

CIVIL/SANITARY/ENVIRONMENTAL ENGINEERS

SOLID WASTE MANAGEMENT

**Municipal
Services**

SITE PLANNING/SUBDIVISIONS



**Engineering
Company, P.A.**

SUBSURFACE UTILITY ENGINEERING (SUE)

September 19, 2008

Jaelynne Drummond, Hydrogeologist Permitting Branch
Solid Waste Section
Division of Waste Management
North Carolina Department of Environmental and Natural Resources
401 Oberlin Road, Suite 150
Raleigh, NC 27605



Re: Selection of Remedy
Alexander County #02-01

Dear Ms. Drummond:

Enclosed you will find the Selection of Remedy for the Alexander County Landfill permit #02-01. As per request, one hard copy is included. An electronic copy is included with the Corrective Action Plan.

Please contact us by phone at (919) 772-5393, should you have any questions or comments regarding this report.

Sincerely,
MUNICIPAL ENGINEERING SERVICES CO., P.A.

D. Wayne Sullivan
Project Manager

Enclosures

Cc: Josh Mitchell – Alexander County



**North Carolina Department of Environment and Natural Resources
Division of Waste Management
Solid Waste Section**



North Carolina Solid Waste Groundwater Corrective Action Permit Modification Application

Pursuant to 15A NCAC 13B .1636, "Within 14 days of selecting a remedy, the permittee shall submit an application to modify the permit describing the selected remedy to the Division for evaluation and approval." The application shall include the demonstrations necessary to comply with the financial assurance requirements set forth in Paragraph (d) of Rule .1628.

Please attach the following: (1) a copy of the minutes from the public meeting discussing the Assessment of Corrective Measures, (2) a signed resolution/proclamation/document adopting the remedy, (3) a site map designating locations of groundwater monitoring wells and surface water monitoring locations that will be impacted by the remedy, (4) any draft conceptual schematics/figures/plans relating to the selected remedy, (5) a list of any required registrations, permits, and approvals, (6) a copy of most recent permit issued by the Solid Waste Section, and (7) an amendment to the Financial Assurance Mechanism, including a break-down of the cost estimates for closure, post-closure and corrective action.

Send the application and attachments to NCDENR-DWM, Solid Waste Section, Compliance Unit, 1646 Mail Service Center, Raleigh, NC 27699-1646. This application and any documents attached to this application are "Public Records" as defined in NC General Statute 132-1. As such, these documents are available for inspection and examination by any person upon request (NC General Statute 132-6).

Please type or print all information legibly.

I. Site Identification

Permit Number: 02-01
 Solid Waste Rule Designation (.0500 or .1600): .1600
 Facility Name: Alexander County Landfill
 Facility Physical Address: 621 Liledoun Road
 City: Taylorsville
 Zip: 28681
 County: Alexander
 Waste Type: Closed MSW

II. Owner and Operator Information

Check box, if owner and operator are the same.

Owner

Name: Alexander County (Josh Mitchell - Solid Waste Director)
 Address: 621 Liledoun Road
 Phone Number: (828) 632-1101

Operator

Name: _____
 Address: _____
 Phone Number: _____

III. Groundwater Corrective Action

Selected remedy (include addition lines if needed):

(1) Monitored Natural Attenuation, Stream Dilution, Phytoremediation (Hybrid Willow Trees)

(2) Purchase of Property

(3) Active Methane System

Contingency Plan A: Injection

Contingency Plan B: Vapor Extraction - Bioventing

IV. Financial Assurance

Financial Assurance Mechanism: Financial Test

Total Cost Estimate for 30 Years (based upon ACM): \$ 600,000.00

V. Project Schedule (upon Division approval)

Approximate Date of Remedy Construction Completion (if applicable): June 2009

Approximate Date of Implementation of Remedy: April 2009

Approximate Date of Baseline Sampling Completion (if applicable): December 2010

Approximate Date of First Remedy Performance and Effectiveness Report Submittal: February 2011

VI. Environmental Consultant

Consulting Company: Municipal Engineering Services Company

Address: P.O. BOX 97 Garner, NC 27303

Phone Number: (919) 772-5393

VII. Signatures

To the best of my knowledge, the information reported and statements made in this North Carolina Solid Waste Groundwater Corrective Action Permit Modification Application are true and correct. I am aware that there are significant penalties for making any false statement, representation, or certification including the possibility of fine and imprisonment.

If Owner and Operator are the same, please sign for Owner and type or write SAME for Operator.

