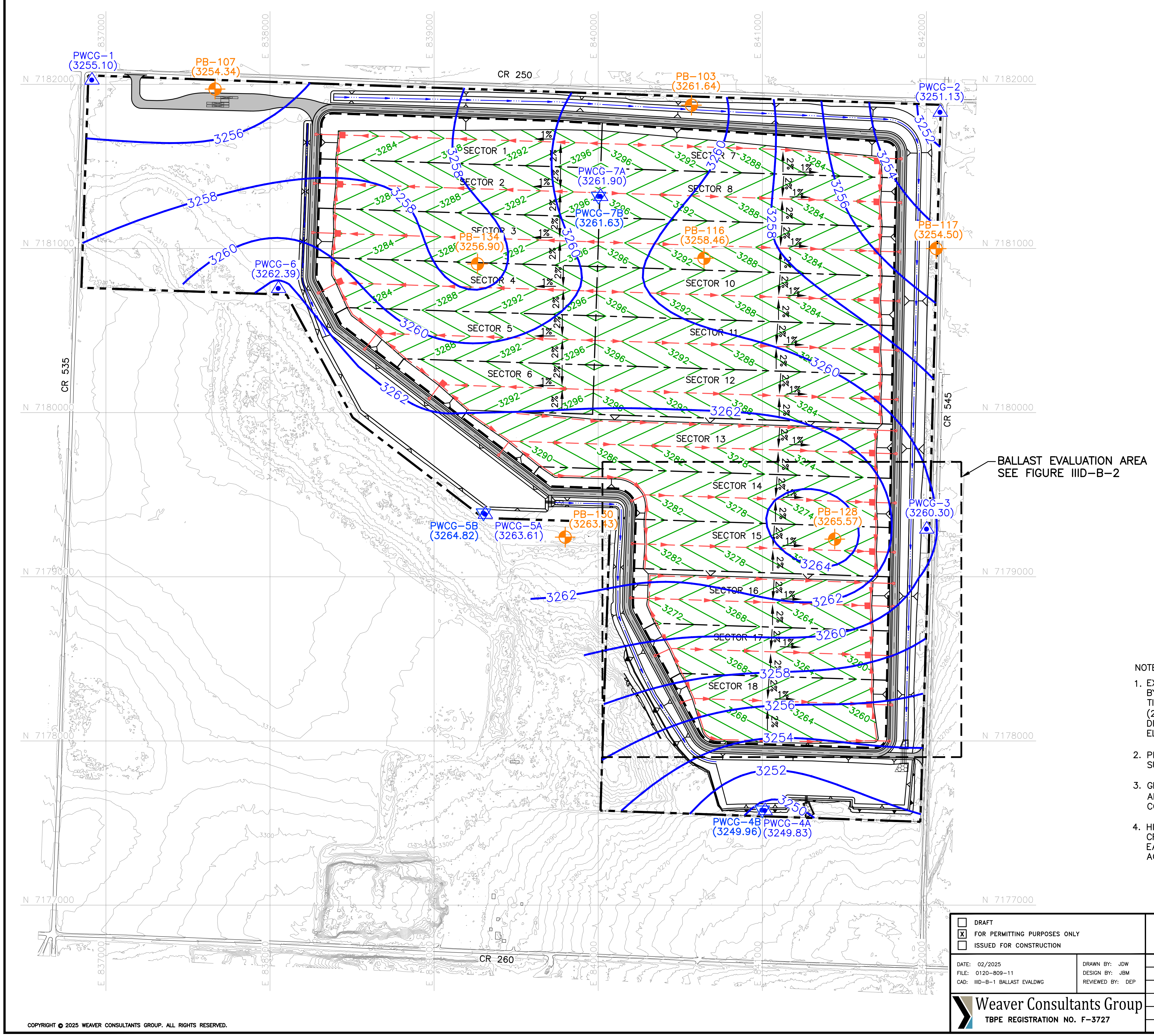
Evaluation Point	Estimated Potentiometric Surface Elevation E_{H20} (ft-msl) (Note 3, 4)	Excavation Grade (GCL)[3] E_{liner} (ft-msl) (Note 4)	Maximum Groundwater Head Above Top of GCL Liner H (ft)	Maximum Uplift Pressure Created by Groundwater Head P_{H20} (psf) at GCL (Note 1)	Elevation of Top of Protective Cover E_{pc} (ft-msl) (Note 2)	Counteracting Ballast Pressure from Protective Cover, R_{pc} (psf) (Note 2)	Calculated Factor of Safety with Protective Cover Installed F_{pc} (Notes 1, 2)	Factor of Safety > 1.2?
F1	3263.01	3265.99	-2.98	-186.0	3267.99	240	NA	YES
F2	3263.08	3263.49	-0.41	-25.6	3265.49	240	NA	YES
F3	3261.87	3261.09	0.78	48.7	3263.09	240	**4.93**	YES
F4	3261.91	3263.14	-1.23	-76.8	3265.14	240	NA	YES
F5	3261.73	3260.64	1.09	68.0	3262.64	240	**3.53**	YES
F6	3260.96	3258.50	2.46	153.5	3260.50	240	**1.56**	YES
F7	3259.13	3263.04	-3.91	-244.0	3265.04	240	NA	YES
F8	3258.89	3260.54	-1.65	-103.0	3262.54	240	NA	YES
F9	3258.43	3258.39	0.04	2.5	3260.39	240	**96.15**	YES
F10	3256.20	3262.95	-6.75	-421.2	3264.95	240	NA	YES
F11	3256.08	3260.44	-4.36	-272.1	3262.44	240	NA	YES
F12	3255.93	3258.29	-2.36	-147.3	3260.29	240	NA	YES
F13	3253.81	3267.76	-13.95	-870.5	3269.76	240	NA	YES
F14	3253.99	3265.11	-11.12	-693.9	3267.11	240	NA	YES
F15	3254.30	3261.96	-7.66	-478.0	3263.96	240	NA	YES
S1	3260.84	3256.27	4.57	285.2	3260.27	480	**1.68**	YES
S2	3258.36	3256.16	2.20	137.3	3260.16	480	**3.50**	YES
S3	3255.90	3255.98	-0.08	-5.0	3259.98	480	NA	YES

[1] If the maximum uplift pressure is less than zero (in column 4) then Factor of Safety is reported as "NA", as no uplift is acting on the GCL at the excavation grades.

[2] The factor of safety was calculated for the thickness of protective cover (2 feet) for the floor (F1-F15) and 4 feet for the bottom of sumps (S1-S3), with a required minimum factor of safety of 1.2 for protective cover soil as ballast (only). Waste not required for ballasting ballast calculations will be adjusted for updated estimated potentiometric surface. The estimated potentiometric surface can only be adjusted upward.

[3] Analysis performed using highest measured groundwater elevation.

[4] Analysis performed for GCL bottom liner option only.



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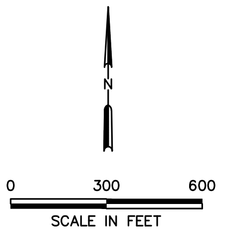

STATE OF TEXAS
KYLE D. GOULD
106018
LICENSED PROFESSIONAL ENGINEER
02/28/2025

LEGEND

	PROPOSED PERMIT BOUNDARY
	PROPOSED LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
3300	EXISTING CONTOUR
560	PROPOSED EXCAVATION CONTOUR
	SECTOR BOUNDARY
	CHANNEL CENTERLINE
	LEACHATE COLLECTION PIPE
■	LEACHATE COLLECTION SUMP
	LEACHATE RISER PIPE
PB-116 (3258.46)	EXISTING RELICT GROUNDWATER PIEZOMETER LOCATION (WITH HIGHEST MEASURED GROUNDWATER POTENTIOMETRIC HEAD ELEVATION POSTED IN FT-MSL)
△ PWCG-4A (3249.83)	2023 EXPANSION PIEZOMETER (WITH HIGHEST MEASURED GROUNDWATER POTENTIOMETRIC HEAD ELEVATION POSTED IN FT-MSL)
▽ PWCG-4B (3249.96)	2023 PERCHED ZONE EXPANSION PIEZOMETER (WITH HIGHEST MEASURED GROUNDWATER POTENTIOMETRIC HEAD ELEVATION POSTED IN FT-MSL)
3260	HIGHEST MEASURED GROUNDWATER POTENTIOMETRIC HEAD SURFACE CONTOUR IN FT-MSL

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0. ELEVATIONS SHOWN RELATIVE TO NORTH AMERICAN VERTICAL DATUM OF 1988.
2. PIEZOMETER LOCATION COORDINATES OBTAINED FROM AUGUST 2023 AS-BUILT SURVEY BY WEAVER CONSULTANTS GROUP.
3. GROUNDWATER POTENTIOMETRIC HEAD ELEVATION DATA FROM MANUAL GAUGING AND/OR DEDICATED DATA LOGGER MEASUREMENTS CONDUCTED BY WEAVER CONSULTANTS GROUP IN 2023 AND 2024.
4. HIGHEST MEASURED GROUNDWATER POTENTIOMETRIC HEAD SURFACE CONTOURS CREATED USING THE HIGHEST MEASURED GROUNDWATER ELEVATION RECORDED AT EACH MEASUREMENT POINT AND DO NOT REPRESENT A SINGLE GAUGING EVENT OR ACTUAL GROUNDWATER FLOW.

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 02/2025
FILE: 0120-809-11
CAD: IIID-B-1 BALLAST EVALDWG

DRAWN BY: JDW
DESIGN BY: JBM
REVIEWED BY: DEP

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT
HIGHEST MEASURED GROUNDWATER
POTENTIOMETRIC HEAD

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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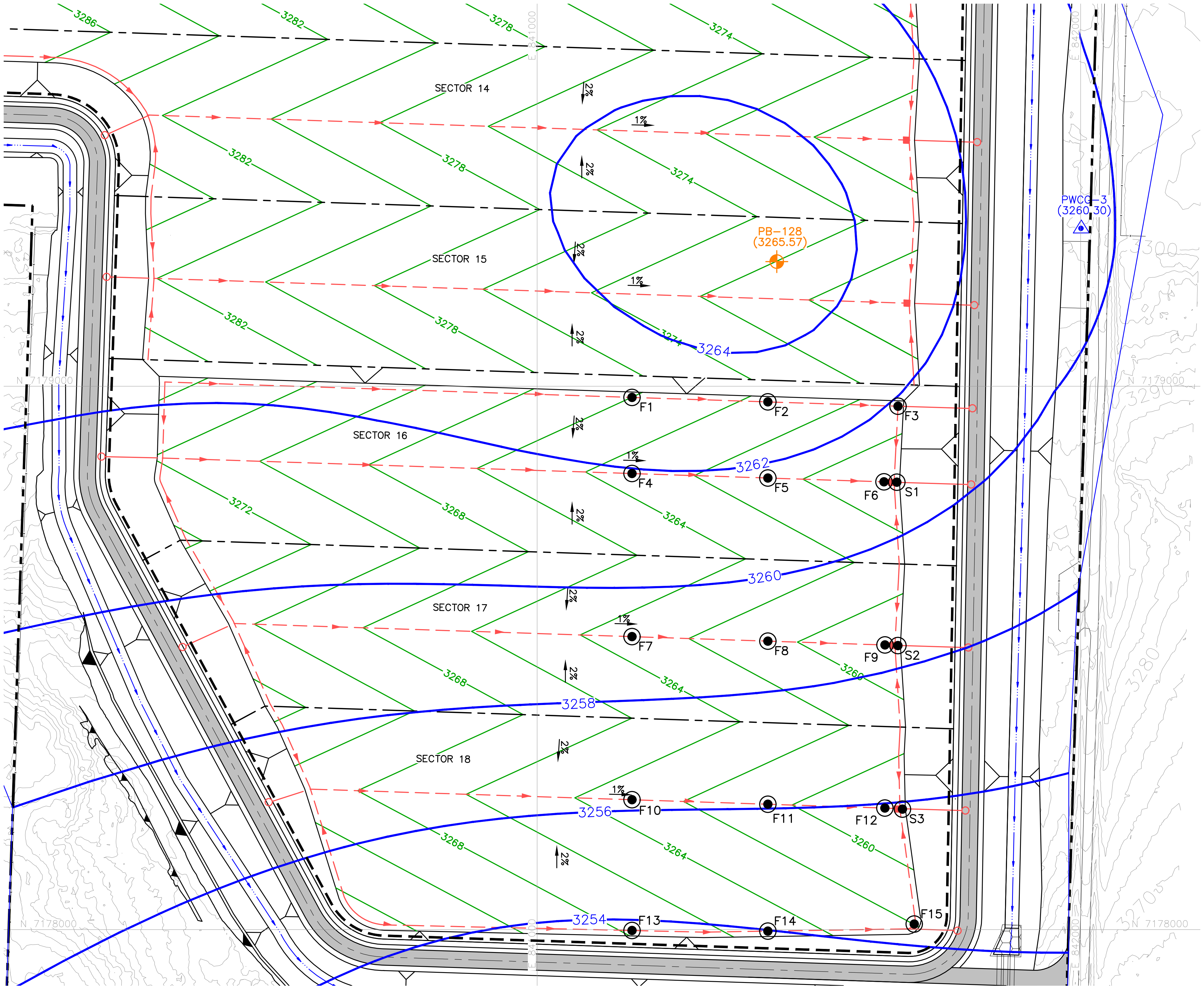
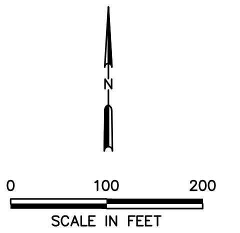
FIGURE IIID-B-1

O:\0120\809\EXPANSION 2023\PART III\IIID\CLEAN 02-2025\IIID-B-1 BALLAST EVALUATION.dwg, jwilson, 1:2





KYLE D. GOULD
106018

02/28/2025

LEGEND

— · — · —	PROPOSED PERMIT BOUNDARY
— — — —	PROPOSED LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
3300	EXISTING CONTOUR
560	PROPOSED EXCAVATION CONTOUR
— — —	SECTOR BOUNDARY
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PB-116 (3258.46)	EXISTING RELICT GROUNDWATER PIEZOMETER LOCATION (WITH HIGHEST MEASURED GROUNDWATER POTENTIOMETRIC HEAD ELEVATION POSTED IN FT-MSL)
△ PWCG-4A (3249.83)	2023 EXPANSION PIEZOMETER (WITH HIGHEST MEASURED GROUNDWATER POTENTIOMETRIC HEAD ELEVATION POSTED IN FT-MSL)
3260	HIGHEST MEASURED GROUNDWATER POTENTIOMETRIC HEAD SURFACE CONTOUR IN FT-MSL
◉ F1	BALLAST EVALUATION POINT

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0. ELEVATIONS SHOWN RELATIVE TO NORTH AMERICAN VERTICAL DATUM OF 1988.
2. PIEZOMETER LOCATION COORDINATES OBTAINED FROM AUGUST 2023 AS-BUILT SURVEY BY WEAVER CONSULTANTS GROUP.
3. GROUNDWATER POTENTIOMETRIC HEAD ELEVATION DATA FROM MANUAL GAUGING AND/OR DEDICATED DATA LOGGER MEASUREMENTS CONDUCTED BY WEAVER CONSULTANTS GROUP IN 2023 AND 2024.
4. HIGHEST MEASURED GROUNDWATER POTENTIOMETRIC HEAD SURFACE CONTOURS CREATED USING THE HIGHEST MEASURED GROUNDWATER ELEVATION RECORDED AT EACH MEASUREMENT POINT AND DO NOT REPRESENT A SINGLE GAUGING EVENT OR ACTUAL GROUNDWATER FLOW.

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DATE: 02/2025
FILE: 0120-809-11
CAD: IIID-B-2 BALLAST BLOWUP.DWG

DRAWN BY: JDW
DESIGN BY: JBM
REVIEWED BY: DEP

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT
BALLAST EVALUATION

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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FIGURE IIID-B-2

O:\0120\809\EXPANSION 2023\PART III\IIID\CLEAN 02-2025\IIID-B-2 BALLAST BLOWUP.dwg, jwilson, 1:2

APPENDIX IIID-B-A

LINER UPLIFT DEMONSTRATION

Includes pages IIID-B-A-1 through IIID-B-A-3

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02/28/2025

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0120-809-11-05
APPENDIX IIID-B-A
LINER UPLIFT DEMONSTRATION

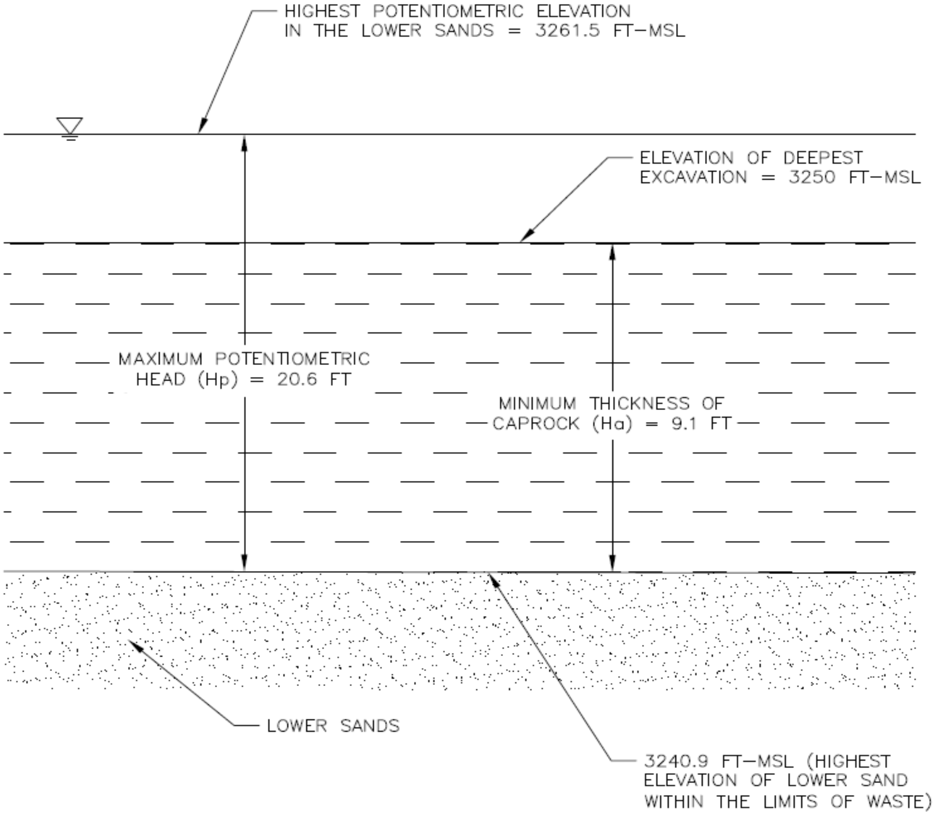
Required: Demonstrate that the potentiometric head within the Lower Sands does not induce an uplift pressure on the liner area.

Method:
1. Define Variables
2. Calculate Maximum Allowable Potentiometric Head

References:
1. Day, Robert W., *Geotechnical Engineer's Portable Handbook* , McGraw Hill, New York, 2000.

CITY OF MEADOW LANDFILL
0120-809-11-05
APPENDIX IIID-B-A
LINER UPLIFT DEMONSTRATION

1. Define Variables



The graphic shown is developed based on the EDE of 3250 ft-msl, and an elevation of 3261.5 ft-msl is used for the potentiometric head in Lower Sands for demonstration purposes. The highest elevation of Lower Sands within the limits of waste (i.e., 3240.9 ft-msl) is used for this demonstration. Refer to Appendix IIIG-C for detailed information for stratum thicknesses. The stability demonstration present here is developed along with the ballast demonstration included in Appendix IIID-B.

Maximum Potentiometric Elevation of Lower Sands, Ep = 3261.5 ft-msl

Elevation of Deepest Excavation (EDE), E_e = 3250 ft-msl

Minimum Thickness of Caprrock, H_a = 9.1 ft

Maximum Potentiometric Head, H_p = 20.6 ft

Unit Weight of Water, γ_w = 62.4 pcf

In-situ Saturated Unit Weight of the Caprock (determined from lowest test value from Appendix IIIE-C), γ_a = 132.6 pcf

2. Calculate Maximum Allowable Potentiometric Head (H_{max})

$$H_{max} = \frac{H_a \times \gamma_a \times 1.2}{\gamma_w}$$

H_{max} = 23.2 ft

CONCLUSION: The calculation above demonstrates that the Caprock formation can withstand up to 23.2 ft of potentiometric head from the Lower Sands. Currently the maximum potentiometric head of the Lower Sands that exists in the liner area is 20.6 ft (for the worst case scenario of excavations extending to the EDE). Therefore the liner excavations are stable and is not affected by the potentiometric head of the Lower Sands.

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

VOLUME 3 OF 6

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

DAVID E. POE
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02/28/2025

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WCG Project No. 0120-809-11-05

This document is intended for permitting purposes only.

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN

APPENDIX IIIE
GEOTECHNICAL REPORT

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

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02/28/2025

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WCG Project No. 0120-809-11-06

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Table 2-1
Geotechnical Test Methods Performed

Test	Test Method
Sieve Analysis (Passing No. 200)	ASTM D1140
Atterberg Limits (Liquid & Plastic Limit)	ASTM D4318
Moisture Content	ASTM D2216
Coefficient of Permeability (Hydraulic Conductivity)	Vertical - ASTM D5084 Method F Horizontal – ASTM D4044 and D8084 Method F

2.2 Classification Tests

Classification tests consisting of Atterberg limits, percent passing the #200 sieve, moist unit weight, and moisture content were performed on selected soil samples recovered from boreholes. Classification tests were used to characterize the soils according to the Unified Soil Classification System (USCS) and to evaluate physical properties of the soils. The test results for the strata identified at the site are presented in the summary table included in Appendix IIIE-C.

2.2.1 Material Strength Tests

The landfill is founded primarily in the Caliche formation described in Section 3 of this appendix. As described, the Caliche is a relatively hard formation, with interbedded sand and gravels that do not facilitate collection of undisturbed samples during field investigations. Hence, strength characteristics for the Caliche were derived from the Standard Penetration Testing (SPT) results obtained during drilling, which was correlated to strength characteristics for non-plastic soils, and from WCG experience with similar granular soils. The SPT results demonstrate the Caliche is hard to very hard, with blow counts generally exceeding 50 blows per 6 inches of spoon penetration. Based on this information, shear strength parameters of cohesion equal to 200 psf and an angle of internal friction of 28 degrees were conservatively assigned to the Caliche formation.

The overburden surficial soils encountered at the site are comprised predominately of sand and sand with silt as demonstrated in the laboratory results presented in Table IIIE-C-1. While sands and silty sands generally exhibit internal friction angles in the 30 to 36 percent range, the assumption that the upper sands and sands with silt are represented by the angle of internal friction value of 28 degrees and cohesion of 200 psf (as also conservatively assumed for the underlying Caliche) is conservative for the analyses presented in this appendix.

2.2.2 Hydraulic Conductivity Testing

Laboratory hydraulic conductivity tests were performed to evaluate the hydrogeological properties of the soils at the site. Additional discussion regarding the hydraulic conductivity testing is presented in Appendix IIIG–Geology Report and has not been reproduced for this appendix. The results of the hydraulic conductivity testing are included in Appendix IIIE-C.

4.3 Landfill Excavation

Excavation for the bottom liner construction will be performed in a manner that will achieve reasonable segregation of liner quality material from soils that are not suitable for liner construction. Soil materials to potentially be used for liner construction will be stockpiled separately, according to construction material properties outlined in Section 4.4 and visual observation during excavation. Alternatively, the operator may elect to not segregate the soils in anticipation of substituting GCL for the compacted clay liner component of the bottom liner system.

Excavation of the soils encountered will be achieved with equipment such as bulldozers and excavators. Local areas of cemented sands or Caliche may be encountered intermittently within the excavation. These zones can be broken up with an excavator equipped with a hydraulic hammer tool or ripped. The hydraulic hammer may be fitted with a pointed chisel or moil or a blunt tool for harder cemented material.

Excavation side slopes will be graded no steeper than 3 horizontal to 1 vertical (3H:1V). Temporary slopes during excavation may be steeper. Excavation cut slopes within the future cell construction areas may require erosion protection if an extended period of time occurs between excavation and liner construction. Interim erosion protection can be accomplished by diverting runoff away from the slopes. “Track walking” with a bulldozer up and down the slopes will create the effect of “mini-dikes” with the bulldozer tracks, which will also reduce erosion.

Prior to beginning construction of the liner components, the subgrade area will be stripped to a depth sufficient to remove all loose surface soils or soft zones within the exposed excavation. The liner base grades will be proof-rolled with heavy, rubber-tired construction equipment or equivalent to detect soft or pumping areas. Soft or pumping areas will be undercut to firm material and backfilled with suitable compacted fill, as discussed in Appendix IIID–LQCP. Preparation of the liner base grades will result in a surface that is stable and that does not exhibit significant rutting or pumping from the construction traffic. The prepared liner base grades will be approved by a Professional of Record (POR), tested to verify that it meets the requirements outlined in Appendix IIID–LQCP, and surveyed to verify grades.

In the event seepage of groundwater is observed at the excavation grades, the geotechnical engineer will make recommendations to address the short term seepage in consideration of the Ballast Demonstration included in Appendix IIID-B demonstrating that ballasting of the bottom liner system in the area intersecting the highest measured groundwater potentiometric head during liner construction, prior to certification of the liner system. Potential short term remedial measures might include drawdown trenches installed outside of the liner construction, replacement of the upper 2 feet of foundation soils with a low permeability soil, raising the bottom liner sufficient to lift the entire cell bottom out of the highest measured groundwater potentiometric surface, or other means. In the event sufficient groundwater is encountered to require an underdrain system and sump (i.e., cannot be controlled by the previously listed methods), a permit modification will be submitted to the executive director prior to proceeding with underdrain and liner construction. Additional guidance regarding groundwater encountered at the excavation grades is provided in Appendix IIID, Section 2.3.7 – Surface Water Removal.

4.4 Soil Liner Construction

The bottom and sides of the landfill excavation may consist of 2-foot-thick compacted clay liner (in instances a GCL is not substituted as an alternative to compacted clay liner). The clay liner will have a maximum hydraulic conductivity of $1x10^{-7}$ cm/s. Details for the liner system are provided in Appendix IIIA (Appendix IIIA-A). Adequate clay soil liner material may be available from proposed landfill excavations or onsite borrow areas, or offsite borrow sources. Preconstruction

APPENDIX IIIE-A

SLOPE STABILITY ANALYSIS

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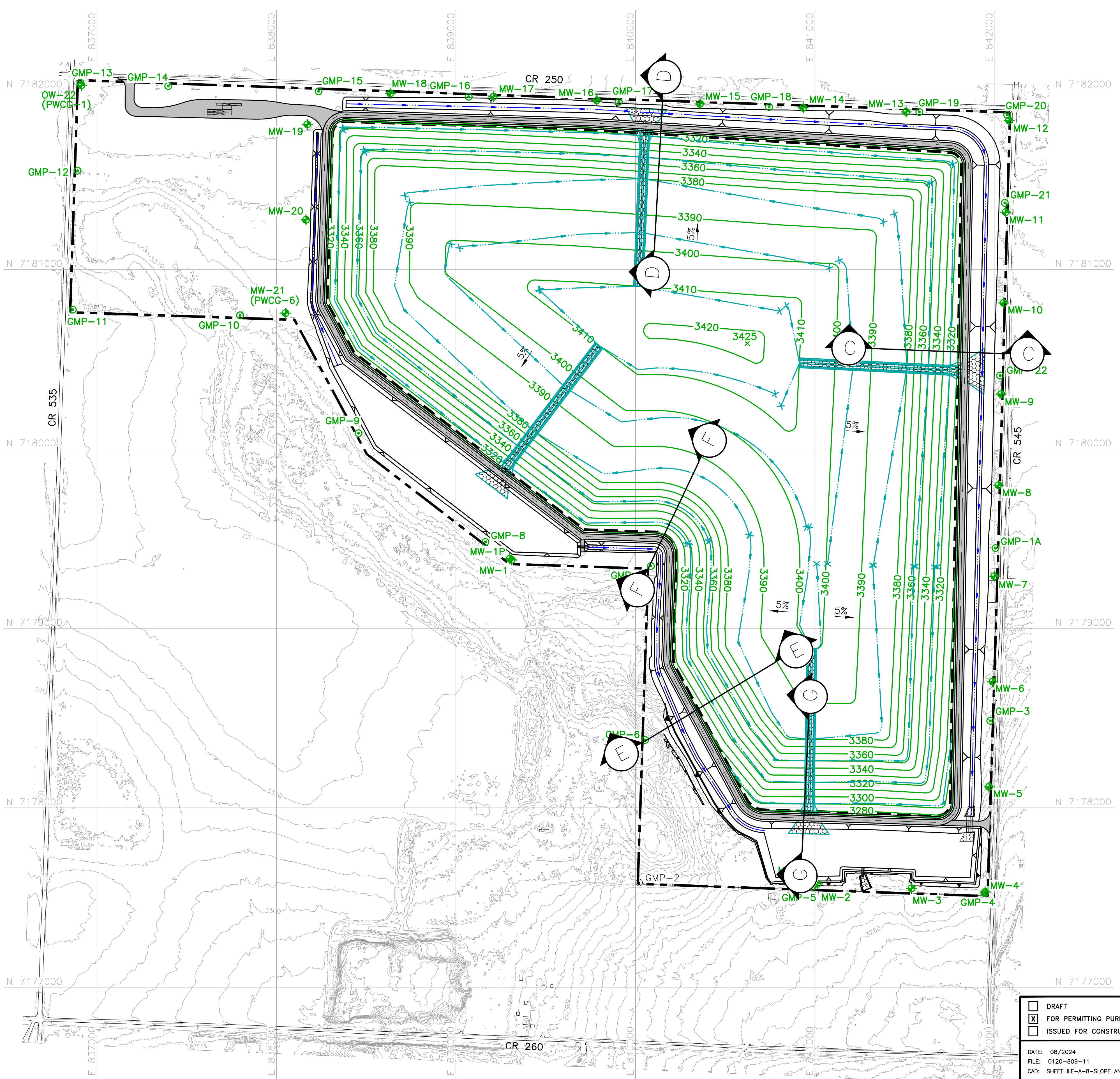
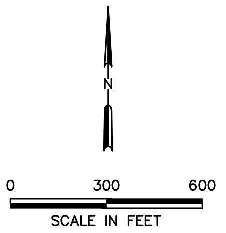
02/28/2025





LEGEND

— - — - —	PROPOSED PERMIT BOUNDARY
— — — —	PROPOSED LIMIT OF WASTE
N 7180000 ——	STATE PLANE COORDINATE SYSTEM
—3300—	EXISTING CONTOUR
—3400—	FINAL COVER CONTOUR
—·—·—	DRAINAGE SWALE
▨	DRAINAGE LETDOWN
—·—·—	CHANNEL CENTERLINE
◈ MW-10	PROPOSED GROUNDWATER MONITORING WELL
⊙ GP-1	EXISTING GAS PROBE
C —— C	SECTION LOCATION

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PROPERTY AND PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.

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81734

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FILE: 0120-809-11
CAD: SHEET IIIE-A-8-SLOPE ANALYSIS.DWG

DRAWN BY: RAA
DESIGN BY: JBM
REVIEWED BY: DEP

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PREPARED FOR
MEADOW LANDFILL, LLC

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NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT
SLOPE STABILITY ANALYSIS
FINAL CONDITIONS SECTIONS

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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SHEET IIIE-A-8

O:\0120\809\EXPANSION 2023\PART III\IIIE\A\CLEAN 02-2025\SHEET IIIE-A-8.dwg, jwilson, 1:2

APPENDIX IIIE-B

FOUNDATION SETTLEMENT

STATE OF TEXAS
DAVID E. POE
81734
LICENSED
PROFESSIONAL ENGINEER

02/28/2025

APPENDIX IIIE-B-1

FOUNDATION/BOTTOM LINER SETTLEMENT ANALYSIS

Includes pages IIIE-B-1-1 through IIIE-B-1-30

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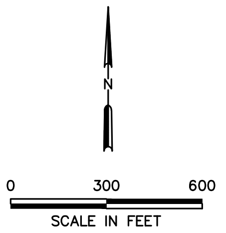

LEGEND

	PROPOSED PERMIT BOUNDARY
	PROPOSED LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
3300	EXISTING CONTOUR
560	PROPOSED EXCAVATION CONTOUR
	SECTOR BOUNDARY
	LEACHATE COLLECTION PIPE
	LEACHATE COLLECTION SUMP
	LEACHATE RISER PIPE
MW-10	PROPOSED GROUNDWATER MONITORING WELL
GP-1	EXISTING GAS PROBE
BL1	BOTTOM LINER EVALUATION POINT
	BOTTOM LINER EVALUATION LINE

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.

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DRAWN BY: JDW
DESIGN BY: JBM
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NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT
SETTLE3 SETTLEMENT ANALYSIS
BOTTOM LINER STRAIN CALCULATIONS

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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SHEET IIIE-B-1-12

O:\0120\809\EXPANSION 2023\PART III\IIIE\CLEAN 02-2025\IIIE-B-1-12 SETTLE3.dwg, jwilson, 1:2

APPENDIX IIIE-B-2

FINAL COVER SETTLEMENT ANALYSIS

Includes pages IIIE-B-2-1 through IIIE-B-2-12

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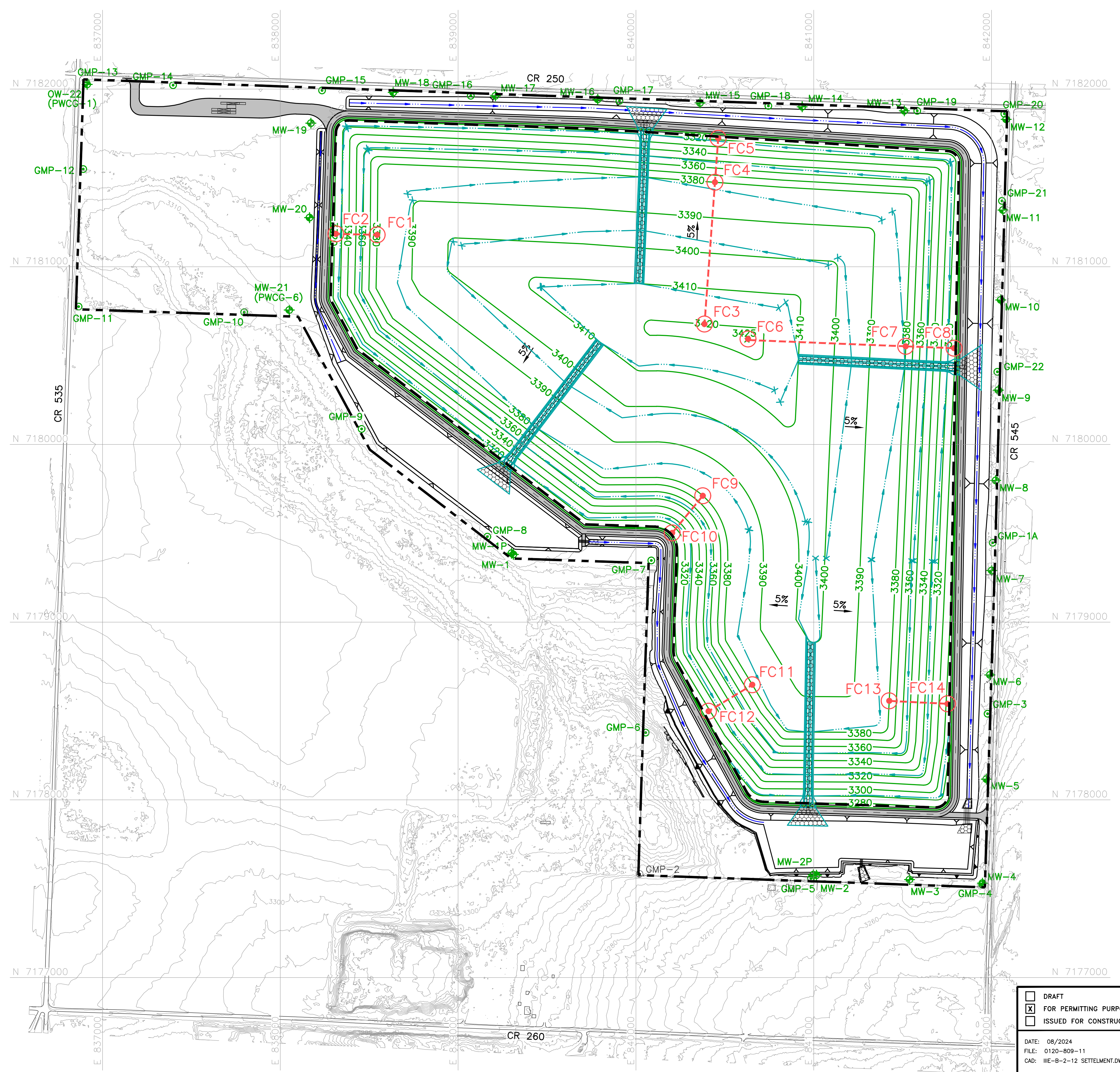

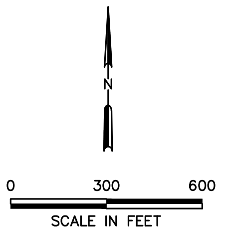

LEGEND

— · —	PROPOSED PERMIT BOUNDARY
— — —	PROPOSED LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
3300	EXISTING CONTOUR
3400	FINAL COVER CONTOUR
	DRAINAGE SWALE
	DRAINAGE LETDOWN
	CHANNEL CENTERLINE
MW-10	PROPOSED GROUNDWATER MONITORING WELL
GP-1	EXISTING GAS PROBE
◉ FC2	FINAL COVER EVALUATION POINT
◉- - - -◉	FINAL COVER EVALUATION LINE

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.
4 EXCAVATION SLOPES AND SLOPES OUTSIDE THE LIMIT OF WASTE (e.g., CHANNELS) ARE TYPICALLY 3H:1V.

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DESIGN BY: JBM
REVIEWED BY: DEP

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NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT SETTLE3 SETTLEMENT FINAL COVER ANALYSIS POINT PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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SHEET IIIE-B-2-12

O:\0120\809\EXPANSION 2023\PART III\IIIE\CLEAN 02-2025\SHEET IIIE-B-2-12.dwg, jwilson, 1:2

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

VOLUME 4 OF 6

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

CHARLES R. MARSH
105073

02/28/2025

Prepared by

Weaver Consultants Group, LLC
TBPE Registration No. F-3727
6420 Southwest Boulevard, Suite 206
Fort Worth, Texas 76109
817-735-9770

WCG Project No. 0120-809-11-05

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CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN
APPENDIX IIIF
SURFACE WATER DRAINAGE PLAN

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

CHARLES R. MARSH
105073

02/28/2025

Prepared by

Weaver Consultants Group, LLC
TBPE Registration No. F-3727
6420 Southwest Boulevard, Suite 206
Fort Worth, Texas 76109
817-735-9770

WCG Project No. 0120-809-11-05

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IIIF.2 – Post-Project Drainage Plan
IIIF.3 – Offsite Drainage Area Map
IIIF.4 – Perimeter Channel Plan
IIIF.5 – Perimeter Channel Profiles
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IIIF.7 – Drainage Details
IIIF.8 – Drainage Details
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IIIF.10 – Drainage Details
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Erosion Layer Evaluation

APPENDIX IIIF-E
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Erosion Control Plan for All Phases of Landfill Operation

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Excerpts from CLOMR

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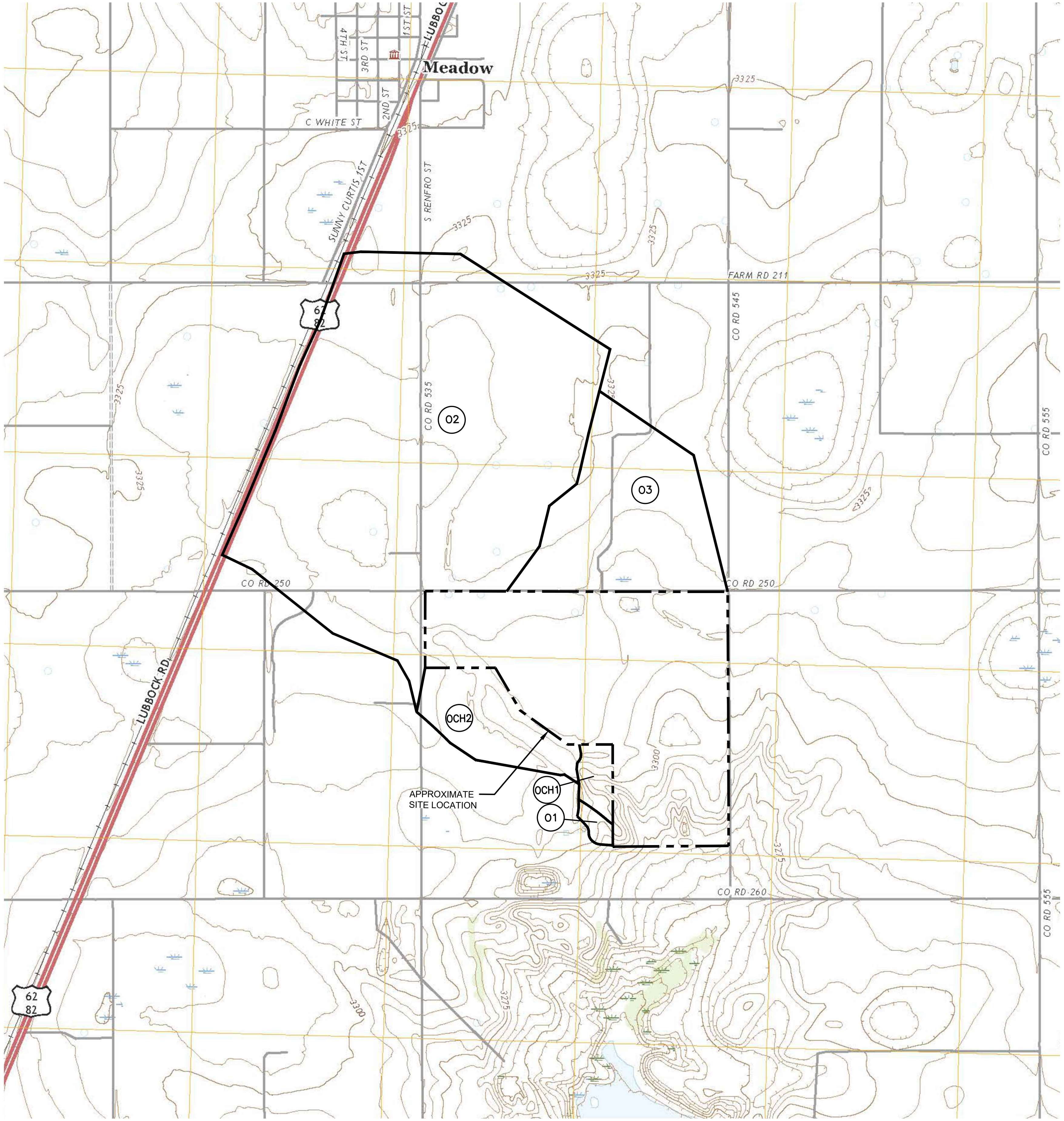

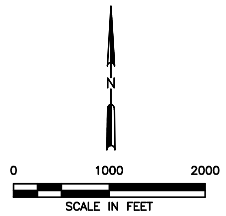

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105073
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LEGEND

— · —	PROPOSED PERMIT BOUNDARY
———	DRAINAGE AREA BOUNDARY
(01)	DRAINAGE AREA DESIGNATION

ROAD CLASSIFICATION

Expressway	▬	Local Connector	▬
Secondary Hwy	▬	Local Road	▬
Ramp	▬	4WD	- - -

Interstate Route
US Route
○ State Route

MEADOW, TX
2022

NOTES:

1. REPRODUCED FROM 7.5 MINUTE, MEADOW, TEXAS QUADRANGLE USGS MAP DATED 2022.

DRAINAGE AREA NO.	AREA (ACRES)
01	6.39
02	686.24
03	174.65
OCH1	17.02
OCH2	71.93

UPSTREAM UNNAMED RICH LAKE TRIBUTARY CATCHMENT

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FILE: 0120-809-11
CAD: FIG 4.3-OFFSITE DRAINAGE AREA.DWG

DRAWN BY: JDW
DESIGN BY: SSM
REVIEWED BY: KDG

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NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT
OFFSITE DRAINAGE AREA MAP

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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FIGURE 4.3

O:\0120\809\EXPANSION 2023\PART III\HIF\FIGURES\CLEAN 02-2025\FIG 4.3-OFFSITE DRAINAGE AREA MAP.dwg, jwilson, 1:2

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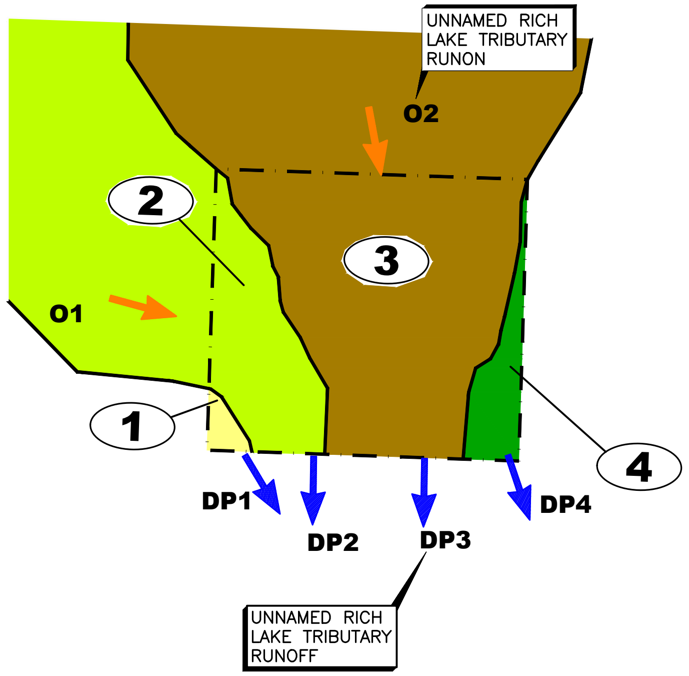
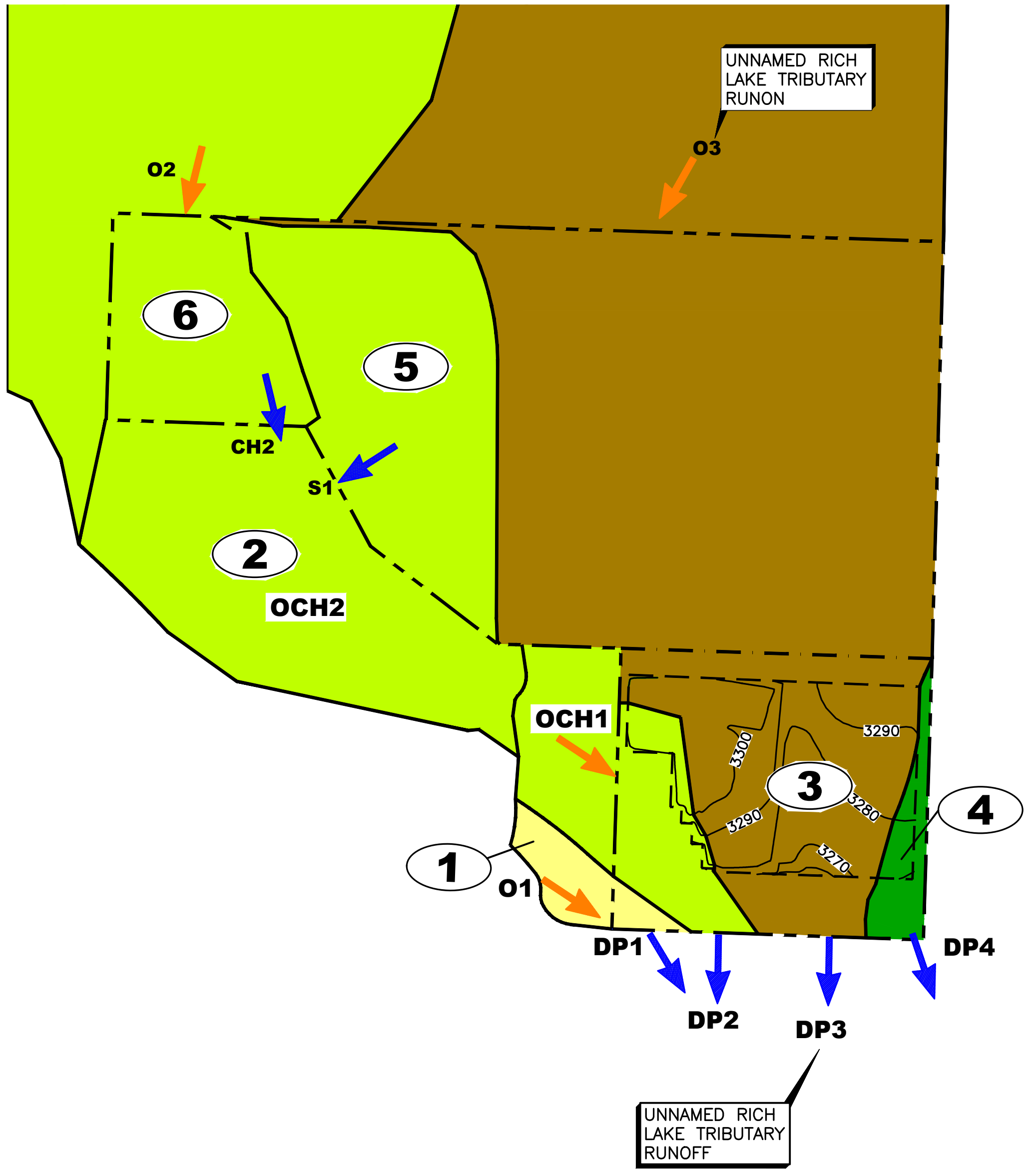


EXISTING PERMITTED DRAINAGE PATTERNS[1]



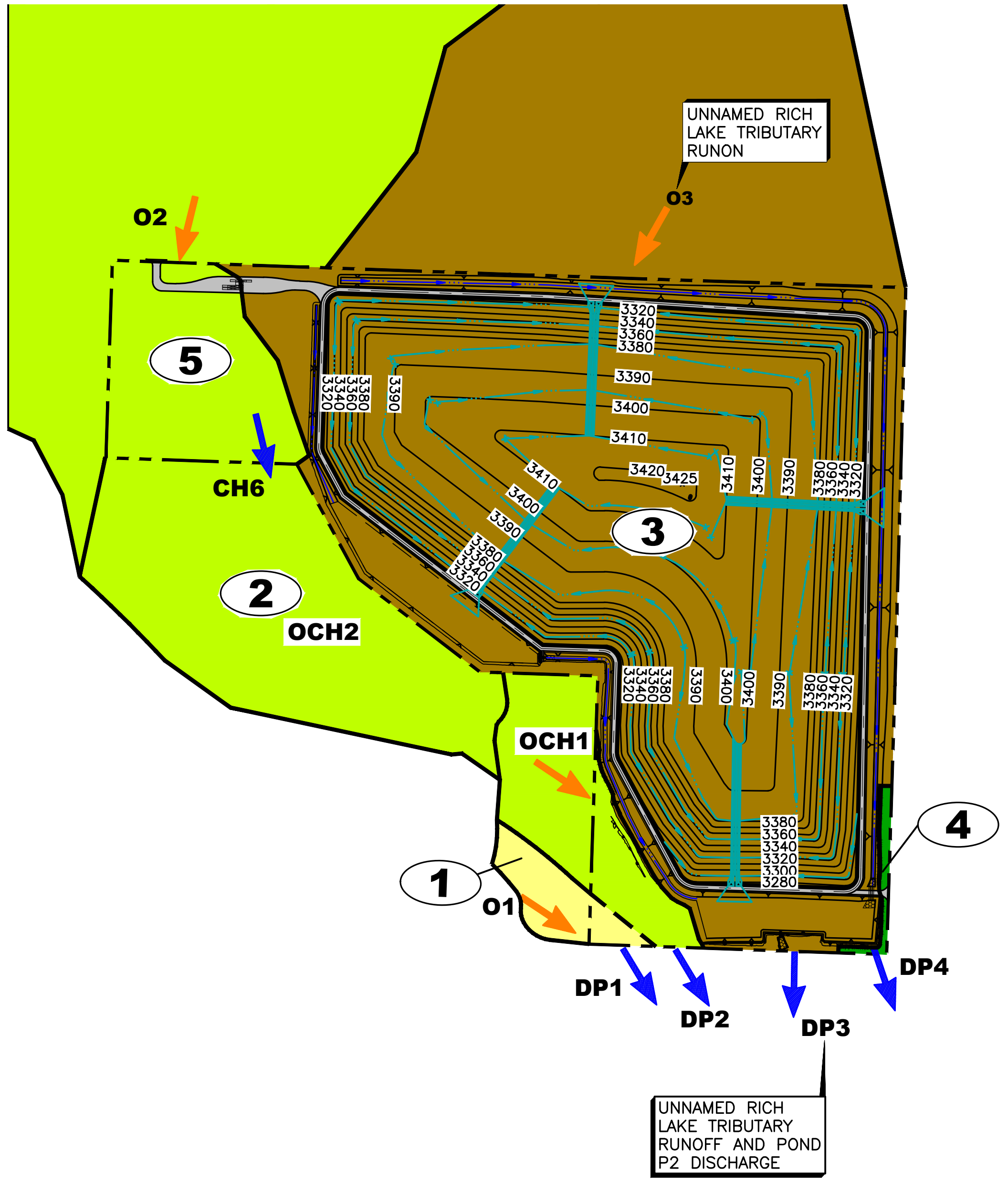
UPDATED PERMITTED DRAINAGE PATTERNS[1]

DISCHARGE POINT AREAS

CH2 = 717.98 ACRES
S1 = 59.53 ACRES
DP1 = 8.04 ACRES
DP2 = 881.19 ACRES
DP3 = 397.48 ACRES
DP4 = 7.38 ACRES

OFF–SITE AREAS

O1 = 6.39 ACRES
O2 = 686.24 ACRES
O3 = 174.65 ACRES
OCH1 = 866.46 ACRES (SEE NOTE 2)
OCH2 = 849.44 ACRES (SEE NOTE 3)



POST–DEVELOPMENT DRAINAGE PATTERNS

DISCHARGE POINT AREAS

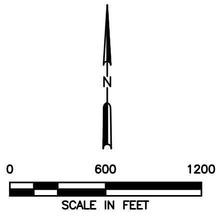
CH6 = 717.98 ACRES
DP1 = 8.04 ACRES
DP2 = 815.27 ACRES
DP3 = 468.96 ACRES
DP4 = 1.84 ACRES

OFF–SITE AREAS

O1 = 6.39 ACRES
O2 = 686.24 ACRES
O3 = 174.65 ACRES
OCH1 = 806.93 ACRES (SEE NOTE 4)
OCH2 = 789.91 ACRES (SEE NOTE 5)

LEGEND

— — ——— — —	PROPOSED PERMIT BOUNDARY
— · — · — · —	PERMITTED PERMIT BOUNDARY
——100——	ELEVATION OF FINAL COVER SYSTEM
————	DRAINAGE AREA BOUNDARY
①	DRAINAGE AREA DESIGNATION
→	UPLAND DRAINAGE ENTERING THE SITE
→	STORMWATER DISCHARGE POINT



NOTES:

1. REFER TO SECTION 4.3.1 FOR A DISCUSSION ON THE EXISTING PERMITTED CONDITION AND UPDATED PERMITTED CONDITION.
2. DISCHARGE POINT OCH1 INCLUDES ACREAGE FROM DISCHARGE POINTS CH2, S1, AND OFFSITE AREAS OCH1 AND OCH2.
3. DISCHARGE POINT OCH2 INCLUDES ACREAGE FROM DISCHARGE POINTS CH2, AND S1 AND OFFSITE AREAS OCH2.
4. DISCHARGE POINT OCH1 INCLUDES ACREAGE FROM DISCHARGE POINTS CH6 AND OFFSITE AREAS OCH1 AND OCH2.
5. DISCHARGE POINT OCH2 INCLUDES ACREAGE FROM DISCHARGE POINTS CH6 AND OFFSITE AREA OCH2.

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DESIGN BY: CMW
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1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT
SITE DRAINAGE PATTERNS

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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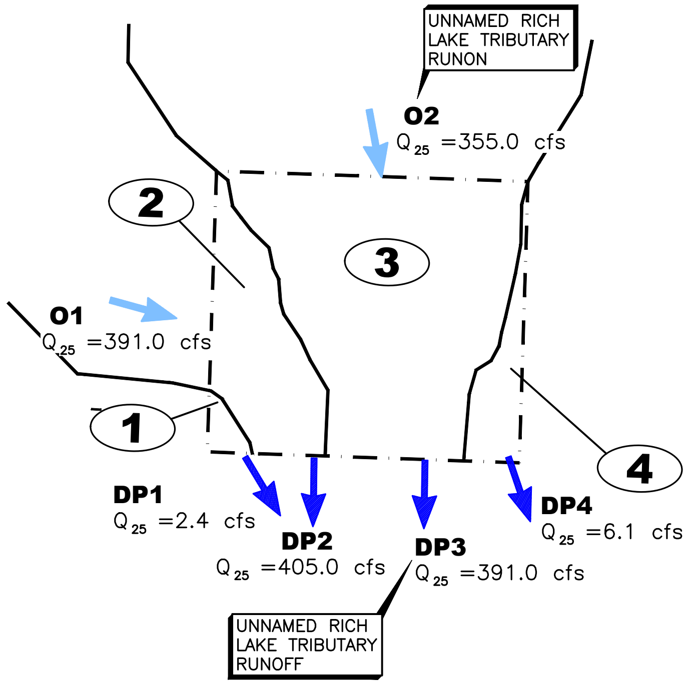
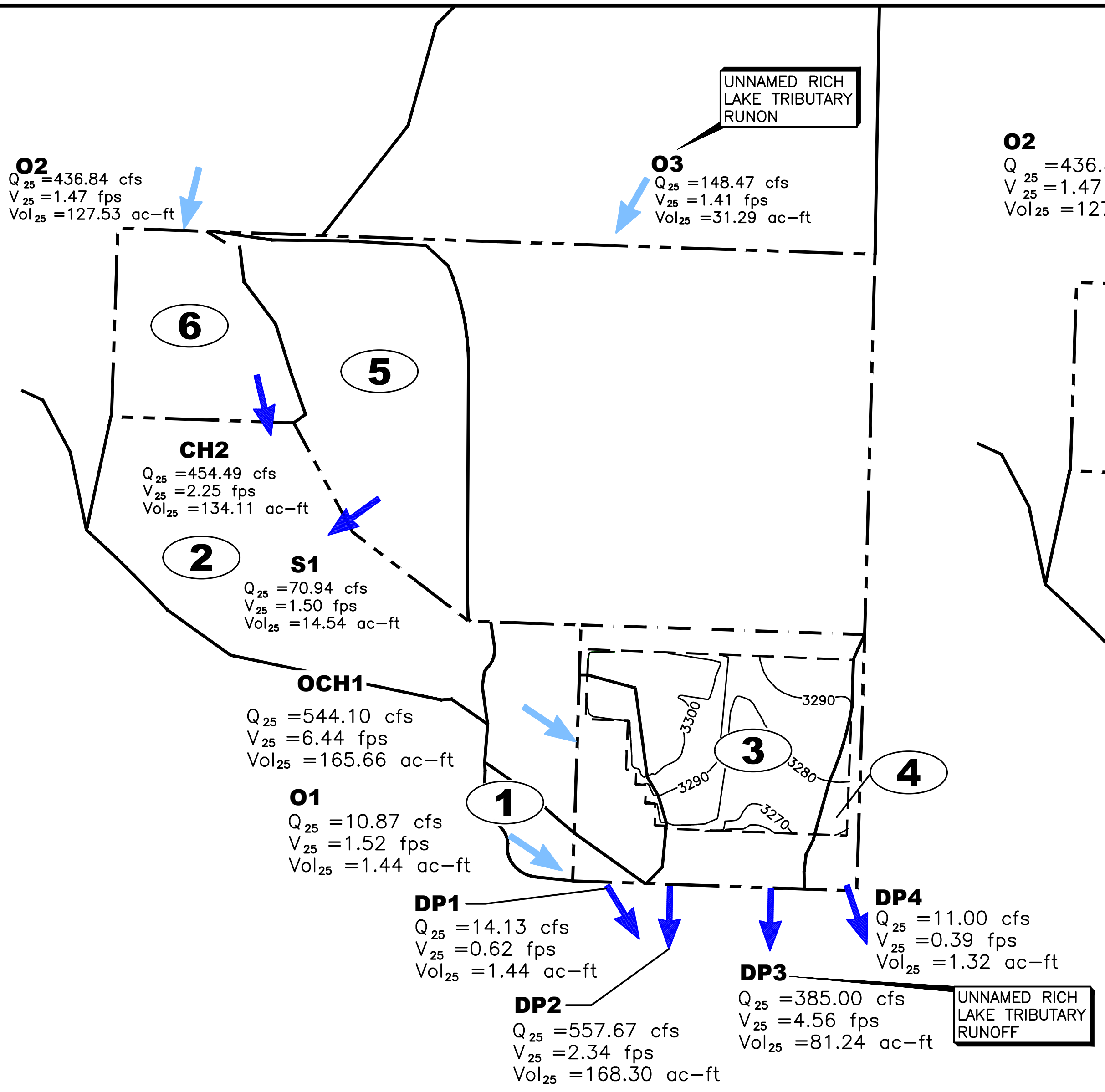
FIGURE 4.4

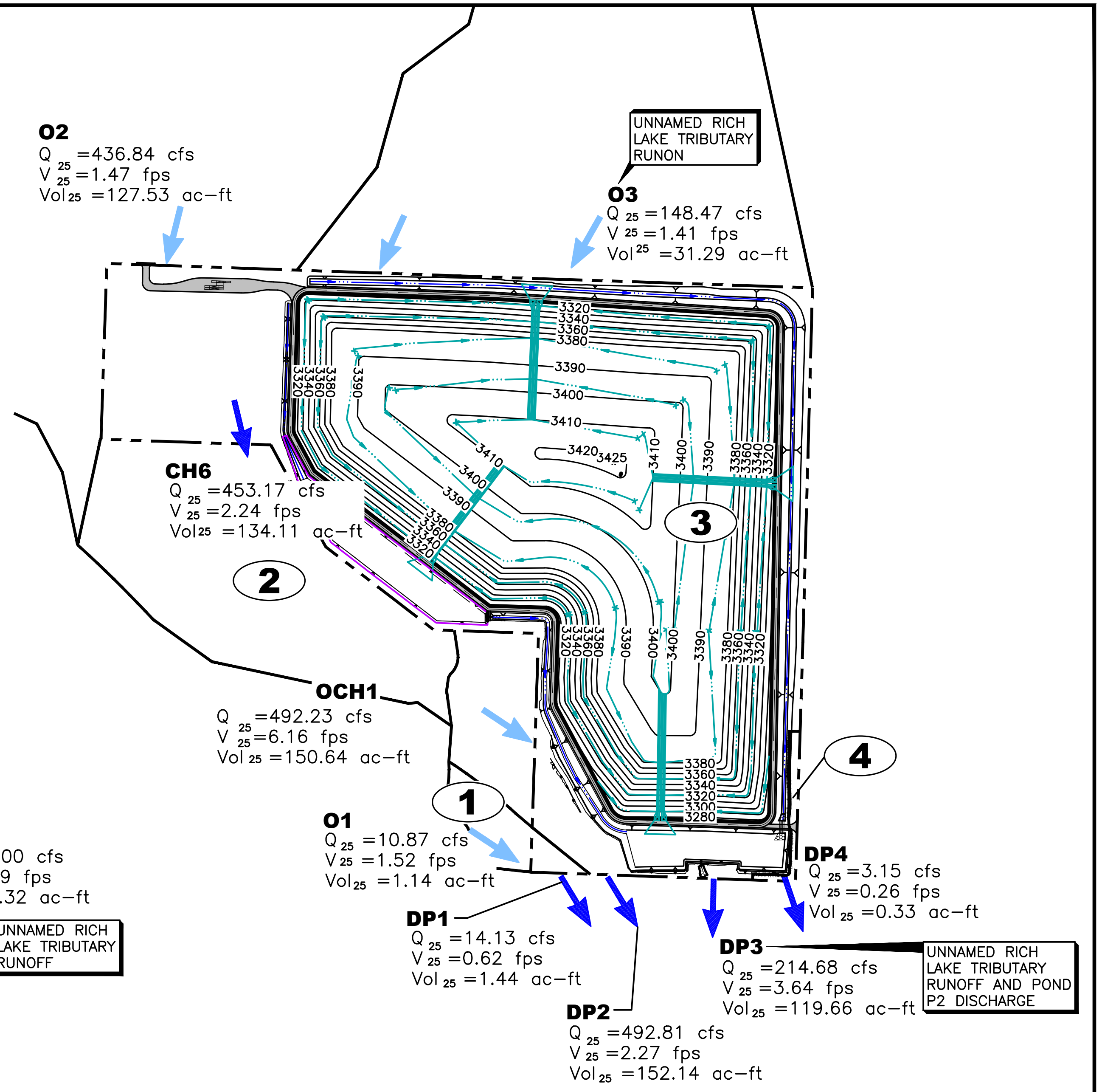
O:\0120\809\EXPANSION 2023\PART III\IIIF\FIGURES\CLEAN 02–2025\FIG 4.4–DRAINAGE PATTERNS.dwg, jwilson, 1:2



EXISTING PERMITTED DRAINAGE PATTERNS[1]



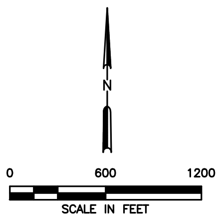
UPDATED PERMITTED DRAINAGE PATTERNS[1]



POST–DEVELOPMENT DRAINAGE PATTERNS

LEGEND

— - — - —	PROPOSED PERMIT BOUNDARY
— - - — - -	PERMITTED PERMIT BOUNDARY
——100——	ELEVATION OF FINAL COVER SYSTEM
————	DRAINAGE AREA BOUNDARY
1	DRAINAGE AREA DESIGNATION
→	UPLAND DRAINAGE ENTERING THE SITE
→	STORMWATER DISCHARGE POINT



NOTES:

1. REFER TO SECTION 4.3.1 FOR A DISCUSSION ON THE EXISTING PERMITTED CONDITION AND UPDATED PERMITTED CONDITION.

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CAD: 4-SITE PLAN.DWG

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DESIGN BY: CMW
REVIEWED BY: CRM

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NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT
SITE DRAINAGE PATTERNS
RUN–ON/RUNOFF

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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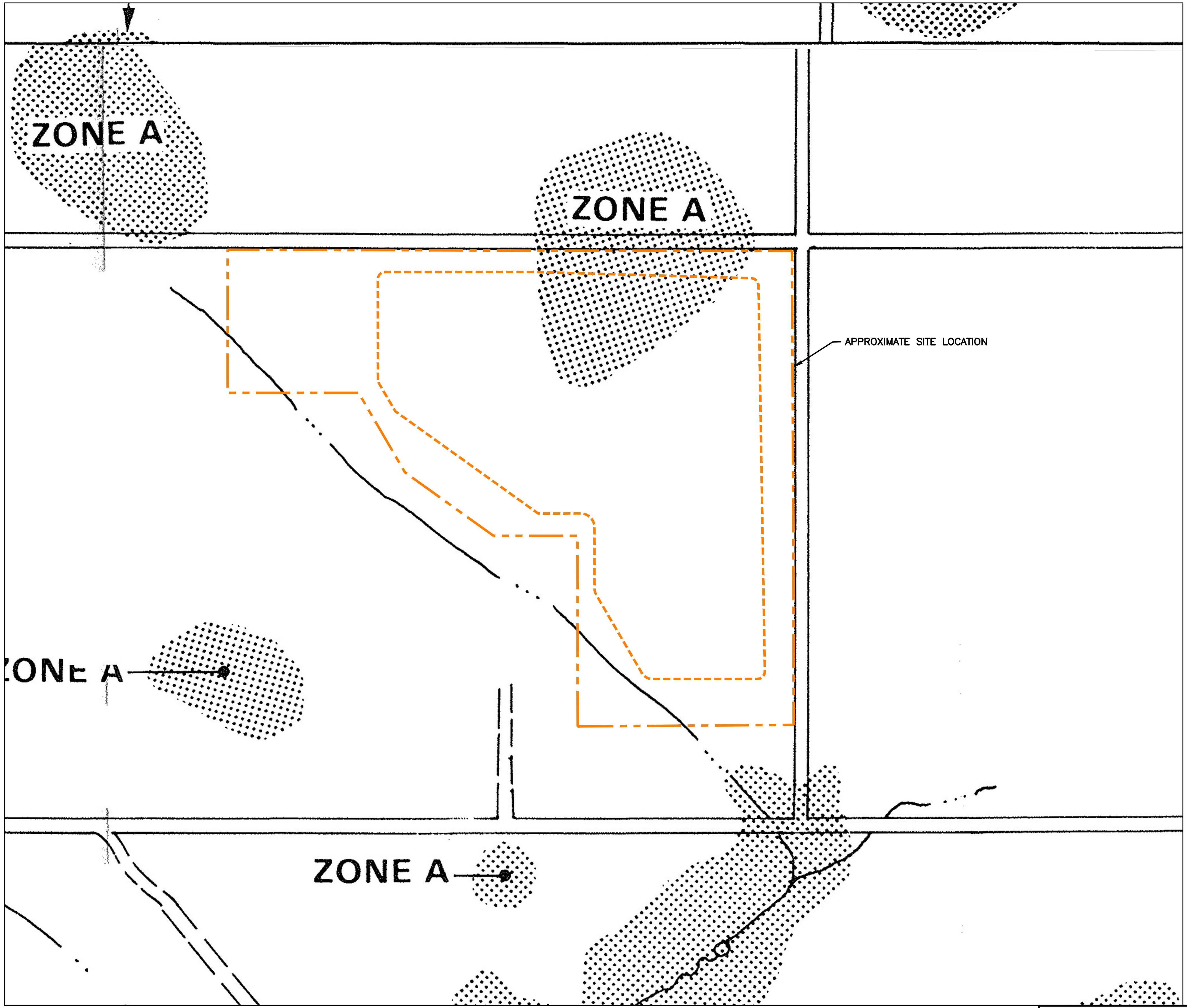
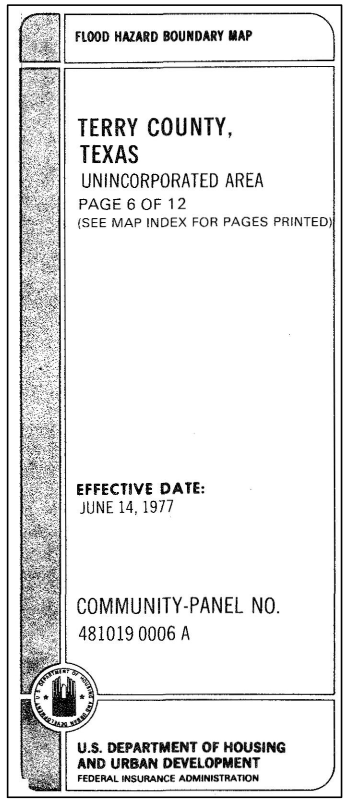
FIGURE 4.5

G:\0120\809\EXPANSION 2023\PART III\IIIF\FIGURES\CLEAN 02–2025\FIG 4.5–RUN–ON RUN–OFF.dwg, jwilson, 1:2



LEGEND

— - —	PROPOSED PERMIT BOUNDARY
- - - -	PROPOSED LIMIT OF WASTE
SPECIAL FLOOD HAZARD AREA	▨ ZONE A



FLOOD HAZARD BOUNDARY MAP

TERRY COUNTY,
TEXAS
UNINCORPORATED AREA
PAGE 6 OF 12
(SEE MAP INDEX FOR PAGES PRINTED)

EFFECTIVE DATE:
JUNE 14, 1977

COMMUNITY-PANEL NO.
481019 0006 A

U.S. DEPARTMENT OF HOUSING
AND URBAN DEVELOPMENT
FEDERAL INSURANCE ADMINISTRATION

CHARLES R. MARSH
105073

02/28/2025

NOTE:

1. REPRODUCED FROM FEMA FIRM NUMBER 4810190006A FOR TERRY COUNTY, TEXAS AND UNCORPORATED AREAS, EFFECTIVE DATE JUNE 14, 1977.

