CIVIL/SANITARY/ENVIRONMENTAL ENGINEERS

Municipal Services

SITE PLANNING/SUBDIVISIONS

SOLID WASTE MANAGEMENT

Engineering Company, P.A.

SUBSURFACE UTILITY ENGINEERING (SUE)

September 9, 2010

Fac/Perm/Co ID #	Date	Doc ID#
96-01	08/11/2011	DIN 11747

10/06/2011

Ming-Tai Chao, P.E.
Environmental Engineer II
NCDENR – Solid Waste Section
401 Oberlin Rd.
Raleigh, NC 27605

Re: Application for Permit to Continue Operation
Wayne County C & D Landfill, Permit No. 9601-CDLF-1997

Dear Mr. Chao:

In response to your July 19. 2010 letter, we submit the following:

Section 1 – Operation Plan

Response to NCDENR Comment Numbers 1:

We have revised the text in Section 1.1. ✓

RECEIVED SOLID WASTE SECTION SEP 17 2010

Response to NCDENR Comment Number 2:

We have revised the text in Section 1.1.

Response to NCDENR Comment Number 3:

We have revised the text in Sections 1.1 and 1.2.

Response to NCDENR Comment Number 4:

We have revised the text in Sections 1.1 and 1.4, and the drawings in Appendix A.

Response to NCDENR Comment Number 5:

We have revised the text in Sections 1.1 and 1.3, and the drawings in Appendix A.

Response to NCDENR Comment Number 6:

We have revised the text in Section 1.2.

Response to NCDENR Comment Number 7:

We have revised the text in Section 1.2.

Response to NCDENR Comment Number 8:

We have revised the text in Section 1.2. There is no written documentation of local fire protection. In the event of a fire, the landfill operator(s) will dial 911. Thoroughfare Volunteer Fire Department is located approximately 2 miles away and will provide the required services. Appendix D has been added to reference all state and local contact information.

Response to NCDENR Comment Number 9:

We have revised the text in Section 1.2.

Response to NCDENR Comment Number 10:

We have revised the text in Section 1.2.

Response to NCDENR Comment Number 11:

We have revised the text in Section 1.2.

Response to NCDENR Comment Number 12:

We have revised the text in Section 1.2.

Response to NCDENR Comment Number 13:

We have included the As-Built Survey by Surveying Solutions, PC, for the Wayne County Gas Collection and Control system, for your use in Appendix A.

Section 2 – Closure Plan

Response to NCDENR Comment Number 14:

The text has been revised to address this issue.

Response to NCDENR Comment Number 15:

The text has been revised, we will be using the gas venting system in addition to the LFGCC system.

Response to NCDENR Comment Number 16:

We have revised the text.

Response to NCDENR Comment Number 17:

We are not installing any new LFGCC components. The goal is to abandon all Title V wells 15 years after their installation. The text has been revised to address this, and the cost estimates have been revised in Section2.7 (originally Section 2.6).

Response to NCDENR Comment Number 18:

The text has been revised in Section 2.2.

Response to NCDENR Comment Number 19:

The text has been revised in Section 2.3.

Response to NCDENR Comment Number 20:

The text has been revised in Section 2.4.

Response to NCDENR Comment Number 21:

The text has been revised in Section 2.7 (originally Section 2.6).

Response to NCDENR Comment Number 22:

Text has been added to Section 2.6 to address the CQA report .

Section 3.0 – Post-Closure

Response to NCDENR Comment Number 23:

Text has been added to Section 3.1.

Response to NCDENR Comment Number 24:

The text has been revised to address Closure of the LFGCC system and the Post-Closure Cost have been revised to reflect this addition.

Response to NCDENR Comment Number 25:

Text has been added to Section 3.1.

Response to NCDENR Comment Number 26:

The text has been revised in Section 3.2 to address these concerns.

Section 4 – Financial Responsibilities

Response to NCDENR Comment Number 27 and 28:

The County is in the process of revising these documents and they will forward you these items directly.

Figures

Response to NCDENR Comment Number 29:

The drawings have been revised to reflect these additions.

Response to NCDENR Comment Number 30:

The County has already filled in the haul road to address the compliance concerns. This five year fill plan was based on the conditions at the site at the time of the original submittal, however, we have revised the fill sequences beginning with "3rd Year Fill Plan" to show the haul road filled in. The County is actually already into the 3rd year fill plan now.

Appendix B – Local Government Approvals

Response to NCDENR Comment Number 31:

We have added Appendix E for the "Written Facility Plan" and the Facility Drawings have been added to Appendix A with the rest of the drawings.

Response to NCDENR Comment Number 32:

This information has been provided on the Facility Drawings and in the Written Facility Plan.

Response to NCDENR Comment Number 33:

Your interpretation of the Closure drawing is incorrect, therefore we have provided the Facility Plan Drawings and text to address this. The closure drawings show only the conditions for the five year permit renewal, should the County decide to close after Phase 2 is complete. The facility plan drawings show the additional phases yet to be permitted. The requested charts have been shown on the facility drawings.

Response to NCDENR Comment Number 34:

The requested chart has been shown on sheet 3 of 9 in the facility drawings. A copy of the deed has been placed in Appendix A.

Appendix C – Waste Screening Plan

Response to NCDENR Comment Number 35:

The text has been revised in Appendix C to correct the typographical errors.

Response to NCDENR Comment Number 36:

We have added "Appendix D – State and Local Contact Information".

Please find enclosed two (2) copies of the revised plans and text. If you have any questions or need additional information please don't hesitate to give us a call.

Sincerely,
MUNICIPAL ENGINEERING SERVICES CO., PA

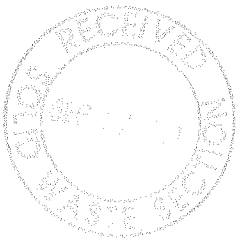
Lisa C. Hampton
Designer

LCH:lch
Enclosures
cc: Tim Rogers, Solid Waste Director, Wayne County

PERMIT APPLICATION FOR CONTINUED OPERATION

Wayne County Construction and Demolition Landfill Facility

Permit No.: 9601-CDLF-1997

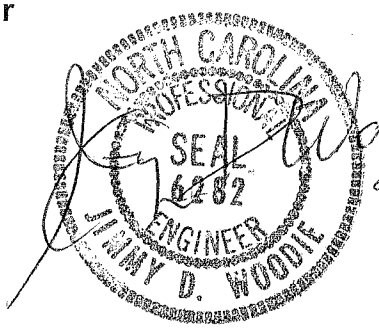


Site Location: 460B South Landfill Rd.
Dudley, NC 28333

Applicant: Wayne County

Applicant's Address: 224 E. Walnut St., 3rd Floor
Goldsboro, NC 27530

MESCO Project Number
G07058



9/13/2010

Revised August 2010
Revised July 2009
Revised April 2009
June 2008

Submitted By:

Municipal Engineering Services Company, P.A.

Garner	Boone	Morehead City
P.O. Box 97	P.O. Box 349	P.O. Box 828
Garner, NC 27529	Boone, NC 28607	Morehead City, NC 28557
(919) 772-5393	(828) 262-1767	(252) 726-9481

Corporate License #: C-0281

Table of Contents

Section 1.0 - Operation Plan.....3-16

Section 2.0 - Closure Plan.....17-25

Section 3.0 - Post-Closure Plan.....26-29

Section 4.0 - Financial Responsibility.....30

Appendix A – Facility, Engineering/Operation and Closure Drawings.....31

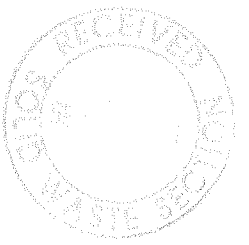
Appendix B – Local Government Approval.....32

Appendix C – Waste Screening Plan.....33

Appendix D – State and Local Contacts.....43

Appendix E – Written Facility Plan.....45

OPERATION PLAN



County of Wayne
Solid Waste Department

Tim Rogers
Director

460B South Landfill Rd.
Dudley, NC 28333

Statement of Purpose

The purpose for this application is to continue the operation of our existing Construction and Demolition (C&D) Landfill which is on top of a Municipal Solid Waste (MSW) Landfill. The air space that is available on top of the old MSW Landfill for the disposal of the C&D waste is very valuable. Utilizing the space on top of the MSW Landfill prevents the need to develop another area within our landfill property or on other property. The landfill property can be used for additions to our MSW Landfill. Also, if we move to another site, we are creating another brown field that is not necessary. Furthermore, we do not have to use valuable MSW landfill space to dispose of C&D waste. The space on top of the closed landfill is available for several years, and we need to be able to continue to utilize this space.

Tim Rogers
Solid Waste Director
Wayne County

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AUG 07
Municipal Engineering Services
Company

See CAP "Introduction"

1.1 Introduction

Wayne County will continue to operate a Construction and Demolition Landfill (C&DLF) within the permitted boundaries and upon closed sections of the present municipal solid waste landfill. The sections are limited to areas that stopped receiving waste prior to October 9, 1991 and have two feet of final cover.

The County will implement a program at the landfill for detecting and preventing the disposal of hazardous and liquid wastes. The program consists of random inspection of incoming loads at a minimum of 1% of the weekly traffic. Landfill personnel will be trained to recognize hazardous and liquid wastes. Records will be kept on the training and the inspections. See Appendix C for detailed plan.

The County will monitor for explosive gases at landfill structures and the perimeter of the landfill. The concentration of methane gases generated by the landfill cannot exceed 25 percent of the lower explosive limit for methane in the structures, and it cannot exceed 100 percent of the lower explosive limit for methane of the landfill property boundary. If methane gas is found to exceed the acceptable limits at either the property boundary or landfill structures, it is the County's responsibility to do the following:

1. Immediately take all necessary steps to ensure protection of human health, (i.e. no smoking etc.) temporarily abandon the structure and notify the Division of Waste Management (Division).

2. Within seven days of detection, place in the operating record the methane gas levels detected and a description of the steps taken to protect human health; and

3. Within 60 days of detection, implement a remediation plan for the methane gas releases, place a copy of the plan in the operating record, and notify the Division that the plan has been implemented. The plan will describe the nature and extent of the problem and the proposed remedy.

See Section 1.4 for the Explosive Gas Control Plan.

Off-site and on-site erosion will be controlled through erosion control structures and devices. Provisions for a vegetative ground cover sufficient to restrain erosion will be accomplished within 30 working days or 120 calendar days upon completion of any phase of landfill development.

The County will record and retain at the landfill an operating record of the following information:

(1) Inspection records, waste determination records, and training procedures;

(2) Amounts by weight of solid waste received at the landfill;

(3) Gas monitoring results and any remediation plans;

(4) Any demonstration, certification, findings, monitoring, testing or analytical data required for surface and groundwater monitoring;

(5) Any monitoring, testing or analytical data required for closure or post-closure;

(6) Any cost estimates and financial assurance documentation.

All information contained in the operating record will be furnished upon request to the Division or be made available at all reasonable times for inspection by the Division.

Ground and surface water will be sampled and analyzed according to Subtitle D Appendix I detection monitoring requirements. The monitoring frequency for all Appendix I detection monitoring constituents will be at least semiannual during the life of the facility (including closure) and the post-closure period. A minimum of four independent samples from each well (background and downgradient) will be collected and analyzed for the Appendix I constituents during the first semiannual sampling event. At least one sample from each well (background and downgradient) will be collected and analyzed during subsequent semiannual sampling events. See Section 1.3 for the Ground water and Surface water Sampling and Analysis Plan.

If the County determines that there is a statistically significant increase over background for one or more of the constituents listed in Appendix I at any monitoring well at the relevant point of compliance, the County will, within 14 days of the finding, report to the Division and place a notice in the operating record indicating which constituents have shown statistically significant changes from background levels. The County will establish an assessment monitoring program within 90 days. The County may demonstrate that a source other than the landfill caused the contamination or that the statistically significant increase resulted from an error in sampling, analysis, statistical evaluation, or natural variation in ground-water quality. A report documenting these demonstrations will be certified by a Licensed Geologist or Professional Engineer and approved by the Division. A copy of this report will be placed in the operating record. If a successful demonstration is made, documented, and approved by the Division, the County may continue detection monitoring. If after 90 days, a successful demonstration is not made, the County will initiate an assessment monitoring program.

1.2 Operational Requirements

1. Waste Acceptance and Disposal Requirements

   a. The Construction and Demolition Landfill (C&DLF) will only accept those solid wastes which it is permitted to receive. The County will notify the Division within 24 hours of attempted disposal of any waste the landfill is not permitted to receive.

   b. Asbestos waste will be managed in accordance with 40 CFR 61. The regulated asbestos waste will be covered immediately with soil in a manner that will not cause airborne conditions and will be disposed of separate and apart from other solid waste, as:

      i. in a defined isolated area within the footprint of the landfill, or

      ii. in an area not contiguous with other disposal areas. Separate areas will be designated so that asbestos will not be exposed by future land-disturbing activities.

   c. Wastewater treatment sludges may be accepted, with the approval of the Division, either as a soil conditioner incorporated into or applied onto vegetative growth layer. The wastewater treatment sludge will neither be applied at greater than agronomic rates nor to a depth greater than six inches.

   d. Asphalt in accordance with G.S. 130-294(m) will be accepted;

   e. Inert debris from any source that is defined as solid waste which consists solely of material that is virtually inert, such as brick, concrete, rock and clean soil will be accepted;

   f. Construction materials, that could or would be part of any construction, remodeling, repair or demolition of pavement, buildings or other structures, from solid waste that is generated by mobile or modular home manufacturers and asphalt shingle manufacturers in Wayne County. The waste must be source separated at the manufacturing site and must exclude municipal solid waste, hazardous wastes, and other wastes prohibited from disposal in a C&DLF. It must be transported to Wayne

County C&DLF in a shipment or container that consists solely of the separated waste to be disposed of. Wayne County C&DLF will not accept this waste if it has not been separated or transported as specified.

g. Wooden pallets generated only from C&D activities.

h. The following wastes are prohibited from disposal at the C&DLF:

i. Containers such as tubes, drums, barrels, tanks, cans, and bottles unless they are empty and perforated to ensure that no liquid, hazardous or municipal solid waste is contained therein.

ii. Garbage as defined in G.S. 130A-290(a)(7).

iii. Hazardous waste as defined in G.S. 130A-290(a)(8), to also include hazardous waste from conditionally exempt small quantity generators.

iv. Industrial solid waste unless a demonstration has been made and approved by the Division that the landfill meets the requirements of Rule .0503(2)(d)(ii)(A).

v. Liquid wastes.

vi. Medical waste as defined in G.S. 130A-290(a)(18)

vii. Municipal solid waste as defined in G.S. 130A-290(a)(18a)

viii. Polychlorinated biphenyls (PCB) wastes as defined in 40 CFR 761

ix. Radioactive waste as defined in G.S. 104E-5(14)

x. Septage as defined in G.S. 130A-290(a)(32)

xi. Sludge as defined in G.S. 130A-290(a)(34)

xii. Special waste as defined in G.S. 130A-290(a)(40)

xiii. White goods as defined in G.S. 130A-290(a)(44)

xiv. Yard trash as defined in G.S. 130A-290(a)(45), shall not be disposed in the landfill area. However, yard trash, along with land-cleaning debris and wooden pallets(as defined below), may be accepted for processing in the "Yard Waste Area" as shown on the Engineering/Operation drawings.

xv. Wooden Pallets generated by means other than C&D activities

i. The following waste will not be received if separate from C&DLF waste: lamps or light bulbs including but not limited to halogen, incandescent, neon or fluorescent; lighting ballast or fixtures: thermostats and light switches; batteries including but not limited to those from exit and emergency lights and smoke detectors; lead pipes; lead roof flashing; transformers; capacitors; and copper chrome arsenate (CCA) and creosote treated woods.

j. Waste accepted for disposal in the C&DLF unit shall be readily identifiable as C&D waste and must not have been shredded, pulverized, or processed to such an extent that the composition of the original waste cannot be readily ascertained except in the case where the waste has come from a permitted recycling and reuse facility.

k. The County will not knowingly dispose any type or form of C&D waste that is generated within the boundaries of a unit of local government that by ordinance:

i. Prohibits generators or collectors of C&D waste from disposing that type or form of C&D waste.

ii. Requires generators or collectors of C&D waste to recycle that type or form of C&D waste.

l. The County has thirteen(13) recycling collation centers that have a variety of collection bins, including roll-offs and converted dumpsters. Six(6) collection centers have containers for white goods, metals, and furniture. Six(6) materials are collected: paper, aluminum cans, steel cans, glass, #1 and #2 plastics. Special wastes such as lead acid batteries, used oil and oil filters are also collected at the sites. All recyclables are hauled directly from these site to Wayne Opportunity Center with the exception of glass, which is hauled to Strategic Materials. Metal, white goods, and batteries are hauled to Kemp Recyclers. Used oil and oil filters are picked up by FCC Environmental at the collection centers and the landfill. No recyclables are stored at these sites they are hauled directly as the collection bins are filled.

2. Cover material requirements.

a. Except as in Subparagraph (c), the County must cover the solid waste with six inches of earthen material when the waste disposal area exceeds one-half acre and at least once weekly. Cover must be placed at more frequent intervals if necessary to control disease vectors, fires, odors, blowing litter and scavenging. A notation of the date and time of the cover placement must be recorded in the operating record, as specified in Paragraph 10 in this section.

b. Except as in Subparagraph (c), areas which will not have additional wastes placed on them for three months or more, but where final termination of disposal operations has not occurred, will be covered and stabilized with vegetative ground cover or other stabilizing material. Ample cover material is available from additional property owned by the County.

thickness of Intermediate cover

c. Alternative material or an alternative thickness of cover may be used, if the County demonstrates that the alternative material or thickness controls disease vectors, fires, odors, blowing litter, and scavenging without presenting a threat to human health and the environment, and is approved by the Division.

3. Spreading and compacting requirements.

a. C&DLF units will restrict solid waste to the smallest area feasible.

b. Solid waste will be compacted as densely as practical into cells.

c. Fencing and/or diking will be provided within the area to confine solid waste which is subject to be blown by the wind. At the conclusion of each operating day, all windblown material resulting from the operation will be collected and disposed of by the County.

4. Disease vector control

   a. The County will prevent or control on-site populations of disease vectors using techniques appropriate for protection of human health and the environment.

   b. "Disease vectors" means any rodents, flies, mosquitoes, or other animals, including insects, capable of transmitting disease to humans.

5. Air Criteria and Fire Control

   a. The County will ensure that the units do not violate any applicable requirements developed under a State Implementation Plan (SIP) approved or promulgated by the U.S. EPA Administrator pursuant to Section 110 of the Clean Air Act, as amended.

   b. Open burning of solid waste, except for the approved burning of land clearing debris generated on-site or debris from emergency clean-up operations, is prohibited at all C&DLF facilities. *Prior to any burning a request will be sent to the Division for review and approval. In addition, the Division of Air Quality and local fire department must approve the activity prior to burning.* The Division will determine the burning to be approved if it is one of two types of burning previously referenced. A notation of the date of approval and the name of the Division personnel who approved the burning must be included in the operating record.

   c. Equipment will be provided to control accidental fires. In the event of an emergency the operator(s) will call 911. Thoroughfare Volunteer Fire Department is located 2 miles away and the nearest fire hydrant is within a ¼ mile. Fire extinguishers are located in all buildings and on all equipment. Dirt piles are also on site to use in emergency situations.

   d. Fires and explosions that occur at the C&DLF require verbal notice to the Division within 24 hours and written notification within 15 days. Written notification must include the suspected cause of fire or explosion, the response taken to manage the incident, and the action(s) to be taken to prevent the future occurrence of fire or explosion.

6. Access and safety requirements

   a. The C&DLF will be adequately secured by means of gates, chains, beams, fences and other security measures approved by the Division to prevent unauthorized entry.

   b. An attendant will be on duty at the site at all times while it is open for public use to ensure compliance with operational requirements.

   c. The access road to the site and monitoring locations will be of all-weather construction and maintained in good condition.

   d. Dust control measures will be implemented when necessary. If dust problems should arise, the County will use any reasonable means necessary to reduce it. At a minimum the County will spray water on necessary areas.

   e. Signs providing information on tipping or disposal procedures, the hours during which the site is open for pubic use, the permit number and other pertinent information will be posted at the site entrance.

   f. Signs will be posted stating that no hazardous or liquid waste can be received.

   g. Traffic signs or markers will be provided as necessary to promote an orderly traffic pattern to and from the discharge area and to maintain efficient operating conditions.

h. The removal of solid waste from the C&DLF will be prohibited unless the County has included in it's operational plan a recycling program which has been approved by the Division. The general public is prohibited from removal activities on the working face.

7. Erosion and Sedimentation Control Requirements

a. Adequate sediment control measures (structures or devices), will be utilized to prevent silt from leaving the landfill.

b. Adequate sediment control measures (structures or devices), will be utilized to prevent excessive on-site erosion.

c. Provisions for a vegetative ground cover sufficient to restrain erosion will be accomplished within **30 working days** or **120 calendar days** upon completion of any phase of landfill development.

8. Drainage Control and Water Protection Requirements

a. Surface water will be diverted from the operational area and will not be impounded over waste.

b. Solid waste will not be disposed of in water.

c. Leachate will be contained on site and properly treated prior to discharge.

d. The landfill will not:

(i) Cause a discharge of pollutants into waters of the United States, including wetlands, that violates any requirements of the Clean Water Act, including, but not limited to, the National Pollutant Discharge Elimination System (NPDES) requirements pursuant to Section 402.

(ii) Cause the discharge of a nonpoint source of pollution to waters of the United States, including wetlands, that violates any requirements of an area-wide or state-wide water quality management plan that has been approved under Section 208 or 319 of the Clean Water Act, as amended.

e. The County will inspect the exterior slopes of the landfill at least weekly to determine if there are any breakouts of leachate in the slopes. If any are discovered, they will be contained immediately to assure that they will not leave the site. The containment can consist but not be limited to an earthen berm, sand bags, erosion control logs and/or anything that will contain the leachate on the slope.

The repair of the breakout will require excavating into the cover soil on the slope down to the waste and into the waste to determine what is causing the leachate to come to the surface. Normally it is another layer of soil that has been used as cover and the leachate is flowing along that layer to the slope and surfacing on the slope. The lower layer of cover needs to be removed at the breakout so that the leachate that is flowing along this cover has a point where it will go vertically into the landfill instead of flowing along the soil boundary that was once either daily cover or an intermediate cover.

Once this soil layer has been breached, the excavation can be filed back with stone, clean waste or any material, other than soil, that will allow the leachate to flow

vertically instead of horizontally. Once the excavation has been filled with this material, the surface can be cover with soil so that surface water does not intrude into the excavation. Vegetative cover will be reestablished over the excavated area.

9. Survey for Compliance

Within 60 days of a permittee's receipt of the Division's written request, the permittee will have a survey conducted of active and/or closed portions of the unit(s) at the facility in order to determine whether operations are being conducted in accordance with the approved design and operation plans. The permittee must report the results of the survey, including a map produced by the survey, to the Division within 90 days of receipt of the Division's request.

a. A survey shall be required by the division:

(i) If there is reason to believe that the operations are being conducted in a manner that deviates from the plan listed in the effective permit, or

(ii) As verification that operations are being conducted in accordance with the plan listed in the effective permit.

b. Any survey pursuant to this Paragraph must be performed by a professional land surveyor duly authorized under North Carolina law to conduct such activities.

10. Record keeping Requirements

a. The County will record and retain at the facility, or an alternative location near the facility approved by the Division, in an operating record the following information as it becomes available.

(i) Inspection records, waste determination records, and training procedures;

(ii) Amounts by weight of solid waste received at the landfill to include source of generation.

(iii) Any demonstration, certification, findings, monitoring, testing or analytical data required for surface, groundwater and gas monitoring;

(iv) Any monitoring, testing, or analytical data required for closure or post-closure;

(v) Any cost estimates and financial assurance documentation;

(vi) Notation of date and time of placement of cover material; and,

(vii) All audit records, compliance records and inspection reports.

(viii) Notation of approval date and the name of the Division personnel who approved the type of the open burning; and

(ix) Approved monitoring plan and corrective action plans.

b. All information contained in the operating record will be furnished to the Division according to the permit or upon request, or be made available for inspection by the Division.

c. The operating record will also include a copy of the approved operation plan and all required permits.

1.3 Ground Water and Surface Water Sampling and Analysis Plan

Introduction

Objective

The objective of the Ground and Surface water Sampling and Analysis Plan is to provide clear guidelines and procedures for field and laboratory personnel when obtaining and testing ground and surface water samples. This plan is an update, and supersedes the November 1995 SAP for the Wayne County C&D Landfill on top of Closed MSW landfill. The sampling procedures outlined in this analysis plan are guidelines by which sampling will be performed. Deviation from the procedures may be warranted depending on facility conditions or unforeseen sampling variables. Alternative sampling procedures must conform to the N.C. Water Quality Monitoring Guidance Document for Solid Waste Facilities (Guidance Document).

All groundwater and surface water monitoring points shall be sampled semi-annually for the constituents listed in Appendix I and Appendix II. In addition to the Appendix I constituents monitoring wells MW-1, MW-2 and MW-8 will be sampled for the following suite of Monitored Natural Attenuation (MNA) parameters.

MNA Performance Parameters		
Parameter	**Analysis Type**	**Analytical Method**
Dissolved Oxygen (DO)	Field Reading	Multi-parameter Field Instrument w/ flow-through cell
pH	Field Reading	
Oxidation-Reduction Potential (ORP)	Field Reading	
Turbidity	Field Reading	
Conductivity	Field Reading	
Temperature	Field Reading	
Dissolved CO_2	Field Reading	Field Instrument / Hach Kit
Alkalinity (Total as $CaCO_3$)*	Laboratory/Field*	EPA 310.2
Chloride*	Laboratory/Field*	SM 4500-CLB
Iron	Laboratory	SM3111B
Nitrate*	Laboratory/Field*	EPA 353.2 / SM 2320B
Sulfate*	Laboratory/Field*	EPA 375.4 / SM 4500-SO4E
Sulfide*	Laboratory/Field*	EPA 376.1 or SM 4500SE
TOC/BOD/COD	Laboratory	EPA 415.1 / EPA 405.1 / EPA 410.1
Methane	Laboratory	RSK 175
Ethane, Ethene	Laboratory	RSK 175
Hydrogen	Laboratory	AM19GA
Volatile Fatty Acids	Laboratory	AM23G
*For budgetary considerations these analyses may be performed in the field using Hach® brand color wheel test kits.		

Water Quality Monitoring Summary

The nature of the groundwater flow, geology, location of Edwards Branch, and close proximity of several drainage features will require extensive monitoring for early detection of a landfill release. The monitoring plan consists of eight (8) monitoring wells numbered MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, MW-7, and MW-8 and three (3) surface monitoring points numbered SW-1, SW-2 and SW-3.

Monitoring well MW-1 is the background well located upgradient of the landfill. MW-2 is a downgradient monitoring well for the western portion; designed to intersect groundwater flow from the eastern portion prior to reaching the western tributary of Edwards Branch. MW-3 is a downgradient monitoring well in the northeastern portion of the western landfill. MW-4 is installed on the eastern half of the landfill to detect a potential release from the southeastern area via advection. MW-5 is a downgradient well utilized for the detection of a release from the middle of the landfill. MW-6 is a downgradient monitoring well located on the northeastern side of the landfill, positioned to detect a release from the landfill center. MW-7 is a downgradient monitoring well for the southernmost route of contamination. MW-8 is a downgradient monitoring well for the eastern unit.

Surface water sampling point SW-1 is located downstream of the landfill below the confluence of the two forks of Edwards Branch. Surface water sampling points SW-2 and SW-3 are located upstream of the landfill on the two separate forks of Edwards Branch.

Assessment Monitoring

Assessment Monitoring will be performed on MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, MW-7, and MW-8. Assessment monitoring will consist of collection of groundwater for analysis for the complete list of Appendix I constituents, as well as Appendix II constituents as determined by the Solid Waste Section. Additionally, field parameters including dissolved oxygen (DO), oxidation reduction potential (ORP), pH, temperature, turbidity, and conductivity will also be collected.

As indicated in the *Corrective Action Plan*, MNA monitoring will be performed on monitoring wells MW-1, MW-2, and MW-8.

Sampling Equipment

Groundwater purging and sampling will be performed using a submersible pump and disposable polyethylene bailers. A new bailer will be used to sample each individual well. *Under no circumstance will a disposable bailer used to sample a given well be used to sample any remaining well.* The following procedure will be used to decontaminate the submersible pump:

1. Phosphate-free detergent & de-ionized or distilled water rinse.
2. De-ionized or distilled water rinse.
3. Isopropyl alcohol (isopropanol) rinse.
4. De-ionized or distilled water rinse.

At least one (1) equipment blank will be collected during pump decontamination procedures to ensure that cross-contamination has not occurred as a result of the decontamination process. The standard equipment necessary to conduct sampling for each well consists of sample containers (including trip blanks and equipment blanks), one wide-mouth container, at least one 100-ft spool of nylon twine, at least one box of disposable latex/nitrile gloves, temperature/pH/ORP/conductivity indicator, water level indicator, storage coolers, and ice. All equipment subject to damage and contamination will be transported in sealed, plastic bags or storage containers. The water level indicator will be decontaminated in accordance with Steps 2 and 3 described above prior to placement in a clean plastic bag or storage container.

Sampling Containers

Ground and surface water monitoring will include organic (volatile organic compounds- VOCs) and inorganic (metals) analyses. Samples will be collected for the various analyses in laboratory-supplied containers.

1. Each sample container will be clearly labeled providing the following information: site name, county location, sample identification number, parameters to be analyzed, preservative added, date and time of sampling, and initials of the sampler.
2. Samples to be analyzed for VOC concentrations will be collected first, using three 40-ml glass vials with Teflon septa caps. The sample vials will be completely filled to create zero headspace in the vials.
3. Samples to be analyzed for inorganic contamination will be collected second, using a quart/1-liter polyethylene container.

All sample containers will be obtained from an independent laboratory in a sterilized condition and with the appropriate, method-specific preservative. Care will be taken by the field technician to not allow the preservative to wash out of the sample containers during sampling.

Sampling Containers

Samples to be analyzed for VOC concentrations will be collected into three 40-ml glass vials with Teflon septa caps. The sample vials will be completely filled with zero headspace in the vials. Samples to be analyzed for inorganic compound concentrations will be collected into 1-liter polyethylene containers, with ½ inch space for air permitted. All sample containers will be obtained from an independent

laboratory in a sterilized condition. Some of the containers will have a pre-measured amount of preservative in them as necessary. In this event, care will be taken not to rinse the container or to allow the preservative to wash out during sampling.

Groundwater samples to be analyzed for MNA performance parameters will be collected into the container types listed in the table below.

MNA Parameter	Volume	Bottle Type	Preservative
Alkalinity	250 mL	Plastic	none; cool to 4°C
Chloride	125 mL	Plastic	none; cool to 4°C
TOC/COD	250 mL	Glass	Sulfuric acid (H_2SO_4)
BOD	500 mL	Polyethylene	none; cool to 4°C
Iron	125 mL	Plastic	Nitric acid (HNO_3)
Nitrate	125 mL	Plastic	Sulfuric acid (H_2SO_4)
Sulfate	125 mL	Plastic	none; cool to 4°C
Sulfide	250 mL	Glass	Sodium hydroxide (NaOH)
Methane/Ethane/Ethene	125 mL	Plastic	none; cool to 4°C
Hydrogen	-	-	proprietary lab sampler
Volatile Fatty Acids	40 mL	Glass	Hydrochloric Acid (HC1)

SAMPLING

Wells will be sampled from upgradient to downgradient locations; or when previous analytical data is available, from least to greatest contamination. This procedure is required to limit potential cross contamination between sampling points.

A clean sheet of plastic will be placed around the well to provide a clean surface for sampling equipment. The total well depth read from the well tag and the measured depth to water, determined using the water level indicator, will be used to compute the depth of water in the well. The total well depth will be measured and compared to the depth indicated on the well tag as a check for silt buildup or blockage at depth.

All meters used to monitor purge parameters will be calibrated immediately prior to purging and sampling, and those readings recorded in a field logbook. Entries will always include pre- and post-calibration readings as well as the model and serial number of the equipment and the date, time, and person performing the calibration(s). Two standards, which bracket the average or suspected measurements for pH and specific conductance, will be used at the site. Since natural waters (including those impacted by environmental contaminants) tend to have pH values less than 7.0, pH buffers of 4.0 and 7.0 will typically be used for instrument calibration.