Owner

Owner Name (Printed or Typed): Josh Mitchell

Owner Signature: [Handwritten Signature]

Date: 9-17-08

Operator

Operator Name (Printed or Typed): Same

Operator Signature: _____

Date: 9-17-08

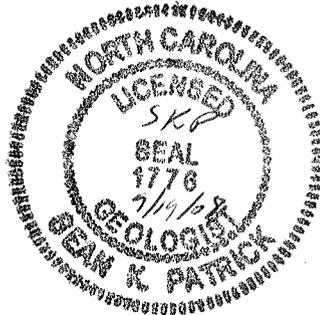
NC Professional Geologist or NC Professional Engineer

Name (Printed or Typed): Sean K. Patrick

Signature: [Handwritten Signature]

Date: 9-19-08

Affix NC Professional Geologist/Engineer Seal:



**Minutes of June 26, 2008
Alexander County, North Carolina
Assessment of Corrective Measures**

Meeting called to order at 3:40 pm

The following were present

- Ethan Caldwell – Municipal Engineering Services
- Wayne Sullivan – Municipal Engineering Services
- Josh Mitchell – Alexander County
- Linda R Correll – Adjoining Property Owner
- Tony J Correll – Adjoining Property Owner

Ethan Caldwell summarized the findings of the Assessment of Corrective Measures

- Low level contamination exists under the closed MSW landfill.
- Contamination has migrated off site and has the potential to migrate onto the Correll Property.
- A good option for remediation would be to purchase the property, thus extending the relevant point of compliance and allowing for natural attenuation.
- Contamination also exists under the scale house. Contamination appears to be driven by landfill gas. Enhanced vapor extraction may be used as a remediation option.

Tony Correll would consider Alexander County purchasing a portion of his property. He would also consider allowing access to his property. Discussion of historical landfill use; he indicated at one time the area near MW-5 received animal carcasses. (This area may not be suitable for substrate injection due to this information)

Final selection of remedy will be determined based on implementation schedule, ease of implementation, and financial responsibility. A signed proclamation adopting the remedy will be prepared upon determination of remedy



Alexander County

Administrative Offices



October 23, 2008
Ms. Jaclynne Drummond
Hydrogeologist – Environmental Compliance
NCDENR – Solid Waste Section
1646 Mail Service Center
Raleigh, North Carolina 27699

Re: Selection of Remedies
Alexander County MSWLF
Permit No. 02-01

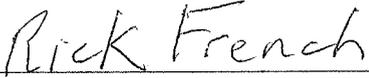
Dear Ms. Drummond:

Please consider this correspondence as acceptance by the Alexander County government of the corrective measures that have been proposed for the subject facility by Municipal Engineering Services Company, P.A. (MESCO) of Garner, NC. MESCO has submitted an *Assessment of Corrective Measures (ACM)* dated April 11, 2008) and a *Corrective Action Plan (CAP)* dated September 19, 2008 that identified four specific areas requiring corrective measures.

The potential corrective measures that were outlined in both the ACM and CAP include phytoremediation, monitored natural attenuation (MNA), and purchase of property downgradient of an area of off-site contaminant migration. Based upon the relatively low level of groundwater impact, the proposed selection of remedies are protective of human health and the environment. Phytoremediation will treat existing groundwater impact by removing groundwater contaminants, thereby limiting downgradient migration. Groundwater contaminants are also expected to degrade naturally through bioattenuation. The effectiveness of these corrective measures will be determined through semi-annual groundwater monitoring and sampling to be appended to the existing semi-annual sampling schedule. Contingent upon approval of the CAP, planting of hybrid willows for purposes of phytoremediation is scheduled for March 2009. The first sampling event for MNA parameters is scheduled for June 2009.

Please do not hesitate to contact either myself at (828) 632-9332 or Josh Mitchell at (828) 632-1101 should you have any questions or require additional information regarding this matter.

Sincerely yours,



County Manager (printed)



County Manager (signature)

cc: Municipal Engineering Services, P.A.



NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

Dexter R. Matthews, Director

Division of Waste Management

Michael F. Easley, Governor
William G. Ross Jr., Secretary

FACILITY PERMIT NUMBER: 02-01
ORIGINAL DATE ISSUED (MSW): 11/19/79
DATE OF INTERIM PERMIT (MSWLF): 9/5/91
DATE OF INTERIM PERMIT (MSWLF): 5/24/96
DATE MODIFIED (CD Unit Phase 1): 12/31/97
DATE MODIFIED (C&D Extension): 12/22/2005

SOLID WASTE PERMIT

COUNTY OF ALEXANDER

is hereby issued a PERMIT TO OPERATE Phase 1 of a
Construction and Demolition Landfill Unit

located at the Alexander County Landfill, S.R. 1620, Taylorsville, Alexander County, North Carolina in accordance with Article 9, Chapter 130A of the General Statutes of North Carolina and all rules promulgated thereunder and subject to the conditions set forth in this permit. The facility is located and described by the construction plan submitted and the permit application narrative.