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FILE: 0120-809-11
CAD: FIG 4.6-FIRM.DWG

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DESIGN BY: CMW
REVIEWED BY: JBP

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MEADOW LANDFILL, LLC

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MAJOR PERMIT AMENDMENT FLOOD INSURANCE RATE MAP (FIRM)

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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FIGURE 4.6

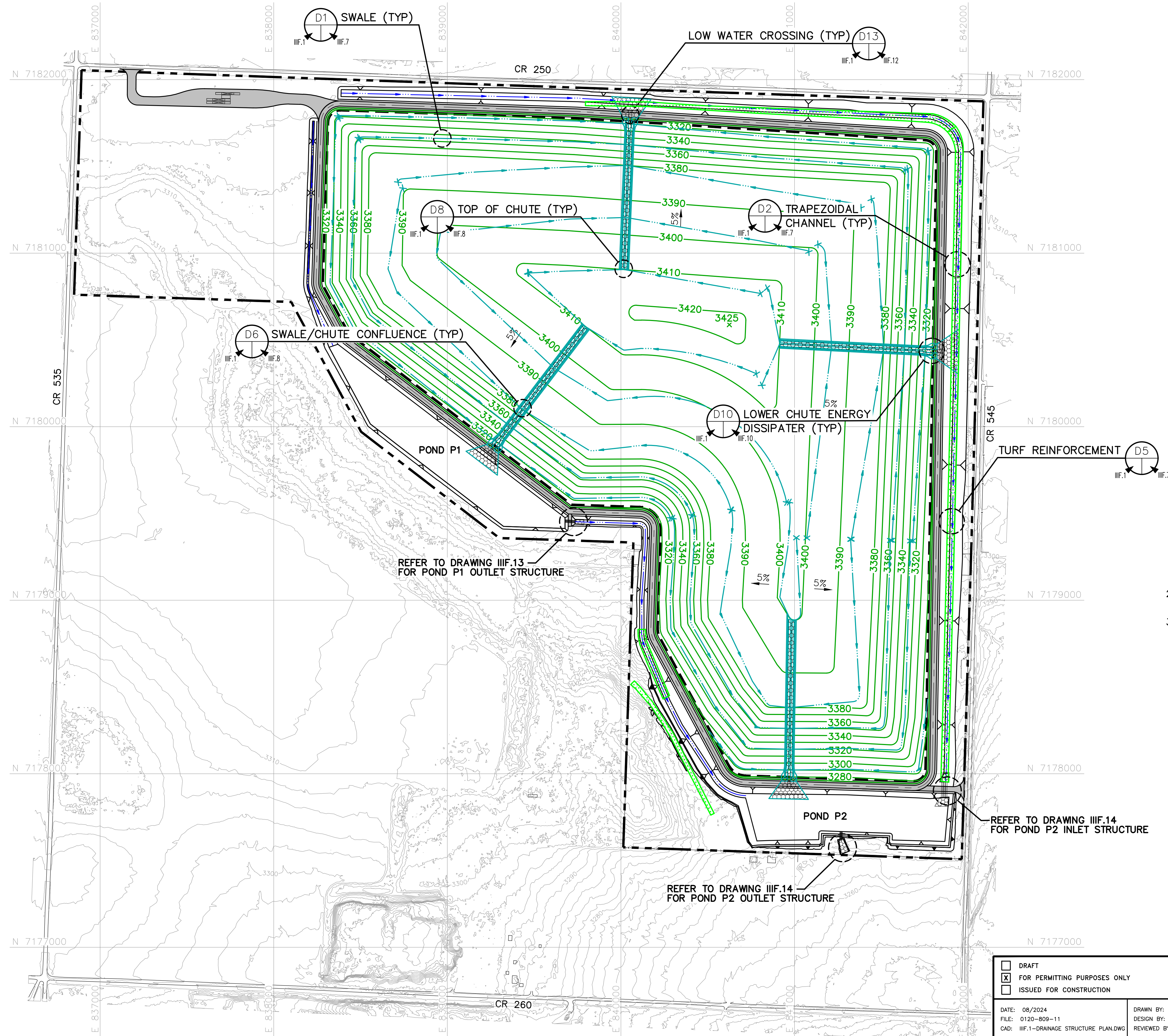
O:\0120\809\EXPANSION 2023\PART III\IIIF\FIGURES\CLEAN 02-2025\FIG 4.6-FIRM.dwg, jwilson, 1:2

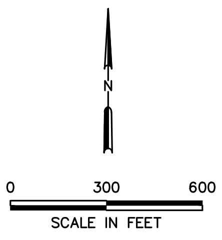
DRAWINGS

IIIF.1 – Drainage Structure Plan
IIIF.2 – Post-Project Drainage
IIIF.3 –Offsite Drainage Area Map
IIIF.4 – Perimeter Drainage Plan
IIIF.5 – Channels 1 and 2 Plan and Profile
IIIF.6 – Channels 1 and 2 Sections
IIIF.7 – Drainage Details
IIIF.8 – Drainage Details
IIIF.9 – Drainage Details
IIIF.10 – Drainage Details
IIIF.11 – Drainage Details
IIIF.12 – Drainage Details
IIIF.13 – Pond P1 Plan
IIIF.14 – Pond P2 Plan
IIIF.15 – Freeboard Summary Plan

STATE OF TEXAS
CHARLES R. MARSH
105073
LICENSED
PROFESSIONAL ENGINEER

02/28/2025





LEGEND

— · — · —	PROPOSED PERMIT BOUNDARY
— — —	PROPOSED LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
3300	EXISTING CONTOUR
3400	FINAL COVER CONTOUR
→→	DRAINAGE SWALE
▨	DRAINAGE LETDOWN
→	CHANNEL CENTERLINE
🟩	TURF REINFORCEMENT MATTING

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.

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DATE: 08/2024
FILE: 0120-809-11
CAD: IIIF.1-DRAINAGE STRUCTURE PLAN.DWG

DRAWN BY: SRF
DESIGN BY: CMW
REVIEWED BY: CRM

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT DRAINAGE STRUCTURE PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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DRAWING IIIF.1

O:\0120\809\EXPANSION 2023\PART III\IIIF\CLEAN 02-2025\IIIF.1-DRAINAGE STRUCTURE PLAN.dwg, jwilson, 1:2

N

0 300 600

SCALE IN FEET

LEGEND

— · — · —	PROPOSED PERMIT BOUNDARY
— — — —	PROPOSED LIMIT OF WASTE
N 7180000 ———	STATE PLANE COORDINATE SYSTEM
——3400——	EXISTING CONTOUR
——3400——	FINAL COVER CONTOUR
—·→—·—	DRAINAGE SWALE
▨	DRAINAGE LETDOWN
—→—··—	CHANNEL CENTERLINE
▨	TURF REINFORCEMENT MATTING

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.

CHARLES R. MARSH
105073

02/28/2025

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DATE: 08/2024
FILE: 0120-809-11
CAD: IIIF.4-PERIMETER CHANNEL PLAN.DWG

DRAWN BY: SRF
DESIGN BY: CMW
REVIEWED BY: CRM

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT
PERIMETER CHANNEL PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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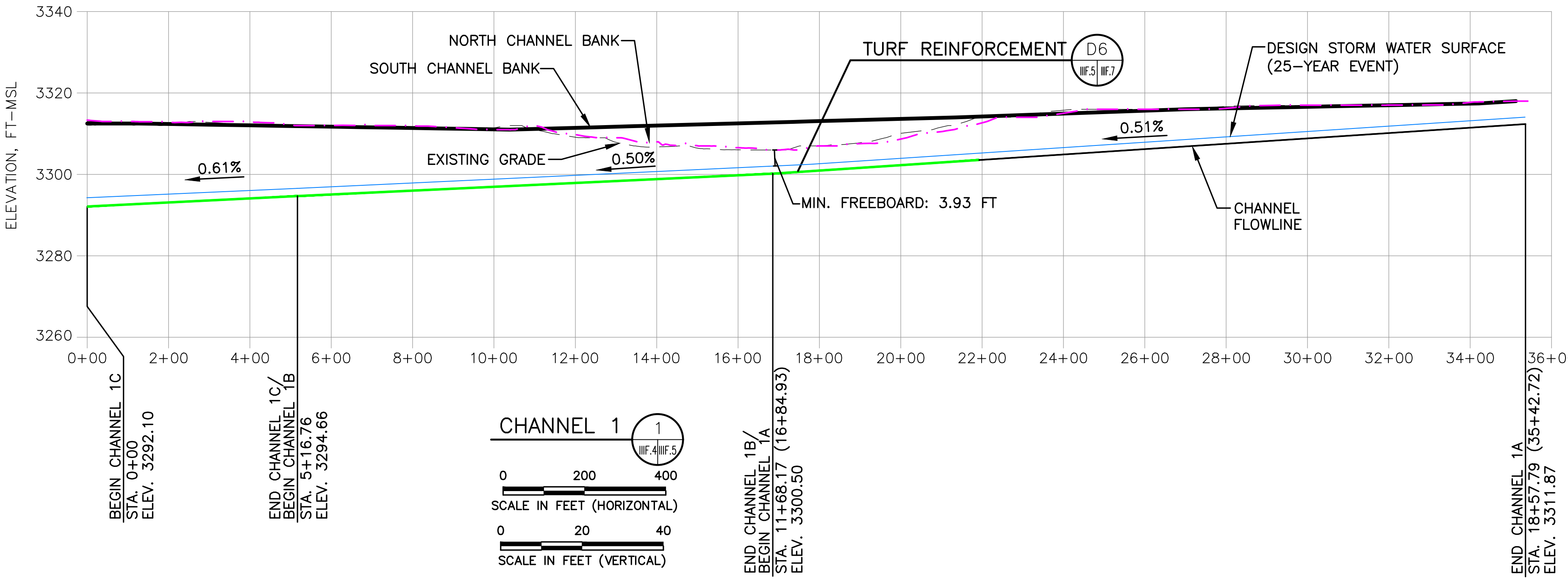
DRAWING IIIF.4

O:\0120\809\EXPANSION 2023\PART III\IIIF\CLEAN 02-2025\IIIF.4-PERIMETER CHANNEL PLAN.dwg, jwilson, 1:2



CHANNEL 1 (1 / IIIF.4 IIIF.5)

25–YEAR CHANNEL 1 INFORMATION

CHANNEL STATION			BOTTOM WIDTH (FT)	PEAK INFLOW (CFS)	SLOPE (%)	FLOW DEPTH (FT.)	VELOCITY (FT/S)
SECTION	FROM	TO					
CH1A	0+00	18+57.79	40	386.84	0.61	1.69	5.08
CH1B	0+00	11+68.17	35	363.60	0.50	1.86	4.82
CH1C	0+00	5+16.76	25	352.93	0.51	2.17	5.16

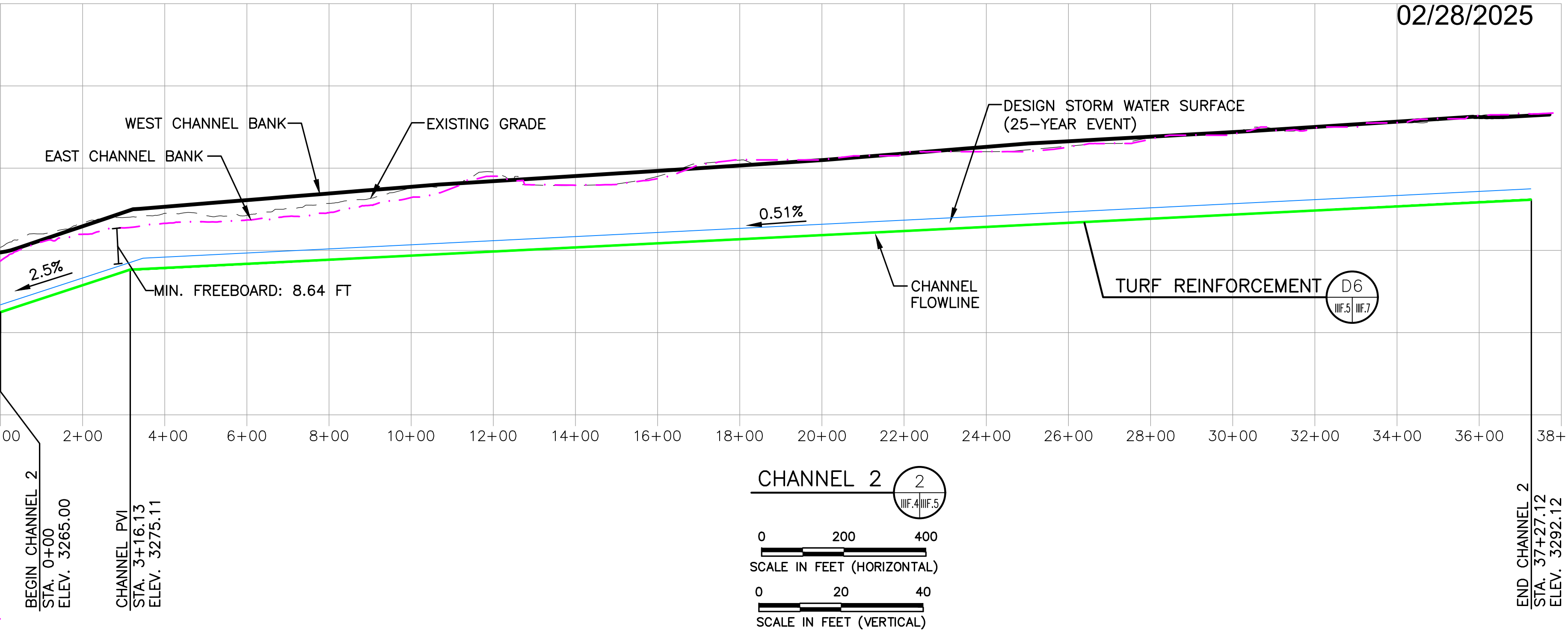
NOTE: NORMAL DEPTH CALCULATION DOES NOT ACCOUNT FOR BACK WATER WHICH WILL INCREASE FLOW DEPTH (SEE PROFILE) AND DECREASE VELOCITY.

CHARLES R. MARSH
105073
02/28/2025

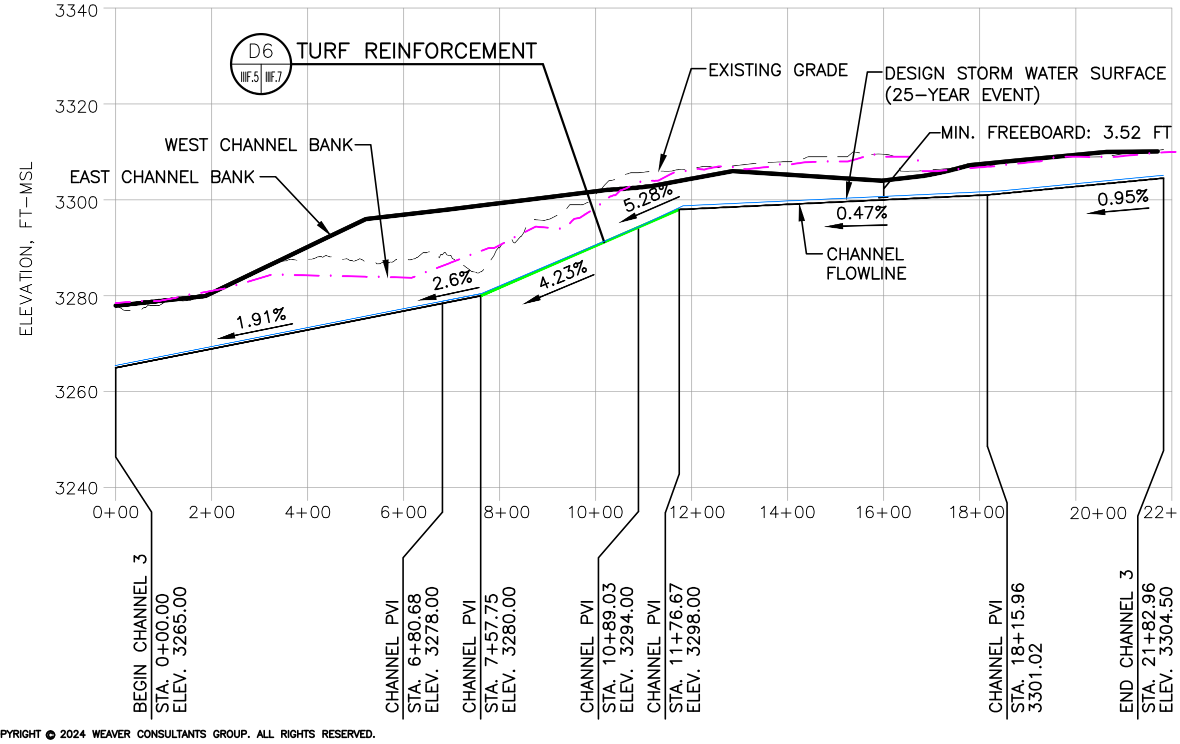
25–YEAR CHANNEL 3 INFORMATION

CHANNEL STATION		BOTTOM WIDTH (FT)	PEAK INFLOW (CFS)	SLOPE (%)	FLOW DEPTH (FT.)	VELOCITY (FT/S)
FROM	TO					
0+00	6+80.68	25	50.79	1.91	0.48	4.02
6+80.68	7+57.75	25	50.79	2.60	0.44	4.43
7+57.75	10+89.03	25	50.79	4.23	0.38	5.16
10+89.03	11+76.67	25	50.79	5.28	0.35	5.52
11+76.67	18+15.96	25	50.79	0.47	0.72	2.59
18+15.96	21+82.96	25	50.79	0.95	0.59	3.24

NOTE: NORMAL DEPTH CALCULATION DOES NOT ACCOUNT FOR BACK WATER WHICH WILL INCREASE FLOW DEPTH (SEE PROFILE) AND DECREASE VELOCITY.



CHANNEL 2 (2 / IIIF.4 IIIF.5)



CHANNEL 3 (3 / IIIF.4 IIIF.5)

0 200 400
SCALE IN FEET (HORIZONTAL)
0 20 40
SCALE IN FEET (VERTICAL)

NOTES:

1. REFER TO DRAWING IIIF.4 FOR PROFILE LOCATIONS.
2. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
3. HYDRAULIC CALCULATIONS INCLUDED IN APPENDIX IIIF–B.
4. GABIONS SHALL BE USED FOR VELOCITIES OF 13 FT/SEC OR HIGHER.
5. CULVERT CALCULATIONS INCLUDED IN APPENDIX IIIF–B.

25–YEAR CHANNEL 2 INFORMATION

CHANNEL STATION		BOTTOM WIDTH (FT)	PEAK INFLOW (CFS)	SLOPE (%)	FLOW DEPTH (FT.)	VELOCITY (FT/S)
FROM	TO					
0+00	3+16.13	25	499.54	2.50	1.68	9.88
3+16.13	37+27.12	25	499.54	0.51	2.63	5.76

NOTE: NORMAL DEPTH CALCULATION DOES NOT ACCOUNT FOR BACK WATER WHICH WILL INCREASE FLOW DEPTH (SEE PROFILE) AND DECREASE VELOCITY.

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DATE: 07/2024
FILE: 0120–809–11
CAD: IIIF.5_6–PERIMETER CHANNEL PROFILES.DWG

DRAWN BY: SRF
DESIGN BY: CMW
REVIEWED BY: CRM

Weaver Consultants Group
TBPE REGISTRATION NO. F–3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT PERIMETER CHANNEL PROFILES

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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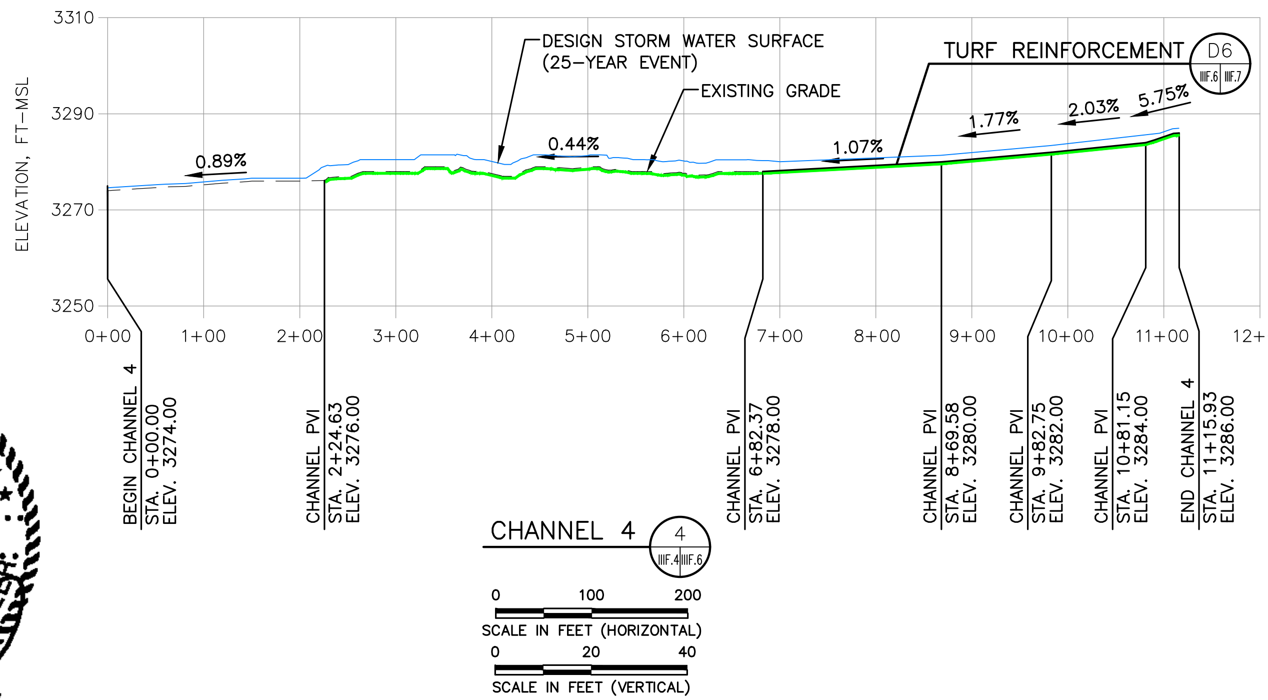
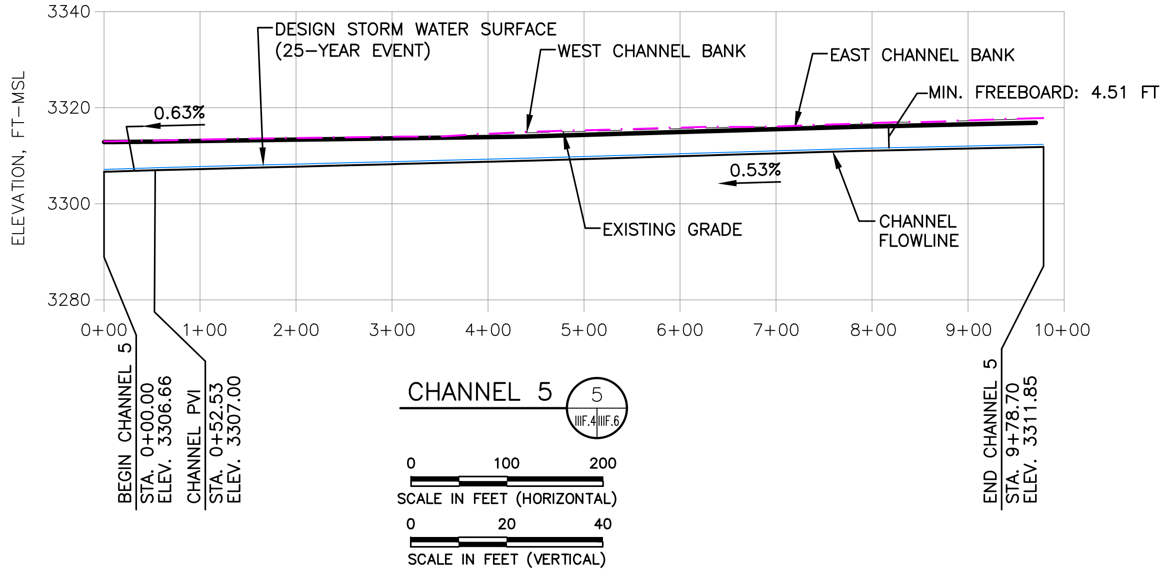
DRAWING IIIF.5

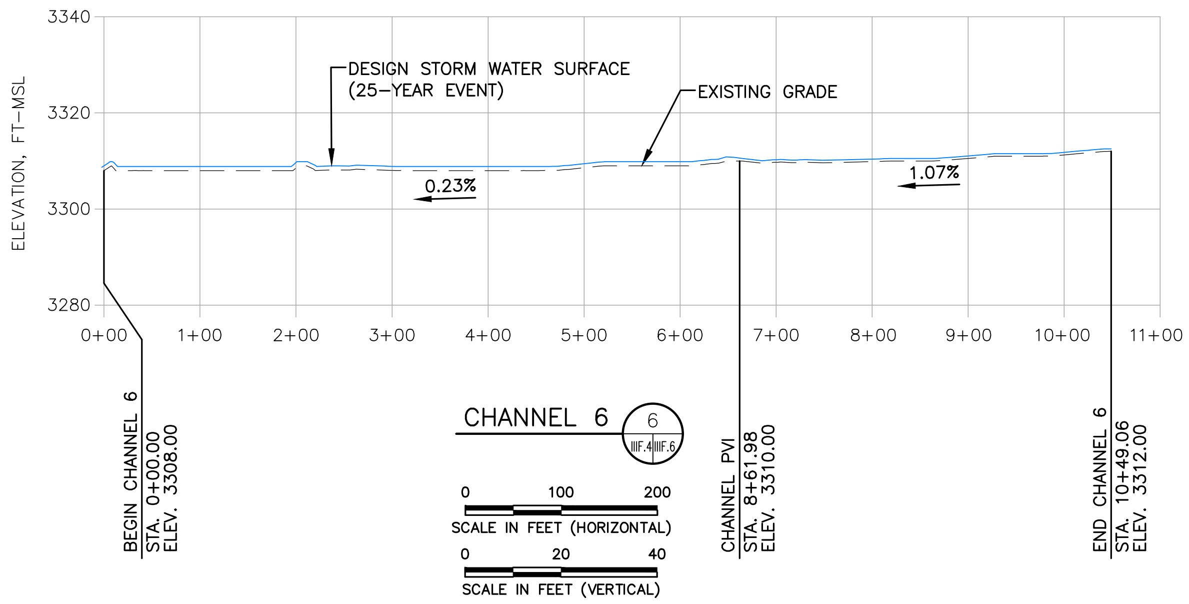


CHANNEL 4

CHARLES R. MARSH
105073
02/28/2025



CHANNEL 5



CHANNEL 6

25–YEAR CHANNEL 4 INFORMATION

CHANNEL STATION		BOTTOM WIDTH (FT)	PEAK INFLOW (CFS)	SLOPE (%)	FLOW DEPTH (FT.)	VELOCITY (FT/S)
FROM	TO					
0+00	2+24.63	244	492.81	0.89	0.60	3.27
2+24.63	6+82.37	31	492.81	0.44	2.45	5.25
6+82.37	8+69.58	31	492.81	1.07	1.90	7.07
8+69.58	9+82.75	42	492.81	1.77	1.38	7.54
9+82.75	10+81.15	24	492.81	2.03	1.65	8.03
10+81.15	11+15.93	40	492.81	5.75	0.98	10.59

NOTE: NORMAL DEPTH CALCULATION DOES NOT ACCOUNT FOR BACK WATER WHICH WILL INCREASE FLOW DEPTH (SEE PROFILE) AND DECREASE VELOCITY.

NOTES:

1. REFER TO DRAWING IIIF.4 FOR PROFILE LOCATIONS.
2. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
3. HYDRAULIC CALCULATIONS INCLUDED IN APPENDIX IIIF–B.
4. GABIONS SHALL BE USED FOR VELOCITIES OF 13 FT/SEC OR HIGHER.
5. CULVERT CALCULATIONS INCLUDED IN APPENDIX IIIF–B.

25–YEAR CHANNEL 5 INFORMATION

CHANNEL STATION		BOTTOM WIDTH (FT)	PEAK INFLOW (CFS)	SLOPE (%)	FLOW DEPTH (FT.)	VELOCITY (FT/S)
FROM	TO					
0+00	0+52.53	10	12.62	0.63	0.49	2.24
0+52.53	9+78.70	10	12.62	0.53	0.52	2.12

NOTE: NORMAL DEPTH CALCULATION DOES NOT ACCOUNT FOR BACK WATER WHICH WILL INCREASE FLOW DEPTH (SEE PROFILE) AND DECREASE VELOCITY.

25–YEAR CHANNEL 6 INFORMATION

CHANNEL STATION		BOTTOM WIDTH (FT)	PEAK INFLOW (CFS)	SLOPE (%)	FLOW DEPTH (FT.)	VELOCITY (FT/S)
FROM	TO					
0+00	8+61.98	248	453.17	0.23	0.84	2.01
8+61.98	10+49.06	247	453.17	1.07	0.53	3.24

NOTE: NORMAL DEPTH CALCULATION DOES NOT ACCOUNT FOR BACK WATER WHICH WILL INCREASE FLOW DEPTH (SEE PROFILE) AND DECREASE VELOCITY.

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DATE: 08/2024
FILE: 0120–809–11
CAD: IIIF.5_6–PERIMETER CHANNEL PROFILES.DWG

DRAWN BY: SRF
DESIGN BY: CMW
REVIEWED BY: CRM

Weaver Consultants Group
TBPE REGISTRATION NO. F–3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT
PERIMETER CHANNEL PROFILES

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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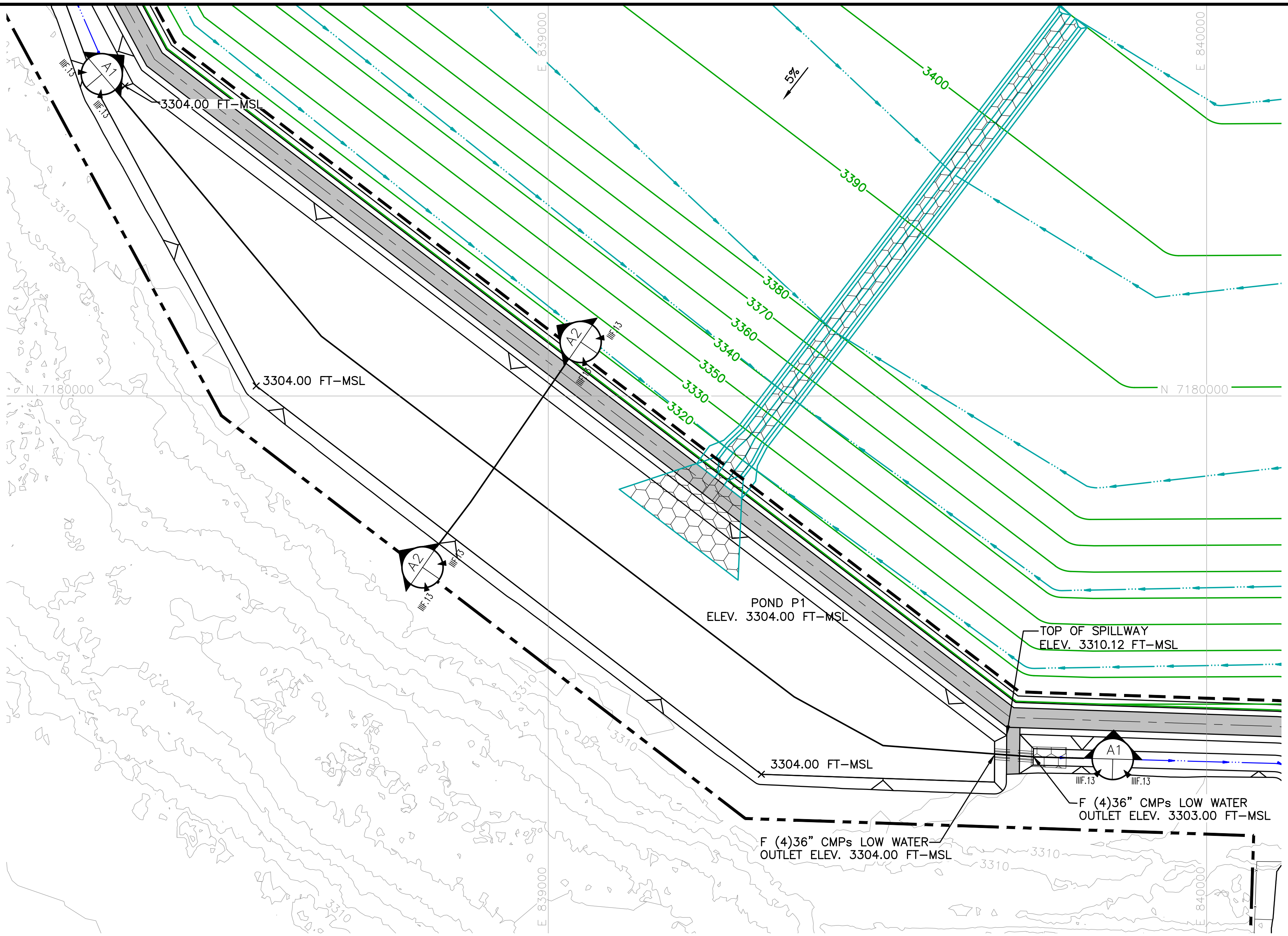
DRAWING IIIF.6

O:\0120\809\EXPANSION 2023\PART III\IIIF\CLEAN 02–2025\IIIF.5_6–PERIMETER CHANNEL PROFILES.dwg, jwilson, 1:2



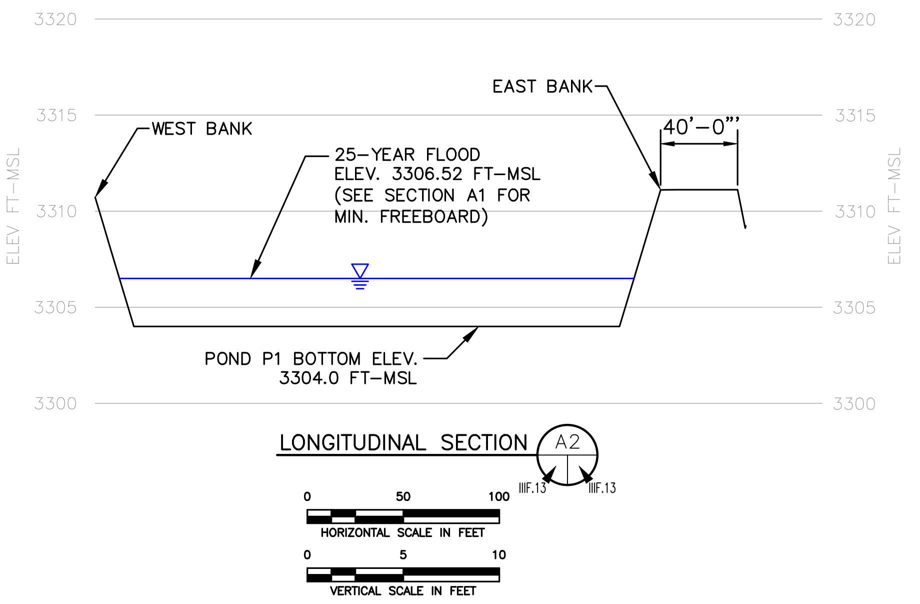
STATE OF TEXAS
CHARLES R. MARSH
105073
LICENSED PROFESSIONAL ENGINEER
02/28/2025

LEGEND

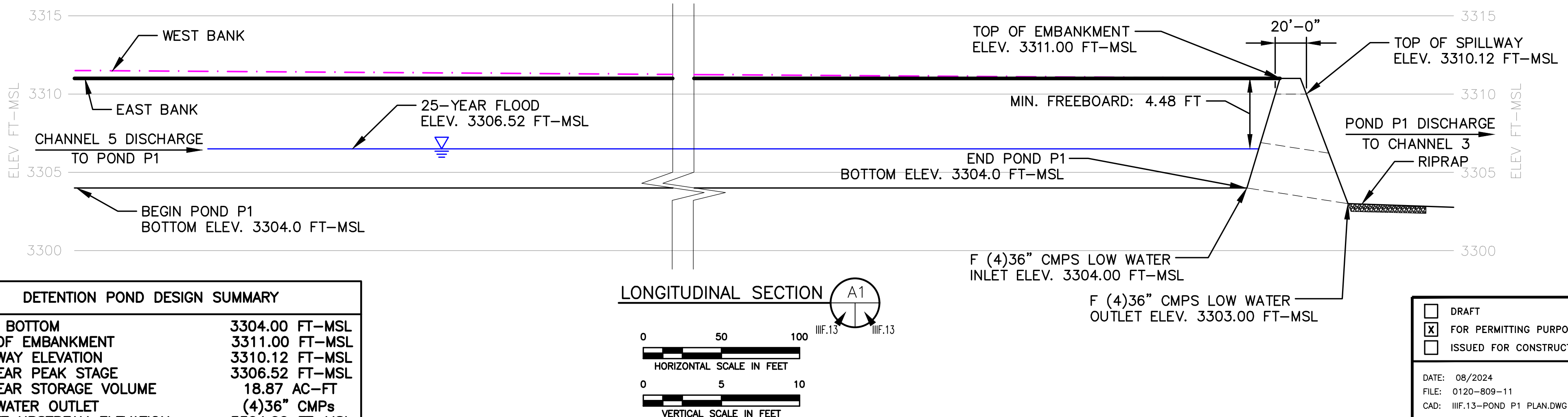
▬ ─ ▬	PROPOSED PERMIT BOUNDARY
▬ ▬ ▬	PROPOSED LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
3400	EXISTING CONTOUR
3400	FINAL COVER CONTOUR
─·─	DRAINAGE SWALE
▨	DRAINAGE LETDOWN
─··─	CHANNEL CENTERLINE

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.



LONGITUDINAL SECTION



LONGITUDINAL SECTION

DETENTION POND DESIGN SUMMARY

POND BOTTOM	3304.00 FT−MSL
TOP OF EMBANKMENT	3311.00 FT−MSL
SPILLWAY ELEVATION	3310.12 FT−MSL
25−YEAR PEAK STAGE	3306.52 FT−MSL
25−YEAR STORAGE VOLUME	18.87 AC−FT
LOW WATER OUTLET	(4)36" CMPs
OUTLET UPSTREAM ELEVATION	3304.00 FT−MSL
OUTLET DOWNSTREAM ELEVATION	3303.00 FT−MSL

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DATE: 08/2024
FILE: 0120−809−11
CAD: IIIF.13−POND P1 PLAN.DWG

DRAWN BY: SRF
DESIGN BY: CMW
REVIEWED BY: CRM

Weaver Consultants Group
TBPE REGISTRATION NO. F−3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT
POND P1 PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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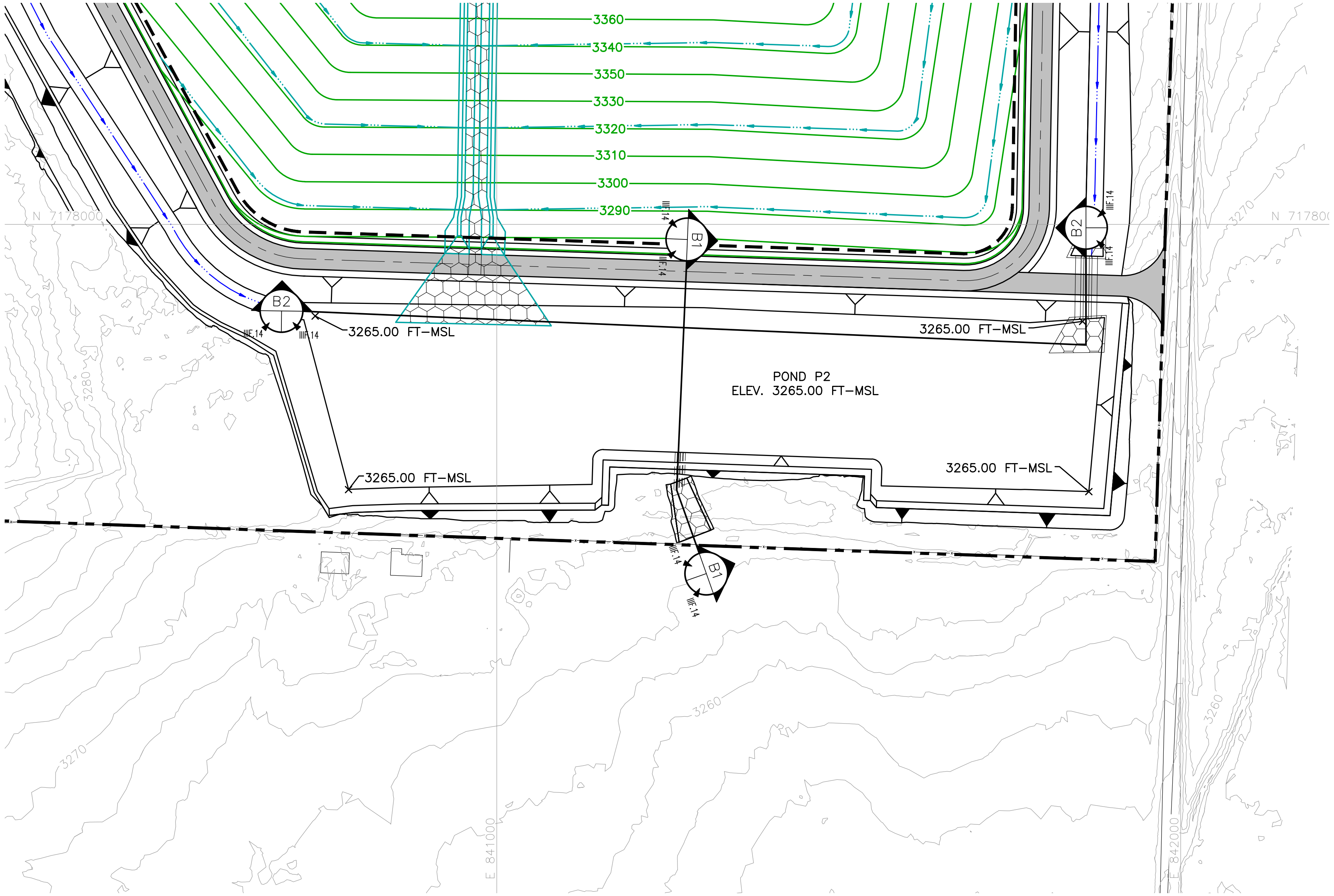
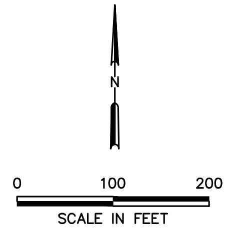
DRAWING IIIF.13

O:\0120\809\EXPANSION 2023\PART III\IIIF\CLEAN 02−2025\IIIF.13−POND P1 PLAN.dwg, jwilson, 1:2



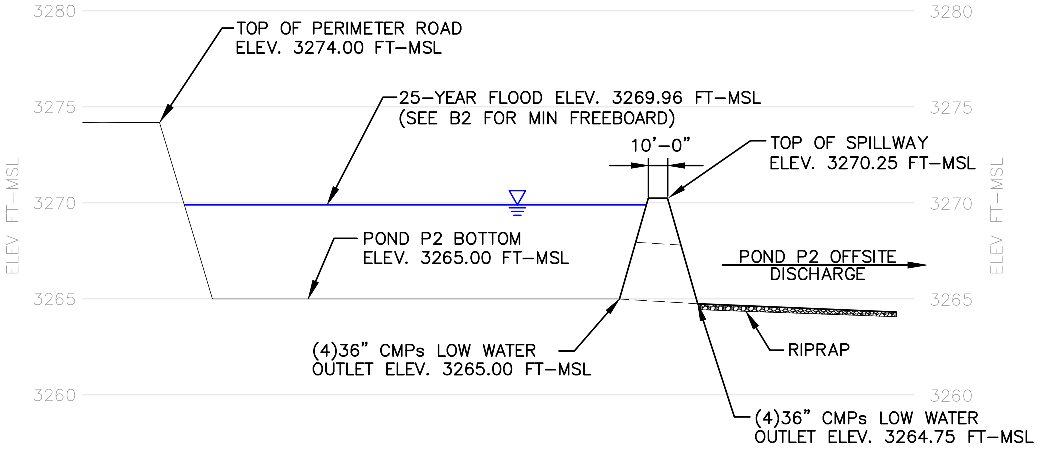


LEGEND

▬ · ▬	PROPOSED PERMIT BOUNDARY
▬ ▬ ▬	PROPOSED LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
3400	EXISTING CONTOUR
3380	FINAL COVER CONTOUR
─ ─	DRAINAGE SWALE
▨	DRAINAGE LETDOWN
→	CHANNEL CENTERLINE

NOTES:

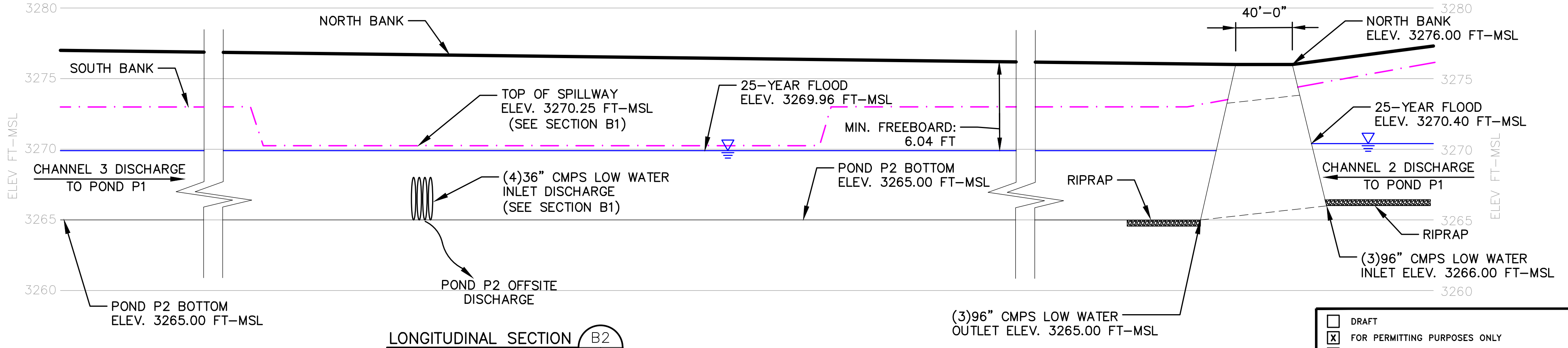
1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.



LONGITUDINAL SECTION B1 IIIF.14 IIIF.14

0 50 100
HORIZONTAL SCALE IN FEET
0 5 10
VERTICAL SCALE IN FEET

CHARLES R. MARSH
105073
02/28/2025



LONGITUDINAL SECTION B2 IIIF.14 IIIF.14

0 50 100
HORIZONTAL SCALE IN FEET
0 5 10
VERTICAL SCALE IN FEET

DETENTION POND DESIGN SUMMARY

POND BOTTOM	3265.00 FT–MSL
TOP OF EMBANKMENT	3274.00 FT–MSL
SPILLWAY ELEVATION	3270.25 FT–MSL
25–YEAR PEAK STAGE	3269.96 FT–MSL
25–YEAR STORAGE VOLUME	33.05 AC–FT
LOW WATER OUTLET	(4)36" CMPs
OUTLET UPSTREAM ELEVATION	3265.00 FT–MSL
OUTLET DOWNSTREAM ELEVATION	3264.75 FT–MSL

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DATE: 08/2024
FILE: 0120–809–11
CAD: IIIF.14–POND P2 PLAN.DWG

DRAWN BY: SRF
DESIGN BY: CMW
REVIEWED BY: CRM

Weaver Consultants Group
TBPE REGISTRATION NO. F–3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT POND P2 PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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DRAWING IIIF.14

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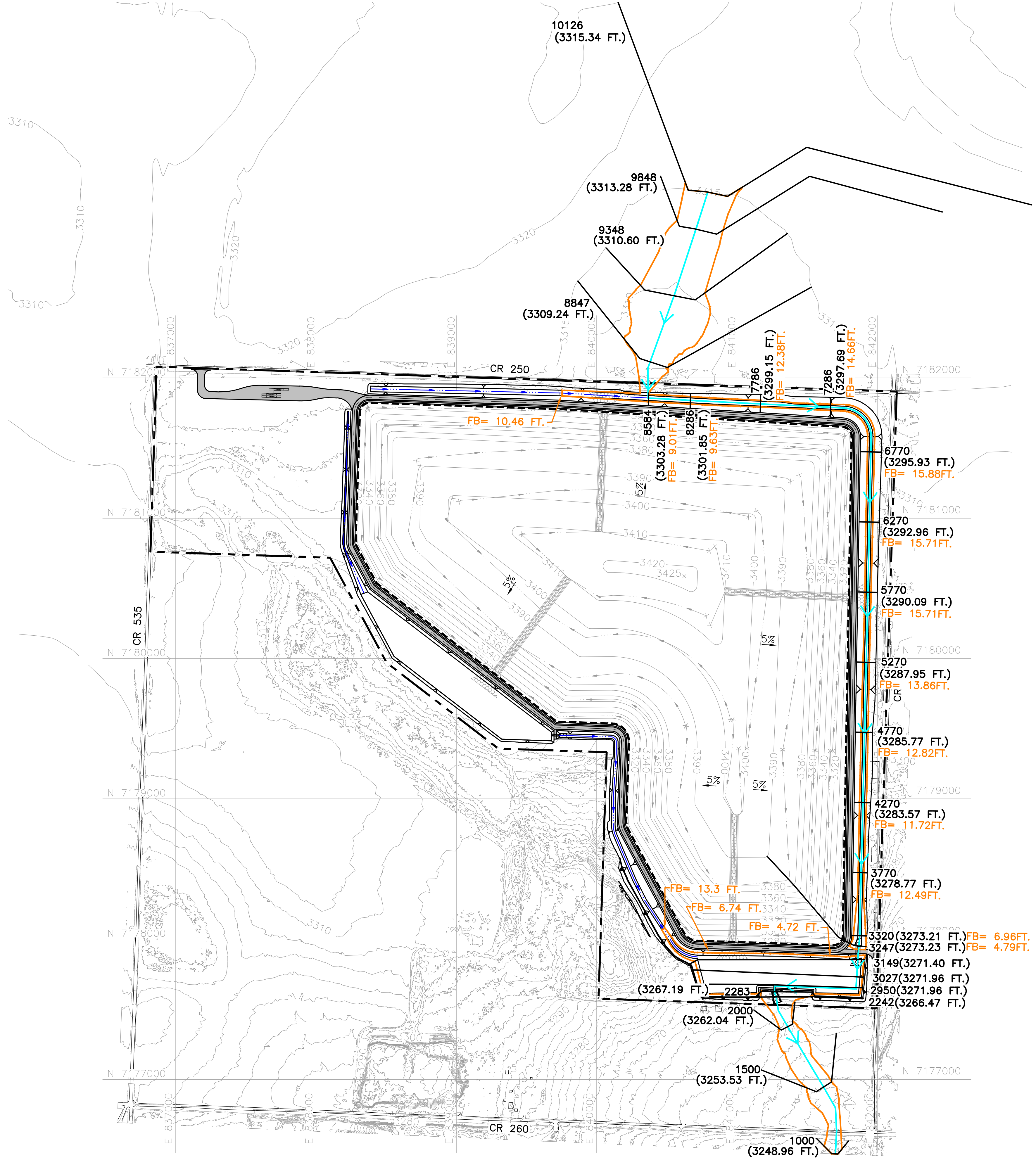

N

0 400 800
SCALE IN FEET

LEGEND

- PROPOSED PERMIT BOUNDARY
- PROPOSED LIMIT OF WASTE
- N 7180000 STATE PLANE COORDINATE SYSTEM
- 3300 EXISTING CONTOUR
- 3400 FINAL COVER CONTOUR
- DRAINAGE SWALE
- DRAINAGE LETDOWN
- CHANNEL CENTERLINE
- 5770 (3290.09 FT.) FB= 15.71FT. HEC–RAS CROSS SECTION, 100–YEAR FLOODPLAIN ELEVATION, AND DESIGNED FREEBOARD
- PROPOSED UNNAMED RICH LAKE TRIBUTARY FLOWLINE
- POST–PROJECT 100–YEAR FLOODPLAIN

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM USGS CONTOUR DATA AND UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022 AND BASED ON NAVD 88 VERTICAL DATUM. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.

CHARLES R. MARSH
105073

02/28/2025

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DATE: 02/2025
FILE: 0120–809–11
CAD: IIIF.15 FREEBOARD PLAN.DWG

DRAWN BY: RAA
DESIGN BY: VG
REVIEWED BY: CRM

Weaver Consultants Group
TBPE REGISTRATION NO. F–3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT FREEBOARD SUMMARY PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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DRAWING IIIF.15

O:\0120\809\EXPANSION 2023\PART III\IIIF\CLEAN 02–2025\IIIF.15 FREEBOARD PLAN.dwg, jwilson, 1:2

APPENDIX IIIF-B

PERIMETER CHANNEL, DETENTION POND, AND CULVERT DESIGN

Includes pages IIIF-B-1 through IIIF-B-17

CHARLES R. MARSH
105073

02/28/2025

Prep By: CMW
Date: 2/28/2025

Chkd By: JPI / CRM
Date: 2/28/2025

CITY OF MEADOW LANDFILL
0120-809-11-05
PERIMETER CHANNEL HYDRAULIC ANALYSIS

Channel[2]	Station[2]		Flow Rate[3]	Bottom	Bottom	Left Side	Right Side	Manning's	Normal	Flow Vel.	Froude No.	Vel. Head	Energy	Flow Area[1]	Top width of
	From	To	(cfs)	Slope (ft/ft)	Width (ft)	Slope (ft/ft)	Slope (ft/ft)	n-Value	Depth (ft)	(fps)		(ft)	Head (ft)	(sq.ft.)	Flow[1] (ft)
CH1A	0+00.00	18+57.79	386.84	0.0061	40	3	3	0.03	1.69	5.08	0.726	0.40	2.09	76.22	50.15
CH1B	0+00.00	11+68.17	363.60	0.0050	35	3	3	0.03	1.86	4.82	0.664	0.36	2.22	75.47	46.16
CH1C	0+00.00	5+16.76	352.93	0.0051	25	3	3	0.03	2.17	5.16	0.679	0.41	2.58	28.33	38.01
CH2	0+00.00	3+16.13	499.54	0.0250	25	3	3	0.03	1.68	9.88	1.452	1.52	3.20	50.54	35.09
	3+16.13	37+27.12	499.54	0.0051	25	3	3	0.03	2.63	5.76	0.697	0.52	3.15	86.67	40.81
CH3	0+00.00	6+80.68	50.79	0.0191	25	3	3	0.03	0.48	4.02	1.054	0.25	0.73	12.62	27.86
	6+80.68	7+57.75	50.79	0.0260	25	3	3	0.03	0.44	4.43	1.213	0.31	0.74	11.46	27.61
	7+57.75	10+89.03	50.79	0.0423	25	3	3	0.03	0.38	5.16	1.512	0.41	0.79	9.85	27.26
	10+89.03	11+76.67	50.79	0.0528	25	3	3	0.03	0.35	5.52	1.672	0.47	0.83	9.20	27.12
	11+76.67	18+15.96	50.79	0.0047	25	3	3	0.03	0.72	2.59	0.558	0.10	0.83	19.63	29.34
	18+15.96	21+82.96	50.79	0.0095	25	3	3	0.03	0.59	3.24	0.769	0.16	0.75	15.70	28.52
CH4	0+00.00	2+24.63	492.81	0.0089	244	7	15	0.03	0.60	3.27	0.754	0.17	0.77	150.64	257.22
	2+24.63	6+82.37	492.81	0.0044	31	3	3	0.03	2.45	5.25	0.645	0.43	2.88	93.90	45.69
	6+82.37	8+69.58	492.81	0.0107	31	3	3	0.03	1.90	7.07	0.972	0.78	2.68	69.72	42.40
	8+69.58	9+82.75	492.81	0.0177	42	4	4	0.03	1.38	7.54	1.198	0.88	2.26	65.34	53.00
	9+82.75	10+81.15	492.81	0.0203	24	7	9	0.03	1.65	8.03	1.282	1.00	2.65	61.40	50.41
	10+81.15	11+15.93	492.81	0.0575	40	7	8.5	0.03	0.98	10.59	2.033	1.74	2.72	46.53	55.16
CH5	0+00.00	0+52.53	12.62	0.0063	10	3	3	0.03	0.49	2.24	0.600	0.08	0.57	5.63	12.94
	0+52.53	9+78.70	12.62	0.0053	10	3	3	0.03	0.52	2.12	0.554	0.07	0.59	5.96	13.09
CH6	0+00.00	8+61.98	453.17	0.0023	248	28	24	0.03	0.84	2.01	0.402	0.06	0.90	225.97	291.56
	8+61.98	10+49.06	453.17	0.0107	247	32	28	0.03	0.53	3.24	0.807	0.16	0.69	139.81	278.90

Note:

1) Calculations were performed using the HYDROCALC HYDRAULIC FOR WINDOWS Computer Program developed by Dodson and Associates (Version 2.0.1, 1996-2010).
2) Refer to Drawing IIIF.4 for channel locations.
3) Flow rates shown are the peak flow rates obtained from the HEC-HMS model. See HEC-HMS Output-Post Project Conditions in Appendix IIIF-A.

DETENTION POND OUTLET STRUCTURE AND CULVERT EROSION PROTECTION CALCULATIONS

Required: Determine the minimum length and median diameter of riprap required at the detention pond outlet structures and creek culverts to control erosion in the detention pond outlet channels.

Reference:

1. Haan, Barfield, and Hayes, *Design Hydrology and Sedimentology for Small Catchments*, 1994.
2. Dodson's and Associates, Inc., *ProHec-1 Plus Program Documentation,* 1995.
3. Freeman, Gary E., J. Craig Fischenich, Gabion for Streambank Erosion Control, 2000. EMRRP Technical Notes Collection (ERDC TN-EMRRP-SR-22), U.S. Army Engineer Research and Development Center, Vicksburg, MS.

Solution: The riprap will be designed for the 25-year flow rates at the detention pond outlet structures and culverts. The flow at the outlet structures and culverts can be divided into two categories:

1. Flow over the Spillway/Road

Erosion protection calculations for the drainage structures will be based on flow through low water outlets/culverts only.

Flow Structure Spillway Topslope	25-Year Flow Rate (cfs)	25-Year Velocity (ft/s)	25-Year Flow Depth (ft)	25-Year Foude Number	25-Year Velocity Head (ft)	25-Year Energy Head (ft)	25-Year Flow Area (sq. ft.)	25-Year Top Width (ft)
P1	--	--	--	--	--	--	--	--
P2	--	--	--	--	--	--	--	--

Flow Structure Spillway Sideslope	25-Year Flow Rate (cfs)	25-Year Velocity (ft/s)	25-Year Flow Depth (ft)	25-Year Foude Number	25-Year Velocity Head (ft)	25-Year Energy Head (ft)	25-Year Flow Area (sq. ft.)	25-Year Top Width (ft)
P1	--	--	--	--	--	--	--	--
P2	--	--	--	--	--	--	--	--

2. Flow through the Low Water Outlet

The flow rate through the low water outlet (LWO) is summarized below.

	Pond	LWO Invert Elev.		LWO	25-Year	25-Year Outlet
Flow Structure	Bottom Elev (ft-msl)	Upstream (ft-msl)	Downstream (ft-msl)	Diameter (in)	Flow Rate[2] (cfs)	Velocity[1] (ft/s)
P1	3304.00	3304.00	3303.00	36	11.74	5.53
P2	3265.00	3265.00	3264.75	36	53.67	7.59
C3	3265.00	3266.00	3265.00	96	166.50	9.13

[1] Velocities through the low water outlets were calculated using the HYDROCALC HYDRAULICS FOR WINDOWS program developed by Dodson and Associates (Version 1.2a, 1996).

[2] The flowrates for all low water outlets are the peak discharges for the respective areas as calculated by HEC-HMS since the spillway crest is not overtopped in the 25-year event. The total 25-year flowrate discharging P1 is 46.94 cfs / 4 pipes = 11.74 cfs per pipe, P2 is 214.68 cfs / 4 pipes = 53.67 cfs per pipe, and C3 is 499.5 cfs / 3 pipes = 166.50 cfs per pipe.

The flowrate through the low water outlet is used to design the riprap apron. The nomograph used for design of the length of the riprap and the median diameter are shown on page IIIF-B-12.

The minimum riprap length and diameter for each outlet is summarized below. The length of the riprap is increased by 20 percent to provide for a conservative design.

Pond	Riprap Design Flowrate (cfs)	Pipe Diameter (in)	Riprap Length (ft)	Adjusted Length L x 1.2 (ft)	Median Rock Diameter (ft)
P1	11.7	36	10	12	0.25
P2	53.7	36	15	18	0.25
C3	166.5	96	30	36	0.50

Apron width required for the ponds (e.g., width of erosion protection in outlet channel) are:
W_{req}=LWO diameter + 0.4*(RipRap Length)

Pond	W_{req} (ft)	$W_{provided}$ (ft)
P1	7.0	17.0
P2	9.0	19.0
C3	15.0	30.0

The median diameter of riprap is intended to determine the minimum diameter of the riprap that will be used. As an alternative, 2-foot thick gabions with a d_{50} of 6-inches can be used.