Disposable nitrile gloves will be worn by the field technician during sampling to minimize the risk of personal exposure to potentially harmful chemical substances and to minimize the risk of sample cross-contamination. Fresh pairs of nitrile gloves will be worn during each purge and sampling event. The groundwater samples will be transferred from the bailers into method-specific and appropriately preserved containers and placed into a clean cooler containing ice to chill the samples to a temperature of approximately 4°C.

Indicator parameters such as pH, temperature and specific conductance will be measured during purging as an indication that groundwater representative of the formation surrounding a given well is being sampled. Purging is considered complete when at least three well volumes have been purged and indicator parameters have stabilized such that three successive readings vary by no more than 10%. Purging may need to be continued beyond five well volumes if indicator parameters have not stabilized. All information will be recorded on a field data sheet or in a field logbook with copies submitted to the Division of Waste Management with the analytical results.

Purging

Each well will be purged of approximately three (3) to five (5) volumes of standing water and allowed to settle prior to collection of groundwater samples. If the well should go dry and not recharge before the requisite well volumes are removed, the well will be allowed to recharge and a sample will be collected

within 24 hours of the initial purging. The amount of standing water will be calculated by first subtracting the depth-to-water from total well depth.

After determination of the amount of water to be purged from a given well, the equipment necessary for purging will be assembled at the well. The disposable bailer will be maintained in a stable, upright position while the upper portion of the plastic wrapping will be pulled away to expose only the eyelet used for securing twine to the bailer. After the twine has been secured to the bailer with gloved hands, the bailer will be suspended as the remaining plastic is removed. The bailer will be lowered slowly into the well until the bailer contacts groundwater. The bailer twine will then be cut to an adequate length and secured to prevent loss of the bailer in the well. At no time during purging will the bailer twine be allowed to touch the ground. In order to not allow the twine to touch the ground during purging, the twine will be collected when raising the bailer either by loops gathered in one hand or by alternating hand-to-hand as the bailer is pulled from the well. When purging deep wells (in excess of 40 feet), the ground and the well head may be covered with a clean plastic bag or sheet of plastic with a slit cut to allow the plastic to slide over the well head. This will be a separate sheet of plastic from the one used for the sampling equipment.

Groundwater Sample Collection

The bailer will be lowered slowly into the well to avoid volatilization of any dissolved-phase compounds that may be present in the groundwater. Once full, the bailer will be retrieved and containers filled by emptying the water through the hole at the bottom of the bailer. Glass 40-mL vials for VOC analyses will be filled in such a manner as to produce zero headspace in the vials. Polyethylene containers for metals analyses will be filled and sealed with the cap, leaving about ½-inch of airspace at the top. In addition to collecting the samples, water will be collected in the wide-mouth container for pH, temperature, and conductivity measurements. Upon completion of sampling, all groundwater samples, including equipment and trip blanks, will be placed in labeled and sealed plastic bags and stored in ice-filled coolers to chill the samples to 4°C pending transport to a NCDENR-certified analytical laboratory. Contaminated nitrile gloves and twine will be discarded.

Surface water Sample Collection

Surface water sampling will be taken with given consideration to minimize turbulence and aeration. As during groundwater sampling, surface water samples will be collected by a field technician wearing disposable gloves. Containers will be dipped at sampling location points by gently dipping the sample container into surface water and allowing surface water to flow over the mouth of container so as not to displace any preservative within the sample container. If there is little current movement, the container will be moved slowly through the water laterally. During times of low water, if the water is not deep enough to allow filling of sample containers, an appropriately decontaminated sampling cup will be used to retrieve the sample. All containers will be treated in the same manner as the groundwater samples. The samples will be sealed in labeled, plastic bags, and stored in an ice-filled cooler to chill the samples to 4°C pending transport to a NCDENR-certified analytical laboratory.

Chain of Custody

Chain-of-custody forms will be used to document the handling of all samples collected and listing all individuals who have taken possession of a given set of samples, including field personnel, laboratory couriers, and laboratory personnel. Trip blanks, equipment blanks, and sample containers will all travel and be stored together. Trip blanks will remain in the condition they are received from the laboratory and will not be opened or tampered with during the sampling. A chain-of-custody record will be completed for each day's samples, indicating the date and time, sample location, sample matrix (soil, water, etc.), and laboratory analyses to be conducted.

Analysis

When the water samples reach the laboratory, they will be transferred to a sample custodian who will sign the chain of custody documentation as receipt of the samples. Internal control of the water samples in the laboratory will be in accordance with QA/QC procedures for the laboratory. Copies of QA/QC manuals for approved laboratories are on file at the Division.

Groundwater and surface water will be analyzed for the Appendix I list of constituents. QA/QC procedures utilized during the testing will be in conformance with laboratory QA/QC manual. Monitoring wells MW-1, MW-2 and MW-8 will be sampled for the Appendix I list and the aforementioned MNA parameters.

1.4 Explosive Gas Control Plan

Quarterly, Wayne County Landfill will monitor the explosive gas at the landfill structures and at or near the landfill boundary. The permanent probes will consist of a plastic stand pipe similar to a piezometer used for groundwater detection. A typical permanent methane probe is detailed in the operation drawings. The permanent probe will be constructed at a depth of six (6) feet. A 6" diameter hole will contain a one (1) inch slotted PVC pipe. The bottom two (2) feet will be backfilled with non-carbonate pea gravel with a bentonite seal one (1) foot thick above it. The remaining three (3) feet will be backfilled with *in situ* soils. The one (1) inch PVC pipe will be approximately three (3) feet above the existing grade. The PVC pipe will be capped with a one (1) inch PVC cap, one quarter (1/4) inch NPT hose barb, and 1" tubing, plugged or capped.

The existing permanent methane probes are surrounding the Closed MSW Landfill Limits. The location and spacing of the methane monitoring probes is somewhat arbitrary. The locations were determined by the relationship of solid waste with property lines and landfill structures. The spacing of the monitoring probes is between 200 and 400 feet. The migration of methane gas is induced by pressure gradients. The methane will move from areas of high pressure to those of low pressure following the path of least resistance. The methane will migrate vertically until it reaches the landfill cap, where it will begin to flow horizontally. This occurs until it finds a pathway out, either by the installed methane collection trenches or migration through the permeable *in situ* soils. Since methane is lighter than air, it wants to escape into the atmosphere. It has been our experience that whenever gas is migrating no matter what the spacing or depth of the monitoring probes, the gas will fill the void created by the monitoring point and an explosive meter will monitor the level. The various depths of the monitoring probes are to ensure a stable monitoring points. The only time a shallow monitoring point has not worked is in a very heavy, impermeable clay layer that acts as a seal to the migration of the gas. The existing permanent methane probes are surrounding the Closed MSW Landfill Limits.

The gas can be detected by use of an instrument that reports the percent of lower explosive limit. The instrument being used is the Gas Tech GP 204.

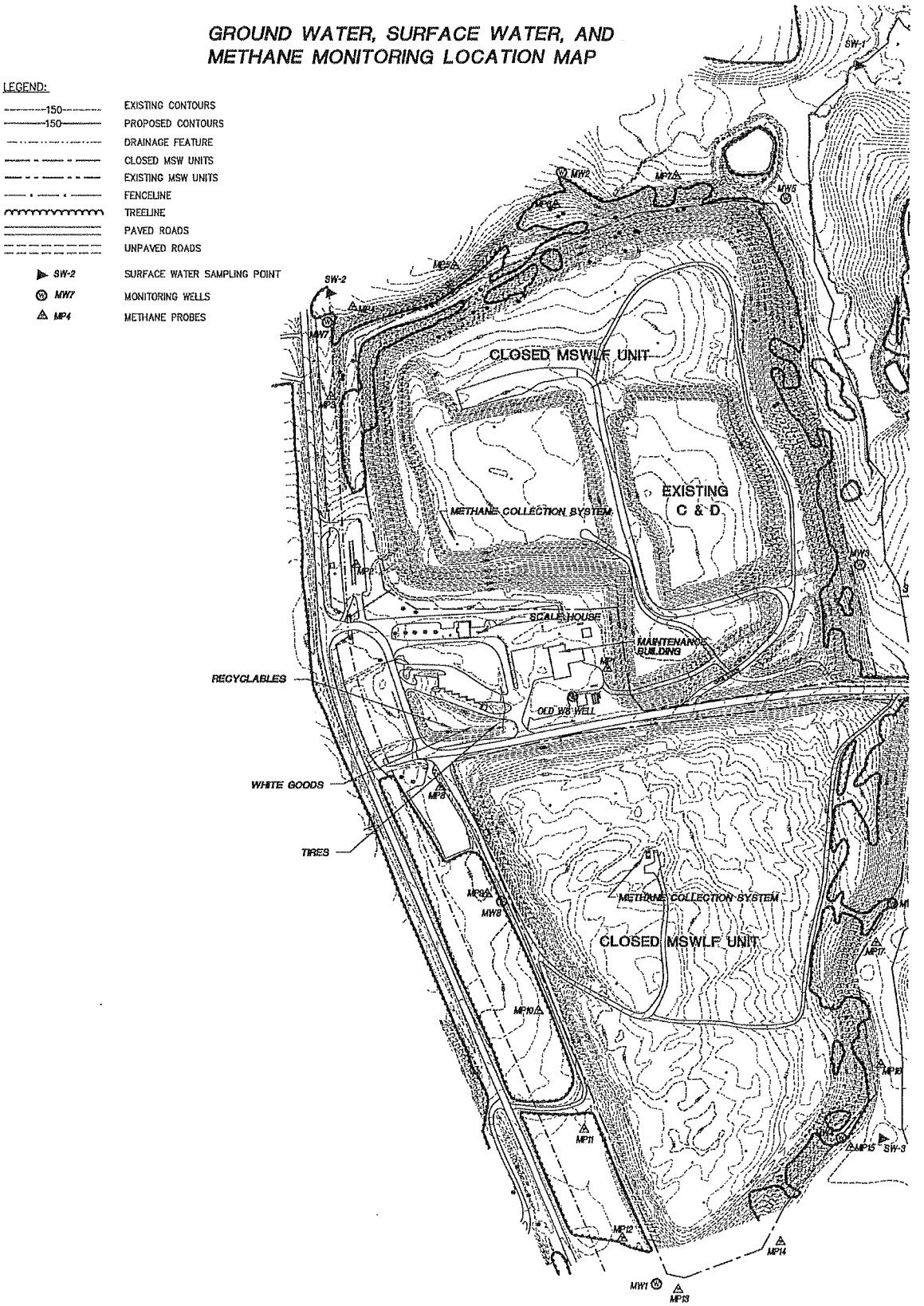
Based on current conditions, there are eighteen(18) existing monitoring points. Quarterly, a County employee will visit each monitoring point either the temporary or permanent. Using the detection instrument, he will determine if methane gas has filled the probes. If the probe is near the property line and methane gas is detected at or beyond the lower explosive limit (100% LEL), it must then be determined if the gas is migrating across the landfill boundary. If the probe is on the boundary or methane gas has migrated beyond the boundary , a remediation plan must be completed by Wayne County.

Other points of monitoring will be the landfill structures. Each structure will be monitored for methane using the following methods:

1. All crawl spaces will be monitored;
2. All corners in the structure will be monitored;
3. Any holes, cracks and pipes through the foundation will be monitored

If methane gas is detected beyond 25% of its lower explosive limit in any structure, check the calibration of the monitor and resample. If the reading is still above 25%, evacuate the building and try to find the source of gas. If the source is found try to remove the source. If this fails a remediation plan is stated in the operational requirements.

GROUND WATER, SURFACE WATER, AND METHANE MONITORING LOCATION MAP



CLOSURE PLAN

2.1 Introduction

The Division requires that the Engineer certifies the constructed cap is built according to approved plans and specifications. The Engineer that will accomplish this task is the one who did the planning and has written the specifications.

Before construction can begin a pre-construction meeting will be held and the responsibilities and duties of each party will be discussed.

The Contractor is responsible for following and meeting the requirements set forth in the contract documents. The Contractors will provide to the Owner of the landfill and the Engineer a completed landfill constructed by Division approved plans and specifications. The Contractor will give the Engineer a schedule for completion of the landfill including dates for expected construction of the cohesive soil test pad, cohesive soil cap, erosive layer, and estimated time for project completion. The contractor is responsible for providing a foreman to remain on site at all times during construction, provide qualified personnel to conduct quality control, scheduling and coordinating the subcontractors, provide progress reports and as-built drawings, and coordinating construction activities with the Engineer. The foreman is responsible for supervising and coordinating with his crew, subcontractors, quality control personnel, attending all meetings and notifying the Engineer's Construction Observer when any discrepancies occur. The Contractor will meet with the Construction Observer on a daily basis to discuss the days construction activities. The results of all tests and any change in schedule shall be given to the Construction Observer as soon they are known by the contractor. The Contractor must be registered in the state of North Carolina.

The Engineer is responsible for providing the engineering design, drawings and specifications, contract documents and Construction Quality Assurance (CQA) needed for construction of the landfill. The Engineer is responsible for conduction of the pre-construction meeting, which will lay out the foundation for the project. The engineer will approve any design changes and certify to the Division that the cap was constructed according to the requirements of Rule .0541 Construction Quality Assurance Plan and .0540 Construction requirements for C&D Facilities, and Division approved plans and specifications. This will be accomplished by on site observation and independent laboratory soil testing to test site specific soil properties including permeability. The Engineer will be providing Quality Assurance by spot testing along side the contractor, who will be providing the Quality Control. The Engineer will certify that the construction was completed in accordance with the CQA manual. The Engineer must be a professional engineer registered in North Carolina.

The Construction Observer (CO) is the Engineer's representative on-site. It is the CO's responsibility to know and interpret the plans and specifications of the project. On a daily basis the CO will coordinate with the Foreman to help ensure a quality product for the Owner. The CO will keep a daily log on the activities of the Contractor, keep notes on all meetings, and handle all quality assurance activities indicated in this document. The CO will keep a log of all material delivered on site and ensure the materials meets or exceeds the specifications indicated in this report. If the need arises additional meetings will be scheduled as determined by the CO.

The County will cap their landfill within 180 days after the final receipt of solid waste. The cap system will consist of 12 inches of intermediate cover, 18 inches of cohesive soil with a permeability no greater than 1.0×10^{-5} cm/sec, 18 inches of erosive layer. The cap contains gas venting system consisting of a series of washed stone trenches below the soil liner that will be vented through 10" diameter PVC pipes that penetrate the cap. The cap system will also include the proper seeding and mulching of the erosive layer and other erosion control devices. The largest area ever needing closure will be 40 acres.

The estimate of the maximum inventory of wastes ever on-site over the active life of the landfill facility is 636,858 tons from FY 98-99 through FY 09-10.

Prior to beginning closure, the County shall notify the Division that a notice of the intent to close the unit has been placed in the operating record. The County shall begin closure activities no later than thirty (30) days after the date on which the landfill receives the final wastes or if the landfill has remaining

capacity and there is a reasonable likelihood that the landfill will receive additional wastes, no later than one year after the most recent receipt of wastes. Extensions beyond the one-year deadline for beginning closure may be granted by the Division if the County demonstrates that the landfill has the capacity to receive additional waste and the County has taken and will continue to take all steps necessary to prevent threats to human health and the environment from the closed landfill.

The County shall complete closure activities in accordance with the closure plan within 180 days following the final receipt of waste. Extensions of the closure period may be granted by the Division if the County demonstrates that closure will, of necessity, take longer than one hundred eighty (180) days and the County has taken and will continue to take all steps to prevent threats of human health and environment from the enclosed landfill.

Following closure of the landfill, the County shall notify the Division that a certification, signed by the project engineer verifying that closure has been completed in accordance with the closure plan, and has been placed in the operating record. The County shall record a notation on the deed to the landfill property and notify the Division that the notation has been recorded and a copy has been placed in the 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 and its use is restricted under the closure plan approved by the Division. The County may request permission from the Division to remove the notation from the deed if all waste is removed from the landfill.

2.2 Cap System

The County will cap their landfill within 180 days after the final receipt of solid waste. The cap system will consist of 12 inches of intermediate cover, 18 inches of cohesive soil with a permeability no greater than 1.0×10^{-5} cm/sec, and 18 inches of erosive layer. The cap will contain a gas venting system consisting of a series of washed stone trenches below the soil liner that will be vented through 10" diameter PVC pipes that penetrate the cap. The cap system will also include the proper seeding and mulching of the erosive layer and other erosion control devices. The largest area currently requiring a cap system will be 40 acres.

2.3 Cohesive Soil Cap

All materials and equipment shall be furnished by an established and reputable manufacturer or supplier. All materials and equipment shall be new and shall be of first class ingredients and construction, designed and guaranteed to perform the service required and shall conform with the following standard specifications or shall be the product of the listed manufacturers or similar and equal thereto as approved by the Engineer.

Cohesive Soil Cap Borrow Material

Test Name	Test Method	Contractor/Engineer Frequency
Moisture/Density	ASTM D698/D1557	1 per 5000 c.y.
Remolded Permeability	ASTM D5084	1 per 5000 c.y.
Atterberg Limits	ASTM D4318	1 per 5000 c.y.
Visual Classification	ASTM D2488	1 per 5000 c.y.
Grain Size Distribution	ASTM D422	1 per 5000 c.y.

Cohesive Soil Cap Test Pad

Test Name	Test Method	Contractor/Engineer Frequency
Field Moisture/Density	ASTM D1556 (sand cone) ASTM D2922/D3017 (nuclear gauge) ASTM D2937 (drive cylinder)	3 per lift
Permeability	ASTM D5084	1 per lift
Remolded Permeability	ASTM D5084	1 per lift
Atterberg Limits	ASTM D4318	1 per lift
Visual Classification	ASTM D2488	1 per lift
Grain Size Distribution	ASTM D422	1 per lift

In-Place Cohesive Soil Cap

Test Name	Test Method	Contractor/Engineer Frequency
Field Moisture/Density	ASTM D1556 (sand cone) ASTM D2922/D3017 (nuclear gauge) ASTM D2937 (drive cylinder)	1 per lift per acre
Permeability	ASTM D5084	1 per lift per acre
Atterberg Limits	ASTM D4318	1 per lift per acre
Visual Classification	ASTM D2488	1 per lift per acre
Grain Size Distribution	ASTM D422	1 per lift per acre

(a) Suitable on-site and/or off-site soils may be used as cohesive soil cap if it can achieve an in-place permeability of 1.0×10^{-5} cm/sec or less and meets all testing requirements indicated in the material testing paragraph in this section. Wyoming bentonite or an approved equivalent may be blended with the soil to lower the soil's permeability.

(b) A permeability "window" shall be developed for each type of soil from the borrow material that will be used for construction of the cohesive soil cap. The window shall be plotted on a semi-log plot with moisture content versus density. Laboratory testing to develop the window shall include a series of remolded samples compacted to various dry densities and moisture contents utilizing the same compactive effort (ASTM D 698 or D 1557). The remolded samples shall be tested for permeability to determine whether or not the particular soil type will provide the maximum permeability (1.0×10^{-5} cm/sec) at various dry densities and moisture contents. The window is then developed from the accepted remolded samples and moisture contents from the semi-log plot. A straight line is typically drawn between the acceptable points on the moisture-density curve to indicate a range of probable acceptable permeability results. The window will be used in the construction of the test strip to verify the laboratory remolded permeability results.

(c) Atterberg Limits (ASTM D4318) and grain size distribution (ASTM D422) and visual classification (ASTM D2488) shall also be conducted on the bulk samples used to prepare the permeability window. These tests can be used as indices on random samples collected from the borrow site during construction to verify the soil type is the same as was used to develop the "window". As a minimum, sufficient visual classifications and Atterberg Limits shall be conducted in association with each permeability test to verify that the construction materials meet specifications.

(d) A test strip of compacted cohesive soil cap shall be prepared to verify the permeability "window" prior to general installation of the cohesive soil cap. The test strip will be used to verify the results from the remolded permeabilities from the borrow site utilizing the permeability window(s) for each soil type that is going to be used for construction of the cohesive soil cap. At a minimum, the verification will consist of three moisture density tests, one Atterberg limits test, one grain size

distribution test (ASTM D2488, D4318, and D422), and one Shelby Tube sample for each lift constructed in the test pad. Laboratory permeability tests shall be performed on tube (Shelby or drive tubes) samples of the cohesive soil cap after placement and compaction. The permeability must be a maximum of 1.0 x10^{-5}cm/sec. Tests shall be performed in accordance with the ASTM D5084. The test strip shall be approximately 2,500 sq. ft. in surface area and constructed to conform geometrically to the site topography with a minimum lateral dimension in any direction of 25 ft. The test strip shall consist of at least three compacted 6 inch lifts of cohesive soil cap. Placement and testing of the test strip shall be in conformance with the construction specifications and requirements for general installation of the cohesive soil cap. Test results from the test strip shall be used to guide placement and achievement of the required maximum permeability of 1.0 x 10^{-5} cm/sec of the cohesive soil cap. The test strip may be used as an integral part of the overall cohesive soil cap if it meets the required specification for the cap. All results shall be given to the Construction Observer.

(e) The soils shall be placed to the total thickness shown on the plans in maximum 8-inch thick loose lifts resulting in a maximum 6" lift compacted preferably at a moisture content between 0 to 3% above optimum moisture content to 95% (Standard Proctor) maximum dry density (ASTM D698). A sheepsfoot roller or approved alternative may be used to compact the soil cap provided the compaction and permeability requirements can be achieved. Each lift shall be tested for permeability, moisture content, particle size distribution analysis, Atterberg Limits, moisture-density-permeability relation, and if needed, percent bentonite admixed with soil, prior to the placement of the succeeding lift. Each lift shall also be visually inspected to confirm that all soil clods have been broken and that the surface is sufficiently scarified so that adequate bonding can be achieved. Soils for cohesive soil cap shall be screened, disked, or prepared using any other approved method as necessary to obtain a homogeneous cohesive soil with clod sizes in a soil matrix no larger than approximately 1.5 inches in maximum diameter. After each lift, the surface shall be scarified prior to the placement of the next lift to provide good bonding from one lift to the next.

(f) The cohesive soil cap shall be tested in the field to evaluate the coefficient of permeability. The coefficient of permeability of the soil cap shall be equal to or less than 1.0 x 10^{-5} cm/sec after placement and compaction. The soil cap must be a minimum of 1.5 feet thick.

(g) Laboratory permeability tests shall be performed on tube (Shelby or drive tubes) samples of the cohesive soil cap after placement and compaction. The permeability must be a maximum of 1.0 x 10^{-5}cm/sec. Tests shall be performed in accordance with ASTM D5084.

(h) The soil cap shall be tested a minimum of one soil sample per lift per acre for laboratory permeability. All permeability testing will be on random samples judged by the Engineer to be representative of the most permeable soil conditions for the area being tested. The project engineer shall certify that the materials used in construction were tested according to the Division approved plans. If after placement of the soil cap it fails the required tests, the material will either be reworked or replaced and then retested for permeability. The soil cap must remain moist at all times. If any section becomes dry, rework the dry area and moisten.

(i) A minimum of two (2) inches of soil shall be removed prior to securing each sample for permeability testing. The sampling tube shall be advanced vertically into the soil with as little soil disturbance as possible and should be pushed using a uniform pressure. The sampling tube (Shelby tube), when extracted, shall be free of dents, and the ends shall not be distorted. A backhoe or approved alternative should be used to advance the sampling tube (Shelby tube) as long as disturbance is minimized. Drive tube samples of the cap may be obtained for permeability testings. If the Engineer judges the sample to be too disturbed, another sample shall be taken. Once an acceptable sample has been secured and properly prepared, all sample excavations shall be backfilled to grade with a 50% mixture of bentonite and similar soils in maximum 3-inch loose lifts and hand tamped with a blunt tool to achieve a tight seal equivalent to the original density.

(j) No additional construction shall proceed on the soil layers at the area being tested until the Engineer has reviewed the results of the tests and judged the desired permeability is being achieved.

(k) As a minimum, sufficient visual classifications (ASTM Test Designation D2488) , analyses (ASTM Test Designation D422) and Atterberg limits (ASTM Test Designation D4318) shall be conducted in association with each permeability test to verify that the construction materials meet specifications. The minimum number of tests will be 1 per lift per acre.

(l) If the soil for the cohesive soil cap is incapable of achieving the required permeability when compacted, bentonite or approved alternative may be mixed with the soils to decrease the permeability. The amount of additive required must be determined in the laboratory. Where additives are required, the soil shall be placed in maximum 8-inch thick loose lifts and compacted preferably between 0 to +3% optimum moisture content to 95% standard Proctor maximum dry density (ASTM Test Designation D698) for the soil-additive mixture. All other compaction procedures for the soil apply.

(m) The Contractor shall protect the cohesive soil cap from desiccation, flooding and freezing. Protection, if required, may consists of a thin plastic protective cover, (or other material as approved by the engineer) installed over the completed cohesive soil cap until such time as the placement of flexible membrane liner begins. Areas found to have any desiccation cracks or which exhibit swelling, heaving or other similar conditions shall be replaced or reworked by the contractor to remove these defects.

(n) The thickness and grade of the soil cap will be verified by the surveyor. The soil cap will be surveyed at 100' grid points where the elevations of the top of landfill will be checked with the top of soil cap to verify 1.5 feet of soil cap. The grade will then be verified with the surveyed information. The survey will be performed by North Carolina Professional Land Surveyor.

2.4 Erosive Layer

The soil for the erosive layer shall consist of any soils suitable of supporting vegetative growth.

(a) Native vegetation will be used as recommended in the NC Erosion and Sediment Control Planning and Design Manual and as shown in the Closure Plan drawings in Appendix A.

(b) The thickness and grade of the erosive layer will be verified by the surveyor. The erosive soil layer will be surveyed at 100 foot grid points where the elevations of the top of landfill will be checked with the top of soil cap to verify 2.0 feet of erosive soil layer. The grade will then be verified with the surveyed information. The survey will be performed by North Carolina Professional Land Surveyor.

18" ?

2.5 Methane Venting System

Gas Venting System

NC.D.O.T. No.5 stone, Geotextile fabric, and 8" and 10" plastic pipes will be used in the construction of the Gas venting system.

(1) Stone in Trenches and Surrounding Perforated Collection Piping

Stone for methane collection system shall meet the requirements of NC DOT aggregate, Standard Size No. 5 and shall contain no fines. Stone must pass the sieve analysis test for No. 5 stone performed at the quarry.

(2) Geotextile Fabric

Geotextile fabric surrounding the stone/piping shall be non-woven needle punched fabric with the following minimum properties:

1)	Weight	8.0 oz/yd^2	ASTM D-3776
2)	Grab Strength	205 lbs.	ASTM D-4632
3)	Grab Elongation	50%	ASTM D-4632
4)	Trapezoidal Tear Strength	85 lbs.	ASTM D-4533
5)	Puncture Strength	100 lbs.	ASTM D-4833
6)	Mullen Burst Strength	320 psi	ASTM D-3786
7)	Permittivity	1.4 sec^{-1}	ASTM D-4491

Geotextile fabric shall be manufactured by Polyfelt , TNS Advanced Technologies, or approved equal.

(3) Plastic Pipe

Plastic gravity sewer pipe and fittings used for methane vent shall be unplasticized polyvinyl chloride (PVC) and conform to the requirements of ASTM Designation D-3034 on ASTM F679, Type PSM, Class 12454-B, SDR-35 with elastomeric gasket joints. PVC pipe and fittings shall be as manufactured by J-M Pipe, Certainteed, H&W Industries or equal. The methane riser pipe shall be a 10-inch solid wall PVC pipe.

(1) → The methane gas venting system on top of the landfill will be constructed after all phases of filling have been completed.

2.6 Construction Quality Assurance(CQA) Report

The CQA report will contain the results of all the construction quality assurance and construction quality control testing including documentation of any failed test results, descriptions of procedures used to correct the improperly installed material, and results of all retesting performed. The CQA report will contain as-built drawings noting any deviation from the approved closure plans and will also contain a comprehensive narrative including, but not limited to, daily reports from the project engineer, a series of color photographs of major project features, and documentation of proceedings of all progress and troubleshooting meetings.

CQA rept signed by a NC PE

Add (1) convert the extraction wells to vent
1) How many
2) Costs

2.7 Closure Costs

The largest area to be closed within the permitted life will be 40 acres. Post Closure will be 30 years after closure.

Closure Costs:

Closure will consist of the following which costs are estimated as being done by a third party.

1. 18" of $1x10^{-5}$ cm/sec. cohesive soil cap;
2. Erosion Control Devices;
3. 18" Erosive layer;
4. Seeding and Mulching;
5. Mobilization/Demobilization;
6. Labor Costs; and
7. Engineering Costs and QA/QC of the Composite liner and certification of closure.

Estimate of Probable Costs:

1. 18" of $1x10^{-5}$ cm/sec. cohesive soil cap for 40 acres:
   (including surface preparation)
   40 x 43,560 = 1,742,400 x 1.5 = 2,613,600 / 27 = 96,800 cy
   Total yardage + 15% = 111,320 yd^3 @ a cost of \$9.00/yd^3
   ∴ Cost = \$1,001,800

2. Erosion Control devices

   Estimated costs @ \$75,000
   ∴ Cost = \$75,000

3. 18" erosive soil layer for 40 acres.
   40 x 43,560 = 1,742,400 x 1.5 = 2,613,600 / 27 = 96,800cy
   Total yardage + 15% = 111,320 yd^3 @ a cost of \$4.00/yd^3
   ∴ Cost = \$445,280

4. Seeding and Mulching for 40 acres.

   Estimated cost of \$2,000/acre
   ∴ Cost = \$80,000

5. Mobilization/Demobilization.
   (including Machine/Equipment costs and fuel costs)

   Estimated cost of \$175,000

6. Labor Costs.

   Estimated cost of \$200,000
   ∴ Cost = \$200,000

7. Stone for methane gas collection.

   Total estimated linear feet =2,839 ft.
   Total estimated volume for a 2'x1' trench = 5,678 ft^3
   with a density of 120 lbs/ft^3 total weight =341 tons @ a cost of \$25.00/ton
   ∴ Cost = \$8,525

8. Geotextile for methane gas collection.

   Total estimated linear feet = 2,839 ft.
   Total estimated perimeter for a 2'x1' trench =
   (2,839 ft × 6 ft)=17,034 ft^2 @ a cost of \$0.20/ ft^2
   ∴ Cost = \$3,407

9. Vent pipes for methane gas collection.

   Estimated cost @ \$600.00 each (9 vents).
   ∴ Cost = \$5,400

10. Engineering Costs and QA/QC of the Composite liner and certification of closure. (including CQA field monitoring and lab testing, CQA reporting and certification, construction administration, construction documentation and bidding, Survey as-builts and recordation fees)

    Estimated cost = \$200,000
    ∴ Cost = \$200,000

Total of Estimated Closure Costs:

1.	\$ 1,001,800
2.	\$ 75,000
3.	\$ 445,280
4.	\$ 80,000
5.	\$ 175,000
6.	\$ 200,000
7.	\$ 8,525
8.	\$ 3,407
9.	\$ 5,400
10.	\$ 200,000
Total:	\$ 2,194,412

SECTION 3.0

POST-CLOSURE PLAN

3.1 Introduction

CONTACTS:

Name:	Tim Rogers
Title:	Solid Waste Director
Phone No.:	(919) 689-2994
Address:	460 B. S. Landfill Rd. Dudley, NC 28333

DESCRIPTION OF USE:

The County has no future use planned for their landfill at this time. However, any future use of the landfill shall not disturb the integrity of the cap system, base line system or any other components of the containment system or the functioning of the monitoring systems.

DESCRIPTION OF MAINTENANCE ACTIVITIES:

The County Landfill will be monitored quarterly for evidence of settlement, subsidence and ponding in the cap system. The entire site will be monitored quarterly for evidence and effects of erosion. The erosion control plan will be preserved. All gates, fencing, access roads, and signs shall be maintained appropriately. Annually in the Spring, the vegetative cover will be monitored to assure a good stand of vegetation, and where needed, it will be reseeded. The vegetative cover will be mowed twice a year , once in mid-summer and again in early fall. These maintenance activities will take place over the entire post closure period of thirty years. The County will make repairs as necessary to maintain the integrity and effectiveness of the Cap System.

The County will maintain the Landfill Gas Collection and Control System(LGCCS) to insure efficient operation. There will not be any new LGCCS Title V components installed in the C&D area. The goal is to abandon all Title V LGCCS wells within fifteen(15) years after their installation. An As-Built map can be found in Appendix A.

DESCRIPTION OF MONITORING ACTIVITIES:

The County Landfill will monitor and analyze ground water and surface water semi-annually for Appendix I constituents for a period of thirty years. The County will also monitor methane gas at landfill structures and the boundary quarterly for the thirty-year period.

