1. CLOSURE PLAN

1.1 Closure Plan

The requirements are contained in the North Carolina Solid Waste Management Regulations (15A NCAC 13B .0543) and in the Financial Assurance Rule of Solid Waste Management Facilities (15A NCAC 13B .0546) require that a closure and post-closure plan be submitted to the North Carolina Department of Environment and Natural Resources (NCDENR) Division of Waste Management that details the activities that will be performed to satisfy the requirements of these regulations.

1.2 Closure Plan – 15 NCAC 13B .0543

All construction and demolition landfill facility (C&DLF) owners/operators shall prepare a closure plan that describes the steps necessary to close a C&DLF at any point during its active life as well as the steps necessary to facilitate final closure. In providing this information, the closure plan will assist the North Mecklenburg C&D Landfill – Infill Expansion in achieving the goals of closure implementation, which are: prevent exposure of the disposed waste, minimize precipitation infiltration, and control the emission of landfill gas in order to protect human health and the environment. Specifically, this closure plan establishes: design criteria for the final cover system, a description of the landfill gas collection system, a closure sequence and construction schedule, construction costs, and other information relating to closure.

1.3 Closure Schedule – 15 NCAC 13B .0543(d)(4)

The proposed closure schedule and estimated maximum area and inventory of waste is included as Table1-1. In accordance with 15 NCAC 13B .0543(c)(5) the landfill facility may conduct partial closure of a portion of the C&DLF upon reaching final waste grades.

Table 1-1. Inventory of Waste and Estimated Life

Landfill Area	Total Airspace	Disposal Airspace	Estimated Waste Density	Estimated Disposal Tonnage	Annual Waste Disposal	Anticipated Landfill Life
16.2 acres	1,041,000 yd^3	949,631 yd^3	1,200 lbs/yd^3	569,800 tons	120,000 tons	4.75 years

1.4 Closure Performance Standard –15A NCAC 13B .0543(c)(1)

The landfill final cover system is designed to minimize infiltration of precipitation and erosion and the need for post-closure maintenance.

1.5 Landfill Closure – 15A NCAC 13B .0543

1.5.1 Plan Sheets

Closure Plan Engineering Drawings are provided in Appendix A of the Facility Plan showing cover layers and thickness, final slope topography, stormwater management, erosion and sediment controls, and associated details.

1.5.2 Closure Cap Description

The following provides a description of each layer of the landfill closure cap system. Details for the cap system are provided in the Engineering Drawings included in Appendix A of the Facility Plan.

- The cap system will consist of the following layers (listed from top to bottom):
  - An 18-inch Erosion Soil Layer consisting of soil capable of supporting native plant growth and designed to maintain vegetative growth over the landfill; and,
  - An 18-inch Low-Permeability Soil Barrier Layer to minimize infiltration of precipitation through the closed landfill.

1.5.3 Intermediate/Operational Soil Cover

A 12-inch intermediate/operational soil cover layer will be placed over the in-place waste prior to placement of the cap system. The intermediate/operational soil cover layer will be placed in such a manner as to protect the integrity of the in-place waste and landfill closure cap system.

1.5.4 Soil Cap Construction

The closure cap system for the Greenway Waste Solutions at North Meck, LLC facility shall be constructed in accordance with the requirements within this plan and the Engineering Drawings included in Appendix A of the Facility Report.

1.5.5 Low-Permeability Soil Barrier Layer

The closure cap system low permeability soil barrier layer shall have a maximum permeability less than or equal to soils underlying the landfill or $1.0 * 10^{-5}$ cm/sec, whichever is less.

1.5.6 Final Closure Slopes

The closure cover system will accommodate the differential settlement anticipated to occur during the post-closure period. The closure cover system will be placed on a slope of no less than 5 percent to promote positive drainage and at a maximum slope of 33 percent. A closure system slope stability evaluation including calculations was completed for determining the static and seismic stability of the landfill final cover system and waste mass and is included in Appendix D of the Engineering Plan. The stability evaluation concluded that the final cover system and waste mass met Federal EPA's guidance document 600/R-95/051 minimum factors of safety against slope failures of 1.5 for static loading and 1.0 for earthquake loading.

1.5.7 Stormwater Management and Erosion and Sediment Control

Proposed stormwater management and erosion and sediment control for the final closure conditions includes side-slope terrace benches, downchute inlets and piping, perimeter channels, sediment basins and sediment basin inlet and outlet structures, silt fencing and rip-rap aprons.

Applicable regulations and guidance used in the design of the erosion and sediment control system include the North Carolina Erosion and Sediment Control Planning and Design Manual dated June 1, 2006. Plan and detail drawings for the stormwater management and erosion and sediment control systems are provided in Appendix A of the Facility Plan. Specific stormwater management and erosion and sedimentation control design information and calculations are provided in Appendix F of the Engineering Plan.