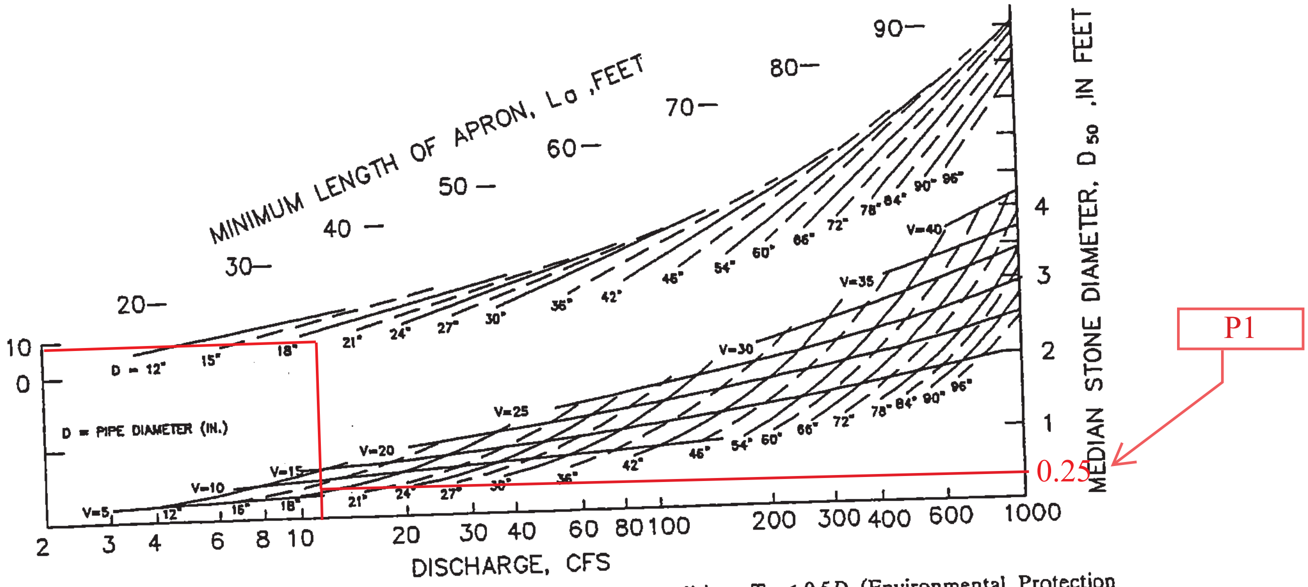


Figure 5.24 Design of outlet protection—minimum tailwater condition, $T_w < 0.5D$ (Environmental Protection Agency, 1976).

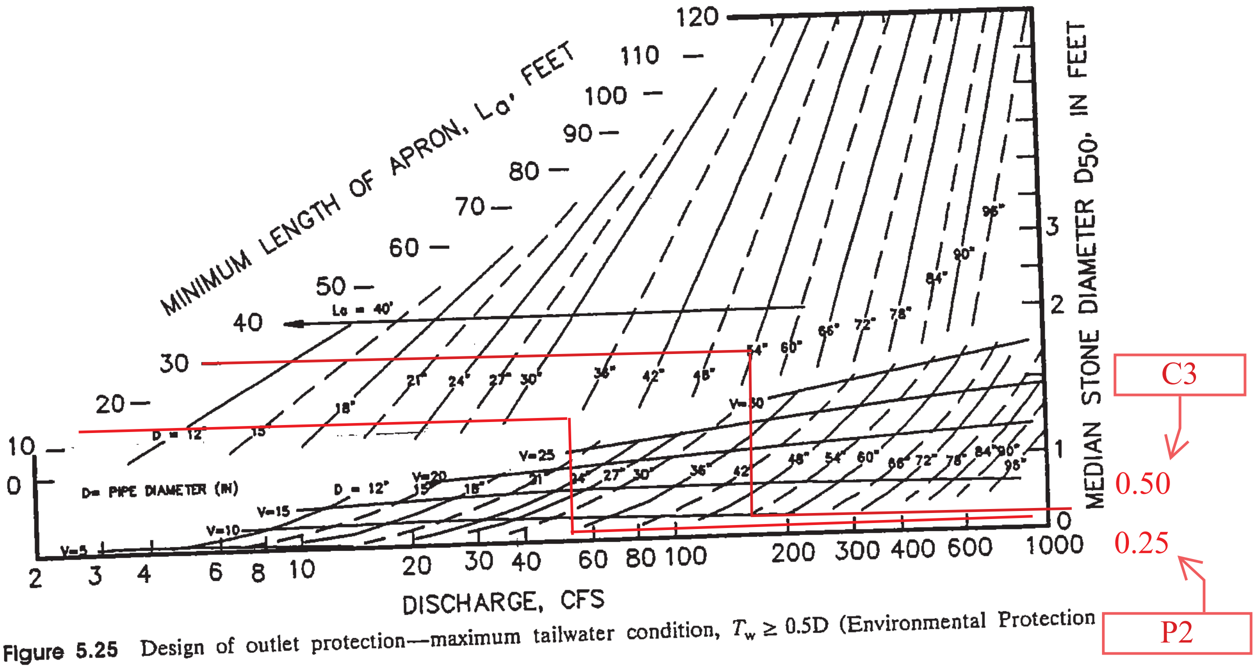
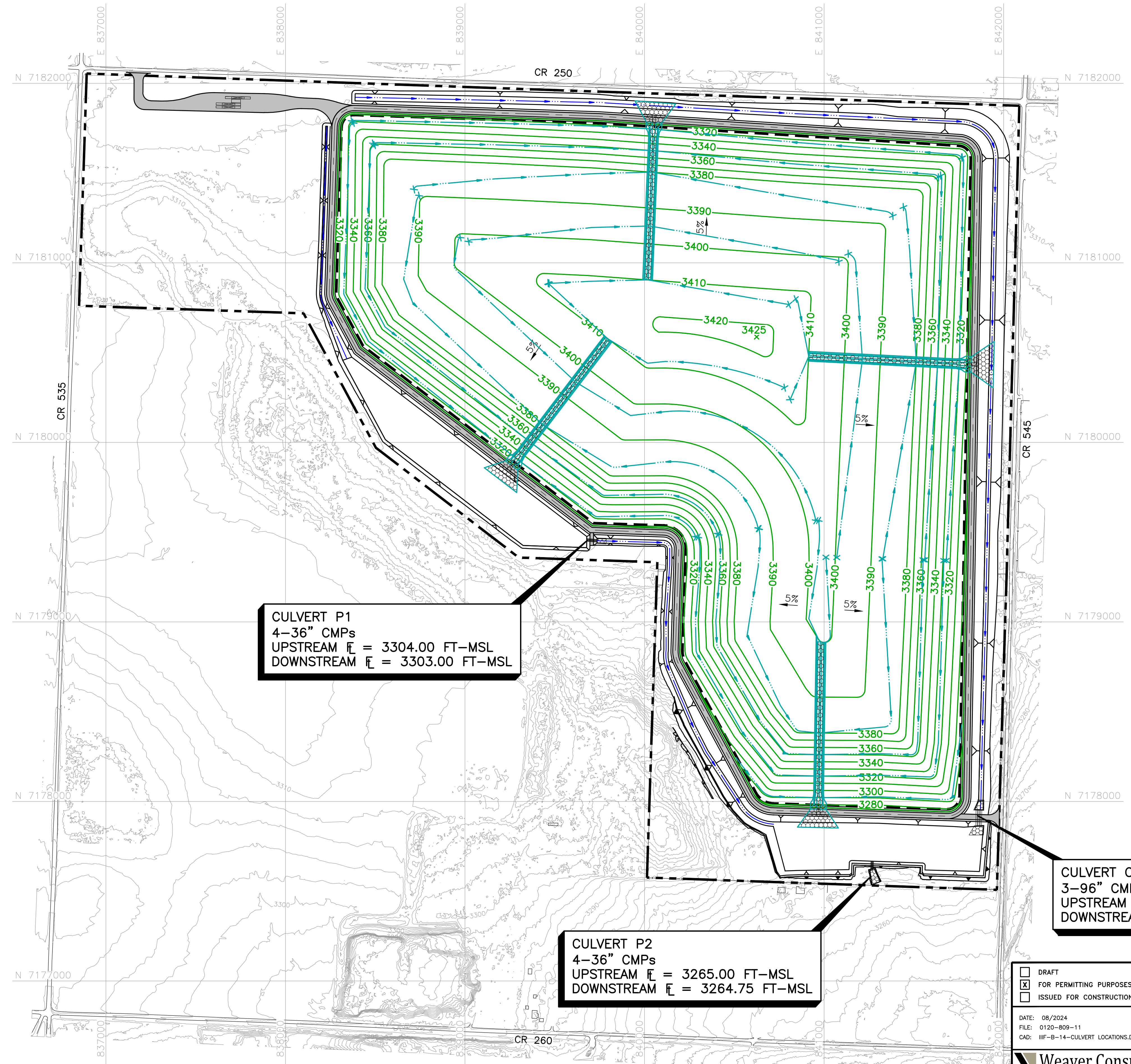


Figure 5.25 Design of outlet protection—maximum tailwater condition, $T_w \geq 0.5D$ (Environmental Protection Agency, 1976).

into the riser 3 ft below its top, what discharge will pass through the four holes with the water level at 1, 2, 4, and 8 ft above the riser? (c) What is the total discharge through the pipe? (d) How might the orifices be sized to provide better stormwater control? (e) Explain whether you would expect two rows (each consisting of four holes) of 8-in.-diameter holes to provide better results? Assume that one row is 2 ft below the riser invert and the other row is 4 ft below the riser invert.

(5.6) A gravel roadway is constructed in a low-lying area such that the roadway is frequently overtopped as a result of severe storms. The roadway is 40 ft wide, and its elevation is 36 ft. (a) If the water level upstream of the roadway is 2 ft above the crest of the roadway, what is the discharge across the roadway? (b) If the roadway is paved, what upstream depth would be required to carry the same flow? (c) Would paving reduce flooding problems?



CULVERT P1
4–36" CMPs
UPSTREAM ℄ = 3304.00 FT–MSL
DOWNSTREAM ℄ = 3303.00 FT–MSL

CULVERT P2
4–36" CMPs
UPSTREAM ℄ = 3265.00 FT–MSL
DOWNSTREAM ℄ = 3264.75 FT–MSL

CULVERT C3
3–96" CMPs
UPSTREAM ℄ = 3266.00 FT–MSL
DOWNSTREAM ℄ = 3265.00 FT–MSL

LEGEND

PROPOSED PERMIT BOUNDARY
PROPOSED LIMIT OF WASTE
N 7180000 STATE PLANE COORDINATE SYSTEM
3400 EXISTING CONTOUR
3400 FINAL COVER CONTOUR
DRAINAGE SWALE
DRAINAGE LETDOWN
CHANNEL CENTERLINE

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.

CHARLES R. MARSH
105073
02/28/2025

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120–809–11
CAD: IIIF–B–14–CULVERT LOCATIONS.DWG

DRAWN BY: SRF
DESIGN BY: CMW
REVIEWED BY: CRM

Weaver Consultants Group
TBPE REGISTRATION NO. F–3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT
CULVERT LOCATIONS

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

DRAWING IIIF–B–14

0:\0120\809\EXPANSION 2023\PART III\IIIF\IIIF–B\CLEAN 02–2025\IIIF–B–14–CULVERT LOCATIONS.dwg, jwilson, 1:2

Prep by: CMW
Date: 2/28/2025

Chkd By: JPI/CRM
Date: 2/28/2025

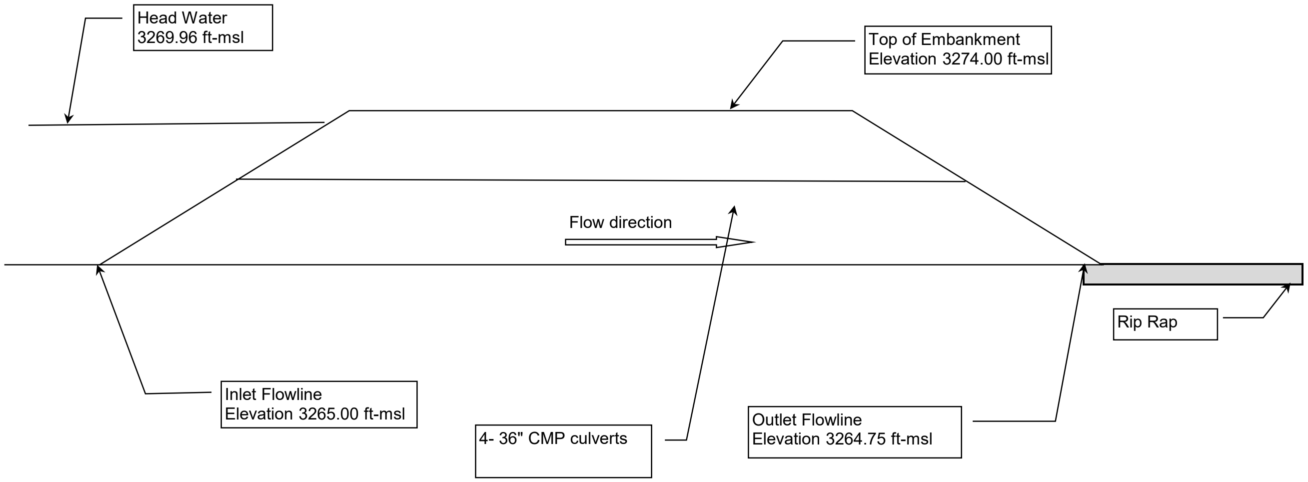
CITY OF MEADOW LANDFILL
0120-809-11-05
CULVERT DESIGN

For proposed 36" CMP culverts at downstream end of P2

Total Flow=	214.68	cfs
No. of Culverts=	4	
Culvert Span=	--	inches
Culvert Rise=	--	inches
Culvert Diameter=	36	inches

Culvert ID	Culvert Span	Culvert Span (ft)	FHWA Chart Number	FHWA Scale Number	Culvert Diameter (ft)	Manning's Coefficient	Entrance Loss Coefficient	Culvert Length (ft)	Downstream Invert Elevation (ft msl)	Upstream Invert Elevation (ft msl)	Flow Rate (cfs)	Tailwater Depth[2] (ft)	Headwater Inlet Control (ft)	Headwater Outlet Control (ft)	Normal Depth (ft)	Critical Depth (ft)	Depth at Outlet (ft)	Outlet Velocity (fps)
P2	--	--	2	3	3	0.024	0.8	41.50	3264.75	3265.00	53.67	1.07	4.93	4.06	3.00	2.38	3.00	7.59

1. Calculations were performed using the HYDROCALC Hydraulics for Windows program developed by Dodson and Associates (Version 2.0, 1996-2010).
2. Tailwater depth is assumed to be the 25-year, 24-hour normal depth in the channel downstream of the culvert.



Prep by: CMW
Date: 2/28/2025

CITY OF MEADOW LANDFILL
0120-809-11-05
CULVERT DESIGN

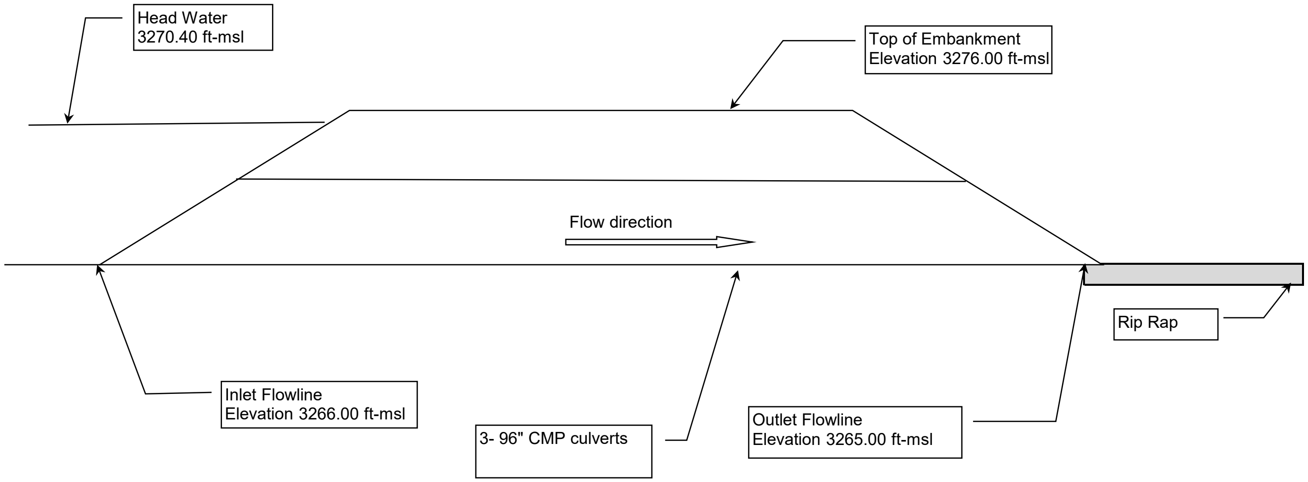
Chkd By: JPI/CRM
Date: 2/28/2025

For proposed 96" CMP culverts at downstream end of Channel 2.

Total Flow= 499.54 cfs
No. of Culverts= 3
Culvert Span= -- inches
Culvert Rise= -- inches
Culvert Diameter= 96 inches

Culvert ID	Culvert Span	Culvert Span (ft)	FHWA Chart Number	FHWA Scale Number	Culvert Diameter (ft)	Manning's Coefficient	Entrance Loss Coefficient	Culvert Length (ft)	Downstream Invert Elevation (ft msl)	Upstream Invert Elevation (ft msl)	Flow Rate (cfs)	Tailwater Depth^2 (ft)	Headwater Inlet Control (ft)	Headwater Outlet Control (ft)	Normal Depth (ft)	Critical Depth (ft)	Depth at Outlet (ft)	Outlet Velocity (fps)
C3	--	--	3	2	8	0.024	0.7	92.30	3265.00	3266.00	166.51	4.00	4.40	0.00	3.13	3.22	3.13	9.13

1. Calculations were performed using the HYDROCALC Hydraulics for Windows program developed by Dodson and Associates (Version 2.0, 1996-2010).
2. Tailwater depth is assumed to be the 25-year, 24-hour normal depth in the channel downstream of the culvert.



APPENDIX IIIF-D

EROSION LAYER EVALUATION

Includes pages IIIF-D-1 through IIIF-D-33

STATE OF TEXAS
CHARLES R. MARSH
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LICENSED
PROFESSIONAL ENGINEER

02/28/2025

CITY OF MEADOW LANDFILL
0120-809-11-05
EROSION LAYER EVALUATION

Case	Slope		
	Slope	Length	L_s
	(%)	(ft)	
1. Typical Top Slope	5	250	0.90
2. Longest Top Slope	5	350	1.00
3. Typical Side Slope	25	120	6.50
4. Longest Side Slope	25	132	6.75

The plant cover or cropping management factor, C, represents the percentage of soil loss that would occur if the surface were partially protected by some combination of cover and management practices. C Factor for Permanent Pasture, Range, and Idle Land with No Appreciable Canopy has the following relation with percent ground cover (GC) (from Ref 3, p.11) .

% GC	C Factor
0	0.45
20	0.2
40	0.1
60	0.042
80	0.013
95	0.0030

[1] Linear Interpolation was utlized for % GC between reported values.

C Factor = 0.013 (For 80% Ground Cover)

The erosion control practice factor, P, measures the effect of control practices that reduce the erosion potential of the runoff by influencing drainage patterns, runoff concentration , and runoff velocity. Contouring for this site will be done only to establish vegetation.

P = 1.00

2 Slope Condition Soil loss calculations

	R	K	L_s	C	P	A (tons/ac/yr)
1. Typical Top Slope 5% slope 250 ft length	115	0.3	0.90	0.013	1.00	0.4
2. Longest Top Slope 5% slope 350 ft length	115	0.3	1.00	0.013	1.00	0.4
3. Typical Side Slope 25% slope 120 ft length	115	0.3	6.50	0.013	1.00	2.9
4. Longest Side Slope 25% slope 132 ft length	115	0.3	6.75	0.013	1.00	3.0

APPENDIX IIIF-F

EROSION CONTROL PLAN FOR ALL PHASES OF LANDFILL OPERATION

Includes pages IIIF-F-1 through IIIF-F-15

STATE OF TEXAS
CHARLES R. MARSH
105073
LICENSED
PROFESSIONAL ENGINEER

02/28/2025

For example, as stated in Section 4.18.3 of the current Site Operating Plan (SOP), intermediate cover areas are inspected weekly and within 72 hours of a rainfall event of 0.5 inches or more, or as soon as the areas are accessible, for proper placement, thickness, erosion, and compaction. Additionally, Section 4.23 of the SOP also requires inspections of perimeter channels and ponds to ensure they are functioning as designed (e.g., excess sediment removed, outlet structures intact, and erosion control measures intact, etc.) on a weekly basis and after a rainfall event of 0.5 inches or more, or as soon as the areas are accessible.

During the inspection of structural controls (e.g., vegetation over intermediate cover areas), if significant soil loss is identified in a given intermediate cover area, impacted areas will be replenished with additional soil. Prior to application of temporary erosion controls and seeding, the area will be graded to eliminate preferential path ways or any other uneven surface due to settlement to prevent concentrated flow over the intermediate cover areas. Soil for replenishment of cover areas will be borrowed from sedimentation ponds or any other soil source. If sediment collected from temporary sedimentation pond(s) is used for erosion layer replenishment, it will be stockpiled outside the ponds to dry out prior to being used for intermediate cover layer replenishment. Soil borrowed from other soil sources may be used as intermediate cover layer and erosion layer replenishment soil.

2.5 Construction Activities on Top Dome Surfaces and External Side Slopes with Intermediate Cover

Occasionally, top dome surfaces and external side slopes that have been stabilized through the use of swales, letdown structures, and compliance with the minimum required vegetation cover specification will be disturbed due to various construction activities such as the installation or repair of a landfill gas system, regrading of an area due to ponded water caused by uneven waste settlement, the repair of erosion rills, or damage due to an extreme storm event or natural disaster. Each of these events will be documented in the Site Operating Record. Recorded information will include the date of construction, approximate area disturbed, and the date re-seeding of the disturbed area occurred. In accordance with Title 30 TAC §330.165(g), previously stabilized surfaces will be repaired within 5 days of detection of the disturbance of these surfaces.

3.0 Erosion Control Plan for Daily Cover Areas and Intermediate Cover Areas for Non-External Side Slopes

BMPs will be employed to control erosion. BMPs will include the use of temporary rock riprap, silt fences, straw bales, check dams, interceptor swales and berms,

APPENDIX IIIF-G

EXCERPTS FROM CLOMR

STATE OF TEXAS
CHARLES R. MARSH
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LICENSED
PROFESSIONAL ENGINEER

02/28/2025

Includes pages IIIF-G-1 through IIIF-G-14

Note:
Appendix IIIF-G incorporates excerpts from the July 10, 2024 Conditional Letter of Map Revision (CLOMR) submittal to Terry County and the Federal Emergency Management Agency (FEMA), and is limited in presentation to the overall Table of Contents for the CLOMR application, Introduction and Background, Scope, and relevant figures. Appendix IIIF-G is intended to provide an overview of the CLOMR process undertaken for the permit by the applicant only.

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

VOLUME 5 OF 6

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

STATE OF TEXAS
AARON K. EVANS
11143
LICENSED
PROFESSIONAL GEOSCIENTIST

02/28/2025

Prepared by

Weaver Consultants Group, LLC
TBPE Registration No. F-3727
6420 Southwest Boulevard, Suite 206
Fort Worth, Texas 76109
817-735-9770

WCG Project No. 0120-809-11-05

This document is intended for permitting purposes only.

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOT PERMIT AMMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN
APPENDIX IIIG
GEOLOGY REPORT

Prepared for

Meadow Landfill, LLC.

August 2024

Revised February 2025

AARON K. EVANS
11143

02/28/2025

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TBPE Registration No. F-3727
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817-735-9770

WCG Project No. 0120-809-11-05

This document intended for permitting purposes only.

GEOLOGY REPORT CERTIFICATION

Site Information

Site: City of Meadow Landfill

Site Location: Terry County

MSW Permit No.: 2293C

Qualified Groundwater Scientist Statement

I, Aaron K. Evans, am a Texas-licensed professional geoscientist and a qualified groundwater scientist as defined in Title 30 TAC §330.3(120). I have prepared the Geology Report which constitutes Appendix IIIG of this permit application. In my professional opinion, the Geology Report is in compliance with the requirements specified in Title 30 TAC §§330.63(e). This report has been completed specifically for the City of Meadow Landfill. The only warranty made by me in connection with this report is that I have used that degree of care and skill ordinarily exercised under similar conditions by reputable members of my profession, practicing in the same or similar locality. No other warranty, expressed or implied, is intended.

Firm/Address: Weaver Consultants Group, LLC
6420 Southwest Blvd., Suite 206
Fort Worth, Texas 76109

AARON K. EVANS
11143

Signature:
Aaron K. Evans, P.G., Texas License No. 11143

Date: 02/28/2025

Table 2-1
Regional Stratigraphy in the Vicinity of the City of Meadow Landfill

System	Group	Formation / Unit	Lithologic Characteristics	Aquifer	Approximate Formation Depth and Thickness (in Feet)
Quaternary		Windblown Sand & Playa Deposits	Sand, silt, clay, and caliche.		Depth: Outcrops regionally Thickness: 10' in Site Area
Tertiary		Ogallala	Sand, silt, clay, gravel, and caliche with chert and sandstone.	Ogallala	Depth: Outcrops in Site area Thickness: ~110' in Site area
Cretaceous	Washita	Duck Creek	Shale, limestone, clay, and sand.	Edwards-Trinity High Plains	Depth: ~110' in Site area
	Fredericksburg	Kiamichi	Shale with limestone and sandstone.		
	Trinity	Edwards	Shale, clay, and limestone.		
		Comanche Peak	Limestone and shale.		Thickness: ~250' in Site area
		Walnut	Sandstone, shale, and limestone.		
		Antlers	Sandstone, sandy, conglomerate, siltstone, and clay.		
Triassic	Dockum	Cooper Canyon	Siltstone and mudstone with sandstone and conglomerate.	Dockum	Depth: ~360' in Site area
		Trujillo	Sandstone and conglomerate with shale.		
		Tecovas	Mudstone and Sandstone.		Thickness: 1,500' Regionally
		Santa Rosa	Sandstone and conglomerate.		

<u>Notes:</u> Modified from Deeds et al. (TWDB, 2015), and Fallin, J. A. Tony (TWDB, 1989).

Lithologic characteristics from Deeds et al. (TWDB, 2015), and Fallin, J. A. Tony (TWDB, 1989).

Approximate formation depths and thicknesses estimated from Deed et al. (TWDB, 2015), and Fallin, J.A. Tony (TWBD, 1989), and local well logs.

2.3 Geologic Processes

2.3.1 Fault and Seismic Data

Seismic impact zone and fault investigations are discussed in the location restrictions in Parts I/II, Appendix I/IIC. As discussed in these sections, no geologic processes, including active faults or seismic impact zones, are located within one mile of the site.

2.3.2 Erosional Processes

Erosional processes in the landfill area are limited to those produced by the Meadow Landfill drainage system which include rill and channel erosion and sheet flow. Erosion from natural drainage processes is minimal in the vicinity of the site. No adverse effects from natural erosional processes are anticipated and no mass wasting has been observed.

2.3.3 Wetlands Identification

Details regarding jurisdictional wetland areas are provided in the location restriction demonstrations in Appendix I/IIC.

2.4 Regional Aquifers

According to the Texas Water Development Board (TWDB), regional aquifers in the facility area consist of the Tertiary-age Ogallala Aquifer and the underlying Cretaceous-age Edwards-Trinity High Plains Aquifer which are components of the greater High Plains Aquifer System that extends across the majority of west Texas and into eastern New Mexico (Deeds et al., 2015 and Fallin, J.A. Tony, 1989).

The Ogallala and Edwards-Trinity aquifers are hydraulically connected in limited areas regionally where Edwards-Trinity sediments exhibit higher permeability at contact with the overlying Ogallala sediments. (Deeds et al., 2015). According to the TWDB, the closest extent of observed higher permeability Edwards-Trinity sediments to the site is within the adjacent Gaines and Lubbock counties where cross-flow of groundwater is observed between the Ogallala and Edwards-Trinity High Plains aquifers (Deeds et al., 2015 and Fallin, J.A. Tony, 1989). The Edwards-Trinity acts as an aquitard to the overlying saturated Ogallala Aquifer in areas where Edwards-Trinity sediments are fine-grained and exhibit low permeability. According to the TWDB and area water well logs, there are approximately 250-feet of Edwards-Trinity sediments beneath the Site and throughout most of Terry County with the uppermost approximately 180-feet characterized as low permeability clay and shale aquitard sediments and the lowermost approximately 70-feet characterized as low permeability limestone sediments (Deeds et al., 2015 and Fallin, J.A. Tony, 1989). Approximately 1,500 feet of low permeability Triassic-age Dockum Group sediments underlay the Edwards-Trinity beneath the Site (Deeds et al., 2015 and Fallin, J.A. Tony, 1989). The Dockum Group is composed predominately of fine-grained siltstone and mudstone sediments that comprises an aquiclude to the overlying Ogallala and Edward-Trinity aquifers in the Site area (Deeds et al., 2015).

2.4.1 Ogallala Aquifer

The Ogallala Aquifer is classified by the TWDB as a major Texas aquifer (Ashworth, 1995). The Ogallala is comprised of predominately interbedded sand/sandstone facies with caliche, silts, clays, and gravels (BEG, 1974) (Gustavson, 1996). According to the TWDB and area water well logs, the Ogallala Aquifer is observed to be about 500-feet thick regionally with an approximate thickness of 110-feet in the immediate Site area (Deeds et al., 2015). Ogallala groundwater is present under semi-confined water-table conditions regionally with a saturated thickness of approximately 25-feet in the Site area (Bell & Morrison, 1978). As illustrated in Figure IIIG-A-4, the regional Ogallala Aquifer groundwater flow generally follows the regional dip of the formation toward the south-southeast with a potentiometric head elevation of approximately 3,250 ft-msl locally (Deeds et al., 2015 and Fallin, J.A. Tony, 1989). The primary source of recharge to the aquifer is precipitation infiltration on outcrop and through overlying transmissive Quaternary sediments (where present).

Hydraulic properties and groundwater quality in the Ogallala Aquifer are summarized in Table 2-2. According to the TWDB, the aquifer produces substantial amounts of fresh to moderately saline water.

2.4.2 Edwards-Trinity High Plains Aquifer

TWDB classifies the Edwards-Trinity High Plains (ETHP) Aquifer as a minor Texas aquifer (Ashworth, 1995). Occurrence, sedimentary composition, and saturation of the Edwards-Trinity varies regionally. According to the TWDB, sediments of the Edwards-Trinity vary regionally (where present) and are characterized with an approximate thickness of 180-feet of low permeability clay and shale above approximately 70 feet of low permeability limestone in the Site area (Deeds et al., 2015 and Fallin, J.A. Tony, 1989). Where present regionally, groundwater in the ETHP Aquifer is present under mostly confined conditions, being overlain nearly completely by Ogallala Formation sediments. As shown in Figure IIIG-A-5, groundwater flow is generally to the east-southeast following the dip of the host formation, with an approximate potentiometric head of 3,200 ft-msl locally (Deeds et al., 2015). The primary source of recharge for the ETHP is percolation from the overlying Ogallala Aquifer.

Hydraulic properties and groundwater quality in the ETHP Aquifer is summarized in Table 2-2. The ETHP Aquifer produces small to moderate amounts of generally saline water (Bruun and Jackson, 2016).

2.4.3 Dockum Aquifer

The Dockum Aquifer is classified as a minor Texas aquifer by the TWDB, comprised of sandstone, siltstone, mudstone, and shale originally deposited in fluvial and lacustrine environments (Hopkins, 1993). Dockum groundwater is present under confined conditions regionally and is commonly delineated into Upper and Lower aquifer components in geologic literature. According to the TWDB and regional well logs, the Dockum Aquifer strata is approximately 1,500 feet thick with upper contact depth of about 360 feet below ground surface (ft-bgs) in the site area (Deeds et al., 2015 and Fallin, J.A. Tony, 1989). As illustrated in Figure IIIG-A-6 and Figure IIIG-A-7, where present, groundwater flow in both the Upper and Lower components of the Dockum Aquifer follows the regional trend of the host formation towards the south-southeast with a local potentiometric head elevation of approximately 3,180 ft-msl in the Upper Dockum Aquifer locally. The

3.1.3 Caprock

Beneath the Surficial Sediments lies the Caprock stratum. The Caprock is comprised of upper Ogallala Formation sediments that are continuous across the permit boundary. The Caprock is comprised predominately of dry to moist, loose to very dense, caliche intermixed and interbedded with lesser sands, silts, and clays, and occasional clay lenses, chert gravel, and calcite. The Caprock caliche sediments are highly variable in hardness and structure and observed as predominately loose to poorly consolidated caliche with lesser hard friable poorly consolidated caliche, and occasional microcrystalline calcite seams. The Caprock exhibits an average thickness of approximately 50 feet across the site. Due to the variable intermixed and interbedded nature of overall Caprock sediment composition and structure, in-situ soil core samples suitable for laboratory permeability testing where difficult to obtain. However, an in-situ sample of appreciable length was able to be collected from a clay layer within the Caprock Stratum at boring PWCG-5A. Laboratory soil testing indicate a Caprock stratum vertical permeability of $2.3x10^{-7}$ cm/sec for the in-situ clay sample collected from boring PWCG-5A. Regionally, the caliche-rich Caprock sediments of the Ogallala Formation are characterized as low permeability where unconsolidated to poorly consolidated and impermeable where indurated. The low permeability of the Caprock is also supported by the confined condition of the Uppermost Aquifer observed at all expansion piezometers across the site.

3.1.4 Lower Sand

Beneath the Caprock lies the Lower Sand stratum. The Lower Sand is comprised of Ogallala Formation sediments that are continuous beneath the permit boundary. The Lower Sand contains the facility's uppermost monitorable groundwater zone which is hydraulically separated from any potential underlying groundwater zones by the Basal Clay stratum. A total of 12 expansion boreholes (PWCG-3, PWCG-5A, PWCG-6, PWCG-7A, WCG-9, WCG-11, WCG-19, WCG-20, WCG-22, WCG-25, WCG-26, and WCG-27) were advanced to significant depth to penetrate through the Lower Sand and into the underlying Basal Clay aquiclude. The observations and data from these 12 deep boreholes were used to determine the total thickness of the Lower Sand stratum and delineate the underlying Basal Clay stratum which comprises the Lower Confining Unit beneath the Site.

The Lower Sand stratum comprises the Uppermost Aquifer beneath the proposed expansion area and is comprised predominately of dry to wet, dense to very dense, silt sand and sandy silt, with lesser occurrences of caliche, chert gravel, and clay.

Lower Sand sediments exhibit thicknesses ranging from 7.5 to 54 feet with an average thickness of approximately 25 feet across the site. Laboratory soil testing indicates a vertical permeability of $2.8x10^{-3}$ cm/sec for an in-situ Lower Sand stratum Uppermost Aquifer sample collected from boring PWC-1A. Field slug test data from piezometers screened within the Lower Sand indicate an Uppermost Aquifer horizontal permeability ranging from $1.37x10^{-4}$ to $2.96x10^{-3}$ cm/sec with an arithmetic mean horizontal permeability of $1.08x10^{-3}$ cm/sec.

3.1.5 Basal Clay

Lower Sand sediments are underlain by low permeability fine-grained, dry to moist, clayey sediments of the Basal Clay stratum that function as the Lower Confining Unit to groundwater within the overlying Lower Sand stratum.

Twelve deep borings were advanced to depths ranging from 2 to 20 feet into the Basal Clay stratum (PWCG-3, PWCG-5A, PWCG-6, PWCG-7A, WCG-9, WCG-11, WCG-19,

4.4 Contaminant Pathways

The landfill liner is founded in the Caprock Stratum sediments which function as a massive upper confining unit to groundwater within saturated Lower Sand Stratum sediments that comprise the Uppermost Aquifer beneath the Site. The Caprock sediments are also characterized as an upper confining unit to Ogallala Aquifer groundwater regionally. In the unlikely occurrence of a release of leachate from the landfill unit, the pollutants would be isolated to the localized area in subsurface at the point of release. However, given enough time, the most probable pathway for the migration of pollutants will occur vertically through the vadose zone and laterally into the uppermost saturated aquifer strata. Once within the Uppermost Aquifer, pollutants would be transported within the Lower Sand stratum, above the Basal Clay stratum Lower Confining Unit, and down gradient in the direction of groundwater flow toward the permitted Point of Compliance and network of groundwater detection monitor wells. However, pollutant migration through Caprock sediments could take decades or longer before reaching the Uppermost Aquifer.

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APPENDIX IIIG-A

REGIONAL GEOLOGIC DATA

STATE OF TEXAS
AARON K. EVANS
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LICENSED
PROFESSIONAL GEOSCIENTIST

02/28/2025

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FIGURE IIIG-A-5 – Regional ETHP Aquifer Potentiometric Surface Map
FIGURE IIIG-A-6 – Regional Upper Dockum Aquifer Potentiometric Surface Map
FIGURE IIIG-A-7 – Regional Lower Dockum Aquifer Potentiometric Surface Map
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FIGURE IIIG-A-9 – Oil and Gas Well Location Map

ERIS Water Well Report	IIIG-A-10
Oil & Gas Well Plugging Reports	IIIG-A-82

STATE OF TEXAS
AARON K. EVANS
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LICENSED
PROFESSIONAL GEOSCIENTIST

02/28/2025

OIL & GAS WELL PLUGGING REPORT

Plugging Record

RECEIVED
RRC OF TEXAS
MAY 13 2013
O&G WELL COMPLIANCE
AUSTIN, TX

RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION

FORM W-3
Rev. 12/92
FOD1296

API NO. (If available) 42-445-32282

1. RRC District: 8A

FILE IN DUPLICATE WITH DISTRICT OFFICE OF DISTRICT IN WHICH WELL IS LOCATED WITHIN THIRTY DAYS AFTER PLUGGING

RECEIVED
RRC OF TEXAS
APR 08 2013
Midland

4. RRC Lease or ID Number: 69940

2. FIELD NAME (as per RRC Records): MOUND LAKE, N.(FUSSELMAN)

3. Lease Name: RICH LAKE UNIT

5. Well Number: 1

6. OPERATOR: RAW OIL AND GAS, INC.

6a. Original Form W-1 Filed in Name of: Raw Oil + Gas, Inc. O&G

10. County: TERRY

7. ADDRESS: 1415 BUDDY HOLLY AVE. LUBBOCK, TX 79401

6b. Any Subsequent W-1's Filed in Name of: N/A

11. Date Drilling Permit Issued: 4/20/11

8. Location of Well, Relative to Nearest Lease Boundaries of Lease on which this Well is located.: 1383 Feet From East Line and 1032 Feet From South Line of the Rich Lake Unit Lease

12. Permit Number: 714437

9a. SECTION, BLOCK, AND SURVEY: SECTION 19, BLK 4X, C&M RR CO. A-5

9b. Distance and Direction From Nearest Town in this County: 10 MILE NE OF BROWNFIELD

13. Date Drilling Commenced: 12/28/11

16. Type Well (Oil, Gas, Dry): OIL

Total Depth: 11825

17. If Multiple Completion List All Field Names and Oil Lease or Gas ID No.'s: N/A

GAS ID or OIL LEASE #	Oil—O Gas—G	WELL #
---	---	---

14. Date Drilling Completed: 2/2/12

18. If Gas, Amt. of Cond. on Hand at time of Plugging:

15. Date Well Plugged: 1/2/13

CEMENTING TO PLUG AND ABANDON DATA:	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7	PLUG #8
*19. Cementing Date	12/20/12	12/21/12	12/21/12	12/21/12	12/21/12	12/28/12	1/2/13	
20. Size of Hole or Pipe in which Plug Placed (inches)	5.5	5.5	5.5	5.5	5.5	8.625	8.625	
21. Depth to Bottom of Tubing or Drill Pipe (ft.)	11460	9089	8050	6976	4300	2809	511	
*22. Sacks of Cement Used (each plug)	20	40	25	40	40	55	160	
*23. Slurry Volume Pumped (cu. ft.)	26	52	33	52	52	73	211	
*24. Calculated Top of Plug (ft.)	11260	8690	7800	6575			Surface	
25. Measured Top of Plug (if tagged) (ft.)	---	---	---	---	3953	2642	0	
*26. Slurry Wt. #/Gal.	14.8	14.8	14.8	14.8	14.8	14.8	14.8	
*27. Type Cement	C	C	C	C	C	C	C	

28. CASING AND TUBING RECORD AFTER PLUGGING

SIZE	WT. #/FT.	PUT IN WELL (ft.)	LEFT IN WELL (ft.)	HOLE SIZE (in.)
13-3/8	48	461	461	17 1/2
8-5/8	32	4622	4622	11
5-1/2	17	11825	8925	7 7/8
5 1/2	17	7994	DV Tool	7 7/8

29. Was any Non-Drillable Material (Other than Casing) Left in This Well? ☐ Yes ☒ No

29a. If answer to above is "Yes" state depth to top of "junk" left in hole and briefly describe non-drillable material. (Use Reverse Side of Form if more space is needed.)

30. LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS

FROM 11512 TO 11544 FROM ____ TO ____
FROM ____ TO ____ FROM ____ TO ____
FROM ____ TO ____ FROM ____ TO ____
FROM ____ TO ____ FROM ____ TO ____
FROM ____ TO ____ FROM ____ TO ____

RECEIVED
CENTRAL RECORDS
FEB 24 2014
AUSTIN TEXAS

I have knowledge that the cementing operations, as reflected by the information found on this form, were performed as indicated by such information.

* Designates items to be completed by Cementing Company. Items not so designated shall be completed by Operator.

Signature of Cementer or Authorized Representative

Basic Energy Services
Name of Cementing Company

CERTIFICATE:

I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this report, that this report was prepared by me or under my supervision and direction, and that data and facts stated therein are true, correct, and complete, to the best of my knowledge.

Brett Bednarz — REPRESENTATIVE OF COMPANY
Engineer — TITLE
2-15-13 — DATE
Phone 806 — A/C
771-7766 — NUMBER

Brett Bednarz
SIGNATURE: REPRESENTATIVE OF RAILROAD COMMISSION

19

Witnessed by [illegible] Turnbow
RRC VR 5-9-13

9m 2-20-14

2-20-14 9m

31. Was well filled with Mud-Laden Fluid, according to the regulations of the Railroad Commission ☒ Yes ☐ No

32. How was Mud Applied? TUBING

33. Mud Weight 10

24. Total Depth 11825

Depth of Deepest Fresh Water 400'

Other Fresh Water Zones by T.D.W.R.

TOP	BOTTOM

35. Have all Abandoned Wells on this Lease been Plugged according to RRC Rules? ☒ Yes ☐ No

36. If NO, Explain

37. Name and Address of Cementing or Service company who mixed and pumped cement plugs in this well.

Basic Energy Services. P.O. Box 61877, Midland, Texas 79711

Date RRC District Office notified of plugging

38. Name(s) and Address(es) of Surface Owner of Well Site

City of Meadow
- James Smith
806-539-2327

39. Was Notice Given Before Plugging to Each of the Above?

Yes

FILL IN BELOW FOR DRY HOLES ONLY

40. For Dry Holes, this Form must be accompanied by either a Driller's, Electric, Radioactivity or Acoustical/Sonic Log or such Log must be released to a Commercial Log Service.

☒ Log Attached ☐ Log released to Date

Type Logs

☐ Driller's ☒ Electric ☐ Radioactivity ☐ Acoustical/Sonic

41. Date FORM P-8 (Special Clearance) Filed?

42 Amount of Oil produced prior to Plugging 2706 bbls*

* File FORM P-1 (Oil Production Report) for month this oil was produced

R R C USE ONLY

Nearest Field

REMARKS

SET CIBP @ 11460'

CUT AND PULL 5.5" CASING @ 2,900'

~~Approved W-3A attached~~

Job # 12-4901 witnessed by Byron Turnbow

12/20/12 CIBP @ 11460'; RIH w/wireline to 11460 & load with mud; [illegible] mix & spot 25sx on top of CIBP (per Joe Collins)

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN
APPENDIX IIIH
GROUNDWATER SAMPLING AND ANALYSIS PLAN

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

STATE OF TEXAS
AARON K. EVANS
11143
LICENSED
PROFESSIONAL GEOSCIENTIST

02/28/2025

Prepared by

Weaver Consultants Group, LLC
TBPE Registration No. F-3727
6420 Southwest Blvd., Suite 206
Fort Worth, Texas 76109
817-735-9770

WCG Project No. 0120-809-11-05

This document intended for permitting purposes only.

2.1.2 Existing Groundwater Monitoring Network

The facility is an existing Type IAE Arid Exempt landfill (MSW Permit No. 2293) with no permitted groundwater monitoring system.

2.1.3 Proposed Groundwater Monitoring Network Design

The proposed groundwater monitoring network design is illustrated on Figure IIIH-A-1 (Proposed Groundwater Monitoring System Network) and Figure IIIH-A-2 (Groundwater Monitor Well Details) in Appendix IIIH-A. A monitor well and observation well installation and conversion schedule is provided in Table 2-1.

The proposed monitoring system design utilizes two background monitor wells (MW-1 and MW-1P), 21 Point of Compliance (POC) monitor wells (MW-2, MW-2P, MW-3, MW-4, MW-5, MW-6, MW-7, MW-8, MW-9, MW-10, MW-11, MW-12, MW-13, MW-14, MW-15, MW-16, MW-17, MW-18, MW-19, MW-20, and MW-22), and one observation well (OW-22).

Monitor wells MW-1 and MW-1P will be converted from existing piezometers PWCG-5A and PWCG-5B; respectively. These two wells are hydrogeologically upgradient from the landfill and will serve as background wells. Monitor well MW-1 (formerly PWCG-5A) is screened within basal Uppermost Aquifer groundwater above the Lower Confining Unit. Paired monitor well MW-1P (formerly PWCG-5B) is screened within a shallower perched Uppermost Aquifer groundwater zone. Both wells will monitor saturated intervals within the Uppermost Aquifer at their location.

Monitor wells MW-2 and MW-2P will be converted from existing piezometers PWCG-4A and PWCG-4B; respectively. These two wells are hydrogeologically downgradient from the landfill and will serve as the facility's southernmost POC wells. Monitor well MW-2 (formerly PWCG-4A) is screened within basal Uppermost Aquifer groundwater above the Lower Confining Unit. Paired monitor well MW-2P (formerly PWCG-4B) is screened within a shallower perched Uppermost Aquifer groundwater zone. Both wells will monitor saturated intervals within the continuous Uppermost Aquifer at their location.

POC monitor wells MW-7, MW-12, and MW-21 will be converted from existing piezometers PWCG-3, PWCG-2, and PWCG-6; respectively. A total of 16 POC monitor wells (MW-3, MW-4, MW-5, MW-6, MW-8, MW-9, MW-10, MW-11, MW-13, MW-14, MW-15, MW-16, MW-17, MW-18, MW-19 and MW-20) will also be installed to monitor groundwater encountered within the Uppermost Aquifer at their location. The facility's seven relict piezometers (PB-107, PB-116, PB-134, PMW-2, PMW-6, PMW-9, and PMW-21) and 2023 expansion piezometers PWCG-7A and PWCG-7B, will be plugged and abandoned.

Piezometer conversions and new monitor well installations will be completed in accordance with the schedule provided in Table 2-1. Piezometer pluggings will be completed prior expansion area waste placement. Following well conversion or installation, quarterly background data collection monitoring will begin in accordance with Section 5.3. Facility monitor wells will be gauged, purged, and sampled in accordance with Section 3. Observation wells OW-20 and OW-21 will be gauged to obtain static groundwater elevations in conjunction with routine groundwater monitoring events.

Table 2-1
Groundwater Monitoring Network

Well Name	Gradient Position	Current Condition	Installation/Conversion Schedule
MW-1	BG	Existing PWCG-5A	Convert prior to waste placement in expansion area
MW-1P	BG	Existing PWCG-5B	Convert prior to waste placement in expansion area
MW-2	POC	Existing PWCG-4A	Convert prior to waste placement in expansion area
MW-2P	POC	Existing PWCG-4B	Convert prior to waste placement in expansion area
MW-3	POC	Future MW	Install prior to waste placement in expansion area
MW-4	POC	Future MW	Install prior to waste placement in expansion area
MW-5	POC	Future MW	Install prior to waste placement in expansion area
MW-6	POC	Future MW	Install prior to waste placement in expansion area
MW-7	POC	Existing PWCG-3	Convert prior to waste placement in expansion area
MW-8	POC	Future MW	Install prior to waste placement in Sector 12 or 13
MW-9	POC	Future MW	Install prior to waste placement in Sectors 11 through 13
MW-10	POC	Future MW	Install prior to waste placement in Sectors 5, 6, 10, 11, 12, or 13
MW-11	POC	Future MW	Install prior to waste placement in Sectors 4, 5, 6, 10, 11, 12, or 13
MW-12	POC	Existing PWCG-2	Convert prior to waste placement in Sectors 3 through 11
MW-13	POC	Future MW	Install prior to waste placement in Sectors 3 through 10
MW-14	POC	Future MW	Install prior to waste placement in Sectors 1 through 10
MW-15	POC	Future MW	Install prior to waste placement in Sectors 1 through 9
MW-16	POC	Future MW	Install prior to waste placement in Sectors 1 through 6
MW-17	POC	Future MW	Install prior to waste placement in Sectors 1 through 6
MW-18	POC	Future MW	Install prior to waste placement in Sectors 1 through 6
MW-19	POC	Future MW	Install prior to waste placement in Sectors 1 through 6
MW-20	POC	Future MW	Install prior to waste placement in Sectors 1 through 6
MW-21	POC	Existing PWCG-6	Convert prior to waste placement in Sectors 1 through 6
OW-22	OW	Existing PWCG-1	Convert prior to waste placement in expansion area

NOTES: MW = Monitor Well.
POC = Point of compliance well located hydraulically downgradient from landfill unit.
BG = Background well located hydraulically upgradient from the landfill unit.
OW = Observation Well.

satisfy either the criteria of §330.409(i)(1) - (4), inclusive or comply with §330.409(i)(5).

The facility will submit an annual assessment monitoring report within 60 days after the facility's second semiannual groundwater sampling event that includes the following information determined since the previously submitted report:

- a statement whether a statistically significant level above a groundwater protection standard established in subsection (h) or (i) of §330.409 has occurred in any well during the previous calendar year period and the status of any statistically significant level events.
- the results of all groundwater monitoring, testing, and analytical work obtained or prepared in accordance with the requirements of this chapter, including a summary of background groundwater quality values, groundwater monitoring analyses, statistical calculations, graphs, and drawings;
- 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 Assessment Monitoring Program. The owner or operator shall also include in the report all documentation used to determine the groundwater flow rate and direction and groundwater flow;
- 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;
- recommendation for any changes; and
- any other items requested by the Executive Director.

6.4 Corrective Action Monitoring

Detection of assessment monitoring constituents at statistically significant levels, as defined in Title 30 TAC §330.409, could result in corrective action monitoring. Groundwater monitoring for the purpose of corrective action assessment and remediation will be conducted in accordance with Title 30 TAC §330.411 through §330.415, and in consultation with TCEQ. At a minimum, the assessment will address the following:

- a characterization of the contaminated groundwater, including concentrations of assessment constituents as defined in 30 TAC §330.409;
- the concentration limit for each constituent found in the groundwater;
- detailed plans and an engineering report describing the corrective action to be taken;
- a description of how the groundwater monitoring program will demonstrate the adequacy of the corrective action; and
- a schedule for submittal of the above information provided the owner or operator obtains written authorization from the executive director prior to submittal of the complete permit application.

7 GROUNDWATER ANALYTICAL RESULTS AND POTENTIAL RESPONSE ACTIONS

7.1 Groundwater Quality

Title 30 TAC §330.63(f)(5-7) require a comparison of the facility's groundwater analytical data to the specific constituents referenced in Title 30 TAC §330.419(a) and listed in 40 CFR, Part 258, Appendix I. The City of Meadow Landfill was historically a Type IAE Arid Exempt facility (MSW Permit No. 2293) with no prior groundwater monitoring system or GWSAP. Therefore, no groundwater detection monitoring data exists for the facility at this time.

7.2 Potential Contaminant Migration

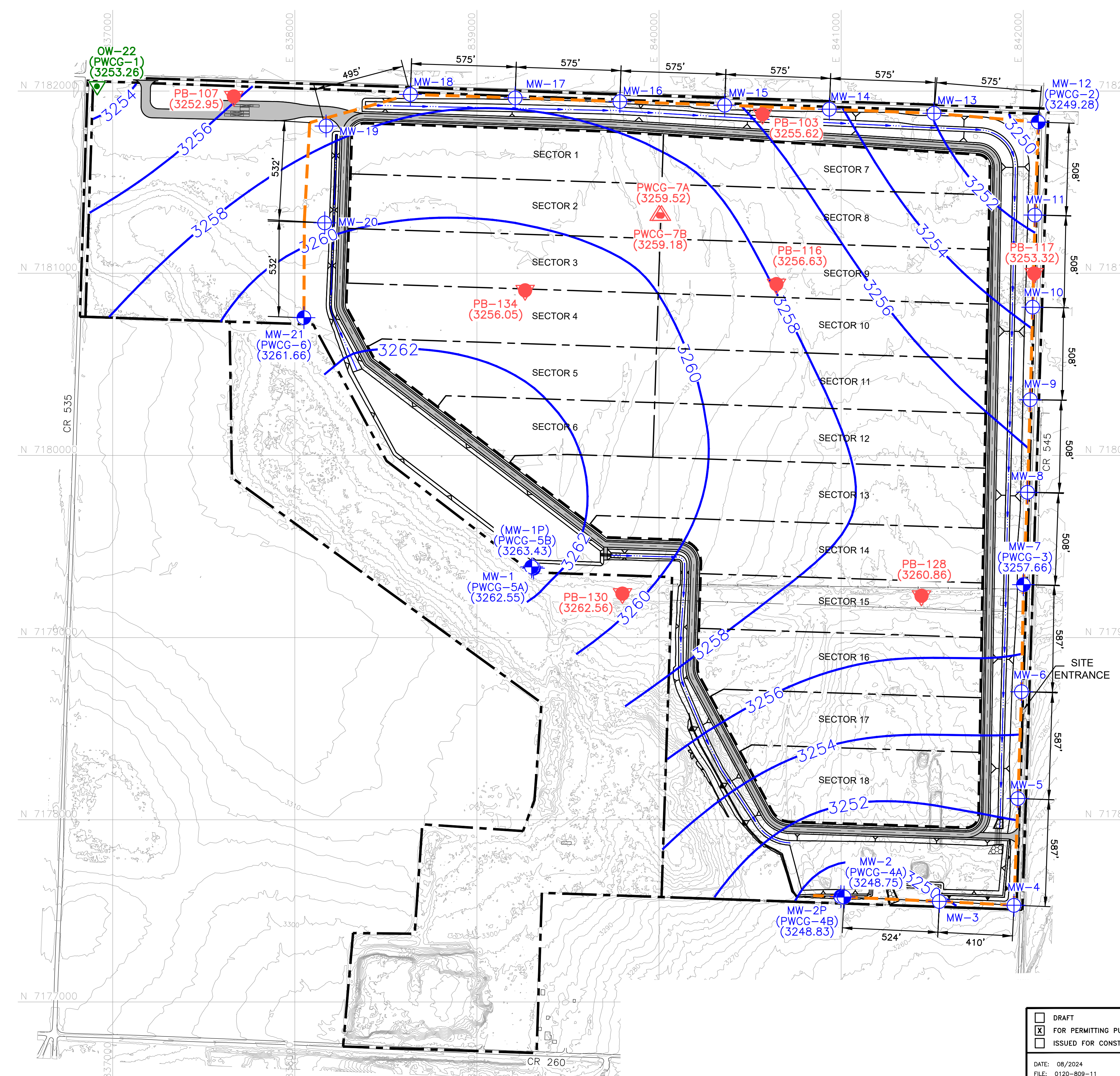
In the unlikely occurrence of a release of leachate from the landfill unit, the most probable pathway for the migration of pollutants will occur vertically through the vadose zone and laterally into the Uppermost Aquifer at the point of release. Once within the Uppermost Aquifer, pollutants would be transported within the Aquifer strata, above the Lower Confining Unit, and down gradient in the direction of groundwater flow toward the permitted Point of Compliance and network of groundwater detection monitor wells. Site-specific geology and hydrogeology are further discussed in Appendix IIIG (Geology Report) of the SDP. Potential containment migration is further discussed in Appendix IIIG, Section 4.4.

APPENDIX IIIH-A

GROUNDWATER MONITORING SYSTEM

STATE OF TEXAS
AARON K. EVANS
11143
LICENSED
PROFESSIONAL GEOSCIENTIST

02/28/2025



N

0 300 600
SCALE IN FEET

STATE OF TEXAS
AARON K. EVANS
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LICENSED
PROFESSIONAL GEOSCIENTIST

02/28/2025

LEGEND

— - —	PROPERTY BOUNDARY
— - - —	PROPOSED PERMIT BOUNDARY
— — —	PROPOSED LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
350	EXISTING CONTOUR
MW–1 (PWCG–5A) (3262.55)	PROPOSED GROUNDWATER MONITOR WELL (TO BE CONVERTED FROM EXISTING PIEZOMETER) WITH FORMER PIEZOMETER NAME POSTED IN PARENTHESES
▽ OW–22 (PWCG–1) (3253.26)	PROPOSED GROUNDWATER OBSERVATION WELL (TO BE CONVERTED FROM EXISTING PIEZOMETER) WITH FORMER PIEZOMETER NAME POSTED IN PARENTHESES
⊕ MW–3	PROPOSED NEW GROUNDWATER MONITOR WELL (TO BE INSTALLED)
△ PWCG–7A (3259.52)	EXISTING 2023 EXPANSION PIEZOMETER (TO BE REMOVED)
▼ PB–116 (3256.63)	EXISTING RELICT GROUNDWATER PIEZOMETER (TO BE REMOVED) (SEE NOTE 5)
—3260—	GROUNDWATER POTENTIOMETRIC SURFACE CONTOUR IN FT–MSL
— — —	PROPOSED POINT OF COMPLIANCE
508'	INTERWELL SPACING ALONG POINT OF COMPLIANCE IN LINEAR FEET

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. PIEZOMETER LOCATION COORDINATES OBTAINED FROM AUGUST 2023 AS–BUILT SURVEY BY WEAVER CONSULTANTS GROUP.
3. GROUNDWATER POTENTIOMETRIC SURFACE ELEVATIONS MEASURED BY WEAVER CONSULTANTS GROUP IN SEPTEMBER 2023 AND POSTED AT EACH MEASUREMENT LOCATION IN FT–MSL.
4. GROUNDWATER POTENTIOMETRIC SURFACE CONTOURS ARE INTERPOLATED BETWEEN MEASUREMENT LOCATIONS; ACTUAL CONDITIONS MAY VARY.
5. NO GEOSCIENTIST OR ENGINEER CERTIFIED LITHOLOGIC LOGS, DETAILS, OR OTHER INFORMATION IS AVAILABLE FOR THE EXISTING RELICT GROUNDWATER PIEZOMETERS; THEIR LOCATIONS AND MEASURED POTENTIOMETRIC SURFACE ELEVATIONS ARE SHOWN FOR INFORMATION PURPOSES BUT ARE NOT INCORPORATED INTO POTENTIOMETRIC CONTOURS SHOWN.
6. PROPOSED MONITOR WELLS WILL BE INSTALLED, OR CONVERTED FROM EXISTING PIEZOMETERS, AS LANDFILL IS DEVELOPED IN ACCORDANCE WITH SECTION 2.0 AND FIGURE IIIH–A–2 OF THE FACILITY'S GWSAP.
7. DEED DESIGNATIONS THAT FORM THE PROPERTY BOUNDARY ARE SHOWN ON PAGE I/II–13–6. LEGAL DESCRIPTIONS OF THE PARCELS OF LAND CAN BE FOUND IN PART I/II–13.

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DATE: 08/2024
FILE: 0120–809–11
CAD: IIIH–A–1 GW SYSTEM DWG

DRAWN BY: DCS
DESIGN BY: AKE
REVIEWED BY: AKE

Weaver Consultants Group
TBPE REGISTRATION NO. F–3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
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MAJOR PERMIT AMMENDMENT

PROPOSED GROUNDWATER MONITORING SYSTEM NETWORK

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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FIGURE IIIH–A–1

WELL NAME (FORMER NAME LISTED IN PARENTHESIS)	BACKGROUND (BG) OR POINT OF COMPLIANCE (POC) WELL?	INSTALL DATE	SITE GRID COORDINATES		TOP OF CASING ELEVATION	GROUND ELEVATION	WELL CONSTRUCTION DEPTHS				WELL CONSTRUCTION ELEVATIONS				GROUNDWATER ELEVATION[3]
			NORTHING	EASTING			TOP OF FILTER PACK	TOP OF SCREEN	BOTTOM OF SCREEN	BOTTOM OF FILTER PACK	TOP OF FILTER PACK	TOP OF SCREEN	BOTTOM OF SCREEN	BOTTOM OF FILTER PACK	
WELLS TO BE CONVERTED FROM EXISTING EXPANSION PIEZOMETERS															
MW-1 (PWCG-5A)	BG	Aug-23	7179381.82	839309.31	3312.19	3309.1	90.0	93.0	103.0	103.0	3219.1	3216.1	3206.1	3206.1	3262.55
MW-1P (PWCG-5B)	BG	Aug-23	7179389.37	839298.83	3312.08	3309.0	73.0	75.0	80.0	80.0	3236.0	3234.0	3229.0	3229.0	3263.43
MW-2 (PWCG-4A)	POC	Aug-23	7177577.27	841014.12	3270.51	3267.1	37.0	40.0	50.0	50.0	3230.1	3227.1	3217.1	3217.1	3248.75
MW-2P (PWCG-4B)	POC	Aug-23	7177579.69	840996.83	3270.11	3267.1	26.0	28.0	32.0	32.0	3241.1	3239.1	3235.1	3235.1	3248.83
MW-7 (PWCG-3)	POC	Aug-23	7179290.62	841999.62	3298.84	3295.9	52.0	57.0	67.0	67.0	3243.9	3238.9	3228.9	3228.9	3257.66
MW-12 (PWCG-2)	POC	Aug-23	7181829.44	842081.66	3317.74	3314.8	75.0	77.0	87.0	90.0	3239.8	3237.8	3227.8	3224.8	3249.28
MW-21 (PWCG-6)	POC	Aug-23	7180756.96	838049.09	3314.86	3311.7	70.0	72.0	82.0	82.0	3241.7	3239.7	3229.7	3229.7	3261.66
OW-22 (PWCG-1)	NOT APPLICABLE	Aug-23	7182024.79	836913.78	3319.34	3316.3	80.0	85.0	95.0	95.0	3236.3	3231.3	3221.3	3221.3	3253.26
NEW MONITOR WELLS - TO BE INSTALLED															
MW-3	POC	TBD	7177551	841539	3271.0	3268.0	35.0	38.0	48.0	48.0	3233.0	3230.0	3220.0	3220.0	3250.0
MW-4	POC	TBD	7177530	841949	3267.0	3264.0	31.0	34.0	44.0	44.0	3233.0	3230.0	3220.0	3220.0	3251.0
MW-5	POC	TBD	7178116	841970	3279.0	3276.0	43.0	46.0	56.0	56.0	3233.0	3230.0	3220.0	3220.0	3253.0
MW-6	POC	TBD	7178703	841990	3291.0	3288.0	55.0	58.0	68.0	68.0	3233.0	3230.0	3220.0	3220.0	3255.0
MW-8	POC	TBD	7179797	842023	3305.0	3302.0	59.0	62.0	72.0	72.0	3243.0	3240.0	3230.0	3230.0	3257.0
MW-9	POC	TBD	7180305	842038	3307.0	3304.0	61.0	64.0	74.0	74.0	3243.0	3240.0	3230.0	3230.0	3255.0
MW-10	POC	TBD	7182025	837485	3311.0	3308.0	65.0	68.0	78.0	78.0	3243.0	3240.0	3230.0	3230.0	3253.0
MW-11	POC	TBD	7181319	842064	3313.0	3310.0	67.0	70.0	80.0	80.0	3243.0	3240.0	3230.0	3230.0	3252.0
MW-13	POC	TBD	7181878	841510	3317.0	3314.0	71.0	74.0	84.0	84.0	3243.0	3240.0	3230.0	3230.0	3252.0
MW-14	POC	TBD	7181900	840935	3315.0	3312.0	79.0	82.0	92.0	92.0	3233.0	3230.0	3220.0	3220.0	3254.0
MW-15	POC	TBD	7181922	840360	3313.0	3310.0	67.0	70.0	80.0	80.0	3243.0	3240.0	3230.0	3230.0	3256.0
MW-16	POC	TBD	7181942	839785	3315.0	3312.0	59.0	62.0	72.0	72.0	3253.0	3250.0	3240.0	3240.0	3257.0
MW-17	POC	TBD	7181962	839210	3319.0	3316.0	63.0	66.0	76.0	76.0	3253.0	3250.0	3240.0	3240.0	3258.0
MW-18	POC	TBD	7181981	838635	3321.0	3318.0	65.0	68.0	78.0	78.0	3253.0	3250.0	3240.0	3240.0	3258.0
MW-19	POC	TBD	7181808	838171	3321.0	3318.0	65.0	68.0	78.0	78.0	3253.0	3250.0	3240.0	3240.0	3257.0
MW-20	POC	TBD	7181276	838165	3319.0	3316.0	63.0	66.0	76.0	76.0	3253.0	3250.0	3240.0	3240.0	3255.0

NOTES:

1. ELEVATIONS LISTED IN FEET ABOVE MEAN SEA LEVEL (FT-MSL); DEPTHS LISTED IN FEET BELOW GROUND SURFACE (FT-BGS).
2. EXISTING WELL COORDINATES, TOP OF CASING ELEVATIONS, AND GROUND ELEVATIONS OBTAINED FROM ASBUILT SURVEY CONDUCTED BY WEAVER CONSULTANTS GROUP IN AUGUST 2023.
3. GROUNDWATER ELEVATIONS GAUGED BY WEAVER CONSULTANTS GROUP IN SEPTEMBER 2023.
4. MONITOR WELLS MW-1P AND MW-2P SCREENED IN PERCHED UPPERMOST AQUIFER GROUNDWATER ADJACENT PAIRED DEEPER WELLS MW-1 and MW-2; RESPECTIVELY.
5. OBSERVATION WELLS TO BE RETAINED IN SYSTEM FOR GROUNDWATER GAUGING PURPOSES INDICATED BY "OW" DESIGNATION.
6. DETAILS FOR PROPOSED FUTURE WELLS ESTIMATED FROM EXISTING SUBSURFACE INVESTIGATION DATA; ACTUAL DETAILS TO BE DETERMINED AT TIME OF INSTALLATION BASED ON SUBSURFACE CONDITIONS ENCOUNTERED.
7. WELLS ARE TO BE CONVERTED, INSTALLED, OR REMOVED IN ACCORDANCE WITH SECTION 2.0 OF THE GWSAP.
8. TBD = TO BE DETERMINED.