The County will inspect the exterior slopes of the landfill at least weekly to determine if there are any breakouts of leachate in the slopes. If any are discovered, they will be contained immediately to assure that they will not leave the site. The containment can consist but not be limited to an earthen berm, sand bags, erosion control logs and/or anything that will contain the leachate on the slope.

The repair of the breakout will require excavating into the cover soil on the slope down to the waste and into the waste to determine what is causing the leachate to come to the surface. Normally it is another layer of soil that has been used as cover and the leachate is flowing along that layer to the slope and surfacing on the slope. The lower layer of cover needs to be removed at the breakout so that the leachate that is flowing along this cover has a point where it will go vertically into the landfill instead of flowing along the soil boundary that was once either daily cover or an intermediate cover.

Once this soil layer has been breached, the excavation can be filed back with stone, clean waste or any material, other than soil, that will allow the leachate to flow vertically instead of horizontally. Once the excavation has been filled with this material, the surface can be cover with soil so that surface water does not intrude into the excavation. Vegetative cover will be reestablished over the excavated area.

COMPLETION OF POST-CLOSURE CARE

Following completion of the post-closure care period for each unit, the owner or operator will notify the Division that a certification, signed by a registered professional engineer, verifying that post-closure care has been completed in accordance with the post-closure plan, has been placed in the operating record.

3.2 Post Closure Costs

The largest closed area to be monitored within the post closure life will 40 acres.

Post Closure Costs:

Methane gas, ground water and surface water will be monitored for 30 years after closure. The cap will also have to be monitored for the 30 year period. All costs include reports, data analysis, and certifications.

1. Ground and Surface Water monitoring semi-annually for 30 years for appendix I constituents and statistical analysis.
   Estimated cost/sample = $840.00/sample
   Total annual samples = 2(8 wells + 3 surface) = 22 samples/year
   Estimated cost = 30 years x 22 samples/year x $840.00/sample =

   ∴ Cost = $554,400

2. Methane Gas monitoring quarterly for 30 years.
   Estimate $600.00/quarter = $2,400.00/year
   Estimated cost = 30 year x $2,400.00 = $72,000.00

   ∴ Cost = $72,000.00

3. Cap Monitoring and repairing (including maintenance of all gates, fencing, access roads and signs, mowing and revegetation)

   Estimate $300,000 for the 30 years.

   ∴ Cost = $300,000

4. Closure of sedimentation and erosion control devices.
   Estimate $24,000.00 for closure

   ∴ Cost = $24,000

5. Maintenance of gas extraction system.
   Estimated cost/year = $3,000.00/year

   ∴ Cost = $90,000

6. Decommissioning of LGCCS System.
   Estimated cost/well head = $500.00
   22 well heads x 500.00 = $11,000

   ∴ Cost = $11,000

7. Administration/Record keeping
Estimate $4,000.00/year for 30 years

∴ Cost = $120,000

Total of Estimated Post Closure Costs:

1.	$ 554,400
2.	$ 72,000
3.	$ 300,000
4.	$ 24,000
5.	$ 90,000
6.	$ 11,000
7.	$ 120,000
Total:	$1,171,400

SECTION 4.0

FINANCIAL RESPONSIBILITIES

County of Wayne

STATE OF NORTH CAROLINA
Goldsboro
27533-0227

PAMELA M. HOLT
FINANCE DIRECTOR

P.O. BOX 227
PHONE: (919) 731-1424
FAX: (919) 731-1388
pam.holt@waynegov.com

June 26, 2008

Ms. Amy Kadrie, Compliance Officer
Solid Waste Section
NCDENR – Division of Waste Management
1646 Mail Service Center
Raleigh, NC 27699-1646

Dear Ms. Kadrie,

I am the Chief Financial Officer of Wayne County, 224-226 E. Walnut Street, Goldsboro, NC 27533. This letter is in support of this unit of local government's use of the financial test to demonstrate financial assurance, as specified in 15A NCAC 13B.1628(e)(1)(f).

This unit of local government is the owner or operator of the following facility for which financial assurance for closure, post-closure, or corrective action is demonstrated through the financial test specified in 15A NCAC 13B.1628(e)(1)(f). The current closure, post-closure, or corrective action cost estimates covered by the test are shown for the facility:

Opened 01-01-98:

Facility Name:	Wayne County Landfill
Facility Address:	460-B South Landfill Road, Dudley, NC 28333
Permit Number:	9601
Closure Cost Estimate:	$1,694,769
Post-Closure Estimate:	$709,600
Corrective Action Cost Estimate:	N/A
Total Costs to be Covered:	$2,404,369

The fiscal year of the unit of local government ends on June 30, 2008. The figures for the following items marked with an asterisk are derived from this unit of local government's Annual Financial Information Report (AFIR) for the latest completed fiscal year, ended June 30, 2007.

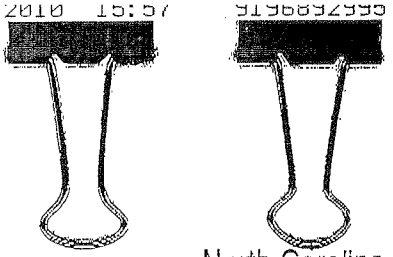
I hereby certify that the wording of this letter is identical to the wording specified in 15A NCAC 13B.1628(e)(2)(g) as such rules were constituted on the date shown immediately below. I further certify the following: (1) that the unit of local government has not operated at a total operating fund deficit equal to five percent or more of total annual revenue in either of the past two fiscal years, (2) that the unit of local government is not in default on any outstanding general obligation bonds or long-term obligations, and (3) does not have any outstanding general obligation bonds rated lower than Baa issued by Moody's, BBB as issued by Standard & Poor's, BBB as issued by Fitch's, or 75 as issued by the Municipal Council.

Sincerely,

Pamela M. Holt
Director of Finance

BOND RATING INDICATOR OF FINANCIAL STRENTH

1. Sum of current closure, post-closure, and corrective action cost estimates (total of all cost estimates shown in the paragraphs above)	$2,404,369
2. Current bond rating of most recent issuance and name of rating service	A1 Moody's, A+ Standard & Poors
3. Date of issuance bond	June 01, 2001
4. Date of maturity of bond	February 01, 2011
5. Assured environmental costs to demonstrate financial responsibility in the following amounts under Division rules:	
MSWLF under 15A NCAC 13B.1600	$2,404,369
Hazardous waste treatment, storage, and disposal facilities under 15A NCAC 13A .0009 and .0010	$0
Petroleum underground storage tanks under 15A NCAC 2N.0100-.0800	$0
Underground Injection Control System facilities under 15A NCAC 2D.0400 and 15A NCAC 2C.0200	$0
PCB commercial storage facilities under 15A NCAC 20.0100 and 15A NCAC 2N.0100	$0
Total assured environmental costs	$2,404,369
*6. Total Annual Revenue (AFIR Part 2)	$125,085,437
Circle either "yes" or "no" to the following question.	
7. Is line 5 divided by line 6 less than or equal to 0.43?	**YES**



North Carolina Department of Environment and Natural Resources
Division of Air Quality

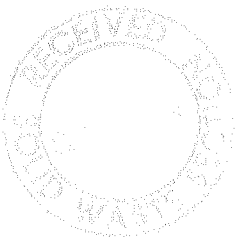
Beverly Eaves Perdue
Governor

Sheila C. Holman.
Director

Dee Freeman
Secretary

August 11, 2010

Mr. Lee Smith
Wayne County Manager
Wayne County Municipal Solid Waste Landfill
460B South Landfill Road
Dudley, North Carolina 28333



Dear Mr. Smith:

SUBJECT: Air Quality Permit No. 08885T03
Facility ID: 9600250
Wayne County Municipal Solid Waste Landfill
Dudley, North Carolina
Wayne County
Fee Class: Title V

In accordance with your completed Air Quality Permit Application for a **Renewal** of a Title V permit received July 30, 2009, we are forwarding herewith Air Quality Permit No. 08885T03 to Wayne County Municipal Solid Waste Landfill located at 460B South Landfill Road, Dudley, North Carolina authorizing the construction and operation, of the emission source(s) and associated air pollution control device(s) specified herein. Additionally, any emissions activities determined from your Air Quality Permit Application as being insignificant per 15A North Carolina Administrative Code 2Q .0503(8) have been listed for informational purposes as an "ATTACHMENT." Please note the requirements for the annual compliance certification are contained in General Condition P in Section 3. **The current owner is responsible for submitting a compliance certification for the entire year regardless of who owned the facility during the year.**

As the designated responsible official it is your responsibility to review, understand, and abide by all of the terms and conditions of the attached permit. It is also your responsibility to ensure that any person who operates any emission source and associated air pollution control device subject to any term or condition of the attached permit reviews, understands, and abides by the condition(s) of the attached permit that are applicable to that particular emission source.

Permitting Section
1641 Mail Service Center, Raleigh, North Carolina 27699-1641
2728 Capital Blvd., Raleigh, North Carolina 27604
Phone: 919-715-6235 / FAX 919-733-5317 / Internet: www.ncair.org

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October 10, 2005

Mr. Lloyd S. Cook
Solid Waste Manager
Wayne County Municipal Solid Waste Landfill
460B South Landfill Road
Dudley, North Carolina 28333

Dear Mr. Cook:

SUBJECT: Air Quality Permit No. 08885T02
Facility ID: 9600250
Wayne County Municipal Solid Waste Landfill
Dudley, North Carolina
Wayne County
Fee Class: Title V

In accordance with your completed Air Quality Permit Application for **"State Only"** modification of a Title V permit received June 6, 2005, we are forwarding herewith Air Quality Permit No. 08885T02 to the Wayne County Municipal Solid Waste Landfill located at 460B South Landfill Road, Dudley, North Carolina authorizing the operation, as outlined in Part I, "Air Quality Federal Title V and State Operation Permit," and the construction, as outlined in Part II, "Air Quality State Construction Permit," of the emission source(s) and associated air pollution control device(s) specified herein. Additionally, any emissions activities determined from your Air Quality Permit Application as being insignificant per 15A North Carolina Administrative Code 2Q .0503 have been listed for informational purposes as an "ATTACHMENT." Please note the requirements for the annual compliance certification are contained in General Condition P in Section 3 of Part I.

As the designated responsible official it is your responsibility to review, understand, and abide by all of the terms and conditions of the attached permit. It is also your responsibility to ensure that any person who operates any emission source and associated air pollution control device subject to any term or condition of the attached permit reviews, understands, and abides by the condition(s) of the attached permit that are applicable to that particular emission source.

If any parts, requirements, or limitations contained in this Air Quality Permit are unacceptable to you, you have the right to request a formal adjudicatory hearing within 30 days following receipt of this permit, identifying the specific issues to be contested. This hearing request must be in the form of a written petition, conforming to NCGS (North Carolina General Statutes) 150B-23, and filed with **both** the Office of Administrative Hearings, 6714 Mail Service Center, Raleigh, North Carolina 27699-6714 and the Division of Air Quality, Permitting Section, 1641 Mail Service Center, Raleigh, North Carolina 27699-1641.

The form for requesting a formal adjudicatory hearing may be obtained upon request from the Office of Administrative Hearings. Unless a request for a hearing is made pursuant to NCGS 150B-23, this Air Quality Permit shall be final and binding.

You may request modification of your Air Quality Permit through informal means pursuant to NCGS 150B-22. This request must be submitted in **writing** to the Director and must identify the specific provisions or issues for which the modification is sought. Please note that this Air Quality Permit will become final and binding regardless of a request for informal modification unless a request for a hearing is also made under NCGS 150B-23.

The construction of new air pollution emission source(s) and associated air pollution control device(s), or modifications to the emission source(s) and air pollution control device(s) described in this permit must be covered under an Air Quality Permit issued by the Division of Air Quality prior to construction. Failure to do so is a violation of GS 143-215.108 and may subject the Permittee to civil or criminal penalties as described in GS 143-215.114A and 143-215.114B.

This Air Quality Permit shall be effective from **October 10, 2005** until **April 30, 2010** is nontransferable to future owners and operators, and shall be subject to the conditions and limitations as specified therein.

Should you have any questions concerning this matter, please contact Booker T. Pullen, E.I.T., at (919) 715-6248.

Sincerely yours,

Laura S. Butler, P.E.
Chief

Enclosure

c: Washington Regional Office
Central Files

Air Quality Permit No. 08885T02
Wayne County Municipal Solid Waste Landfill

Changes to existing permit No. 08885T01 per application (No. 9600250.05A)

Old Page No.	New Page No.	Condition No.	Changes
		Cover Letter	
Page 1	Page 1	Heading and body of letter	Revised: issue date, permit number, "complete application received date", type of modification,
Page 2	Page 2	Heading and body of letter	Revised: date of letter, effective date of permit, contact person's name and phone number, removed c: Greg Worley, EPA
		Part I Operation Permit	
Page 1	Page 1	Cover page	Revised: permit number, "replaces permit no.", effective date of permit, application number, complete application date, issue date of permit
All pages	All pages	Heading of permit	Revised permit number to T02
Page 8	Page 8	Specific Limitations and Conditions	Revised Condition 6 to include the modeled toxic air pollutant emission rates Added Condition 7 to include the "Emission Rates Requiring a Permit" of toxic air pollutants
Pages 8 – 17	Pages 9-18	General Conditions	Page numbers changed with the addition of Specific Condition No. 7
N/A	Page 13	General Conditions	Changed the reporting date for Condition "P" from January 30 to March 1.

State of North Carolina,
Department of Environment,
and Natural Resources

Division of Air Quality

NCDENR
NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

AIR QUALITY PERMIT

Permit No.	Replaces Permit No.(s)	Effective Date	Expiration Date
08885T02	08885T01	October 10, 2005	April 10, 2010

Until such time as this permit expires or is modified or revoked, the below named Permittee is authorized to operate, as outlined in Part I, "Air Quality Federal Title V and State Operation Permit," and to construct, as outlined in Part II, "Air Quality State Construction Permit," the emission source(s) and associated air pollution control device(s) specified herein, in accordance with the terms, conditions, and limitations within this permit. This permit is issued under the provisions of Article 21B of Chapter 143, General Statutes of North Carolina as amended, and Title 15A North Carolina Administrative Codes (15A NCAC), Subchapters 2D and 2Q, and other applicable Laws.

Pursuant to Title 15A NCAC, Subchapter 2Q, the Permittee shall not construct, operate, or modify any emission source(s) or air pollution control device(s) without having first submitted a complete Air Quality Permit Application to the permitting authority and received an Air Quality Permit, except as provided in this permit.

Permittee:	**Wayne County Municipal Solid Waste Landfill**
Facility ID:	**9600250**
Facility Site Location:	**460B Landfill Road**
City, County, State, Zip:	**Dudley, Wayne County, North Carolina 28333**
Mailing Address:	**460B Landfill Road**
City, State, Zip:	**Dudley, North Carolina 28633**
Application Number:	**9600250.05A**
Complete Application Date:	**June 6, 2005**
Renewal Application Due Date:	**July 30, 2009**
Primary SIC Code:	**4953**
Division of Air Quality:	**Washington Regional Office**
Regional Office Address:	**943 Washington Square Mall Washington, NC 27899**

Permit issued this the 10th day of October, 2005.

Laura S. Butler, P.E., Chief, Air Permits Section
By Authority of the Environmental Management Commission

Table Of Contents

PART I - AIR QUALITY FEDERAL TITLE V AND STATE OPERATION PERMIT

SECTION 1: PERMITTED EMISSION SOURCE(S) AND ASSOCIATED AIR POLLUTION CONTROL DEVICE(S) AND APPURTENANCES

SECTION 2: SPECIFIC LIMITATIONS AND CONDITIONS

2.1 - Emission Source(s) Specific Limitations and Conditions (Including specific requirements, testing, monitoring, recordkeeping, and reporting requirements)

2.2 - Multiple Emission Source(s) Specific Limitations and Conditions (Including specific requirements, testing, monitoring, recordkeeping, and reporting requirements)

SECTION 3: GENERAL PERMIT CONDITIONS

ATTACHMENT

List of Acronyms

PART II - AIR QUALITY STATE CONSTRUCTION PERMIT

This permit does not include a Part II.

PART I
AIR QUALITY FEDERAL TITLE V AND STATE OPERATION PERMIT

The Division of Air Quality (DAQ), the United States Environmental Protection Agency (EPA), and citizens as defined under the Federal Clean Air Act have the authority to enforce the terms, conditions, and limitations contained in Part I of this permit unless otherwise specified.

Under Title 15A NCAC 2Q, the operation of emission source(s) and associated air pollution control device(s) and appurtenances listed in Part I of this permit is based on plans, specifications, operating parameters, and other information as submitted in the Air Quality Permit Application.

SECTION 1- PERMITTED EMISSION SOURCE(S) AND ASSOCIATED AIR POLLUTION CONTROL DEVICE(S) AND APPURTENANCES

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
ES-01 – closed ES-02 – closed ES-03 – active **(NSPS Subpart WWW, MACT Subpart AAAA)**	Municipal solid waste landfill	CD-GCCS1 CD-F1	One landfill gas collection and control system with: One gas-fired candlestick-type flare (30 million Btu per hour heat input capacity)

SECTION 2 - SPECIFIC LIMITATIONS AND CONDITIONS

2.1- Emission Source(s) and Control Devices(s) Specific Limitations and Conditions

The emission source(s) and associated air pollution control device(s) listed below are subject to the following specific terms, conditions, and limitations, including the monitoring, recordkeeping, and reporting requirements as specified herein:

A. **Municipal solid waste landfill (ID Nos. ES-01, ES-02, and ES-03) with associated gas collection system and gas-fired candlestick-type flare (ID Nos. CD-GCCS1 and CD-F1)**

The following provides a summary of limits and/or standards for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Limits/Standards	Applicable Regulation
Sulfur dioxide	2.3 pounds per million Btu heat input	15A NCAC 2D .0516
Visible emissions	20 percent opacity	15A NCAC 2D .0521
Nonmethane organic compounds (NMOC)	A control system designed to reduce NMOC by 98 weight percent, **OR** Route landfill gas to an enclosed combustion device that reduces the outlet NMOC concentration to less than 20 parts per million by volume, dry basis as hexane at three percent oxygen, **OR** Route the collected landfill gas to a treatment system that processes the collected gas for subsequent sale or use	15A NCAC 2D .0524 (40 CFR 60, Subpart WWW)
Hazardous air pollutants	Work practice standards, startup, shutdown, and malfunction plan	15A NCAC 2D .1111 (40 CFR 63, Subpart AAAA)
Odorous emissions	**State-enforceable only** Odorous emissions must be controlled	15A NCAC 2D .1806
Toxic air pollutants	**State-enforceable only** Facility-wide toxics evaluation	15A NCAC 2Q .0705

1. **15A NCAC 2D .0516: SULFUR DIOXIDE EMISSIONS FROM COMBUSITON SOURCES**
   a. Emissions of sulfur dioxide from the flare **(ID No. CD-F1)** shall not exceed 2.3 pounds per million Btu heat input. Sulfur dioxide formed by the combustion of sulfur in fuels, wastes, ores, and other substances shall be included when determining compliance with this standard. [15A NCAC 2D .0516]

   Testing [15A NCAC 2D .0501(c)(4)]
   b. If emission testing is required, the testing shall be performed in accordance with 15A NCAC 2D .0501(c)(4) and General Condition JJ. If the results of this test are above the limit given in Section 2.1 A.1.a above, the Permittee shall be deemed in noncompliance with 15A NCAC 2D .0516.

   Monitoring/Recordkeeping/Reporting [15A NCAC 2Q .0508(f)]
   c. No monitoring/recordkeeping/reporting is required for sulfur dioxide emissions from the firing of landfill gas from the flare **(ID No. CD-F1)**.

2. **15A NCAC 2D .0521: CONTROL OF VISIBLE EMISSIONS**
   a. Visible emissions from the flare **(ID No. CD-F1)** shall not be more than 20 percent opacity when averaged over a six-minute period. However, six-minute averaging periods may exceed 20 percent not more than once in any hour and not more than four times in any 24-hour period. In no event shall the six-minute average exceed 87 percent opacity. [15A NCAC 2D .0521(d)]

   Testing [15A NCAC 2D .0501(c)(8)]
   b. If emission testing is required, the testing shall be performed in accordance with 15A NCAC 2D .0501(c)(8) and General Condition JJ. If the results of this test are above the limit given in Section 2.1 A.2.a above, the Permittee shall be deemed in noncompliance with 15A NCAC 2D .0521.

   Monitoring/Recordkeeping/Reporting [15A NCAC 2Q .0508(f)]
   c. No monitoring/recordkeeping/reporting is required for visible emissions from the firing of landfill gas in the flare **(ID No. CD-F1)**.

3. 15A NCAC 2D .0524: NEW SOURCE PERFORMANCE STANDARDS (40 CFR PART 60, SUBPART WWW)

a. Emissions of nonmethane organic compounds (NMOCs) from the landfill **(ID Nos. ES-01, ES-02, and ES-03)** shall be controlled by a gas collection and control system **(ID No. CD-GCCS1)** that routes the gas to an open flare **(ID No. CD-F1)** designed in accordance with 40 CFR 60.18.

Testing [15A NCAC 2D .0524, 40 CFR 60.754]

b. When testing is required, the testing shall be performed in accordance with 40 CFR 60.754 and General Condition JJ. If the results are above the limit given in Section 2.1 A.3.a above, the Permittee shall be deemed in noncompliance with the NMOC standard in 40 CFR Part 60, Subpart WWW.

Monitoring [15A NCAC 2D .0524, 40 CFR 60.756]

c. The Permittee shall install a sampling port and a thermometer, other temperature measuring device, or an access port for temperature measurements at each wellhead, and:
   i. measure the gauge pressure in the gas collection header on a monthly basis as provided in 40 CFR 60.775(a)(3);
   ii. monitor nitrogen or oxygen concentration in the landfill gas on a monthly basis as provided in 40 CFR 60.755(a)(5);
   iii. monitor temperature of the landfill gas on a monthly basis as provided in 60.755(a)(5); and
   iv. monitor surface concentrations of methane along the entire perimeter of the collection area (or site-specific established spacing) for each collection area on a quarterly basis in accordance with 40 CFR 60.755(c). The serpentine pattern mentioned in 60.755(c) means a back-and-forth series of sweeps across the entire surface of the landfill, at 30-meter intervals.

d. The Permittee shall calibrate, maintain, and operate according to the manufacturer's recommendations the following equipment when using an enclosed combustor to comply with this Subpart:
   i. a temperature monitoring device equipped with a continuous recorder and having a minimum accuracy of $\pm$ 1percent of the temperature being measured expressed in degrees Celsius or $\pm$ 0.5 degrees Celsius, whichever is greater;
   ii. a device that records flow to or bypass of the control device. The Permittee shall either install, calibrate, and maintain a gas flow rate measuring device that shall record the flow to the control device at least every 15 minutes; or secure the bypass valve in the closed position with a car-seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism shall be performed at least one every month to ensure that the valve is maintained in the closed position and that the gad flow is not diverted through the bypass line.

e. The Permittee who is seeking to install a collection system that does not meet the specifications in 40 CFR 60.759 or seeking to monitor alternative parameters to those required by 40 CFR 60.753 through 60.756 shall provide information satisfactory to the EPA as provided in 60.752(b)(2)(i)(B) and (C) describing the design and operation of the collection system, the operating parameters that would indicate proper performance, and appropriate monitoring procedures.

Recordkeeping [15A NCAC 2D .0524, 40 CFR 60.758]

f. The Permittee shall keep for at least five years, up-to-date, readily accessible, on-site records (written or electronic) of the maximum design capacity, the current amount of solid waste in-place, and the year-by-year waste acceptance rate. Off-site records may be maintained if they are retrievable within four hours.

g. The Permittee shall keep up-to-date, readily accessible records for the life of the control equipment of the data measured during the initial performance test or compliance determination. Records of subsequent tests shall be maintained for a minimum of five years. Records of control device vendor specifications shall be maintained until removal. Control equipment data shall include the maximum expected gas generation flow rate, the density of wells, horizontal collectors, surface collectors, or other gas extraction devices.

h. The Permittee shall keep for the life of the control system an up-to-date, readily accessible plot map showing each existing and planned collector in the system and providing a unique identification location label for each collector.

i. The Permittee shall keep up-to-date, readily accessible continuous records of the equipment operating parameters specified in 60.756 as well as up-to-date, readily accessible records for periods of operation during which the parameter boundaries established during the most recent performance test are exceeded.
j. The Permittee shall keep up-to-date, readily accessible records of the installation date and location of all newly installed collectors. Documentation shall be kept of the nature, date of deposition, amount, and location of asbestos-containing or non-degradable waste excluded from collection as well as any nonproductive areas excluded from production.
k. The Permittee shall keep for at least five years up-to-date, readily accessible records of all collection and control system exceedences of the operational standards, the reading in the subsequent month whether or not the second reading is an exceedance, and the location of each exceedance.

Reporting [15A NCAC 2D .0524, 40 CFR 60.757]

l. The Permittee shall submit the initial annual report within 180 days of the installation and start-up of the collection and control system, and shall include the initial performance test report required under 40 CFR 60.8.
m. The Permittee shall submit annual reports of the recorded information for the gas collection and control system as follows:
    i. value and length of time for exceedance of applicable parameters monitored under 40 CFR 60.756(a), (b), (c), and (d);
    ii. description and duration of all periods when the gas stream is diverted from the control device through a bypass line or the indication of bypass flow as specified in 40 CFR 60.756;
    iii. description and duration of all periods when the control device was not operating for a period exceeding one hour and length of time the control device was not operating;
    iv. all periods when the collection system was not operating in excess of five days;
    v. the location of each exceedance of the 500 parts per million methane concentration and the concentration recorded at each location for which an exceedance was recorded in the previous month;
    vi. the date of installation and the location of each well or collection system expansion added in accordance with 40 CFR 60.755(a)(3), (b), and (c)(4).
n. The Permittee shall submit a summary report of monitoring and recordkeeping activities postmarked on or before January 30 of each calendar year for the preceding six-month period between July and December and July 30 of each calendar year for the preceding six-month period between January and June. All instances of deviations from the requirements of this permit must be clearly identified.

4. 15A NCAC 2D .1111: MAXIMUM ACHIVABLE CONTROL TECHNOLOGY (40 CFR 63, SUBPART AAAA)

Applicability [40 CFR 63.1935]

a. The landfill **(ID Nos. ES-01, ES-02, and ES-03)** shall comply with all requirements of 15A NCAC 2D .1111 "Maximum Achievable Control Technology" and 40 CFR Part 63, Subpart AAAA "National Emission Standards for Hazardous Air Pollutants from Municipal Solid Waste Landfills."

Definitions and Nomenclature [40 CFR 63.1990]

b. For the purpose of this permit condition, the definitions and nomenclature contained in 40 CFR 63.1990 shall apply.

Regulated Pollutants [40 CFR 63.2]

c. Hazardous air pollutant (HAP) means any air pollutant listed in or pursuant to Section 112(b) of the Clean Air Act.

Applicability to General Provisions [40 CFR 63.1935]

d. The Permittee shall comply with the requirements of 40 CFR 63, Subpart A "General Provisions" according to the applicability of Subpart A to such sources as identified in 40 CFR 63, Subpart AAAA.

Compliance Dates [40 CFR 63.1945]

e. The existing landfill **(ID Nos. ES-01, ES-02, and ES-03)** is an affected area source in accordance with 40 CFR 63.1935(a)(3). An area source is by definition a landfill that is not major due to the annual emission rate of HAPs, but one that has greater than 2.5 million megagrams (Mg) and 2.5 million cubic meters (m^3) and has estimated uncontrolled emissions equal to or greater than 50 megagrams per year (Mg/year) NMOC emissions. This facility shall be in compliance with this regulation by the date this landfill is required to install a collection and control system in accordance with 40 CFR 60.752(b)(2) of the New Source Performance Standards, Subpart WWW.

Monitoring Requirements [40 CFR 63.1955 and 63.1960]

f. Compliance with this Subpart (AAAA) is determined in accordance with the New Source Performance Standards, Subpart WWW, including performance testing, monitoring of the collection system, continuous parameter monitor, and other credible evidence. In addition, continuous parameter monitoring data, collected under 40 CFR 60.756(c)(1) and (d) of Subpart WWW, are used to demonstrate compliance with the operating conditions for control systems.

The Permittee must develop and implement a written Start-up/Shutdown/Malfunction (SSM) plan according to the provision in 40 CFR 63.6(e)(3). A copy of the SSM shall be maintained on site.

For the purposes of this rule, deviation means any instance in which an affected source subject to this Subpart, or an owner or operator of such a source:

i. fails to meet any requirement or obligation established by this Subpart, including, but not limited to, any emission limitation (including any operating limit) or work practice standard;
ii. fails to meet any term or condition that is adopted to implement an applicable requirement in this Subpart and that is included in the operating permit for any affected source required to obtain such a permit;
iii. fails to meet any emission limitation, (including any operating limit), or work practice standard in this Subpart during SSM, regardless of whether or not such failure is permitted by this Subpart; or
iv. fails to write, develop, implement, or maintain a copy of the SSM plan.

If a deviation occurs, the Permittee has failed to meet the control device operating conditions described in this Subpart and have deviated from the requirements of this Subpart.

Recordkeeping/Reporting Requirements [40 CFR 63.1980]

g. The Permittee shall keep records and reports as specified in the General Provisions of 40 CFR Part 60, and in Subpart WWW, except the annual report described in 40 CFR 60.757(f) shall be submitted every six months.

If actions taken during a start-up, shutdown, and malfunction plan are consistent with the procedures in the start-up, shutdown, and malfunction plan, this information shall be included in a semi-annual start-up, shutdown, and malfunction plan report. Any time an action taken during a start-up, shutdown, and malfunction plan is not consistent with the start-up, shutdown, and malfunction plan, the source shall report actions taken within 2 working days after commencing such action, followed by a letter 7 days after the event.

State-enforceable only

5. 15A NCAC 2D .1806: CONTROL AND PROHIBITION OF ODOROUS EMISSIONS

a. The Permittee shall not operate the facility without implementing management practices or installing and operating odor control equipment sufficient to prevent odorous emissions from the facility from causing or contributing to objectionable odors beyond the facility's boundary.

State-enforceable only

6. 15A NCAC 2Q .0705 "Existing Facilities And SIC Calls", 15A NCAC 2D .1100 "Control Of Toxic Air Pollutants"

Toxic Air Pollutant Emissions Limitation And Requirements - Pursuant to 15A NCAC 2D .1100 and in accordance with the approved application for an air toxic compliance demonstration, the following permit limit shall not be exceeded:

Emission Sources	Toxic Air Pollutants	Emission Limits	
Municipal Solid Waste Landfill (ES-1, ES-2, ES-3)	Benzene	9.869 lbs per year	----------
	Vinyl chloride	50.362 lbs per year	----------
	Hydrogen sulfide	----------	2.841 lbs per day
	Hydrogen chloride	----------	0.20 lbs per hour

7. TOXIC AIR POLLUTANT EMISSIONS LIMITATION REQUIREMENT

Pursuant to 15A NCAC 2Q .0705, the Wayne Landfill (ID Nos. ES-01, ES-02, and ES-03), shall be operated and maintained in such a manner that emissions of any listed toxic air pollutants from the facility, including fugitive emissions, will not exceed the "Emission Rates Requiring A Permit" specified in 15A NCAC 2Q .0711. In accordance with the approved application, the Permittee shall maintain records of operational information demonstrating that the toxic air pollutant emissions do not exceed the emission rates as listed below. In the event one (1) or more of these thresholds are exceeded, compliance with 15A NCAC 2D. 1100 shall be demonstrated.