1.5.8 Landfill Gas Management

In accordance with 15 NCAC 13B .0543(c)(2)(B) a passive gas venting system will be installed as part of the final closure cap system to minimize pressures exerted on the low-permeability soil barrier layer of the cap system. The approximate locations and details of the venting system are provided in the Engineering Drawings included in Appendix A of the Facility Plan.

1.5.9 Construction Quality Assurance

Procedures, observations, and tests required during construction of the landfill closure cap system are included in the Construction Quality Assurance Plan in the Permit to Construct.

1.6 Schedule for Landfill Closure – 15 NCAC 13B .0543(c)(5)

The Greenway Waste Solutions at North Meck, LLC facility will be developed incrementally in three phases. The general intent is to construct phases within the landfill as needed. Phases 2 and 3 of the Facility's three planned phases is simply a vertical expansion of Phase 1. The existing expansion was permitted to construct by the North Carolina Department of Environment and Natural Resources – Division of Waste Management (NCDENR-DWM) in October 26, 2006, under Permit Number 60-13. The proposed phased development is consistent with the permitted facility boundary.

Final landfill closure procedures will begin when the filling operations have reached the proposed final waste grades. An estimate of landfill area that has reached final waste grade will be determined annually by a surveyor during the active life of the facility.

Upon reaching final waste grades, all areas will be covered with a minimum of 12 inches of intermediate/operational soil and then seeded. These areas will be inspected quarterly and after every major storm event for excessive erosion, and will be repaired accordingly. These areas will be maintained until the construction of the closure cap system.

The landfill facility is anticipated to be closed with a cap system as shown on the proposed closure schedule provided in Table 1-1. The cap system construction will be initiated when waste placement reaches final grades. The facility will perform an aerial survey each year and will determine areas that have reached final waste grade elevation.

Table 1-1 presents a schedule for completing all activities necessary to satisfy the closure criteria. The schedule presented in Table 1-1 is based upon the final waste grades presented in the Drawings included in the Greenway Waste Solutions at North Meck, LLC facility Operations Plan. This schedule does not reflect any variations to the filling rate or filling sequence which are likely to occur during the life of the facility.

When the landfill has reached final waste grades the Greenway Waste Solutions at North Meck, LLC facility shall initiate the closure process no later than 30 days after the final receipt of waste. However, if the area has not reached permitted final grades and there is reasonable likelihood that additional waste will be received, then closure activities must begin no later than 1 year after the most recent receipt of wastes. The Division of Waste Management may grant extensions beyond the 1 year deadline for beginning closure if the Greenway Waste Solutions at North Meck, LLC facility demonstrates the area has additional capacity and the facility has implemented measures to protect human health and the environment.

According to 15 NCAC 13B .0543(c)(6), the Greenway Waste Solutions at North Meck, LLC facility shall complete all closure activities of each C&DLF unit in accordance with the closure plan within 180 days following the beginning of closure activities. Extensions of the closure period may be granted by the Division of Waste Management if the Greenway Waste Solutions at North Meck, LLC facility demonstrates that closure will, of necessity, take longer than 180 days and the facility has taken and will continue to take all steps to prevent threats to human health and the environment from the unclosed C&DLF unit.

1.7 Security and Posting

The site security fencing around the perimeter of the landfill facility property will be maintained. All gates will remain locked to prevent unauthorized entry to the site. The site will be properly posted with signage to clearly delineate the limits of the landfill.

1.8 Closure Certification – 15 NCAC 13B .0543(c)(7)

Upon closure of the C&DLF, North Mecklenburg C&D Landfill – Infill Expansion will provide a certification from a North Carolina registered professional engineer verifying that the closure activities have been completed in accordance with the regulatory approved closure plan. The certification will be submitted with the results of the construction quality assurance program.

1.9 Notification – 15 NCAC 13B .0543(c)(8)

In accordance with 15 NCAC 13B .0543(c)(8), following closure of all C&DLF units, Greenway Waste Solutions at North Meck, LLC shall record a notation on the deed to the landfill facility property, or some other instrument that is normally examined during title search, and notify the Division of Waste Management that the notation has been recorded and a copy has been placed in the facility's operating record. The notation on the deed shall, in perpetuity, notify any potential purchaser of the property that the land has been used as a landfill facility and that its future use is restricted to the planned post-closure property uses presented in the post-closure plan. Greenway Waste Solutions at North Meck, LLC will also notify Mecklenburg County's Register of Deeds office as the local land recording authority.

1.10 Financial Assurance – 15 NCAC 13B .0543(d)(5)

A cost estimate for hiring a third party to close the entire 16.2 acre Greenway Waste Solutions at North Meck, LLC facility has been prepared and included in Appendix A. Each year, the estimate will be adjusted according to the areas of the landfill that are operational and closed, for inflation and to reflect any changes to the closure plan.