AARON K. EVANS
11143

02/28/2025

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DATE: 08/2024
FILE: 0120-809-11
CAD: IIIH-A-2-WELL DETAILS.DWG

DRAWN BY: SRF
DESIGN BY: DCS
REVIEWED BY: AKE

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PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
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MAJOR PERMIT AMMENDMENT

GROUNDWATER MONITOR
WELL DETAILS

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FIGURE IIIH-A-2

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

VOLUME 6 OF 6

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

KYLE D. GOULD
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02/28/2025

Prepared by

Weaver Consultants Group, LLC
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6420 Southwest Boulevard, Suite 206
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817-735-9770

Project No. 0120-809-11-05

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CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN
APPENDIX III I
LANDFILL GAS MANAGEMENT PLAN

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

COLIN G. MCINNES
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02/28/2025

Prepared by

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WCG Project No. 0120-809-11-05

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on-site occupied structures. LFG migration may be controlled by various options which are discussed in Section 5. The site will comply with Title 30 TAC §330.55(a) requirements by obtaining the necessary air permit or authorization for the proposed expansion.

The LFG monitoring postclosure care period program will continue for a period of 30 years after final closure of the facility or until the owner or operator receives written authorization from TCEQ to revise or discontinue the program. The request to revise or discontinue LFG monitoring program will be based on a demonstration along with collected data by the owner or operator that there is no potential for gas migration along the property boundary or into on-site structures.

phases of the landfill. Existing LFG extraction wells in areas receiving additional waste will be extended and/or replaced with a new well as necessary based on the additional waste fill.

Each extraction well and horizontal collector will be equipped with a control valve and monitoring port similar to the detail shown on Figure III I-F-4 of Appendix III I-F. These control valves and monitoring ports, used in conjunction with controls on the blower, will allow the site to regulate vacuum and LFG levels at each individual extraction well/horizontal collector. This will allow the site to make adjustments in order to effectively reduce the potential for subsurface migration and odors, as well as to protect the integrity of the final cover system.

It is expected that the GCCS (if required) will be installed prior to final cover placement and the LFG extraction wells will be connected to the geomembrane with a boot when the final cover system is installed. If installation of a LFG extraction well is required after the final cover installation, the geomembrane cover will be cut and removed in the work area prior to LFG extraction well installation and then the geomembrane boot will be installed.

The as-built information for each phase of the GCCS installation will be maintained in the site operating record. The as-built information will document the location of the extraction wells, piping, and related GCCS components. The GCCS will be installed as described in this section; as such, no additional authorization (i.e. permit modification) will be required to install each phase of the GCCS unless there is a significant change in the number of extraction wells or the layout of GCCS.

Following each GCCS installation, an as-built GCCS drawing will be submitted to the TCEQ to incorporate each GCCS installation into the existing permit in the form of revision to Appendix III I-F. The new drawing will be placed behind the existing Figure III I-F-2. In addition, the existing site layout will also be submitted in the form of revision to Figure III I-F-2 of Appendix III I-F to update the existing GCCS conditions. The TCEQ MSW Section will be notified of any changes to the gas collection and control system as stated above. However, if the TCEQ MSW Section determines a permit modification is required upon receipt of the notification, then the site will submit a permit modification.

6.3 GCCS Operation and Maintenance

The operation and maintenance of the proposed GCCS will be performed consistent with industry guidelines and practices. Wellhead and system monitoring will be performed on a routine basis to monitor overall system performance. As needed, system adjustments will be made to optimize the extraction of LFG from the landfill to control LFG migration, odors, and greenhouse gases.

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN
APPENDIX IIIJ
CLOSURE PLAN

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

DAVID E. POE
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02/28/2025

Prepared by

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WCG Project No. 0120-809-11-06

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- 2.2 Final Cover System Design IIIJ-3
- 2.3 Installation Methods and Procedures IIIJ-4

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APPENDIX IIIJ-A
Final Cover System Quality Control Plan

APPENDIX IIIJ-B
GCL Alternative Final Cover Demonstration

APPENDIX IIIJ-C
Closure Plan for Municipal Solid Waste Type I Landfill Units and
Final Facility Closure (Form 20720)

STATE OF TEXAS
DAVID E. POE
81734
LICENSED PROFESSIONAL ENGINEER
02/28/2025

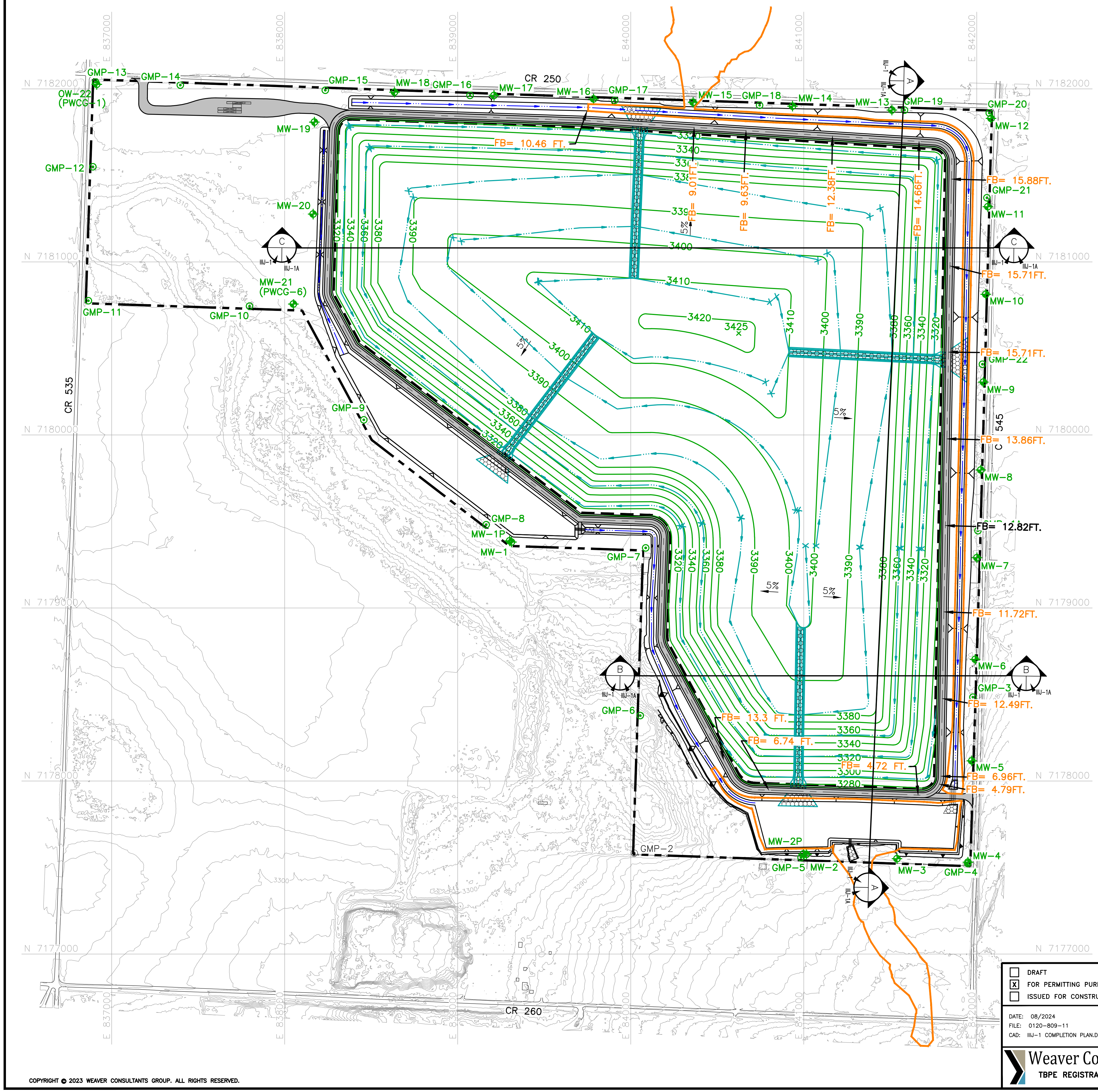
FIGURES

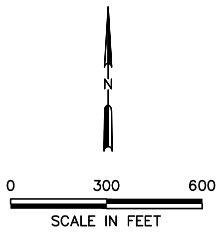
Figures

Figure IIIJ-1 – Completion Plan
Figure IIIJ-1A – Landfill Sections
Figure IIIJ-2 – Final Closure Schedule

STATE OF TEXAS
DAVID E. POE
81734
LICENSED
PROFESSIONAL ENGINEER

02/28/2025





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DAVID E. POE
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LICENSED PROFESSIONAL ENGINEER
02/28/2025

LEGEND

— · — · —	PROPOSED PERMIT BOUNDARY
— — —	PROPOSED LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
3300	EXISTING CONTOUR
3400	FINAL COVER CONTOUR
	DRAINAGE SWALE
	DRAINAGE LETDOWN
	CHANNEL CENTERLINE
	POST–PROJECT 100–YEAR FLOODPLAIN
MW–1	PROPOSED OBSERVATION/GROUNDWATER MONITORING WELL
GMP–5	PROPOSED LANDFILL GAS MONITORING PROBE
GMP–2	EXISTING LANDFILL GAS MONITORING PROBE
FB= 15.71FT.	DESIGNED FREEBOARD

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PROPERTY AND PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.

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DATE: 08/2024
FILE: 0120–809–11
CAD: IIIJ–1 COMPLETION PLAN.DWG

DRAWN BY: JDW
DESIGN BY: BPY
REVIEWED BY: DEP

Weaver Consultants Group
TBPE REGISTRATION NO. F–3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

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MAJOR PERMIT AMENDMENT
COMPLETION PLAN

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

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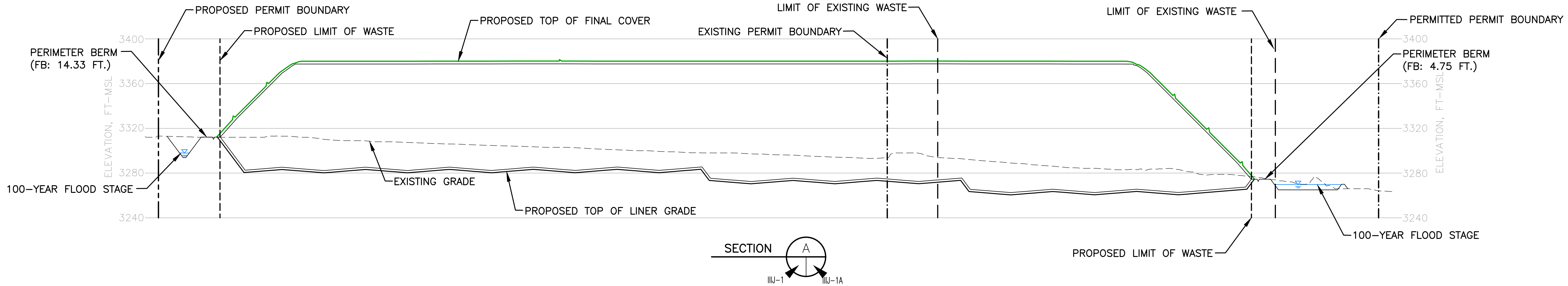
FIGURE IIIJ–1

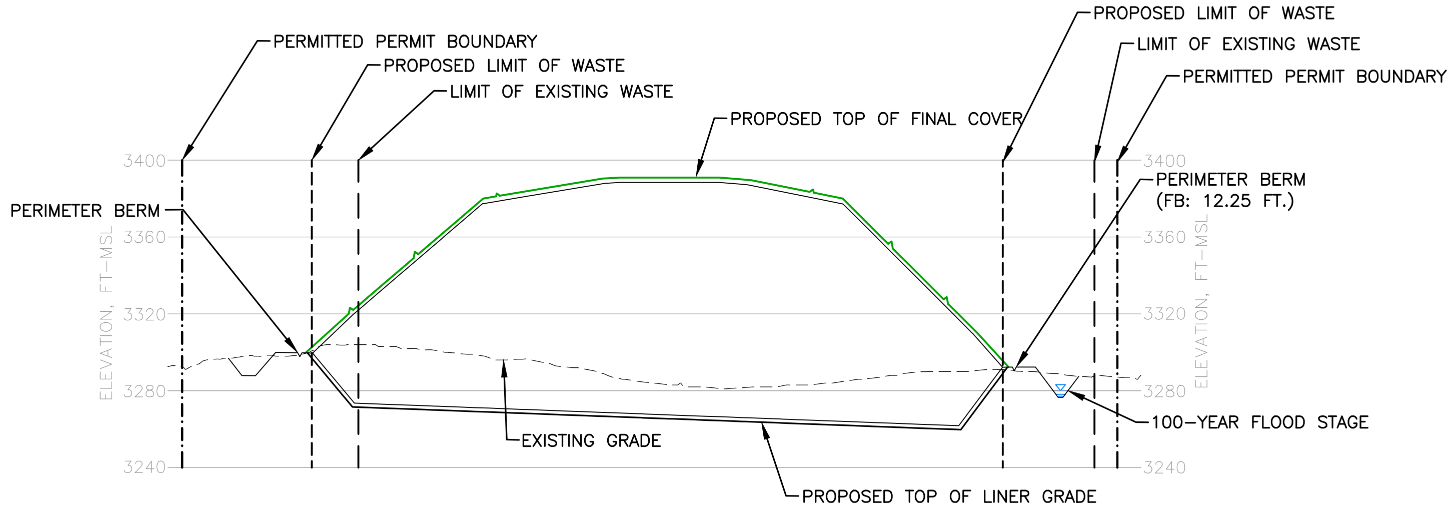


SECTION A

IIIJ-1 IIIJ-1A

0 50 100 VERTICAL SCALE IN FEET

0 200 400 HORIZONTAL SCALE IN FEET

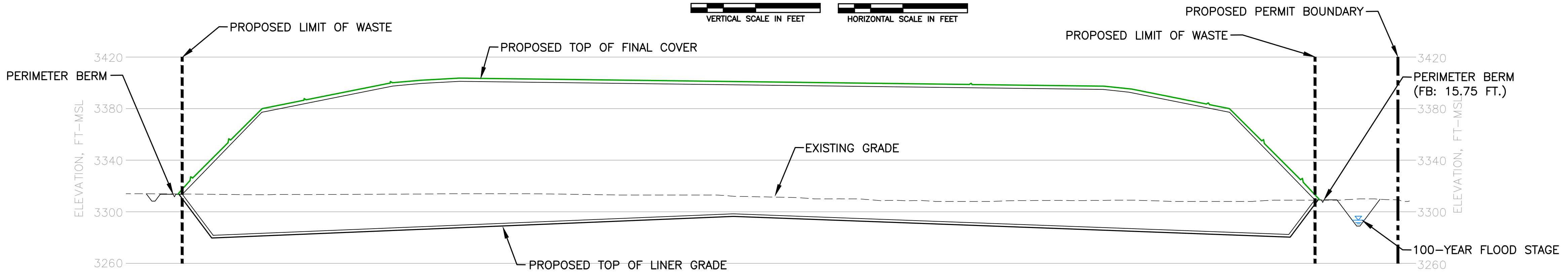


SECTION B

IIIJ-1 IIIJ-1A

0 50 100 VERTICAL SCALE IN FEET

0 200 400 HORIZONTAL SCALE IN FEET



LEGEND

- -·-·-·- PERMITTED PERMIT BOUNDARY
- —·—·— PROPOSED PERMIT BOUNDARY
- — — — PERMITTED LIMIT OF WASTE
- - - - - PROPOSED LIMIT OF WASTE
- - - - - EXISTING GRADE
- ——— TOP OF FINAL COVER
- ——— TOP OF WASTE

SECTION C

IIIJ-1 IIIJ-1A

0 50 100 VERTICAL SCALE IN FEET

0 200 400 HORIZONTAL SCALE IN FEET

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81734
02/28/2025

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DATE: 02/2025
FILE: 0120-809-11
CAD: IIIJ-1A-TYPICAL SECTION.DWG

DRAWN BY: SRF
DESIGN BY: JBM
REVIEWED BY: KDG

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MAJOR PERMIT AMENDMENT
LANDFILL SECTIONS

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FIGURE IIIJ-1A

O:\0120\809\EXPANSION 2023\PART III\IIIJ\CLEAN 02-2025\IIIJ-1A-SECTIONS A-C.dwg, jwilson, 1:2

2 FINAL COVER SYSTEM

2.1 Introduction

The final cover system for the City of Meadow Landfill has been developed to incorporate the requirements of Title 30 TAC §330.457(f)(4). The rules state that the owner or operator of an MSW landfill unit shall complete closure activities for the unit in accordance with the approved closure plan within 180 days following the initiation of closure activities (closure activities for MSW landfill units shall begin no later than 30 days after the date on which the unit receives the known final receipt of wastes, or, if the unit has remaining capacity and there is a reasonable likelihood that the unit will receive additional wastes, no later than one year after the most recent receipt of wastes). Closure will include installation of a final cover system and storm water runoff controls. The storm water runoff controls are addressed in Appendix IIIF – Surface Water Drainage Plan. The final cover system design is discussed below and is also detailed in Appendix IIIA-A. Cross-sections are provided in Appendix IIIA-B.

2.2 Final Cover System Design

The final cover system will consist of a composite final cover system for the Subtitle D areas. The final cover system will provide a low maintenance cover, protect against erosion, reduce rainfall percolation through the cover system and subsequently minimize leachate generation within the landfill. As depicted on Figure IIIJ-1 (and Drawing A.2 – Landfill Completion Plan in Appendix IIIA-A), a maximum slope of 5 percent is provided for the top slopes. Typical sideslopes of 4H:1V are provided to control erosion and facilitate drainage of the landfill.

Composite Final Cover System

- A 12-inch-thick earthen material erosion layer capable of sustaining vegetative growth. The vegetation will consist of native or introduced grasses, as well as a mixture of wild flowers, and other flowering plants capable of providing 80 percent coverage over the final cover. The minimum vegetation coverage will be established at closure and maintained throughout the post-closure care period.

- A geocomposite drainage layer (250-mil-thick geonet with 6 oz/sy geotextile(s) heat bonded to the top for top slopes and heat bonded to both sides for side slopes).
- A 40-mil, smooth or textured (topslope) and textured (sideslope), linear low-density polyethylene (LLDPE) geomembrane.
- An 18-inch-thick compacted clay infiltration layer with a coefficient of permeability of less than or equal to $1x10^{-5}$ cm/s. A geosynthetic clay liner (GCL) may be installed as an alternative to the compacted clay infiltration layer.

The low permeability components of the final cover (geomembrane, 18-inch-thick clay infiltration layer, or GCL) are designed to minimize infiltration of surface water into the underlying waste material. Details of the final cover systems are shown in Appendix IIIA-A. Material specifications, construction, and testing procedures are provided in Appendix IIIJ-A – Final Cover System Quality Control Plan (FCSQCP).

Vegetation will be established over the installed final cover system to minimize the erosion potential of the cover slopes. The erosion layer was evaluated using the Universal Soil Loss Equation (USLE) developed by the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). The evaluation is presented in Appendix IIIF.

Landfill gas generated will be managed as discussed in Appendix III I – Landfill Gas Management Plan. If required, the landfill gas system will collect the gas generated by deposited waste and control gas emissions from the site.

Permanent final cover erosion control structures including swales and chutes will be constructed on the final cover. The maximum swale spacing on the final cover is 350 feet for the top slope and 132 feet for the side slopes. The final cover design also consists of 5% top slopes and 25% side slopes. The non-swale side slopes will not exceed 25%. The design of the final cover system erosion control structures is provided in Appendix IIIF-C. A soil loss and sheet flow velocity demonstration for the erosion layer is included in Appendix IIIF-D. Procedures to comply with 330.165(g) and (h) for final cover repair and maintenance are included in Appendix IV, Sections 4.18.4 and 4.18.5, respectively.

2.3 Installation Methods and Procedures

The final cover system will be constructed in accordance with the requirements listed on the permit drawings in Appendix IIIA-A and the Final Cover System Quality Control Plan (FCSQCP) presented in Appendix IIIJ-A. Testing and evaluation of the final cover system during construction will be in accordance with Appendix IIIJ-A – FCSQCP.

- Engineering plans will be developed to address site closure at the time of discontinued waste filling.
- A revised final closure plan will be developed and submitted to the TCEQ for approval.
- The final waste received will be placed and properly compacted.
- Excavations will be filled with suitable material, and the site will be graded to promote runoff and prevent ponding.
- The top of the landfill will be regraded and reshaped as needed to provide the proper slope for positive drainage.
- The final cover system will be constructed according to specifications.
- Following application of final cover, the site will be vegetated with appropriate grasses to minimize erosion. The established grasses will provide a minimum of 80 percent coverage of the final cover system.
- A surface water management system will be constructed to minimize erosion.
- A closure certification will be prepared by an independent licensed professional engineer and submitted to TCEQ for approval.
- All proper notices and documentation will be filed with the appropriate agencies.

3.2.1 Estimate of Largest Active Disposal Area

Consistent with Title 30 TAC §330.503(a), the largest area that could be open within the next year is shown on Figure IIIL.1 and is listed in Appendix IIIL – Closure and Post Closure Care Cost Estimate. Consistent with this rule and TCEQ guidelines for financial assurance to complete closure and postclosure activities, financial assurance will be posted for the current active area as discussed in Appendix IIIL – Closure and Postclosure Care Cost Estimate. The entire site will also need to be administratively closed.

Supporting calculations are presented in Appendix IIIL – Closure and Postclosure Care Cost Estimate.

3.2.2 Estimate of Maximum Inventory of Waste Ever On Site

The estimate of maximum inventory of waste (defined as waste and daily cover) ever on site over the active life of the facility is approximately 29,500,000 cubic yards. Supporting calculations are included in Appendix IIIM – Site Life Calculations.

Total landfill volume estimates are developed based on AutoCAD surfaces developed from the top of protective cover (in the bottom of the landfill) and the bottom of the intermediate cover over which the final cover system is constructed and incorporate both bottom liner and final cover foundation grades and contours. Intermediate cover (other than the intermediate cover installed over the final slopes and used as the foundation for the final cover system) is assumed (for these calculations) to have been removed and incorporated back into the landfill operations as daily cover.

3.3 Leachate Storage Tanks, Evaporation Ponds, and Piping

The leachate storage tanks, evaporation ponds, and piping will continue to operate throughout the active life of the site and the postclosure period. Once the postclosure period has ended, the following steps will be taken to decommission the leachate storage tanks and piping.

- The remaining leachate will be transferred to a properly permitted offsite treatment or disposal facility.
- General cleanup of the site, including areas around the leachate storage tank and evaporation pond (i.e., washdown of the concrete truck loading pad, etc.) will be performed.

The tanks will be demolished and the debris will be disposed of at a permitted disposal facility. The leachate pond liners shall be removed and disposed into the landfill or transported off site for disposal at a licensed facility. Plastic piping may be reused in other landfill applications, transported off-site for reuse at another Republic landfill or for recycling or disposal at a licensed facility. Pond and piping removal will include inspection of the pipe and liner foundations, and removal and disposal of visibly stained soils to the landfill or off-site to a licensed facility.

3.4 Liquid Waste Bulking Facility Closure

If the Liquid Waste Bulking Facility is constructed, it will operate throughout the active life of the City of Meadow Landfill. During closure of the site, the following steps will be taken to decommission the Liquid Waste Bulking Facility.

- The final waste received or stored at the facility will be solidified and transferred to the landfill for disposal.
- General cleanup of the site, including all areas around the Liquid Waste Bulking Facility (i.e., removal of bulking agents, washdown of floor, etc.) will be performed.
- The facility equipment will be dismantled and removed from the site.
- The concrete mixing basins will be demolished and the concrete debris will be disposed of. Any soil below the basins that is visually stained will be excavated and disposed of in the landfill. In accordance with 30 TAC §330.459(c), the executive director may require an investigation into the nature and extent of any release and an assessment of measures necessary to correct any impacts to groundwater in the event there is evidence of a release from the facility. Additional closure and certification requirements are set forth in Appendix IVC, Section 9 of the application.

A description of the Liquid Waste Bulking Facility closure procedures will be included in the closure certification report.

3.5 Citizens Convenience Center Closure

If the Citizens Convenience Center is constructed, it will likely operate throughout the active life of the facility. During closure of the site, the Citizens Convenience Center will be decommissioned. Closure activity will include a general cleanup of the area. All roll-offs will be emptied at the landfill working face and removed from the site. Recyclables staged at the Citizens Convenience Center will be transported offsite for recycling, disposed into the landfill or transported and disposed at an off-site facility.

4 SCHEDULE OF FACILITY FINAL CLOSURE

4.1 Final Closure Requirements

The site will be closed in an orderly fashion consistent with Title 30 TAC §330.457 and §330.461 implementing the following steps:

- No later than 90 days prior to initiation of final closure activities for the municipal solid waste landfill (MSWLF) facility, the Executive Director of TCEQ will be notified of the intent to close the facility and that a notice of the intent to close the unit has been placed in the operating record.
- No later than 90 days prior to initiation of final facility closure, a public notice of facility closure which contains the name, address, and physical location of the facility, the permit number, and the last date of intended receipt of waste, will be provided in the newspaper of the largest circulation in the vicinity of the facility. Meadow Landfill, LLC will also make available a copy of the approved final closure and postclosure plan at the landfill office for public access and review. Additional copies (as needed) of the closure and post-closure plans will be made available by owner for public access and review.
- Consistent with Title 30 TAC §330.461(b) and following notification of the Executive Director of TCEQ, a minimum of one sign will be posted at the main entrance and all other frequently used points of access for the facility notifying all persons utilizing the facility of the closure date or date after which further receipt of waste is prohibited. In addition, access control is provided by perimeter fencing and a locked gate following the closure date to prevent unauthorized disposal or dumping of solid waste at the facility.
- Final closure activities will commence for the MSWLF facility no later than 30 days after the date the MSWLF facility receives the known final receipt of wastes. If the MSWLF facility has remaining capacity and there is a reasonable likelihood that the MSWLF facility will receive additional wastes, final closure activities will commence no later than 1 year after the most recent receipt of wastes.
- Final closure activities of the MSWLF facility will be completed in accordance with the Closure Plan (this appendix) within 180 days following the initiation of closure activities as defined in Title 30 TAC §330.457(f)(3) and will include closure of all facilities described in Section 3 of this appendix. If necessary, as noted in Title 30 TAC §330.457(f)(4), a request for an extension of the completion of final closure activities may be submitted and granted by the

Executive Director. The request will include all applicable documentation necessary to demonstrate that final closure will take longer than 180 days and all steps have been taken and will continue to be taken to prevent threats to human health and the environment from the unclosed site.

- Following completion of final closure activities of the MSWLF unit, the facility will comply with the post-closure care requirements specified in Title 30 TAC §330.463(b). Within ten days after completion of final closure activities, a documented certification, signed by an independent licensed professional engineer, will be submitted to the Executive Director of the TCEQ for review and approval. This certification will verify that final closure has been completed in accordance with the approved final closure plan and will include all applicable documentation necessary for certification of final closure. Once approved, this certification will be placed in the Site Operating Record.
- Within 10 days after completion of final closure activities of the facility, a certified copy of an Affidavit to the Public (most current format provided by the TCEQ will be used) will be submitted to the Executive Director of the TCEQ by registered mail and placed in the facility's site operating record. In addition, a certified notation will be recorded on the deed to the facility that will in perpetuity notify any potential purchaser of the property that the land has been used as a landfill facility and the use of the land is restricted according to the provisions specified in Section 4 of Appendix IIIK – Postclosure Care Plan. Within 10 days after completion of final closure activities of the facility, a certified copy of the modified deed will be submitted to the Executive Director and placed in the operating record.

Following receipt of the required final closure documents and an inspection report from the TCEQ Regional Office verifying proper closure of the MSWLF facility according to this Closure Plan (this appendix), the Executive Director may acknowledge the termination of operation and closure of the facility and deem it properly closed. The steps in the closure process are depicted on Figure IIIJ-3 – Final Closure Schedule. Consistent with Title 30 TAC §330.461(c)(2), a professional engineer certification will be submitted to TCEQ within 10 days of completion of closure. In accordance with Title 30 TAC §330.463(b), the postclosure care period begins immediately upon the date of final closure.

4.2 Provisions for Extending Closure Period

If the City of Meadow Landfill has remaining capacity at the time of its closure, final closure activities will begin no later than one year after the most recent receipt of wastes. A request for an extension beyond the one-year deadline for the initiation of final closure may be submitted to the Executive Director for review and approval and will include all applicable documentation to demonstrate that the unit or site

City of Meadow Landfill
Figure IIIJ-2 – Final Closure Schedule

	DAY 30	DAY 60	DAY 90	DAY 120	DAY 150	DAY 180	DAY 210	DAY 240	DAY 270	DAY 300
Written notification of facility closure to TCEQ	●									
Public notice of facility closure published in newspaper	●									
Provide Public Access to Final Closure/Post Closure Plans	—	—	—							
Posting of sign (Day 45)		●								
Initiation of final closure activities (Day 90)			●							
Time interval for completion of final closure activities (Note 3				—	—	—	—	—	—	
Submit engineering certification of final closure to TCEQ (Day 280)										●
Submit certified copies of Affidavit to the Public and modified deed to TCEQ (Day 280)										●

Notes: (1) Schedule is based on anticipated date of beginning final closure activities. Heavy vertical line signifies final receipt of waste. Schedule is shown for reference purposes only. (2) Implementation of closure activities shall follow the TCEQ-approved closure plan and applicable rules. (3) Completion of closure may be extended as described in Section 4.2 of this appendix.

Period ——— Milestone ●

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN
APPENDIX IIIJ-A
FINAL COVER SYSTEM QUALITY CONTROL PLAN

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

DAVID E. POE
81734

02/28/2025

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WCG Project No. 0120-809-11-05

This document is intended for permitting purposes only.

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APPENDIX IIIJ-A-A
Final Cover Drainage Layer Design

STATE OF TEXAS
DAVID E. POE
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LICENSED PROFESSIONAL ENGINEER

02/28/2025

Earthwork

This is a construction activity involving the use of soil materials as defined in the construction drawings and specifications and Section 2 of this plan.

Film Tear Bond (FTB)

A failure in the geomembrane sheet material on either side of the seam and not within the seam itself.

Final Cover System Evaluation Report (FCSER)

Upon completion of closure activities, the certification will be in the form of the FCSER which will be signed by the POR and include all the documentation necessary for certification of closure. The FCSER described in this appendix will provide the necessary “certification” of the final cover system construction as a component of the overall final closure described in Appendix IIIJ, Section 8, but is not intended to supersede the closure and certification requirements set forth in Appendix IIIJ, Section 8 and Title 30 TAC §330.641(c)(2).

Fish Mouth

A semi-conical opening of the seam that is formed by an edge wrinkle in one sheet of the geomembrane.

Geomembrane Liner (GM)

This is a synthetic lining material, also referred to as geomembrane, membrane liner, or sheet. The term Flexible Membrane Liner (FML) is also used for GM.

Geosynthetics Contractor

This individual is also referred to as the “contractor” or “installer”, and is the person or firm responsible for geosynthetic construction. This definition applies to any person installing FML or other geosynthetic materials, even if not his primary function.

Independent Testing Laboratory

A laboratory that is independent of ownership or control by the permittee or any party to the construction of the final cover or the manufacturer of the final cover products used.

Manufacturing Quality Assurance (MQA)

A planned system of activities that provides assurance that the raw materials were constructed (manufactured) as specified.

Manufacturing Quality Control (MQC)

A planned system of inspection that is used to directly monitor and control the manufacture of a material.

5 CONSTRUCTION QUALITY ASSURANCE FOR EROSION LAYER

5.1 General Requirements

The erosion layer will consist of a minimum of 12 inches of earthen material and will be capable of sustaining native and introduced vegetative growth and must be seeded immediately after completion of the final cover. Temporary or permanent erosion control materials may be used to minimize erosion and aid establishment of vegetation. The physical characteristics of the erosion layer will be evaluated through visual observation (and laboratory testing if deemed necessary by the POR) before construction and visual observation during construction. Additional testing during construction will be at the discretion of the POR.

The erosion layer may be placed using any appropriate equipment capable of completing the work and should only receive the minimal compaction effort required for stability. Under no circumstances will the construction equipment come in direct contact with the installed geosynthetics. Equipment used to install the erosion layer must meet the requirements of Section 4.5.

The thickness of the erosion layer will be verified with surveying procedures at a minimum of one survey point per 10,000 square feet of constructed area by a qualified surveyor with a minimum of one reference point. The survey results for the erosion layer will be included in the FCSER.

During construction the CQA monitor will:

- Verify that grade control is performed prior to work.
- Verify that underlying geosynthetic installations are not damaged during placement operations or by survey grade controls. Mark damaged geosynthetics and verify that damage is repaired.
- Monitor haul-road thickness over installed geosynthetics and verify that equipment hauling and material placement meet equipment specifications. (See Section 4.5).
- The POR will coordinate with the project surveyor to perform a thickness verification survey of the erosion layer materials upon completion of placement operations. Verify corrective action measures as determined by

the verification survey. Thickness surveying to determine minimum erosion layer thickness will be performed similar to the infiltration layer thickness verification discussed in Section 2 and shown in Table 2-1.

5.2 Vegetation Establishment and Monitoring

Vegetation for the site will be native and introduced grasses with root depths of 6 inches to 8 inches. The erosion layer shall also include a mixture of Bermuda, vetch, rye, wheat grass, wildflowers, and flowering plants. The seeding is specified in Appendix IIIF-D, pages IIIF-D-28 through IIIF-D-34. The seeding is specified by TxDOT for temporary and permanent erosion control for Terry County, Texas (Lubbock).

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 will 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 or the soil will be replaced with soil that will support the grasses.

After 6 months of growth, areas that have not achieved the required minimum coverage as specified in the Erosion and Sedimentation Control Plan (Appendix IIIF, Section 2.2) will be addressed by reseeding or replacement of soil, or both, as described above.

APPENDIX IIIJ-A-A

FINAL COVER DRAINAGE LAYER DESIGN

Includes pages IIIJ-A-A-1 through IIIJ-A-A-51

STATE OF TEXAS
DAVID E. POE
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PROFESSIONAL ENGINEER

02/28/2025

Calculate the Design Transmissivity (T_{DES}) and permeability of the final cover geocomposite drainage layer:

Table 2.3 - Required Transmissivity

Fill Condition	P^1 (psf)	t^2 (in)	T^3 (m^2/s)	ORF^4	$T_{DES}{}^5$ (m^2/s)	k^6 (cm/s)
Closed (topslope)	120	0.250	2.13E-03	5.06	4.21E-04	6.63

[1] P is the pressure on the final cover drainage layer due to the weight of erosion layer from Table 2.1.

[2] t is the drainage layer thickness from Table 2.1.

[3] T is obtained from the specified transmissivity values for a representative geocomposite drainage layer (250-mil-thick geonet with 6 oz/sy polypropylene geotextile) as shown on Sheet IIIJ-A-A-13.

[4] ORF is the Overall Reduction Factor obtained from Table 2.2.

[5] T_{DES} is the design transmissivity value calculated using the following equation:

$$T_{DES} = T / (\text{FS Factor})$$

[6] k is the hydraulic conductivity and calculated using the following equation:

$$k = T_{DES} / t$$

2.2 Verify that the erosion layer will not be impacted by uplift.

Uplift may occur if the depth of water in the geocomposite exceeds the thickness of the geocomposite. If this occurs, the potential for uplift exists. It is conservatively assumed that the erosion layer is fully saturated. Therefore, to prevent uplift, the weight of erosion layer must be higher than the uplift exerted by the maximum head on the final cover geomembrane (12 inches).

Maximum Head, h_{max}=	12	inches
Unit Weight of Erosion Layer, γ_{EL}=	120	pcf
Unit Weight of Water, γ_W=	62.4	pcf
Thickness of Erosion Layer, h_{EL}=	12	inches

Uplift Force, UF= $h_{max} \times \gamma_W$ psf

Weight of Erosion Layer, W_{EL}= $h_{EL} \times \gamma_{EL}$ psf

UF= (12/12)*62.4 (psf)

W_{EL}= 1 ft x 120 pcf (psf)

UF= 62.4 psf

W_{EL}= 120 psf

Factor of Safety, FS= W_{EL} / UF

FS= 120 / 62.4

FS= 1.9

Conclusion:
A factor of safety of more than one indicates that the erosion layer will not be impacted by uplift force caused by the maximum head on the final cover geomembrane. Therefore, the erosion layer is stable as designed. As shown on page IIIJ-A-A-17, under normal conditions the head in the geocomposite is 0.003 inches which is less than the thickness of the geocomposite. Therefore, the thickness of the water on the geomembrane will not exceed the thickness of the geocomposite under normal conditions.

2.3 Determine pipe size required to convey the design flow for the specified pipe length and pipe outlet spacing.

Maximum flow to a collection pipe has been estimated by using the HELP model.
From the HELP model, the lateral drainage collected per unit length of drainage geocomposite is:

Lateral Drainage Collected $d_{collected}$=	0.115	ft/day, (drainage collected expressed as depth from HELP)
L (5%)=	340	ft (topslope length between the pipe and the grade break)
q_p =	$d_{collected}$ * 1 * L	cfs
q_p =	0.00045	cfs (Flow per Unit Length of Pipe, q_p)

Maximum Flow to Collection Pipe for Various Pipe Lengths:

$Q_{max} = L_{p\text{-}max} \times q_p$

Pipe Length, $L_{p\text{-}max}$ (ft)	Flow per Unit Length of Pipe, q_p (cfs/ft)	Maximum Pipe Flow, Q_{max}[1] (cfs)
< 350	0.00045	0.158
350-950	0.00045	0.430
950-1,700	0.00045	0.769

[1] Maximum pipe flow is calculated using the maximum pipe length in each range.

Collection Pipe Size:

Use Manning's Equation to determine the pipe size.

Pipe Capacity (Q_{pc}):

$$Q_{pc} = \frac{1.49AR^{2/3}S^{1/2}}{n}$$

(from Chapter 10 of Ref 2)

where:
Q_{pc}: Full Flow Pipe Capacity (cfs)
d: Diameter (inches), HDPE ADS Collection Pipe Diameter
A: Flow area (sf), Cross Section Pipe
P: Perimeter (ft)
R: Hydraulic radius (ft) = Cross Section (A) / Perimeter (P)
S: Pipe slope (ft/ft)
n: Manning's Roughness Coefficient

Pipe Capacity for Different Pipe Sizes

d (inches)	A (sf)	P (ft)	R (ft)	S (ft/ft)	n	Q_{pc} (cfs)
4	0.09	1.05	0.08	0.005	0.010	0.171
6	0.19	1.57	0.12	0.005	0.010	0.474
8	0.32	2.09	0.15	0.005	0.010	0.943

Fullness Ratio of Pipe (f):

$f = Q_{max}/Q_{pc}$ (Ratio of maximum calculated flow (Q_{max}) to total flow capacity (Q_{pc}) for pipe)

Fullness ratio of pipe (f)					
Fill Condition	Pipe Length (ft)	d (inches)	Q_{max} (cfs)	Q_{pc} (cfs)	f
Closed (topslope)	< 350	4	0.158	0.171	0.93
	350-950	6	0.430	0.474	0.91
	950-1,700	8	0.769	0.943	0.82

Conclusion: A pipe size of 4 inches is acceptable for the topslope area for pipes lengths of 350 feet and shorter. A pipe size of 6 inches is acceptable for pipe lengths between 350 and 950 feet. A pipe size of 8 inches is acceptable for pipe lengths between 950 and 1,700 feet.

A minimum open area of 1 square inch per foot of drainage pipe is recommended by the U.S. Soil Conservation Service and the U.S. Bureau of Reclamation. Therefore, the number of 0.5 in diameter holes per foot will be 6 and total slot area provided by the manufacturer will provide documentation that minimum of 1 square inch of total slot area is provided per linear foot of pipe.

3. Topslope/Sideslope Transition

3.1 Estimate the percolation into the drainage geocomposite from the erosion layer.

Calculate the flow entering the geocomposite from unit area of erosion layer (q_f):

k_{cover} = 1.2E-04 cm/s
q_f = k_{cover} * i (i is the gradient of water percolating within the drainage layer, and it is equal to 1 for vertical percolation.)
q_f = 1.2E-4 cm/s * 1 / (30.48 cm/ 1 ft)
q_f = 3.94E-06 cfs/sf

Calculate the maximum flow in drainage geocomposite on 4H:1V sideslope.
Consider the flow coming from the topdeck:

L (4H:1V)= 85 ft (estimated)
L (5%)= 185 ft, topdeck length between the topdeck pipe and the grade break (estimated)
L (total)= 270 ft
q_p = q_f * L (total)
q_p = 0.00106 sf/s (per unit width)

3.2 Determine the capacity of the sideslope drainage geocomposite based on the estimated transmissivity and compare to the estimated flow rate that occurs due to infiltration.

T_{DES}	>	q_p
(flow capacity of the drainage geocomposite per unit width. Refer to Section 1.1)		(estimated flow in the drainage geocomposite per unit width)
0.00123 sf/s (cf/s·ft)	>	0.00106 sf/s (cf/s·ft)

Since the capacity of the drainage geocomposite is greater than the estimated flow in the geocomposite, the actual flow depth is contained within the geocomposite and the design is acceptable.

3.3 Determine pipe size required to convey the design flow for the specified pipe length and pipe outlet spacing.

Maximum flow to a collection pipe has been estimated by using the HELP model.
From the HELP model, the lateral drainage collected per unit length of drainage geocomposite is:

Sideslope:

Lateral Drainage Collected $d_{collected}$= 0.070 ft/day, (drainage collected expressed as depth from HELP)
L (4H:1V)= 85 ft (sideslope length between the pipe and the grade break)
$q_{p\ (Sideslope)}$ = $d_{collected}$ * 1 * L cfs
$q_{p\ (Sideslope)}$ = 0.00007 cfs (Flow per Unit Length of Pipe, q_p)

Topslope:

Lateral Drainage Collected $d_{collected}$= 0.107 ft/day, (drainage collected expressed as depth from HELP)
L (5%)= 180 ft (topslope length between the pipe and the grade break)
$q_{p\ (topslope)}$ = $d_{collected}$ * 1 * L cfs
$q_{p\ (topslope)}$ = 0.00022 cfs (Flow per Unit Length of Pipe, q_p)

Total: $q_{p\ (Total)}$ = 0.00029 cfs

Maximum Flow to Collection Pipe for Various Pipe Lengths:

$Q_{max} = L_{p\text{-}max} \times q_p$

Pipe Length, $L_{p\text{-}max}$ (ft)	Flow per Unit Length of Pipe, q_p (cfs/ft)	Maximum Pipe Flow, Q_{max}[1] (cfs)
< 550	0.00029	0.161
550-1,500	0.00029	0.439
1,500-1,700	0.00029	0.497

[1] Maximum pipe flow is calculated using the maximum pipe length in each range.

Capacity of the collection pipe:

Use Manning's Equation to determine the pipe capacity.

Pipe Capacity (Q_{pc}):

$$Q_{pc} = \frac{1.49AR^{2/3}S^{1/2}}{n}$$

(from Chapter 10 of Ref 2)

where:

Q_{pc}: Full Flow Pipe Capacity (cfs)
d: Diameter (inches), HDPE ADS collection pipe
A: Flow area (sf), Cross section of pipe
P: Perimeter (ft)
R: Hydraulic radius (ft) = Cross section (A) / Perimeter (P)
S: Pipe slope (ft/ft)
n: Manning's roughness coefficient

Pipe Capacity						
d (inches)	A (sf)	P (ft)	R (ft)	S (ft/ft)	n	Q_{pc} (cfs)
4	0.09	1.05	0.08	0.005	0.010	0.171
6	0.19	1.57	0.12	0.005	0.010	0.474
8	0.32	2.09	0.15	0.005	0.010	0.943

Fullness Ratio of Pipe (f):

$f = Q_{max}/Q_{pc}$ **(Ratio of maximum calculated flow (Q_{max}) to total flow capacity (Q_{pc}) for pipe)**

Fullness Ratio of Pipe (f)					
Fill Condition	Pipe Length (ft)	d (inches)	Q_{max} (cfs)	Q_{pc} (cfs)	f
Closed (transition)	< 550	4	0.161	0.171	0.94
	550-1,500	6	0.439	0.474	0.93
	1,500-1,700	7	0.497	0.943	0.53

Conclusion: A pipe size of 4 inches is acceptable for the topslope area for pipes lengths of 550 feet and shorter. A pipe size of 6 inches is acceptable for pipe lengths between 550 and 1,500 feet. A pipe size of 8 inches is acceptable for pipe lengths between 1,500 and 1,700 feet.

A minimum open area of 1 square inch per foot of drainage pipe is recommended by the U.S. Soil Conservation Service and the U.S. Bureau of Reclamation. Therefore, the number of 0.5 in diameter holes per foot will be 6 and total slot area provided by the manufacturer will provide documentation that minimum of 1 square inch of total slot area is provided per linear foot of pipe.

Prep By: SSM
Date: 2/28/2025

CITY OF MEADOW LANDFILL
0120-809-11-05
HELP VERSION 3.07 SUMMARY SHEET

Chkd By: BPY/DEP
Date: 2/28/2025

		CLOSED SIDESLOPE (25%)	CLOSED TOPSLOPE (5%)	CLOSED SIDESLOPE TRANSITION	CLOSED TOPSLOPE TRANSITION
GENERAL	Case No.	1	2	3	4
INFORMATION	Output Page	IIIJ-A-A-18	IIIJ-A-A-25	IIIJ-A-A-32	IIIJ-A-A-39
	No. of Years	30	30	30	30
	Ground Cover	GOOD	GOOD	GOOD	GOOD
	SCS Runoff Curve No.	82.4	80.6	81.7	81.3
	Model Area (acre)	1.0	1.0	1.0	1.0
	Runoff Area (%)	100	100	100	100
	Maximum Leaf Area Index	4.5	4.5	4.5	4.5
	Evaporative Zone Depth (inch)	12	12	12	12
EROSION	Thickness (in)	12	12	12	12
LAYER	Porosity (vol/vol)	0.3980	0.3980	0.3980	0.3980
(Texture = 10)	Field Capacity (vol/vol)	0.2440	0.2440	0.2440	0.2440
	Wilting Point (vol/vol)	0.1360	0.1360	0.1360	0.1360
	Init. Moisture Content (vol/vol)	0.2440	0.2440	0.2440	0.2440
	Hyd. Conductivity (cm/s)	1.2E-04	1.2E-04	1.2E-04	1.2E-04
DRAINAGE	Thickness (in)	0.250	0.250	0.250	0.250
LAYER	Porosity (vol/vol)	0.8500	0.8500	0.8500	0.8500
(Texture = 0)	Field Capacity (vol/vol)	0.0100	0.0100	0.0100	0.0100
	Wilting Point (vol/vol)	0.0050	0.0050	0.0050	0.0050
	Init. Moisture Content (vol/vol)	0.0100	0.0100	0.0100	0.0100
	Hyd. Conductivity (cm/s)	19.43	6.63	19.43	6.63
	Slope (%)	25	5	25	5
	Slope Length (ft)	140	350	270	185
FLEXIBLE	Thickness (in)	0.04	0.04	0.04	0.04
MEMBRANE	Hyd. Conductivity (cm/s)	4.0E-13	4.0E-13	4.0E-13	4.0E-13
LINER	Pinhole Density (holes/acre)	0	0	0	0
(Texture = 36)	Install. Defects (holes/acre)	0	0	0	0
	Placement Quality	GOOD	GOOD	GOOD	GOOD
INFILTRATION	Thickness (in)	18	18	18	18
LAYER	Porosity (vol/vol)	0.4270	0.4270	0.4270	0.4270
(Texture = 0)	Field Capacity (vol/vol)	0.4180	0.4180	0.4180	0.4180
	Wilting Point (vol/vol)	0.3670	0.3670	0.3670	0.3670
	Init. Moisture Content (vol/vol)	0.4270	0.4270	0.4270	0.4270
	Hyd. Conductivity (cm/s)	1.0E-05	1.0E-05	1.0E-05	1.0E-05
PRECIPITATION	Average Annual (in)	17.93	17.93	17.93	17.93
RUNOFF	Average Annual (in)	0.360	0.224	0.323	0.260
EVAPOTRANSPIRATION	Average Annual (in)	16.59	16.60	16.62	16.57
LATERAL	Average Annual (cf/year)	3,692	4,137	3,725	4,138
DRAINAGE COLLECTED[1]	Peak Daily (cf/day)	2,908	4,858	3,067	4,677
LATERAL DRAINAGE	Peak Daily (in)	0.801	1.338	0.845	1.288
DEPTH	Peak Daily (ft)	0.067	0.112	0.070	0.107
HEAD ON FINAL	Average Annual (in)	0.000	0.003	0.000	0.001
COVER GEOMEMBRANE	Peak Daily (in)	0.008	8.931	0.017	0.949

[1] This is the lateral drainage collected in the drainage geocomposite in the final cover system.

```
*******************************************************************************
*******************************************************************************
**                                                                           **
**                                                                           **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE                **
**                HELP MODEL VERSION 3.07  (1 NOVEMBER 1997)                 **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                    **
**                    USAE WATERWAYS EXPERIMENT STATION                      **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY               **
**                                                                           **
**                                                                           **
*******************************************************************************
*******************************************************************************



PRECIPITATION DATA FILE:    C:\TOP\DATA4.D4
TEMPERATURE DATA FILE:      c:\TOP\DATA7.D7
SOLAR RADIATION DATA FILE:  C:\TOP\DATA13.D13
EVAPOTRANSPIRATION DATA:    C:\TOP\DATA11.D11
SOIL AND DESIGN DATA FILE:  C:\TOP\DATA10.D10
OUTPUT DATA FILE:           C:\TOP\OUTPUT1.OUT



TIME:  14:35     DATE:   2/11/2025



*******************************************************************************

     TITLE:  CITY OF MEADOW LANDFILL - FC PIPE DESIGN TS

*******************************************************************************



     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER
              WERE SPECIFIED BY THE USER.



                                   LAYER  1
                                   --------

                     TYPE 1 - VERTICAL PERCOLATION LAYER
                         MATERIAL TEXTURE NUMBER  10
           THICKNESS                   =    12.00   INCHES
```

```
  POROSITY                    =     0.3980 VOL/VOL
  FIELD CAPACITY              =     0.2440 VOL/VOL
  WILTING POINT               =     0.1360 VOL/VOL
  INITIAL SOIL WATER CONTENT  =     0.2440 VOL/VOL
  EFFECTIVE SAT. HYD. COND.   =  0.119999997000E-03 CM/SEC
NOTE:  SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY  5.00
         FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.


                          LAYER  2
                          --------

              TYPE 2 - LATERAL DRAINAGE LAYER
                MATERIAL TEXTURE NUMBER   0
  THICKNESS                   =     0.25   INCHES
  POROSITY                    =     0.8500 VOL/VOL
  FIELD CAPACITY              =     0.0100 VOL/VOL
  WILTING POINT               =     0.0050 VOL/VOL
  INITIAL SOIL WATER CONTENT  =     0.0100 VOL/VOL
  EFFECTIVE SAT. HYD. COND.   =   6.63000011000     CM/SEC
  SLOPE                       =     5.00   PERCENT
  DRAINAGE LENGTH             =   350.0    FEET


                          LAYER  3
                          --------

              TYPE 4 - FLEXIBLE MEMBRANE LINER
                MATERIAL TEXTURE NUMBER  36
  THICKNESS                   =     0.04   INCHES
  POROSITY                    =     0.0000 VOL/VOL
  FIELD CAPACITY              =     0.0000 VOL/VOL
  WILTING POINT               =     0.0000 VOL/VOL
  INITIAL SOIL WATER CONTENT  =     0.0000 VOL/VOL
  EFFECTIVE SAT. HYD. COND.   =  0.399999993000E-12 CM/SEC
  FML PINHOLE DENSITY         =     0.00   HOLES/ACRE
  FML INSTALLATION DEFECTS    =     0.00   HOLES/ACRE
  FML PLACEMENT QUALITY       =  3 - GOOD


                          LAYER  4
                          --------

                TYPE 3 - BARRIER SOIL LINER
```

```
                 MATERIAL TEXTURE NUMBER   0
   THICKNESS                   =     18.00   INCHES
   POROSITY                    =      0.4270 VOL/VOL
   FIELD CAPACITY              =      0.4180 VOL/VOL
   WILTING POINT               =      0.3670 VOL/VOL
   INITIAL SOIL WATER CONTENT  =      0.4270 VOL/VOL
   EFFECTIVE SAT. HYD. CONDV.  =  0.999999975000E-05 CM/SEC
```

```
           GENERAL DESIGN AND EVAPORATIVE ZONE DATA
           ----------------------------------------

 NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
          SOIL DATA BASE USING SOIL TEXTURE #10 WITH A
          GOOD STAND OF GRASS, A SURFACE SLOPE OF  5.%
          AND A SLOPE LENGTH OF  350. FEET.

SCS RUNOFF CURVE NUMBER             =     80.60
FRACTION OF AREA ALLOWING RUNOFF    =    100.0    PERCENT
AREA PROJECTED ON HORIZONTAL PLANE  =      1.000  ACRES
EVAPORATIVE ZONE DEPTH              =     12.0    INCHES
INITIAL WATER IN EVAPORATIVE ZONE   =      2.928  INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE  =      4.776  INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE  =      1.632  INCHES
INITIAL SNOW WATER                  =      0.000  INCHES
INITIAL WATER IN LAYER MATERIALS    =     10.616  INCHES
TOTAL INITIAL WATER                 =     10.616  INCHES
TOTAL SUBSURFACE INFLOW             =      0.00   INCHES/YEAR
```

```
            EVAPOTRANSPIRATION AND WEATHER DATA
            -----------------------------------

 NOTE:  EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
          MIDLAND               TEXAS

     STATION LATITUDE                       =  32.00 DEGREES
     MAXIMUM LEAF AREA INDEX                =   4.50
     START OF GROWING SEASON (JULIAN DATE)  =     67
     END OF GROWING SEASON (JULIAN DATE)    =    317
     EVAPORATIVE ZONE DEPTH                 =  12.0  INCHES
     AVERAGE ANNUAL WIND SPEED              =  11.10 MPH
     AVERAGE 1ST QUARTER RELATIVE HUMIDITY  =  52.00 %
     AVERAGE 2ND QUARTER RELATIVE HUMIDITY  =  50.00 %
     AVERAGE 3RD QUARTER RELATIVE HUMIDITY  =  55.00 %
```

```
             AVERAGE 4TH QUARTER RELATIVE HUMIDITY  =  58.00 %


         NOTE:  PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
                COEFFICIENTS FOR    ABILENE             TEXAS

                NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

     JAN/JUL     FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
     -------     -------     -------     -------     -------     -------
       0.69        0.62        1.07        1.31        2.20        2.67
       1.94        1.80        2.56        1.57        0.88        0.74


         NOTE:  TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
                COEFFICIENTS FOR    MIDLAND             TEXAS

             NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

     JAN/JUL     FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
     -------     -------     -------     -------     -------     -------
      40.90       44.80       52.70       60.60       70.00       78.30
      80.60       79.30       72.00       61.80       49.90       41.90


         NOTE:  SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
                COEFFICIENTS FOR    MIDLAND             TEXAS
                  AND STATION LATITUDE  =  32.00 DEGREES




******************************************************************************

         AVERAGE MONTHLY VALUES IN INCHES FOR YEARS    1 THROUGH   30
------------------------------------------------------------------------------

                         JAN/JUL  FEB/AUG  MAR/SEP  APR/OCT  MAY/NOV  JUN/DEC
                         -------  -------  -------  -------  -------  -------
  PRECIPITATION
  -------------
    TOTALS                 0.69     0.55     1.29     1.32     1.96     2.54
                           2.67     1.56     2.49     1.40     0.90     0.57

    STD. DEVIATIONS        0.64     0.33     1.02     0.82     1.05     2.04
```

```
                           1.97     1.09     1.58     1.26     0.60     0.60

  RUNOFF
  ------
    TOTALS                 0.000    0.000    0.001    0.000    0.003    0.077
                           0.108    0.002    0.023    0.009    0.000    0.000

    STD. DEVIATIONS        0.000    0.000    0.004    0.000    0.007    0.199
                           0.271    0.006    0.065    0.038    0.000    0.000

  EVAPOTRANSPIRATION
  ------------------
    TOTALS                 0.640    0.558    0.966    1.809    1.907    2.186
                           2.313    1.511    2.227    0.999    0.844    0.645

    STD. DEVIATIONS        0.400    0.392    0.728    0.913    1.031    1.534
                           1.482    1.010    1.344    0.712    0.461    0.428

  LATERAL DRAINAGE COLLECTED FROM LAYER  2
  ----------------------------------------
    TOTALS                 0.0330   0.0096   0.0824   0.0251   0.0064   0.2496
                           0.3142   0.0182   0.1616   0.2012   0.0270   0.0115

    STD. DEVIATIONS        0.0986   0.0397   0.2103   0.0849   0.0237   0.5628
                           0.5775   0.0955   0.4132   0.6134   0.0642   0.0373

  PERCOLATION/LEAKAGE THROUGH LAYER  4
  ------------------------------------
    TOTALS                 0.0000   0.0000   0.0000   0.0000   0.0000   0.0000
                           0.0000   0.0000   0.0000   0.0000   0.0000   0.0000

    STD. DEVIATIONS        0.0000   0.0000   0.0000   0.0000   0.0000   0.0000
                           0.0000   0.0000   0.0000   0.0000   0.0000   0.0000


-------------------------------------------------------------------------------
               AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)
-------------------------------------------------------------------------------


  DAILY AVERAGE HEAD ON TOP OF LAYER  3
  -------------------------------------
    AVERAGES               0.0002   0.0001   0.0007   0.0002   0.0000   0.0082
                           0.0161   0.0002   0.0024   0.0032   0.0002   0.0001

    STD. DEVIATIONS        0.0006   0.0003   0.0022   0.0005   0.0001   0.0252
                           0.0442   0.0009   0.0066   0.0106   0.0004   0.0002

*******************************************************************************
```

```
*******************************************************************************

     AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS    1 THROUGH   30
-------------------------------------------------------------------------------
                                     INCHES           CU. FEET       PERCENT
                               -------------------   -------------   ---------
 PRECIPITATION                  17.93    (   4.448)      65096.8     100.00

 RUNOFF                          0.224   (  0.3376)        811.47      1.247

 EVAPOTRANSPIRATION             16.604   (  3.7495)     60271.22     92.587

 LATERAL DRAINAGE COLLECTED      1.13977 (  1.01585)      4137.376    6.35573
   FROM LAYER  2

 PERCOLATION/LEAKAGE THROUGH     0.00000 (  0.00000)         0.003     0.00000
   LAYER  4

 AVERAGE HEAD ON TOP             0.003 (    0.004)
   OF LAYER  3

 CHANGE IN WATER STORAGE        -0.034   (  0.6826)      -123.28     -0.189

*******************************************************************************


******************************************************************************

                PEAK DAILY VALUES FOR YEARS    1 THROUGH   30
   ------------------------------------------------------------------------
                                                (INCHES)      (CU. FT.)
                                               ----------   -------------
      PRECIPITATION                              4.67        16952.100

      RUNOFF                                     1.192        4326.7114

      DRAINAGE COLLECTED FROM LAYER  2           1.33830      4858.04053

      PERCOLATION/LEAKAGE THROUGH LAYER  4       0.000002        0.00617

      AVERAGE HEAD ON TOP OF LAYER  3            4.997

      MAXIMUM HEAD ON TOP OF LAYER  3            8.931

      LOCATION OF MAXIMUM HEAD IN LAYER  2
            (DISTANCE FROM DRAIN)               36.4 FEET
```

```
      SNOW WATER                                   0.94          3414.2761


      MAXIMUM VEG. SOIL WATER (VOL/VOL)                    0.3628

      MINIMUM VEG. SOIL WATER (VOL/VOL)                    0.1360

       ***  Maximum heads are computed using McEnroe's equations.  ***

            Reference:  Maximum Saturated Depth over Landfill Liner
                        by Bruce M. McEnroe, University of Kansas
                        ASCE Journal of Environmental Engineering
                        Vol. 119, No. 2, March 1993, pp. 262-270.

******************************************************************************




******************************************************************************

                    FINAL WATER STORAGE AT END OF YEAR   30
    ----------------------------------------------------------------------
                     LAYER        (INCHES)       (VOL/VOL)
                     -----        --------       ---------
                       1            1.9091         0.1591

                       2            0.0025         0.0100

                       3            0.0000         0.0000

                       4            7.6860         0.4270

                    SNOW WATER      0.000

******************************************************************************
******************************************************************************
```

```
******************************************************************************
******************************************************************************
**                                                                          **
**                                                                          **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**                HELP MODEL VERSION 3.07  (1 NOVEMBER 1997)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
**                                                                          **
******************************************************************************
******************************************************************************


PRECIPITATION DATA FILE:    C:\TSS\DATA4.D4
TEMPERATURE DATA FILE:      c:\TSS\DATA7.D7
SOLAR RADIATION DATA FILE:  C:\TSS\DATA13.D13
EVAPOTRANSPIRATION DATA:    C:\TSS\DATA11.D11
SOIL AND DESIGN DATA FILE:  C:\TSS\DATA10.D10
OUTPUT DATA FILE:           C:\TSS\OUTPUT1.OUT


TIME:  14:41     DATE:   2/11/2025


******************************************************************************

     TITLE:  CITY OF MEADOW LANDFILL - FC PIPE DESIGN TRANSITION SS

******************************************************************************


     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER
              WERE SPECIFIED BY THE USER.


                                   LAYER  1
                                   --------

                     TYPE 1 - VERTICAL PERCOLATION LAYER
                         MATERIAL TEXTURE NUMBER  10
           THICKNESS                   =     12.00   INCHES
```

```
    POROSITY                    =     0.3980 VOL/VOL
    FIELD CAPACITY              =     0.2440 VOL/VOL
    WILTING POINT               =     0.1360 VOL/VOL
    INITIAL SOIL WATER CONTENT  =     0.2440 VOL/VOL
    EFFECTIVE SAT. HYD. COND.   =  0.119999997000E-03 CM/SEC
  NOTE:  SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY  5.00
           FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.



                            LAYER  2
                            --------

                 TYPE 2 - LATERAL DRAINAGE LAYER
                   MATERIAL TEXTURE NUMBER   0
    THICKNESS                   =     0.25   INCHES
    POROSITY                    =     0.8500 VOL/VOL
    FIELD CAPACITY              =     0.0100 VOL/VOL
    WILTING POINT               =     0.0050 VOL/VOL
    INITIAL SOIL WATER CONTENT  =     0.0100 VOL/VOL
    EFFECTIVE SAT. HYD. COND.   =   19.4300003000     CM/SEC
    SLOPE                       =    25.00   PERCENT
    DRAINAGE LENGTH             =   270.0    FEET



                            LAYER  3
                            --------

                 TYPE 4 - FLEXIBLE MEMBRANE LINER
                   MATERIAL TEXTURE NUMBER  36
    THICKNESS                   =     0.04   INCHES
    POROSITY                    =     0.0000 VOL/VOL
    FIELD CAPACITY              =     0.0000 VOL/VOL
    WILTING POINT               =     0.0000 VOL/VOL
    INITIAL SOIL WATER CONTENT  =     0.0000 VOL/VOL
    EFFECTIVE SAT. HYD. COND.   =  0.399999993000E-12 CM/SEC
    FML PINHOLE DENSITY         =     0.00   HOLES/ACRE
    FML INSTALLATION DEFECTS    =     0.00   HOLES/ACRE
    FML PLACEMENT QUALITY       =  3 - GOOD



                            LAYER  4
                            --------

                   TYPE 3 - BARRIER SOIL LINER
```

```
                 MATERIAL TEXTURE NUMBER   0
   THICKNESS                   =     18.00   INCHES
   POROSITY                    =      0.4270 VOL/VOL
   FIELD CAPACITY              =      0.4180 VOL/VOL
   WILTING POINT               =      0.3670 VOL/VOL
   INITIAL SOIL WATER CONTENT  =      0.4270 VOL/VOL
   EFFECTIVE SAT. HYD. COND.   =  0.999999975000E-05 CM/SEC




           GENERAL DESIGN AND EVAPORATIVE ZONE DATA
           ----------------------------------------

 NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
          SOIL DATA BASE USING SOIL TEXTURE #10 WITH A
          GOOD STAND OF GRASS, A SURFACE SLOPE OF 25.%
          AND A SLOPE LENGTH OF  270. FEET.

SCS RUNOFF CURVE NUMBER             =     81.70
FRACTION OF AREA ALLOWING RUNOFF    =    100.0    PERCENT
AREA PROJECTED ON HORIZONTAL PLANE  =      1.000  ACRES
EVAPORATIVE ZONE DEPTH              =     12.0    INCHES
INITIAL WATER IN EVAPORATIVE ZONE   =      2.928  INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE  =      4.776  INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE  =      1.632  INCHES
INITIAL SNOW WATER                  =      0.000  INCHES
INITIAL WATER IN LAYER MATERIALS    =     10.616  INCHES
TOTAL INITIAL WATER                 =     10.616  INCHES
TOTAL SUBSURFACE INFLOW             =      0.00   INCHES/YEAR



            EVAPOTRANSPIRATION AND WEATHER DATA
            -----------------------------------

 NOTE:  EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
          MIDLAND               TEXAS

     STATION LATITUDE                        =  32.00 DEGREES
     MAXIMUM LEAF AREA INDEX                 =   4.50
     START OF GROWING SEASON (JULIAN DATE)   =     67
     END OF GROWING SEASON (JULIAN DATE)     =    317
     EVAPORATIVE ZONE DEPTH                  =  12.0  INCHES
     AVERAGE ANNUAL WIND SPEED               =  11.10 MPH
     AVERAGE 1ST QUARTER RELATIVE HUMIDITY   =  52.00 %
     AVERAGE 2ND QUARTER RELATIVE HUMIDITY   =  50.00 %
     AVERAGE 3RD QUARTER RELATIVE HUMIDITY   =  55.00 %
```

```
             AVERAGE 4TH QUARTER RELATIVE HUMIDITY  =  58.00 %


         NOTE:  PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
                  COEFFICIENTS FOR    ABILENE             TEXAS

                  NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

     JAN/JUL     FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
     -------     -------     -------     -------     -------     -------
       0.69        0.62        1.07        1.31        2.20        2.67
       1.94        1.80        2.56        1.57        0.88        0.74


         NOTE:  TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
                  COEFFICIENTS FOR    MIDLAND             TEXAS

             NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

     JAN/JUL     FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
     -------     -------     -------     -------     -------     -------
      43.70       47.70       55.00       64.10       72.10       79.80
      81.70       80.60       74.20       64.40       52.30       46.00


         NOTE:  SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
                  COEFFICIENTS FOR    MIDLAND             TEXAS
                    AND STATION LATITUDE  =  32.00 DEGREES




*******************************************************************************

         AVERAGE MONTHLY VALUES IN INCHES FOR YEARS    1 THROUGH   30
-------------------------------------------------------------------------------

                         JAN/JUL  FEB/AUG  MAR/SEP  APR/OCT  MAY/NOV  JUN/DEC
                         -------  -------  -------  -------  -------  -------
  PRECIPITATION
  -------------
    TOTALS                 0.69     0.55     1.29     1.32     1.96     2.54
                           2.67     1.56     2.49     1.40     0.90     0.57

    STD. DEVIATIONS        0.64     0.33     1.02     0.82     1.05     2.04
```

```
                         1.97     1.09     1.58     1.26     0.60     0.60

 RUNOFF
 ------
   TOTALS                0.000    0.000    0.002    0.000    0.006    0.101
                         0.153    0.003    0.042    0.016    0.000    0.000

   STD. DEVIATIONS       0.000    0.000    0.007    0.001    0.013    0.235
                         0.354    0.009    0.107    0.059    0.001    0.000

 EVAPOTRANSPIRATION
 ------------------
   TOTALS                0.636    0.548    0.990    1.819    1.879    2.181
                         2.324    1.520    2.231    1.006    0.843    0.642

   STD. DEVIATIONS       0.393    0.393    0.719    0.919    1.012    1.523
                         1.499    1.019    1.348    0.743    0.465    0.422

 LATERAL DRAINAGE COLLECTED FROM LAYER  2
 ----------------------------------------
   TOTALS                0.0366   0.0194   0.0757   0.0178   0.0062   0.2354
                         0.2584   0.0138   0.1398   0.1929   0.0240   0.0061

   STD. DEVIATIONS       0.1077   0.0636   0.2063   0.0614   0.0312   0.5461
                         0.4804   0.0735   0.3714   0.5889   0.0705   0.0208

 PERCOLATION/LEAKAGE THROUGH LAYER  4
 ------------------------------------
   TOTALS                0.0000   0.0000   0.0000   0.0000   0.0000   0.0000
                         0.0000   0.0000   0.0000   0.0000   0.0000   0.0000

   STD. DEVIATIONS       0.0000   0.0000   0.0000   0.0000   0.0000   0.0000
                         0.0000   0.0000   0.0000   0.0000   0.0000   0.0000


-------------------------------------------------------------------------------
             AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)
-------------------------------------------------------------------------------


 DAILY AVERAGE HEAD ON TOP OF LAYER  3
 -------------------------------------
   AVERAGES              0.0000   0.0000   0.0000   0.0000   0.0000   0.0001
                         0.0001   0.0000   0.0001   0.0001   0.0000   0.0000

   STD. DEVIATIONS       0.0000   0.0000   0.0001   0.0000   0.0000   0.0002
                         0.0002   0.0000   0.0001   0.0002   0.0000   0.0000

*******************************************************************************
```

```
*******************************************************************************

     AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS    1 THROUGH   30
-------------------------------------------------------------------------------
                                     INCHES            CU. FEET       PERCENT
                               -------------------   -------------   ---------
 PRECIPITATION                  17.93    (   4.448)      65096.8     100.00

 RUNOFF                          0.323   (  0.4294)       1171.08      1.799

 EVAPOTRANSPIRATION             16.617   (  3.7350)      60320.96     92.663

 LATERAL DRAINAGE COLLECTED      1.02630 (  0.94270)      3725.484    5.72299
   FROM LAYER  2

 PERCOLATION/LEAKAGE THROUGH     0.00000 (  0.00000)         0.001     0.00000
   LAYER  4

 AVERAGE HEAD ON TOP             0.000 (    0.000)
   OF LAYER  3

 CHANGE IN WATER STORAGE        -0.033   (  0.6786)       -120.74     -0.185

*******************************************************************************


******************************************************************************

                PEAK DAILY VALUES FOR YEARS    1 THROUGH   30
   ------------------------------------------------------------------------
                                                (INCHES)      (CU. FT.)
                                               ----------   -------------
      PRECIPITATION                              4.67         16952.100

      RUNOFF                                     1.305         4738.6367

      DRAINAGE COLLECTED FROM LAYER  2           0.84502       3067.43286

      PERCOLATION/LEAKAGE THROUGH LAYER  4       0.000000         0.00005

      AVERAGE HEAD ON TOP OF LAYER  3            0.010

      MAXIMUM HEAD ON TOP OF LAYER  3            0.017

      LOCATION OF MAXIMUM HEAD IN LAYER  2
            (DISTANCE FROM DRAIN)                0.0 FEET
```

```
      SNOW WATER                                 0.94          3403.5652


      MAXIMUM VEG. SOIL WATER (VOL/VOL)                  0.3592

      MINIMUM VEG. SOIL WATER (VOL/VOL)                  0.1360


       ***  Maximum heads are computed using McEnroe's equations.  ***

            Reference:  Maximum Saturated Depth over Landfill Liner
                        by Bruce M. McEnroe, University of Kansas
                        ASCE Journal of Environmental Engineering
                        Vol. 119, No. 2, March 1993, pp. 262-270.


******************************************************************************





******************************************************************************

                   FINAL WATER STORAGE AT END OF YEAR   30
    ----------------------------------------------------------------------
                    LAYER        (INCHES)       (VOL/VOL)
                    -----        --------       ---------
                      1            1.9302         0.1608

                      2            0.0025         0.0100

                      3            0.0000         0.0000

                      4            7.6860         0.4270

                  SNOW WATER       0.000

******************************************************************************
******************************************************************************
```