Emission Source ID No.	Toxic Air Pollutants	Threshold (lbs/yr)	Threshold (lbs/day)	Threshold (lbs/hr)
ES-1, ES-2, ES-3 Municipal solid waste landfill	1,1,1-Trichloroethane (Methyl chloroform)	----------	250	----------
	1,1,2,2-Tetrachloroethane	430	----------	----------
	1,1-Dichloroethene (Vinylidene chloride)	----------	2.5	----------
	1,2-Dichloroethane (Ethylene dichloride)	260	----------	----------
	Acrylonitrile	10	----------	----------
	Carbon disulfide	----------	3.9	----------
	Carbon tetrachloride	460	----------	----------
	Chlorobenzene	----------	46	----------
	Chloroform	290	----------	----------
	Dichlorobenzene	----------	----------	16.8
	Dichlorodifluoromethane	----------	5200	----------
	Dichlorofluoromethane	----------	10	----------
	Dichloromethane (Methylene chloride)	1600	----------	0.39
	Ethyl acetate	----------	----------	36
	Ethyl mercaptan (Ethanethiol)	----------	----------	0.025
	Ethylene dibromide	27	----------	----------

-Table continued on the next page-

7. **TOXIC AIR POLLUTANT EMISSIONS LIMITATION REQUIREMENT: (Continued)**

Emission Source ID No.	Toxic Air Pollutants	Threshold (lbs/yr)	Threshold (lbs/day)	Threshold (lbs/hr)
ES-1, ES-2, ES-3 Municipal solid waste landfill	Mercury (Total)	----------	0.013	----------
	Methyl ethyl ketone	----------	78	22.4
	Methyl isobutyl ketone	----------	52	7.6
	Methyl mercaptan	----------	----------	0.013
	n-hexane	----------	23	----------
	Perchloroethylene (Tetrachloroethene)	13000	----------	----------
	Styrene	----------	----------	2.7
	Toluene	----------	98	14.4
	Trichloroethylene (Trichloroethene)	4000	----------	----------
	Trichlorofluoromethane (75-69-4)	----------	----------	140
	Xylenes	----------	57	16.4

SECTION 3 - GENERAL CONDITIONS

This Section describes terms and conditions applicable to this Title V facility. All references to the "permit" in this Section apply only to Part I of the permit.

A. **General Provisions** [NCGS 143-215 and 15A NCAC 2Q .0508(aa)]
1. Terms not otherwise defined in this permit shall have the meaning assigned to such terms as defined in 15A NCAC 2D and 2Q.
2. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are binding and enforceable pursuant to NCGS 143-215.114A and 143-215.114B, including assessment of civil and/or criminal penalties. Any unauthorized deviation from the conditions of this permit may constitute grounds for revocation and/or enforcement action by the DAQ.
3. This permit is not a waiver of or approval of any other Department permits that may be required for other aspects of the facility which are not addressed in this permit.
4. This permit does not relieve the Permittee from liability for harm or injury to human health or welfare, animal or plant life, or property caused by the construction of this permitted facility, or from penalties therefore, nor does it allow the Permittee to cause pollution in contravention of state laws or rules, unless specifically authorized by an order from the North Carolina Environmental Management Commission.
5. Except as identified as state-only requirements in this permit, all terms and conditions contained herein shall be enforceable by the DAQ, the EPA, and citizens of the United States as defined in the Federal Clean Air Act.
6. Any stationary source of air pollution shall not be operated, maintained, or modified without the appropriate and valid permits issued by the DAQ, unless the source is exempted by rule. The DAQ may issue a permit only after it receives reasonable assurance that the installation will not cause air pollution in violation of any of the applicable requirements. A permitted installation may only be operated, maintained, constructed, expanded, or modified in a manner that is consistent with the terms of this permit.

B. **Permit Availability** [15A NCAC 2Q .0507(k) and .0508(aa)]
The Permittee shall have available at the facility a copy of this permit and shall retain for the duration of the permit term one complete copy of the application and any information submitted in support of the application package. The permit and application shall be made available to an authorized representative of Department of Environment and Natural Resources upon request.

C. **Severability Clause** [15A NCAC 2Q .0508(i)]
In the event of an administrative challenge to a final binding permit in which a condition is held to be invalid, the provisions in this permit are severable so that all requirements contained in the permit, except those held to be invalid, shall remain valid and must be complied with.

D. **Submissions** [15A NCAC 2Q .0507(c)]
Except as otherwise specified herein, two copies of all documents, reports, test data, monitoring data, notifications, request for renewal, and any other information required by this permit shall be submitted to the appropriate Regional Office. Refer to the Regional Office address on the cover page of this permit. For continuous emissions monitoring systems (CEMS) reports, continuous opacity monitoring systems (COMS) reports, quality assurance (QA)/quality control (QC) reports, acid rain CEM certification reports, and NOx budget CEM certification reports, one copy shall be sent to the appropriate Regional Office and one copy shall be sent to:

Supervisor, Stationary Source Compliance
North Carolina Division of Air Quality
1641 Mail Service Center
Raleigh, NC 27699-1641

E. **Duty to Comply** [15A NCAC 2Q .0508(j)]
The Permittee shall comply with all terms, conditions, requirements, limitations and restrictions set forth in this permit. Noncompliance with any permit condition except conditions identified as state-only requirements constitutes a violation of the Federal Clean Air Act. Noncompliance with any permit condition is grounds for enforcement action, for permit termination, revocation and reissuance, or modification, or for denial of a permit renewal application.

F. **Circumvention** – STATE ENFORCEABLE ONLY
The facility shall be properly operated and maintained at all times in a manner that will effect an overall reduction in air pollution. Unless otherwise specified by this permit, no emission source may be operated without the concurrent operation of its associated air pollution control device(s) and appurtenances.

G. **Permit Modifications**
1. Administrative Permit Amendments [15A NCAC 2Q .0514]
The Permittee shall submit an application for an administrative permit amendment in accordance with 15A NCAC 2Q .0514.
2. Transfer of Ownership or Operation [15A NCAC 2Q .0524]
The Permittee shall submit an application for an ownership change in accordance with 15A NCAC 2Q .0524.
3. Minor Permit Modifications [15A NCAC 2Q .0515]
The Permittee shall submit an application for a minor permit modification in accordance with 15A NCAC 2Q .0515.
4. Significant Permit Modification [15A NCAC 2Q .0516]
The Permittee shall submit an application for a significant permit modification in accordance with 15A NCAC 2Q .0516.
5. Reopen for Cause [15A NCAC 2Q .0517]
The Permittee shall submit an application for reopening for cause in accordance with 15A NCAC 2Q .0517.

H. **Changes Not Requiring Permit Modifications**

1. Section 502(b)(10) Changes [15A NCAC 2Q .0523(a)]
   a. "Section 502(b)(10) changes" means changes that contravene an express permit term or condition. Such changes do not include changes that would violate applicable requirements or contravene federally enforceable permit terms and conditions that are monitoring (including test methods), recordkeeping, reporting, or compliance certification requirements.
   b. The Permittee may make Section 502(b)(10) changes without having the permit revised if:
      i. the changes are not a modification under Title I of the Federal Clean Air Act;
      ii. the changes do not cause the allowable emissions under the permit to be exceeded;
      iii. the Permittee notifies the Director and EPA with written notification at least seven days before the change is made; and
      iv. the Permittee shall attach the notice to the relevant permit.
   c. The written notification shall include:
      i. a description of the change;
      ii. the date on which the change will occur;
      iii. any change in emissions; and
      iv. any permit term or condition that is no longer applicable as a result of the change.
   d. Section 502(b)(10) changes shall be made in the permit the next time that the permit is revised or renewed, whichever comes first.
2. Off Permit Changes [15A NCAC 2Q .0523(b)]
   The Permittee may make changes in the operation or emissions without revising the permit if:
   a. the change affects only insignificant activities and the activities remain insignificant after the change; or
   b. the change is not covered under any applicable requirement.
3. Emissions Trading [15A NCAC 2Q .0523(c)]
   To the extent that emissions trading is allowed under 15A NCAC 2D, including subsequently adopted maximum achievable control technology standards, emissions trading shall be allowed without permit revision pursuant to 15A NCAC 2Q .0523(c).

I.A. **Reporting Requirements for Excess Emissions and Permit Deviations**

[15A NCAC 2D .0535(f) and 2Q .0508(f)(3)]
"Excess Emissions" – means an emission rate that exceeds any applicable emission limitation or standard allowed by any rule in Sections .0500, .0900, .1200, or .1400 of Subchapter 2D; or by a permit condition; or that exceeds an emission limit established in a permit issued under 15A NCAC 2Q .0700. *(Note: Definitions of excess emissions under 2D .1100 and 2D .1111 shall apply where defined by rule.)*
"Deviations" – any action or condition not in accordance with the terms and conditions of this permit including those attributable to upset conditions, but not including excess emissions as defined above.

Excess Emissions

1. If a source is required to report excess emissions under NSPS (15A NCAC 2D .0524), NESHAPS (15A NCAC 2D .1110 or .1111), or the operating permit provides for periodic (*e.g.*, quarterly) reporting of excess emissions, reporting shall be performed as prescribed therein.
2. If the source is not subject to NSPS (15A NCAC 2D .0524), NESHAPS (15A NCAC 2D .1110 or .1111), or these rules do NOT define "excess emissions," the Permittee shall report excess emissions in accordance with 15A NCAC 2D .0535 as follows:
   a. Pursuant to 15A NCAC 2D .0535, if excess emissions last for more than four hours resulting from a malfunction, a breakdown or process or control equipment, or any other abnormal condition, the owner or operator shall:

i. notify the Regional Supervisor or Director of any such occurrence by 9:00 a.m. Eastern Time of the Division's next business day of becoming aware of the occurrence and provide:

- name and location of the facility;
- nature and cause of the malfunction or breakdown;
- time when the malfunction or breakdown is first observed;
- expected duration; and
- estimated rate of emissions;

ii. notify the Regional Supervisor or Director immediately when corrected measures have been accomplished; and

iii. submit, if requested, to the Regional Supervisor or Director within 15 days after the request a written report as described in 15A NCAC 2D .0535(f)(3).

Other Notification Requirements

3. Pursuant to 15A NCAC 2Q .0508(f)(3), the Permittee shall report deviations or excess emissions lasting for less than or equal to four hours from permit requirements (terms and conditions) as follows:
   a. Notify the Regional Supervisor or Director of all other deviations from permit requirements not covered under 15A NCAC 2D .0535 on the next business day after becoming aware of the deviation. A written report shall be submitted within two business days to the Regional Supervisor and shall include the probable cause of such deviation and any corrective actions or preventative actions taken. All reports or deviations from permit requirements shall be certified by a responsible official.

I.B. **Other Requirements under 15A NCAC 2D .0535**

The Permittee shall comply with all other applicable requirements contained in 15A NCAC 2D .0535, including 15A NCAC 2D .0535(c) as follows:

1. Any excess emissions that do not occur during start-up and shutdown shall be considered a violation of the appropriate rule unless the owner or operator of the sources demonstrates to the Director, that the excess emissions are a result of a malfunction. The Director shall consider, along with any other pertinent information, the criteria contained in 15A NCAC 2D .0535(c)(1) through (7).
2. Note that 15A NCAC 2D .0535(g) is state-enforceable only.

J. **Emergency Provisions** [40 CFR 70.6(g)]

The Permittee shall be subject to the following provisions with respect to emergencies:

1. An emergency means any situation arising from sudden and reasonably unforeseeable events beyond the control of the facility, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the facility to exceed a technology-based emission limitation under the permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.
2. An emergency constitutes an affirmative defense to an action brought for noncompliance with such technology-based emission limitations if the conditions specified in 3. below are met.
3. The affirmative defense of emergency shall be demonstrated through properly signed contemporaneous operating logs or other relevant evidence that include information as follows:
   a. an emergency occurred and the Permittee can identify the cause(s) of the emergency;
   b. the permitted facility was at the time being properly operated;
   c. during the period of the emergency the Permittee took all reasonable steps to minimize levels of emissions that exceeded the standards or other requirements in the permit; and
   d. the Permittee submitted notice of the emergency to the DAQ within two working days of the time when emission limitations were exceeded due to the emergency. This notice must contain a description of the emergency, steps taken to mitigate emissions, and corrective actions taken.
4. In any enforcement proceeding, the Permittee seeking to establish the occurrence of an emergency has the burden of proof.
5. This provision is in addition to any emergency or upset provision contained in any applicable requirement specified elsewhere herein.

K. **Permit Renewal** [15A NCAC 2Q .0513(b)]
This permit is issued for a fixed term of five years for facilities subject to Title IV requirements and for a term not to exceed five years in the case of all other facilities. This permit shall expire at the end of its term. Permit expiration terminates the facility's right to operate unless a complete renewal application is submitted at least nine months before the date of permit expiration. If the Permittee or applicant has complied with 15A NCAC 2Q .0512(b)(1), this permit shall not expire until the renewal permit has been issued or denied. All terms and conditions of this permit shall remain in effect until the renewal permit has been issued or denied.

L. **Need to Halt or Reduce Activity Not a Defense** [15A NCAC 2Q .0508(k)]
It shall not be a defense for a Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

M. **Duty to Provide Information (submittal of information)** [15A NCAC 2Q .0508(n)]
1. The Permittee shall furnish to the DAQ, in a timely manner, any reasonable information that the Director may request in **writing** to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit or to determine compliance with the permit.
2. The Permittee shall furnish the DAQ copies of records required to be kept by the permit when such copies are requested by the Director. For information claimed to be confidential, the Permittee may furnish such records directly to the EPA upon request along with a claim of confidentiality.

N. **Duty to Supplement** [15A NCAC 2Q .0705(f)]
The Permittee, upon becoming aware that any relevant facts were omitted or incorrect information was submitted in the permit application, shall promptly submit such supplementary facts or corrected information to the DAQ. The Permittee shall also provide additional information as necessary to address any requirement that becomes applicable to the facility after the date a complete permit application was submitted but prior to the release of the draft permit.

O. **Retention of Records** [15A NCAC 2Q .0508(f)]
The Permittee shall retain records of all required monitoring data and supporting information for a period of at least five years from the date of the monitoring sample, measurement, report, or application. Supporting information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring information, and copies of all reports required by the permit. These records shall be maintained in a form suitable and readily available for expeditious inspection and review. Any records required by the conditions of this permit shall be kept on site and made available to DAQ personnel for inspection upon request.

P. **Compliance Certification** [15A NCAC 2Q .0508(t)]
The Permittee shall submit to the DAQ and the EPA (Air and EPCRA Enforcement Branch, EPA, Region 4, 61 Forsyth Street, Atlanta, GA 30303) postmarked on or before **March 1** a compliance certification (for the preceding calendar year) by a responsible official with all federally-enforceable terms and conditions in the permit, including emissions limitations, standards, or work practices. The compliance certification shall comply with additional requirements as may be specified under Sections 114(a)(3) or 504(b) of the Federal Clean Air Act. The compliance certification shall specify:
1. the identification of each term or condition of the permit that is the basis of the certification;
2. the compliance status;
3. whether compliance was continuous or intermittent; and
4. the method(s) used for determining the compliance status of the source, currently and over the reporting period.

Q. **Certification by Responsible Official** [15A NCAC 2Q .0520]
A responsible official shall certify the truth, accuracy, and completeness of any application form, report, or compliance certification required by this permit. All certifications shall state that based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

R. **Permit Shield for Applicable Requirements** [15A NCAC 2Q .0512]
1. Compliance with the terms and conditions of this permit shall be deemed compliance with applicable requirements, where such applicable requirements are included and specifically identified in the permit as of the date of permit issuance.
2. A permit shield shall not alter or affect:
   a. the power of the Commission, Secretary of the Department, or Governor under NCGS 143-215.3(a)(12), or EPA under Section 303 of the Federal Clean Air Act;
   b. the liability of an owner or operator of a facility for any violation of applicable requirements prior to the effective date of the permit or at the time of permit issuance;
   c. the applicable requirements under Title IV; or
   d. the ability of the Director or the EPA under Section 114 of the Federal Clean Air Act to obtain information to determine compliance of the facility with its permit.
3. A permit shield does not apply to any change made at a facility that does not require a permit or permit revision made under 15A NCAC 2Q .0523.
4. A permit shield does not extend to minor permit modifications made under 15A NCAC 2Q .0515.

S. **Termination, Modification, and Revocation of the Permit** [15A NCAC 2Q .0519]
The Director may terminate, modify, or revoke and reissue this permit, if:
1. the information contained in the application or presented in support thereof is determined to be incorrect;
2. the conditions under which the permit or permit renewal was granted have changed;
3. violations of conditions contained in the permit have occurred;
4. the EPA requests that the permit be revoked under 40 CFR 70.7(g) or 70.8(d); or
5. the Director finds that termination, modification, or revocation and reissuance of the permit is necessary to carry out the purpose of NCGS Chapter 143, Article 21B.

T. **Insignificant Activities** [15A NCAC 2Q .0503]
Because an emission source or activity is insignificant does not mean that the emission source or activity is exempted from any applicable requirements or that the owner or operator of the source is exempted from demonstrating compliance with any applicable requirement. The Permittee shall have available at the facility at all times and made available to an authorized representative upon request, documentation, including calculations, if necessary, to demonstrate that an emission source or activity is insignificant.

U. **Property Rights** [15A NCAC 2Q .0508(m)]
This permit does not convey any property rights in either real or personal property or any exclusive privileges.

V. **Inspection and Entry** [15A NCAC 2Q .0508(r) and NCGS 143-215.3(a)(2)]
1. Upon presentation of credentials and other documents as may be required by law, the Permittee shall allow the DAQ, or an authorized representative, to perform the following:
   a. enter the Permittee's premises where the permitted facility is located or emissions-related activity is conducted, or where records are kept under the conditions of the permit;
   b. have access to and copy, at reasonable times, any records that are required to be kept under the conditions of the permit;
   c. inspect at reasonable times and using reasonable safety practices any source, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit; and
   d. sample or monitor substances or parameters, using reasonable safety practices, for the purpose of assuring compliance with the permit or applicable requirements at reasonable times.

   Nothing in this condition shall limit the ability of the EPA to inspect or enter the premises of the Permittee under Section 114 or other provisions of the Federal Clean Air Act.
2. No person shall refuse entry or access to any authorized representative of the DAQ who requests entry for purposes of inspection, and who presents appropriate credentials, not shall any person obstruct, hamper, or interfere with any such authorized representative which in the process of carrying out his official duties. Refusal of entry or access may constitute grounds for permit revocation and assessment of civil penalties.

W. **Annual Fee Payment** [15A NCAC 2Q .0508(o)]
1. The Permittee shall pay all fees in accordance with 15A NCAC 2Q .0200.
2. Payment of fees may be by check or money order made payable to the N.C. Department of Environment and Natural Resources. Annual permit fee payments shall refer to the permit number.
3. If, within 30 days after being billed, the Permittee fails to pay an annual fee, the Director may initiate action to terminate the permit under 15A NCAC 2Q .0519.

X. **Annual Emission Inventory Requirements** [15A NCAC 2Q .0207]
The Permittee shall report by **June 30 of each year** the actual emissions of each air pollutant listed in 15A NCAC 2Q .0207(a) from each emission source within the facility during the previous calendar year. The report shall be in or on such form as may be established by the Director. The accuracy of the report shall be certified by a responsible official of the facility.

Y. **Confidential Information** [15A NCAC 2Q .0107 and 2Q .0508(n)]
Whenever the Permittee submits information under a claim of confidentiality pursuant to 15A NCAC 2Q .0107, the Permittee may also submit a copy of all such information and claim directly to the EPA upon request. All requests for confidentiality must be in accordance with 15A NCAC 2Q .0107.

Z. **Construction and Operation Permits** [15A NCAC 2Q .0100 and .0300]
A construction and operating permit shall be obtained by the Permittee for any proposed new or modified facility or emission source which is not exempted from having a permit prior to the beginning of construction or modification, in accordance with all applicable provisions of 15A NCAC 2Q .0100 and .0300.

AA. **Standard Application Form and Required Information** [15A NCAC 2Q .0505 and .0507]
The Permittee shall submit applications and required information in accordance with the provisions of 15A NCAC 2Q .0505 and .0507.

BB. **Financial Responsibility and Compliance History** [15A NCAC 2Q .0507(d)(3)]
The DAQ may require an applicant to submit a statement of financial qualifications and/or statement of substantial compliance history.

CC. **Refrigerant Requirements (Stratospheric Ozone and Climate Protection)** [15A NCAC 2Q .0501(e)]
1. If the Permittee has appliances or refrigeration equipment, including air conditioning equipment, which use Class I or II ozone-depleting substances such as chlorofluorocarbons and hydrochlorofluorocarbons listed as refrigerants in 40 CFR Part 82 Subpart A Appendices A and B, the Permittee shall service, repair, and maintain such equipment according to the work practices, personnel certification requirements, and certified recycling and recovery equipment specified in 40 CFR Part 82 Subpart F.
2. The Permittee shall not knowingly vent or otherwise release any Class I or II substance into the environment during the repair, servicing, maintenance, or disposal of any such device except as provided in 40 CFR Part 82 Subpart F.
3. The Permittee shall comply with all reporting and recordkeeping requirements of 40 CFR 82.166. Reports shall be submitted to the EPA or its designee as required.

DD. **Prevention of Accidental Releases – Section 112(r)** [15A NCAC 2Q .0508(g)]
If the Permittee is required to develop and register a Risk Management Plan with EPA pursuant to Section 112(r) of the Clean Air Act, then the Permittee is required to register this plan in accordance with 40 CFR Part 68.

EE. **Prevention of Accidental Releases "General Duty" Clause – Section 112(r)(1) –**
FEDERALLY ENFORCEABLE ONLY
Although a risk management plan may not be required, if the Permittee produces, processes, handles, or stores any amount of a listed hazardous substance, the Permittee has a general duty to take such steps as are necessary to prevent the accidental release of such substance and to minimize the consequences of any release.

FF. **Title IV Allowances** [15A NCAC 2Q .0508(h)]
This permit does not limit the number of Title IV allowances held by the Permittee, but the Permittee may not use allowances as a defense to noncompliance with any other applicable requirement. The Permittee's emissions may not exceed any allowances that the facility lawfully holds under Title IV of the Federal Clean Air Act.

GG. **Air Pollution Emergency Episode** [15A NCAC 2D .0300]
Should the Director of the DAQ declare an Air Pollution Emergency Episode, the Permittee will be required to operate in accordance with the Permittee's previously approved Emission Reduction Plan or, in the absence of an approved plan, with the appropriate requirements specified in 15A NCAC 2D .0300.

HH. **Registration of Air Pollution Sources** [15A NCAC 2D .0200]
The Director of the DAQ may require the Permittee to register a source of air pollution. If the Permittee is required to register a source of air pollution, this registration and required information will be in accordance with 15A NCAC 2D .0202(b).

II. **Ambient Air Quality Standards** [15A NCAC 2D .0501(e)]
In addition to any control or manner of operation necessary to meet emission standards specified in this permit, any source of air pollution shall be operated with such control or in such manner that the source shall not cause the ambient air quality standards in 15A NCAC 2D .0400 to be exceeded at any point beyond the premises on which the source is located. When controls more stringent than named in the applicable emission standards in this permit are required to prevent violation of the ambient air quality standards or are required to create an offset, the permit shall contain a condition requiring these controls.

JJ. **General Emissions Testing and Reporting Requirements** [15A NCAC 2Q .0508(aa)]
If emissions testing is required by this permit or the DAQ or if the Permittee submits emissions testing to the DAQ in support of a permit application, the Permittee shall perform such testing in accordance with the appropriate EPA reference method(s) as approved by the DAQ and follow the procedures outlined below. The Permittee must request **in writing** and receive approval from the DAQ for an alternate test method or procedure.

1. The Permittee shall submit a completed Protocol Submittal Form to the DAQ Regional Supervisor at least 45 days prior to the scheduled test date. A copy of the Protocol Submittal Form may be obtained from the Regional Supervisor.
2. The Permittee shall notify the Regional Supervisor of the specific test dates at least 15 days prior to testing in order to afford the DAQ the opportunity to have an observer on-site during the sampling program.
3. During all sampling periods, the Permittee shall operate the emission source(s) under maximum normal operating conditions or alternative operating conditions as deemed appropriate by the Regional Supervisor or his delegate.
4. The Permittee shall submit **two** copies of the test report to the DAQ. The test report shall contain at a minimum the following information:
    a. a certification of the test results by sampling team leader and facility representative;
    b. a summary of emissions results and text detailing the objectives of the testing program, the applicable state and federal regulations, and conclusions about the testing and compliance status of the emission source(s);
    c. a detailed description of the tested emission source(s) and sampling location(s) process flow diagrams, engineering drawings, and sampling location schematics should be included as necessary;
    d. all field, analytical, and calibration data necessary to verify that the testing was performed as specified in the applicable test methods;
    e. example calculations for at least one test run using equations in the applicable test methods and all test results including intermediate parameter calculations; and
    f. documentation of facility operating conditions during all testing periods and an explanation relating these operating conditions to maximum normal operation. If necessary, provide historical process data to verify maximum normal operation.

5. The testing requirement(s) shall be considered satisfied only upon written approval of the test results by the DAQ.
6. The DAQ will review emission test results with respect exclusively to the specified testing objectives as proposed by the Permittee and approved by the DAQ. The use of the test results beyond the stated objectives remains subject to the approval of the DAQ.

KK. **Reopening for Cause** [15A NCAC 2Q .0517]

1. A permit shall be reopened and revised under the following circumstances:
   a. additional applicable requirements become applicable to a facility with remaining permit term of three or more years;
   b. additional requirements (including excess emission requirements) become applicable to a source covered by Title IV;
   c. the Director or EPA finds that the permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of the permit; or
   d. the Director or EPA determines that the permit must be revised or revoked to assure compliance with the applicable requirements.
2. Any permit reopening shall be completed or a revised permit issued within 18 months after the applicable requirement is promulgated. No reopening is required if the effective date of the requirement is after the expiration of the permit term unless the term of the permit was extended pursuant to 15A NCAC 2Q .0512(c).
3. Except for the state-enforceable only portion of the permit, the procedures set out in 15A NCAC 2Q .0507, .0521, or .0522 shall be followed to reissue the permit. If the State-enforceable only portion of the permit is reopened, the procedures in 15A NCAC 2Q .0300 shall be followed. The proceedings shall affect only those parts of the permit for which cause to reopen exists.
4. The Director shall notify the Permittee at least 60 days in advance of the date that the permit is to be reopened, except in cases of imminent threat to public health or safety the notification period may be less than 60 days.
5. Within 90 days, or 180 days in the EPA extends the response period, after receiving notification from the EPA that a permit needs to be terminated, modified, or revoked and reissued, the Director shall send to the EPA a proposed determination to termination, modification, or revocation and reissuance, as appropriate.

LL. **Reporting Requirements for Non-Operating Equipment** [15A NCAC 2Q .0508(f)]

The Permittee shall maintain a record of operation for permitted equipment noting whenever the equipment is taken from and placed into operation. During operation the monitoring recordkeeping and reporting requirements as prescribed by the permit shall be implemented within the monitoring period.

ATTACHMENT

List of Acronyms

AOS	Alternate Operating Scenario
BACT	Best Available Control Technology
Btu	British thermal unit
CEM	Continuous Emission Monitor
CFR	Code of Federal Regulations
CAA	Clean Air Act
DAQ	Division of Air Quality
DENR	Department of Environment and Natural Resources
EMC	Environmental Management Commission
EPA	Environmental Protection Agency
FR	Federal Register
GACT	Generally Available Control Technology
HAP	Hazardous Air Pollutant
MACT	Maximum Achievable Control Technology
NCAC	North Carolina Administrative Code
NCGS	North Carolina General Statutes
NESHAPS	National Emission Standards for Hazardous Air Pollutants
NO_X	Nitrogen Oxides
NSPS	New Source Performance Standard
OAH	Office of Administrative Hearings
PM	Particulate Matter
PM_{10}	Particulate Matter with Nominal Aerodynamic Diameter of 10 Micrometers or Less
POS	Primary Operating Scenario
PSD	Prevention of Significant Deterioration
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
tpy	Tons Per Year
VOC	Volatile Organic Compound

ENGINEERING CONSULTING SERVICES, LTD.
Geotechnical • Construction Materials • Environmental

RECEIVED
MAY 21 2009
Municipal Engineering Services Company, PA

May 20, 2009

Mr. Wayne Sullivan, PLS
Municipal Engineering Services Co. PA
The Corporate Center
1140 Benson Highway, Suite 220
Garner, NC 27529

RE: Preliminary Report of Geotechnical Engineering Services
Wayne County Municipal Landfill – C&D Fill Slope Evaluation
460 South Landfill Drive
Dudley, North Carolina
ECS Report Number: 06P.12847

Dear Mr. Sullivan:

ECS Carolinas, LLP (ECS) has completed the geotechnical slope stability analysis for the proposed updated maximum fill slopes for Wayne County C&D Landfill as requested by Municipal Engineering Services Company, PA (MESCO). The proposed landfill slopes are at 3 horizontal to 1 vertical (3H:1V), compared to the original design of 4H:1V.

Project Information

Based on the proposed finished grades and the section provided by MESCO we understand that the maximum waste height will be approximately 150 feet. The permanent side slopes for the cap will have an inclination of 3H:1V.

ECS has been provided with preliminary boring and well installation logs performed by others. The Wayne County Landfill lies in the Coastal Plain Region of North Carolina, and the soils generally consist of loose to medium dense silty SANDS and sandy SILTS, with sandy CLAY and Clayey SAND at the surface in many borings. Groundwater was encountered within most of the borings ranging from approximately 1 to 17 feet below the prevailing ground surface.

Engineering Analyses

Analyses were performed to determine global slope stability of the landfill. These analyses were based on the design drawings provided by MESCO. Shear strength and compressibility of the soil were estimated based on the soil descriptions on the provided boring logs and our previous experience. The analyses were performed by engineers specializing in geotechnical engineering and copies of the slope stability analyses are attached in the Appendix.

The C&D waste fill was evaluated for slope stability analysis using circular potential failure mechanism. The location and profile analyzed was based on the drawings provided by MESCO, which was considered representative of the proposed construction. The slope stability analysis was performed using the proprietary STEDwin/GSTABL7 computer program. The modeled slope configuration was based on the topographic information and site grading plan provided to us by MESCO, while the soil strata information, index properties and engineering properties used in these analyses were estimated based on the soil descriptions on the provided preliminary boring logs and our previous experience. For the pseudostatic analysis of the slope, we used an earthquake ground motion having a 2-percent probability of exceedance within a 50-year period (2,475 year return period).

The factors of safety were determined for both static and seismic loading, using the pseudo-static method. According to the USGS Map, Oct 2002, the seismic acceleration at the bed rock level based on the probabilistic earthquake (2,475 year return period) for this site is 0.08g.

The resulting factors of safety were computed to exceed 1.4 for permanent slopes under static loading conditions and more than 1.1 for seismic conditions. The results of the slope stability analyses are presented in the Appendix.

In conclusion, the results of the geotechnical analysis indicate that the 3H: 1V (permanent) slope configuration will be stable and provide an adequate factor of safety.

This report has been prepared in order to aid in the evaluation of C&D landfill side slopes and to assist the engineer in the design of this project. The scope is limited to the specific project and locations described herein and our description of the project represents our understanding of the significant aspects relative to soil and foundation characteristics. In the event that any changes in the nature or location of the proposed construction outlined in this report are planned, we should be informed so that the changes can be reviewed and the conclusions of this report modified or approved in writing by the geotechnical engineer. It is recommended that all construction operations dealing with earthwork and foundations be reviewed by an experienced geotechnical engineer to provide information as to whether the design requirements are fulfilled in the actual construction. If you wish, we would welcome the opportunity to provide field construction services for you during construction.

The data submitted in this report are based upon the information obtained from the soil borings and tests performed by others at the locations as indicated on the information referenced in this report. This report does not reflect any variations which may occur between the borings. In the performance of the subsurface exploration, specific information is obtained at specific locations at specific times. However, it is a well known fact that variations in soil conditions exist on most sites between boring locations and also such situations as groundwater levels vary from time to time. The nature and extent of variations may not become evident until the course of construction. If site conditions vary from those identified during the explorations, the recommendations contained in this report may require revision.

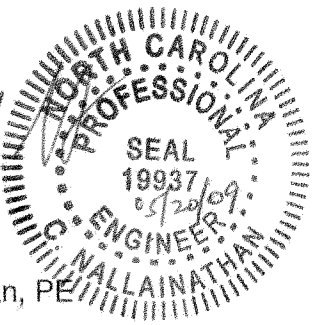
Thank you for the opportunity to work with you on this project. Should you have any questions or if we could be of further assistance, please do not hesitate to contact us.

