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.

# General Information

Facility Name:

MSW Permit No.:

Site Operator/Permittee Name:

# Landfill and Other Waste Management Units and Operations Requiring Closure at the Facility

## Facility Units

Table . 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 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
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|  |  |  |  |  |  |  |  |  |
| Totals |  |  |  |  |  | enter total waste footprint | enter total max inventory |  |

Table . 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) |
| --- | --- | --- | --- | --- |
|  |  |  | cubic yards tons |  |
|  |  |  | cubic yards tons |  |
|  |  |  | cubic yards tons |  |
|  |  |  | cubic yards tons |  |
| Totals |  | enter total size of areas used for storage or processing or operation here | enter total maximum inventory of waste here |  |

## Waste Inventory Summary

Table . 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) | cubic yards or tons |
| Maximum inventory of waste in storage or processing units or operations (total from Table 2) | 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) | cubic yards or tons |

## Drawings Showing Details of the Waste Management Units at Closure

Table . 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 |
| --- | --- | --- | --- |
|  |  |  | e.g., outlines , waste footprints, and dimensions of the landfill unit(s) |
|  |  |  | e.g., maximum elevations of waste and final cover of the landfill unit(s) |
|  |  |  | e.g., outlines and dimensions of the storage and processing unit(s) |

# Description of the Final Cover System Design

## Types and Descriptions of the Final Cover Systems

Table . 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) |
| --- | --- | --- | --- |
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## Design Details

Table . 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) |
| --- | --- | --- | --- | --- | --- |
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## 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):

## 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 , 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: %. 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 . 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) |
| --- | --- | --- | --- | --- | --- | --- |
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## Final Contour Map

Figure , a facility final contour map is attached. The map shows the final contours of the landfill units and the entire facility at closure.

Figures  and  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):

# Description of the Final Cover System Installation Procedure

## Mode of Installation

Table . 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 |
| --- | --- | --- | --- | --- |
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## 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 . List of Attached Installation Drawings for Final Cover and Drainage Features.

| Drawing No. | Drawing Title | Description of Information Contained in Drawing |
| --- | --- | --- |
|  |  | (e.g., final cover cross section details with references to base drawings) |
|  |  | (e.g., the largest area ever requiring final cover) |
|  |  | (e.g., details of the sequence final cover system installation) |
|  |  | (e.g., details of all drainage features on the final cover) |
|  |  | Other: describe as applicable |

## Final Cover Quality Control Plan

A final cover quality control plan (FCQCP), Attachment , 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.

## 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.

# Closure Activities and Completion Schedules for Each Landfill Unit and for the Final Facility Closure

## 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.

1. 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.

1. 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:

1. All applicable documentation necessary to demonstrate that the unit has the capacity to receive additional waste; and
2. 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.
3. 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.

1. 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.

1. 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.

1. 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.

1. 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.

1. 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.

1. 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:

1. Closure Inspection

A written request to the local TCEQ regional office for a closure inspection of the unit.

1. 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.

1. 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.

1. 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.

1. 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.

1. Closure Schedule for the Landfill Unit:

A closure schedule, Figure      , is attached. 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.

1. Other: (enter as applicable).

## 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.

## 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:

1. 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.

1. 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       (state public place within the area, including address, where the plan will be available for public access and review).

1. 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.

1. 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:

1. 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.

1. 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.

1. 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:

1. 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.

1. 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.

1. 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.

1. 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:

1. A certified copy of the "Affidavit to the Public";
2. A certified copy of the modified deed to the facility property; and
3. 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.

1. Other

Additional items relating to the schedule for final facility closure, and additional closure activities specific to the final closure of this facility include:

1. 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.

1. Final Closure Schedule for the Facility:

The attached Figure      , 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.

# Summary of Attachments

## Drawings and Maps

The following Drawings and Maps are attached as part of this plan.

* Figure      , Final Contour Map.
* Figures      , Cross-Section Drawings of the Landfill Units at Closure.
* Figures      , Final Cover and Drainage Features Installation Drawings.
* Other Drawings/Maps: Figures

## Documents

* Attachment      , Final Cover Quality Control Plan (FCQCP).
* Attachment      , Landfill Unit Closure Schedule Chart.
* Attachment      , Final Closure Schedule Chart.
* Other: Attachment

## Additional Items Attached (enter as applicable)

# Professional Engineer’s Statement, Seal, and Signature

Name:

Title:

Date:

Company Name:

Firm Registration Number:

Professional Engineer’s Seal

Signature