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

PART III – SITE DEVELOPMENT PLAN
APPENDIX IIIJ-B
GCL ALTERNATIVE FINAL COVER DEMONSTRATION

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

DAVID E. POE
81734

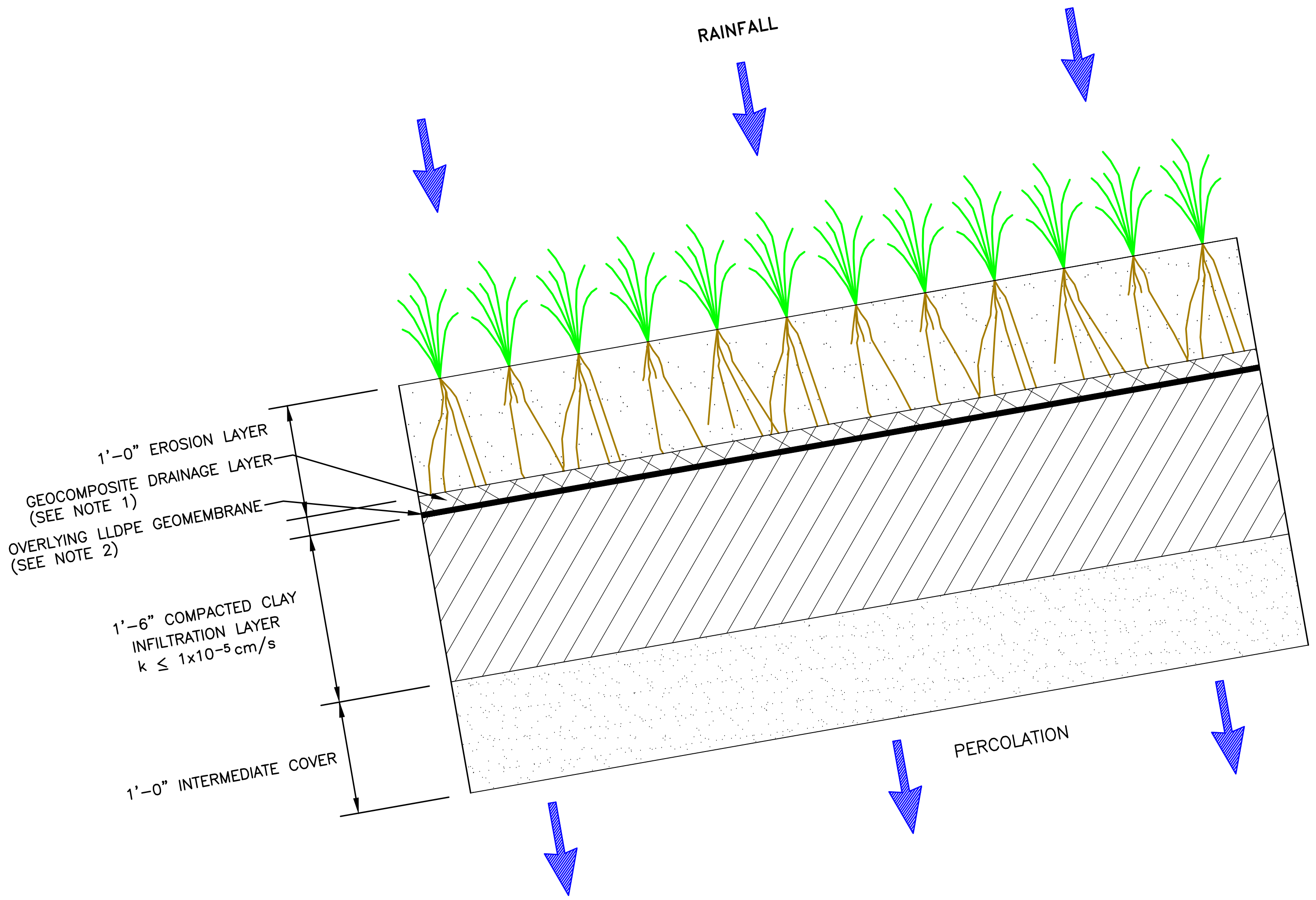
02/28/2025

Prepared by

Weaver Consultants Group, LLC
TBPE Registration No. F-3727
6420 Southwest Boulevard, Suite 206
Fort Worth, Texas 76109
817-735-9770

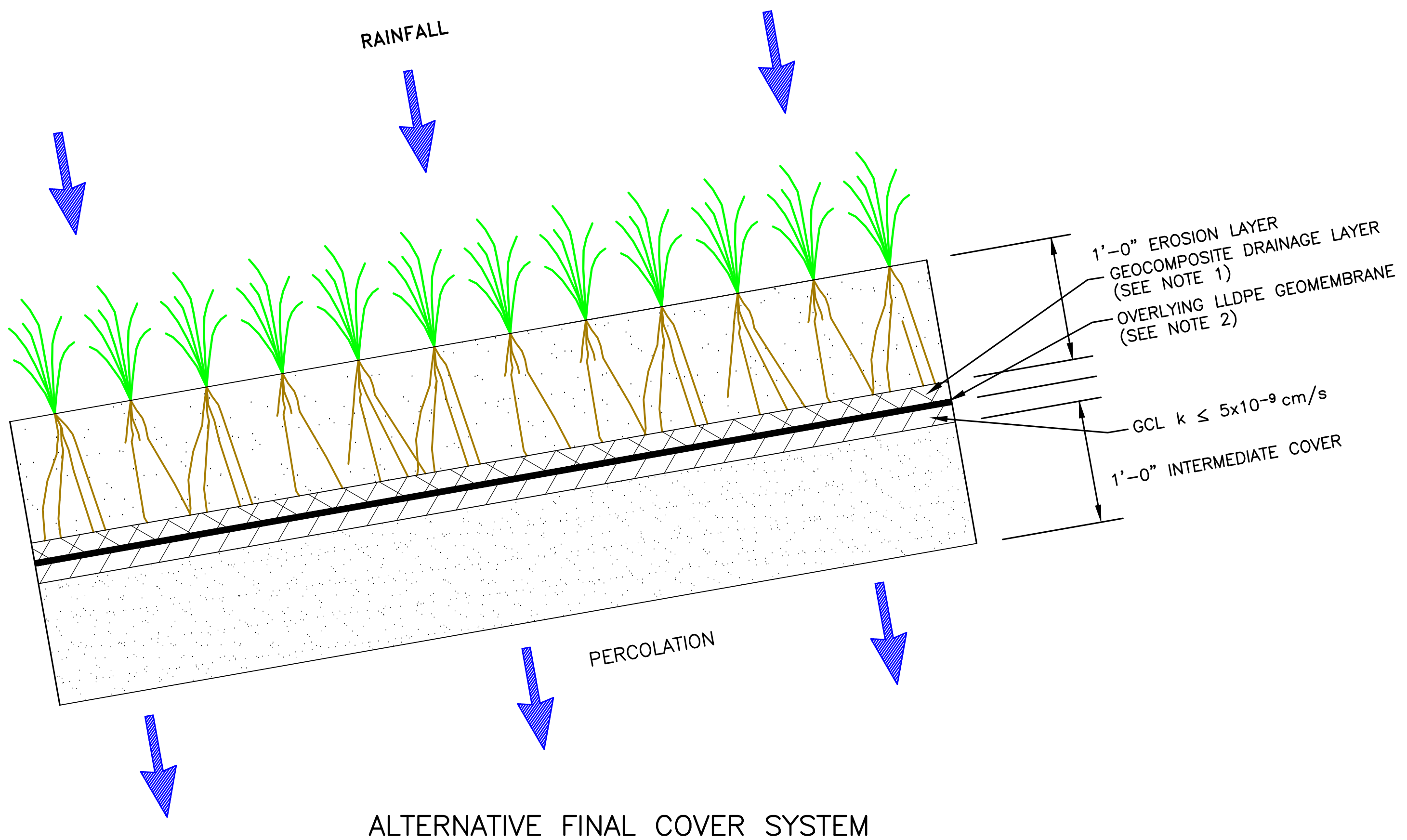
WBC Project No. 0120-809-11-05

AVERAGE ANNUAL RAINFALL = 17.93 IN/YEAR



COMPOSITE FINAL COVER SYSTEM

	TOP SLOPE	SIDE SLOPE
AVERAGE ANNUAL PERCOLATION (IN/YEAR)=	0.00008	0.00000
PEAK DAILY PERCOLATION (IN/DAY)=	0.00035	0.000001



ALTERNATIVE FINAL COVER SYSTEM

	TOP SLOPE	SIDE SLOPE
AVERAGE ANNUAL PERCOLATION (IN/YEAR)=	0.00000	0.00000
PEAK DAILY PERCOLATION (IN/DAY)=	0.000006	0.000000

NOTES:

1. THE FINAL COVER GEOCOMPOSITE DRAINAGE LAYER DESIGN IS INCLUDED IN APPENDIX IIIJ–A–A AND DESIGN CONSISTS OF SINGLE–SIDED GEOCOMPOSITE FOR THE TOP SLOPES AND DOUBLE–SIDED GEOCOMPOSITE FOR THE SIDE SLOPES.
2. THE OVERLYING LLDPE GEOMEMBRANE LINER DESIGN CONSISTS OF SMOOTH OR TEXTURED 40–MIL LLDPE FOR THE TOP SLOPES AND TEXTURED 40–MIL LLDPE FOR THE SIDE SLOPES.
3. THIS GRAPHIC IS DEVELOPED TO COMPARE THE COMPOSITE FINAL COVER SYSTEM AND ALTERNATIVE FINAL COVER SYSTEM PERCOLATION RATES THROUGH THE BOTTOM OF THE INFILTRATION AND GCL LAYERS, RESPECTIVELY.

DAVID E. POE
81734
02/28/2025

☐ DRAFT
☒ FOR PERMITTING PURPOSES ONLY
☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120–076–11
CAD: FIG IIIJ–B.1–DEMO. COMPARISON.DWG

DRAWN BY: JDW
DESIGN BY: BPY
REVIEWED BY: DEP

Weaver Consultants Group
TBPE REGISTRATION NO. F–3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT
ALTERNATIVE FINAL COVER
DEMONSTRATION COMPARISON