Respectfully,

ECS CAROLINAS, LLP represented by:
Firm License No. F-1078

Heather A. Hickerson, PE
Geotechnical Project Manager
NC PE License No. 035100

C. (Nathan) Nallainathan, PE
Principal Engineer
NC PE License No. 019937



APPENDIX

SLOPE STABILITY ANALYSES RESULTS

Estimated Material Property Legend

Soil Layer	Moist Unit Weight (PCF)	Friction Angle	Cohesion (psf)
Future C&D Waste	95	22	150
Existing C&D Waste	85	20	200
Old Waste	75	20	250
Residual Soils Loose Silty Sands	110	28	50

Wayne County Landfill 3 to 1 slope

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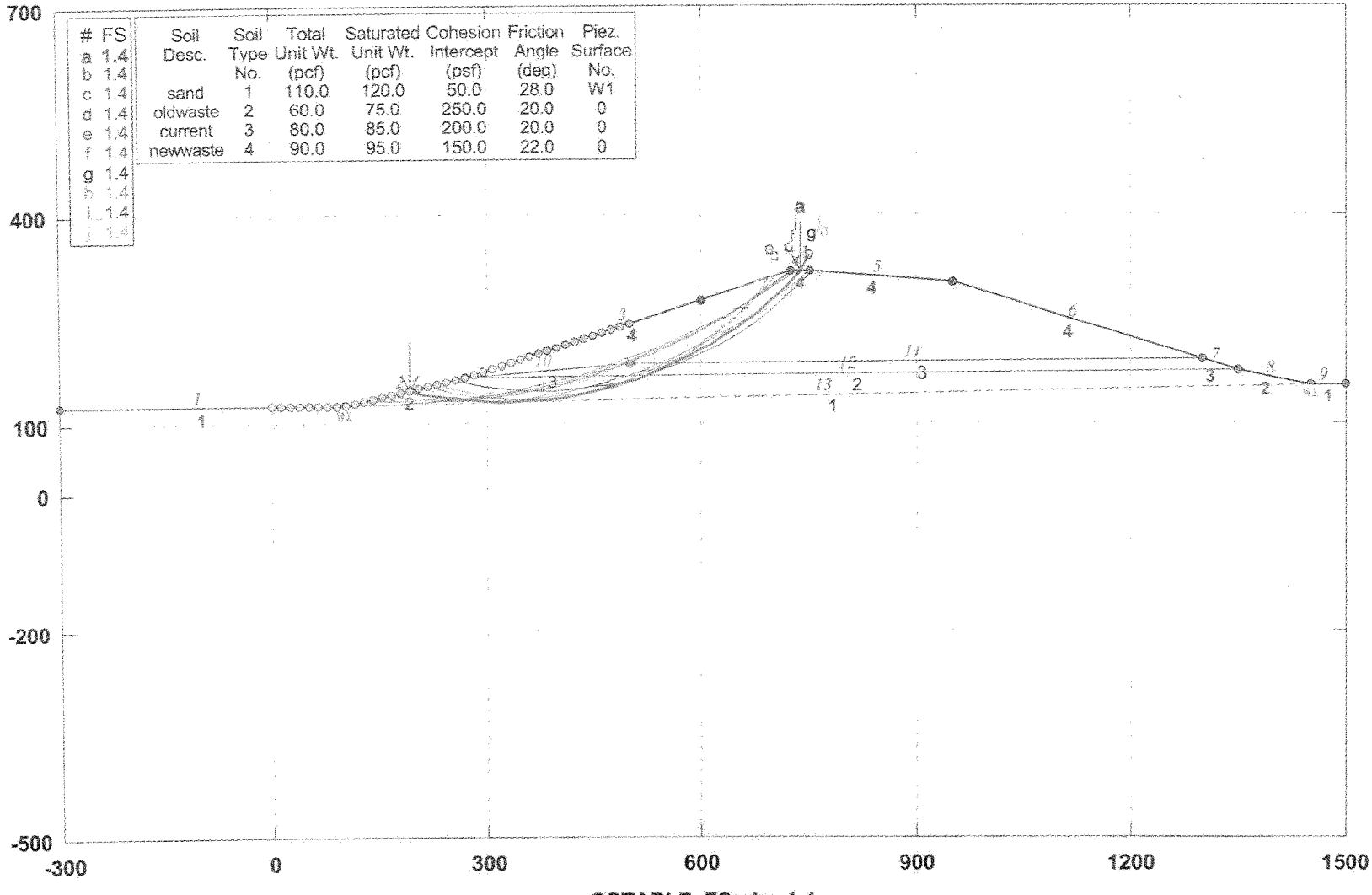

#	FS
a	1.4
b	1.4
c	1.4
d	1.4
e	1.4
f	1.4
g	1.4
h	1.4
i	1.4
j	1.4

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
sand	1	110.0	120.0	50.0	28.0	W1
oldwaste	2	60.0	75.0	250.0	20.0	0
current	3	80.0	85.0	200.0	20.0	0
newwaste	4	90.0	95.0	150.0	22.0	0

GSTABL7 FSmin=1.4

Safety Factors Are Calculated By The Modified Bishop Method

Wayne County Landfill 3 to 1 slope - seismic

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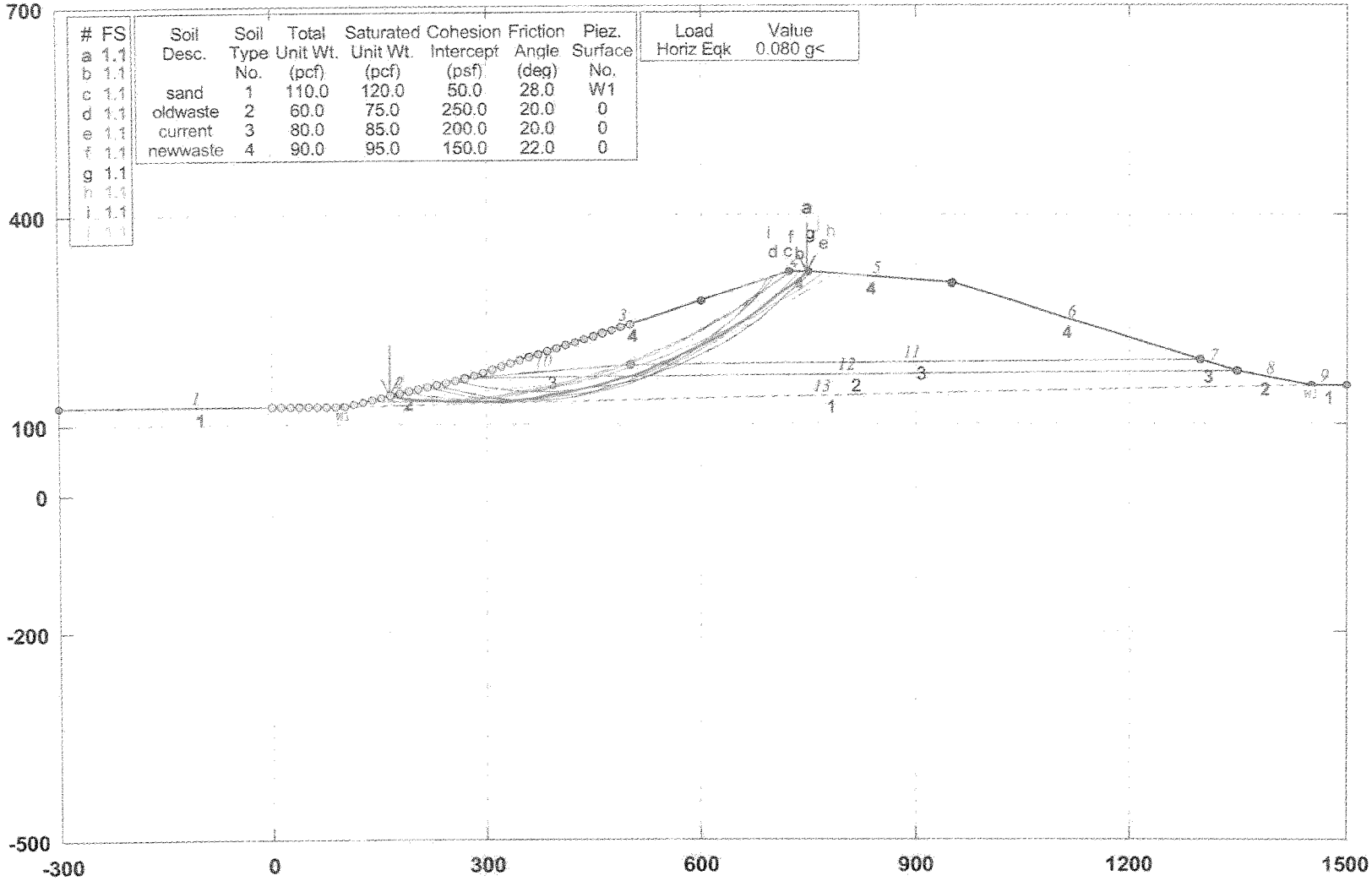
#	FS
a	1.1
b	1.1
c	1.1
d	1.1
e	1.1
f	1.1
g	1.1
h	1.1
i	1.1
j	1.1

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
sand	1	110.0	120.0	50.0	28.0	W1
oldwaste	2	60.0	75.0	250.0	20.0	0
current	3	80.0	85.0	200.0	20.0	0
newwaste	4	90.0	95.0	150.0	22.0	0

Load	Value
Horiz Eqk	0.080 g<



GSTABL7 FSmin=1.1

Safety Factors Are Calculated By The Modified Bishop Method

APPENDIX A

FACILITY, ENGINEERING/OPERATION, CLOSURE DRAWINGS AND OTHER RELATED MAPS

WAYNE COUNTY
CONSTRUCTION AND DEMOLITION LANDFILL FACILITY

FACILITY PLAN

Permit Number: 96-01

Site Location: 460 B South Landfill Road
Dudley, NC 28333

Applicant: Wayne County

Applicant's Address: 224 E. Walnut St., 3rd Floor
Goldsboro, NC 27530

BOARD OF COMMISSIONERS

Roland M. "Bud" Gray - Chairman
C. Munroe "Jack" Best, Jr - Vice-Chairman
Wilbur E. "Andy" Anderson
J.D. Evans
John M. Bell
Steve Keen
Dr. Sandra McCullen

COUNTY MANAGER

William "Lee" Smith, III

SOLID WASTE DIRECTOR

Tim Rogers

Engineer
Municipal Engineering Services Company, P.A.
Garner, NC - Morehead City, NC - Boone, NC

NORTH CAROLINA PROFESSIONAL SEAL 8282 ENGINEER JIMMY D. WOODIE
9/13/2010

by _____
Professional Engineer
(Garner Office)

LICENSE NUMBER: C-0281
Municipal Engineering Services Company, P.A.
P.O. BOX 97 GARNER, N.C. 27529 (919) 772-5393
P.O. BOX 349 BOONE, N.C. 28607 (828) 262-1767
P.O. BOX 828 MOREHEAD CITY, N.C. 28557 (252) 726-9481

SCALE:	1:1
DATE:	11/19/09
DRWN. BY:	L. HAMPTON
CHKD. BY:	J. WOODIE
PROJECT NUMBER	G07058
DRAWING NO. T1	SHEET NO. 1 OF 9

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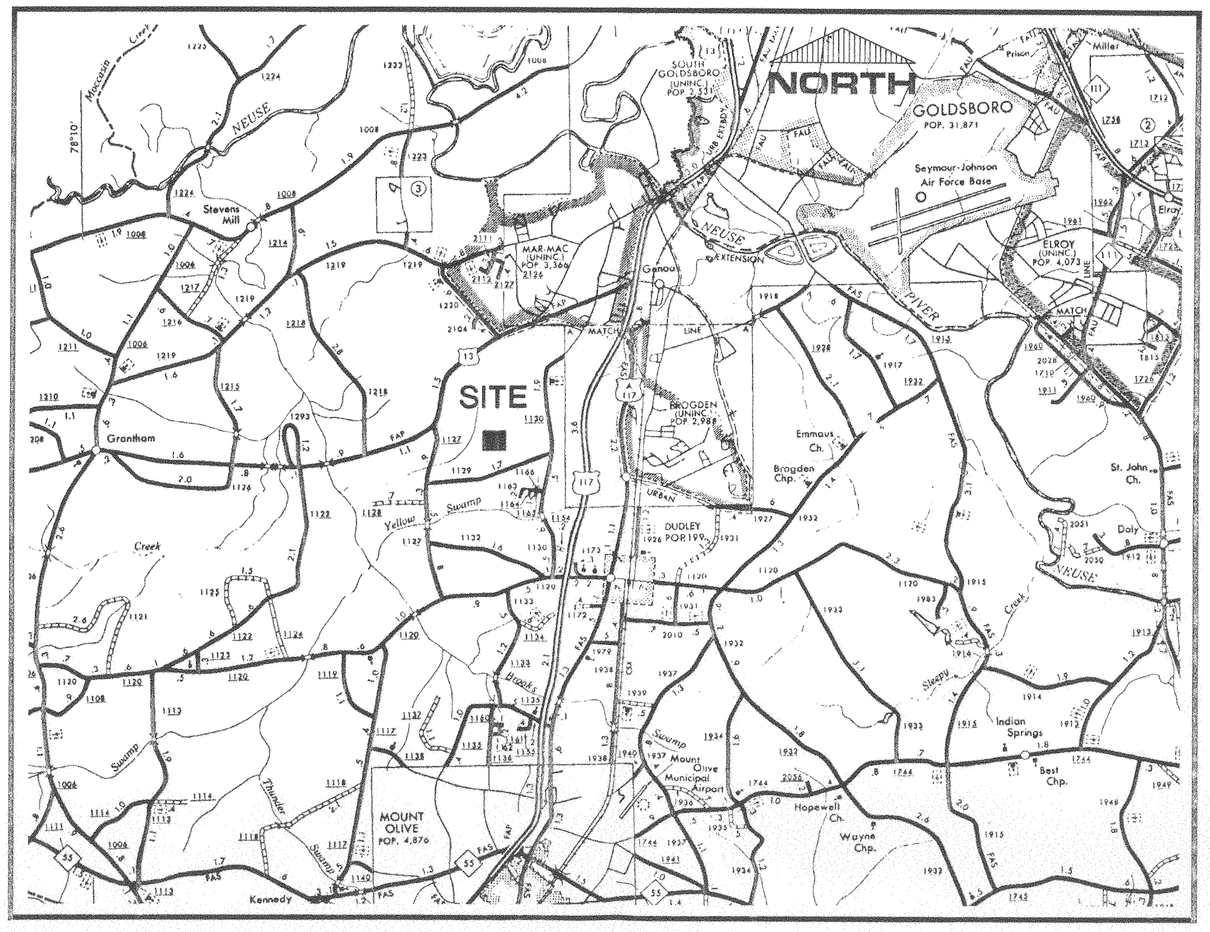
INDEX

SHEET NO.	DRAWING NO.	DESCRIPTION
1	T1	TITLE SHEET
2	T2	INDEX AND VICINITY MAP
3	F1	EXISTING CONDITIONS
4	F2	PHASE 2 FILL PLAN
5	F3	PHASE 3 FILL PLAN
6	F4	PHASE 4 FILL PLAN
7	F5	PHASE 5 FILL PLAN
8	F6	PHASE 6 FILL PLAN
9	F7	PHASE 7 FILL PLAN



VICINITY MAP

LICENSE NUMBER: C-0281

Municipal Services Engineering Company, P.A.

P.O. BOX 97 GARNER, N.C. 27529 (919) 772-5393

P.O. BOX 349 BOONE, N.C. 28607 (828) 262-1767

P.O. BOX 828 MOREHEAD CITY, N.C. 28557 (252) 726-9481

CONSTRUCTION & DEMOLITION LANDFILL FACILITY
WAYNE COUNTY
NORTH CAROLINA

DATE	BY	REV.	DESCRIPTION

INDEX AND VICINITY MAP

NORTH CAROLINA PROFESSIONAL SEAL 6282 ENGINEER JIMMY D. WOODIE

SCALE: 1:1
DATE: 11/19/09
DRWN. BY: L. HAMPTON
CHKD. BY: J. WOODIE
PROJECT NUMBER G07058
DRAWING NO. T2
SHEET NO. 2 OF 9

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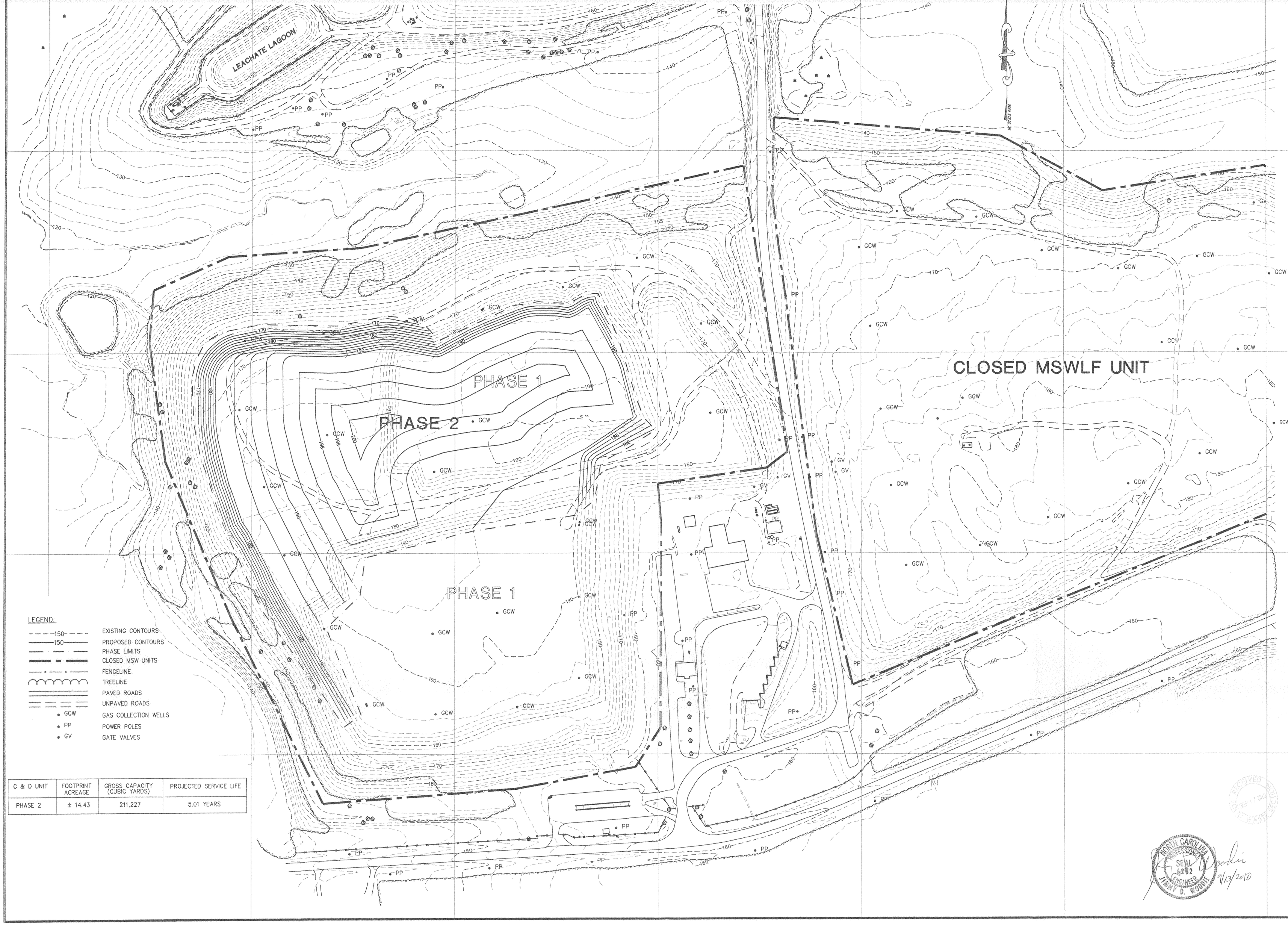

C & D UNIT	FOOTPRINT ACREAGE	GROSS CAPACITY (CUBIC YARDS)	PROJECTED SERVICE LIFE
PHASE 2	± 14.43	211,227	5.01 YEARS

Engineering Company, P.A.
P.O. BOX 349 BOONE, N.C. 28607
(828) 262-1767
P.O. BOX 828 MOREHEAD CITY, N.C. 28557
(252) 726-9451
Municipal Services
P.O. BOX 97 GARNER, N.C. 27529
(919) 772-5393
LICENSE NUMBER: C-0281

CONSTRUCTION AND DEMOLITION LANDFILL FACILITY
WAYNE COUNTY
NORTH CAROLINA

DATE	BY	REV.	DESCRIPTION

FACILITY PLAN
PHASE 2 FILL PLAN

NORTH CAROLINA PROFESSIONAL SEAL 6282 ENGINEER JERRY D. WOODIE
9/13/2010

SCALE: 1" = 100'
DATE: 12/03/07
DRWN. BY: L. HAMPTON
CHKD. BY: J. WOODIE
PROJECT NUMBER G07058
DRAWING NO. F2
SHEET NO. 4 OF 9

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C & D UNIT	FOOTPRINT ACREAGE	GROSS CAPACITY (CUBIC YARDS)	PROJECTED SERVICE LIFE
PHASE 3	± 10.14	222,804	5.07 YEARS

LEGEND:

- EXISTING CONTOURS
- PROPOSED CONTOURS
- PHASE LIMITS
- CLOSED MSW UNITS
- FENCELINE
- TREELINE
- PAVED ROADS
- UNPAVED ROADS
- GCW GAS COLLECTION WELLS
- PP POWER POLES
- GV GATE VALVES

EXIST. RISER BASIN

LEACHATE LAGOON

PHASE 3

PHASE 2

CLOSED MSWLF UNIT

NC STATE GRID

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 6282 JAMES D. WOODIE

9/13/10

DATE	BY	REV.	DESCRIPTION

FACILITY PLAN
PHASE 3 FILL PLAN

CONSTRUCTION AND DEMOLITION LANDFILL FACILITY
WAYNE COUNTY
NORTH CAROLINA

DRAWING NO.	F3
SHEET NO.	5 OF 9
PROJECT NUMBER	G07058
DRWN. BY:	L. HAMPTON
CHKD. BY:	J. WOODIE
DATE:	12/03/07
SCALE:	1" = 100'

LICENSE NUMBER: C-0281

Municipal Services
P.O. BOX 97 GARNER, N.C. 27529
(919) 772-5393

Engineering Company, P.A.
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(828) 262-1767
P.O. BOX 828 MOREHEAD CITY, N.C. 28557
(252) 726-9481

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C & D UNIT	FOOTPRINT ACREAGE	GROSS CAPACITY (CUBIC YARDS)	PROJECTED SERVICE LIFE
PHASE 4	± 12.18	233,651	5.11 YEARS

LEGEND:

- EXISTING CONTOURS
- PROPOSED CONTOURS
- PHASE LIMITS
- CLOSED MSW UNITS
- FENCELINE
- TREELINE
- PAVED ROADS
- UNPAVED ROADS
- GAS COLLECTION WELLS
- POWER POLES
- GATE VALVES

PHASE 4

PHASE 3

PHASE 2

CLOSED MSWLF UNIT

LEACHATE LAGOON

STATE GRID

D. AMOS WOODIE — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 8282

9/13/2010

DATE	BY	REV.	DESCRIPTION

FACILITY PLAN
PHASE 4 FILL PLAN

CONSTRUCTION AND DEMOLITION
LANDFILL FACILITY
WAYNE COUNTY
NORTH CAROLINA

SCALE: 1" = 100'
DATE: 12/03/07
DRWN. BY: L. HAMPTON
CHKD. BY: J. WOODIE
PROJECT NUMBER: G07058
DRAWING NO.: F4
SHEET NO.: 6 OF 9

LICENSE NUMBER: C-0281
Municipal Services
P.O. BOX 97 GARNER, N.C. 27529
(919) 772-5393
Engineering Company, P.A.
P.O. BOX 349 BOONE, N.C. 28607
(828) 262-1767
P.O. BOX 828 MOREHEAD CITY, N.C. 28557
(252) 726-9481

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C & D UNIT	FOOTPRINT ACREAGE	GROSS CAPACITY (CUBIC YARDS)	PROJECTED SERVICE LIFE
PHASE 5	± 14.37	249,518	5.23 YEARS

LEGEND:

- EXISTING CONTOURS
- PROPOSED CONTOURS
- PHASE LIMITS
- CLOSED MSW UNITS
- FENCELINE
- TREELINE
- PAVED ROADS
- UNPAVED ROADS
- GAS COLLECTION WELLS
- POWER POLES
- GATE VALVES

EXIST. RISER BASIN

LEACHATE LAGOON

PHASE 4

PHASE 5

PHASE 2

CLOSED MSWLF UNIT

STATE GRID

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 6282 JIMMY D. WOODIE

DRAWING NO.	SHEET NO.
F5	7 OF 9

PROJECT NUMBER G07058

DRWN. BY: L. HAMPTON

CHK'D. BY: J. WOODIE

DATE: 12/03/07

SCALE: 1" = 100'

DATE	BY	REV.	DESCRIPTION

FACILITY PLAN
PHASE 5 FILL PLAN

CONSTRUCTION AND DEMOLITION LANDFILL FACILITY
WAYNE COUNTY
NORTH CAROLINA

LICENSE NUMBER: C-0281

Municipal Services
P.O. BOX 97 GARNER, N.C. 27529
(919) 772-5393

Engineering Company, P.A.
P.O. BOX 349 BOONE, N.C. 28607
(828) 262-1767
P.O. BOX 828 MOREHEAD CITY, N.C. 28557
(252) 726-9481

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C & D UNIT	FOOTPRINT ACREAGE	GROSS CAPACITY (CUBIC YARDS)	PROJECTED SERVICE LIFE
PHASE 6	± 10.55	255,624	5.14 YEARS

LEGEND:

- EXISTING CONTOURS
- PROPOSED CONTOURS
- PHASE LIMITS
- CLOSED MSW UNITS
- FENCELINE
- TREELINE
- PAVED ROADS
- UNPAVED ROADS
- GAS COLLECTION WELLS
- POWER POLES
- GATE VALVES

EXIST. RSER BASIN

LEACHATE LAGOON

PHASE 5

PHASE 6

CLOSED MSW UNIT

STATE GRID

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 6882 JAMES D. WOODIE

DRAWING NO.	SHEET NO.
F6	8 OF 9

PROJECT NUMBER G07058

CHKD. BY: J. WOODIE

DRWN. BY: L. HAMPTON

DATE: 12/03/07

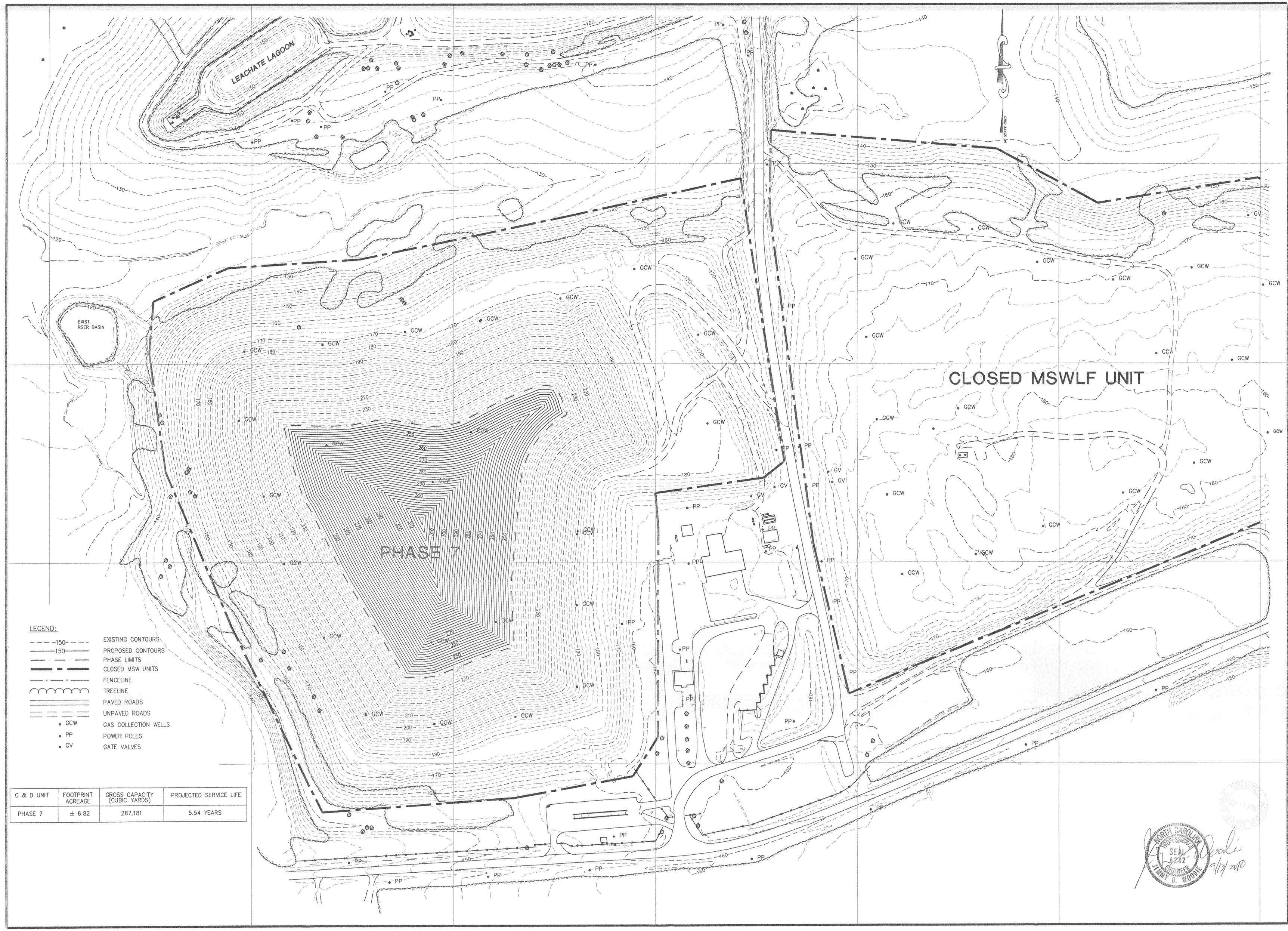
SCALE: 1" = 100'

DATE	BY	REV.	DESCRIPTION

FACILITY PLAN
PHASE 6 FILL PLAN

CONSTRUCTION AND DEMOLITION
LANDFILL FACILITY
WAYNE COUNTY
NORTH CAROLINA

LICENSE NUMBER: C-0281
Municipal Services Engineering Company, P.A.
P.O. BOX 97 GARNER, N.C. 27529 (919) 772-5393
P.O. BOX 349 BOONE, N.C. 28607 (828) 262-1767
P.O. BOX 828 MOREHEAD CITY, N.C. 28557 (252) 726-9481



LEGEND:

- EXISTING CONTOURS
- PROPOSED CONTOURS
- PHASE LIMITS
- CLOSED MSW UNITS
- FENCELINE
- TREELINE
- PAVED ROADS
- UNPAVED ROADS
- GCW — GAS COLLECTION WELLS
- PP — POWER POLES
- GV — GATE VALVES

C & D UNIT	FOOTPRINT ACREAGE	GROSS CAPACITY (CUBIC YARDS)	PROJECTED SERVICE LIFE
PHASE 7	± 6.82	287,181	5.54 YEARS

NORTH CAROLINA PROFESSIONAL SEAL 6232 ENGINEER JIMMY D. WOODIE

9/13/2010

Engineering Company, P.A.
Municipal Services
LICENSE NUMBER: C-0281
P.O. BOX 97 GARNER, N.C. 27528 (919) 772-5393
P.O. BOX 349 BOONE, N.C. 28607 (828) 262-1767
P.O. BOX 828 MOREHEAD CITY, N.C. 28557 (252) 726-9481

CONSTRUCTION AND DEMOLITION LANDFILL FACILITY
WAYNE COUNTY
NORTH CAROLINA

DESCRIPTION	REV.	BY	DATE

FACILITY PLAN
PHASE 7 FILL PLAN

SCALE:	1" = 100'
DATE:	12/03/07
DRWN. BY:	L. HAMPTON
CHKD. BY:	J. WOODIE
PROJECT NUMBER	G07058
DRAWING NO.	F7
SHEET NO.	9 OF 9

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WAYNE COUNTY
CONSTRUCTION AND DEMOLITION
LANDFILL FACILITY

ENGINEERING/OPERATION PLAN

Permit Number: 96-01

Site Location: 460 B South Landfill Road
Dudley, NC 28333

Applicant: Wayne County

Applicant's Address: 224 E. Walnut St., 3rd Floor
Goldsboro, NC 27530

BOARD OF COMMISSIONERS

Roland M. "Bud" Gray - Chairman
C. Munroe "Jack" Best, Jr. - Vice-Chairman
Wilbur E. "Andy" Anderson
John M. Bell
J. D. Evans
Steve Keen
Dr. Sandra McCullen

COUNTY MANAGER

William "Lee" Smith, III

SOLID WASTE DIRECTOR

Tim Rogers

Engineer
Municipal Engineering Services Company, P.A.
Garner, NC - Morehead City, NC - Boone, NC

NORTH CAROLINA PROFESSIONAL SEAL 6282 ENGINEER JIMMY D. WOODIE

by _____
Professional Engineer
(Garner Office)