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

FIGURE IIIJ–B.1

O:\0120\809\EXPANSION 2023\PART III\IIIJ\IIIJ–B\CLEAN 02–2025\IIIJ–B.1–FC COMPARISON.dwg, jwilson, 1:2

APPENDIX IIIJ-B-1

HELP MODEL ANALYSIS

Includes pages IIIJ-B-1-1 through IIIJ-B-1-31

STATE OF TEXAS
DAVID E. POE
81734
LICENSED
PROFESSIONAL ENGINEER

02/28/2025

Prep By: SSM
Date: 2/28/2025

CITY OF MEADOW LANDFILL
0120-076-11-106
HELP VERSION 3.07 SUMMARY SHEET
AFC DEMONSTRATION

Chkd By: BPY/DEP
Date: 2/28/2025

		COMPOSITE FINAL COVER		GCL ALTERNATIVE FINAL COVER	
		TOP SLOPE	SIDE SLOPE	TOP SLOPE	SIDE SLOPE
GENERAL	Case No.	1	2	3	4
INFORMATION	Output Page	IIIJ-B-1-3	IIIJ-B-1-10	IIIJ-B-1-18	IIIJ-B-1-25
	No. of Years	30	30	30	30
	Ground Cover	GOOD	GOOD	GOOD	GOOD
	SCS Runoff Curve No.	80.6	82.4	80.6	82.4
	Model Area (acre)	1	1	1	1
	Runoff Area (%)	100	100	100	100
	Maximum Leaf Area Index	4.5	4.5	4.5	4.5
	Evaporative Zone Depth (inch)	12	12	12	12
EROSION	Thickness (in)	12	12	12	12
LAYER	Porosity (vol/vol)	0.3980	0.3980	0.3980	0.3980
(Texture = 10)	Field Capacity (vol/vol)	0.2440	0.2440	0.2440	0.2440
	Wilting Point (vol/vol)	0.1360	0.1360	0.1360	0.1360
	Init. Moisture Content (vol/vol)	0.2440	0.2440	0.2440	0.2440
	Hyd. Conductivity (cm/s)	1.2E-04	1.2E-04	1.2E-04	1.2E-04
DRAINAGE	Thickness (in)	0.25	0.25	0.25	0.25
LAYER	Porosity (vol/vol)	0.8500	0.8500	0.8500	0.8500
(Texture = 0)	Field Capacity (vol/vol)	0.0100	0.0100	0.0100	0.0100
	Wilting Point (vol/vol)	0.0050	0.0050	0.0050	0.0050
	Init. Moisture Content (vol/vol)	0.0100	0.0100	0.0100	0.0100
	Hyd. Conductivity (cm/s)	6.63	19.43	6.63	19.43
	Slope (%)	5	25	5	25
	Slope Length (ft)	350	140	350	140
FLEXIBLE MEMBRANE	Thickness (in)	0.04	0.04	0.04	0.04
LINER	Hyd. Conductivity (cm/s)	4.0E-13	4.0E-13	4.0E-13	4.0E-13
(Texture = 36)	Pinhole Density (holes/acre)	1	1	1	1
	Installation Defects (holes/acre)	4	4	4	4
	Placement Quality	GOOD	GOOD	GOOD	GOOD
INFILTRATION	Thickness (in)	18	18		
LAYER	Porosity (vol/vol)	0.4270	0.4270		
(Texture = 0)	Field Capacity (vol/vol)	0.4180	0.4180		
	Wilting Point (vol/vol)	0.3670	0.3670		
	Init. Moisture Content (vol/vol)	0.4270	0.4270		
	Hyd. Conductivity (cm/s)	1.0E-05	1.0E-05		
GEOSYNTHETIC CLAY	Thickness (in)			0.25	0.25
LINER	Porosity (vol/vol)			0.7500	0.7500
(Texture = 17)	Field Capacity (vol/vol)			0.7470	0.7470
	Wilting Point (vol/vol)			0.4000	0.4000
	Init. Moisture Content (vol/vol)			0.7500	0.7500
	Hyd. Conductivity (cm/s)			5.0E-09	5.0E-09
PRECIPITATION	Average Annual (in)	17.93	17.93	17.93	17.93
RUNOFF	Average Annual (in)	0.223	0.360	0.223	0.356
EVAPOTRANSPIRATION	Average Annual (in)	16.60	16.59	16.60	16.66
INFILTRATION RATE	Average Annual (in/year)	0.00008	0.00000	0.00000	0.00000
THROUGH FINAL COVER	Peak Daily (in/day)	0.00035	0.000001	0.000006	0.000000

```
******************************************************************************
******************************************************************************
**                                                                          **
**                                                                          **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**                HELP MODEL VERSION 3.07  (1 NOVEMBER 1997)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
**                                                                          **
******************************************************************************
******************************************************************************


PRECIPITATION DATA FILE:    C:\COMPTS\DATA4.D4
TEMPERATURE DATA FILE:      c:\COMPTS\DATA7.D7
SOLAR RADIATION DATA FILE:  C:\COMPTS\DATA13.D13
EVAPOTRANSPIRATION DATA:    C:\COMPTS\DATA11.D11
SOIL AND DESIGN DATA FILE:  C:\COMPTS\DATA10.D10
OUTPUT DATA FILE:           C:\COMPTS\CL85.OUT


TIME:  17:40     DATE:   2/11/2025


******************************************************************************

     TITLE:  CITY OF MEADOW LANDFILL - COMPOSITE FINAL COVER TS

******************************************************************************


     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER
              WERE SPECIFIED BY THE USER.


                                   LAYER  1
                                   --------

                     TYPE 1 - VERTICAL PERCOLATION LAYER
                         MATERIAL TEXTURE NUMBER  10
           THICKNESS                   =     12.00   INCHES
```

```
  POROSITY                    =      0.3980 VOL/VOL
  FIELD CAPACITY              =      0.2440 VOL/VOL
  WILTING POINT               =      0.1360 VOL/VOL
  INITIAL SOIL WATER CONTENT  =      0.2440 VOL/VOL
  EFFECTIVE SAT. HYD. COND.   =  0.119999997000E-03 CM/SEC
NOTE:  SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY  5.00
         FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.




                          LAYER  2
                          --------

            TYPE 2 - LATERAL DRAINAGE LAYER
              MATERIAL TEXTURE NUMBER   0
  THICKNESS                   =      0.25   INCHES
  POROSITY                    =      0.8500 VOL/VOL
  FIELD CAPACITY              =      0.0100 VOL/VOL
  WILTING POINT               =      0.0050 VOL/VOL
  INITIAL SOIL WATER CONTENT  =      0.0100 VOL/VOL
  EFFECTIVE SAT. HYD. COND.   =   6.63000011000     CM/SEC
  SLOPE                       =      5.00   PERCENT
  DRAINAGE LENGTH             =    350.0    FEET




                          LAYER  3
                          --------

            TYPE 4 - FLEXIBLE MEMBRANE LINER
              MATERIAL TEXTURE NUMBER  36
  THICKNESS                   =      0.04   INCHES
  POROSITY                    =      0.0000 VOL/VOL
  FIELD CAPACITY              =      0.0000 VOL/VOL
  WILTING POINT               =      0.0000 VOL/VOL
  INITIAL SOIL WATER CONTENT  =      0.0000 VOL/VOL
  EFFECTIVE SAT. HYD. COND.   =  0.399999993000E-12 CM/SEC
  FML PINHOLE DENSITY         =      1.00   HOLES/ACRE
  FML INSTALLATION DEFECTS    =      4.00   HOLES/ACRE
  FML PLACEMENT QUALITY       =  3 - GOOD




                          LAYER  4
                          --------

              TYPE 3 - BARRIER SOIL LINER
```

```
                 MATERIAL TEXTURE NUMBER   0
   THICKNESS                   =     18.00   INCHES
   POROSITY                    =      0.4270 VOL/VOL
   FIELD CAPACITY              =      0.4180 VOL/VOL
   WILTING POINT               =      0.3670 VOL/VOL
   INITIAL SOIL WATER CONTENT  =      0.4270 VOL/VOL
   EFFECTIVE SAT. HYD. COND.   =  0.999999975000E-05 CM/SEC




           GENERAL DESIGN AND EVAPORATIVE ZONE DATA
           ----------------------------------------

 NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
          SOIL DATA BASE USING SOIL TEXTURE #10 WITH A
          GOOD STAND OF GRASS, A SURFACE SLOPE OF  5.%
          AND A SLOPE LENGTH OF  350. FEET.

SCS RUNOFF CURVE NUMBER             =     80.60
FRACTION OF AREA ALLOWING RUNOFF    =    100.0    PERCENT
AREA PROJECTED ON HORIZONTAL PLANE  =      1.000  ACRES
EVAPORATIVE ZONE DEPTH              =     12.0    INCHES
INITIAL WATER IN EVAPORATIVE ZONE   =      2.928  INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE  =      4.776  INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE  =      1.632  INCHES
INITIAL SNOW WATER                  =      0.000  INCHES
INITIAL WATER IN LAYER MATERIALS    =     10.616  INCHES
TOTAL INITIAL WATER                 =     10.616  INCHES
TOTAL SUBSURFACE INFLOW             =      0.00   INCHES/YEAR



            EVAPOTRANSPIRATION AND WEATHER DATA
            -----------------------------------

 NOTE:  EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
          MIDLAND              TEXAS

     STATION LATITUDE                       =  32.00 DEGREES
     MAXIMUM LEAF AREA INDEX                =   4.50
     START OF GROWING SEASON (JULIAN DATE)  =     67
     END OF GROWING SEASON (JULIAN DATE)    =    317
     EVAPORATIVE ZONE DEPTH                 =  12.0  INCHES
     AVERAGE ANNUAL WIND SPEED              =  11.10 MPH
     AVERAGE 1ST QUARTER RELATIVE HUMIDITY  =  52.00 %
     AVERAGE 2ND QUARTER RELATIVE HUMIDITY  =  50.00 %
     AVERAGE 3RD QUARTER RELATIVE HUMIDITY  =  55.00 %
```

```
             AVERAGE 4TH QUARTER RELATIVE HUMIDITY  =  58.00 %


         NOTE:  PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
                  COEFFICIENTS FOR    ABILENE             TEXAS

                  NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

     JAN/JUL     FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
     -------     -------     -------     -------     -------     -------
       0.69        0.62        1.07        1.31        2.20        2.67
       1.94        1.80        2.56        1.57        0.88        0.74


         NOTE:  TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
                  COEFFICIENTS FOR    MIDLAND             TEXAS

             NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

     JAN/JUL     FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
     -------     -------     -------     -------     -------     -------
      40.90       44.80       52.70       60.60       70.00       78.30
      80.60       79.30       72.00       61.80       49.90       41.90


         NOTE:  SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
                  COEFFICIENTS FOR    MIDLAND             TEXAS
                    AND STATION LATITUDE  =  32.00 DEGREES




*******************************************************************************

         AVERAGE MONTHLY VALUES IN INCHES FOR YEARS    1 THROUGH   30
-------------------------------------------------------------------------------

                         JAN/JUL  FEB/AUG  MAR/SEP  APR/OCT  MAY/NOV  JUN/DEC
                         -------  -------  -------  -------  -------  -------
  PRECIPITATION
  -------------
    TOTALS                 0.69     0.55     1.29     1.32     1.96     2.54
                           2.67     1.56     2.49     1.40     0.90     0.57

    STD. DEVIATIONS        0.64     0.33     1.02     0.82     1.05     2.04
```

```
                        1.97     1.09     1.58     1.26     0.60     0.60

  RUNOFF
  ------
    TOTALS              0.000    0.000    0.001    0.000    0.003    0.077
                        0.108    0.002    0.023    0.009    0.000    0.000

    STD. DEVIATIONS     0.000    0.000    0.004    0.000    0.007    0.199
                        0.271    0.006    0.065    0.038    0.000    0.000

  EVAPOTRANSPIRATION
  ------------------
    TOTALS              0.639    0.557    0.973    1.797    1.910    2.188
                        2.312    1.512    2.228    0.991    0.845    0.649

    STD. DEVIATIONS     0.396    0.393    0.752    0.912    1.033    1.538
                        1.478    1.010    1.346    0.712    0.459    0.432

  LATERAL DRAINAGE COLLECTED FROM LAYER  2
  ----------------------------------------
    TOTALS              0.0325   0.0100   0.0829   0.0260   0.0067   0.2477
                        0.3150   0.0178   0.1614   0.2010   0.0271   0.0156

    STD. DEVIATIONS     0.0979   0.0419   0.2100   0.0886   0.0236   0.5575
                        0.5807   0.0956   0.4124   0.6135   0.0642   0.0510

  PERCOLATION/LEAKAGE THROUGH LAYER  4
  ------------------------------------
    TOTALS              0.0000   0.0000   0.0000   0.0000   0.0000   0.0000
                        0.0000   0.0000   0.0000   0.0000   0.0000   0.0000

    STD. DEVIATIONS     0.0000   0.0000   0.0000   0.0000   0.0000   0.0001
                        0.0001   0.0000   0.0000   0.0000   0.0000   0.0000


-------------------------------------------------------------------------------
             AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)
-------------------------------------------------------------------------------


  DAILY AVERAGE HEAD ON TOP OF LAYER  3
  -------------------------------------
    AVERAGES            0.0002   0.0001   0.0006   0.0002   0.0000   0.0082
                        0.0162   0.0002   0.0024   0.0032   0.0002   0.0001

    STD. DEVIATIONS     0.0006   0.0003   0.0020   0.0006   0.0001   0.0252
                        0.0442   0.0009   0.0066   0.0106   0.0004   0.0003

*******************************************************************************
```

```
*******************************************************************************

     AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS    1 THROUGH   30
-------------------------------------------------------------------------------
                                     INCHES            CU. FEET       PERCENT
                               -------------------   -------------   ---------
 PRECIPITATION                  17.93    (   4.448)      65096.8     100.00

 RUNOFF                          0.223   (  0.3377)        810.99      1.246

 EVAPOTRANSPIRATION             16.600   (  3.7486)      60256.67     92.565

 LATERAL DRAINAGE COLLECTED      1.14384 (  1.00911)      4152.128    6.37839
   FROM LAYER  2

 PERCOLATION/LEAKAGE THROUGH     0.00008 (  0.00011)         0.278     0.00043
   LAYER  4

 AVERAGE HEAD ON TOP             0.003 (    0.004)
   OF LAYER  3

 CHANGE IN WATER STORAGE        -0.034   (  0.6729)       -123.29     -0.189

*******************************************************************************



******************************************************************************

                PEAK DAILY VALUES FOR YEARS    1 THROUGH   30
   ------------------------------------------------------------------------
                                                (INCHES)      (CU. FT.)
                                               ----------   -------------
      PRECIPITATION                              4.67         16952.100

      RUNOFF                                     1.192         4326.7114

      DRAINAGE COLLECTED FROM LAYER  2           1.33830       4858.03906

      PERCOLATION/LEAKAGE THROUGH LAYER  4       0.000345         1.25319

      AVERAGE HEAD ON TOP OF LAYER  3            4.995

      MAXIMUM HEAD ON TOP OF LAYER  3            8.928

      LOCATION OF MAXIMUM HEAD IN LAYER  2
            (DISTANCE FROM DRAIN)               36.4 FEET
```

```
      SNOW WATER                                 0.94          3414.2761


      MAXIMUM VEG. SOIL WATER (VOL/VOL)                  0.3628

      MINIMUM VEG. SOIL WATER (VOL/VOL)                  0.1360


       ***  Maximum heads are computed using McEnroe's equations.  ***

            Reference:  Maximum Saturated Depth over Landfill Liner
                        by Bruce M. McEnroe, University of Kansas
                        ASCE Journal of Environmental Engineering
                        Vol. 119, No. 2, March 1993, pp. 262-270.


******************************************************************************





******************************************************************************

                   FINAL WATER STORAGE AT END OF YEAR   30
    ----------------------------------------------------------------------
                    LAYER        (INCHES)       (VOL/VOL)
                    -----        --------       ---------
                      1            1.9091         0.1591

                      2            0.0025         0.0100

                      3            0.0000         0.0000

                      4            7.6860         0.4270

                  SNOW WATER       0.000

******************************************************************************
******************************************************************************
```

```
******************************************************************************
******************************************************************************
**                                                                          **
**                                                                          **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**                HELP MODEL VERSION 3.07  (1 NOVEMBER 1997)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
**                                                                          **
******************************************************************************
******************************************************************************


PRECIPITATION DATA FILE:    C:\ALTTS\DATA4.D4
TEMPERATURE DATA FILE:      c:\ALTTS\DATA7.D7
SOLAR RADIATION DATA FILE:  C:\ALTTS\DATA13.D13
EVAPOTRANSPIRATION DATA:    C:\ALTTS\DATA11.D11
SOIL AND DESIGN DATA FILE:  C:\ALTTS\DATA10.D10
OUTPUT DATA FILE:           C:\ALTTS\CL85.OUT


TIME:  17:55     DATE:   2/11/2025


******************************************************************************

     TITLE:  CITY OF MEADOW LANDFILL - ALTERNATIVE FINAL COVER TS

******************************************************************************


     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER
              WERE SPECIFIED BY THE USER.


                                   LAYER  1
                                   --------

                     TYPE 1 - VERTICAL PERCOLATION LAYER
                         MATERIAL TEXTURE NUMBER  10
           THICKNESS                   =     12.00   INCHES
```

```
  POROSITY                    =      0.3980 VOL/VOL
  FIELD CAPACITY              =      0.2440 VOL/VOL
  WILTING POINT               =      0.1360 VOL/VOL
  INITIAL SOIL WATER CONTENT  =      0.2440 VOL/VOL
  EFFECTIVE SAT. HYD. COND.   =  0.119999997000E-03 CM/SEC
NOTE:  SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY  5.00
         FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.




                          LAYER  2
                          --------

            TYPE 2 - LATERAL DRAINAGE LAYER
              MATERIAL TEXTURE NUMBER   0
  THICKNESS                   =      0.25   INCHES
  POROSITY                    =      0.8500 VOL/VOL
  FIELD CAPACITY              =      0.0100 VOL/VOL
  WILTING POINT               =      0.0050 VOL/VOL
  INITIAL SOIL WATER CONTENT  =      0.0100 VOL/VOL
  EFFECTIVE SAT. HYD. COND.   =   6.63000011000     CM/SEC
  SLOPE                       =      5.00   PERCENT
  DRAINAGE LENGTH             =    350.0    FEET




                          LAYER  3
                          --------

            TYPE 4 - FLEXIBLE MEMBRANE LINER
              MATERIAL TEXTURE NUMBER  36
  THICKNESS                   =      0.04   INCHES
  POROSITY                    =      0.0000 VOL/VOL
  FIELD CAPACITY              =      0.0000 VOL/VOL
  WILTING POINT               =      0.0000 VOL/VOL
  INITIAL SOIL WATER CONTENT  =      0.0000 VOL/VOL
  EFFECTIVE SAT. HYD. COND.   =  0.399999993000E-12 CM/SEC
  FML PINHOLE DENSITY         =      1.00   HOLES/ACRE
  FML INSTALLATION DEFECTS    =      4.00   HOLES/ACRE
  FML PLACEMENT QUALITY       =  3 - GOOD




                          LAYER  4
                          --------

              TYPE 3 - BARRIER SOIL LINER
```

```
              MATERIAL TEXTURE NUMBER   0
   THICKNESS                 =      0.25   INCHES
   POROSITY                  =      0.7500 VOL/VOL
   FIELD CAPACITY            =      0.7470 VOL/VOL
   WILTING POINT             =      0.4000 VOL/VOL
   INITIAL SOIL WATER CONTENT  =      0.7500 VOL/VOL
   EFFECTIVE SAT. HYD. COND.   =  0.499999997000E-08 CM/SEC




          GENERAL DESIGN AND EVAPORATIVE ZONE DATA
          ----------------------------------------

 NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
         SOIL DATA BASE USING SOIL TEXTURE #10 WITH A
         GOOD STAND OF GRASS, A SURFACE SLOPE OF  5.%
         AND A SLOPE LENGTH OF  350. FEET.

SCS RUNOFF CURVE NUMBER             =     80.60
FRACTION OF AREA ALLOWING RUNOFF    =    100.0    PERCENT
AREA PROJECTED ON HORIZONTAL PLANE  =      1.000  ACRES
EVAPORATIVE ZONE DEPTH              =     12.0    INCHES
INITIAL WATER IN EVAPORATIVE ZONE   =      2.928  INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE  =      4.776  INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE  =      1.632  INCHES
INITIAL SNOW WATER                  =      0.000  INCHES
INITIAL WATER IN LAYER MATERIALS    =      3.118  INCHES
TOTAL INITIAL WATER                 =      3.118  INCHES
TOTAL SUBSURFACE INFLOW             =      0.00   INCHES/YEAR



           EVAPOTRANSPIRATION AND WEATHER DATA
           -----------------------------------

 NOTE:  EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
         MIDLAND              TEXAS

     STATION LATITUDE                        =  32.00 DEGREES
     MAXIMUM LEAF AREA INDEX                 =   4.50
     START OF GROWING SEASON (JULIAN DATE)   =     67
     END OF GROWING SEASON (JULIAN DATE)     =    317
     EVAPORATIVE ZONE DEPTH                  =  12.0  INCHES
     AVERAGE ANNUAL WIND SPEED               =  11.10 MPH
     AVERAGE 1ST QUARTER RELATIVE HUMIDITY   =  52.00 %
     AVERAGE 2ND QUARTER RELATIVE HUMIDITY   =  50.00 %
     AVERAGE 3RD QUARTER RELATIVE HUMIDITY   =  55.00 %
```

```
           AVERAGE 4TH QUARTER RELATIVE HUMIDITY  =  58.00 %


       NOTE:  PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
                COEFFICIENTS FOR    ABILENE            TEXAS

                NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

     JAN/JUL     FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
     -------     -------     -------     -------     -------     -------
       0.69        0.62        1.07        1.31        2.20        2.67
       1.94        1.80        2.56        1.57        0.88        0.74


       NOTE:  TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
                COEFFICIENTS FOR    MIDLAND            TEXAS

           NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

     JAN/JUL     FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
     -------     -------     -------     -------     -------     -------
      40.90       44.80       52.70       60.60       70.00       78.30
      80.60       79.30       72.00       61.80       49.90       41.90


       NOTE:  SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
                COEFFICIENTS FOR    MIDLAND            TEXAS
                  AND STATION LATITUDE  =  32.00 DEGREES




*******************************************************************************

       AVERAGE MONTHLY VALUES IN INCHES FOR YEARS    1 THROUGH   30
-------------------------------------------------------------------------------

                         JAN/JUL  FEB/AUG  MAR/SEP  APR/OCT  MAY/NOV  JUN/DEC
                         -------  -------  -------  -------  -------  -------
  PRECIPITATION
  -------------
    TOTALS                 0.69     0.55     1.29     1.32     1.96     2.54
                           2.67     1.56     2.49     1.40     0.90     0.57

    STD. DEVIATIONS        0.64     0.33     1.02     0.82     1.05     2.04
```

```
                           1.97     1.09     1.58     1.26     0.60     0.60

  RUNOFF
  ------
    TOTALS                 0.000    0.000    0.001    0.000    0.003    0.077
                           0.108    0.002    0.023    0.009    0.000    0.000

    STD. DEVIATIONS        0.000    0.000    0.004    0.000    0.007    0.199
                           0.271    0.006    0.065    0.038    0.000    0.000

  EVAPOTRANSPIRATION
  ------------------
    TOTALS                 0.639    0.555    0.972    1.801    1.909    2.188
                           2.312    1.511    2.227    0.990    0.845    0.649

    STD. DEVIATIONS        0.396    0.392    0.751    0.911    1.032    1.537
                           1.479    1.010    1.344    0.713    0.459    0.432

  LATERAL DRAINAGE COLLECTED FROM LAYER  2
  ----------------------------------------
    TOTALS                 0.0326   0.0099   0.0827   0.0254   0.0071   0.2473
                           0.3154   0.0181   0.1621   0.2016   0.0269   0.0154

    STD. DEVIATIONS        0.0985   0.0400   0.2100   0.0849   0.0239   0.5569
                           0.5801   0.0955   0.4131   0.6134   0.0641   0.0508

  PERCOLATION/LEAKAGE THROUGH LAYER  4
  ------------------------------------
    TOTALS                 0.0000   0.0000   0.0000   0.0000   0.0000   0.0000
                           0.0000   0.0000   0.0000   0.0000   0.0000   0.0000

    STD. DEVIATIONS        0.0000   0.0000   0.0000   0.0000   0.0000   0.0000
                           0.0000   0.0000   0.0000   0.0000   0.0000   0.0000


-------------------------------------------------------------------------------
               AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)
-------------------------------------------------------------------------------


  DAILY AVERAGE HEAD ON TOP OF LAYER  3
  -------------------------------------
    AVERAGES               0.0002   0.0001   0.0007   0.0002   0.0000   0.0081
                           0.0162   0.0002   0.0024   0.0032   0.0002   0.0001

    STD. DEVIATIONS        0.0006   0.0003   0.0022   0.0005   0.0001   0.0252
                           0.0442   0.0009   0.0066   0.0106   0.0004   0.0003

*******************************************************************************
```

```
*******************************************************************************

     AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS    1 THROUGH   30
-------------------------------------------------------------------------------
                                     INCHES          CU. FEET       PERCENT
                               -------------------   -------------   ---------
 PRECIPITATION                  17.93    (   4.448)      65096.8     100.00

 RUNOFF                          0.223   (  0.3377)        811.04      1.246

 EVAPOTRANSPIRATION             16.599   (  3.7457)      60255.12     92.562

 LATERAL DRAINAGE COLLECTED      1.14433 (  1.00891)      4153.902    6.38112
   FROM LAYER  2

 PERCOLATION/LEAKAGE THROUGH     0.00000 (  0.00000)         0.005     0.00001
   LAYER  4

 AVERAGE HEAD ON TOP             0.003 (    0.004)
   OF LAYER  3

 CHANGE IN WATER STORAGE        -0.034   (  0.6724)       -123.28     -0.189

*******************************************************************************



******************************************************************************

                PEAK DAILY VALUES FOR YEARS    1 THROUGH   30
   ------------------------------------------------------------------------
                                                (INCHES)      (CU. FT.)
                                               ----------   -------------
      PRECIPITATION                              4.67        16952.100

      RUNOFF                                     1.192        4326.7114

      DRAINAGE COLLECTED FROM LAYER  2           1.33830      4858.03857

      PERCOLATION/LEAKAGE THROUGH LAYER  4       0.000006        0.02030

      AVERAGE HEAD ON TOP OF LAYER  3            4.997

      MAXIMUM HEAD ON TOP OF LAYER  3            8.930

      LOCATION OF MAXIMUM HEAD IN LAYER  2
            (DISTANCE FROM DRAIN)               36.4 FEET
```

```
      SNOW WATER                                  0.94          3414.2761


      MAXIMUM VEG. SOIL WATER (VOL/VOL)                  0.3628

      MINIMUM VEG. SOIL WATER (VOL/VOL)                  0.1360


       ***  Maximum heads are computed using McEnroe's equations.  ***

            Reference:  Maximum Saturated Depth over Landfill Liner
                        by Bruce M. McEnroe, University of Kansas
                        ASCE Journal of Environmental Engineering
                        Vol. 119, No. 2, March 1993, pp. 262-270.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                   FINAL WATER STORAGE AT END OF YEAR   30
    ----------------------------------------------------------------------
                    LAYER        (INCHES)       (VOL/VOL)
                    -----        --------       ---------
                      1            1.9091         0.1591

                      2            0.0025         0.0100

                      3            0.0000         0.0000

                      4            0.1875         0.7500

                  SNOW WATER       0.000

******************************************************************************
******************************************************************************
```

```
*******************************************************************************
*******************************************************************************
**                                                                           **
**                                                                           **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE                **
**                HELP MODEL VERSION 3.07  (1 NOVEMBER 1997)                 **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                    **
**                    USAE WATERWAYS EXPERIMENT STATION                      **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY               **
**                                                                           **
**                                                                           **
*******************************************************************************
*******************************************************************************


PRECIPITATION DATA FILE:    C:\ALTSS\DATA4.D4
TEMPERATURE DATA FILE:      c:\ALTSS\DATA7.D7
SOLAR RADIATION DATA FILE:  C:\ALTSS\DATA13.D13
EVAPOTRANSPIRATION DATA:    C:\ALTSS\DATA11.D11
SOIL AND DESIGN DATA FILE:  C:\ALTSS\DATA10.D10
OUTPUT DATA FILE:           C:\ALTSS\CL85.OUT


TIME:  18: 4     DATE:   2/11/2025


*******************************************************************************

     TITLE:  ROYAL OAKS LANDFILL - FINAL COVER (SIDESLOPE)

*******************************************************************************


     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER
              WERE SPECIFIED BY THE USER.


                                   LAYER  1
                                   --------

                     TYPE 1 - VERTICAL PERCOLATION LAYER
                         MATERIAL TEXTURE NUMBER  10
           THICKNESS                 =     12.00   INCHES
```

```
  POROSITY                    =      0.3980 VOL/VOL
  FIELD CAPACITY              =      0.2440 VOL/VOL
  WILTING POINT               =      0.1360 VOL/VOL
  INITIAL SOIL WATER CONTENT  =      0.2440 VOL/VOL
  EFFECTIVE SAT. HYD. COND.   =  0.119999997000E-03 CM/SEC
NOTE:  SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY  5.00
         FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.



                          LAYER  2
                          --------

              TYPE 2 - LATERAL DRAINAGE LAYER
                MATERIAL TEXTURE NUMBER   0
  THICKNESS                   =      0.25   INCHES
  POROSITY                    =      0.8500 VOL/VOL
  FIELD CAPACITY              =      0.0100 VOL/VOL
  WILTING POINT               =      0.0050 VOL/VOL
  INITIAL SOIL WATER CONTENT  =      0.0100 VOL/VOL
  EFFECTIVE SAT. HYD. COND.   =   6.63000011000     CM/SEC
  SLOPE                       =     25.00   PERCENT
  DRAINAGE LENGTH             =    140.0    FEET



                          LAYER  3
                          --------

              TYPE 4 - FLEXIBLE MEMBRANE LINER
                MATERIAL TEXTURE NUMBER  36
  THICKNESS                   =      0.04   INCHES
  POROSITY                    =      0.0000 VOL/VOL
  FIELD CAPACITY              =      0.0000 VOL/VOL
  WILTING POINT               =      0.0000 VOL/VOL
  INITIAL SOIL WATER CONTENT  =      0.0000 VOL/VOL
  EFFECTIVE SAT. HYD. COND.   =  0.399999993000E-12 CM/SEC
  FML PINHOLE DENSITY         =      1.00   HOLES/ACRE
  FML INSTALLATION DEFECTS    =      4.00   HOLES/ACRE
  FML PLACEMENT QUALITY       =  3 - GOOD



                          LAYER  4
                          --------

                TYPE 3 - BARRIER SOIL LINER
```

```
              MATERIAL TEXTURE NUMBER   0
THICKNESS                 =      0.25   INCHES
POROSITY                  =      0.7500 VOL/VOL
FIELD CAPACITY            =      0.7470 VOL/VOL
WILTING POINT             =      0.4000 VOL/VOL
INITIAL SOIL WATER CONTENT  =    0.7500 VOL/VOL
EFFECTIVE SAT. HYD. COND.   =  0.499999997000E-08 CM/SEC




          GENERAL DESIGN AND EVAPORATIVE ZONE DATA
          ----------------------------------------

  NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
           SOIL DATA BASE USING SOIL TEXTURE #10 WITH A
           GOOD STAND OF GRASS, A SURFACE SLOPE OF 25.%
           AND A SLOPE LENGTH OF  140. FEET.

 SCS RUNOFF CURVE NUMBER              =     82.40
 FRACTION OF AREA ALLOWING RUNOFF     =    100.0    PERCENT
 AREA PROJECTED ON HORIZONTAL PLANE   =      1.000  ACRES
 EVAPORATIVE ZONE DEPTH               =     12.0    INCHES
 INITIAL WATER IN EVAPORATIVE ZONE    =      2.928  INCHES
 UPPER LIMIT OF EVAPORATIVE STORAGE   =      4.776  INCHES
 LOWER LIMIT OF EVAPORATIVE STORAGE   =      1.632  INCHES
 INITIAL SNOW WATER                   =      0.000  INCHES
 INITIAL WATER IN LAYER MATERIALS     =      3.118  INCHES
 TOTAL INITIAL WATER                  =      3.118  INCHES
 TOTAL SUBSURFACE INFLOW              =      0.00   INCHES/YEAR




           EVAPOTRANSPIRATION AND WEATHER DATA
           -----------------------------------

  NOTE:  EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
           MIDLAND               TEXAS

     STATION LATITUDE                        =  32.00 DEGREES
     MAXIMUM LEAF AREA INDEX                 =   4.50
     START OF GROWING SEASON (JULIAN DATE)   =    67
     END OF GROWING SEASON (JULIAN DATE)     =   317
     EVAPORATIVE ZONE DEPTH                  =  12.0  INCHES
     AVERAGE ANNUAL WIND SPEED               =  11.10 MPH
     AVERAGE 1ST QUARTER RELATIVE HUMIDITY   =  52.00 %
     AVERAGE 2ND QUARTER RELATIVE HUMIDITY   =  50.00 %
     AVERAGE 3RD QUARTER RELATIVE HUMIDITY   =  55.00 %
```

```
             AVERAGE 4TH QUARTER RELATIVE HUMIDITY  =  58.00 %


         NOTE:  PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
                  COEFFICIENTS FOR    ABILENE             TEXAS

                  NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

     JAN/JUL     FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
     -------     -------     -------     -------     -------     -------
       0.69        0.62        1.07        1.31        2.20        2.67
       1.94        1.80        2.56        1.57        0.88        0.74


         NOTE:  TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
                  COEFFICIENTS FOR    MIDLAND             TEXAS

             NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

     JAN/JUL     FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
     -------     -------     -------     -------     -------     -------
      40.90       44.80       52.70       60.60       70.00       78.30
      80.60       79.30       72.00       61.80       49.90       41.90


         NOTE:  SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
                  COEFFICIENTS FOR    MIDLAND             TEXAS
                    AND STATION LATITUDE  =  32.00 DEGREES




*******************************************************************************

         AVERAGE MONTHLY VALUES IN INCHES FOR YEARS    1 THROUGH   30
-------------------------------------------------------------------------------

                         JAN/JUL  FEB/AUG  MAR/SEP  APR/OCT  MAY/NOV  JUN/DEC
                         -------  -------  -------  -------  -------  -------
  PRECIPITATION
  -------------
    TOTALS                 0.69     0.55     1.29     1.32     1.96     2.54
                           2.67     1.56     2.49     1.40     0.90     0.57

    STD. DEVIATIONS        0.64     0.33     1.02     0.82     1.05     2.04
```

```
                           1.97     1.09     1.58     1.26     0.60     0.60

  RUNOFF
  ------
    TOTALS                 0.000    0.000    0.003    0.000    0.007    0.111
                           0.166    0.004    0.047    0.018    0.000    0.000

    STD. DEVIATIONS        0.000    0.000    0.009    0.001    0.016    0.250
                           0.372    0.012    0.117    0.068    0.002    0.000

  EVAPOTRANSPIRATION
  ------------------
    TOTALS                 0.630    0.563    0.980    1.820    1.911    2.192
                           2.333    1.524    2.237    0.982    0.855    0.632

    STD. DEVIATIONS        0.397    0.392    0.718    0.918    1.030    1.550
                           1.517    1.018    1.354    0.704    0.473    0.432

  LATERAL DRAINAGE COLLECTED FROM LAYER  2
  ----------------------------------------
    TOTALS                 0.0328   0.0115   0.0681   0.0176   0.0034   0.2046
                           0.2279   0.0144   0.1250   0.1934   0.0285   0.0248

    STD. DEVIATIONS        0.0937   0.0490   0.1864   0.0520   0.0170   0.4789
                           0.4397   0.0778   0.3336   0.5883   0.0707   0.1194

  PERCOLATION/LEAKAGE THROUGH LAYER  4
  ------------------------------------
    TOTALS                 0.0000   0.0000   0.0000   0.0000   0.0000   0.0000
                           0.0000   0.0000   0.0000   0.0000   0.0000   0.0000

    STD. DEVIATIONS        0.0000   0.0000   0.0000   0.0000   0.0000   0.0000
                           0.0000   0.0000   0.0000   0.0000   0.0000   0.0000


-------------------------------------------------------------------------------
               AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)
-------------------------------------------------------------------------------


  DAILY AVERAGE HEAD ON TOP OF LAYER  3
  -------------------------------------
    AVERAGES               0.0000   0.0000   0.0000   0.0000   0.0000   0.0001
                           0.0001   0.0000   0.0001   0.0001   0.0000   0.0000

    STD. DEVIATIONS        0.0000   0.0000   0.0001   0.0000   0.0000   0.0003
                           0.0002   0.0000   0.0002   0.0003   0.0000   0.0001

*******************************************************************************
```

```
*******************************************************************************

     AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS    1 THROUGH   30
-------------------------------------------------------------------------------
                                     INCHES            CU. FEET       PERCENT
                               -------------------   -------------   ---------
 PRECIPITATION                  17.93    (   4.448)      65096.8     100.00

 RUNOFF                          0.356   (  0.4559)       1291.98      1.985

 EVAPOTRANSPIRATION             16.659   (  3.7857)      60471.92     92.895

 LATERAL DRAINAGE COLLECTED      0.95209 (  0.85990)      3456.088    5.30915
   FROM LAYER  2

 PERCOLATION/LEAKAGE THROUGH     0.00000 (  0.00000)         0.001     0.00000
   LAYER  4

 AVERAGE HEAD ON TOP             0.000 (    0.000)
   OF LAYER  3

 CHANGE IN WATER STORAGE        -0.034   (  0.6903)       -123.19     -0.189

*******************************************************************************


******************************************************************************

                PEAK DAILY VALUES FOR YEARS    1 THROUGH   30
   ------------------------------------------------------------------------
                                                (INCHES)      (CU. FT.)
                                               ----------   -------------
      PRECIPITATION                               4.67        16952.100

      RUNOFF                                      1.381        5014.1909

      DRAINAGE COLLECTED FROM LAYER  2            0.81036      2941.60718

      PERCOLATION/LEAKAGE THROUGH LAYER  4        0.000000        0.00007

      AVERAGE HEAD ON TOP OF LAYER  3             0.013

      MAXIMUM HEAD ON TOP OF LAYER  3             0.040

      LOCATION OF MAXIMUM HEAD IN LAYER  2
            (DISTANCE FROM DRAIN)                 0.0 FEET
```

```
      SNOW WATER                                 0.94          3414.2761


      MAXIMUM VEG. SOIL WATER (VOL/VOL)                       0.3580

      MINIMUM VEG. SOIL WATER (VOL/VOL)                       0.1360


       ***  Maximum heads are computed using McEnroe's equations.  ***

            Reference:  Maximum Saturated Depth over Landfill Liner
                        by Bruce M. McEnroe, University of Kansas
                        ASCE Journal of Environmental Engineering
                        Vol. 119, No. 2, March 1993, pp. 262-270.


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                   FINAL WATER STORAGE AT END OF YEAR   30
    ----------------------------------------------------------------------
                    LAYER        (INCHES)       (VOL/VOL)
                    -----        --------       ---------
                      1            1.9099         0.1592

                      2            0.0025         0.0100

                      3            0.0000         0.0000

                      4            0.1875         0.7500

                  SNOW WATER       0.000

******************************************************************************
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APPENDIX IIIJ-C

CLOSURE PLAN FOR MUNICIPAL SOLID WASTE TYPE I LANDFILL UNITS AND FINAL FACILITY CLOSURE (FORM 20720)

STATE OF TEXAS
DAVID E. POE
81734
LICENSED
PROFESSIONAL ENGINEER

02/28/2025

Texas Commission on Environmental Quality

Closure Plan for Municipal Solid Waste Type I Landfill Units and Final Facility Closure

This form is for use by applicants or site operators of Municipal Solid Waste (MSW) Type I landfills to detail the plan for closure of a landfill unit, closure of associated storage or processing units, and final closure of the facility to meet the requirements in 30 TAC Chapter 330, §330.63(h) and 30 TAC Chapter 330 Subchapter K for a MSW Type I facility.

If you need assistance in completing this form, please contact the MSW Permits Section in the Waste Permits Division at (512) 239-2335.

I. General Information

Facility Name: **City of Meadow Landfill**

MSW Permit No.: **2293C**

Site Operator/Permittee Name: **Meadow Landfill, LLC, 663 County Road 545, Meadow, TX 70745**

II. Landfill and Other Waste Management Units and Operations Requiring Closure at the Facility

A. Facility Units

Table 1. Description of Landfill Units.

Name or Descriptor of Unit	Operating Status of Unit	Type of Liner System Under Unit	Above Grade Class 1 Disposal Cells in this Unit	Below Grade Class 1 Disposal Cells in this Unit	Other Class 1 Disposal Cells in this Unit (describe)	Size of Unit's Waste Footprint (acres)	Maximum Inventory of Waste Ever in Unit (indicate cubic yards or tons)	Other Necessary Information that Pertains to the Unit
MSW Landfill	Active	Subtitle D	☐	☐	☐	210.7	29,500,000 CY	Waste = Waste plus Daily Cover
			☐	☐	☐			
			☐	☐	☐			
Totals						210.7	29,500,000	

Table 2. Description of Waste Storage or Processing Units or Operations Associated with this Permit.

Type of Storage or Processing Unit or Operation (individual units may be closed at any time prior to or during the final facility closure as described in this plan)	Operational Status of Unit	Size of the Area Used for the Storage or Processing Unit or Operation (Acres)	Maximum Inventory of Waste Ever in Storage or Processing Unit or Operation (indicate cubic yards or tons)	Other Information (enter other necessary information that pertains to the unit)
Citizens Convenience Center	Future	1.00	400 ☒cubic yards ☐tons	
Liquid Waste Bulking Facility	Future	1.00	480 ☒cubic yards ☐tons	
Totals		2.00	800 CY	

B. Waste Inventory Summary

Table 3. Maximum Inventory of Wastes Ever On Site.

Item	Quantity (indicate cubic yards or tons)
Maximum inventory of waste in landfill units (total from Table 1)	29,500,000 ☒cubic yards or ☐tons
Maximum inventory of waste in storage or processing units or operations (total from Table 2)	880 ☒cubic yards or ☐tons
Total Maximum Inventory of Wastes ever on site over the active life of the MSW facility (sum of totals from Tables 1 and 2)	29,500,640 ☒cubic yards or ☐tons

C. Drawings Showing Details of the Waste Management Units at Closure

Table 4. Location of the Drawings showing Details of the Waste Management Units at Closure (outlines, dimensions, maximum elevations of waste and final cover of landfill units, and waste storage or processing units or operations at closure of the facility).

Drawing Location in the SDP	Drawing Figure Number	Drawing Title	Waste Management Units Details Shown
Part III, App. IIIA-A	A.1	Bottom of Liner Plan	e.g., outlines, waste footprints, and dimensions of the landfill unit(s)
Part III, App. IIIA-A	A.2	Landfill Completion Plan	e.g., maximum elevations of waste and final cover of the landfill unit(s)

III. Description of the Final Cover System Design

A. Types and Descriptions of the Final Cover Systems

Table 5. Types and Descriptions of the Final Cover Systems Permitted or Proposed for Closure of the Landfill Units.

Landfill Unit Name or Descriptor	Type of Final Cover System	Final Cover System Components Description	Other Information (Enter other information as applicable)
MSW Landfill – Subtitle D Area	GCL Alternative	Comprised of GCL, geomembrane (LLDPE), geocomposite drainage layer, and a 12” vegetated erosion layer.	
MSW Landfill – Subtitle D Area	Regulatory Composite Final Cover	Comprised of an 18” low permeability ($1x10^{-5}$ cm/s) soil infiltration layer, geomembrane (LLDPE), geocomposite drainage layer, and a 12” vegetated erosion layer.	

B. Design Details

Table 6. Design Details of the Final Cover Top and Side Slopes for the Landfill Units.

Landfill Unit Name or Descriptor	Maximum Final Elevation of Waste (feet above mean sea level [ft-msl])	Maximum Elevation of Top of Final Cover (ft-msl)	Minimum Grade of the Final Cover Top Slope (%)	Maximum Grade of the Final Cover Side Slope (%)	Other Information (enter other information as applicable, e.g. above-grade Class 1 Cell Dikes)
MSW Landfill	3,423	3,425	5%	25%	

C. Final Cover Drainage Features

Storm water drainage and erosion and sediment control features incorporated on the final cover of the landfill units to protect the integrity and effectiveness of the final cover system include *(please list and describe the drainage features to be installed on the final cover at or prior to closure for each landfill unit, or list the drainage features and provide cross references on the location(s) of the descriptive and details (drawing) information in other parts of the SDP)*:

Storm water drainage features incorporated into the project include vegetative cover on the landfill side and topslopes, sideslope drainage swales, reinforced downchutes, perimeter ditches, and stormwater detention basins. Drainage feature design calculations are presented in Part III, Appendix IIIF – Surface Water Drainage Plan of the application.

D. Final Cover Vegetation or Other Ground Cover Material

The final cover will be seeded and/or sodded with native plants immediately following the application of the final cover in order to minimize erosion. Other materials, including **NA**, may be incorporated over the final cover soil surface to ensure sufficient coverage of the ground surface to minimize erosion. The estimated percent ground cover to minimize soil loss and maintain long-term erosional stability of the final cover top and side slopes is: 80%. The minimum material specifications for other ground cover materials are summarized in the table below.

For a landfill with water balance final cover design, the percentage vegetation cover (excluding other ground cover types) will not be less than that assumed in the water balance final cover model.

Table 7. Minimum Specification for Ground Cover Materials Other Than Vegetation, if Applicable.

Other Ground Cover Material	Maximum Particle Size (inches)	Minimum Particle Size (inches)	Material Placement Method	Thickness of Layer (inches)	Percentage Coverage (%)	Other (specify)
NA						

E. Final Contour Map

Figure **A.2 (Part III, App. IIIA-A)**, a facility final contour map is attached. The map shows the final contours of the landfill units and the entire facility at closure.

Figures **B.1 through B.9 (Part III, App. IIIA-B),** showing the cross–sections of the landfill units at closure are also provided.

The facility final contour and cross-section maps/drawings depict the following information:

(1) Final constructed contours of the landfill at closure.

(2) Top slopes and side slopes of the landfill units.

(3) Surface drainage features.

(4) 100-year floodplain, as applicable.

(5) Constructed features providing protection of/from the 100-year floodplain.

(6) Other (specify):

IV. Description of the Final Cover System Installation Procedure

A. Mode of Installation

Table 8. Mode of Final Cover Installation on the Landfill Units.

Landfill Unit Name or Descriptor	Largest Area of Unit Ever Requiring Final Cover (Acres)	Check this Column if Final Cover will be Placed in Installments as Permitted Elevation is Reached	Check this Column if Final Cover will be Placed when Entire Unit Area Reaches Permitted Elevation	Final Cover Installation Status
MSW Landfill	210.7 (see note in Table 9)	☐	☒	Yet to be installed
		☐	☐	
		☐	☐	
		☐	☐	

B. Installation Drawings for Final Cover and Drainage Features

The following attached plan and cross-section drawings show the final cover design details, the largest area requiring final cover, details of the sequence of installation of the final cover system, and all drainage features.

Table 9. List of Attached Installation Drawings for Final Cover and Drainage Features.

Drawing No.	Drawing Title	Description of Information Contained in Drawing
Drawings B.1 to B.9 (Part III, App. IIIA-B)	Varies	(e.g., final cover cross section details with references to base drawings)
Drawing IIIL.1 (Part III, App. IIIL – Closure and Postclosure Care Cost Estimates	Largest Area to Require Final Cover	(e.g., the largest area ever requiring final cover). Note that the largest area value will be reviewed periodically and adjusted as necessary along with the closure/postclosure care cost estimates and financial assurance demonstration.
Drawing I/IIA.4 to Drawing I/IIA.8 (Part I/II App I/IIA)	Varies	(e.g., details of the sequence final cover system installation)
Drawings IIIF.1 to IIIF.14 (Part III, App. IIIF – Surface Water Drainage Plan)	Varies	(e.g., details of all drainage features on the final cover)
NA		Other: describe as applicable

C. Final Cover Quality Control Plan

A final cover quality control plan (FCQCP), **Part III, Appendix IIIJ-A**, is attached. The FCQCP describes the final cover system design, construction, and evaluation protocol and processes, including the personnel, materials, methods, sampling and testing standards, procedures, and practices to be used in procuring, handling, installing, and evaluating all elements of the final cover system. It establishes the material requirements; personnel qualifications and roles; installation requirements; quality control and quality assurance monitoring, testing, documentation, and reporting programs to be used during construction of each component of the final cover system to assure and to verify that the final cover system is constructed as designed and in accordance with applicable rules and technical standards.

D. Documentation and Reporting of Final Cover System Construction and Testing

The professional of record will document all aspects and stages of the final cover installation, including materials used, equipment and construction methods, and the type and rate of sampling and quality control testing performed. Following completion of construction of the final cover, the site operator/permittee will submit to the TCEQ executive director, a Final Cover System Evaluation Report (FCSER) for each landfill unit.

V. Closure Activities and Completion Schedules for Each Landfill Unit and for the Final Facility Closure

A. Closure of a Landfill Unit

The following activities will be conducted to satisfy the closure criteria for a landfill unit:

(1) Closure Notification to the TCEQ Executive Director:

The site operator will inform the executive director of the TCEQ, in writing, of the intent to close the unit no later than 45 days prior to the initiation of closure activities and place this notice of intent in the operating record.

(2) Stoppage of Waste Acceptance and Commencement of Other Closure Activities for the Unit:

The site operator will stop accepting waste upon receiving the known final receipt of waste. The site operator will ensure that the permitted top elevations of the in-place waste, as depicted in/derived from the unit's final contour map approved by the TCEQ executive director, are not exceeded at any section or part of the landfill unit. The site operator will begin closure activities for the unit no later than:

- Thirty days after the date on which the unit receives the known final receipt of wastes; or

- One year after the most recent receipt of wastes if the unit has remaining capacity and there is a reasonable likelihood that the unit will receive additional wastes.

(3) Request for Extension Beyond the 1-Year Deadline for Commencing Closure Activities for a Unit:

The site operator may submit a written request to the executive director of the TCEQ for review and approval for an extension beyond the one-year deadline for the initiation of closure. The request will include the following:

(a) All applicable documentation necessary to demonstrate that the unit has the capacity to receive additional waste; and

(b) All documentation necessary to demonstrate that the site operator has taken and will continue to take all steps necessary to prevent threats to human health and the environment from the MSW landfill unit.

(4) Construction of Final Cover:

The site operator will construct the permitted final cover over the waste mass utilizing methods, procedures, and specifications described in the FCQCP. The final constructed contours, elevations, and slopes of the installed final cover will match the permitted final cover contours, elevations, and slopes shown in closure drawings contained in this closure plan.

(5) Construction of Drainage Features:

The site operator will construct the drainage structures shown in drawings referenced or contained in this closure plan or in the facility surface water drainage report.

(6) Completion of Outstanding or Replacement of Damaged Groundwater or Landfill Gas Monitoring Components:

The site operator will complete installation of any outstanding or replacement of any damaged groundwater or landfill gas monitoring system components and landfill gas control systems as needed to maintain current and effective groundwater or landfill gas monitoring and control systems.

(7) Submittal of Final Cover System Evaluation Report (FCSER) to the TCEQ Executive Director:

Following completion of construction of the final cover for the subject landfill unit, the site operator will submit to the TCEQ executive director for review and acceptance, a FCSER for the unit.

(8) Completion of Closure Activities for the Landfill Unit:

The site operator will complete closure activities for the unit within 180 days following the start of closure activities, unless the executive director of the TCEQ grants an extension as described in Item V.A.8(a) below.

(a) Request for Extension of the Completion of Closure Activities for the Landfill Unit:

The site operator may submit a written request for an extension for the completion of closure activities to the TCEQ for review and approval. The extension request will include:

- All applicable documentation necessary to demonstrate that closure will, of necessity, take longer than 180 days; and
- All applicable documentation necessary to document that all steps have been taken and will continue to be taken to prevent threats to human health and the environment from the unclosed MSW landfill unit.

(9) Submittal of Engineer's Certification of Closure to the TCEQ Executive Director and Request of Closure Inspection to TCEQ Regional Office:

Following completion of all closure activities for the landfill unit, the site operator will submit:

(a) Closure Inspection

A written request to the local TCEQ regional office for a closure inspection of the unit.

(b) Closure Certification

A certification, signed by an independent licensed professional engineer, to the executive director of the TCEQ for review and approval verifying that closure has been completed in accordance with this closure plan. The site operator will submit the certification via registered mail, and the submittal will contain all applicable documentation necessary for certification of closure of the unit, including:

- A final cover system evaluation report (FCSER) documenting the installation of the final cover. The FCSER may be submitted as a separate document for review and approval following the completion of the final cover installation. In that case, the certification of closure will be submitted subsequently;
- A final contour map as described under Section III.E that includes the relevant unit; and
- Copy of the letter to the TCEQ regional office requesting a closure inspection of the relevant unit.

(10) TCEQ’s Acknowledgement of Termination of Operation and Closure of a Unit:

Upon receipt, the TCEQ executive director will review the closure documents for completeness and accuracy; and following receipt of the closure inspection report from the agency’s regional office verifying proper closure of the MSW landfill unit according to this closure plan, the executive director will, in writing, acknowledge the termination of operation and closure of the unit and deem it properly closed. Thereafter, the site operator will comply with the post-closure care requirements described in the post-closure care plan for the unit.

(11) Deed Recordation for Disposed Regulated Asbestos Containing Materials (RACM):

Upon closure of the unit that accepted RACM, the site operator will place a specific notation that the unit accepted RACM in the deed records for the facility with a diagram identifying the RACM disposal areas. Concurrently, the site operator will submit to the TCEQ executive director, a notice of the deed recordation and a copy of the diagram identifying the asbestos disposal areas.

(12) Placement of all Closure Documentation in the Site Operating Record:

Once approved, the closure certification and all other documentation of closure will be placed in the site operating record.

(13) Closure Schedule for the Landfill Unit:

A closure schedule is provided on Figure III J-2 of Appendix III J. The schedule shows all the closure activities listed within Section V.A and the timelines for commencing and completing each activity. Also, the schedule shows that closure activities for the landfill unit will be completed within 180 days following the initiation of closure activities as required, unless an extension is granted by the TCEQ executive director.

(14) Other: (enter as applicable).

Not Applicable.

B. Closure of the Waste Storage or Processing Units or Operations

Closure of the waste storage or processing units or operations authorized under this permit will include removal of all waste, waste residues, and any recovered materials. The facility units and operations will either be dismantled and removed off-site or decontaminated. The site operator will dispose at the landfill or evacuate all materials (including feedstock, in process, and processed) to an authorized facility and disinfect all leachate handling units, tipping areas, processing areas, and post-processing areas. If there is evidence of a release from a unit or operation, the site operator will conduct an investigation, as approved by the TCEQ executive director, into the nature and extent of the release and an assessment of measures necessary to correct an impact to groundwater.

C. Final Closure of the Facility

In addition to the closure activities listed in Section V.A above for closing a landfill unit, the site operator will conduct the following activities for the closure of the entire facility:

(1) Publish Final Closure Notice and Place the closure Plan in a Public Place:

No later than 90 days prior to the initiation of the final facility closure, the site operator will:

(a) Publication of Notice:

The site operator will publish notice in the newspaper(s) of largest circulation in the vicinity of the facility to inform the public of the final closure of the facility. This notice will include:

- The name of the facility;
- The address, and physical location of the facility;
- The facility’s permit number; and
- The last date of intended receipt of waste.

(b) Place Copies of the Closure Plan in a Public Place:

The site operator will also make available an adequate number of copies of the approved final closure and post-closure plans for public access and review at the **Meadow City Offices 906 1st St., Meadow, TX 79345** (state public place within the area, including address, where the plan will be available for public access and review).

(2) Submit Written Notice of “Intent to Close the Facility” to the TCEQ Executive Director:

The site operator will provide written notification to the TCEQ executive director of the intent to close the facility. This notice will be provided to the executive director no later than 90 days prior to the initiation of the final facility closure, and thereafter be placed in the site operating record.

(3) Post Signs and Install Barriers:

Upon notifying the executive director of the intent to close the facility and no later than 90 days prior to the initiation of final facility closure, the site operator will:

(a) Post Final Closure Signs:

The site operator will post a minimum of one sign at the main entrance and all other frequently used points of access for the facility notifying all persons who may utilize the facility of the date of closing for the entire facility and the prohibition against further receipt of waste materials after the stated date.

(b) Install Barriers:

Also, the site/operator will install suitable barriers at all gates or access points to adequately prevent the unauthorized dumping of solid waste at the closed facility.

(4) Filling of "Affidavit to the Public" and Performance of the Final Deed Recording:

Upon closure of all the landfill units or upon final closure of the facility, the site operator will:

(a) File Affidavit

File with the county deed records an "Affidavit to the Public" in a form provided by the TCEQ executive director that includes an updated metes and bounds description of the extent of the disposal areas at the facility and the restrictions to future use of the land in accordance with applicable provisions under 30 TAC Chapter 330, Subchapter T.

(b) Record a Notation on the Deed

Record a certified notation on the deed to the facility property, or on some other instrument that is normally examined during title search, that will in perpetuity notify any potential purchaser of the property that the land has been used as a landfill facility and use of the land is restricted according to the provisions under 30 TAC Chapter 330, Subchapter T.

(c) Place Documents in the Operating Record

Place a copy of the "Affidavit to the Public" and a copy of the modified deed in the site operating record.

(5) Submittal of a Copy of the “Affidavit to the Public” and the “Modified Deed” to the TCEQ Executive Director:

Within ten days after completion of final closure activities of the facility, the site operator will submit the following to the TCEQ executive director by registered mail:

(a) A certified copy of the "Affidavit to the Public";

(b) A certified copy of the modified deed to the facility property; and

(c) A certification, signed by an independent licensed professional engineer, verifying that final facility closure has been completed in accordance with the approved closure plan. The submittal will contain all applicable documentation necessary for certification of final facility closure, including:

- Final Cover System Evaluation Report (FCSER) documenting the installation of the final cover. The FCSER may be submitted earlier as a separate document for review and approval following the completion of the final cover installation. In that case, the certification of closure will be submitted subsequently;
- A final contour map as described under Item III.G above;
- Copy of a letter to the TCEQ regional office requesting a final closure inspection of the facility; and
- Copies of documents verifying newspaper publication of the notice of the final facility closure.

(6) Other

Additional items relating to the schedule for final facility closure, and additional closure activities specific to the final closure of this facility include:
Not Applicable.

(7) TCEQ's Acceptance of Termination of Operation and Closure of a Landfill Facility:

Following the TCEQ executive director's receipt and completion of the review of the professional engineer's certification of the completion of facility closure and the final closure documents, and receipt of the inspection report from the agency's regional office verifying proper closure of the facility according to this closure plan, the executive director will, in writing, accept the termination of operation and closure of the facility and deem it properly closed. Thereafter, the site operator will comply with the post closure care requirements described in the post closure plan for the facility.

(8) Final Closure Schedule for the Facility:

The attached Figure **IIIJ-2 (Part III, Appendix IIIJ)**, Final Closure Schedule, provides the closure schedule for the final facility closure. It incorporates the schedule for closure of a unit as discussed in Section V.A and also shows the commencement and completion timelines for the final closure activities listed within this Section.

VI. Summary of Attachments

A. Drawings and Maps

The following Drawings and Maps are attached as part of this plan.

- Figure **A.2 (Landfill Completion Plan included in Part III, App. IIIA-A)**, Final Contour Map.
- Figures **B.1 through B.9 (included in Part III, App. IIA-B)**, Cross-Section Drawings of the Landfill Units at Closure.
- Figures **IIIF.1 through IIIF.14 (included in Part III, App. IIIF)**, Final Cover and Drainage Features Installation Drawings.
- Other Drawings/Maps: Figures **IIIL.1 (Part III, App. IIIL – Closure and Postclosure Care Cost Estimates)**

B. Documents

- Attachment **Part III, App. IIIJ-A**, Final Cover Quality Control Plan (FCQCP).
- Attachment **Part III, App. IIIJ-Closure Plan, Section 4)**, Final Closure Schedule Chart.
- Attachment, Landfill Unit Closure Schedule Chart, (Not Applicable)
- Other: Attachment Not Applicable

C. Additional Items Attached (enter as applicable)

Not Applicable.

VII. Professional Engineer’s Statement, Seal, and Signature

Name: **Kyle Gould, P.E.**

Title: **Senior Engineer**

Date: **02/2025**

Company Name: **Weaver Consultants Group, LLC**

Firm Registration Number: **F-3727**

Professional Engineer’s Seal

STATE OF TEXAS
KYLE D. GOULD
106018
LICENSED PROFESSIONAL ENGINEER

02/28/2025

Signature

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN
APPENDIX IIIK
POSTCLOSURE CARE PLAN

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

KYLE D. GOULD
106018

02/28/2025

Prepared by

Weaver Consultants Group, LLC
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817-735-9970

WCG Project No. 0120-809-11-06

This document is intended for permitting purposes only.

- Maintain and operate the leachate collection system in accordance with Title 30 TAC §330.331 and §330.333 and the EPA's Design Criteria (i.e., less than 1 foot of leachate over the liner, or approved equivalent design). Leachate collection sump levels will be measured on a quarterly basis. Site personnel will verify that the leachate level is maintained within the sump as discussed in Appendix IIIC, Table 3-5. The leachate collection system will be operated consistent with Appendix IIIC – Leachate and Contaminated Water Management Plan, which includes procedures for the operation of the leachate collection sump, storage tanks, evaporation pond, and the disposal of leachate. Meadow Landfill, LLC may submit a demonstration to the TCEQ that leachate will no longer pose a threat to human health and the environment. If the demonstration is approved by the TCEQ, Meadow Landfill, LLC will be allowed to discontinue the maintenance and operation of the leachate collection system. Alternatively, if there is a significant increase in leachate generation, inspection frequency will be increased to ensure compliance. Refer to Section 3.4 of Appendix IIIJ for the procedures to decommission the leachate storage tank and piping.
- Maintain the groundwater monitoring system in accordance with Subchapter J of Title 30 TAC and monitor groundwater in accordance with an approved Groundwater Sampling and Analysis Plan (refer to Appendix IIIH for the minimum monitoring frequency requirements). However, Meadow Landfill, LLC may request TCEQ approval of (1) an alternative monitoring frequency, and/or (2) an alternative list of parameters to be monitored.
- Maintain and operate the perimeter landfill gas monitoring system in accordance with Subchapter I of Title 30 TAC. In accordance with Title 30 TAC §330.371(b)(2), the minimum monitoring frequency will be quarterly. However, City of Meadow Landfill may request TCEQ approval of an alternate monitoring frequency.
- Maintain and operate the landfill gas collection and/or control system in accordance with applicable regulations.
- In accordance with 30 TAC §330.463(a)(3), the executive director may require an investigation into the nature and extent of a release if there is evidence of a release from a municipal solid waste unit and an assessment of measures necessary to correct an impact to groundwater.

2.2 Decreasing Postclosure Period

The length of the postclosure care maintenance period may be decreased by the TCEQ if Meadow Landfill, LLC submits a documented certification signed by an independent licensed professional engineer and if the documented certification is approved by the TCEQ. The certification will include all applicable documentation demonstrating that the reduced period is sufficient to protect human health and the environment. Applicable documentation may include data from monitoring of groundwater, surface water, leachate levels, ~~and~~ landfill gas, or documentation that all waste and waste residues have been removed during closure.

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PART III – SITE DEVELOPMENT PLAN
APPENDIX IIIL
CLOSURE AND POSTCLOSURE CARE COST ESTIMATES

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

KYLE D. GOULD
106018

Prepared by

02/28/2025

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WCG Project No. 0120-809-11-05

This document intended for permitting purposes only.

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3 POSTCLOSURE CARE COST ESTIMATE **IIIL-6**
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APPENDIX IIIL-A
Closure Cost Estimate Form for Municipal Solid Waste Type I Landfill (Form 20721)

APPENDIX IIIL-B
Post-Closure Cost Estimate Form for Municipal Solid Waste Type I Landfill (Form 20723)

APPENDIX IIIL-C
Existing Financial Assurance Documentation

STATE OF TEXAS
KYLE D. GOULD
106018
LICENSED PROFESSIONAL ENGINEER

02/28/2025

2 CLOSURE COST ESTIMATE

This cost estimate shows the cost of hiring a third party to close the largest waste fill area (at the time of permit amendment approval) that has not received final cover. As shown on Figure IIIL.1, the closure area was determined to be 45.0 acres. The 45.0-acre area shown on Figure IIIL.1 includes the existing trench fill area without final cover. The closure cost estimate includes: 1) engineering costs required to administratively close the facility; 2) construction costs involved with the construction of the final cover systems, the landfill gas monitoring system (if required), and other activities required to close the facility, and 3) contingencies and other administrative costs that may be incurred during closure activities. A summary of closure cost estimate is presented on Table IIIL-1. The costs will be adjusted annually as indicated in Section 4.

An assessment will be completed each year to verify that the Closure Cost Estimate shown in Table IIIL-1 is consistent with the current permit conditions and the projected permit conditions for the upcoming 12-month period. The assessment will verify that the closure costs are based on the current active and inactive areas and that all other permit conditions are addressed by the Closure Cost Estimate (e.g., the number of groundwater monitor wells and landfill gas probes (if required) in the estimate match the wells and probes that are either in-place or need to be installed to match the number of wells and probes listed in the permit for the current phase of development).

The estimates will be updated, if needed, consistent with the procedures noted in Section 4. Continuous financial assurance coverage for closure of the facility will be provided until the facility reaches postclosure status and the requirements of the facility's final closure plan have been approved by the Executive Director. Approval documentation will be placed in the Site Operating Record. Additional information regarding the closure cost estimate is summarized below.

2.1 Engineering Costs

The cost estimates for hiring a third party is based on closing the largest area (at the time of permit amendment approval) scheduled to receive final cover, which is 45.0 acres. An area of 45.0 acres is used for the closure estimates presented in this appendix. This area is illustrated on Figure IIIL.1. A boundary survey will be required for the filing of the affidavit of closure, deed recording of any area of the site that has received waste, and publishing the public notice of closure activities. A topographic survey may be required to determine the existing height and top slope of the landfill so that permit compliance can be evaluated and the final closure systems, drainage system, and final grading can be engineered. An inspection of the site is included to identify any disposal areas requiring closure, drainage and erosion protection improvements, and identify any potential regulatory deficiencies. The site evaluation also includes the costs for a third party consultant to develop preliminary engineering report that identifies the status of the site. The report will identify all areas of work necessary to close the landfill. The engineering costs include the cost to develop construction plans and closure schedules, closure testing and inspections, and TPDES permit document preparation. In addition, administration costs (i.e., for construction contracts and contract administration) have also been included.

2.2 Construction Costs

As shown on Figure IIIL.1, construction costs include construction of the final cover system, and drainage improvements, for the 45.0-acre area. LFG system installation will not apply to the existing trench fill area. The final cover system is detailed in Appendix IIIA-A. The construction costs include site grading and drainage including the final grading of the site, drainage improvements, and erosion and sedimentation controls for proper closure of the site.

2.3 Data Used to Develop Closure Cost Estimates

Consistent with Title 30 TAC §330.503 a detailed written cost estimate in current dollars is provided on Table IIIL-1. The cost data used to develop these estimates are based on current market conditions and were derived from similar projects completed by Meadow Landfill, LLC, its parent company Republic Services (Republic), and Weaver Consultants Group, LLC (WCG).

As shown in Table 16-1 in Parts I/II, Republic operates over 30 landfills in Texas and over 220 nationally. Over the last few years, Republic has completed several landfill closure projects and routinely constructs final cover systems as their landfill sites continue to develop.

WCG has been involved in many of the projects discussed above and similar projects in Texas. In addition, WCG has developed third-party closure cost estimates for over 25 sites in Texas (and numerous others nationally). Each of these estimates has been approved by TCEQ and similar state regulatory agencies.

Through the successful completion of these numerous closure related projects, Republic and WCG have gained a broad-based understanding of costs associated with landfill closures. The closure cost estimates listed in Table IIIL-1 are consistent with unit cost data used to develop closure cost estimates at other sites and are based on the extensive experience of Meadow Landfill, LLC, Republic, and WCG with each of the closure cost items.

STATE OF TEXAS
KYLE D. GOULD
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02/28/2025

TABLE 1
CITY OF MEADOW LANDFILL - CLOSURE COST

Area Requiring Final Cover	45.0	ac			
Trench Final Cover Area	45.0	ac	Infiltration Layer Thickness	45.0	ft (Trench Area
Composite Topslope Area	0.0	ac	Infiltration Layer Thickness	0.0	ft (Comp. Area)
Composite Sideslope Area	0.0	ac	Erosion Layer Thickness	0.0	ft (Trench Area
Permit Boundary Area	337.9	ac	Erosion Layer Thickness	337.9	ft (Comp. Area)

Description	Quantity	Unit[1]	2024 Unit Cost[2]	Inflation Factor[3]	2024 Unit Cost	Proposed Total (2024)
1.0 ENGINEERING						
1.1 Topographic Survey	1	LS	$ 5,180	1.000	$ 5,180	**$ 5,180**
1.2 Boundary Survey for Affidavit	337.9	AC	$ 67	1.000	$ 67	**$ 22,754**
1.3 Site Evaluation	337.9	AC	$ 730	1.000	$ 730	**$ 246,795**
1.4 Development of Plans	45	AC	$ 616	1.000	$ 616	**$ 27,739**
Subtotal						**$ 302,468**
1.5a Contract Administration	1	5%		1.000		**$ 15,123**
1.5b Admin. Cost for Certification of Final Cover and Affidavit to the Public	1	5%		1.000		**$ 15,123**
1.6 Closure Inspection	45.0	AC	$ 1,886	1.000	$ 1,886	**$ 84,848**
1.7 TPDES and other Permits	1	LS	$ 7,252	1.000	$ 7,252	**$ 7,252**
1.8 Additional Costs						**$ -**
1.9 ENGINEERING COSTS SUBTOTAL						**$ 424,816**
2.0 CONSTRUCTION[4]						
2.1 Mobilization of Personnel and Equipment			5%			**$ -**
2.2 Final Cover System						**$ -**
2.2.1 Final Cover - Side Slope Cover - Not Used						**$ -**
2.2.2 Final Cover - Top Slope Cover						**$ -**
2.2.2a Infiltration Layer - Compacted Clay	108,900	CY	$ 6.01	1.000	$ 6.01	**$ 654,489**
2.2.1g Erosion Layer	36,300	CY	$ 3.89	1.000	$ 3.89	**$ 141,207**
2.2.1h Vegetation	45.0	AC	$ 1,031	1.000	$ 1,031	**$ 46,387**
2.3 Site Grading	45.0	AC	$ 1,715	1.000	$ 1,715	**$ 77,156**
2.4 Site Fencing and Security	-	LF	$ -	1.000	$ -	**$ -**
2.5 Landfill Gas Monitoring and Control System	-	Wells	$ -	1.000	$ -	**$ -**
2.6 Groundwater Monitoring System	-	LS	$ -	1.000	$ -	**$ -**
2.7 Leachate Management	-	LS	$ -	1.000	$ -	**$ -**
2.8 Stormwater Management	-	LS	$ -	1.000	$ -	**$ -**
2.9 Additional Construction Cost Items						
2.10 CONSTRUCTION COSTS SUBTOTAL						**$ 919,239**
3.0 STORAGE AND PROCESSING UNIT CLOSURE COSTS						**-**
4.0 SUM OF CLOSURE COST SUBTOTALS						**$ 1,344,055**
5.0 CONTINGENCY			10% of Item 4			**$ 134,405**
6.0 CONTRACT PERFORMANCE BOND			2.0% of Item 4			**$ 26,881**
7.0 THIRD PARTY ADMINISTRATION AND PROJECT MANAGEMENT COSTS			2.5% of Item 4			**$ 33,601**
8.0 TOTAL CLOSURE COST						**$ 1,538,943**

[1] N/A = not applicable, LS = lump sum, AC = acres, CY = cubic yards, SF = square feet.

[2] Unit Costs are in 2024 dollars. Unit costs are based on current market conditions, typical engineering costs and industry standards related to construction, and reflect input from Republic Services and Weaver Consultants Group, LLC.

[3] Inflation factor is a product of the annual percentage change for each year as published by the TCEQ. Inflation factor will be used during future updating of CPC Cost Estimates.

[4] Table will be expanded in the future to incorporate additional line items for new components that are required for landfill closure.

3 POSTCLOSURE CARE COST ESTIMATE

The postclosure care period has been established by TCEQ regulations to be 30 years. This detailed cost estimate shows the cost of hiring a third party to conduct routine maintenance and monitoring during the postclosure period. During this period, continuous maintenance must be ongoing to assure the integrity and effectiveness of the final cover system, monitoring systems, leachate collection system, drainage system, and landfill gas system. The leachate collection system and landfill gas system will not be applicable to the existing trench fill area. A summary of postclosure cost estimate is presented on Table IIIL-5. The costs will be adjusted annually as indicated in Section 4. An assessment will be completed each year to verify that the Postclosure Cost Estimate shown in Table IIIL-5 is consistent with the current permit conditions and the projected permit conditions for the upcoming 12-month period. The assessment will verify that the postclosure costs are based on the current active area and that all other permit conditions are addressed by the Postclosure Cost Estimate (e.g., verify the LFG O&M cost estimate is updated to match the number of wells that will need to be maintained during the postclosure period). Continuous financial assurance coverage for the postclosure care period of the facility will be provided until the facility is released from the postclosure care period by the Executive Director, in accordance with the requirements of the facility's postclosure care plan. The estimates will be adjusted, as needed, consistent with the procedures noted in Section 4.

3.1 Engineering Costs

As shown on Table IIIL-5, engineering postclosure estimates include the cost of annual site inspections, corrective plans and specifications, and site compliance monitoring. The estimates are based on the largest area with waste in-place. Site inspections will be performed annually and will include identification of areas experiencing settlement or subsidence, identification of erosion or other drainage-related problems, and inspection of the leachate collection system, gas control and monitoring system, and the groundwater monitoring system. The leachate collection system and landfill gas system will not be applicable to the existing trench fill area. Correctional plans and specifications include the costs for an engineering consultant to prepare construction plans and specifications to correct problems identified during the site inspections. Future gas monitoring and groundwater sampling and analysis will be performed as outlined in the Postclosure Care Plan (Appendix IIIK).

3.2 Construction Costs

Postclosure construction/maintenance estimates include the costs to correct problems determined by the engineering site inspections and as specified by the engineer's correctional plans and specifications. These costs will also include any ongoing site maintenance that is needed throughout the postclosure period. These costs include cover and drainage maintenance, as well as annual seeding and mowing costs. The (future) leachate disposal costs include leachate removal from the area with a leachate collection system. Future postclosure landfill gas control system O&M costs includes regular calibration and maintenance of regulatory equipment, such as valves and flow meters, associated system components of the active collection system and condensate disposal for the completely developed site.

A justification for the postclosure landfill gas (LFG) system operation and maintenance (O&M) cost estimate (for future revised CPC estimate) provided in Table IIIL-5 is discussed below. The following summary information can be found in Tables IIIL-2, IIIL-3, and IIIL-4.

- Table IIIL-2 – Estimated Routine O&M Costs. This table estimates the annual and 30-year cost for the routine O&M activities.
- Table IIIL-3 – Estimated Non-Routine O&M Costs. This table presents a summary of non-routine tasks and their associated costs. The estimates are based on the tasks required to replace or repair components on the flare/blower system.
- Table IIIL-4 – Summary of Estimated O&M Costs. This table provides a summary of the information listed in Tables IIIL-2 and IIIL-3.

Table IIIL-2
Estimated Routine Operation and Maintenance (O&M) Costs
Typical Landfill Gas Collection and Control System

Number of Extraction Wells	Annual Routine O&M Cost	30-year Routine O&M Cost
20	$25,500	$765,000
40	$32,000	$960,000
60	$38,500	$1,155,000
80	$45,000	$1,350,000
100	$51,500	$1,545,000
200	$64,500	$1,935,000
300	$77,500	$2,325,000
400	$96,500	$2,895,000
500	$109,500	$3,285,000
600	$122,500	$3,675,000
700	$135,500	$4,065,000
800	$148,500	$4,455,000

Annual routine maintenance includes the following items (i.e., once the threshold requiring a LFG system is reached):

- Routine monitoring includes:
  - Balancing of the LFG extraction wells and monitoring of the blower/flare facility
  - Monitoring includes methane (% by volume), oxygen (% by volume), carbon dioxide (% by volume), pressures, and LFG temperature
  - Surface emissions and well field monitoring required under current NSPS regulations
- Maintenance of the GCCS will consist of:
  - Repair or replacement of sample ports
  - Repair or replacement of lateral valves
  - Adjusting and/or replacing flex joints
  - Adjusting and/or replacing flex tubing
  - Adjusting pipe supports to account for differential settlement
- Maintenance of a flare station includes:
  - Rotation of the blower operation
  - Maintaining vegetative growth inside the flare facility
  - Replacement of filters
  - Testing voltage output and operation of the blower(s)
  - Lubricating the blower bearings
  - Checking for blower belt wear and adjusting belt tension
  - Inspecting the flame arrestor and all safety shut-down features
  - Replacing recorder paper
  - Checking flare pilot system and pilot gas fuel tank levels
  - Checking flare controller set points and automatic louvers in accordance with the manufacturer's recommendations and schedules
  - Pump repairs to condensate sumps

Power costs are also included.

In addition, consistent with Title 30 TAC §330.507 an assessment will be completed each year to verify that the postclosure cost estimates shown in Table IIIL-5 are consistent with the current permit conditions and the projected permit conditions for the upcoming 12-month period. The assessment will verify that the postclosure costs are based on the current active and inactive areas and that all other permit conditions are addressed by the Postclosure Cost Estimate. This assessment will also address the appropriateness of the unit cost data.

Upon completion of closure activities and initiation of the postclosure care period, the facility may submit a request to the TCEQ Financial Assurance Unit to revise the postclosure cost estimate. The request shall update postclosure costs for inflation and to reflect the number of years remaining in the postclosure care period. Financial assurance will be maintained for a minimum 10-year postclosure care period regardless of the number of years remaining in the facility's 30-year postclosure care period. Correspondence with the TCEQ Financial Assurance Unit will be maintained in the Site Operating Record for the facility.

TABLE 2
CITY OF MEADOW LANDFILL - POST-CLOSURE CARE COST

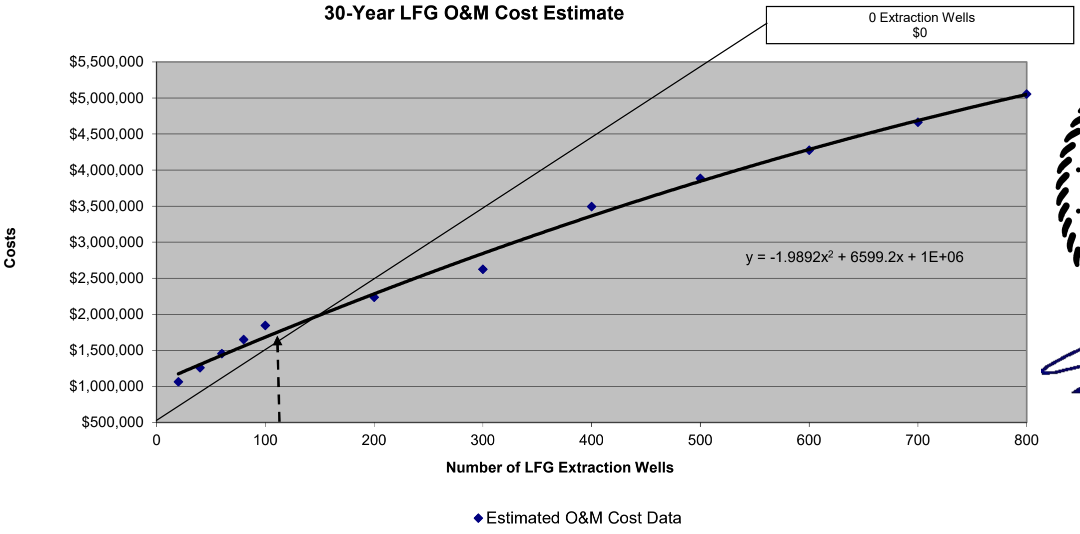
Permitted Waste Footprint	210.7	ac	Solid Waste Fill Area	45
Area with leachate collection system	0	ac	Post Closure Care Period	30
Groundwater Monitoring Wells	0	wells	Gas Monitoring Events	4
Gas Probes	2	probes	GW Monitoring Events	2
Area to be administratively closed	337.9	ac	Leachate Generation	0

Description	Quantity	Unit[1]	2024 Unit Cost[2]	Inflation Factor[3]	2024 Unit Cost	
1.0 ENGINEERING						
1.1 Site Inspection and Recordkeeping (annual)	337.9	AC	$ 10.00	1.000	$ 10.00	$ 3,379
1.2 Correctional Plans and Specifications (annual)	337.9	AC	$ 14.00	1.000	$ 14.00	$ 4,731
1.3 Site Monitoring						
1.3.1 Groundwater Monitoring System						
1.3.1(a) Groundwater Monitoring (semiannual)	-	WELLS	$ -	1.000	$ -	$ -
1.3.2 LFG Monitoring System						
1.3.2(a) LFG Monitoring (quarterly)	4	EA	$ 350	1.000	$ 350	$ 1,400
1.3.2(b) LFG Plugging and Abandonment	-	WELLS	$ -	1.000	$ -	$ -
1.3.3 Surface Water Monitoring (quarterly)						
1.3.3(a) Surface Water Monitoring (quarterly)	-	EA	$ -	1.000	$ -	$ -
1.4 Additional Engineering Cost Items						$ -
1.5 ENGINEERING SUBTOTAL						**$ 9,510**
2.0 CONSTRUCTION / MAINTENANCE						
2.1 Cap and Sideslope Repairs and Revegetation	45	AC	$ 210	1.000	$ 210	$ 9,450
2.2 Mowing and Vegetation Management	1	LS	$ 5,500	1.000	$ 5,500	$ 5,500
2.3 Groundwater Monitoring System Maintenance	0	LS	$ -	1.000	$ -	$ -
2.4 LFG Monitoring Probes Maintenance	0	LS	$ -	1.000	$ -	$ -
2.5 LFG Collection System Operations and Maintenance	0	LS	$ -	1.000	$ -	$ -
2.6 Perimeter Fence and Gates Maintenance	1	LS	$ 1,200	1.000	$ 1,200	$ 1,200
2.7 Access Roads Maintenance	1	LS	$ 2,000	1.000	$ 2,000	$ 2,000
2.9 Additional Construction and Maintenance Cost Items	-	-	-			
2.10 CONSTRUCTION AND MAINTENANCE COSTS SUBTOTAL						**$ 18,150**
3.0 LEACHATE MANAGEMENT SYTEM OPERATION/MAINTENANCE/DISPOSAL						
3.1 Leachate Management System Operation and Maintenance	0	LS	$ -	1.000	$ -	$ -
3.2 Leachate Disposal	0.0	AC	$ -	1.000	$ -	$ -
3.4 Additional Leachate Management Cost Items						$ -
3.5 LEACHATE MANAGEMENT COSTS SUBTOTAL						**$ -**
4.0 SUM OF ENGINEERING, CONSTRUCTION, AND LEACHATE MANAGEMENT COSTS						**$ 27,660**
5.0 CONTINGENCY			10%	of Item 4		**$ 2,766**
6.0 THIRD PARTY ADMINISTRATION AND PROJECT MANAGEMENT			2.5%	of Item 4		**$ 691**
7.0 TOTAL POST-CLOSURE COST						
7.1 TOTAL ANNUAL POST-CLOSURE COST						**$ 31,117**
7.2 30 YEAR POST-CLOSURE COSTS						**$ 933,512**

[1] N/A = not applicable, LS = lump sum, AC = acres, CY = cubic yards, SF = square feet, GAL = gallon

[2] Unit Costs are in 2024 dollars. Unit costs are based on current market conditions, typical engineering costs and industry standards related to construction, and reflect input from Republic Services and Weaver Consultants Group, LLC.

[3] Inflation factor is a product of the annual percentage change for each year as published by the TCEQ. Inflation factor will be used during future updating of CPC Cost Estimates



KYLE D. GOULD
106018

02/28/2025

4 COST ESTIMATE ADJUSTMENTS

During the active life of the site, Meadow Landfill will annually adjust the cost estimates for inflation and for changes to the facility conditions that increase the cost of closure. The adjustment may be made by recalculating the maximum costs of closure and postclosure in current dollars, or by using an inflation factor derived from the most recent Implicit Price Deflator for Gross National Product published by the United States Department of Commence in its Survey of Current Business. The inflation factor is the result of dividing the latest published annual deflator by the deflator for the previous year. The first adjustment is made by multiplying the closure and postclosure cost estimates by the inflation factor. The result is the adjusted closure and postclosure cost estimates. Subsequent adjustments are made by multiplying the latest adjusted closure and postclosure estimates by the latest inflation factor.

An increase in the closure or postclosure cost estimate and the amount of financial assurance will be made if changes to the final closure or postclosure care plan or the landfill conditions increase the maximum cost. If only the maximum area requiring closure changes (i.e., increases due to liner construction), a permit modification to change the closure and postclosure care cost estimates will be submitted to TCEQ.

A reduction in the closure or postclosure care cost estimate and the amount of financial assurance may be submitted if the cost estimate exceeds the maximum costs of closure at any time during the remaining life of the unit or postclosure care remaining over the postclosure care period. Meadow Landfill, LLC, will submit written notice to the Executive Director of the detailed justification for the reduction of the cost estimates and the amount of financial assurance. A reduction in the cost estimate and financial assurance will be considered a permit modification.

In the event that the facility were to enter into corrective action during the postclosure period, Meadow Landfill, LLC, will submit a corrective action cost estimate to the TCEQ in accordance with Title 30 TAC §330.509.

In accordance with Title 30 TAC §330.503 and §330.507, the closure and post-closure cost estimates will be reviewed and updated on an annual basis if the facility's permit conditions have changed (e.g, that the areas requiring closure or post-closure care do not match the current estimate, inflation costs), or if the landfill conditions increase the maximum cost of closure or post-closure (e.g., new cell construction, storage or processing units addition or revisions) at any time during the remaining active life of the unit. In accordance with Title 30 TAC §330.503(a) and §330.463(b)(3)(D), evidence of any additional financial assurance resulting from the annual revision of cost-estimates will be provided to the TCEQ.

APPENDIX IIIL-A

CLOSURE COST ESTIMATE FORM FOR MUNICIPAL SOLID WASTE TYPE I LANDFILL (FORM 20721)

STATE OF TEXAS
KYLE D. GOULD
106018
LICENSED
PROFESSIONAL ENGINEER

02/28/2025

Texas Commission on Environmental Quality

Closure Cost Estimate Form for Municipal Solid Waste Type I Landfills

This form is for use by applicants or site operators to provide cost estimates for closure of MSW Type I landfills to meet the requirements in 30 Texas Administrative Code (TAC) Chapter 330, Section 330.63(j) and 30 TAC Chapter 330 Subchapter L. The costs to be provided herein are cost estimates for hiring a third party to close the largest waste fill area that could potentially be open in the year to follow and those areas that have not received final cover. If you need assistance in completing this form, please contact the MSW Permits Section in the Waste Permits Division at (512) 239-2335.

Facility Name: City of Meadow Landfill

MSW Permit No.: 2293C

Site Operator/Permittee Name and Mailing Address: Meadow Landfill, LLC, 663 County Road 545, Meadow, TX 79345

Total Closure Cost Estimate (2024 Dollar Amount): $1,538,943

I. Professional Engineer's Statement, Seal, and Signature

I am a licensed professional engineer in the State of Texas. To the best of my knowledge, this Closure Cost Estimate has been completed in substantial conformance with the facility Closure Plan and, in my professional opinion, is in compliance with Title 30 of the Texas Administrative Code, Chapter 330.

Name: Kyle D. Gould

Title: Senior Engineer

Date: 2/2025

Company Name: Weaver Consultants Group, LLC

Firm Registration Number: F-3727

Professional Engineer's Seal

KYLE D. GOULD
106018

02/28/2025

Professional Engineer's Signature

II. Annual Review of Permit Conditions, Cost Estimates, Inflation Factor, and Financial Assurance

The permittee/site operator acknowledges that he/she will:

(1) Review the facility's permit conditions on an annual basis and verify that the current active and inactive waste fill areas of the landfill match the areas on which closure cost estimates are based.

(2) Request in writing via a permit modification application for an increase in the closure cost estimate and the amount of financial assurance provided if changes to the closure plan or the landfill conditions increase the maximum cost of closure at any time during the remaining active life of the landfill.

(3) Request in writing via a permit modification application for a reduction in the cost estimate and the amount of financial assurance provided if the cost estimate exceeds the maximum cost of closure at any time during the remaining active life of the landfill. The permit modification application will include a description of the situation and a detailed justification for the reduction of the closure cost estimate and the amount of financial assurance.

(4) Establish financial assurance for closure of the unit in an amount no less than the current closure cost estimate in accordance with 30 TAC Chapter 37, Subchapter R.

(5) Adjust the current cost estimate for inflation within 60 days prior to the anniversary date of the first establishment of the financial assurance mechanism.

(6) Provide annual inflation adjustments to the closure costs and financial assurance during the active life of the facility, until the facility is officially placed under the post closure care period and all requirements of the final closure plan have been approved in writing by the TCEQ executive director. The adjustment will be made using an inflation factor derived from the most recent annual Implicit Price Deflator for Gross National Product published by the United States Department of Commerce in its Survey of Current Business, as specified in paragraphs (1) and (2) of 30 TAC §37.131. The inflation factor is the result of dividing the latest published annual Deflator by the Deflator for the previous year.

(7) Provide continuous financial assurance coverage for closure until the facility is officially placed under the post-closure care period.

III. Description of the Closure Cost Estimates Worksheet

The following descriptions of the items on the closure cost estimates worksheet provide guidance for identifying the minimum work or cost elements and estimating the unit or lump sum cost of each item as applicable. Enter additional detail for each item in the field following the item as necessary and as site-specific condition warrants. The cost items are grouped under closure costs for engineering, construction, and storage and processing units. Include attachments to detail any additional work and associated costs necessary to close the site that is not already included as a line item on the worksheet. Reference the attachments and list the work or cost items in the fields under "Additional Engineering Cost Items Not Listed on the Worksheet," "Additional Construction Cost Items Not Listed on the Worksheet," or "Additional Storage and Processing Units Items Not Listed on the Worksheet" as applicable. Provide the total cost of the additional work or cost items in each cost category on the worksheet line that precedes the cost subtotal for each cost group.

1. Engineering Costs

The engineering tasks have been subdivided into seven items and are described below. Other related costs may be added as site-specific issues warrant.

1.1. Topographic Survey

A topographic survey will be required to verify the existing elevation and slopes of the landfill to ensure conformance with the final cover system, drainage system, and final grading designs.

Enter additional topographic survey work or cost element details as site-specific conditions warrant: **$5,180**

1.2. Boundary Survey

The metes and bounds description is required for filing of the affidavit of closure and deed recording of any area of the site which has received waste. Other activities to be included here are publication of the public notice of closing activities.

Enter additional boundary survey work or cost element details as site-specific conditions warrant: **$22,754**

1.3. Site Evaluation

The evaluation includes a site inspection to identify waste disposal areas, analyze drainage and erosion protection needs, and to determine other site operational features that are not in compliance with the permit. The site evaluation also includes verifying the need for new or relocation of existing groundwater monitoring wells and landfill gas monitoring probes, analysis of groundwater samples, and review of site operating record. The third party consultant who performed the site evaluation will prepare and submit an engineering report to the executive director to document the status of the site. The report will identify all areas of work and the associated implementation costs necessary to safely close the landfill operations with recommendations on how to fulfill these needs.

Enter additional site evaluation work or cost element details as site-specific conditions warrant: **$246,795**

1.4. Development of Plans

The final closure, plan the final cover system design and specifications, grading and drainage plans, specification for revegetation, design of any other improvements to bring the site into compliance with the permit, the closure schedule, and coordination with the TCEQ and provision of closure notice to the public.

Enter additional development of plans work or cost element details as site-specific conditions warrant: **$27,739**

1.5. Contract Administration (bidding and award)

The third-party consultant will advertise the project, receive the bids, evaluate the bids, award the closure construction contract and administer the contract during construction.

Enter additional contract administration work or cost element details as site-specific conditions warrant: **$30,246**

1.6. Closure Inspection and Testing

The professional of record will observe closure construction, perform cover thickness and permeability verification, and prepare an evaluation report upon completion of closure.

Enter additional closure inspection or testing work or cost element details as site-specific conditions warrant: **$84,848**

1.7. TPDES and other Permits

The third-party consultant will prepare plans, specifications, and other documents necessary for compliance with applicable federal and state laws and requirements, including the Clean Water Act, for the proper closure of the site.

Enter additional TPES or other permits work or cost element details as site-specific conditions warrant: **$7,252**

1.8. Additional Engineering Cost Items Not Listed on the Worksheet

List the Attachment(s) detailing any additional engineering cost items necessary to close the site that is not already included as a line item on the worksheet: Also, reference these Attachments in the “Units” column on this line of the worksheet. Provide the total cost of all additional engineering cost items in the “Cost” column.

Groundwater Monitoring Well Consultant : NA

The existing groundwater monitoring system is adequate. There should be no cost associated with this item.

1.9. Engineering Costs Subtotal: $424,816

1.9.1. Enter the sum of engineering costs in Items 1.1 through 1.8.

2. Construction Costs

Closure construction costs include those for construction of the final cover system, site grading, and drainage improvements. Other costs may be added as site-specific issues warrant.

2.1. Mobilization

2.1.1. Mobilization of Personnel and Equipment

The cost of mobilizing personnel and construction heavy equipment must be included as part of the construction costs.

Enter additional work or cost element details for mobilization of personnel and equipment as site-specific conditions warrant:

Included in overall cost of construction work.

2.2. Final Cover System

The owner or operator must install a final cover system that is designed to minimize infiltration and erosion. The final cover system is subdivided into the sideslope cover and cap cover with their associated components to facilitate cost calculations. If an alternative final cover is proposed, the closure cost estimate will still be based on a design that utilizes the conventional composite cover system.

Enter additional final cover system work or cost element details as site-specific conditions warrant: $795,696 – Included in item 2.1A and 2.1B on Table 1.

2.2.1. Side Slope Cover

Enter information for Items 2.2.1a through 2.2.1h.

2.2.2. Top Slope Cover

Enter information for Items 2.2.2a through 2.2.2h.

2.2.3. Cells for Class 1 Nonhazardous Industrial Waste

2.3. Site Grading

Site grading includes the final grading of the site, including the landfill cap and sideslopes.

Enter additional site grading work or cost element details as site-specific conditions warrant: $77,156

2.4. Site Fencing and Security

Site fencing and security must be included for the area which has received waste and have no existing approved fencing.

Enter additional site fencing and security work or cost element details as site-specific conditions warrant:

The site has adequate existing fencing.

2.5. Landfill Gas Monitoring and Control Systems

Enter information for Items 2.5.1 through 2.5.6.

Final installation of the landfill gas monitoring and control systems must include the installation costs of pipes and appurtenances. In the event of a forced closure, the systems may not have been completed, thus, the estimated costs to complete the landfill gas monitoring and control system must be provided.

Enter additional landfill gas monitoring and control systems work or cost element details as site-specific conditions warrant:

No landfill gas system is required.

2.6. Groundwater Monitoring System

2.6.1. Monitor Well Installation

Upon closure of the site, it may be necessary to relocate the compliance boundary. This requires the installation of new monitor wells.

Enter additional groundwater monitoring system work or cost element details as site-specific conditions warrant:

No existing groundwater monitoring system.

2.6.2. Piezometer and Monitor Well Plugging and Abandonment

Piezometer or monitor well abandonment is the cost of abandoning (plugging) piezometers or monitor wells that are no longer needed. Determine the number of piezometers or monitor wells to be abandoned and include the total cost.

Enter additional plugging and abandonment work or cost element details as site-specific conditions warrant:

No plugging of piezometers or monitoring wells is required.

2.7. Leachate Management

2.7.1. Completion of Existing Leachate Collection System

In the event of a forced closure, there may be circumstances where the leachate collection system has not been completed. In this event, the leachate collection system must be closed with a permanent outfalls and permanent cleanouts installed.

Enter additional leachate management work or cost element details as site-specific conditions warrant:

There is not an existing leachate system.

2.8. Stormwater Management

2.8.1. Stormwater Drainage Management System

To reduce the potential long-term impacts of the landfill on surface water quality, drainage features must be incorporated into the final cover design to direct runoff, minimize erosion, control sediments, and avoid ponding of stormwater. The drainage system construction costs must be included.

Enter additional stormwater drainage management work or cost element details as site-specific conditions warrant:

Included in overall cost of final cover system construction.

2.9. Additional Construction Cost Items Not Listed on Worksheet

List the Attachments detailing any additional construction cost items necessary to close the site that is not already included as a line item on the worksheet:

Also, reference these Attachments in the "Units" column on this line of the worksheet. Provide the total cost of all additional construction cost items in the "Cost" column.

2.10. Construction Costs Subtotal: $979,239

2.10.1. Enter the sum of construction costs in Items 2.1 through 2.9.

3. Storage and Processing Unit Closure Costs

For landfills that incorporate storage and/or processing operations that are not separately authorized, all waste and processed and unprocessed materials associated with storage and/or processing units must be removed during the closure process.

3.1. Waste Disposal

The cost of disposal of waste at an authorized facility. *Enter additional waste disposal work or cost element information as necessary.*

Not Applicable

3.2. Material Removal and Disinfection

The cost of removal, including transportation, of any remaining processed and unprocessed materials to an authorized off-site location. *Enter additional material removal and disinfection work or cost element information as necessary.*

Not Applicable

3.3. Demolition and Disposal

The cost of dismantling and/or disinfection of storage and/or processing units and disposal, as applicable. *Enter additional demolition and disposal work or cost element information as necessary.*

Not Applicable

3.4. Additional Storage and Processing Unit Closure Cost Items Not Listed in Worksheet

List the Attachments detailing any additional storage and processing unit closure cost items necessary to close the site that is not already included as a line item on the worksheet. Also, reference these Attachments in the "Units" column on this line of the worksheet. Provide the total cost of all additional storage and processing unit closure cost items in the "Cost" column.

3.5. Storage and Processing Unit Closure Costs Subtotal: Not Applicable

4. Sum of Cost Subtotals: $1,344,055

4.1. Enter the sum of engineering, construction, and storage and processing unit closure cost subtotals from lines 1.9.1, 2.10.1, and 3.5.1.

5. Contingency: $134,405

5.1. Add an amount equal to at least 10 percent of the sum of cost subtotals to cover unanticipated events during implementation of closure activities.

6. Contract Performance Bond: $26,881

6.1. Add an amount equal to at least 2 percent of the sum of cost subtotals for purchase of a surety bond to guarantee satisfactory completion of the closure activities.

7. Third Party Administration and Project Management Costs: $33,601

7.1. Add an amount equal to at least 2.5 percent of the sum of cost subtotals to cover the cost for a third party hired by TCEQ to administer the closure activities.

8. Total Closure Cost: $1,538,943

8.1. Enter the sum of the amounts on lines 4.1, 5.1, 6.1, and 7.1.

IV. Closure Cost Estimates Worksheet

A. Landfill Data

Total Permitted Waste Disposal Area: 210.7 acres

Largest Area Requiring Final Cover in the year to follow: 45.0 acres

Total Filled Area with Constructed Final Cover: 0 acres

Total Area Certified Closed: 0 acres

Number of Monitor Wells to be Installed for Closure: 0

Number of Gas Probes to be Installed for Closure: 0

Total Acreage Needing LFG Collection and Control System: 0 acres

The unit or lump sum cost for each item is based on the work items and cost elements described in Section III of this Closure Cost Estimate document:

Yes ☒ No ☐ Partially ☐

(if "No" or "Partially" is checked, please include attachments describing the additional work items and detailing the unit, quantities, and costs for the additional items)

B. Facility Drawings and Financial Assurance Documentation

- Facility drawings
    - Attach facility drawings showing the closure areas to which the closure cost estimates apply.
- Financial assurance documentation
    - For an existing facility, attach a copy of the documentation required to demonstrate financial assurance as specified in 30 TAC Chapter 37, Subchapter R.
    - For a new facility, a copy of the required documentation shall be submitted 60 days prior to the initial receipt of waste.

C. Attachments

- Additional Engineering, Construction, and Storage and Processing Units Cost Items Details

D. Closure Cost Estimates Worksheet

If any item listed in this worksheet is not applicable to the subject facility, enter "NA" (Not Applicable) in the affected field.

Table 1. Closure Cost Estimates Worksheet.

Item No.	Item Description	Units[1]	Quantity	Unit Cost	Cost	Source of Unit Cost Estimate[2]
1. Engineering Costs						
1.1	Topographic Survey	Lump Sum	1	$5,180	$5,180	Third Party Estimate
1.2	Boundary Survey	Acres	337.9	$67	$22,754	Third Party Estimate
1.3	Site Evaluation	Acres	337.9	$730	$246,795	Third Party Estimate
1.4	Development of Plans	Acres	45.0	$616	$27,739	Third Party Estimate
1.5	Contract Administration (bidding and award)	Percent	10%	NA	$30,246	Third Party Estimate
1.6	Closure Inspection and Testing	Acres	45.0	$1,886	$84,848	Third Party Estimate
1.7	TPDES and other Permits	Lump Sum	1	$7,252	$7,252	Third Party Estimate
1.8	Additional Engineering Cost Items (describe in attachments)	NA	NA	NA	NA	NA
1.9 Engineering Costs Subtotal						
1.9.1	Engineering Costs Subtotal	NA	NA	NA	424,816	NA
2. Construction Costs						
2.1 Mobilization						
2.1.1	Mobilization of Personnel and Equipment	Lump Sum	NA	NA	NA	NA
2.2 Final Cover System						
2.2.1 Side Slope Cover						
2.2.1a	Infiltration Layer – Compacted Clay	Cubic Yards	NA	NA	NA	Estimate from Recent Construction Experiences
2.2.1b	Infiltration Layer – Geosynthetic Clay Liner	Square Feet	NA	NA	NA	NA

Item No.	Item Description	Units[1]	Quantity	Unit Cost	Cost	Source of Unit Cost Estimate[2]
2.2.1c	Flexible Membrane Cover – HDPE	Square Feet	NA	NA	NA	NA
2.2.1d	Flexible Membrane Cover – LLDPE	Square Feet	NA	NA	NA	Estimate from Recent Construction Experiences
2.2.1e	Drainage Layer – Aggregate	Cubic Yards	NA	NA	NA	NA
2.2.1f	Drainage Layer – Drainage Geocomposite Material	Square Feet	NA	NA	NA	Estimate from Recent Construction Experiences
2.2.1g	Erosion Layer	Cubic Yards	NA	NA	NA	Estimate from Recent Construction Experiences
2.2.1h	Vegetation	Acres	NA	NA	NA	Estimate from Recent Construction Experiences
2.2.2 Top Slope Cover						
2.2.2a	Infiltration Layer – Compacted Clay	Cubic Yards	108,900	$6.01	$654,489	Estimate from Recent Construction Experiences
2.2.2b	Infiltration Layer – Geosynthetic Clay Liner	Square Feet	NA	NA	NA	NA
2.2.2c	Flexible Membrane Cover – HDPE	Square Feet	NA	NA	NA	NA
2.2.2d	Flexible Membrane Cover – LLDPE	Square Feet	NA	NA	NA	Estimate from Recent Construction Experiences
2.2.2e	Drainage Layer – Aggregate	Cubic Yards	NA	NA	NA	NA
2.2.2f	Drainage Layer – Drainage Geocomposite Material	Square Feet	NA	NA	NA	Estimate from Recent Construction Experiences
2.2.2g	Erosion Layer	Cubic Yards	36,300	$3.89	$141,207	Estimate from Recent Construction Experiences
2.2.2h	Vegetation	Acres	45.0	$1,031	$46,387	Estimate from Recent Construction Experiences
2.2.3 Cells for Class 1 Nonhazardous Industrial Waste						
2.2.3a	Dike Construction	specify	NA	NA	NA	NA

Closure Cost Estimate for MSW Type I Landfill

Facility Name: City of Meadow Landfill	Revision No.: 1
Permit No: 2293C	Date: 2/2025

Item No.	Item Description	Units[1]	Quantity	Unit Cost	Cost	Source of Unit Cost Estimate[2]
2.3 Site Grading						
2.3.1	Site Grading	Acres	45.0	$1,715	$77,156	Estimate from Recent Construction Experiences
2.4 Site Fencing and Security						
2.4.1	Site Fencing and Security	specify	NA	NA	NA	NA
2.5 Landfill Gas Monitoring and Control System						
2.5.1	Gas Control Wells	specify	NA	NA	NA	NA
2.5.2	Gas Header Piping	specify	NA	NA	NA	NA
2.5.3	Gas Lateral Piping	specify	NA	NA	NA	NA
2.5.4	Flare Station	Lump Sum	NA	NA	NA	NA
2.5.5	Condensate Sumps	specify	NA	NA	NA	NA
2.5.6	Completion of LFG Monitoring System	Wells	NA	NA	NA	NA
2.6 Groundwater Monitoring System						
2.6.1	Groundwater Monitoring Well Installation	Each	NA	NA	NA	NA
2.6.2	Piezometer and Monitor Well Plugging and Abandonment	Each	NA	NA	NA	NA
2.7 Leachate Management						
2.7.1	Completion of Leachate Management System	specify	NA	NA	NA	NA
2.8 Stormwater Management						
2.8.1	Stormwater Drainage Management System	specify	NA	NA	NA	NA
2.9 Other Cost Items						
2.9.1	Additional Construction Cost Items (describe in attachments)	LS	1	NA	NA	Estimate from Recent Construction Experiences
2.10 Construction Costs Subtotal						
2.10.1	Construction Costs Subtotal	NA	NA	NA	$979,239	NA

Closure Cost Estimate for MSW Type I Landfill

Facility Name: City of Meadow Landfill	Revision No.: 1
Permit No: 2293C	Date: 2/2025

Item No.	Item Description	Units[1]	Quantity	Unit Cost	Cost	Source of Unit Cost Estimate[2]
3. Storage and Processing Unit Closure Costs						
3.1	Waste Disposal	☐ Tons ☐ Cubic Yards	NA	NA	NA	NA
3.2	Material Removal and Disinfection	specify	NA	NA	NA	NA
3.3	Demolition and Disposal Units	specify	NA	NA	NA	NA
3.4	Additional Storage and Processing Unit Closure Cost Items (describe in attachments)	identify attach-ments	NA	NA	NA	NA
3.5 Storage and Processing Unit Closure Costs Subtotal						
3.5.1	Storage and Processing Unit Closure Costs Subtotal	NA	NA	NA	NA	NA
4. Sum of Engineering, Construction, and Storage and Processing Unit Closure Costs						
4.1	Sum of Engineering, Construction, and Storage and Processing Unit Closure Cost Subtotals	NA	NA	NA	$1,344,055	NA
5. Contingency						
5.1	Contingency (10% of Sum of Engineering, Construction, and Storage and Processing Unit Closure Cost Subtotals)	NA	NA	NA	$134,405	NA
6. Contract Performance Bond						
6.1	Contract Performance Bond (2% of Sum of Engineering, Construction, and Storage and Processing Unit Closure Cost Subtotals)	NA	NA	NA	$26,881	NA
7. Third Party Administration and Project Management Costs						
7.1	Third Party Administration and Project Management Costs (2.5% of Sum of Engineering, Construction, and Storage and Processing Unit Closure Cost Subtotals)	NA	NA	NA	$33,601	NA

Closure Cost Estimate for MSW Type I Landfill

Facility Name: City of Meadow Landfill	Revision No.: 1
Permit No: 2293C	Date: 2/2025

Item No.	Item Description	Units[1]	Quantity	Unit Cost	Cost	Source of Unit Cost Estimate[2]
8. Total Closure Costs						
8.1	Total Closure Costs (sum of amounts in Sections 4, 5, 6, and 7)	NA	NA	NA	$1,538,943	NA

---

[1] For items marked "specify," the responsible professional engineer will enter appropriate unit of measurement

[2] Sources of Unit Costs for Cost Estimates table may include:
(1) Published Cost Estimator Manuals (e.g., RS Means);
(2) Third Party Quotes (e.g., Environmental Field Services Contractors);
(3) Verifiable Data based on Actual Operations; or
(4) Other sources of cost acceptable to the executive director of the TCEQ.

APPENDIX IIIL-B

POST-CLOSURE COST ESTIMATE FORM FOR MUNICIPAL SOLID WASTE TYPE I LANDFILL (FORM 20723)

STATE OF TEXAS
KYLE D. GOULD
106018
LICENSED
PROFESSIONAL ENGINEER

02/28/2025

Texas Commission on Environmental Quality

Post-Closure Care Cost Estimate Form for Municipal Solid Waste Type I Landfills

This form is for use by applicants or site operators to provide post-closure care cost estimates for post-closure care of MSW Type I landfills to meet the requirements in 30 Texas Administrative Code (TAC) Chapter 330, Section 330.63(j) and 30 TAC Chapter 330 Subchapter L. The costs to be provided herein are cost estimates for hiring a third party to conduct post-closure care of the largest waste fill area that has been certified closed in writing by the TCEQ executive director.

If you need assistance in completing this form, please contact the MSW Permits Section in the Waste Permits Division at (512) 239-2335.

I. General Information

Facility Name: City of Meadow Landfill

MSW Permit No.: 2293C

Date: 2/2025

Revision Number: 1

Site Operator/Permittee Name and Mailing Address: Meadow Landfill, LLC, 663 County Road 545, Meadow, TX 79345

Total Post-Closure Care Cost Estimate (2024 Dollar Amount): $933,512

II. Professional Engineer's Statement, Seal, and Signature

I am a licensed professional engineer in the State of Texas. To the best of my knowledge, this Post- Closure Care Cost Estimate has been completed in substantial conformance with the facility Post-Closure Care Plan and, in my professional opinion, is in compliance with Title 30 of the Texas Administrative Code, Chapter 330.

Name: Kyle D. Gould

Title: Senior Engineer

Date: 2/2025

Company Name: Weaver Consultants Group, LLC

Firm Registration Number: F-3727

Professional Engineer's Seal

KYLE D. GOULD
106018

Signature

02/28/2025

III. Annual Review of Permit Conditions, Cost Estimates, Adjustments for Inflation, and Financial Assurance

The site operator/permittee acknowledges that he/she will:

1. Revise and increase the post-closure care cost estimate and the amount of financial assurance provided whenever changes in the post-closure care plan or the landfill conditions increase the maximum cost of post-closure care at any time during the remaining active life of the landfill and until the facility is officially released from the post-closure care period in writing by the executive director.
2. Request a reduction in the post-closure care cost estimate and the amount of financial assurance as a permit modification whenever the post-closure care cost estimate exceeds the maximum cost of post-closure care remaining over the post-closure period. The permit modification will include a detailed justification for the reduction of the post-closure care cost estimate and the amount of financial assurance.
3. Establish financial assurance for post-closure care of the unit in an amount no less than the current post-closure care cost estimate in accordance with 30 TAC Chapter 37
4. Adjust the current post-closure care cost estimate for inflation within 60 days prior to the anniversary date of the first establishment of the financial assurance mechanism.
5. Provide annual inflation adjustments to the post-closure care costs and financial assurance during the active life of the facility and during the post closure care period. The adjustment will be made using an inflation factor derived from the most recent annual Implicit Price Deflator for Gross National Product published by the United States Department of Commerce in its Survey of Current Business, as specified in 30 TAC Chapter 37. The inflation factor is the result of dividing the latest published annual Deflator by the Deflator for the previous year.
6. Provide continuous financial assurance coverage for post-closure care until the facility is officially released in writing by the executive director from the post-closure care period in accordance with all requirements of the post-closure care plan.

IV. Description of Worksheet Items of the Post-Closure Care Cost Estimates

The following descriptions of the worksheet items provide guidance for identifying the minimum work or cost elements for estimating the unit or lump sum cost of each item as applicable. Enter additional detail for each item in the field following the item as necessary and as site-specific conditions warrant. The cost items are grouped under post-closure care costs for engineering, construction, and leachate management. Include attachments to detail any additional work and associated costs necessary for the post-closure care of the unit or facility that is not already included as a line item on the worksheet. Reference the attachments and list the work or cost items in the fields under "Additional Engineering Cost Items Not Listed on the Worksheet," "Additional Construction Cost Items Not Listed on the Worksheet," or Additional Leachate Management Costs Not Listed on the Worksheet" as applicable. Provide the total cost of additional work or cost items in each cost category on the worksheet line that precedes the cost subtotal for each cost group.

1. Engineering Costs

1.1. Site Inspection and Recordkeeping

Regularly scheduled and event-driven site inspection must be performed to identify areas experiencing settlement, subsidence, erosion, or other drainage related problems, and note the conditions of the environmental control and monitoring systems, including leachate collection, groundwater monitoring, and landfill gas monitoring systems. *Enter additional site inspection and recordkeeping work or cost element detail as site-specific conditions warrant.*

$105,019

Site inspections will identify any potential areas experiencing settlement and erosion over the entire area to be administratively closed. The inspection will also document the condition of the LCS, LFG, groundwater monitoring system, and other landfill systems.

1.2. Correctional Plans and Specifications

The cost for an engineering consultant to prepare corrective measure construction plans and specifications to correct problems identified during site inspections. *Enter additional work or cost element details for correctional plans and specifications as site-specific conditions warrant.*

$143,347

Includes preparation of plans and specifications to correct problems identified during inspections in area of waste in-place.

1.3. Site Monitoring

The cost of performing semiannual groundwater (including costs for sampling and analyzing parameters, and assessment and reporting) and quarterly landfill gas monitoring (including costs for sampling and reporting) and the monitoring of other site-specific systems at the landfill during the postclosure period. *Enter additional site monitoring work or cost element details as site-specific conditions warrant.*

$16,783

After development of the footprint under Permit No. MSW-2293C then, this will also include the cost for semi-annual groundwater monitoring.

1.4. Additional Engineering Cost Items Not Listed on the Worksheet

List the Attachments detailing additional post-closure care engineering cost items not already included as a line item on the worksheet. (Also, reference these Attachments in the "Units" column of this line of the worksheet. Provide the total cost of all additional engineering cost items in the "Cost" column).

NA

2. Construction Costs

2.1. Cap and Sideslopes Repairs and Revegetation

The cost of repair of the cap and cap drainage control structures due to erosion or structural integrity failures and maintaining final cover vegetation to minimize erosion. *Enter additional cap and sideslopes repair and revegetation work or cost element details as site-specific conditions warrant.*

Included in Item 2.0 on Table 2.

2.2. Mowing and Vegetation Control

The cost of controlling vegetation growth on the final cover and other areas of the landfill. *Enter additional mowing and vegetation control work or cost element details as site-specific conditions warrant.*

Included in Item 2.0 on Table 2.

2.3. Groundwater Monitoring System Maintenance

The cost of repairs/replacement and routine maintenance. *Enter additional groundwater monitoring system maintenance work or cost element details as site-specific conditions warrant.*

N/A no groundwater monitoring system.

2.4. LFG Monitoring Probes Maintenance

The cost of repairs/replacement and routine maintenance. Enter additional LFG monitoring probes maintenance work or cost element details as site-specific conditions warrant.

LFG O&M is not applicable until sufficient footprint is developed.

2.5. LFG Collection System Maintenance

The cost of repairs and routine maintenance. *Enter additional LFG collection system maintenance work or cost element details as site-specific conditions warrant.*

After a sufficient footprint has been developed under the Permit No. MSW-2293C requiring an LFG Collection System then, the chart for LFG O&M (provided on Table 2) will be applicable.

2.6. Perimeter Fence and Gates Maintenance

The cost of maintaining perimeter fence and gates to restrict unauthorized access to the closed landfill. *Enter additional perimeter fence and gates maintenance work or cost element details as site-specific conditions warrant.*

Included in Item 2.0 on Table 2.

2.7. Access and Rights of Way Maintenance

The cost of maintaining the access roads and other rights of way to the closed landfill to conduct inspections, environmental sampling, routing maintenance and other post-closure activities. *Enter additional access and rights of way maintenance work or cost element details as site-specific conditions warrant.*

Included in Item 2.0 on Table 2.

2.8. Drainage System Cleanout and Repairs

The cost to include costs for maintaining and repairing ditches, conveyance structures, and ponds/basins. *Enter additional drainage system cleanout and repairs work or cost element details as site-specific conditions warrant.*

Included in Item 2.0 on Table 2.

2.9. Additional Construction and Maintenance Cost Items Not Listed on the Worksheet

List the Attachments detailing any additional construction and maintenance cost items necessary for post-closure care that are not already covered on the worksheet. (Also, reference these Attachments in the "Units" column on this line of the worksheet. Provide the total cost of all additional construction and maintenance cost items in the "Cost" column.)

Included in Item 2.0 on Table 2.

3. Leachate Management Costs

3.1. Leachate Collection and Removal System Operation and Maintenance

The cost of operation, routine maintenance and repairs. *Enter additional work or cost element details for leachate collection and removal system operation and maintenance as site-specific conditions warrant.*

NA

3.2. Leachate Disposal

The cost of leachate disposal off-site. *Enter additional work or cost element details for leachate disposal as site-specific conditions warrant*.

NA

3.3. Additional leachate management cost items not listed on the worksheet.

List the Attachments detailing any additional leachate management cost items necessary for post-closure care that are not already covered on the worksheet. (Also, reference these Attachments in the "Units" column on this line of the worksheet. Provide the total cost of all additional leachate management cost items in the "Cost" column.)

NA

4. Sum of Cost Subtotals

Enter the sum of engineering, construction, and storage and leachate management post-closure care cost subtotals from lines 1.5.1, 2.10.1, and 3.5.1.

$829,800

5. Contingency

The cost added to cover unanticipated events during implementation of post-closure activities. (Enter additional work or cost element information as necessary)

$82,980

6. Third Party Administration and Project Management Costs

The cost for the third party hired by TCEQ to administer the post-closure activities. (Enter additional work or cost element information as necessary)

$20,753

V. Post-Closure Care Cost Estimates Worksheet

Post-Closure Care Period – 30 years

Total Permitted Acreage: 337.9 acres

Total Permitted Waste Footprint: 210.7 acres

Number of Groundwater Monitoring Wells: 0

Number of GW Monitoring Events: 2/year

Number of Gas Probes: 2

Number of LFG Monitoring Events: 4/year

The unit or lump sum cost for each item is based on the work items and cost elements described in Section III of this Post-Closure Cost Estimate document:

Yes ☒ No ☐ Partially ☐

If “No” or “Partially” is checked, please attach a written description of work items and cost elements which form the bases of unit or lump sum cost for the affected items.

(NOTE: If any item listed in this worksheet is not applicable to the subject facility, enter Not Applicable (N/A) in the affected fields)

Attachments

Additional Engineering, Construction, and Leachate Management Cost Items Details.

Post-Closure Care Cost Estimate for MSW Type I Landfills

Facility Name: City of Meadow Landfill		Revision No.:	1
Permit No: 2293C		Date:	2/2025

Table 1: Post-Closure Care Cost Estimates

Item No.	Item Description	Units	Annual Qty.	Unit Cost	Annual Cost	Source of Unit Cost Estimate[i]
1.0 Engineering Costs						
1.1	Site Inspection and Recordkeeping[ii]	Acre	337.9	$10.00	$3,379	WCG routinely provides this type of service.
1.2	Correctional Plans and Specifications	Acre	337.9	$14.00	$4,731	WCG routinely provides this type of service.
1.3 Site Monitoring						
1.3.1 Groundwater Monitoring System						
1.3.1(a)	Sampling and Analysis of GW Monitoring Wells (Quantity = 2 x Number of wells)	Wells	NA	NA	NA	WCG routinely provides this type of service.
1.3.1(b)	Piezometers/Well Abandonment	Each	NA	NA	NA	NA
1.3.2 LFG Monitoring System						
1.3.2(a)	LFG Quarterly Monitoring (Quarterly)	Events/ Year	4	$350	$1,400	WCG routinely provides this type of service.
1.3.2(b)	LFG Probe Plugging and Abandonment	Each	NA	NA	NA	NA
1.4 Additional Engineering Cost Items (Detail in Attachments)						
1.4.1	Additional Engineering Cost Items (describe in attachments)	Identify attachments	NA	NA	NA	NA
1.5 Engineering Costs Subtotal						

Item No.	Item Description	Units	Annual Qty.	Unit Cost	Annual Cost	Source of Unit Cost Estimate[i]
1.5.1	Engineering Costs Subtotal	NA	NA	NA	$9,510	NA
2.0 Construction and Maintenance Costs						
2.1	Cap and Sideslopes Repairs and Revegetation	LS	45	$210	$9,450	Ongoing postclosure maintenance projects.
2.2	Mowing and Vegetation Management	LS	1	$5,500	$5,500	Ongoing postclosure maintenance projects.
2.3	Groundwater Monitoring System Maintenance	specify	Included in monitoring.			
2.4	LFG Monitoring Probes Maintenance	specify	Included in monitoring.			
2.5	LFG Collection System Maintenance	specify	0	NA	NA	NA
2.6	Perimeter Fence and Gates Maintenance	LS	1	$1,200	$1,200	Ongoing postclosure maintenance projects.
2.7	Access Roads Maintenance	LS	1	$2,000	$2,000	Ongoing postclosure maintenance projects.
2.8	Drainage System Cleanout/Repairs	specify	NA	NA	NA	NA
2.9 Additional Construction and Maintenance Cost Items (Details in Attachments)						
2.9.1	Additional Construction and Maintenance Cost Items (details in attachments)	Identify attachments	NA	NA	NA	NA

Post-Closure Care Cost Estimate for MSW Type I Landfills

Facility Name: City of Meadow Landfill — Revision No.: 1

Permit No: 2293C — Date: 2/2025

Item No.	Item Description	Units	Annual Qty.	Unit Cost	Annual Cost	Source of Unit Cost Estimate[i]
2.10 Construction and Maintenance Costs Subtotal						
2.10.1	Construction and Maintenance Costs Subtotal	NA	NA	NA	$16,317	NA
3.0 Leachate Management						
3.1	Leachate Management System Operation and Maintenance	specify	NA	NA	NA	NA
3.2	Leachate Disposal	Gals	NA	NA	NA	Estimate from Recent Construction Experiences
3.3 Additional Leachate Management Cost Items (Details in Attachments)						
3.4	Additional Leachate Management Cost Items (details in attachments)	LS	NA	NA	NA	NA
3.5 Leachate Management Costs Subtotal						
3.5.1	Leachate Management Costs Subtotal	NA	NA	NA	0	NA
4.0 Sum of Engineering, Construction, and Leachate Management Costs						
4.1	Sum of Engineering, Construction, and Leachate Management Cost Subtotals	NA	NA	NA	$27,660	NA
5.0 Contingency						
5.1	Contingency (10% of Sum of Engineering, Construction, and Leachate Management Cost Subtotals)	NA	NA	NA	$2,766	NA

Post-Closure Care Cost Estimate for MSW Type I Landfills

Facility Name: City of Meadow Landfill

Permit No: 2293C

Revision No.: 1

Date: 2/2025

Item No.	Item Description	Units	Annual Qty.	Unit Cost	Annual Cost	Source of Unit Cost Estimate[i]
6.0 Third Party Administration and Project Management Costs						
6.1	Third Party Administration and Project Management Costs (2.5% of Sum of Engineering, Construction, and Leachate Management Cost Subtotals)	NA	NA	NA	$691	NA
7. Total Post-Closure Cost						
7.1	Total Annual Post-Closure Cost (Sum of amounts in Sections 4, 5, and 6)	NA	NA	NA	$31,117	NA
7.2	30 Year Post-Closure Costs (Total Annual Post-Closure Cost x 30)	NA	NA	NA	$933,512	NA

---

[i] Sources of Unit Cost Estimates may include:

(1) Published Cost Estimator Manuals (e.g., RS Means);
(2) Third Party Quotes (e.g., Environmental Field Services Contractors); or
(3) Verifiable Data based on Actual Operations

[ii] Example Description for Item No. 1.1 – "Includes costs for site inspection performed at least annually for identification of areas experiencing settlement or subsidence, erosion or other drainage-related problems, inspection of the leachate collection system, gas monitoring system and LFG monitoring system."

APPENDIX IIIL-C

EXISTING FINANCIAL ASSURANCE DOCUMENTATION

USI®

USI Insurance Services
601 Union Street
Suite 1000
Seattle, WA 98101
www.usi.com
Tel: 206.441.6300

June 26, 2024

FedEx Priority Overnight

Brian Danko
Republic Services
1408 N MLK Blvd.
Lubbock, TX 79403
352-518-7397

RE: $ 491,164.24 Closure/Post Closure Bond
for City of Meadow Landfill/Lubbock LF
for Meadow Landfill, LLC
Evergreen National Indemnity Company
Bond # 880438

Please find enclosed increase Penalty Rider increasing the bond:
from $ 491,164.24 to $ 508,846.15 the effective date of change,
4/1/2024 has been used for the above captioned bond per your request.

You will need to send the enclosed original documents to the respective Obligee at your earliest convenience along with any other required paperwork.

Should you require further assistance or if you have any questions, please do not hesitate to contact us at 206-731-1200 or email us at [redacted]

Sincerely,

Amber

Amber Engel
Surety Department

INCREASE PENALTY RIDER

BOND AMOUNT $491,164.24 BOND NO. 880438

To be attached and form a part of Bond No. 880438, executed by Evergreen National Indemnity Company as surety, on behalf of Meadow Landfill, LLC as current principal of record, and in favor of Texas Commission on Environmental Quality, as Obligee for Texas Commission on Environmental Quality Closure/Post Closure Bond for Meadow Landfill, and in the amount of Four Hundred Ninety One Thousand One Hundred Sixty Four Dollars and 24/100 ($491,164.24).

In consideration of the agreed premium charged for this bond, it is understood and agreed that Evergreen National Indemnity Company hereby consents that effective from the 1st Day of April, 2024, said bond shall be amended as follows:

THE BOND PENALTY SHALL BE INCREASED:

FROM: Four Hundred Ninety One Thousand One Hundred Sixty Four Dollars and 24/100 ($491,164.24)

TO: Five Hundred Eight Thousand Eight Hundred Forty Six Dollars and 15/100 ($508,846.15) Closure $356,449.04 / Post Closure $152,397.11

The INCREASE of said bond penalty shall be effective as of the 1st Day of April, 2024.

Signed, sealed and dated this 27th Day of June, 2024

Meadow Landfill, LLC
PRINCIPAL

BY____________________________________
Kathleen M. Mitchell, ATTORNEY-IN-FACT

Evergreen National Indemnity Company
SURETY

BY____________________________________
Amber Engel, ATTORNEY-IN-FACT

REPUBLIC SERVICES

POWER OF ATTORNEY

REPUBLIC SERVICES, INC., a Delaware corporation having its principal place of business at 18500 N. Allied Way, Phoenix, Arizona 85054, hereby makes, constitutes and appoints KIBBLE & PRENTICE HOLDING COMPANY dba USI INSURANCE SERVICES NORTHWEST, acting through and by any one of Debbie Lindstrom, Kathleen M. Mitchell, Scott C. Alderman, Amber Engel, Jamie Armfield, Holly E. Ulfers, or Roxana Palacios, its true and lawful attorney to sign and seal any and all surety bonds, bid bonds, performance bonds and payment bonds at or below the monetary threshold of Five Million Dollars ($5,000,000.00) on behalf of REPUBLIC SERVICES, INC. and its subsidiaries, relating to the provision of solid waste collection, transportation, transfer, recycling, disposal and/or energy services by REPUBLIC SERVICES, INC. and its subsidiaries and affix its corporate seal to and deliver for and on behalf as surety thereon or otherwise, bonds of any of the following classes, to wit:

1. Surety bonds, bid bonds, performance bonds and payment bonds to the United States of America or agency thereof, including those required or permitted under the laws or regulations relating to Customs or Internal Revenue; license and permit bonds or other indemnity bonds under the laws, ordinances or regulations of any state, city, town, village, board, other body organization, public or private; bonds to transportation companies; lost instrument bonds; lease bonds; worker's compensation bonds; miscellaneous surety bonds; and bonds on behalf of notaries public, sheriffs, deputy sheriffs and similar public officials.

2. Surety bonds, bid bonds, performance bonds and payment bonds on behalf of REPUBLIC SERVICES, INC. and its subsidiaries in connection with bids, proposals or contracts.

REPUBLIC SERVICES, INC. hereby agrees to ratify and confirm whatsoever KIBBLE & PRENTICE HOLDING COMPANY dba USI INSURANCE SERVICES NORTHWEST shall lawfully do pursuant to this power of attorney, and until notice or revocation has been given by REPUBLIC SERVICES, INC., the acts of said attorney shall be binding on the undersigned.

IN WITNESS WHEREOF, this Power of Attorney has been signed this 24th day of May, 2023 on behalf of REPUBLIC SERVICES, INC. by its Assistant Secretary, Adrienne W. Wilhoit.

REPUBLIC SERVICES, INC.,
a Delaware corporation

Adrienne W. Wilhoit

STATE OF ARIZONA

COUNTY OF MARICOPA

Subscribed and sworn to before me this 24th day of May, 2023 by Kiara Gonzalez, Notary Public.

KIARA GONZALEZ
Notary Public - Arizona
Maricopa County
Commission # 598922
My Comm. Expires Feb 2, 2025

Notary Public

CERTIFICATE

I, the undersigned, John B. Nickerson, Assistant Secretary of Republic Services, Inc., a Delaware corporation, do hereby certify that the foregoing Power of Attorney is true, correct, remains in full force and effect, and has not been revoked.

IN WITNESS WHEREOF, this Certification has been signed this 27th day of June, 2024 on behalf of REPUBLIC SERVICES, INC. by its Assistant Secretary, John B. Nickerson.

John B. Nickerson

EVERGREEN NATIONAL INDEMNITY COMPANY

Independence, Ohio

POWER OF ATTORNEY

Bond No. 880438

KNOW ALL MEN BY THESE PRESENTS: That the Evergreen National Indemnity Company, a corporation in the State of Ohio does hereby nominate, constitute and appoint:

Amber Engel

its true and lawful Attorney(s)-In-Fact to make, execute, attest, seal and deliver for and on its behalf, as Surety, and as its act and deed, where required, any and all bonds, undertakings, recognizances and written obligations in the nature thereof.

This Power of Attorney is granted and is signed by facsimile pursuant to the following Resolution adopted by its Board of Directors on the 23rd day of July, 2004:

> "RESOLVED, That any two officers of the Company have the authority to make, execute and deliver a Power of Attorney constituting as Attorney(s)-in-fact such persons, firms, or corporations as may be selected from time to time.
> FURTHER RESOLVED, that the signatures of such officers and the Seal of the Company may be affixed to any such Power of Attorney or any certificate relating thereto by facsimile; and any such Power of Attorney or certificate bearing such facsimile signatures or facsimile seal shall be valid and binding upon the Company; and any such powers so executed and certified by facsimile signatures and facsimile seal shall be valid and binding upon the Company in the future with respect to any bond or undertaking to which it is attached."

IN WITNESS WHEREOF, the Evergreen National Indemnity Company has caused its corporate seal to be affixed hereunto, and these presents to be signed by its duly authorized officers this 1st day of April, 2022.

EVERGREEN NATIONAL INDEMNITY COMPANY

By: ______________________
Matthew T. Tucker , President

By: ______________________
David A. Canzone, CFO

Notary Public)
State of Ohio) SS:

On this 1st day of April, 2022, before the subscriber, a Notary for the State of Ohio, duly commissioned and qualified, personally came Matthew T. Tucker and David A. Canzone of the Evergreen National Indemnity Company, to me personally known to be the individuals and officers described herein, and who executed the preceding instrument and acknowledged the execution of the same and being by me duly sworn, deposed and said that they are the officers of said Company aforesaid, and that the seal affixed to the preceding instrument is the Corporate Seal of said Company, and the said Corporate Seal and signatures as officers were duly affixed and subscribed to the said instrument by the authority and direction of said Corporation, and that the resolution of said Company, referred to in the preceding instrument, is now in force.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal at Cleveland, Ohio, the day and year above written.

Julie K Bowers
Notary Public
In and For the State of Ohio
My Commission Expires
August 13, 2024

Julie K Bowers
Julie K. Bowers, Notary Public
My Commission Expires August 13, 2024

State of Ohio) SS:

I, the undersigned, Secretary of the Evergreen National Indemnity Company, a stock corporation of the State of Ohio, DO HEREBY CERTIFY that the foregoing Power of Attorney remains in full force and has not been revoked; and furthermore that the Resolution of the Board of Directors, set forth herein above, is now in force.

Signed and sealed in Independence, Ohio, this 27th day of June, 20 24.

Wan Collier
Wan C. Collier, Secretary

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT

PART III – SITE DEVELOPMENT PLAN
APPENDIX IIIM
SITE LIFE CALCULATIONS

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

KYLE D. GOULD
106018

02/28/2025

Prepared by

Weaver Consultants Group, LLC
TPBE Registration No. F-3727
6420 Southwest Blvd., Suite 206
Fort Worth, TX 76109
817-735-9770

WCG Project No. 0120-809-11-06

This document is intended for permitting purposes only.

FIGURES

Sheet IIIM-6 Remaining Capacity

Sheet IIIM-6A Bottom of Waste Contours

Sheet IIIM-6B Intermediate Cover Grades

STATE OF TEXAS
KYLE D. GOULD
106018
LICENSED
PROFESSIONAL ENGINEER

02/28/2025

1 SITE LIFE

1.1 Solid Waste Generation

The following estimate has been developed to provide an assessment of the solid waste generation rate for the City of Meadow Landfill. It is important to note that the included estimate is based on numerous assumptions and may vary as market conditions change.

Historically, the waste inflow rate at City of Meadow Landfill has varied from 29 tons per day to 39 tons per day as listed below.

Fiscal Year	Actual Waste Inflow[1]	Typical Daily Waste Inflow Rate Based on a 286-Day Operating Schedule
2019	11,016 tons per year	39 tons per day
2020	9,647 tons per year	34 tons per day
2021	9,924 tons per year	35 tons per day
2022	8,350 tons per year	29 tons per day
2023[2]	10 tons per year	--
2024[2]	10 tons per year	--

[1] Information obtained from the TCEQ MSW Annual Reports filed by the City of Meadow Landfill.
[2] The landfill is currently mothballed and only accepts 10 tons per year.

The landfill was previously permitted as a Type I AE and Type IV AE facility, limiting their acceptance rate to 40 tons per day (20 tons per day Type I Waste and 20 tons per day Type IV waste). With this Major Permit Amendment Application, the landfill will be permitted as a Type I facility and will accept more waste. The City of Meadow Landfill estimates that the waste inflow will increase to 107,250 tons per year (375 tons per day based on a 286-day operating schedule) in 2024. After 2024, the waste inflow rate is assumed to increase consistent with the projected growth rate for the facility's general service area which for this analysis is assumed to be the City of Meadow and Lubbock and Terry counties.

Using this methodology, the expected maximum annual waste acceptance rate is 244,745 tons per year (856 tons per day based on a 286-day operating schedule). The above projections are based on current market conditions and may vary as market conditions change. Over the life of the facility, the expected average daily volume of incoming waste is projected to be approximately 578 tons per day (165,308 tons per year based on a 286-day operating schedule).

Site life calculations based on the City of Meadow Landfill projections are shown on pages IIIM-3 through IIIM-5.

1.2 Population Equivalent

Using the average waste inflow rate of 165,308 tons per year discussed in Section 1.1 (an average daily volume of 578 tons per day based on a 286-day operating schedule) and assuming 5 pounds of waste is generated per capita per day, the population equivalent is:

$$\frac{(165{,}308 \text{ tons/year}) \times (2{,}000 \text{ pounds/ton})}{(5 \text{ pounds/person/day}) \times (365 \text{ days/year})} = 181{,}160 \text{ persons}$$

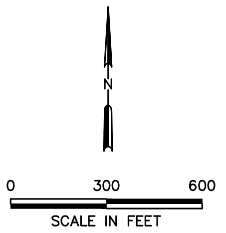
1.3 Landfill Capacity

The estimated total capacity of waste (defined as waste and daily cover) ever on site over the active life of the facility is approximately 29.5 million cubic yards. The total volume available for solid waste and daily cover after December 14, 2022 (date of topographic information) is estimated to be 28,356,013 cubic yards. The current volume of waste (defined as waste and daily cover) in-place as of December 14, 2022 is approximately 1.144 million cubic yards.

Total landfill volumes are estimated based on comparison of AutoCAD surfaces developed for the top of protective cover surface (at the base of landfill) and the bottom of intermediate cover surface (at top of landfill) over which the final cover system is installed. The calculations assume that the bottom of the protective cover (at the base of the landfill) is installed above the top of liner grades shown on Drawing I/II.A-8 – Top of Liner Plan. The installation grades of the barrier system (clay versus GCL) are adjusted during liner design that the top of liner grades coincide with the grades shown on Drawing I/II.A-8, and hence the total calculated landfill capacity does not change between clay and GCL barrier liners.

1.4 Site Life Calculations

The site life calculations are presented on pages IIIM-3 through IIIM-5. In summary, the site life is projected to be approximately 97.0 years, which would result in the site's closure during the year 2121.



LEGEND

— - — - —	PERMIT BOUNDARY
— — — —	LIMIT OF WASTE
N 7180000 ———	STATE PLANE COORDINATE SYSTEM
——3300——	EXISTING CONTOUR
——3400——	FUTURE BOTTOM OF WASTE CONTOUR
——3400——	TOP OF INTERMEDIATE COVER CONTOUR
—·—·→—·—	CHANNEL CENTERLINE
+88	DEPTH OF REMAINING FILL (FEET)

REMAINING CAPACITY – 28,356,013 CY AS OF DECEMBER 14, 2022
ESTIMATED AVERAGE WASTE DEPTH – 87 FEET
MIDPOINT OF AVERAGE DEPTH – 43 FEET (87 FT/2)

NOTES:

1. EXISTING CONTOURS AND ELEVATIONS ARE CREATED FROM GROUND SURVEY AND UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON DECEMBER 14, 2022 AND COMBINED WITH THE PUBLIC "TEXAS WEST CENTRAL LIDAR" DATASET, COLLECTED BY THE UNITED STATES GEOLOGICAL SURVEY BETWEEN FEBRUARY 1, 2018 AND MAY 27, 2018, PROVIDED BY THE TEXAS NATURAL RESOURCES INFORMATION SYSTEM DATAHUB. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00.
2. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.

KYLE D. GOULD
106018
02/28/2025

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☐ ISSUED FOR CONSTRUCTION

DATE: 08/2024
FILE: 0120-809-11
CAD: SHEET IIIM-6-REMAINING CAPACITY.DWG

DRAWN BY: RAA
DESIGN BY: MB
REVIEWED BY: CRM

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT
REMAINING CAPACITY

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

SHEET IIIM-6

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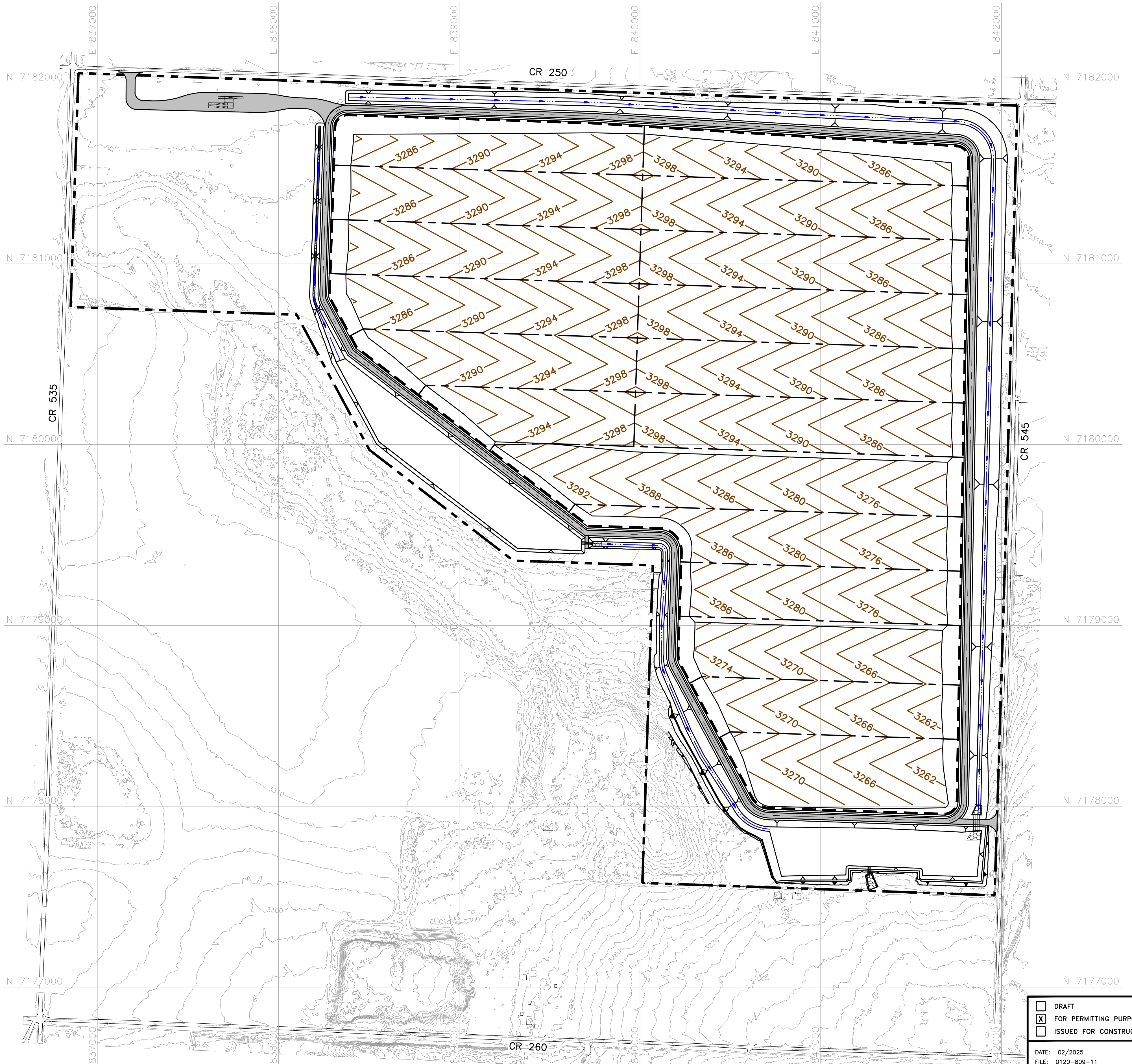

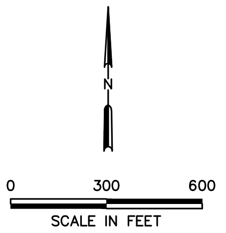

LEGEND

— · — · —	PERMIT BOUNDARY
— — —	LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
3300	EXISTING CONTOUR
3400	FUTURE BOTTOM OF WASTE CONTOUR
→···→	CHANNEL CENTERLINE

NOTES:

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2. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.

KYLE D. GOULD
106018

02/28/2025

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☐ ISSUED FOR CONSTRUCTION

DATE: 02/2025
FILE: 0120-809-11
CAD: SHEET IIIM-6A-BOTTOM OF WASTE.DWG

DRAWN BY: RAA
DESIGN BY: MB
REVIEWED BY: CRM

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT BOTTOM OF WASTE CONTOURS

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

SHEET IIIM-6A

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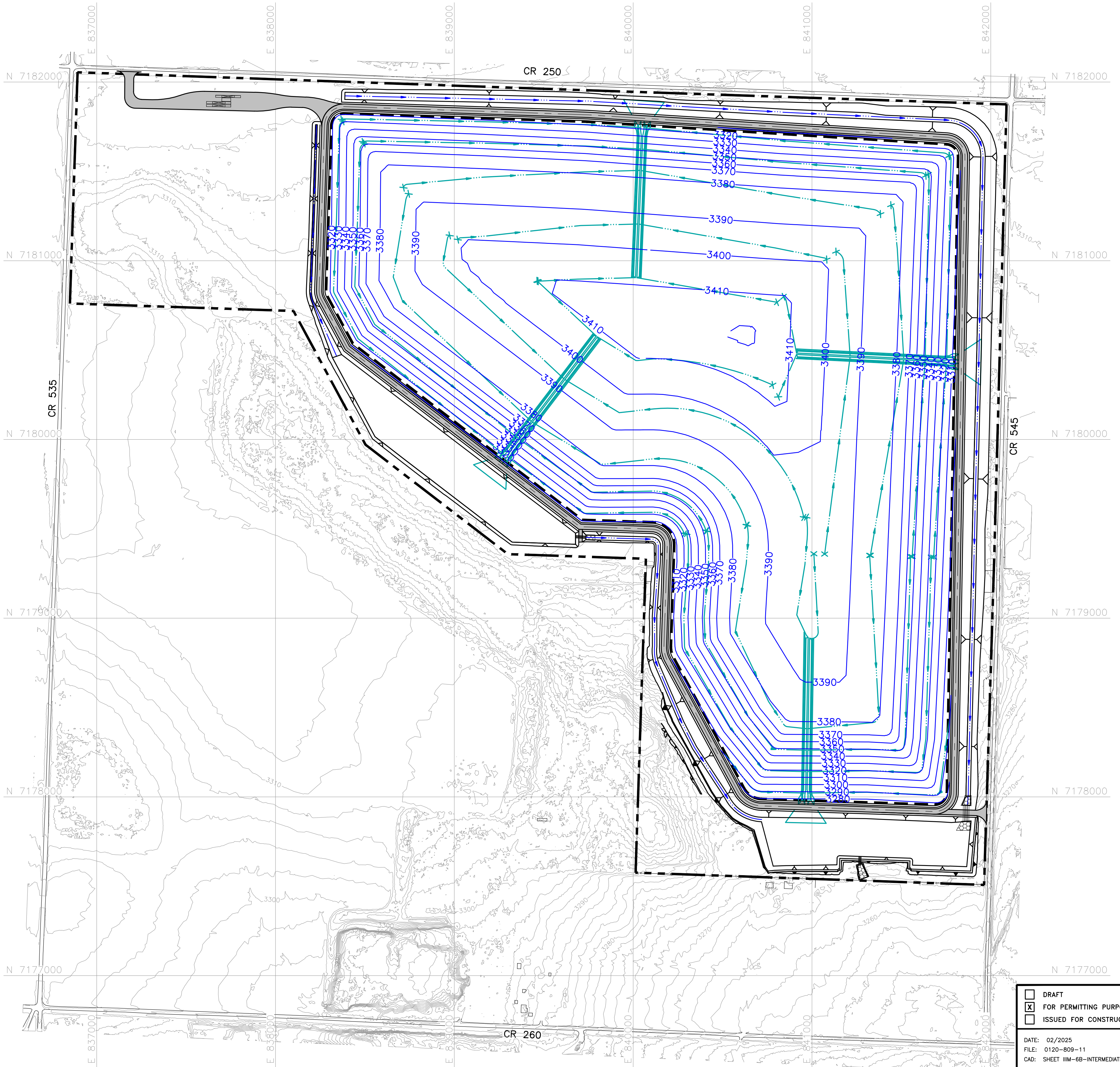

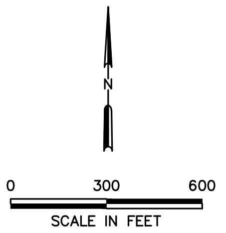

LEGEND

— - — - —	PERMIT BOUNDARY
— — — —	LIMIT OF WASTE
N 7180000 ———	STATE PLANE COORDINATE SYSTEM
—— 3300 ——	EXISTING CONTOUR
—— 3400 ——	TOP OF INTERMEDIATE COVER CONTOUR
—→—·—→—	CHANNEL CENTERLINE

NOTES:

1. EXISTING CONTOURS AND ELEVATIONS ARE CREATED FROM GROUND SURVEY AND UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON DECEMBER 14, 2022 AND COMBINED WITH THE PUBLIC "TEXAS WEST CENTRAL LIDAR" DATASET, COLLECTED BY THE UNITED STATES GEOLOGICAL SURVEY BETWEEN FEBRUARY 1, 2018 AND MAY 27, 2018, PROVIDED BY THE TEXAS NATURAL RESOURCES INFORMATION SYSTEM DATAHUB. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00.
2. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.

STATE OF TEXAS
KYLE D. GOULD
106018
LICENSED
PROFESSIONAL ENGINEER

02/28/2025

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DATE: 02/2025
FILE: 0120-809-11
CAD: SHEET IIIM-6B-INTERMEDIATE CVR.DWG

DRAWN BY: RAA
DESIGN BY: MB
REVIEWED BY: CRM

Weaver Consultants Group
TBPE REGISTRATION NO. F-3727

PREPARED FOR
MEADOW LANDFILL, LLC

REVISIONS

NO.	DATE	DESCRIPTION
1	02/2025	1ST TCEQ COMMENT RESPONSE

MAJOR PERMIT AMENDMENT INTERMEDIATE COVER GRADES

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS

WWW.WCGRP.COM

SHEET IIIM-6B

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PART IV – SITE OPERATING PLAN

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

KYLE D. GOULD
106018

Prepared by

02/28/2025

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WCG Project No. 0120-809-11-06

This document is intended for permitting purposes only.

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STATE OF TEXAS
KYLE D. GOULD
106018
LICENSED PROFESSIONAL ENGINEER
02/28/2025

1 INTRODUCTION

This Site Operating Plan (SOP) has been prepared for the City of Meadow Landfill consistent with Title 30 TAC §330.65. The purpose of this SOP is to provide guidance to site management and operating personnel to meet the general and site-specific requirements of §330, Subchapters D and E. This document also provides a guide for site management to maintain the facility in compliance with the engineering design and applicable regulatory requirements of the TCEQ. The plan may also serve as a reference source and assist in personnel training. This SOP, the permit, and the current TCEQ regulations will be kept onsite throughout the facility's operating life.

In accordance with 30 TAC §330.121(a), the approved site development plan, the site operating plan, the final closure plan, the post-closure maintenance plan, the landfill gas management plan, and all other documents and plans required by the MSW Rules shall become operational requirements and shall be considered a part of the operating record of the facility. Any deviation from the permit and incorporated plans or other related documents associated with the permit is a violation of the MSW Rules.

Consistent with §330.127(3), the operating procedures and instructions outlined in this SOP will be followed and will be considered a part of the operating record of the facility. Landfill operations will be conducted in a professional manner by trained and qualified personnel who will be responsible for placement of waste in approved disposal cells utilizing equipment and procedures and standard industry practices to ensure protection of operating personnel, human health, and the environment.

Wherever the term “executive director” or “TCEQ” is used in this SOP, these terms shall refer to the executive director of the TCEQ or the designated representative of the TCEQ. References to information in the permit or permit application for this facility shall refer to the most current version of these documents, including any later approved amendments, modifications, or revisions.

If any questions arise regarding this SOP, City of Meadow Landfill personnel should consult with:

1. Texas Commission on Environmental Quality
   Municipal Solid Waste Section
   Austin, Texas
   Telephone: (512) 239-2335
2. Texas Commission on Environmental Quality, Region 2
   Lubbock, Texas
   Telephone: (806) 796-7092
3. Texas General Land Office
   Spill Reporting Telephone: 1-800-832-8224

4 OPERATIONAL PROCEDURES

4.1 Access Control

Public access to the waste fill area is controlled by the entrance facilities, which houses the Scale Operators, located in the northwestern portion of the facility. The site entrance facilities are staffed during hours of operation. The Scale Operators control access and monitor all vehicles entering and exiting the site.

4.1.1 Site Security

Site security measures are designed to prevent unauthorized persons from entering the site, to protect the facility and its equipment from possible damage caused by trespassers, and to prevent disruption of facility operations caused by unauthorized site entry.

Unauthorized access to the site is minimized by controlling access with perimeter fencing (minimum 4-foot-high, three-strand barbed wire fences), and gated entrance. The access control plan is provided to prevent the entry of livestock, to protect the public from exposure to potential health and safety hazards, and to discourage unauthorized entry or uncontrolled disposal of solid waste or hazardous materials. Access controls (fencing and gates) will be inspected weekly and documented in the Site Operating Record. Maintenance will be performed on the fencing and gates as necessary.

In the event of a breach of the access controls (e.g., a portion of a fence is impacted in a way that it no longer prevents access to the site), the TCEQ Regional Office and any local pollution agency with jurisdiction that has requested to be notified will be notified within 24 hours of detection of the breach. The breached area will be temporarily repaired within 24 hours of detection and will be permanently repaired by the time specified to the TCEQ Regional Office when it was reported in the initial breach report. In this case, the TCEQ Regional Office will also be notified when the permanent repair is completed. If a permanent repair can be made within 8 hours of detection, no notification to the TCEQ Regional Office is required. Temporary repairs may consist of a barbed wire fence, a 3-foot-high earthen berm, construction equipment (e.g., bulldozers, dumptrucks, etc.) blocking the breach, a security guard posted in the area of the breach or other barriers.

reducing traffic at the MSW working face. The Citizens Convenience Center is located over an impervious area. Citizens will be directed to the Convenience Center by site personnel at the entrance facility. Signs will be posted to assist citizens traveling to the Convenience Center. Waste material is offloaded from the small-vehicles to roll-off containers. The size of the roll-off containers will range between 20 and 40 cubic yards. The site then hauls the roll-off containers periodically to the MSW working face for disposal. The Citizens Convenience Center will not accept sharps. The maximum amount of waste stored at the Convenience Center is 200 cubic yards. The roll-off containers will be emptied at least at the end of each day the site is open or more frequently if needed. Storage for recycling may also occur in this area including electronics, whole tires, and white goods and other non-putrescible recyclables. Recyclable materials will be placed on the ground, palletized, or in containers or bins at the Citizens Convenience Center as not to impede citizen traffic accessing the rolloff containers used for waste disposal. Individual areas for recyclable materials storage are not designated in the plans, although all storage of recyclables (with exception of soil and rock stockpiled and used in landfill operations) will be confined to the area designated as the Citizens Convenience Center on Drawing I/IIA.9.

- Liquid Waste Bulking Facility. The liquid waste bulking facility area will accept liquid wastes as outlined in Appendix IVD.

4.2.2 Waste Excluded from Disposal at the Site

The following wastes are specifically excluded from disposal at the site:

- Liquid wastes that do not pass the paint filter test, except as allowed under Section 4.20.1 of this SOP
- Waste classified as hazardous by the TCEQ (refer to Section 6 for more information)
- Grease trap wastes, except as allowed under Section 4.20.1 of this SOP
- Waste prohibited by the TCEQ (see 30 TAC §330.15(e)) and unauthorized wastes (prohibited waste and unauthorized waste are used interchangeably)

4.2.3 Waste Unloading Procedures

Scale Operators, Equipment Operators, Laborers, and Spotters will monitor the incoming waste. The combined efforts of the trained landfill staff will assure that each load of waste disposed at the landfill is inspected per Title 30 TAC §330.127(5)(A). Scale Operators control site access and monitor incoming vehicles for unauthorized or prohibited wastes by (1) receiving manifests and other shipping documents, (2) recording incoming waste loads, and (3) interviewing the driver, if necessary. Any nonconforming issues will be reported to the Operations Manager or his designee. If the non-conforming issues involve Special or Industrial wastes, the Operations Manager or his designee will review Sections 4.20 and 6.2 of the SOP to verify that all requirements for acceptance of Special and Industrial waste have been met before the material is accepted for disposal. The procedures for handling prohibited waste that is not discovered until after it is unloaded are discussed in Section 6.2.

Equipment Operators, Spotters, Laborers, or other field personnel will be present at all areas where waste is being unloaded to monitor unloading of waste. These personnel 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 be trained to

4.7 Landfill Markers and Benchmark

Landfill markers will be installed to clearly mark significant features as described in §330.143(b). The markers will be steel, plastic, or wooden posts (or other TCEQ-approved material) and will extend at least 6 feet above the ground surface. The markers will not be obscured by vegetation and will be placed in sufficient numbers to clearly show the required boundaries. Markers will be installed with an offset where markers otherwise would not be visible. Markers that are removed or destroyed will be replaced within 15 days of their removal or destruction. Landfill markers will be inspected monthly to ensure they are installed and maintained in accordance with the requirements of this SOP and will be maintained and repaired if necessary. Refer to Section 4.23 of this SOP for site inspection and maintenance schedule. Inspection results and repairs will be documented in the Site Operating Record. Markers will be repainted if needed to retain visibility.

The landfill markers color scheme is listed below.

Landfill Markers

Marker	Color
Site Boundary	Black
Buffer Zone	Yellow
Easements and Right-of-Way	Green
Grid System	White
SLER/GLER	Red
Floodplain	Blue

The site boundary markers will be placed at each corner of the site and along each boundary line spaced no greater than 300 feet apart unless the area is inaccessible, in which case offset markers will be permissible. Fencing will be placed within these markers as required. The buffer zone markers will be placed along each buffer zone boundary at all corners and between corners at intervals of 300 feet unless the area is inaccessible, in which are offsets will be permissible.

The easement and right-of-way markers will be spaced no greater than 300 feet apart. The markers will be placed along the centerline of an easement and along the boundary of a right-of-way at each corner within the site and at the intersection of the permit boundary.

The landfill grid is based on the state plane coordinate system. At a minimum, the grid system envisioned by this section will be established in the area that will receive waste over the next three year period. The landfill grid system markers will be spaced no greater than 100 feet apart measured along perpendicular lines. Intermediate markers will be installed in the case where markers cannot be seen from opposite boundaries. The grid system markers will be maintained during the active life of the site. Placement of the landfill grid system markers may be made along a buffer zone boundary.

The SLER/GLER markers locations will be reported in the respective SLER and GLER submitted to the TCEQ and will be placed so that all areas for which a SLER/GLER has been submitted and approved by the TCEQ are readily determinable. Such markers are to provide site workers with immediate knowledge of the extent of approved disposal areas. These markers will be located so that they are not destroyed during operations until operations extend into the next constructed area. The location of these markers will be tied into the landfill grid system. SLER/GLER markers will not be placed inside the constructed areas.

Flood protection markers will be installed for areas within the facility that are within the 100-year floodplain. The areas subject to flooding will be clearly marked by means of permanent posts not more than 300 feet apart or closer, if necessary, to retain visual continuity.

A permanent benchmark has been established at the site, as shown in Parts I/II, Appendix I/IIA, Drawing I/IIA.1 – General Site Plan. The benchmark elevation has been surveyed from a known United States Coast and Geodetic Survey benchmark or other reliable benchmark. The benchmark is a bronze survey marker set in concrete and stamped with an elevation and survey date.

4.8 Control of Waste Spilled on Route to the Site

The Operations Manager or his designee will take steps to encourage vehicles hauling waste to the working face arrive on-site with a tarpaulin, net, or other means to properly secure the load. The adequacy of covers or containment of incoming wastes will be checked at the facility entrance. The Scale House Attendant will visually inspect each vehicle entering the site to verify that the load is secured. A sign will be posted at the entrance indicating that vehicles shall be covered (or secured) or an additional fee will be charged. Vehicles attempting to enter the site with unsecured loads will be documented and the list can be provided to law enforcement officials, if necessary. An additional fee will be demanded from unsecured vehicles.

The Operations Manager or his designee will be responsible for the cleanup of waste materials (e.g., solid waste material that has left the vehicle) along and within the right-of-way of all public access roads serving the site for a distance of two miles in either direction from the entrance to the site. Cleanup for the spilled solid waste materials will be performed at least once per day that the site is open for waste acceptance. Laborers performing litter and spilled solid waste materials collection will be required to wear appropriate safety equipment. A log shall be maintained to document the date and time the roads are checked and whether litter was observed and when it was collected.

The Operations Manager or his designee will consult with TxDOT officials (or other applicable local agencies with maintenance authority over the roads) concerning cleanup of state highways and right-of-ways consistent with §330.145. The TxDOT

The Operations Manager or his designee will evaluate the perimeter of the site on days when the site is open for waste acceptance to assess the performance of site operations to control odors.

4.11 Disease Vector Control

Facility personnel will control on-site populations of vectors such as an insect, snake, rodent, birds, or animal capable of mechanically or biologically transferring a pathogen from one organism to another. The primary means of control will be to prevent, inhibit, or deter vectors from coming into contact with deposited waste through proper waste compaction and daily cover application. Waste deposited at a working face area will be promptly compacted in accordance with Section 4.17. Daily cover and/or ADC will be applied at the end of each operating day in accordance with Section 4.18.2. A schedule of inspections is provided in Section 4.23 (refer to daily cover item).

Documentation of these inspections will be maintained in the Site Operating Record. If site inspections identify the need for additional vector controls, the site will implement a control program by contracting with a licensed commercial pesticide applicator, or other qualified pest control specialist to perform the following services:

1. Develop a pest management program for the vectors identified.
2. Implement the additional vector management practices.
3. Assist in the development of vector specific awareness training materials for site personnel.
4. Assist the site in distributing these training materials and providing any necessary training activities on vector awareness and control for site personnel.

The site has a bird abatement program that incorporates the use of pyrotechnic devices (if permissible under the local conditions), or an alternative bird abatement program, to control birds at the active working face area. Bird abatement programs used in lieu of pyrotechnics (as set forth in this application) will be approved by the executive director prior to implementation. The most recent revision of the bird abatement plan will be maintained in the Site Operating Record.

4.12 Maintenance of Site Access

The facility will install a paved entrance road at CR 250. In addition, the landfill access roads are constructed with a crushed-stone surface or similar material surface to provide for all weather access area from the unloading areas to public access roads (i.e., mud on vehicles will “spin off” on the access roads within the landfill before the vehicle returns to the public access road). During wet weather conditions, the Operations Manager or his designee will routinely inspect the site species. If endangered or threatened species are encountered during site operations, Texas Parks and Wildlife and U.S. Fish and Wildlife Department will be notified.