Municipal Engineering Services Company, P.A.
P.O. BOX 97 GARNER, N.C. 27529 (919) 772-5393
P.O. BOX 349 BOONE, N.C. 28607 (828) 262-1767
P.O. BOX 828 MOREHEAD CITY, N.C. 28557 (252) 726-9481

DATE	BY	REV.	DESCRIPTION
8/26/10	LCH	2	REVISED PLANS PER NCDENR LETTER DATED 7/19/10
2/16/09	LCH	1	REVISED PER NCDENR LETTER DATED 12/23/08

SCALE: 1:1
DATE: 11/21/07
DRWN. BY: L. HAMPTON
CHKD. BY: J. WOODIE
PROJECT NUMBER
G07058
DRAWING NO. T1
SHEET NO. 1 OF 9

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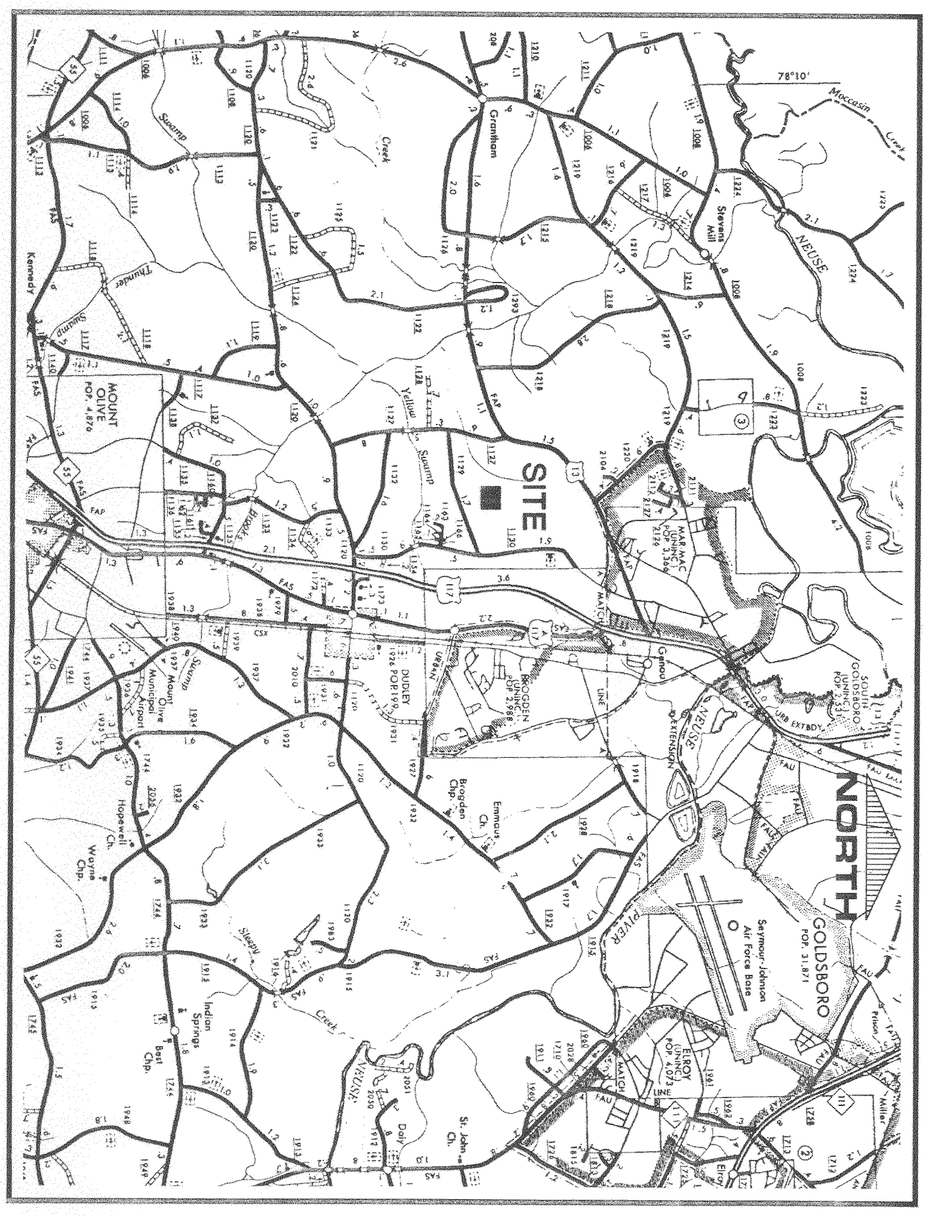
INDEX

SHEET NO.	DRAWING NO.	DESCRIPTION
1	T1	TITLE SHEET
2	T2	INDEX AND VICINITY MAP
3	CD1	FACILITY PLAN
4	CD2	EXISTING CONDITIONS AS OF 11/19/07
5	CD3	1st YEAR FILL PLAN
6	CD4	2nd YEAR FILL PLAN
7	CD5	3rd YEAR FILL PLAN
8	CD6	4th YEAR FILL PLAN
9	CD7	5th YEAR FILL PLAN

VICINITY MAP



DRAWING NO.	SHEET NO.	PROJECT NUMBER	CHKD. BY: J. WOODIE	DRWN. BY: L. HAMPTON	DATE: 11/19/09	SCALE: 1:1
T2	2 OF 9	G07058				

DATE	BY	REV.	DESCRIPTION
8/26/10	LCH	1	REVISED PLAN PER NCDENR LETTER DATED 7/19/10.

INDEX AND VICINITY MAP

CONSTRUCTION & DEMOLITION LANDFILL FACILITY
WAYNE COUNTY
NORTH CAROLINA

LICENSE NUMBER: C-0281
Municipal Services Engineering Company, P.A.
P.O. BOX 97 GARNER, N.C. 27529 (919) 772-5393
P.O. BOX 349 BOONE, N.C. 28607 (828) 262-1767
P.O. BOX 828 MOREHEAD CITY, N.C. 28557 (252) 726-9481

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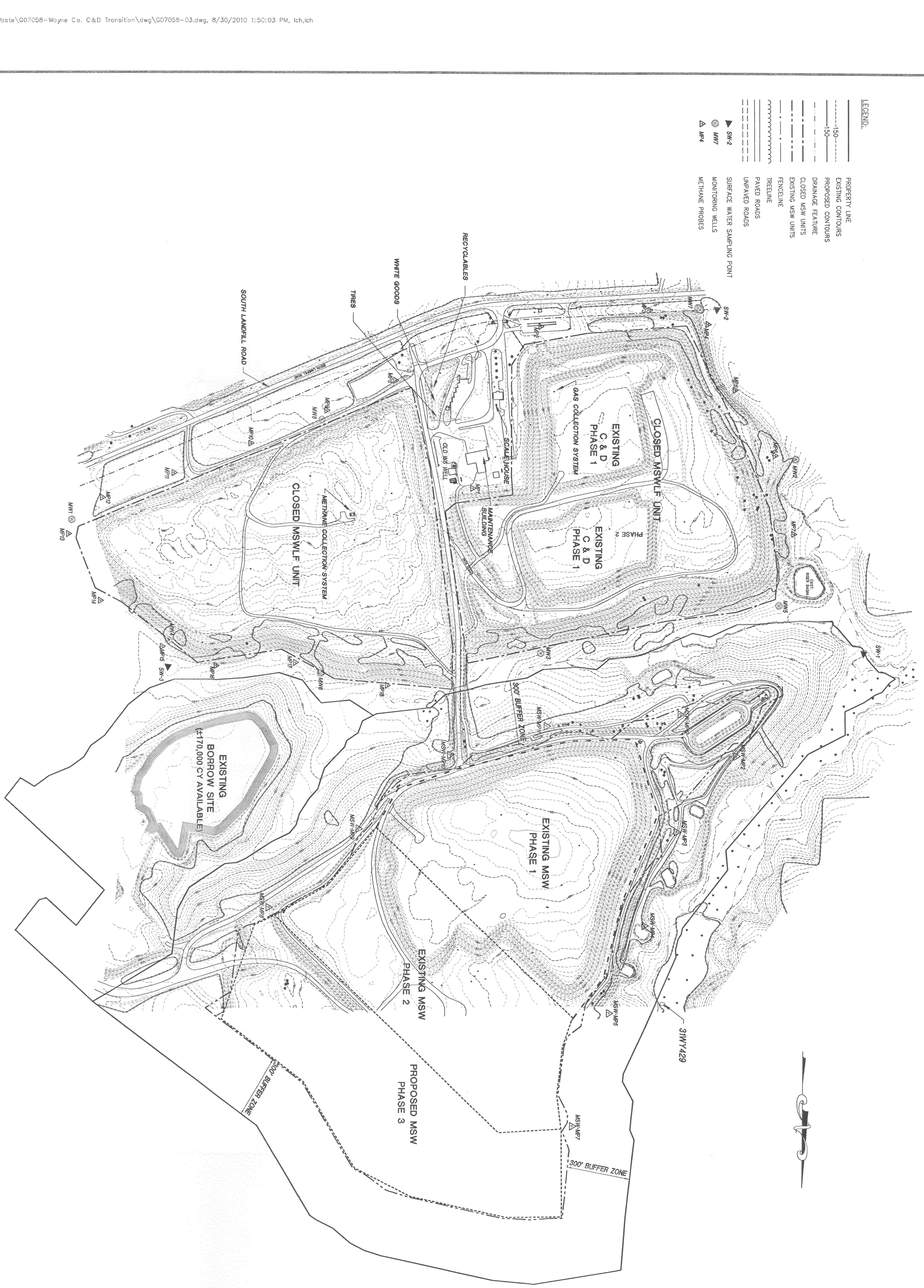
LEGEND:

- PROPERTY LINE
- 150 EXISTING CONTOURS
- 150 PROPOSED CONTOURS
- DRAINAGE FEATURE
- CLOSED MSW UNITS
- EXISTING MSW UNITS
- FENCELINE
- TREELINE
- PAVED ROADS
- UNPAVED ROADS
- SW-2 SURFACE WATER SAMPLING POINT
- MW7 MONITORING WELLS
- MP4 METHANE PROBES



DATE	BY	REV.	DESCRIPTION
8/26/10	LCH	2	ADDED GROUND&SURFACE WATER & GAS MONITORING LOCATION AND EXIST. FEATURES
7/27/09	LCH	1	ADDED BORROW SITE LOCATION

ENGINEERING/OPERATION PLAN
FACILITY PAN

CONSTRUCTION AND DEMOLITION LANDFILL FACILITY
WAYNE COUNTY
NORTH CAROLINA

SCALE: 1" = 200'
DATE: 5/27/08
DRWN. BY: L. HAMPTON
CHKD. BY: J. WOODIE
PROJECT NUMBER: G07058
DRAWING NO.: CD1
SHEET NO.: 3 OF 9

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 8482 JIMMY D. WOODIE
9/13/10

LICENSE NUMBER: C-0281
Municipal Services Engineering Company, P.A.
P.O. BOX 97 GARNER, N.C. 27529 (919) 772-5393
P.O. BOX 349 BOONE, N.C. 28607 (828) 262-1767
P.O. BOX 828 MOREHEAD CITY, N.C. 28557 (252) 726-9481

LEACHATE LAGOON

EXIST. RSER BASIN

EXISTING C & D PHASE 1

CLOSED MSWLF UNIT

EXISTING C & D PHASE 1

CLOSED MSWLF UNIT

SOUTH LANDFILL ROAD

MP1 MP2 MP3 MP4 MP5 MP6 MP7 MP8 MP9 MP10 MP16 MP17 MP18

LEGEND:

- EXISTING CONTOURS
- PROPOSED CONTOURS
- CLOSED MSW UNITS
- FENCELINE
- TREELINE
- PAVED ROADS
- UNPAVED ROADS
- GCW GAS COLLECTION WELLS
- PP POWER POLES
- GV GATE VALVES

Municipal Engineering Services Company, P.A.

P.O. BOX 97 GARNER, N.C. 27529 (919) 772-5393

P.O. BOX 349 BOONE, N.C. 28607 (828) 262-1767

P.O. BOX 828 MOREHEAD CITY, N.C. 28557 (252) 726-9481

CONSTRUCTION AND DEMOLITION LANDFILL FACILITY WAYNE COUNTY NORTH CAROLINA

	LCH	1	ADDED EXIST. METHANE PROBES AND ROAD NAME
	BY:	REV:	DESCRIPTION
8/26/2010			
DATE:			

ENGINEERING/OPERATION PLAN
EXISTING CONDITIONS AS OF 11/19/07

SCALE:	1" = 100'
DATE:	12/03/07
DRWN. BY:	L. HAMPTON
CHKD. BY:	J. WOODIE
PROJECT NUMBER	G07058
DRAWING NO.	CD2
SHEET NO.	4 OF 9

NORTH CAROLINA PROFESSIONAL SEAL 42182 ENGINEER JIMMY D. WOODIE

11/19/2010

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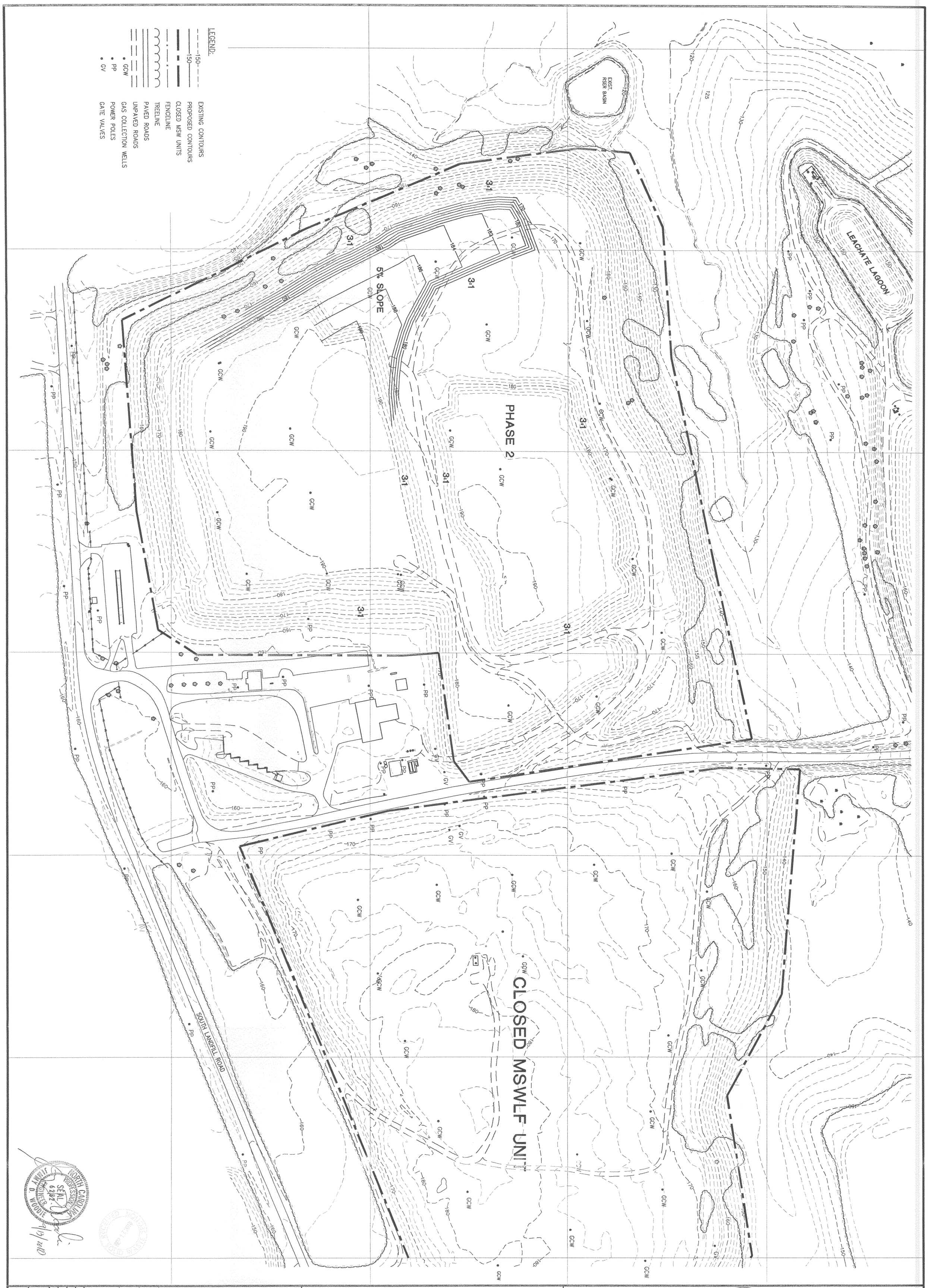

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 6282 JAMES D WOODIE
9/13/2010

DRAWING NO.	SHEET NO.	PROJECT NUMBER	CHKD. BY:	DRWN. BY:	DATE:	SCALE:
CD3	5 OF 9	G07058	J. WOODIE	L. HAMPTON	12/03/07	1" = 100'

DATE	BY	REV.	DESCRIPTION
8/26/10	LCH	2	ADDED ROAD NAME
2/19/09	LCH	1	REVISED FILL SLOPE

ENGINEERING/OPERATION PLAN
1st YEAR FILL PLAN

CONSTRUCTION AND DEMOLITION LANDFILL FACILITY
WAYNE COUNTY
NORTH CAROLINA

Municipal Services
P.O. BOX 97 GARNER, N.C. 27529
(919) 772-5393

ME

Engineering Company, P.A.
P.O. BOX 349 BOONE, N.C. 28607
(828) 262-1767

P.O. BOX 828 MOREHEAD CITY, N.C. 28557
(252) 726-9481

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LEGEND:

- EXISTING CONTOURS
- PROPOSED CONTOURS
- CLOSED MSW UNITS
- FENCELINE
- TREELINE
- PAVED ROADS
- UNPAVED ROADS
- GAS COLLECTION WELLS
- POWER POLES
- GATE VALVES

EXIST. RSER BASIN

LEACHATE LAGOON

PHASE 2

CLOSED MSWLF UNIT

SOUTH LANDFILL ROAD

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 6782 JAMES D. WOODIE

9/13/2010

DRAWING NO.	SHEET NO.	PROJECT NUMBER	CHKD. BY:	DRWN. BY:	DATE:	SCALE:
CD4	6 OF 9	G07058	J. WOODIE	L. HAMPTON	12/03/07	1" = 100'

DATE	BY	REV.	DESCRIPTION
8/26/10	LCH	2	ADDED ROAD NAME
2/19/09	LCH	1	REVISED FILL SLOPES

ENGINEERING/OPERATION PLAN
2nd YEAR FILL PLAN

CONSTRUCTION AND DEMOLITION LANDFILL FACILITY
WAYNE COUNTY
NORTH CAROLINA

Municipal Services Engineering Company, P.A.
P.O. BOX 97 GARNER, N.C. 27529 (919) 772-5393
P.O. BOX 349 BOONE, N.C. 28607 (828) 262-1767
P.O. BOX 828 MOREHEAD CITY, N.C. 28557 (252) 726-9481

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LEGEND:

- EXISTING CONTOURS
- PROPOSED CONTOURS
- CLOSED MSW UNITS
- FENCELINE
- TREELINE
- PAVED ROADS
- UNPAVED ROADS
- GAS COLLECTION WELLS
- POWER POLES
- GATE VALVES

EXIST. RSER BASIN

LEACHATE LAGOON

5% SLOPE

PHASE 2

CLOSED MSWLF UNIT

SOUTH LANDFILL ROAD

3:1

GCW

PP

GV

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 6227 JEFFREY D. WOODIE

9/13/10

DATE	BY	REV.	DESCRIPTION
8/26/10	LCH	2	REVISED FILL CONTOURS
2/19/09	LCH	1	REVISED FILL SLOPES

ENGINEERING/OPERATION PLAN
3rd YEAR FILL PLAN

CONSTRUCTION AND DEMOLITION
LANDFILL FACILITY
WAYNE COUNTY
NORTH CAROLINA

DRAWING NO.	CD5
SHEET NO.	7 OF 9
PROJECT NUMBER	G07058
CHK'D. BY:	J. WOODIE
DRWN. BY:	L. HAMPTON
DATE:	12/03/07
SCALE:	1" = 100'

Municipal Services Engineering Company, P.A.
P.O. BOX 97 GARNER, N.C. 27529 (919) 772-5393
P.O. BOX 349 BOONE, N.C. 28607 (828) 262-1767
P.O. BOX 828 MOREHEAD CITY, N.C. 28557 (252) 726-9481

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LEGEND:

- EXISTING CONTOURS
- PROPOSED CONTOURS
- CLOSED MSW UNITS
- FENCELINE
- TREELINE
- PAVED ROADS
- UNPAVED ROADS
- GAS COLLECTION WELLS
- POWER POLES
- GATE VALVES

EXIST. RSER BASIN

LEACHATE LAGOON

5% SLOPE

PHASE 2

3:1

SOUTH LANDFILL ROAD

CLOSED MSWLF UNIT

PROFESSIONAL ENGINEER SEAL 22822 NORTH CAROLINA D. WOODIE

9/13/10

DATE	BY	REV.	DESCRIPTION
8/26/10	LCH	2	REVISED FILL CONTOURS
2/19/09	LCH	1	REVISED FILL SLOPES

ENGINEERING/OPERATION PLAN
4th YEAR FILL PLAN

CONSTRUCTION AND DEMOLITION LANDFILL FACILITY
WAYNE COUNTY
NORTH CAROLINA

DRAWING NO.	CD6
SHEET NO.	8 OF 9
PROJECT NUMBER	G07058
DRWN. BY:	L. HAMPTON
CHKD. BY:	J. WOODIE
DATE:	12/03/07
SCALE:	1" = 100'

Municipal Services Engineering Company, P.A.
P.O. BOX 97 GARNER, N.C. 27529 (919) 772-5393
P.O. BOX 349 BOONE, N.C. 28607 (828) 262-1767
P.O. BOX 828 MOREHEAD CITY, N.C. 28557 (252) 726-9481

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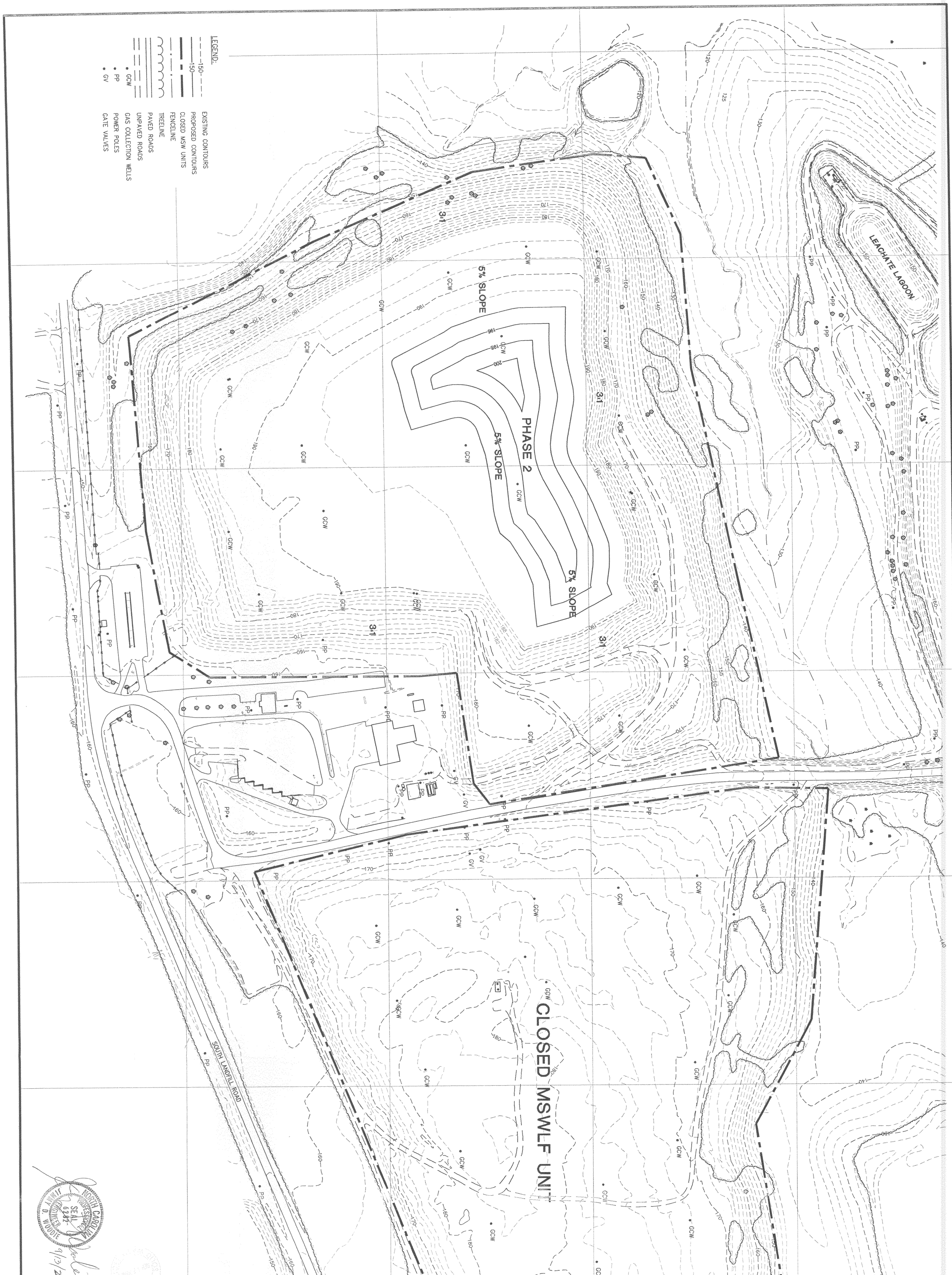

DRAWING NO.	SHEET NO.
CD7	9 OF 9

PROJECT NUMBER G07058

CHKD. BY: J. WOODIE

DRWN. BY: L. HAMPTON

DATE: 12/03/07

SCALE: 1" = 100'

DATE	BY	REV.	DESCRIPTION
8/26/10	LCH	2	REVISED FILL CONTOURS
2/19/09	LCH	1	REVISED FILL SLOPES

ENGINEERING/OPERATION PLAN
5th YEAR FILL PLAN

CONSTRUCTION AND DEMOLITION LANDFILL FACILITY
WAYNE COUNTY
NORTH CAROLINA

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 6282 JIMMY D. WOODIE

9/3/2010

Municipal Services Engineering Company, P.A.
P.O. BOX 97 GARNER, N.C. 27529 (919) 772-5393
P.O. BOX 349 BOONE, N.C. 28607 (828) 262-1767
P.O. BOX 828 MOREHEAD CITY, N.C. 28557 (252) 726-9481

WAYNE COUNTY
CONSTRUCTION AND DEMOLITION
LANDFILL FACILITY

CLOSURE PLAN

Permit Number: 96-01

Site Location: 460 B South Landfill Road
Dudley, NC 28333

Applicant: Wayne County

Applicant's Address: 224 E. Walnut St., 3rd Floor
Goldsboro, NC 27530

BOARD OF COMMISSIONERS

Roland M. "Bud" Gray - Chairman
C. Munroe "Jack" Best, Jr. - Vice-Chairman
Wilbur E. "Andy" Anderson
John M. Bell
J. D. Evans
Steve Keen
Dr. Sandra McCullen

COUNTY MANAGER

William "Lee" Smith, III

SOLID WASTE DIRECTOR

Tim Rogers

Engineer
Municipal Engineering Services Company, P.A.
Garner, NC - Morehead City, NC - Boone, NC

NORTH CAROLINA PROFESSIONAL SEAL 6282 ENGINEER JIMMY D. WOODIE

9/13/2010

by _____
Professional Engineer
(Garner Office)

Municipal Engineering Services Company, P.A.
P.O. BOX 97 GARNER, N.C. 27529 (919) 772-5393
P.O. BOX 349 BOONE, N.C. 28607 (828) 262-1767
P.O. BOX 828 MOREHEAD CITY, N.C. 28557 (252) 726-9481

DATE	BY	REV.	DESCRIPTION
8/26/10	LCH	2	REVISED SHEET NUMBERS
2/18/09	LCH	1	REVISED PER DENR LETTER DATED 12/23/08.