4.15 Control of Landfill Gas

The control and monitoring of landfill gas for the City of Meadow Landfill will be in accordance with the Landfill Gas Management Plan (Part III, Appendix III I). The Landfill Gas Management Plan was developed in accordance with §330.371 and provides for required reports and other submittals to be included in the Site Operating Record and submitted to the Executive Director (refer to Section 4.10 for additional information).

As noted in the Landfill Gas (LFG) Management Plan, monitoring for the presence of methane gas at the site will be conducted on a quarterly basis. In particular, the LFG monitoring probes will be monitored for the possibility of subsurface perimeter methane concentrations exceeding the lower explosive limit (LEL). Additionally, on-site structures will be checked to ensure that methane concentrations do not exceed 25 percent of the LEL. The allowable limits and details of gas recovery are more fully described in the Landfill Gas Management Plan.

Monitoring for combustible gas concentrations will be performed quarterly within all site structures and at the LFG monitoring probes. Required reports and other submittals will be included in the Site Operating Record and submitted to the executive director. In the event that methane levels that exceed allowable limits are detected (25% of the LEL for methane in facility structures or 100% of the LEL at LFG monitoring probes), the TCEQ and other parties identified in the Landfill Gas Management Plan will be notified and steps will be implemented to protect human health, in accordance with the contingency plan presented in the Landfill Gas Management Plan. Documentation of the LFG measurements and of the protective measures implemented will be placed in the Site Operating Record within seven (7) days. A remediation plan for any methane gas exceedances as described in the Landfill Gas Management Plan will be implemented within 60 days of the methane detection. This remediation plan will be submitted to TCEQ to describe the proposed remediation activities.

4.16 Treatment of Oil, Gas, and Water Wells

Existing and abandoned onsite oil, gas and water wells are discussed in Parts I/II Section 2.5 and Part III, Appendix IIIG, Section 2.5 and their locations are plotted on Parts I/II Figure I/II-4.3 and Appendix IIIG figures IIIG-A-8 and IIIG-A-9. Any water wells located within the limits of waste footprint or within the perimeter groundwater monitoring system will be plugged and abandoned prior to development of the landfill expansion area waste disposal cells. If a water well is proposed in the future, a permit modification will be submitted to the TCEQ to meet the requirements of §330.161. Any additional wells encountered will be plugged in accordance with all applicable rules and regulations of the TCEQ, the Railroad Commission of Texas, or other applicable State agencies.

Therefore, if an abandoned oil, gas, or water well is located, the Operations Manager will provide written notification to the TCEQ's Executive Director of their location within 30 days after discovery during the course of facility development. If any wells are encountered, they will be exposed, the casing cut to a minimum of 2 feet below the excavation, and the well capped and plugged in accordance with all applicable rules and regulations of the TCEQ, the Railroad Commission of Texas, or other applicable state agency.

The Operations Manager or his designee will provide written notification to the Executive Director of the location of any and all existing or abandoned water wells within the facility upon discovery during site development. Within 30 days of such a discovery, the Operations Manager or his designee will provide written notification and certification to the Executive Director of the TCEQ that all such wells have been capped, plugged, and closed in accordance with all applicable rules and regulations of the TCEQ or other applicable state agency. If a water well is proposed in the future, a permit modification will be submitted to the TCEQ to meet the requirements of §330.161. Water wells that will be used to supply the facility may remain in use provided they are not affected by landfill operations.

For crude oil or natural gas wells, or other wells associated with mineral recovery that are under the jurisdiction of the Railroad Commission of Texas, within 30 days after the plugging of any such well, the Operations Manager will provide the Executive Director of the TCEQ with written certification that all such wells have been properly capped, plugged, and closed in accordance with all applicable rules and regulations of the Railroad Commission of Texas.

A copy of the well plugging report to be submitted to the appropriate state agency will also be submitted to the executive director of the TCEQ within 30 days after the well has been plugged. Plugging reports for former onsite oil and gas wells are provided in Part III, Appendix IIIG-A.

In the event that an abandoned well causes a change to the liner installation plan, a permit modification will be submitted to the Executive Director in accordance with §330.131(d).

4.17 Compaction of Solid Waste

Compaction of incoming waste facilitates efficient use of available space, minimizes settlement and consolidation, and promotes proper application of daily, intermediate, and final cover. Landfill compactor(s) or similar equipment will be used to compact waste at City of Meadow Landfill. Unless otherwise documented in the Site Operating Record, the Operations Manager or his designee will instruct the Equipment Operators to spread waste in lifts that are approximately two feet thick. The compactor will typically make two to four passes to compact the waste. A pass is defined as one direction of travel. The Equipment Operators will be trained to determine whether the compaction equipment is functioning as designed to ensure

2. A special waste arrives and the waste material does not match the description on the waste manifest or other shipping document.
3. A special waste arrives and the waste differs from the approved waste based upon QA/QC review or other monitoring.
4. The volume of the waste is not consistent with the information on the shipping documents.

The Scale Operators, Operations Manager, Special Waste Analyst, or Environmental Manager will attempt to resolve any waste discrepancies. If the discrepancy can be resolved, the waste may be accepted and the discrepancy form will be filed to document the resolution of the discrepancy in the Site Operating Record. If the discrepancy cannot be resolved, the waste shipment will be rejected and a discrepancy form prepared and filed for the rejected waste shipment.

In addition, the special wastes identified in Sections 4.20.1 through 4.20.7 may be accepted at the facility without prior written authorization in accordance with §330.171(c).

4.20.1 Sludges

Sludges, grease trap waste, grit trap waste or liquid waste from municipal sources will be accepted if the material has been treated or processed and has passed the paint filter test and is certified to contain no free liquid, as prescribed in §330.171(c)(7). The material will be required to have passed a paint filter test, as documented on the Generator Waste Profile, prior to disposal at the working face of the landfill.

4.20.2 Dead Animals

The facility may receive dead animals or slaughterhouse wastes. Dead animals and slaughterhouse wastes will be buried at the working face and covered with a minimum of 3 feet of other solid waste or a minimum of 2 feet of soil immediately upon receipt. Additional waste or soil will be added over the dead animals if objectionable odors are created by the dead animals or slaughterhouse wastes.

4.20.3 Empty Containers

Empty containers, which have been used for pesticides, herbicides, fungicides, or rodenticides will be accepted and disposed of in accordance with Title 30 TAC §330.171(c)(5) and as outlined below. These containers will not be salvaged, unless via a state-sponsored recycling program.

1. These containers may be disposed of at the landfill working face provided that:
    (i) the containers are triple rinsed prior to receipt at the site; and

4.24 Visual Screening of Daily Operations

The facility will continue to operate the landfill in a manner that will provide the maximum screening practical within the requirements of the design. Existing vegetation in the buffer zones shall be maintained, where possible, to provide visual screening. As shown on Drawing I/IIA.14 (Access Control Plan) in Appendix I/IIA of Parts I/II, existing trees and vegetation provide a visual buffer for the site. The executive director may also require visual screening of deposited waste.

During below ground disposal operations, the landfill will not require visual screening of deposited waste. As the landfill is developed above ground, the landfill will construct final cover as the landfill reaches final contours. As the site is developed, the visual effect of the disposal activities will be minimized through the use of screening provided by fencing, planted vegetation, and natural vegetation located within the buffer zone.

4.25 Waste Relocation Plan

4.25.1 Introduction

Existing waste from the trench fill landfill will be excavated and relocated to an approved Subtitle D lined area to allow for future development of the landfill. An excavator and dump truck will be used to excavate the waste from the waste relocation area. The excavated waste will be transported to the working face for disposal. The following sections detail the waste removal procedures, waste inspection procedures, odor control, and notification and reporting requirements.

4.25.2 Waste Removal Procedures

The waste removal areas will be subject to the same requirements as the landfill's working face area. The waste removal area will be covered with daily cover (soil or an approved ADC), consistent with the requirements listed in Section 4.18.2.

It is anticipated that waste removal activities will occur in periodic events. If no waste is to be relocated for a period of 30 days or more; then, intermediate cover will be applied to the waste removal area, consistent with the requirements listed in Section 4.18.3. In addition, a contaminated water containment berm and stormwater diversion berm will be used in the waste removal area, consistent with the Stormwater Management Plan included in Appendix IIIC.

In summary, the facility will manage surface waters in the waste removal area of the landfill to minimize the amount of stormwater that will come in contact with waste. Contaminated water will be managed consistent with Appendix IIIC – Leachate and Contaminated Water Management Plan. Surface water will be controlled through the use of diversion berms, stormwater diversion ditches, and sumps. To promote runoff and prevent ponding, the operational cover will be graded and maintained. Only soil daily cover will be used during wet weather to ensure that washout of waste does not occur. Contaminated water will be contained by the containment berm at the waste removal area, as shown in Appendix IIIC, Appendix IIIC-C. At no time will contaminated water be allowed to discharge into waters of the United States. Storage and disposal of contaminated water is discussed in Appendix IIIC.

4.25.3 Waste Inspection Procedures

Equipment Operators or other field personnel will be present at the waste removal area to monitor waste removal activities. These personnel will be familiar with the rules and regulations governing the various types of waste that can or cannot be relocated to the working face and will be trained to identify prohibited wastes before being assigned to this task (refer to Part IV – Section 2.2 for training procedures). The personnel will also be trained and have a basic understanding of both industrial and hazardous waste and their transportation and disposal requirements. The spotters and equipment operators have the authority and responsibility to segregate prohibited wastes. In the event that prohibited waste is found, the Spotter or Equipment Operator will notify the Operations Manager and waste removal activities will be discontinued. At this point the Operations Manager or other site personnel will notify the TCEQ within 24 hours and seek guidance on how to properly dispose of the waste.

4.25.4 Odor Control

The following procedures will be implemented if odors become an issue during waste relocation activities.

- Minimize the size of the active waste removal area.
- Prevent ponded water, consistent with the procedures outlined in Part IV – SOP.
- Misters and chemical deodorizers when other controls do not reduce or eliminate significant odors.

The Operations Manager or his designee will evaluate the waste removal area on a daily basis to access the performance of the odor control measures implemented.

4.25.5 Foundation Inspection and Preparation

After waste removal, the excavated area will be inspected by a geotechnical engineer to confirm no waste is present, and the foundation soils are suitable for construction. It is reasonably anticipated that the soils and foundation conditions will be similar to those encountered across the site during cell construction. Construction specifications will be incorporated into the construction plans that address foundation inspection and preparation as described in Appendix IIIE, Section 4.3 – Landfill Excavation. The cell foundations within the historic fill areas will be constructed consistent with the requirements set forth in Appendix IIID – Liner Quality Control Plan and Appendix IIIE – Geotechnical Report.

6.2 Load Inspection Procedure

As noted in Section 4.2, Scale Operators, Equipment Operators, Spotters, and Laborers will monitor the incoming waste. Additionally, each load entering the landfill for disposal will be observed by the equipment operators at the working face during unloading and placement of waste into the active landfill. Should any indication of prohibited waste be detected, the Operations Manager, or his designee, will conduct a thorough evaluation of the load. The driver will be directed to a load inspection area located at or near the working face where the load will be discharged from the vehicle. The inspector will break up the waste pile and inspect the material for any prohibited waste.

Prohibited waste that is not discovered until after it is unloaded shall be promptly returned to the vehicle that delivered the waste. That party shall be responsible for the proper disposal of this rejected waste at a permitted facility. In the event the unauthorized waste is not discovered until after the vehicle that delivered it is gone, the waste shall be segregated and controlled to the extent possible (e.g., the unauthorized waste will be covered with soil and/or ADC and no additional filling will occur over the unauthorized waste until it is properly disposed of). Survey stakes or similar markings will be placed around the perimeter of the area that contains the unauthorized waste so that it is clear where the unauthorized waste is located. Alternately, the unauthorized waste may be segregated by placing the unauthorized waste in a roll-off or similar container.

An effort shall first be made to identify the entity that deposited the prohibited waste and have them return to the site and properly dispose of the waste. In the event that identification is not possible, City of Meadow Landfill will notify the TCEQ and seek guidance on how properly to dispose of the waste within 24 hours.

In addition to inspecting suspicious loads, random inspections will be undertaken. Random inspections will be supervised by the Operations Manager or designee. Staff (including Operations Manager, Operators, Equipment Operators and Laborers, and the Special Waste Analyst) conducting random inspections will receive training on the random inspection procedures in this plan and instruction on the recognition of regulated hazardous waste and PCB waste. Random inspections will be conducted at or near the working face to facilitate disposal of authorized waste after random inspections have been completed.

Except as provided herein, all waste loads will be subject to random inspections. At least one vehicle per day, that the site is in operation, shall be scheduled for a random inspection. The Operations Manager shall determine the procedure for the random selection of the waste hauling vehicle that will be selected. The following criteria shall be utilized in the development of the selection procedure:

- The random selection procedure shall objectively select a waste hauling vehicle each day that the facility accepts waste.

waste with at least six inches of soil cover. A water truck, bulldozer, or other equipment will be used to extinguish the burning waste load. The waste will be covered with an adequate amount of soil to ensure it is extinguished. The load will be inspected by the Operations Manager, or his designee, before disposal. During inspection, if the soil is removed, which would allow oxygen to contact the waste, the load will be observed for hot spots or flare-ups. No smoldering or smoking waste will be placed in the working face area for permanent burial until all hot spots or flare-ups have been extinguished.

If it is not possible to move a burning vehicle away from fuel storage or exposed waste, the local fire department shall be called at 911, if necessary. While awaiting the arrival of the local fire department, all reasonable measures should be employed to extinguish the fire and prevent it from spreading beyond the vehicle.

7.3 Accidental Fires

Open burning of waste at the site is not permissible per Title 30 TAC §330.15(d). All fires will be extinguished using the protocols stated in this section. Proper compaction and earthen cover will be used to minimize the potential for accidental fires.

7.4 Preventive Procedures

Fuel spills will be controlled and contained immediately. Containment will include but not limited to turning off the valve or connection causing the leak (if possible), using a backhoe or scraper to berm around the spill (if sufficient to require berming), covering with absorbent or soil to prevent migration, or other means to prevent the unnecessary migration of fuel from the area of the spill. Soil contaminated with spilled fuel will be excavated and, if authorized by TCEQ, disposed of at the active face. Contaminated soils may be excavated using a shovel for small areas or with heavy equipment as appropriate. Onsite brush and vegetation will be controlled through mowing at least annually to reduce the possibility of brush fires from spreading to the landfill or off-site.

The compaction of the waste as it is disposed, and the subsequent covering with daily soil cover or ADC, will reduce the potential for fires by reducing voids within the waste and the amount of oxygen available for combustion. The daily cover or ADC serves as a physical, non-combustible barrier to a fire.

In addition, equipment that is used at the working face will be routinely cleaned through the use of high-pressure water or steam cleaners. The high-pressure water or steam cleaning will remove combustible waste and caked material which can cause equipment overheating and increase fire potential. The amount of water used to clean the equipment will be minimized.

Each piece of heavy equipment at the site listed in Table 3.1 will carry a portable fire extinguisher. Fire extinguishers will be inspected and certified at least annually. Once any extinguisher has been used, it will be refilled or replaced as soon as his designee. Contaminated water will be managed as specified in the Leachate and Contaminated Water Management Plan. This option is applicable to the entire working face.

In each case listed above, after the Operations Manager or his designee confirms that the fire has been extinguished, waste filling operations in that area may resume. In the event that the fire cannot be controlled using the methods above, the local fire department will be called at 911 (refer to Section 7.11 for additional information regarding contacting the fire department).

7.7.3 Water Trucks or Storage Tank Requirements

A water source (either a water truck(s) or storage tank(s)) equipped with a water cannon will be maintained in a readily accessible location to assist the fighting of any potential working face fire. The water truck or storage tank may be used in the support of other landfill activities (e.g., dust suppression, compaction of earth fills).

Maximum Working Face Size (width by length)	No. of Water Trucks or Tanks[1] (minimum capacity of 2,000 gallons)
30 feet by 30 feet (or 900 sf)[2]	N/A[2]
150 feet by 175 feet (or 26,250 sf)	1 (or 2,000 gallons)
250 feet by 325 feet (or 81,250 sf)	1 (or 2,000 gallons)
375 feet by 450 feet (or 168,750 sf)	2 (or 4,000 gallons)
525 feet by 600 feet (or 315,000 sf)	3 (or 6,000 gallons)

[1] The tank or truck size will be based on the required volume. For example, a water truck that has a 4,000-gallon tank is acceptable for a working face size of 375 by 450 feet.

[2] When the facility accepts less than 40 tons per day, the maximum working face area will be 30 feet by 30 feet (900 square feet) and a stockpile of earthen material adequately sized to cover the working face with 6 inches of soil (17 cubic yards) will be maintained immediately adjacent to the working face.

The on-site stormwater detention ponds may also be used as a source of water for fire control. A minimum of 2,000 gallons of water will be available for firefighting purposes. Also, during periods of freezing temperatures measures will be taken to ensure that the tank(s) remain operational. Additionally, Republic may contract with the City of Meadow for water obtained from the fire hydrant system installed and operated within the city or installed at the site (future); obtain water from an adjacent landowner existing well; or install a dedicated potable or non-potable well in the future for operational water.

7.7.4 Soil Stockpile Requirements

A soil stockpile will be maintained within 1,000 feet of each working face. The stockpile will be used to (1) smother burning waste material at the working face or (2) placed over burning waste material that has been cut out of the working face. The stockpile will be sized to cover at least 25 percent of the size of each working face. In addition, enough earthen material (i.e., soil stockpiles and soil within borrow areas) will be maintained on-site to cover the entire working face within 24 hours. The earthen material requirements are listed in the following table.

Number of Feet Traveled for Truck (D_{TR}) in t:

$D_{TR} = \nu_A \times t$ = 1,056 fpm x 60 min = 63,360 ft

Distance of Stockpile from Working Face (D_S):

$D_S = (D_{TR} / (L / N_{TR}))$ = 63,360 ft / (25 loads/3 trucks) = 2,534 ft (round trip)
D_S = 2,534 ft / 2 = 1,267 ft

Therefore, in this case a 486 cy stockpile could be maintained within 1,267 feet of the working face. However, a minimum distance of 1,000 feet is specified.

Largest stockpile to be located within 1,000 feet for 25% coverage (refer to the table in Section 7.7.4).

Volume of Cover = V_c = 1,458 cy

Assume:

Truck Capacity = TR_c = 20 cy
Number of Trucks = N_{TR} = 3
Average Truck Velocity = ν_A = 12 mph = 1,056 fpm
Time to Cover Working Face = t = 60 min

Total Number of Loads (L):

$L = V_c / TR_c$ = 1,458 cy / 20 cy = 73 loads

Number of Feet Traveled for Truck (D_{TR}) in t:

$D_{TR} = \nu_A \times t$ = 1,056 fpm x 60 min = 63,360 ft

Distance of Stockpile from Working Face (D_S):

$D_S = (D_{TR} / (L / N_{TR}))$ = 63,360 ft / (73 loads/3 trucks) = 2,604 ft (round trip)
D_S = 2,604 ft / 2 = 1,302 ft

Therefore, in this case a 1,458 cy stockpile could be maintained within 1,302 feet of the working face. However, a minimum distance of 1,000 feet is specified. The calculations above conservatively assume an average truck velocity of 12 mph, in part to accommodate the loading and unloading of the trucks during soil transport. Actual average velocities during an emergency fire event would be greater.

A readily accessible water source and a soil stockpile within 1,000 feet will facilitate a quick response to fires at the working face. Any working face fire will be controlled quickly so that it will not spread. Because of the quick response provided by this plan, working face fires are not expected to encompass more than 10 percent to 15 percent of the working face. Therefore, by maintaining a soil stockpile within 1,000 feet of the working face, which is large enough to cover 25 percent of the working face, enough soil will be available to cover the area with burning waste, including a significant contingency.

Table 9.1
Record Keeping Requirements

Item	Rule Citation
All location restriction demonstrations	§330.125(b)(1)
Inspection logs and records, training procedures, and notification procedures relating to excluding the receipt of prohibited waste	§330.125(b)(2)
Inspection records and training procedures relating to fire prevention and site safety	§330.125(c)
All inspection documentation noted on Table 4.23 – Site Inspection and Maintenance List	§330.125(b)(12)
Fire Occurrence Notices	§330.129
Personnel training records and operator licenses. Training records (including operator licenses) for current employees will be kept for at least three years from the date the employee last worked at the facility.	§330.125(e), §330.125(f), §335.586(d), and §335.586(e)
Landfill Gas Management Plan	§330.159
Cover Application Logs (including documentation of soil stockpile and earthen material as noted in Section 4.18)	§330.165(h)
Results from gas monitoring events and any remediation plans relating to explosive and other gases	§330.125(b)(3)
Unit design documentation for the placement of leachate or gas condensate in the landfill	§330.125(b)(4)
Bird Abatement Plan	§330.151
Documentation of Vector Inspections	§330.151
Leachate sump level measurements	§330.125(b)(12)
Leachate disposal records	§330.125(b)(12)
All inspection logs and reports and all demonstrations, certifications, findings, monitoring, testing, and analytical data relating to groundwater monitoring and corrective action	§330.125(b)(5)
Closure plans and monitoring, testing, or analytical data relating to postclosure requirements	§330.125(b)(6)
Postclosure care plans and monitoring, testing, or analytical data relating to postclosure requirements	§330.125(b)(6)
Cost estimates and financial assurance documentation relating to financial assurance for closure and postclosure care	§330.125(b)(7)
Copies of all correspondence and responses relating to the operation of the facility, modifications to the permit, approvals, and other matters pertaining to technical assistance.	§330.125(b)(9)
Any and all documents, manifests, scale tickets, generator waste profile sheets, etc., involving special waste	§330.125(b)(10) §330.171(c)(3)(B)
A record of each unauthorized material removal event	§330.133(b)
Annual waste acceptance rate documentation including Quarterly and Annual Solid Waste Summary Reports required by §330.675	§330.125(h)
A record of alternate operations hours	§330.135(d)
Access control breach and repair notices	§330.131
Special Waste Operating Plan Compliance Documentation	§330.145(b)(11)
Special Waste Contingency Plan Compliance Documentation	§330.145(b)(11)
Other documents as specified by the approved permit or by the Executive Director of the TCEQ	§330.125(b)(12)
Monthly Marker Inspection Reports	§330.143(a)
For any spray-applied alternative daily cover (ADC) material, records of the application rate and total amount of ADC applied to the working face on those days in which ADC is applied.	§330.125(b)(11)
The Executive Director may set alternative schedules for recordkeeping and notification requirements, except for notification requirements for any proposed lateral expansion located within a six-mile radius of any airport runway end used by turbojet or piston-type aircraft or notification relating to landowners whose property overlies any part of the plume of contamination, if contaminants migrate off-site as indicated by groundwater sampling.	§330.125(g)

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PART IV – SITE OPERATING PLAN
APPENDIX IVB
ALTERNATIVE DAILY COVER OPERATING PLAN

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

KYLE D. GOULD
106018

Prepared by

02/28/2025

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817-735-9770

WCG Project No. 0120-809-11-06

This document is intended for permitting purposes only.

2 MATERIAL CHARACTERISTICS

2.1 Description of ADC Material

Synthetic tarp ADC material may be used at the site. Synthetic tarps will consist of a high density woven polyethylene coated fabric. Panels of the fabric are heat welded together for the desired width. A series of high tensile strength nylon web straps are sewn around the perimeter of the synthetic tarps for added strength. The selected ADC tarp will have a minimum thickness of 20 mils (or approximately 0.02 inches). Typical specifications and an MSDS example for the types of synthetic tarps to be used as ADC are included in Appendix IVB-1.

2.2 Chemical Characteristics

Chemical characteristics of the ADC materials are included in Appendix IVB-1. The ADC materials are not reactive, ignitable, or corrosive under the expected conditions (e.g., high temperature, intense sunlight).

3 OPERATIONAL METHODS

This section discusses the operational procedures that will be used to employ the approved ADC material. Site personnel will verify that the waste fill area has been covered at the completion of each working day.

The synthetic tarp ADC will be applied by hand or mechanical means at the close of each day. This will prevent any undue stress on the material. Once the tarp is in place, it will be anchored at each corner and along the edges. If reusable tarps are used, the tarps will be removed within 24 hours of their application and prior to waste placement. If sacrificial tarps are utilized, they shall be subsequently covered with new waste or daily cover within 24 hours of their application. Tarps may be used in combination with soil to provide complete coverage of the working face. Tarps will overlap each other on the active face perimeter to ensure complete coverage. Upslope tarps will lap over down slope tarps in a shingle-type fashion to minimize stormwater infiltration into the underlying waste. When the ADC is not in use, it will be rolled up and stored in an area (within the working face containment berm) that it will not come in contact with any vehicle or equipment traffic.

Tarps will be inspected each day that they are used for ADC. Inspections will include looking for holes, tears, and the overall condition of the tarp. Holes larger than 4 inches in size and tears longer than 6 inches will be repaired with patches. A tarp will no longer be utilized (and will be replaced) once the overall condition reduces the effectiveness of the tarp to control vectors, fires, odors, and windblown waste.

APPENDIX IVB-1

SYNTHETIC TARPS

STATE OF TEXAS
KYLE D. GOULD
106018
LICENSED
PROFESSIONAL ENGINEER

02/28/2025

Viaflex
Protecting Earth. Promoting Industry.

VIAFLEX INC.
MSDS Notice

SUBJECT: Viaflex Inc. products

IN REFERENCE TO: MSDS sheets

DATE: July 11, 2023

The film, sheeting, and tape accessories produced and/or distributed by Viaflex Inc. are not classified as hazardous chemicals under the US Department of Labor, Occupational Safety and Health Administration's (OSHA) 1910.1200 regulation. Our materials meet the OSHA definition of manufactured "articles" (1910.1200(c)) that will not expose users to hazardous chemicals under normal and expected conditions of use and are therefore exempt from all requirements of the regulation.

US Federal OSHA defines an "article" as follows at 29 CFR 1910.x1200 (c): Article means a manufactured item other than a fluid or particle: (i) which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which under normal conditions of use does not release more than very small quantities, e.g., minute or trace amounts of a hazardous chemical (as determined under paragraph (d) of this section), and does not pose a physical hazard or health risk to employees.

Viaflex will continue to provide technical product data sheets for each of our products, however, we will no longer provide MSDS or SDS sheets for products that are not classified as hazardous chemicals as outlined in the Global Harmonized System (GHS) standard.

For more information on OSHA Hazard Communication (29 CFR 1910.1200), visit www.osha.gov.

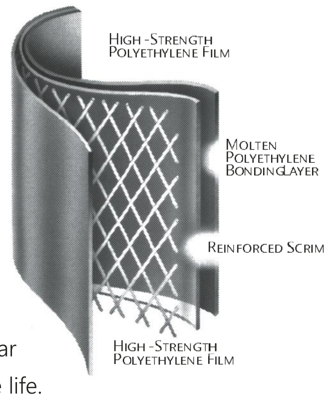
If you should have additional questions or concerns, please contact Viaflex at [redacted] or +1 (800) 635-3456.

DURA♦SKRIM® R20BV

FOUR-LAYER REINFORCED EXTRUSION LAMINATE - MEETS GRI-GM22

PRODUCT DESCRIPTION

DURA♦SKRIM® R20BV consist of two sheets of high-strength virgin polyethylene film laminated together with a third layer of molten polyethylene. The black outer layers contain carbon black to enhance outdoor life. A durable scrim reinforcement placed between these plies greatly enhances tear resistance and increases service life.



DURA♦SKRIM® R20BV is reinforced with a high strength scrim reinforcement laid in a diagonal pattern spaced 3/8" apart for uniform tear resistance in both machine and transverse directions with an additional machine direction scrim every 3" across the width for increased stability.

PRODUCT USE

DURA♦SKRIM® R20BV is used in more demanding applications requiring high tear and puncture resistance and is designed to withstand longer-term outdoor applications requiring up to 10 years of exposure depending upon geographical locations.

DURA♦SKRIM® R20BV is designed to meet the requirements of the Geosynthetics Research Institute; GRI-GM22 Standard Specification.

SIZE & PACKAGING

DURA♦SKRIM® R20BV is available in a variety of widths and fabricated panels up to 80,000 square feet. All panels are manufactured in a quality controlled environment and are accordion folded and tightly rolled on a heavy-duty core for ease of handling and time-saving installation.

Temporary Rain Shed Cover

PRODUCT	PART #
DURA♦SKRIM	R200BV

APPLICATIONS

Modular Tank Liners

Evaporation Covers

Remediation Liners

Earthen Liners

Interim Landfill Caps

Remediation Covers

Erosion Control Covers

DURA♦SKRIM® R20BV

FOUR-LAYER REINFORCED EXTRUSION LAMINATE - MEETS GRI-GM22

		DURA♦SKRIM R20BV			
		IMPERIAL		METRIC	
PROPERTIES	TEST METHOD	MINIMUM	TYPICAL	MINIMUM	TYPICAL
Appearance		Black/Black			
Thickness	ASTM D5199	17 Mil Average	20 Mil Nominal	0.43 mm Average	0.51 mm Nominal
Weight	ASTM D751	94 lbs/MSF	97 lbs/MSF	459 g/m^2	474 g/m^2
Construction		Extrusion laminated with scrim reinforcement			
[2] Grab Tensile	ASTM D7004	114 lbs	138 lbs	507 N	614 N
[2] Grab Tensile Elongation	ASTM D7004	15 %	17 %	15 %	17 %
[3] Tongue Tear	ASTM D5884	53 lbs	58 lbs	236 N	258 N
CBR Puncture Resistance	ASTM D6241	320 lbs	350 lbs	1423 N	1557 N
Mullen Burst	ASTM D751	130 psi	160 psi	896 kPa	1103 kPa
High Pressure OIT	ASTM D5885	1000 min	2600 min	1000 min	2600 min
WVTR	ASTM E96	N/A	0.009 grains/ft^2•hr	N/A	0.151 g/m^2•day
Perm Rating	ASTM E96	N/A	0.022 Perms	N/A	0.0145 g/m^2•day•mm Hg
Hydraulic Conductivity	ASTM E96	1.77x10^{-10} cm/sec			
Maximum Static Use Tempera-		180° F		82° C	
Minimum Static Use Tempera-		-70° F		-57° C	
Low Temperature Bend Test	ASTM D2136	-70° F			

[2] Tests are an average of primary reinforcement directions.
[3] Tests are an average of machine and transverse directions.

DURA♦SKRIM® R20BV consist of two sheets of high-strength virgin polyethylene film laminated together with a third layer of molten polyethylene. The black outer layers contain carbon black to enhance outdoor life. A durable scrim reinforcement placed between these plies greatly enhances tear resistance and increases service life. DURA♦SKRIM® R20BV is reinforced with a high strength scrim reinforcement laid in a diagonal pattern spaced 3/8" apart for uniform tear resistance in both machine and transverse directions with an additional machine direction scrim every 3" across the width for increased stability.

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27-0041 02/25

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PART IV – SITE OPERATING PLAN
APPENDIX IVC
SPECIAL WASTE ACCEPTANCE PLAN

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

KYLE D. GOULD
106018

02/28/2025

Prepared by

Weaver Consultants Group, LLC
TBPE Registration No. F-3727
6420 Southwest Blvd., Suite 206
Fort Worth, Texas 76109
817-735-9770

WCG Project No. 0120-809-11-06

This document is intended for permitting purposes only.

8 PERSONNEL TRAINING

Appropriate facility personnel will receive initial training on waste identification, screening, and management procedures. Refresher training will be provided to appropriate personnel on an annual basis as set forth in Part IV, Section 6.4 – Training. The training will be conducted by either in-house staff or outside specialists familiar with proper waste management procedures and the requirements of this SWAP. Documentation of the training will be placed in the facility's Site Operating Record and personnel files.

CITY OF MEADOW LANDFILL
TERRY COUNTY, TEXAS
TCEQ PERMIT NO. MSW-2293C

MAJOR PERMIT AMENDMENT APPLICATION

PART IV – SITE OPERATING PLAN
APPENDIX IVD
LIQUID WASTE BULKING FACILITY OPERATING PLAN

Prepared for

Meadow Landfill, LLC

August 2024

Revised February 2025

KYLE D. GOULD
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Prepared by

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STATE OF TEXAS
KYLE D. GOULD
106018
LICENSED PROFESSIONAL ENGINEER
02/28/2025

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1 INTRODUCTION (TITLE 30 TAC §330.201)

This Liquid Waste Bulking Facility Operating Plan has been prepared for the liquid waste bulking facility at the City of Meadow Landfill and contains the information required by Title 30 Texas Administrative Code (TAC) §330.201. This plan includes the following two options for liquid waste bulking. Either or both options may be utilized during site development.

- Option A – Bulking facility within future waste footprint - the liquid waste bulking facility will generally consist of a bulking agent storage area and a solidification area containing four separate mixing basins. The mixing basins will be constructed of concrete with secondary containment. Secondary containment consists of a geosynthetic clay liner beneath the mixing basins, containment of the 25-year, 24-hour storm event, and a 2-foot perimeter stormwater berm as an additional containment measure.

- Option B – Bulking facility within the existing waste footprint. The liquid waste bulking facility will be located within the waste footprint over a lined area. The liquid waste bulking facility will consist of a bulking agent storage area and a solidification area containing mixing/solidification tanks.

This operating plan includes provisions for facility management and facility operating personnel to meet the general and facility-specific requirements included in Subchapter E – Operational Standards for Municipal Solid Waste (MSW) Storage and Processing Units for the day-to-day operation of the facility. This operating plan will be retained onsite throughout the active life of the facility and until after certification of closure.

Since the liquid waste bulking facility will be located within the City of Meadow Landfill permit boundary, some requirements of Subchapter E are addressed in Part IV – SOP. Consistent with Title 30 TAC §330.201, this liquid waste bulking facility operating plan references the applicable section in the landfill SOP to minimize duplication and/or competing requirements. For example, the facility operating hours, sign requirements, and access road requirements listed in Sections 8.4, 8.5, and 8.7 of this plan all reference the landfill SOP. In addition, the waste acceptance procedures listed in Section 3 also reference the waste acceptance information listed in the landfill SOP and the facility Waste Acceptance Plan (WAP) included in Appendix IVA. The bulking facility will be operated within the parameters of the existing permit conditions (e.g., operating parameters listed in the existing SDP and SOP, waste acceptance rates, and traffic impact).

3 WASTE ACCEPTANCE AND ANALYSIS
(TITLE 30 TAC §330.203 AND §330.205)

3.1 Properties and Characteristics of Waste (§330.203(a))

Typical liquid waste streams that will be accepted at the facility include, but are not limited to, sludges; septic tank pumpings (septic wastes); grease and grit trap wastes; Class 2 and 3 nonhazardous industrial wastes; Railroad Commission waste; wastes that are not classified as bulk liquids but do not pass the paint filter test; and other nonhazardous bulk liquids. These liquids will be transported to the facility by private or public haulers in vacuum trucks, tank trucks, and sealed containers. The liquids will originate from restaurants and food processing plants, car and truck washes, oil and gas related industrial operations, and other commercial and industrial facilities. Estimated volumes, processing and storage times for the above wastes are provided in the following table.

Waste Type	Monthly Vol. (Gal)^{1,2}	Ave. Processing Time (Hrs)	Max. Storage Time (Hrs)
Sludges	200k	24	168
Septic Waste	400k	24	72
Grease and Grit Trap Waste	300k	24	72
Class 2/3 Non-Haz Waste	300k	24	168
Railroad Commission Waste	500k	24	168
Other Liquid Wastes	500k	24	168

[1] Monthly volumes are estimates only and subject to change.

[2] The total volume shown in the table does not imply or impose limits of individual waste or total waste volumes.

As discussed in Section 4.20 of Part IV – SOP, special waste and industrial waste will be pre-characterized prior to acceptance of the waste material following the guidelines in Part IV – SOP, Section 4.20 and the WAP included in Appendix IVA.

As required by the SOP and WAP included in Appendix IVA, incoming liquid waste will be documented on a Special Waste Profile (SWP) Sheet. The pre-characterization by the generator will include analytical testing and/or process information as necessary to make the determination that the waste is nonhazardous. No waste material will be accepted at the site that is not pre-characterized or does not have the proper manifest(s). Regulated hazardous wastes that require authorization under Title 30 TAC Chapter 335 will not be accepted at the site.

General expected characteristics of the grease trap waste stream to be handled are:

Fats, oils and greases: 6 – 8%
Solids: 20 – 25%
Water: 65 – 75%
pH: 4.5 – 5.5
BOD_5/COD: 10,000 – 60,000 mg/l

Grit trap solids are dirt and sand, with occasional small amounts of large solids (e.g., gravel and rocks). The grit trap liquid fraction will likely contain some oil, normally in small quantities. This is petroleum oils from crankcase drippings, road oils, grease and oil washed from engines, and other similar sources. This liquid will normally have a low BOD_5 (Biological Oxygen Demand). Additionally, some retail/commercial and industrial facilities have grit traps to collect sediment from floor washing activities.

Septic waste and portable toilet waste is typically composed of approximately 2 to 5 percent total solids with the remainder being water. BOD_5 and COD (Chemical Oxygen Demand) levels may be in the 3000-9000 mg/l range. Non-hazardous grease may be about 500 mg/l and the pH is in the range of 4.0 to 8.0.

The parameters listed above provide typical characteristics for the respective liquid waste. Parameters for the above waste streams are not limiting parameters that will impact or influence the design or operation of this liquid waste bulking facility. Liquid wastes that exhibit characteristics outside of the typical characteristic ranges may be accepted at the facility provided that they are reviewed and approved by site personnel prior to receipt. Wastes will be reviewed by the site's Special Waste Analyst and the Operations Manager or his designee to verify that the waste is not incompatible. In addition, Meadow Landfill, LLC will utilize the experience gained at this facility and others in verifying that wastes are not incompatible. In general, there are no incompatibilities with the diverse waste streams listed above. However, if a new or unique waste stream is introduced, the site may perform bench scale compatibility tests (e.g., pH, flammability, acid and base reaction, pit compatibility, etc.) on incoming wastes to verify that the wastes are not incompatible with other wastes or bulking agents. Bulking agents listed in Section 3.3 may be considered for use for solidifying any liquid wastes. Bulking agents are not limiting parameters that impact or influence the design or operation of this liquid waste bulking facility.

Documentation of the waste characterization process will be maintained at the facility in the Site Operating Record, as discussed in the SOP and WAP. Sampling and analysis completed will be done according to EPA-approved methods. Liquid wastes processed at the liquid waste bulking facility will be disposed of at the working face after the material is solidified. No other discharge of waste material will come from this facility.

3.2 Volume and Rate of Transfer (§330.203(b) and §330.205(a) and (b))

The solidification capacity, storage capacity, and maximum storage time for the yard waste bulking facility is summarized in the following table.

Criteria	Option A[2]	Option B[2]
Solidification Capacity Per Day	97,000 gallons	25,250 gallons
Storage Capacity	242,500 gallons	100,500 gallons
Maximum Storage Time	72 hours[1]	72 hours[1]

[1] Liquid wastes will be processed within 72 hours except certain liquid wastes as noted in Sections 5.1 and 8.10. Solidification of liquid waste being stored in the basins will be initiated within 24 hours.

[2] Capacity includes capacity in basin for liquid waste and bulking agents.

The City of Meadow Landfill will maintain documentation at the facility that all wastes leaving the liquid waste bulking facility for landfill disposal are being adequately managed by the site.

In the event of equipment failure or other operational breakdown expected to last longer than the allowable maximum storage time, acceptance of liquid waste will cease and any unprocessed liquid waste in the basins will be transported to another licensed or permitted facility.

Incoming loads of liquid waste will be inspected to verify that the contents and nature of the liquid waste is consistent with the Special Waste Profile. After the load has been determined to be acceptable, it will be directed to the solidification area for discharge into the solidification basins. Bulking agents will be added intermittently during the bulking process or once the solidification basin contains enough liquid waste. The bulking will be conducted in the solidification basin using an excavator or equivalent machinery to add and mix the bulking agent with the liquids. Bulking agents are listed in Section 3.3 and will be classified by the generator as being non-hazardous. The solidified liquid material must be able to pass a paint filter test, as described in EPA publication #SW-846, before it is transferred to the working face for disposal.

Operators at the liquid waste bulking facility will use radio communication with the working face operators prior to transporting loads of solidified liquids to ensure that all loads are disposed of in the proper manner. In the event the solidified liquid does not pass the paint filter test, additional bulking agents will be added and mixed until the desired solidification is achieved. Liquid waste as defined in Title 30 TAC §330.15(e)(6), except as allowed in §330.177, will not be disposed of at the landfill.

3.3 Bulking Agents

The bulking agent used in the liquid waste solidification process may be crushed cement/wood fiber wallboard, lime, fly ash, kiln dust, foundry dust, fines or dust from inert waste material, sawdust, wood chips, auto shredder fluff, agricultural by-products, soil, or other acceptable materials. All bulking agents will meet the waste acceptance limitations for disposal at the facility. Bulking agents will be stored on the all-weather surface area within secondary containment. The following is a brief description of selected bulking agents.

4 CONTAMINATED WATER MANAGEMENT (TITLE 30 TAC §330.207)

The City of Meadow Landfill will take the steps necessary to control and prevent the discharge of contaminated water from the liquid waste bulking facility. As noted in Part III – Site Development Plan, all liquids resulting from the operation of the City of Meadow Landfill will be disposed of in a manner that will not cause surface water or groundwater pollution. All water coming in contact with waste will be treated as contaminated water. Runon and runoff for the 25-year, 24-hour storm event will be controlled following the procedures set forth in the SDP. Surface water will be directed away from the mixing basins by site grading. The facility will be operated consistent with Title 30 TAC §330.15(h)(1)-(4) regarding discharge of solid wastes or pollutants into waters of the United States.

Secondary containment for the Option A bulking facility will be provided by maintaining 1 foot of freeboard in the basins and sloping the surrounding area toward the basins to contain rainfall for a 25-year, 24-hour storm event. The solidification basins for the liquid waste bulking facility will be constructed of concrete. The area under the concrete basins will be lined with a reinforced geosynthetic clay liner.

Secondary containment for the Option B bulking facility will be provided by an earthen berm. The secondary containment area has been designed to control runoff from the 25-year, 24-hour storm event within the secondary containment area and meet the 1-foot freeboard requirement in Title 30 TAC §330.207(b). Ponded water will be handled consistent with the procedures listed in Section 4.19 of the SOP. The solidification tanks will be covered while not in use with a portable synthetic cover, a fitted, rigid cover, or equivalent to prevent rainfall from entering the solidification tanks. Bulking agents will be stored within the secondary containment berm. The facility will be located over MSW unit areas with a composite liner. The facility may be relocated as needed, based on field conditions and/or site activities. As undeveloped areas are constructed, the liquid waste bulking facility may be relocated into newly constructed areas, as needed.

Prior to future relocation of the Option A basins (refer to Section 3.2 of this appendix), a permit modification complying with Title 30 TAC §305.70(d) shall be obtained addressing the relocated basin's design and installation. A permit modification will not be required for relocation of the Option B basins, as they are operated over existing Subtitle D liner systems which provide environmental containment for the basins.

5 STORAGE REQUIREMENTS (TITLE 30 TAC §330.209

5.1 Waste Storage (§330.209(a))

Consistent with Title 30 TAC §330.241 and Section 8.10, the facility will only accumulate waste in quantities that can be solidified within such time as will preclude the creation of odors, insect breeding, or harborage of other vectors. Solidification of liquid waste in a basin will be completed within 24 hours from its addition into the basins; and, subject to the total processing time limit specified below, multiple liquid waste additions and multiple completions of solidification in a basin may be allowed before the basin is emptied. If a mixing basin is processing grease trap waste, grit trap waste, or septage, the maximum processing time (i.e., starting from the receipt of the first waste to the time the basin is emptied) is 72 hours. The maximum processing time (i.e., starting from the receipt of the first waste to the time the basin is emptied) for non-grease trap, grit trap, or septage waste material is 7 days provided that the waste material does not create nuisance odors, insect breeding, or harborage of vectors. If such accumulations occur beyond these specified time limits, additional liquid waste materials will not be received until the adverse conditions are abated.

As noted above, the liquid waste material will be processed in the mixing basins. The actual time the waste material is stored in the mixing basin is a function of the rate of incoming liquid waste material. Solidification of liquid waste being stored in the basins will be initiated within 24 hours. Typically, the mixing basin is "pre-loaded" with the bulking agent. The liquid waste is added until the mixing basin reaches its capacity. For certain types of liquid waste material, the incoming waste is relatively slow and will take a few days to fully load the mixing basin. The processing period will vary depending upon the type and quantity of waste in each mixing basin. However, the storage period for processed waste in the basin will not exceed 72 hours for grease trap waste, grit trap waste, and septage (and the processing period will not exceed 7 days for other waste types) or a shorter period if the liquid waste material being processed has the potential to create a nuisance odor condition at the site.

Prior to the end of the 72-hour or 7-day period, the bulked waste will be disposed of in the landfill or transported and processed at a permitted offsite facility in the event of an operational breakdown. Bulked wastes must be able to pass the paint filter test (EPA SW-846/9095) before the solidified material is transported to the landfill working face for disposal.

The solidification basins will be covered while not in use (i.e., empty; processing not taking place; or storage of processed, unprocessed, or partially processed waste material) with a portable synthetic daily cover, a fitted, rigid cover, or equivalent. By covering the solidification basins the waste will be stored in a manner that does not constitute a fire, safety, or health hazard or provide food or harborage for animals and vectors.

5.2 Approved Containers

Liquid waste entering the facility is typically transported in vacuum trucks, tanker trucks, and sealed containers. These trucks are designed to prevent spillage or leakage during storage, handling, or transport.

The bulking facility will consist of concrete lined mixing basins or steel containers with secondary containment. The mixing basins will be equipped with a portable synthetic daily cover, a fitted rigid cover, or equivalent that will be able to close the basins during mixing or down time. The solidification basins will be maintained in a manner so that they do not constitute a nuisance and to retard the harborage, feeding, and propagation of vectors.

As noted in Section 4.23 of the SOP, the mixing basins will be inspected daily, when in use, for damage to the basin walls and floors and to verify there are no indications of leaks from the basins (i.e., sudden drop in static liquid level). Mixing basins will be repaired on an as needed basis to prevent leaks. Damage repairs and maintenance activities will be documented in the Site Operating Record.

6 RECORDKEEPING AND REPORTING REQUIREMENTS (TITLE 30 TAC §330.219)

6.1 Documents (§330.219(a) and (b))

The City of Meadow Landfill will maintain records on site as part of the Site Operating Record in accordance with Section 9 of the Site Operating Plan. Consistent with Title 30 TAC §330.219(a), copies of documents that are considered part of the operating record for the facility are listed in Section 9 of the SOP. In addition to the information listed in Section 9, the information listed below will also be maintained in the Site Operating Record.

Records to be Maintained in the Site Operating Record[1]	Frequency	Rule Citation
Documentation that wastes leaving the facility are being adequately managed by other licensed or permitted facilities	As needed	§330.205(a)
As-built set of construction plans for the Liquid Waste Bulking Facility	As needed	§330.219(a)
Additional analytical testing performed at the facility to verify compliance with this plan.	As needed	§330.219(b)(5)

[1] Also refer to Section 9 of the Site Operating Plan.

These documents will be made available for inspection by TCEQ representatives upon request.

6.2 Report Signatories (§330.219(c))

An authorized representative of the City of Meadow Landfill will sign all reports and other information requested by the Executive Director as described in Title 30 TAC §305.44(a). For a person to be an authorized representative of the City of Meadow Landfill, the authorization must: (1) be made in writing as described in Title 30 TAC §305.44(a), (2) specify either an individual or a position having responsibility for the overall operation of the City of Meadow Landfill, and (3) submitted in writing to the Executive Director.

If an authorization is no longer accurate because of a change in individuals or position, a new authorization must be submitted to the Executive Director prior to or with any submittal to be signed by an authorized representative. Any person signing a report will make the certification included in Title 30 TAC §305.44(b).

7 FIRE PREVENTION PROCEDURES (TITLE 30 TAC §330.221)

7.1 Fire Prevention Procedures

The following steps will be taken regularly by designated site personnel (according to assigned tasks and training) to prevent fires. Refer to Section 7 of the Site Operating Plan for additional fire prevention procedures.

- Open burning of waste is prohibited.
- Equipment used at the facility will be routinely cleaned through the use of water or steam cleaners. The water or steam cleaning will remove combustible waste and caked material which can cause equipment overheating and increase fire potential.
- Fuel spills will be contained and cleaned up immediately (refer to Section 7.4 of the SOP).
- Smoking is not allowed in the working areas of the site. Smoking is confined to designated areas only, away from the liquid waste bulking facility, fuel stations, and other fire-sensitive areas.
- In the event of an accidental fire, the fire will be extinguished by (1) smothering with soil, (2) applying water from a water truck, or (3) the use of a fire extinguisher. The facility will be equipped with fire extinguishers of a type, size, location, and number as recommended by the local fire department. Each fire extinguisher will be fully-charged and ready for use at all times. Each extinguisher will be inspected on an annual basis and recharged as necessary. These inspections will be performed by a qualified service company, and all extinguishers will display a current inspection tag. Inspection and recharging will be performed following each use. At a minimum, all applicable equipment will have fire extinguishers.

7.2 General Rules for Fires

The following rules will be implemented in the event of a fire at the liquid waste bulking facility. Refer to Section 7 of the SOP for additional fire safety rules.

- Contact the local Fire Department by calling 911.
- Immediately contact the Operations Supervisor.
- Alert other facility personnel.

8 OPERATIONAL PROCEDURES (TITLE 30 TAC §330.223 THROUGH §330.249)

8.1 Access Control (§330.223)

8.1.1 Facility Security

Facility security will be handled consistent with Section 4.1.1 of the SOP. Entry to the facility will be restricted to designated personnel, appropriate subcontractors, approved waste haulers, TCEQ personnel, and properly identified persons whose entry onto the landfill property is authorized by facility management. Visitors (persons not referenced in above list) may be allowed onto the site only when accompanied by a facility representative at the discretion of facility management or their designee.

8.1.2 Traffic Control

Traffic control will be handled consistent with Section 4.1.2 of the SOP. As discussed in the SOP, liquid waste transport vehicles are directed to the liquid waste bulking facility by signs located along the entrance road. These vehicles will deposit their loads within the facility and depart the site. Waste hauling vehicles will be directed to the appropriate unloading area. Roads not being used for access will be blocked or otherwise marked for no entry. An adequate turning radius for the vehicles utilizing the facility will be provided to maintain normal traffic flow.

8.2 Unloading of Waste (§330.225)

8.2.1 Waste Unloading Procedures

General waste unloading procedures are discussed in Section 4.2 of the SOP. As discussed in the SOP, incoming liquid waste transport vehicles will be directed to the liquid waste bulking facility by the Scale House Staff once the vehicle incoming weight has been recorded. Signs directing traffic from the scale house to the liquid waste bulking facility will be located, as needed, along the route to the liquid waste bulking facility. Personnel working at the liquid waste bulking facility will inspect the load and direct the transport vehicle to the proper solidification basin. The unloading of waste will be directed by personnel working at the liquid waste bulking facility.

Unloading of waste in unauthorized areas will be prohibited. Any waste which is identified as having been deposited in an unauthorized area will be immediately contained and moved to the unloading areas.

Prohibited waste will not be allowed to enter the site. All waste loads will be visually inspected and accompanied by a generator waste profile sheet prior to being approved to unload. In the event prohibited wastes are identified in the load, the entire load will be turned away from the gate and not allowed entrance to the facility.

8.2.2 Procedures for the Detection and Prevention of Hazardous and PCB Waste

Procedures for the detection and prevention of the disposal of regulated hazardous waste as defined in 40 CFR Part 261 and polychlorinated biphenyl (PCB) wastes as defined in 40 CFR Part 761 are provided in this section.

Visual inspections of all incoming waste will be conducted at a location where containment is provided and/or potential spills of unauthorized waste would be minimized (i.e., adjacent to the bulking facility).

Vehicles containing suspicious loads will be inspected. Suspicious loads may include:

- Drums or containers with warning labels
- Loads which have a visible emission, smoke, strong chemical odor, or cause physical symptoms (e.g., irritation of eyes, nose, throat, skin, nausea, dizziness, or headache)

The inspector will not inspect any vehicle that appears to present possible physical danger. The Operations Manager or his designee shall be contacted immediately if such a load enters the facility.

The inspections shall be conducted in a manner that allows the inspector to view the contents of the waste load. The inspector shall make an effort to view as much of the waste load as possible. The inspections will be conducted in an expeditious manner to minimize disruption to normal operations.

8.3 Spill Prevention and Control (§330.227)

The Option A bulking facility has been designed to control and contain spills and contaminated water. The areas around the liquid waste bulking facility slope toward the solidification basins to ensure any potential spills from vehicles will flow back into the solidification basins. The liquid waste bulking facility solidification basins will be covered while not in use with a portable synthetic daily cover, a fitted, rigid cover, or equivalent to prevent rainfall from entering the solidification tanks. Unenclosed containment areas (e.g., area within secondary containment berm) account for precipitation from a 25-year, 24-hour storm. The solidification basins will be constructed of concrete. The area under the concrete basins will be lined with a reinforced geosynthetic clay liner.

The solidification area pad will be constructed above natural grade. A containment berm will be constructed around the perimeter of the pad to contain stormwater and potential spills from vehicles. Stormwater on the pad will be drained through a pipe. If a spill occurs, a valve at the drain pipe will be closed and the liquid will be pumped to the basins for solidification.

The Option B bulking facility has been designed to control and contain spills and contaminated water. Liquid waste collected in the secondary containment area will be pumped to the mixing basins where it will be processed for disposal. Water collected in the solidification basins will be mixed with the liquid waste and bulking agents or treated as contaminated water. The solidification tanks will be covered while not in use with a portable synthetic daily cover, a fitted, rigid cover, or equivalent to prevent rainfall from entering the solidification tanks. Bulking agents will be stored within the secondary containment berm. Unenclosed containment areas (e.g., area within secondary containment berm) account for precipitation from a 25-year, 24-hour storm.

The liquid waste bulking tanks will be over areas that have been developed as disposal areas with a composite liner. The facility may be relocated as needed, based on field conditions and/or site activities. As undeveloped areas are constructed, the liquid waste bulking facility may be relocated into newly constructed areas, as needed. The facility will not be located within the landfill working face containment berm.

Berms described above for Options A and B will be constructed of earthen materials (soils) obtained from on-site borrow areas or stockpiles.

8.4 Operating Hours (§330.229)

The liquid waste bulking facility may operate during the waste acceptance hours of the City of Meadow Landfill (refer to Section 4.3 of the SOP).

8.5 Facility Sign (§330.231)

Facility signs will be placed in accordance with the City of Meadow Landfill's approved SOP (refer to Section 4.4 of the SOP).

8.6 Control of Windblown Material and Litter (§330.233)

Windblown material and litter will be collected and properly managed to control unhealthy, unsafe, or unsightly conditions by the following methods:

- Bulking agents will be stored on the all-weather surface area within secondary containment. If stormwater run-off or wind becomes an issue, the bulking stockpile will be reconfigured (i.e., reduced in size or reshaped). Water sprayed onto the bulking agents stockpiles may also be used to control dust.
- Solidification basin lids may be used to cover the solidification basins during the mixing process.

8.7 Materials Along the Route to the Facility (§330.235)

This requirement is addressed in Section 4.8 of the SOP.

8.8 Facility Access Roads (§330.223(b) and §330.237)

As discussed in Section 4.12 of the SOP, the City of Meadow Landfill has an existing paved entrance road. The access road to the liquid waste bulking facility will be an all-weather surface that provides for all weather access. The all-weather surface access and internal roads will provide mud control for the waste hauling vehicles prior to exiting the facility and returning to public access roads. It is not anticipated that mud or other debris will be tracked offsite, given the all-weather surface that exists on these roads. The entrance, access, and internal roads will be maintained in a safe condition. The availability and adequacy of the facility access roads is evaluated in the Engineering Study included in Part I/II, Appendix D.

8.9 Noise Pollution and Visual Screening (§330.239)

Liquid waste solidification will occur within the permit boundary. The proposed location of the liquid waste bulking facility is over 125 feet from the landfill permit boundary. Future relocations of the liquid waste bulking facility will also be a minimum 125 feet from the landfill permit boundary.

8.10 Overloading and Breakdown (§330.241)

The facility will only accumulate waste in quantities that can be processed within such time as will preclude the creation of odors, insect breeding, or harborage of other vectors. If the mixing basins are processing grease trap waste, grit trap waste, or septage, the maximum time waste material will be stored is 72 hours. The maximum time other waste material will be allowed to be stored is 7 days provided that the waste material does not create nuisance odors, insect breeding, or harborage of vectors. Solidification of liquid waste being stored in the basins will be initiated within 24 hours. If accumulations occur beyond these specified time limits, additional liquid waste materials will not be received until the adverse conditions are abated.

If a significant work stoppage (longer than 24 hours) should occur at the facility due to a mechanical breakdown or other causes, the site will accordingly restrict the receiving of liquid waste materials. Under such circumstances, incoming liquid waste shall be diverted (rejected at the scalehouse). If the work stoppage is anticipated to last long enough to create objectionable odors, insect breeding, or harborage of vectors, steps shall be taken to remove the accumulated waste materials from the liquid waste bulking facility to an approved permitted offsite disposal facility.

8.11 Sanitation (§330.243)

When in use, the solidification basins will be washed down on a weekly basis at the completion of processing. During times when the facility is operating on a continuous basis, the liquid waste bulking area will be washed down at least two times per week. Wash water will drain to the mixing basin and may be solidified or removed from the mixing basins and transferred via TCEQ-registered trucks to a permitted wastewater treatment plant or a registered or permitted facility capable of handling liquid waste. The wash water will be removed or solidified on the same day it is generated.

8.12 Ventilation and Air Pollution Control (§330.245)

No significant air pollution emissions are expected to result from the operation of the facility. Any emissions must not cause or contribute to air pollution as defined in the Texas Clean Air Act. The liquid waste bulking facility is covered under the City of Meadow Landfill Standard Air Permit for the site.

The operator will prevent nuisance odors from leaving the boundary of the facility. If nuisance odors are found to be passing the facility boundary, the site will immediately take action to abate the nuisance. Odors are controlled by large buffer areas to the facility from the permit boundary and solidification basin lids which will limit the liquid waste exposure to the environment. Per Section 5.2 of this appendix, the solidification basins will be covered while not in use with a portable synthetic daily cover, a fitted, rigid cover, or equivalent to prevent nuisance odors. Options to abate odors may include, but are not limited to, systematically removing waste until the odor is eliminated or the use of appropriate mister equipment. Abatement equipment will be cleaned and maintained per manufacturer recommendations so that the equipment efficiently can be adequately maintained. In addition, site personnel may also develop a plan to identify specific waste streams that are causing the odor. These waste streams will be processed under an accelerated schedule (i.e., prior to delivery of the waste to the site or proactive processing for odor at the time of delivery into the solidification basin) to prevent odors.

8.13 Health and Safety (§330.247)

Facility personnel will be trained in appropriate sections of the facility's health and safety plan in accordance with the procedures outlined in Section 2 of this plan and as set forth in Section 2 of the SOP.

9 FACILITY CLOSURE

9.1 Option A Bulking Facility

Upon closure of the facility, any remaining waste will be solidified and transported to the working face for disposal. The solidification facility will be washed down and all bulking agents and related equipment will be removed from the facility. Any remaining bulking agents on site at the time of closure may be incorporated into the landfill operations (disposed of within the landfill or used as daily cover, depending on composition), incorporated into on-site filling activities (if non-waste and suitable for use as clean soil or mixing with soil and use), or transported off site for use by others or disposal.

The concrete mixing basins will be demolished and the concrete debris will be disposed of on-site. Mixing basins may be disposed of at the MSW working face. Any soil below the basins that is visually stained will be excavated and disposed of in the landfill. In addition, the area under the liquid waste bulking facility will be sampled. Four shallow (0 to 6-inch depth) grab soil samples will be collected and placed into appropriate laboratory-prepared soil containers. The soil samples will be analyzed at a NELAC certified laboratory for TPH (method TX 1005), BTEX (EPA method 8260B), and RCRA metals (EPA methods 6010B and 7471A). The analytical results will be compared to the Texas Risk Reduction Program (TRRP) commercial soil Protective Concentration Levels (PCLs). If the sample results indicate no PCL exceedances, the solidification area will be backfilled to adjacent grade. If the sample results exceed a PCL, the facility will obtain TCEQ approval of a work plan designed to remove and dispose of the soil exceedances. The work plan will:

- identify the areas that are contaminated above TRRP commercial soil PCLs and quantify the estimated volume of soil material that will be removed;
- identify the methods to be used for soil excavation and disposal; and
- include a detailed sampling plan that will be implemented to verify that the contaminated soils exceeding TRRP commercial soil PCLs have been removed.

Verification that the work plan has been successfully implemented will be included in the Closure Certification Report. A description of the liquid waste bulking facility closure procedures (including soil sample results and verification that the work plan has been successfully implemented, if required) will be included in the Closure Certification Report. The report will be included in the Site Operating Record.

9.2 Option B Bulking Facility

As noted in previous sections, the facility will be located within the existing waste footprint. However, the facility will only be located over areas with intermediate cover. Therefore, before the site reaches the permitted grades within the vicinity of the facility, the facility will be relocated or closed. Facility relocation activities will include the relocation of the steel mixing basis, facility equipment, and bulking agents to a new location where secondary containment has been established. All visible stained soil in the area will be excavated and hauled to the working face for disposal before the secondary containment berms are decommissioned.

Facility closure activities will include the removal and disposal of the steel mixing basins and any other equipment associated with this facility. All liquid wastes will be solidified and disposed of in the landfill or an off-site permitted disposal facility. Any stored bulking agent material will be transported to the working face for disposal. The facility area will be inspected during the decommissioning process. All visible stained soil in the area will be excavated and hauled to the working face for disposal before the secondary containment berms are decommissioned. A notice will be sent to the TCEQ and placed in the Site Operating Record noting the specific steps taken to decommission the facility.

Verification that the work plan has been successfully implemented will be included in the Closure Certification Report. A description of the liquid waste bulking facility closure procedures and verification that the work plan has been successfully implemented will be included in the Closure Certification Report. The report will be included in the Site Operating Record.

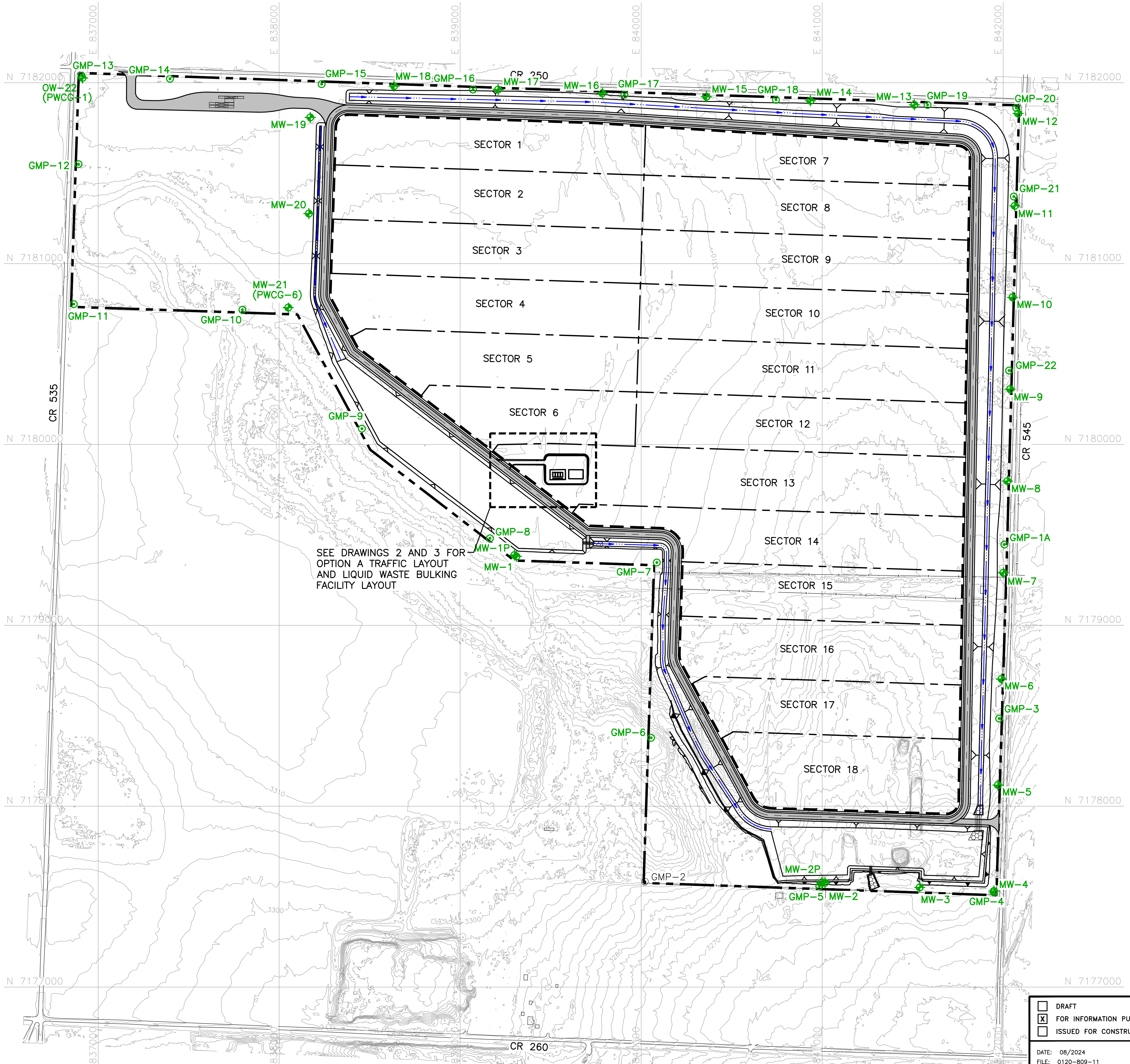
APPENDIX IVD-A

LIQUID WASTE BULKING FACILITY DRAWINGS

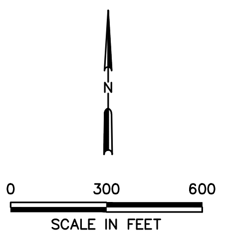
KYLE D. GOULD

106018

02/28/2025



SEE DRAWINGS 2 AND 3 FOR OPTION A TRAFFIC LAYOUT AND LIQUID WASTE BULKING FACILITY LAYOUT



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02/28/2025

LEGEND

	PROPOSED PERMIT BOUNDARY
	PROPOSED LIMIT OF WASTE
N 7180000	STATE PLANE COORDINATE SYSTEM
350	EXISTING CONTOUR
	SECTOR BOUNDARY

NOTES:

1. EXISTING CONTOURS ARE CREATED FROM UNMANNED AERIAL SURVEY DATA COLLECTED BY WEAVER CONSULTANTS GROUP, LLC ON OCTOBER 20, 2022. THE GRID SYSTEM IS TIED TO THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, NAD83 (2011) EPOCH 2010.00 AND HAS BEEN SCALED TO SURFACE COORDINATES BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.99972824 FROM AN ORIGIN OF 0,0.
2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. PERMIT BOUNDARY WAS PREPARED BY WEAVER CONSULTANTS GROUP IN APRIL 2023.
4. THE OPTION B LIQUID WASTE BULKING FACILITY WILL BE LOCATED WITHIN THE PROPOSED LIMIT OF WASTE. HOWEVER, THE FACILITY WILL ONLY BE LOCATED OVER AREAS THAT HAVE BEEN DEVELOPED AS DISPOSAL AREAS WITH A COMPOSITE LINER. THE FACILITY MAY BE RELOCATED AS NEEDED, BASED ON FIELD CONDITIONS AND/OR SITE ACTIVITIES. AS UNDEVELOPED AREAS ARE CONSTRUCTED, THE FACILITY MAY BE RELOCATED INTO THE NEWLY CONSTRUCTED AREAS AS NEEDED. REFER TO DRAWING 4 FOR OPTION B LIQUID WASTE BULKING FACILITY LAYOUT.

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CAD: 1-SITE PLAN.DWG

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DESIGN BY: MB
REVIEWED BY: CRM

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MEADOW LANDFILL, LLC

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SITE PLAN

CITY OF MEADOW LANDFILL
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DRAWING 1

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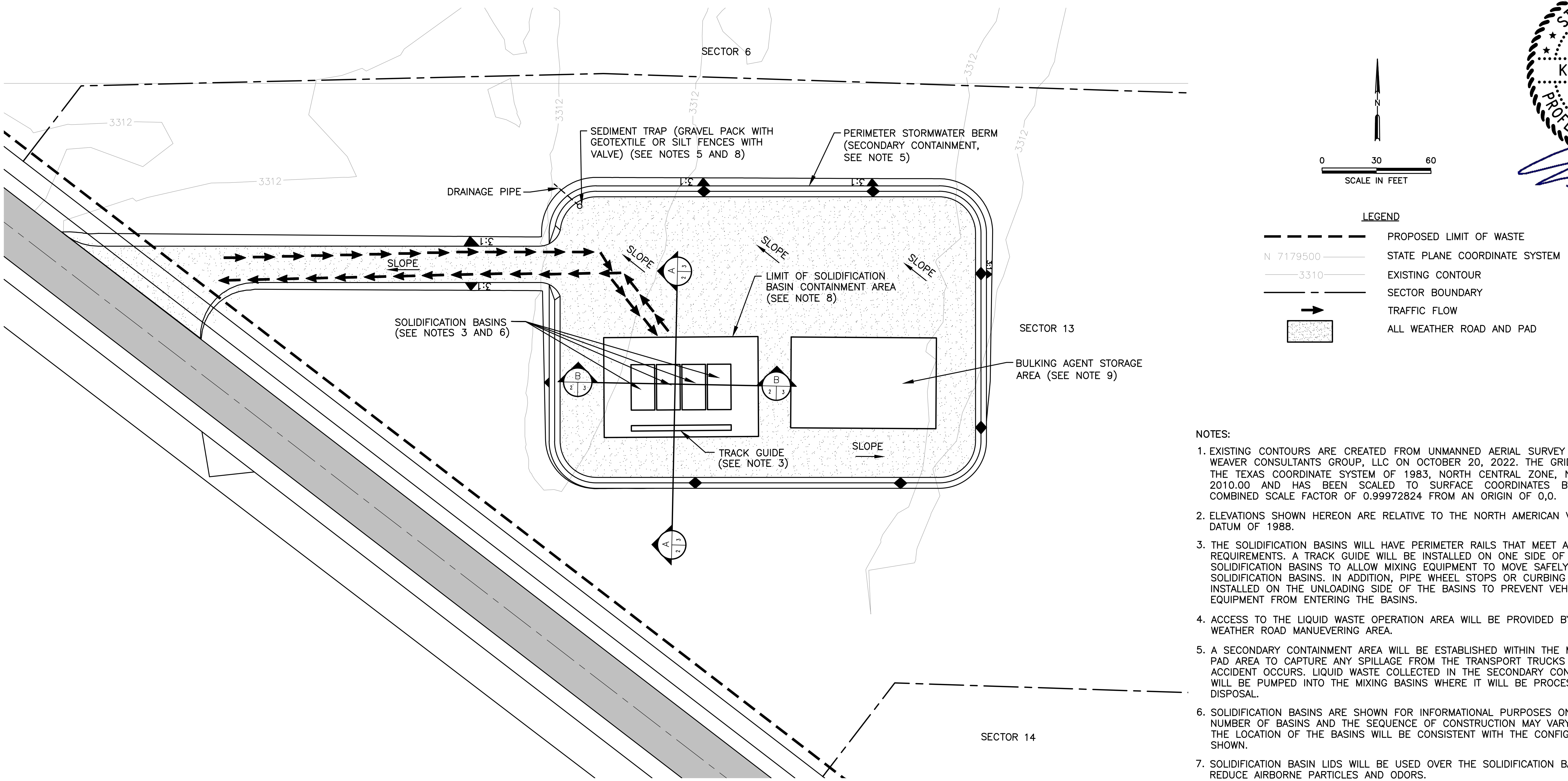

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2. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. THE SOLIDIFICATION BASINS WILL HAVE PERIMETER RAILS THAT MEET ALL OSHA REQUIREMENTS. A TRACK GUIDE WILL BE INSTALLED ON ONE SIDE OF THE SOLIDIFICATION BASINS TO ALLOW MIXING EQUIPMENT TO MOVE SAFELY ALONG THE SOLIDIFICATION BASINS. IN ADDITION, PIPE WHEEL STOPS OR CURBING WILL BE INSTALLED ON THE UNLOADING SIDE OF THE BASINS TO PREVENT VEHICLES AND EQUIPMENT FROM ENTERING THE BASINS.
4. ACCESS TO THE LIQUID WASTE OPERATION AREA WILL BE PROVIDED BY THE ALL WEATHER ROAD MANUEVERING AREA.
5. A SECONDARY CONTAINMENT AREA WILL BE ESTABLISHED WITHIN THE MANUEVERING PAD AREA TO CAPTURE ANY SPILLAGE FROM THE TRANSPORT TRUCKS IF AN ACCIDENT OCCURS. LIQUID WASTE COLLECTED IN THE SECONDARY CONTAINMENT AREA WILL BE PUMPED INTO THE MIXING BASINS WHERE IT WILL BE PROCESSED FOR DISPOSAL.
6. SOLIDIFICATION BASINS ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY. THE NUMBER OF BASINS AND THE SEQUENCE OF CONSTRUCTION MAY VARY. HOWEVER, THE LOCATION OF THE BASINS WILL BE CONSISTENT WITH THE CONFIGURATION SHOWN.
7. SOLIDIFICATION BASIN LIDS WILL BE USED OVER THE SOLIDIFICATION BASINS TO REDUCE AIRBORNE PARTICLES AND ODORS.
8. THE SOLIDIFICATION BASIN CONTAINMENT AREA WILL SLOPE TOWARD THE SOLIDIFICATION BASINS. THE REMAINDER OF THE ROAD AND PAD AREA (SECONDARY CONTAINMENT) WILL SLOPE AWAY FROM THE SOLIDIFICATION BASINS TO THE SEDIMENT TRAP. STORMWATER ON THE PAD AREA WILL CONTROLLED THROUGH THE SEDIMENT TRAP.
9. STORAGE MAY CONSIST OF A SILO AND/OR CONCRETE BUNKERS THAT MINIMIZE THE STORED BULKING AGENT'S EXPOSURE TO WIND. TYPICAL LOCATION IS SHOWN. IN ADDITION, BULKING AGENTS MAY ALSO BE STORED IN SOLIDIFICATION BASINS THAT ARE NOT BEING USED FOR SOLIDIFICATION.
10. IN GENERAL, THE SEDIMENT TRAP WILL DISCHARGE UNCONTAMINATED STORMWATER AWAY FROM THE BULKING FACILITY. IN THE EVENT OF A SPILL, THE VALVE WILL BE CLOSED AND CONTAMINATED WATER WILL BE PUMPED INTO THE BASINS FOR SOLIDIFICATION.

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DESIGN BY: MB
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LIQUID WASTE BULKING FACILITY PLAN

CITY OF MEADOW LANDFILL
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DRAWING 2

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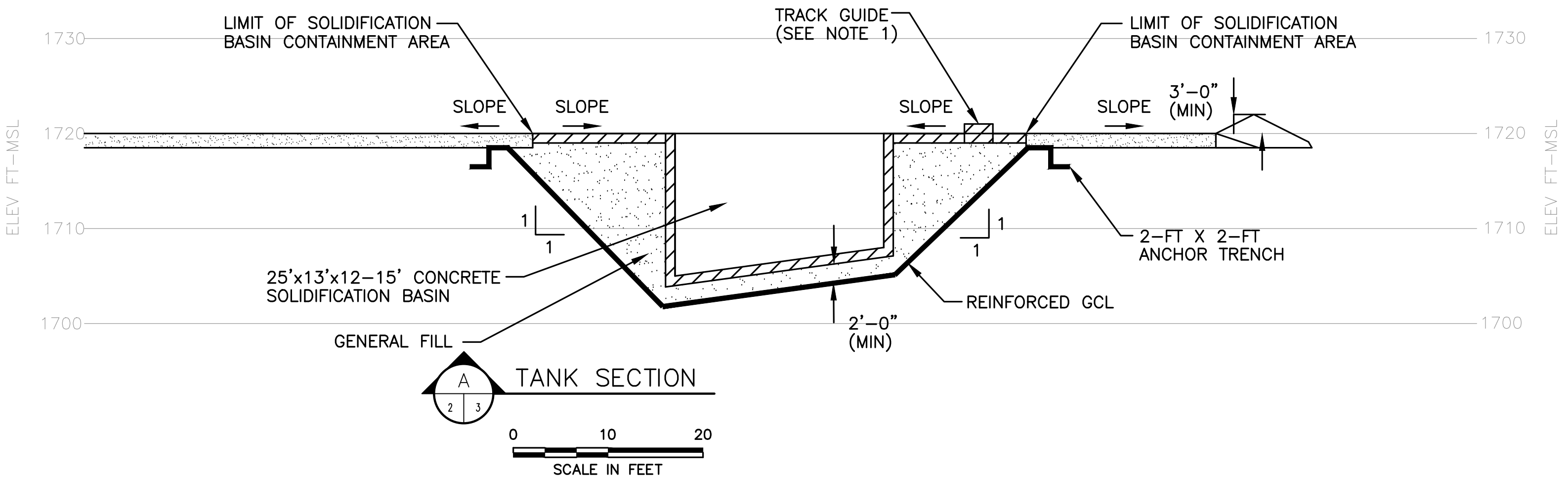
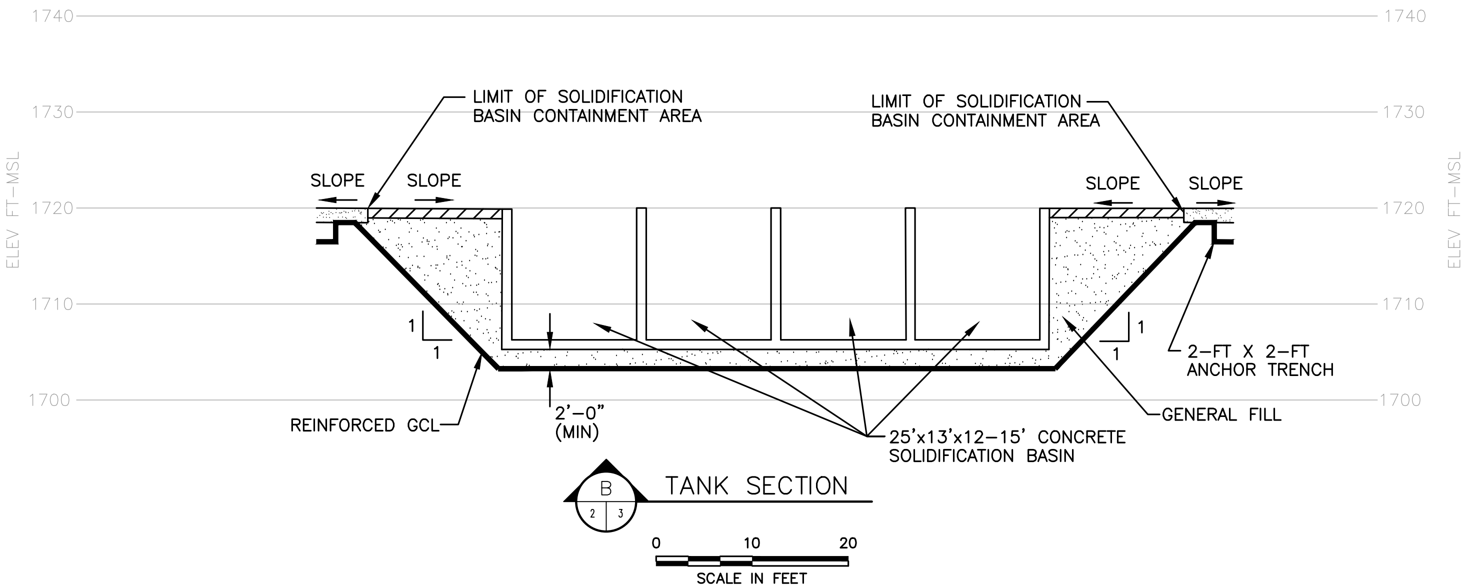


TANK SECTION



TANK SECTION

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02/28/2025

NOTES:

1. TRACK GUIDES WILL ALLOW MIXING EQUIPMENT TO MOVE SAFELY ALONG THE LENGTH OF THE SOLIDIFICATION BASINS.
2. THE PRE-MANUFACTURED LIQUID WASTE BULKING FACILITY BUILDING IS OPTIONAL. IF THE SITE CHOOSES NOT TO INSTALL A BUILDING, THE LIQUID WASTE BULKING SOLIDIFICATION AREA IS DESIGNED SO THAT THE VOLUME PROVIDED BY THE SOLIDIFICATION AREA IS GREATER THAN THE VOLUME OF THE 25-YR, 24 HR STORM EVENT AND 1 FOOT OF FREEBOARD. SEE THE SOLIDIFICATION BASIN AREA CONTAINMENT VOLUME CALCULATIONS.

SOLIDIFICATION BASIN AREA CONTAINMENT VOLUME CALCULATIONS

SOLIDIFICATION AREA CONTAINMENT WILL PROVIDE STORAGE TO CONTAIN THE 25-YEAR, 24-HOUR STORM EVENT (7.88 INCHES).

VOLUME OF 25-YR, 24-HR STORM = 7.88 INCHES x STORAGE AREA
= (7.88"/12") x 4,675 ft^2
STORAGE = 3,070 ft^3

VOLUME PROVIDED BY THE SOLIDIFICATION AREA:
VOLUME OF SOLIDIFICATION AREA=(25 ft. X 13 ft. X 13.5 ft.) x 4 basins
=4,387.5 ft^3 x 4
TOTAL CAPACITY=17,550 ft^3

VOLUME OF LIQUID IN THE SOLIDIFICATION AREA AT WORKING CAPACITY:
VOLUME OF WORKING CAPACITY=(25 ft. X 13 ft. X 10 ft.) x 4 basins
=3,250 ft^3 x 4
WORKING CAPACITY=13,000 ft^3

VOLUME NEEDED FOR THE REQUIRED 1 FOOT OF FREEBOARD PER TANK:
VOLUME OF 1 FOOT FREEBOARD=(25 ft. X 13 ft. X 1 ft.) x 4 basins
=325 ft^3 x 4
FREEBOARD=1,300 ft^3

VOLUME PROVIDED FOR THE 25-YR, 24-HR STORM EVENT AND 1 FOOT OF FREEBOARD PER TANK:
=TOTAL CAPACITY – WORKING CAPACITY
=17,550 ft^3 – 13,000 ft^3
=4,550 ft^3

VOLUME PROVIDED (4,550 ft^3) > VOLUME REQUIRED (STORAGE + FREEBOARD)
VOLUME PROVIDED (4,550 ft^3) > VOLUME REQUIRED (3,070 ft^3 + 1,300 ft^3)
VOLUME PROVIDED (4,550 ft^3) > VOLUME REQUIRED (4,370 ft^3)

THE VOLUME PROVIDED BY THE SOLIDIFICATION AREA IS GREATER THAN THE VOLUME OF THE 25-YR, 24 HR STORM EVENT AND 1 FOOT OF FREEBOARD.

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DATE: 08/2024
FILE: 0120-809-11
CAD: 3-BULKING FACILITY SECTIONS.DWG

DRAWN BY: SRF
DESIGN BY: MB
REVIEWED BY: CRM

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OPTION A
BULKING FACILITY SECTIONS

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DRAWING 3

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KYLE D. GOULD
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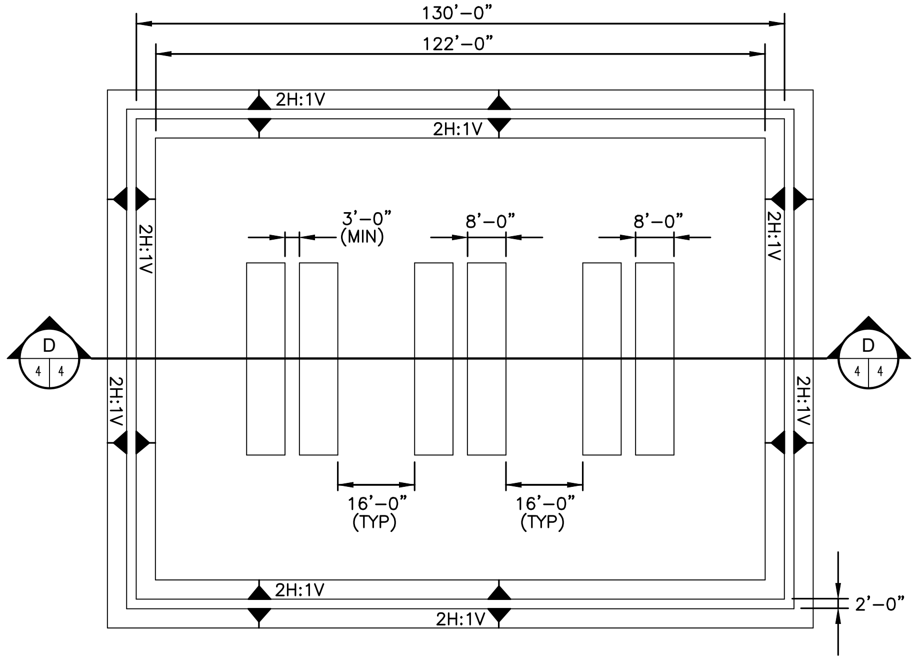
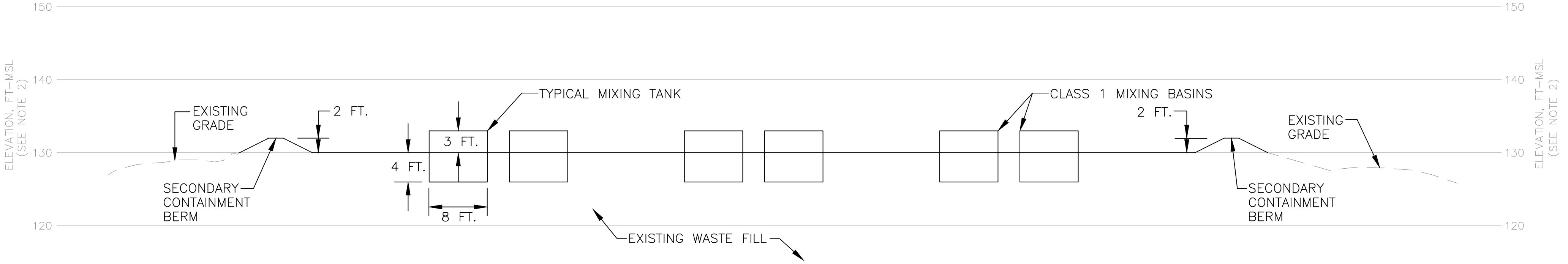
02/28/2025



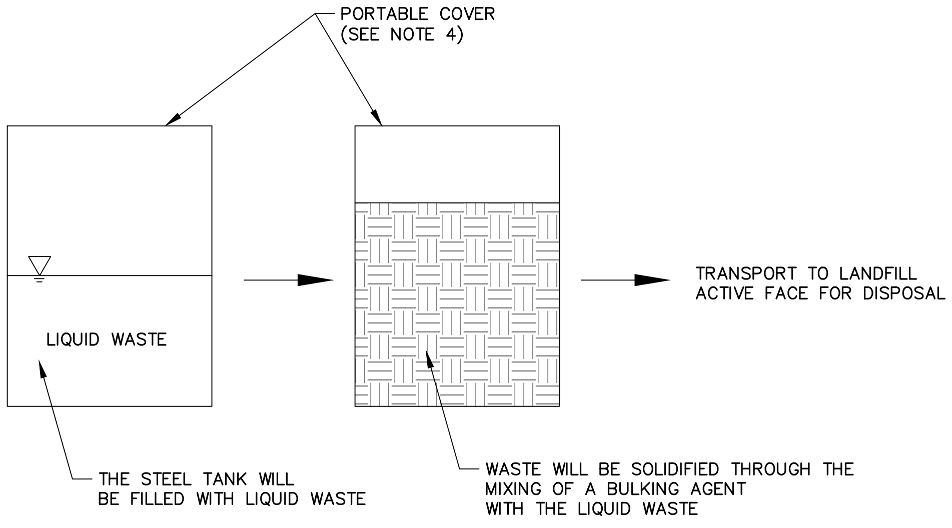
LIQUID WASTE BULKING FACILITY
TYPICAL SECONDARY CONTAINMENT AREA PLAN
C 4 4

0 20 40
SCALE IN FEET



LIQUID WASTE BULKING FACILITY
TYPICAL SECONDARY CONTAINMENT AREA SECTION
D 4 4

0 10 20
SCALE IN FEET



FLOW DIAGRAM

SECONDARY CONTAINMENT VOLUME CALCULATIONS FOR MIXING TANK

LIQUID WASTE BULKING FACILITY AREA SECONDARY CONTAINMENT WILL PROVIDE STORAGE TO CONTAIN EITHER THE VOLUME OF THE LARGEST TANK (16,755 GALLONS) OR THE 25–YEAR, 24 HOUR STORM EVENT (7.88 INCHES), WHICHEVER IS LARGER.

VOLUME OF LARGEST TANK = 16,755 gal x $\frac{1\ ft^3}{7.481\ gal}$ = 2240 ft^3

VOLUME OF 25–YEAR 24 HR STORM = 7.88 INCHES x STORAGE AREA
= (7.88"/12") x (100 ft x 130 ft)
= 8,536 ft^3

PROVIDE STORAGE FOR 8,536 ft^3. VOLUME PROVIDED BY 1 FOOT OF THE CONTAINMENT BERM = 1 ft x 100 ft x 130 ft = 13,000 ft^3

VOLUME PROVIDED (13,000 ft^3) > VOLUME REQUIRED (8,536 ft^3)

THE VOLUME PROVIDED BY THE 2 FT. BERM IS GREATER THAN THE VOLUME OF TANK AND THE 25–YR, 24 HR STORM EVENT.

THE BERM PROVIDES FOR ONE FOOT OF FREEBOARD.

NOTES:

1. ALL SIZES AND DIMENSIONS ARE APPROXIMATE. THE SOLIDIFICATION AREA WILL BE NO LARGER THAN 130 FEET BY 130 FEET. STEEL BASINS WILL BE CONSTRUCTED OF 12 GAUGE STEEL (MINIMUM).
2. ELEVATIONS ARE SHOWN FOR SCALE PURPOSES ONLY, ACTUAL ELEVATIONS MAY VARY.
3. BULKING AGENT MATERIAL WILL BE STORED WITHIN THE SECONDARY CONTAINMENT BERM.
4. THE BASINS OR TANKS WILL BE COVERED WHEN NOT IN USE WITH A PORTABLE SYNTHETIC DAILY COVER OR A FITTED, RIGID COVER TO EXCLUDE RAINFALL FROM FROM THE BASIN AND CONTROL ODOR AND VECTORS.

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DATE: 08/2024
FILE: 0120–809–11
CAD: 4–TANK SECTIONS.DWG

DRAWN BY: SRF
DESIGN BY: JPI
REVIEWED BY: CRM

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OPTION B
LIQUID WASTE BULKING FACILITY PLAN

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