SCALE: 1:1
DATE: 11/21/07
DRWN. BY: L. HAMPTON
CHKD. BY: J. WOODIE
PROJECT NUMBER: G07058
DRAWING NO.: T1
SHEET NO.: 1 OF 6

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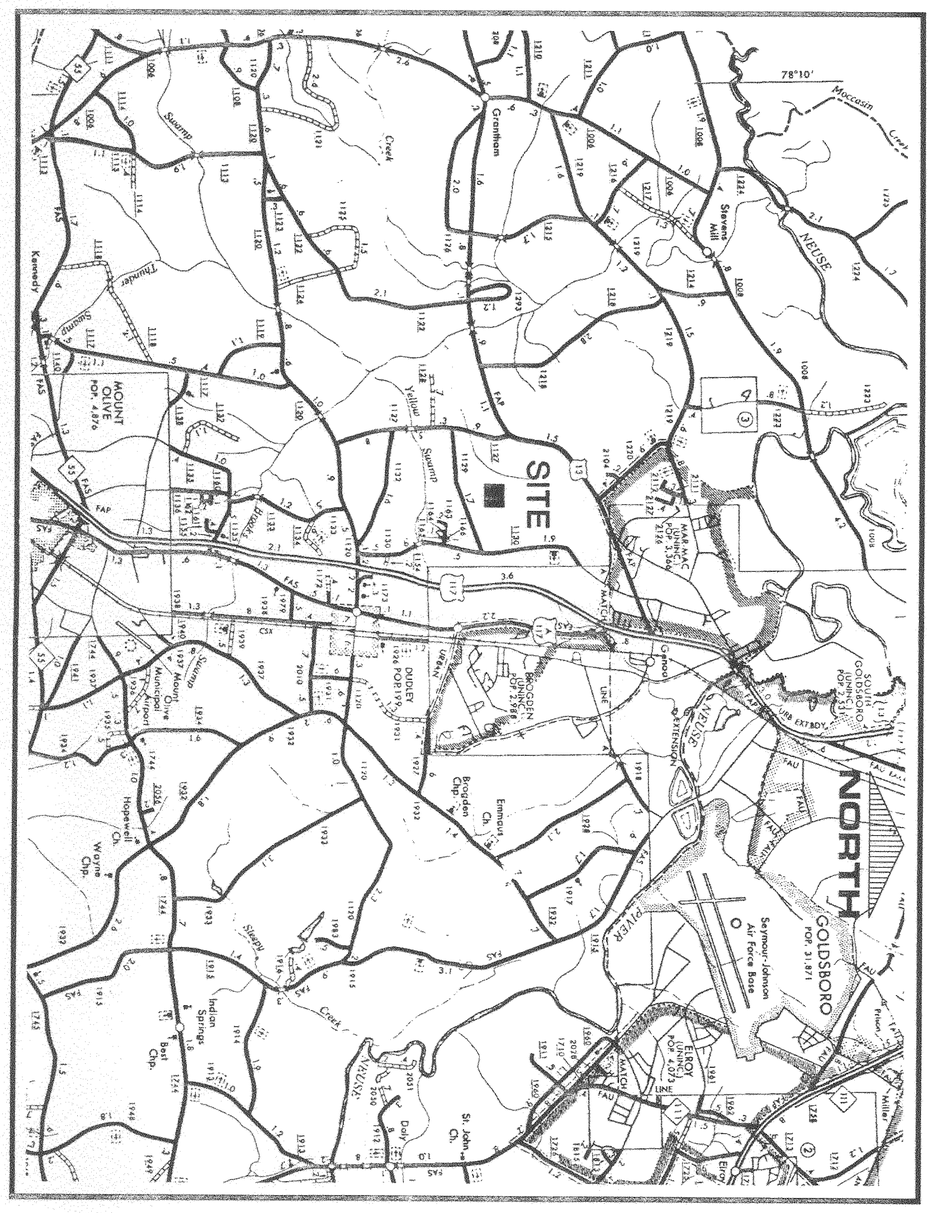
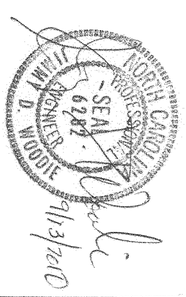
P:\SolidWaste\G07058-Wayne Co. C&D Transition\dwg\CLOSURE\07058-CL2.dwg, 8/27/2010 3:58:50 PM, lch,lch

INDEX

SHEET NO.	DRAWING NO.	DESCRIPTION
1	T1	TITLE SHEET
2	T2	INDEX AND VICINITY MAP
3	CL1	EXISTING CONDITIONS WITH FINAL FILL
4	CL2	FINAL FILL WITH METHANE VENTING
5	CL3	MISCELLANEOUS DETAILS
6	PROF1	BASELINE PROFILE AND CROSS SECTIONS

VICINITY MAP





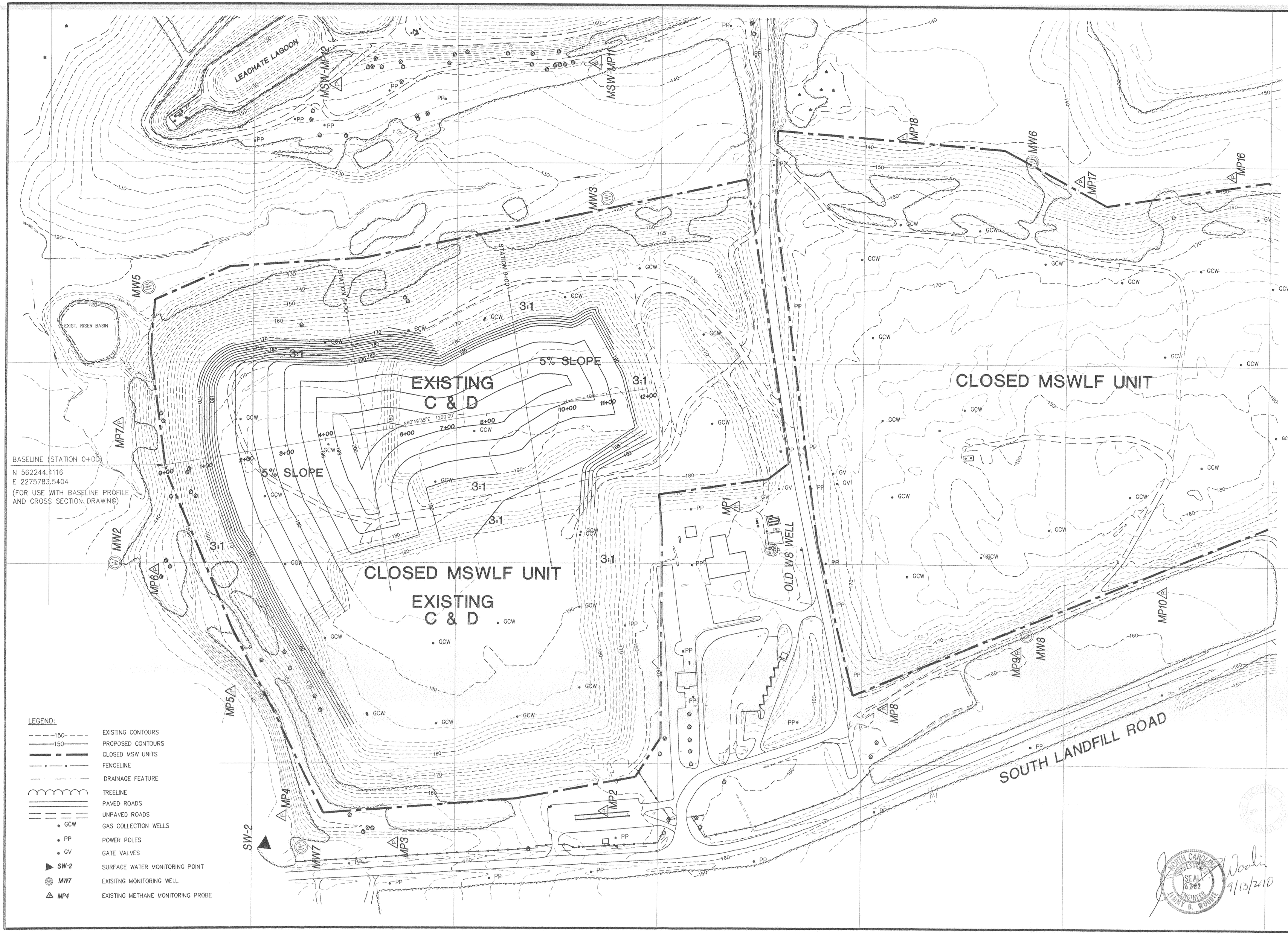
8/26/10	LCH	1	ADDED SHEETS AND REVISED SHEET NUMBERS
DATE	BY	REV.	DESCRIPTION

INDEX AND VICINITY MAP

CONSTRUCTION & DEMOLITION LANDFILL FACILITY
WAYNE COUNTY
NORTH CAROLINA

DRAWING NO.	T2
SHEET NO.	2 OF 6
PROJECT NUMBER	G07058
CHKD. BY:	J. WOODIE
DRWN. BY:	L. HAMPTON
DATE:	11/21/07
SCALE:	1:1

Municipal Services Engineering Company, P.A.
P.O. BOX 97 GARNER, N.C. 27529 (919) 772-5393
P.O. BOX 349 BOONE, N.C. 28607 (828) 262-1767
P.O. BOX 828 MOREHEAD CITY, N.C. 28557 (252) 726-9481



Municipal Engineering Services Company, P.A.
P.O. BOX 97, GARNER, N.C. 27529 (919) 772-5393
P.O. BOX 349 BOONE, N.C. 28607 (828) 262-1767
P.O. BOX 828 MOREHEAD CITY, N.C. 28557 (252) 726-9481

CONSTRUCTION AND DEMOLITION LANDFILL FACILITY
WAYNE COUNTY
NORTH CAROLINA

DATE	BY	REV.	DESCRIPTION
8/26/10	LCH	3	ADDED EXISTING FEATURES AND REVISED FILL CONTOURS
7/28/09	LCH	2	ADDED BASELINE AND STATION INFORMATION
4/6/09	LCH	1	REVISED FILL SLOPES

CLOSURE PLAN
EXISTING CONDITIONS WITH FINAL FILL

SCALE: 1" = 100'
DATE: 12/03/07
DRWN. BY: L. HAMPTON
CHKD. BY: J. WOODIE
PROJECT NUMBER: G07058
DRAWING NO.: CL1
SHEET NO.: 3 OF 6

NORTH CAROLINA PROFESSIONAL SEAL G-262 ENGINEER JIMMY D. WOODIE
9/13/2010

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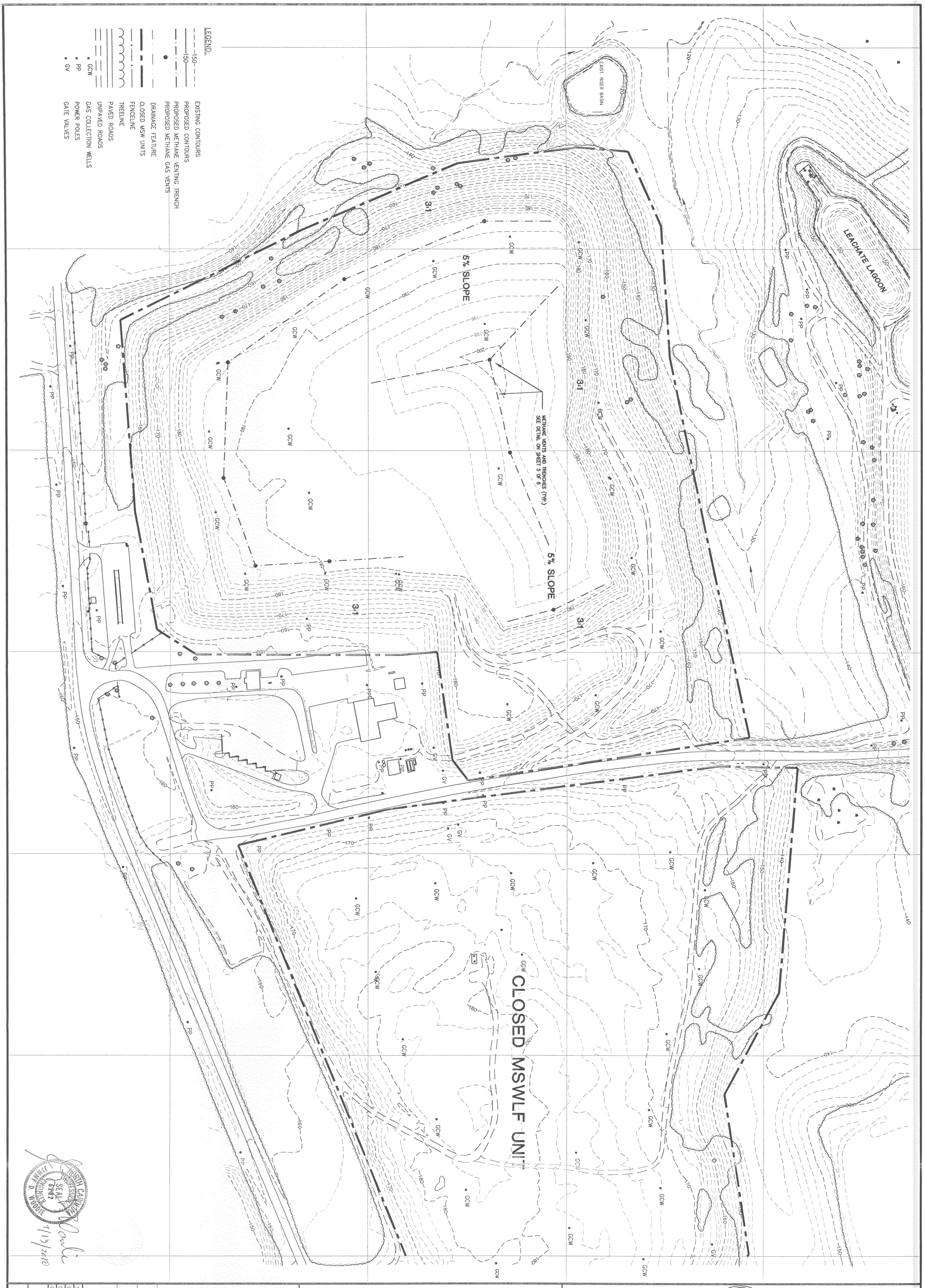


SCALE:	1" = 100'
DATE:	8/26/2010
DRWN. BY:	L. HAMPTON
CHKD. BY:	J. WOODIE
PROJECT NUMBER	G07058
DRAWING NO.	CL2
SHEET NO.	4 OF 6

DATE	BY	REV.	DESCRIPTION

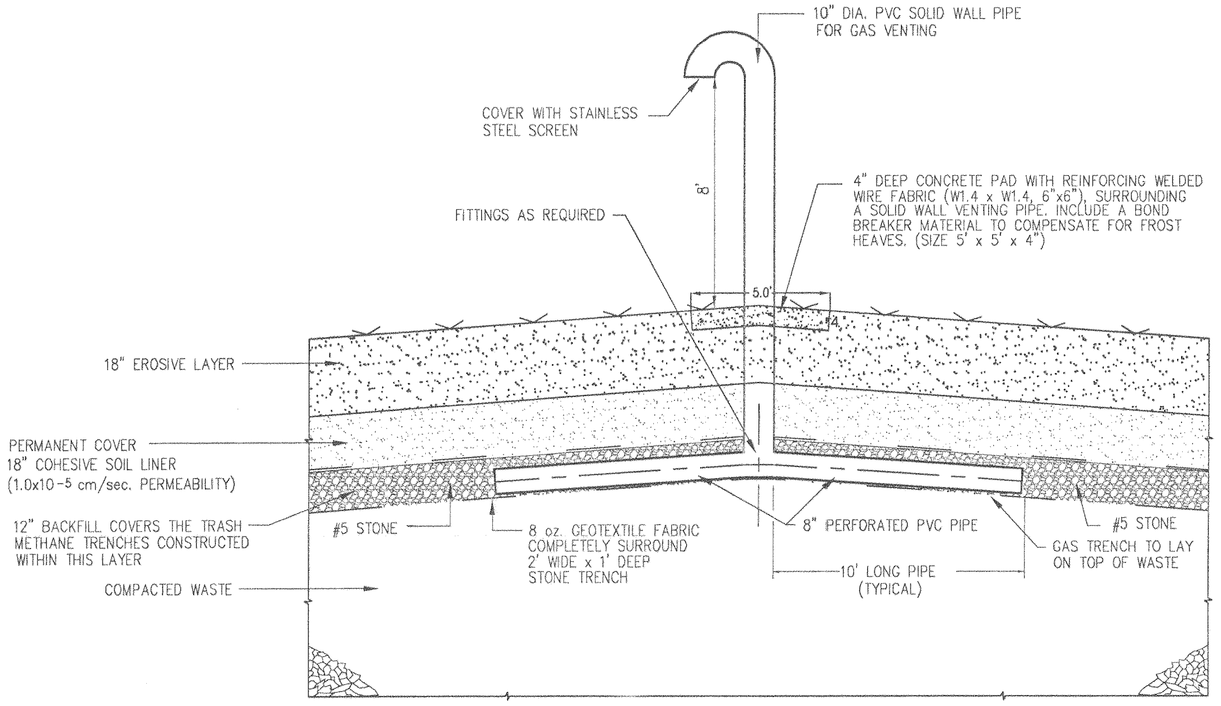
OPERATION PLAN
FINAL FILL PLAN WITH
METHANE VENTING SYSTEM

CONSTRUCTION AND DEMOLITION LANDFILL FACILITY
WAYNE COUNTY
NORTH CAROLINA

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 29282 JAMES D. WOODIE

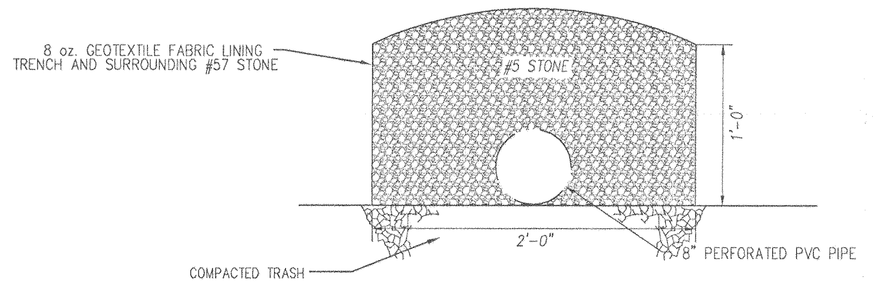
7/13/2010

Municipal Services Engineering Company, P.A.
P.O. BOX 97 GARNER, N.C. 27529 (919) 772-5393
P.O. BOX 349 BOONE, N.C. 28607 (828) 262-1767
P.O. BOX 828 MOREHEAD CITY, N.C. 28557 (252) 726-9481



TYPICAL METHANE GAS COLLECTION TRENCH CLOSURE DETAIL AND CAP COVER DETAIL

N.T.S.



PERMANENT METHANE TRENCH DETAIL

N.T.S.

SEEDBED PREPARATION (SP)

SP-1 FILL SLOPES 3:1 OR STEEPER TO BE SEEDE BY A HYDRAULIC SEEDER (PERMANENT SEEDING)

1) Leave the last 4-6 inches of fill loose and uncompacted, allowing rocks, roots, large clods and other debris to remain on the slope.
2) Roughen slope faces by making grooves 2-3 inches deep, perpendicular to the slope.
3) Spread lime evenly over slopes at rates recommended by soil tests.

SP-2 Fill slopes 3:1 or steeper (temporary seedings)

1) Leave a loose, uncompacted surface. Remove large clods, rocks, and debris which might hold netting above the surface.
2) Spread lime and fertilizer evenly at rates recommended by soil tests.
3) Break up large clods and rake into a loose, uniform seedbed.
4) Rake to loosen surface just prior to applying seed.

SP-4 Gentle or flat slopes where topsoil is not used.

1) Remove rocks and debris.
2) Apply lime and fertilizer at rates recommended by soil tests; spread evenly and incorporate into the top 6" with a disk, chisel plow, or rotary tiller.
3) Break up large clods and rake into a loose, uniform seedbed.
4) Rake to loosen surface just prior to applying seed.

SEEDING METHODS (SM)

SM-1 Fill slopes steeper than 3:1 (permanent seeding)

Use hydraulic seeding equipment to apply seed and fertilizer, a wood fiber mulch at 45 lb./1,000 s.f., and mulch tackifier.

SM-2 Gentle to flat slopes or temporary seedings

1) Broadcast seed at the recommended rate with a cyclone seeder, drop spreader, or cultipacker seeder.
2) Rake seed into the soil and lightly pack to establish good contact.

MULCH (MU)

MU-1 Steep slopes (3:1 or greater)

In mid-summer, late fall or winter, apply 100 lb./1,000 s.f. grain straw, cover with netting and staple to the slope. In spring or early fall use 45lb. / 1,000 s.f. wood fiber in a hydroseeder slurry.

MU-2 High-maintenance vegetation and temporary seedings

Apply 90 lb./1,000 s.f. (4000 lb./acre) grain straw and tack with 0.1 gal./s.y. asphalt (11 gal./1,000 s.f.).

MU-3 Grass-lined channels

Install excelsior mat in the channel, extend up the channel banks to the highest calculated depth of flow, and secure according to manufactur's specifications.
On channel shoulders, apply 100 lb./1,000 s.f. grain straw and anchor with 0.1 gal./s.y. (11 gal./1,000 s.f.) asphalt.

MAINTENANCE (MA)

MA-1 Refertilize in late winter or early spring the following year. Mow as desired.
MA-3 Inspect and repair mulch and lining. Refertilize in late winter of the following year with 150 lb./acre 10-10-10 (3.5 lb./1,000 s.f.). Mow regularly to a height of 3-4 inches.
MA-4 Topdress with 10-10-10 fertilizer if growth is not fully adequate.
MA-5 Topdress with 50 lb./acre (1 lb./1,000 s.f.) nitrogen in March. If cover is needed through the following summer, overseed with 50 lb./acre Kobe lespedeza.

TEMPORARY SEEDING SPECIFICATIONS

TEMPORARY SEEDING RECOMMENDATIONS FOR LATE WINTER AND EARLY SPRING

Seeding Mixture

species	Rate(lb./acre)
Rye (grain)	120
Annual lespedza (Kobe in Piedmont and Coastal Plain,Korean in Mountains)	50

Omit annual lespedeza when duration of temporary cover is not to extend beyond June.

SEEDING DATES

Mountains-Above 2500ft.:Feb. 15 - May 15
Below 2500ft.:Feb. 1 - May 1
Piedmont-Jan. 1 - May 1
Coastal Plain-Dec. 1 - Apr. 15

SOIL AMENDMENTS

Follow recommendations of soil tests or apply 2,000 lb./acre ground agricultural limestone and 750 lb./acre 10-10-10 fertilizer.

MULCH

Apply 4,000 lb./acre straw. Anchor straw by tacking with asphalt, netting, or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulching tool.

MAINTENANCE

Refertilize if growth is not fully adequate. Reseed, refertilize and mulch immediately following erosion or other damage.

TEMPORARY SEEDING RECOMMENDATIONS FOR SUMMER

Seeding Mixture

species	Rate(lb./acre)
German millet	40

In the Piedmont and Mountains, a small-stemmed Sudangrass may be substituted at a rate of 50 lb./acre.

SEEDING DATES

Mountains-May 15 - Aug.15
Piedmont-May 1 - Aug. 15
Coastal Plain-Apr. 15 - Aug. 15

SOIL AMENDMENTS

Follow recommendations of soil tests or apply 2,000 lb./acre ground agricultural limestone and 750 lb./acre 10-10-10 fertilizer.

MULCH

Apply 4,000 lb./acre straw. Anchor straw by tacking with asphalt, netting, or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulching tool.

MAINTENANCE

Refertilize if growth is not fully adequate. Reseed, refertilize and mulch immediately following erosion or other damage.

TEMPORARY SEEDING RECOMMENDATIONS FOR FALL

Seeding Mixture

species	Rate(lb./acre)
Rye (grain)	120

SEEDING DATES

Mountains-Aug.15 - Dec. 15
Coastal Plain and Piedmont-Aug. 15 - Dec. 30

SOIL AMENDMENTS

Follow recommendations of soil tests or apply 2,000 lb./acre ground agricultural limestone and 1,000 lb./acre 10-10-10 fertilizer.

MULCH

Apply 4,000 lb./acre straw. Anchor straw by tacking with asphalt, straight can be used as a mulching tool.

MAINTENANCE

Repair and refertilize damaged areas immediately. Topdress with netting, or a mulch anchoring tool. A disk with blades set nearly 50 lb./acre of nitrogen in March. If it is necessary to extend temporary cover beyond June 15, overseed with 50 lb./acre Kobe (Piedmont and Coastal Plain) or Korean (Mountains)lespedeza in late February or early March.

PERMANENT SEEDING SPECIFICATIONS

PERMANENT SEEDING REQUIREMENTS (N.C. NO. 1CP)

SEEDING MIXTURE

Species	Rate (lb./acre)
Tall fescue	80
Pensacola Bahlagrass	50
Sericea lespedeza	30
Kobe lespedeza	10

SEEDING NOTES

1. From Sept.1-Mar.1, use unscarified sericea seed.
2. On poorly drained sites omit sericea and increase Kobe to 30 lb/acre.
3. Where a neat appearance is desired, omit sericea and increase Kobe to 40 lb/acre.

NURSE PLANTS

Between Apr.15 and Aug.15, add 10lb/acre German millet or 15 lb/acre Sudangrass. Prior to May1 or after Aug.15, add 25 lb/acre rye (grain).

SEEDING DATES

	BEST	POSSIBLE
Early spring:	Aug.25-Sept.15	Aug.20-Oct.25
Fall:	Sept. 1-Sept.30	Sept. 1-Oct.31

SOIL AMENDMENTS

Apply lime and fertilizer according to soil tests, or apply 3000-5000 lb/acre ground agricultural limestone (use the lower rate on sandy soils) and 1,000 lb/acre 10-10-10 fertilizer.

MULCH

Apply 4,000 lb./acre small grain straw or equivalent cover of another suitable mulch. Anchor straw by tacking with asphalt, netting, or roving or by crimping with a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.

MAINTENANCE

If growth is less than fully adequate, refertilize in the second year, according to soil tests or topdress with 500 lb/acre 10-10-10 fertilizer. Mow as needed when sericea is omitted from the mixture. Reseed, fertilize and mulch damaged areas immediately.

Municipal Engineering Services Company, P.A.
LICENSE NUMBER: C-0281
P.O. BOX 97 GARNER, N.C. 27529 (919) 772-5393
P.O. BOX 349 BOONE, N.C. 28607 (828) 262-1767
P.O. BOX 828 MOREHEAD CITY, N.C. 28557 (252) 726-9481

CONSTRUCTION & DEMOLITION LANDFILL FACILITY
WAYNE COUNTY
NORTH CAROLINA

DATE	BY	REV.	DESCRIPTION

CLOSURE PLAN
MISCELLANEOUS DETAILS

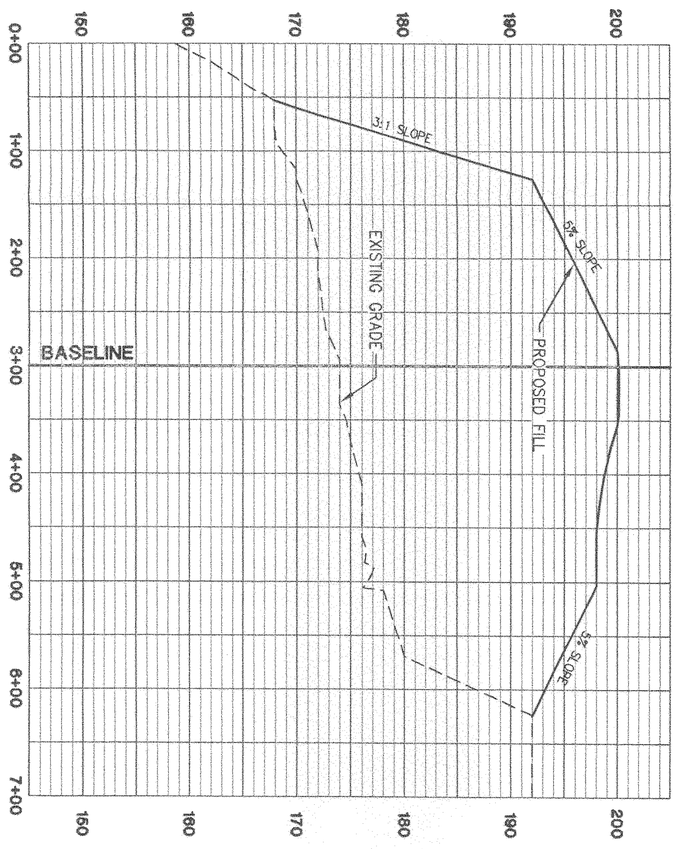
SCALE: 1:1
DATE: 8/26/10
DRWN. BY: L. HAMPTON
CHKD. BY: J. WOODIE
PROJECT NUMBER G07058
DRAWING NO. CL3
SHEET NO. 5 OF 6

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 6282 JIMMY D. WOODIE 9/27/10

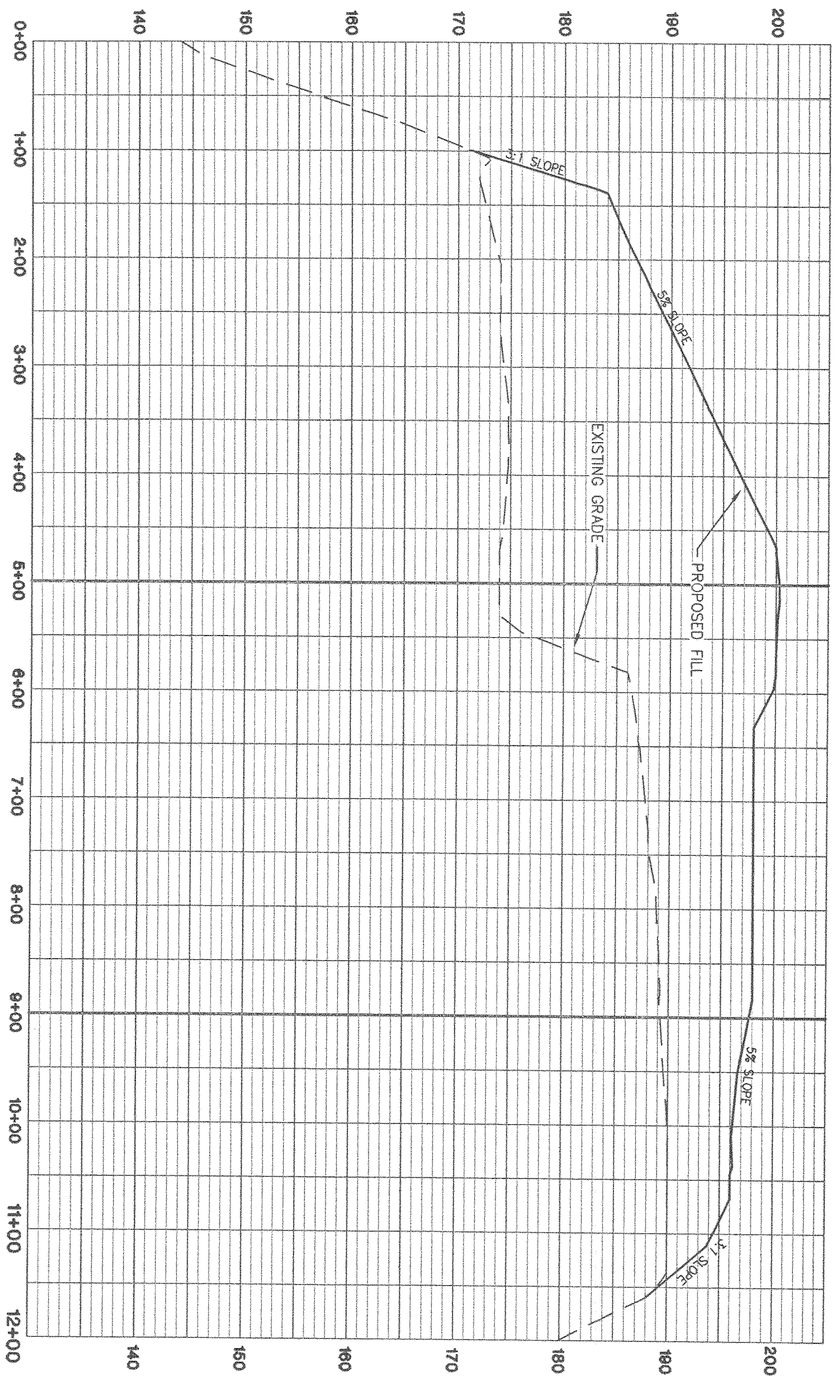
P:\SolidWaste\G07058-Wayne Co. C&D Transition\dwg\CLOSURE\07058-CL5.dwg, 8/27/2010 3:45:18 PM, lch.lch

NOTE

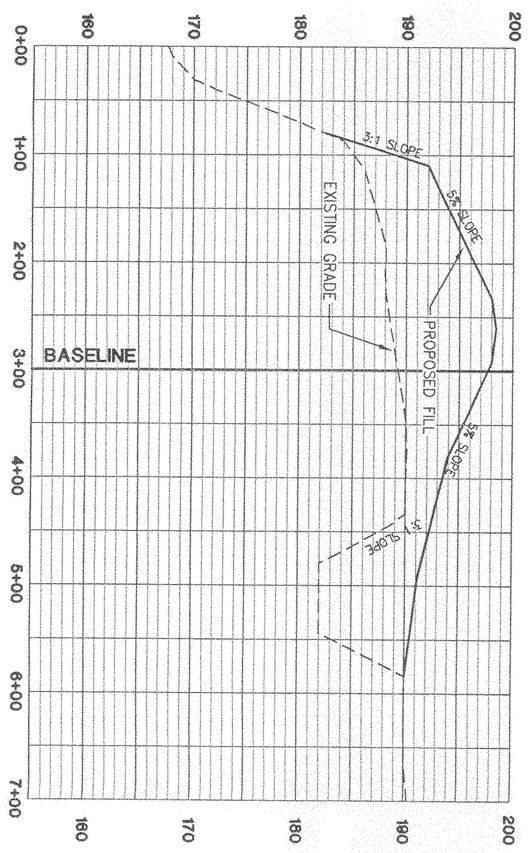
THESE CROSS SECTIONS ARE INTENDED TO SHOW THE CROSS SECTIONS AT SPECIFIC POINTS AS DEFINED BY THE BASELINE GRID ON SHEET 3 OF 6. THEY ARE NOT INTENDED TO BE THE SOLE MEANS FOR CALCULATING THE EARTHWORK FOR THIS PROJECT.



STATION 5+00
SCALE: HORIZ.: 1" = 100'
VERT.: 1" = 10'



BASELINE PROFILE
SCALE: HORIZ.: 1" = 100'
VERT.: 1" = 10'



STATION 9+00
SCALE: HORIZ.: 1" = 100'
VERT.: 1" = 10'

JIMMY D. WOODIE
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 6282
9/13/2010

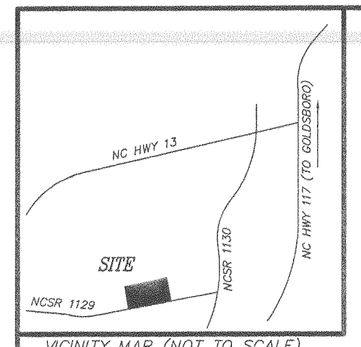
8/26/10	LCH	1	REVISED SHEET NUMBER AND STATION 9+00
DATE	BY	REV.	DESCRIPTION

CLOSURE PLAN
BASELINE PROFILE AND CROSS SECTIONS

SCALE: 1" = 200'
DATE: 7/28/09
DRWN. BY: L. HAMPTON
CHKD. BY: J. WOODIE
PROJECT NUMBER G07058
DRAWING NO. PROF1
SHEET NO. 6 OF 6

CONSTRUCTION AND DEMOLITION LANDFILL FACILITY
WAYNE COUNTY
NORTH CAROLINA

LICENSE NUMBER: C-0281
Municipal Services
P.O. BOX 97 GARNER, N.C. 27529
(919) 772-5393
Engineering Company, P.A.
P.O. BOX 349 BOONE, N.C. 28607
(828) 262-1767
P.O. BOX 828 MOREHEAD CITY, N.C. 28557
(252) 726-9481



VICINITY MAP (NOT TO SCALE)

UNIT 1

UNIT 2

EXISTING FILL AREA LIMITS (SEE NOTE #5)

OLD FILL AREA LIMITS (SEE NOTE #5)

NCSR 1129

SEE NOTE 1

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)

1 inch = 100 ft.

NOTES

1. NORTH REFERENCE TAKEN FROM CONSTRUCTION DRAWINGS PREPARED BY MUNICIPAL ENGINEERING SERVICES COMPANY, P.A., ENTITLED WAYNE COUNTY LANDFILL GAS COLLECTION AND CONTROL SYSTEM (GCCS) DATED MARCH 11, 2002.
2. ALL LATERAL LINES RUNNING TO THE GAS WELLS ARE 4" SDR21 HDPE AND ALL LINES RUNNING TO THE CONDENSATE SUMPS ARE 2" SDR21 HDPE.
3. CONTROL FOR HORIZONTAL AND VERTICAL DATUM WAS PROVIDED BY MUNICIPAL ENGINEERING SERVICES COMPANY, P.A.
4. PERCENT OF GRADE WAS CALCULATED BY USING THE HIGHEST AND LOWEST INVERT ELEVATION AND THE LINEAR FEET OF PIPE BETWEEN THESE POINTS. PLEASE NOTE THAT THIS PERCENTAGE IS NOT DISTRUBITED EQUALLY ALONG THE ENTIRE LINE.
5. THE CELL LIMITS SHOWN ON THIS AS-BUILT MAP WERE PROVIDED BY MUNICIPAL ENGINEERING SERVICES COMPANY, P.A., THEREFORE SURVEYING SOLUTIONS, P.C. DOES NOT CERTIFY THEIR LOCATION TO BE TRUE AND ACCURATE.

LEGEND

- GV — GAS WELL
- GV — GAS VALVE
- CONDENSATE SUMP
- INV. — INVERT OF PIPE (INSIDE BOTTOM)
- 167.25 — INVERT ELEVATION OF PIPE

I, JOHN H. THOMPSON, DO HEREBY CERTIFY THAT THE AS-BUILT INFORMATION SHOWN ON THIS MAP WAS PERFORMED UNDER MY DIRECTION AND SUPERVISION AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

WITNESS MY HAND AND SEAL THIS 18th DAY OF DECEMBER, 2002.

JOHN H. THOMPSON, P.L.S. L-3770

NORTH CAROLINA PROFESSIONAL SEAL L-3770 LAND SURVEYOR JOHN H. THOMPSON

SURVEYING SOLUTIONS, P.C.
5401 HILLSBOROUGH ST.
P.O. BOX 33324 RALEIGH, NC 27636
(919)-854-4833

AS-BUILT SURVEY FOR

WAYNE COUNTY LANDFILL GAS COLLECTION AND CONTROL SYSTEM

DRAWN BY: JHT	CHECKED BY: DRK	SURVEYED BY: JT, BC	GOLDSBORO	WAYNE COUNTY	NORTH CAROLINA
	REVISION: DECEMBER 18, 2002 (MARKUPS PROVIDED BY ENGINEER)		SCALE 1"=100'	OCTOBER 31, 2002	PROJECT# 02-021

APPENDIX B

LOCAL GOVERNMENT APPROVALS

CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

7099 3400 0011 1323 3873

Article Sent To: LOTTIE DIANE SMITH

Postage	$ .41
Certified Fee	2.65
Return Receipt Fee (Endorsement Required)	2.15
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$ 5.21

Postmark Here: GOLDSBORO N.C. 27530 FEB 20 USPS

Name (Please Print Clearly) (to be completed by mailer): LOTTIE DIANE SMITH
Street, Apt. No.; or PO Box No.: 585 S LANDFILL RD
City, State, ZIP+4: DUDLEY NC 28333

PS Form 3800, July 1999 — See Reverse for Instructions

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

7099 3400 0011 1323 3842

Article Sent To: JACKIE BROADIE

Postage	$ .41
Certified Fee	2.65
Return Receipt Fee (Endorsement Required)	2.15
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$ 5.21

Postmark Here: GOLDSBORO N.C. 27530 FEB 20 USPS

Name (Please Print Clearly) (to be completed by mailer): JACKIE BROADIE
Street, Apt. No.; or PO Box No.: 565 SOUTH LANDFILL ROAD
City, State, ZIP+4: DUDLEY, NC 28333

PS Form 3800, July 1999 — See Reverse for Instructions

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

7099 3400 0011 1323 3866

Article Sent To: DOROTHY J. WILLIAMS

Postage	$ .41
Certified Fee	2.65
Return Receipt Fee (Endorsement Required)	2.15
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$ 5.21

Postmark Here: GOLDSBORO N.C. 27530 FEB 20 USPS

Name (Please Print Clearly) (to be completed by mailer): DOROTHY J WILLIAMS
Street, Apt. No.; or PO Box No.: 302 S LANDFILL ROAD
City, State, ZIP+4: DUDLEY, NC 28333

PS Form 3800, July 1999 — See Reverse for Instructions

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

7099 3400 0011 1323 3903

Article Sent To: JESUS APOSTOLIC HOUSE OF PRAYER

Postage	$ .41
Certified Fee	2.65
Return Receipt Fee (Endorsement Required)	2.15
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$ 5.21

Postmark Here: GOLDSBORO N.C. 27530 FEB 20 USPS

Name (Please Print Clearly) (to be completed by mailer): JESUS APOSTOLIC HOUSE OF PRAYER
Street, Apt. No.; or PO Box No.: 202 BRENTWOOD DRIVE
City, State, ZIP+4: DUDLEY, NC 28333

PS Form 3800, July 1999 — See Reverse for Instructions

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

7099 3400 0011 1323 3897

Article Sent To: JAMES OTTO JONES

Postage	$ .41
Certified Fee	2.65
Return Receipt Fee (Endorsement Required)	2.15
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$ 5.21

Postmark Here: GOLDSBORO N.C. 27530 FEB 20 USPS

Name (Please Print Clearly) (to be completed by mailer): JAMES OTTO JONES
Street, Apt. No.; or PO Box No.: 320B SOUTH LANDFILL ROAD
City, State, ZIP+4: DUDLEY, NC 28333

PS Form 3800, July 1999 — See Reverse for Instructions

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

7099 3400 0011 1323 3880

Article Sent To: JEROME MCCLARIN

Postage	$ .41
Certified Fee	2.65
Return Receipt Fee (Endorsement Required)	2.15
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$ 5.21

Postmark Here: GOLDSBORO N.C. 27530 FEB 20 USPS

Name (Please Print Clearly) (to be completed by mailer): JEROME MCCLARIN
Street, Apt. No.; or PO Box No.: 906 SUMMIT LANE
City, State, ZIP+4: ORELAND, PA 19075

PS Form 3800, July 1999 — See Reverse for Instructions

CONSTRUCTION DEMOLITION LANDFILL PUBLIC MEETING
for
COUNTY of WAYNE, NORTH CAROLINA
Sign in Sheet

March 26, 2008 – 2:00 p.m.

Name	Address	Phone Number	Fax Number
Tim Rogers	731 Emmanuel Church Road Dudley N.C.	919-738-9607	919-6892995
LYNN HOPKINS	102 DEREK DR, GOLDSBORO, NC	919.689.2994	919-689-2995
ETHAN CALDWELL	POBOX 97	CALYER NC	917-772-5393
Wayne Sullivan	" "	" "	" " "

NORTH CAROLINA

WAYNE COUNTY.

AFFIDAVIT OF PUBLICATION

Before the undersigned, a Notary Public of said County and State, duly commissioned, qualified, and authorized by law to administer oaths, personally appeared Teresa Bozeman

who being first duly sworn, deposes and says: that he (she) is Legal Clerk

(Publisher, or other officer or employee authorized to make affidavit) of WAYNE PRINTING COMPANY, INC., engaged in the publication of a newspaper known as GOLDSBORO NEWS-ARGUS, published, issued, and entered as second class mail in the city of Goldsboro in said County and State; that he (she) is authorized to make this affidavit and sworn statement; that the notice or other legal advertisement, a true copy of which is attached hereto, was published in GOLDSBORO NEWS-ARGUS on the following dates:

February 22, 2008

and that the said newspaper in which such notice, paper, document, or legal advertisement was published was, at the time of each, and every such publication, a newspaper meeting all of the requirements and qualifications of Section 1-597 of the General Statutes of North Carolina and was a qualified newspaper within the meaning of Section 1-597 of the General Statutes of North Carolina.

This 29 day of February, 20 08

Teresa Bozeman

(Signature of person making affidavit)

Sworn to and subscribed before me, this 29th day of February, 20 08.

Deborah McLamb Pennell

Notary Public

My Commission expires: 9-24-2012

CLIPPING OF LEGAL ADVERTISEMENT ATTACHED HERE

NOTICE OF PUBLIC MEETING

In compliance with the North Carolina Department of Environment and Natural Resources (NCDENR) New Construction and Demolition Landfill Rules 15A NCAC 13B.0531 - .0547, the County of Wayne has scheduled a public meeting for Wednesday, the 26th of March, 2008 at 2:00 p.m. It is the intent of the County to continue operating a Construction and Demolition Landfill (C&DLF). This meeting is to inform the public of the proposed waste management activities as described in the proposed facility plan. All interested parties should attend. The public meeting will be held at the County Landfill office located at 4608 South Landfill Road, Dudley, NC 28333. Application documents may be viewed at the County Landfill office located at 4608 South Landfill Road, Dudley, NC 28333 between the hours of 8:00 am – 4:00 pm Monday through Friday. For further information concerning this meeting, contact the County Solid Waste Department at (919) 689-2994.

Legal #146

February 22, 2008

NOTICE OF PUBLIC MEETING

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NORTH CAROLINA
WAYNE COUNTY

AFFIDAVIT OF PUBLICATION

Before the undersigned, a Notary Public of said County and State, duly commissioned, qualified, and authorized by law to administer oaths, personally appeared Rose Butts

....., who being first duly sworn, deposes and says: that he (she) is

Office Manager

(Owner, partner, publisher or other officer or employee authorized to make this affidavit)

of MOUNT OLIVE TRIBUNE

engaged in the publication of a newspaper known as

MOUNT OLIVE TRIBUNE

published, issued and entered as second class mail in the City of Mount Olive, in said County and State; that he (she) is authorized to make this affidavit and sworn statement; that the notice or other legal advertisement, a true copy of which is attached hereto, was published in

MOUNT OLIVE TRIBUNE

on the following dates:

February 28, 2008

.....

and that the said newspaper in which such notice, paper, document or legal advertisement was published was, at the time of each and every such publication, a newspaper meeting all of the requirements of Section 1-597 of the General Statutes of North Carolina and was a qualified newspaper within the meaning of Section 1,597 of the General Statutes of North Carolina.

This 3 day of March, 2008

Rose Butts

(Signature of person making affidavit)

Sworn to and subscribed before me, this 3

day of March, 2008

Mary L. Rose

Notary Public

My commission expires: April 29, 2008

FACSIMILE TRANSMITTAL SHEET

WAYNE COUNTY SOLID WASTE DEPARTMENT
460 B South Landfill Road
Dudley, NC 28333

DATE:	6/27/2008	TOTAL PAGES INCLUDING COVER:	2

TO:	Wayne Sullivan
COMPANY:	MESCO
FAX NO:	
PHONE NO:	

FROM:	Lynn
FAX NO:	(919) 689-2995
PHONE NO:	(919) 689-2994

URGENT FOR REVIEW PLEASE COMMENT PLEASE REPLY

NOTE/COMMENTS:

I ran the ad in the Mt. Olive Tribune also.

Minutes from Public Meeting
for the Continuing Operation of the
Wayne County Construction and Demolition Landfill

The meeting was held in the Wayne County Scale House Conference Room on March 26, 2008 at 2:00 PM. The meeting was advertised 30 days prior to having it and no one other than Wayne County and Municipal Engineering Representatives were present. The meeting was adjourned after a short discussion amongst the attendees concerning the requirements of local government approval.

NORTH CAROLINA

WAYNE COUNTY

WHEREAS, the construction and demolition landfill is part of the Wayne County Solid Waste facility; and

WHEREAS, the construction and demolition landfill accepts land clearing and inert debris along with construction and demolition type waste or inert material; and

WHEREAS, the Wayne County Solid Waste facility also consists of the municipal solid waste landfill facility, white goods recovery and recycling site, and tire collection area; and

WHEREAS, the Wayne County construction and demolition facility operates on top on the closed municipal solid waste landfill facility; and

WHEREAS, the Wayne County Solid Waste facility is within Wayne County and now accepts only waste from Wayne County; and

WHEREAS, the Wayne County Solid Waste facility does not lie within any incorporated city or town or within the extraterritorial zoning jurisdiction of any city or town.

NOW, THEREFORE BE IT RESOLVED that the Wayne County Board of Commissioners hereby grants approval for the continuing operation of the existing construction and demolition landfill at the current Solid Waste facility.

Adopted this 3rd day of June, 2008.

SEAL OF WAYNE COUNTY FIAT JUSTITIA NORTH CAROLINA

Roland M. Gray, Chairman
Wayne County Board of Commissioners

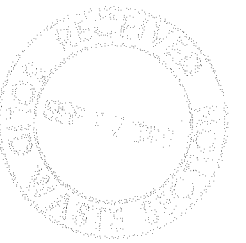
Attest:

Marcia R. Wilson
Clerk to the Board

RECEIVED
JUN 18 2008
Municipal Engineering Services Company, PA

APPENDIX C

WASTE SCREENING PLAN



APPENDIX C Waste Screening Plan

A. INTRODUCTION

The municipal solid waste stream is made up of wastes from all sectors of society. The waste is often categorized by its source or its characteristics. Terms used include commercial, industrial, residential, biomedical, hazardous, household, solid, liquid, demolition/construction, sludge, etc. Regardless of how one classifies wastes, the bottom line is that wastes are delivered to the landfill and a management decision must be made to either reject or accept them. This responsibility rests with the manager of the landfill. Wastes which are not authorized to be accepted at the landfill create a number of potential problems including: (1) liability due to future releases of contaminants; (2) bad publicity if media learns of unacceptable waste entering the landfill; (3) potential for worker injury; (4) exposure to civil or criminal penalties; (5) damage to landfill environmental control systems.

B. HAZARDOUS WASTE REGULATIONS AND MANAGEMENT

In the United States, hazardous waste is regulated under RCRA, Subtitle C. A waste is hazardous if it is listed as a hazardous waste by the Administrator of the Environmental Protection Agency (EPA) in the Code of Federal Regulations, Title 40, Part 261, or if it meets one or more of the hazardous waste criteria as defined by EPA. These criteria are:

- Ignitability
- Corrosivity
- Reactivity
- Toxicity

1. Ignitability

Ignitable waste is a waste that burns readily, causes a fire by friction under normal circumstances, or is an oxidizer. Any waste having a flash point of <140F falls in this category. Flash point is that temperature at which a liquid gives off vapors that will ignite when an open flame is applied. Under Department of Transportation (DOT) definitions, a flammable liquid has a flash point of >100 F. A combustible liquid has a flash point between 100 and 200 F. Therefore, a flammable liquid is always hazardous while a combustible liquid may or may not be hazardous depending upon its flash point.

2. Corrosivity

A corrosive waste is one having a very high or a very low pH. The pH of a liquid is a measure of how acidic or basic (alkaline) the material is. The pH scale ranges from 0 to 14. High numbers are basic and low numbers are acidic. A substance having a pH $\leq$2.0 or $\geq$12.5 is defined as hazardous under RCRA.

3. Reactivity

A waste is reactive if it is normally unstable: reacts violently with water; forms an explosive mixture with water; contains quantities of cyanide or sulfur that could be released to the air; or can easily be detonated or exploded. These wastes may fall into any one of several DOT categories.

4. Toxicity Characteristic Leaching Procedure (TCLP)

A waste is TCLP toxic if the concentration of any constituent in Table 1 exceeds the standard assigned to that substance. The TCLP is a methodology which attempts to simulate the conditions within a landfill. An acidic solution is passed through a sample of waste and the resultant "leachate" is analyzed for contaminants. The TCLP is designed to detect heavy

metals, pesticides and a few other organic and inorganic compounds. The purpose of the test is to prevent groundwater contamination by highly toxic materials. TCLP tests the mobility of 40 different elements and compounds.

Except in certain specified circumstances, regulated quantities of hazardous waste must be disposed of at a permitted hazardous waste disposal facility. In accordance with 40 CFR Part 261.3, **any material contaminated by a hazardous waste is also deemed to be a hazardous waste and must be managed as such.** Hazardous waste from conditionally exempt small quantity generators are to be disposed of in a Hazardous waste disposal facility. RCRA permits are also required to store, transport, and treat hazardous waste.

C. POLYCHLORINATED BIPHENYL'S (PCBs)

1. Introduction

PCBs are nonflammable and conduct heat without conducting electricity. These compounds were most frequently used as an additive to oil or other liquids in situations where heat was involved. The PCBs enhance the heat conducting properties of the liquid and thereby increase the heat dissipation or cooling effect obtained. They have also been used in lubricants and paint. In the United States one of the most common applications was in electric transformers. The only effective method for destroying PCBs is high Temperature incineration which is relatively expensive due to a shortage of PCB incineration capacity.

TABLE 1

T.C.L.P. CONSTITUENTS & REGULATORY LEVELS (mg/L)			
CONSTITUENT	REG LEVEL	CONSTITUENT	REG LEVEL
Arsenic	5.0	Hexachlorobenzene	0.13
Barium	100	Hexachloro-1,3-butadiene	0.5
Benzene	0.5	Hexachloroethane	3.0
Cadmium	1.0	Lead	5.0
Carbon Tetrachloride	0.5	Lindane	0.4
Chlordane	0.03	Mercury	0.2
Chlorobenzene	100	Methoxychlor	10.0
Chloroform	6.0	Methyl ethyl ketone	200
Chromium	5.0	Nitrobenzene	2.0
m-Cresol	200	Pentachlorophenol	100
o-Cresol	200	Pyridine	5.0
p-Cresol	200	Selenium	1.0
Cresol	200	Silver	5.0
1,4-Dichlorobenzene	10.0	Tetrachloroethylene	0.7
1,2-Dichloroethane	0.7	Toxaphene	0.5
1,1-Dichloroethylene	0.5	Trichloroethylene	0.5
2,4-Dichlorophenoxyacetic acid	0.7	2,4,5-Trichlorophenol	400
2,4-Dinitrotoluene	0.13	2,4,6-Trichlorophenol	2.0
Endrin	0.02	2,4,5-TP (Silvex)	1.0
Heptachlor (and its hydroxide)	0.008	Vinyl Chloride	0.2

By law PCB's are no longer used as dielectrics in transformers and capacitors manufactured after 1979. There are many millions of pounds of PCBs still in use or in storage. One example is the ballasts used in fluorescent light fixtures. It has been estimated that there are between 0.5 million and 1.5 billion ballasts currently in use in this country. Due to the long life of these units, about half of these may be of pre-1979 manufacture and contain PCBs. Since each ballast contains about one ounce of nearly pure PCB fluid, there are about **20 to 30 million pounds** of PCBs in existing lighting fixtures. These items are not the subject to RCRA Subtitle D Waste Screening!

Commercial or industrial sources of PCB wastes that should be addressed by the program include:

- Mineral oil and dielectric fluids containing PCBs;
- Contaminated soil, dredged material, sewage sludge, rags, and other debris from a release of PCBs;
- Transformers and other electrical equipment containing dielectric fluids; and
- Hydraulic machines.

2. PCB Regulatory Requirements

As contrasted to hazardous wastes, the Toxic Substance Control Act regulates PCBs based on the concentration of PCBs in the waste rather than the source or characteristic of the waste. The regulations concerning PCB disposal are spelled out in 40 CFR Part 761. Subtitle D of RCRA merely requires that PCB waste not be disposed in a MSW landfill. PCB management requirements include:

Waste containing more than 500 ppm of PCBs must be incinerated. Waste containing from 50 to 500 ppm must be disposed of by incineration, approved burning, or in chemical waste landfill permitted to receive such wastes. The regulations are silent concerning wastes containing less than 50 ppm of PCBs; however, the regulations cannot be circumvented by diluting stronger wastes.

D. FUNDAMENTALS OF WASTE SCREENING

1. Know Your Generators and Haulers

Since the level of sophistication of your waste screening program will be a reflection of the likelihood of hazardous waste and PCB waste being in your incoming waste, **knowledge of the commercial industrial base of your service area is critical.** Some examples are the automotive industry, which generates solvents, paint wastes, lead acid batteries, grease and oil; the dry cleaning industry, which may generate filters containing dry cleaning solvents; metal platers which generate heavy metal wastes; and other industries which generate a variety of undesirable wastes; e.g. chemical and related products, petroleum refining, primary metals, electrical and electronic machinery, etc.

Landfill managers should also know the haulers and trucks serving the businesses in their community which are likely to carry unacceptable wastes.

Some local governments and solid waste management agencies have enacted legislation requiring haulers to provide a manifest showing the customers whose wastes make up that particular load. Such a manifest is an extremely useful tool when a load is found to contain prohibited wastes. It is unwise to accept wastes from unknown, unlicensed, or otherwise questionable haulers.

2. Inspections

An inspection is typically a visual observation of the incoming waste loads by an individual who is trained to identify regulated hazardous or PCB wastes that would not be acceptable for disposal at the C&DLF unit. The training of landfill personnel will be conducted by a local EMS official or a SWANA certification. An inspection is considered satisfactory if the inspector knows the nature of all materials received in the load and is able to discern whether the materials are potentially regulated hazardous wastes or PCB wastes.

Ideally, all loads should be screened; however, it is generally not practical to inspect in detail all incoming loads. Random inspections, therefore, can be used to provide a reasonable means to adequately control the receipt of inappropriate wastes. Random inspections are simply inspections made on less than every load. At a minimum the inspection frequency will not be less than one percent of the waste stream.

The frequency of random inspections may be based on the type and quantity of wastes received daily, and the accuracy and confidence desired in conclusions drawn from inspection observations. Because statistical parameters are not provided in the regulation, a reasoned, knowledge-based approach may be taken. A random inspection program may take many forms such as inspecting every incoming load one day out of every month or inspecting one or more loads from transporters of wastes of unidentifiable nature each day. If these inspections indicate that unauthorized wastes are being brought to the C&DLF site, the random inspection program should be modified to increase the frequency of inspections.

Inspection priority also can be given to haulers with unknown service areas, to loads brought to the facility in vehicles not typically used for disposal of C&D waste, and to loads transported by previous would-be offenders. For wastes of unidentifiable nature received from sources other than households (e.g., industrial or commercial establishments), the inspector should question the transporter about the source/composition of the materials.

An inspection flow chart to identify, accept, or refuse solid waste is provided as Figure 1.

Inspections of materials may be accomplished by discharging the vehicle load in an area designed to contain potentially hazardous wastes that may arrive at the facility. The waste should be carefully spread for observation using a front end loader or other piece of equipment. The Division recommends that waste should be hand raked to spread the load. Personnel should be trained to identify suspicious wastes. Some indications of suspicious wastes are:

- Hazardous placards or markings;
- Liquids;
- Powders or dusts;
- Sludges;
- Bright or unusual colors;
- Drums or commercial size containers; or
- Chemical odors.

The County will follow these procedures when suspicious wastes are discovered.

- Segregate the wastes;
- Dispose of non-C&D waste in designated container(s) for transport off-site;
- Question the driver;
- Review the manifest (if applicable);
- Contact possible source;
- Call the Division;
- Use appropriate protective equipment;
- Contact laboratory support if required; and
- Notify the local Hazardous Material Response Team.

Containers with contents that are not easily identifiable, such as unmarked 55-gallon drums, should be opened only by properly trained personnel. Because these drums could contain hazardous waste, they should be refused whenever possible. Upon verifying that the solid waste is acceptable, it may then be transferred to the working face for disposal.

Testing typically would include the Toxicity Characteristic Leaching Procedure (TCLP) and other tests for characteristics of hazardous wastes including corrositivity, ignitability, and reactivity. Wastes that are suspected of being hazardous should be handled and stored as a hazardous waste until a determination is made.

If the wastes temporarily stored at the site are determined to be hazardous, the County is responsible for the management of the waste. If the wastes are to be transported from the facility, the waste must be: (1) stored at the C&DLF facility in accordance with requirements of a hazardous waste generator, (2) manifested, (3) transported by a licensed Treatment, Storage, or Disposal (TSD) facility for disposal.

E. RECORD KEEPING AND NOTIFICATION REQUIREMENTS

Records must be kept pursuant to an incident where regulated hazardous waste or prohibited waste is found at the landfill. It is also recommended that records be kept of all screening activities and incidents, whether or not, regulated or prohibited wastes are found. This will help prove that the landfill owner/operator has acted in a prudent and reasonable manner.

The best way to prove compliance with this requirement is to document each inspection including:

Date and time of waste detection
Hauler name (company and driver)
Waste(s) detected
Waste generator(s) if able to identify
Action(s) taken to manage or return material(s)
Efforts taken if extreme toxicity or hazard was discovered
Landfill employee in responsible charge

40 CFR Part 258 requires that records should be maintained at or near the landfill site during its active life and as long after as may be required by the appropriate state or local regulations.

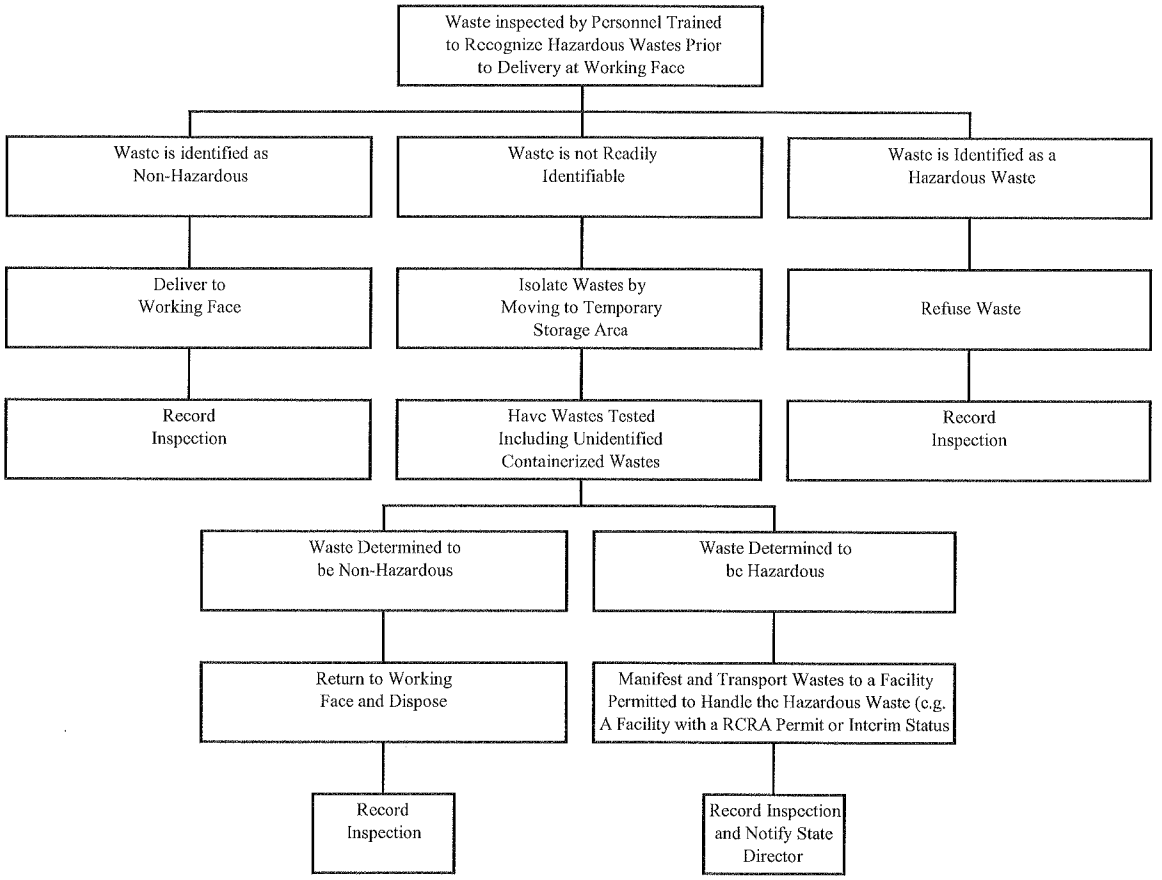


FIGURE 1
Hazardous Waste Inspection Decision Tree
Inspection Prior to Working Face

WASTE SCREENING CHECK LIST

CONTAINERS	YES	NO
FULL	_____	_____
PARTIALLY FULL	_____	_____
EMPTY	_____	_____
CRUSHED	_____	_____
PUNCTURED	_____	_____
POWDERS/DUSTS		
IDENTIFIED	_____	_____
UNKNOWN	_____	_____
SATURATION	_____	_____
LABEL/HAZARDOUS	_____	_____
ODOR/FUMES		
STRONG	_____	_____
FAINT	_____	_____
HEAT	_____	_____
ITEMS FOUND		
BATTERIES	_____	_____
OIL	_____	_____
BIOMEDICAL	_____	_____
RADIOACTIVE	_____	_____
ASHES/RESIDUE	_____	_____
SOD/SOIL	_____	_____
LIQUID	_____	_____
HAZARDOUS	_____	_____
PCB'S	_____	_____

CHECK ALL THAT APPLY

DETAILED SCREENING REPORT

WASTE SOURCE_____
ADDRESS_____
_____
_____

PROBABLE [ ] SUSPECTED [ ] CONFIRMED [ ]

WASTE HAULER_____
ADDRESS_____
_____
_____

DRIVER'S NAME_____
DETAIL_____
_____
_____

NOTIFIED:

WASTE SOURCE [ ] HAULING MANAGEMENT [ ] SITE MANAGEMENT [ ]

STATE [ ] FEDERAL [ ]

NAME_____
WITNESS (IF ANY)_____
DATE_____TIME_____ AM PM
_____

ACTION REQUIRED

APPENDIX D

STATE AND LOCAL CONTACT INFORMATION

STATE AND LOCAL CONTACT INFORMATION

NC Division of Waste Management Office:

Solid Waste Field Operation Branch
Fayetteville Regional Office
Eastern Regional Supervisor

Phone: (910) 433-3300

Local Hazardous Material Response Team:

Emergency: 911

Wayne County Emergency Services

Phone: (919) 731-1416

Local Fire Department:

Emergency: 911

Thoroughfare Volunteer Fire Department

Phone: (919) 689-3507

Local Sheriff's Department:

Emergency: 911

Wayne County Sheriff's Department:

Phone: (919) 731-1481

APPENDIX E

WRITTEN FACILITY PLAN

Introduction

Wayne County will continue to operate a Construction and Demolition Landfill (C&DLF) within the permitted boundaries and upon closed sections of the present municipal solid waste landfill. The sections are limited to areas that stopped receiving waste prior to October 9, 1991 and have two feet of final cover.

General

The existing C&DLF unit is located a minimum of 50' from the property lines, 500' from existing wells, and 50' from any stream, river or lake.

The County will cap their landfill within 180 days after the final receipt of solid waste. The cap system will consist of 12 inches bridging material (temporary cover), 18 inches of soil liner with a permeability no greater than 1.0 x 10^{-5} cm/sec, drainage layer, 18 inches of protective/erosive layer. The cap contains gas venting system consisting of a series of washed stone trenches below the soil liner that will be vented through pipes that penetrate the cap. The cap system will also include the proper seeding and mulching of the erosive layer and other erosion control devices.

The total permitted C&D capacity is 2,731,918 (1997 Submittal) cubic yards. The existing closed MSW footprint is approximately 40 acres in size.

Landfill Capacity

The Life Expectancy calculations were calculated for Phases 2-7 of development with a vertical expansion being included when a Phase is constructed adjacent to the previous Phase. Each successive phase will vary in size due to being able to expand onto the previously filled areas. The Operation Plan of the Engineering Report will delineate this more clearly. The airspace is a net volume excluding the capping requirements.

LIFE EXPECTANCY CALCULATIONS PHASES 2-7

Given:

Life expectancy based on survey data from January 29, 2007 to November 21, 2007, there was 42,128 cubic yards/year. We used this number for the first year and an annual increase of 0.83% for each year thereafter.

Phases	Airspace Available	Years of Life
Phase 2	= 211,227 cubic yards	= 5.01 years
Phase 3	= 222,804 cubic yards	= 5.07 years
Phase 4	= 233,651 cubic yards	= 5.11 years
Phase 5	= 249,518 cubic yards	= 5.05 years
Phase 6	= 255,624 cubic yards	= 5.32 years
Phase 7	= 287,181 cubic yards	= 5.54 years
	1,460,005 cubic yards	31.11 years

Soil requirements for construction, daily cover and final caps for Phases 2-7
(Assume an 10:1 Trash to soil ratio)

Soil needed for Daily Cover	= 132,278 cubic yards
Soil needed for Closure	= 258,134 cubic yards
Overall Soil Requirements	= 390,412 cubic yards (soil needed for closure and daily cover)

The County also owns property which it will utilize for borrow material as needed. There should be enough borrow material available to complete the landfill. If the need arises the County will purchase additional land to borrow from. Estimated schedule of closure will be approximately 31.11 years.