Edward F. Mussler, III, P.E.
Permitting Branch Supervisor
Solid Waste Section

1646 Mail Service Center, Raleigh, North Carolina 27699-1646
Phone 919-508-8400 \ FAX 919-733-4810 \ Internet <http://wastenotnc.org>



NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

Dexter R. Matthews, Director

Division of Waste Management

Michael F. Easley, Governor
William G. Ross Jr., Secretary

December 22, 2005

Mr. Josh Mitchell
Alexander County Solid Waste Director
621 Liledoun Road, Box 12
Taylorsville, North Carolina 28681Re: Alexander County C&D over MSW Landfill, Permit # 02-01
Alexander County, North Carolina

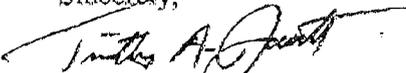
Dear Mr. Mitchell:

The Solid Waste Section hereby approves the modification of the referenced MSWLF Facility permit to allow the continued operation of Phase 1 of the Construction & Demolition Landfill Unit, in accordance with Sheets 2 and 3 of 4 dated 22 December 1997 of the approved plans (with final elevations depicted) at the Alexander County Landfill. The operation of Phase 1 of the C&D Unit, as noted in Condition #2, is valid for two years and will need to be renewed on **15 January 2008** according to the Section's Policy allowing continued C&D operation atop closed MSW landfills on an annual basis after 1 January 2003. Any request to operate after 15 January 2008 will be dependent upon data currently being compiled by the Solid Waste Section regarding the strength of leachate generated by C&D material, groundwater monitoring results from the Alexander site, and any new C&D rules in effect at that time.

Please review the conditions carefully. In particular, please note conditions #5 and #10 that outline annual financial assurance updates and ongoing operational requirements that need to be met for operating the facility. Permanent boundary markers identifying the limits of waste placement are of special importance. The Waste Management Specialist for this facility is Mr. Jason Watkins and he can be reached in our Winston-Salem Regional Office at (336) 771-4608 ext. 340 to schedule an operational meeting.

If you have any questions about this approval letter, please contact me at (336) 771-4608 Ext: 337 or Ed Mussler at (919) 733-0692 Ext. 255.

Sincerely,


Timothy A. Jewett
Western Area Engineer
Solid Waste Sectioncc: Ed Mussler, SWS Brent Rockett, SWS
Jason Watkins, SWS Raleigh Central File - Alexander County (02-01)1646 Mail Service Center, Raleigh, North Carolina 27699-1646
Phone 919-508-8400 \ FAX 919-733-4810 \ Internet <http://wastenotnc.org>

FACILITY PERMIT NUMBER: 02-01
ORIGINAL DATE ISSUED (MSW): 11/19/79
DATE OF INTERIM PERMIT (MSWLF): 9/5/91
DATE OF INTERIM PERMIT (MSWLF): 5/24/96
DATE MODIFIED (CD Unit Phase 1): 12/31/97
DATE MODIFIED (C&D Extension): 12/22/2005

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Permit to Operate
Alexander County Landfill
Construction and Demolition Debris Landfill Unit Phase 1

CONDITIONS OF PERMIT:

GENERAL

1. When this property is sold, leased, conveyed or transferred, the deed or other instrument of transfer shall contain in the description section in no smaller type than that used in the body of the deed or instrument, a statement that the property has been used as a sanitary landfill.
2. This permit will be subject to review at any time. The operating life of this facility is approximately two years and the permit shall expire on **15 January 2008**. If this facility plans to operate beyond the time frame addressed, then modifications to the facility plans may be required in accordance with rules in effect at the time of review.
3. The approved plan is described by Attachment 1, "List of Documents for Approved Plan". Where discrepancies may exist, the most recent submittal and the Conditions of Permit shall govern. Some components of the approved plan are reiterated in the Conditions of Permit.
4. This permit is not transferable.
5. The Financial Assurance Instrument (FAI) for this facility shall be amended when Closure Certification has been complete and the Closure/Post-Closure Care portion of the instrument is amended. The FAI shall be reviewed and updated annually for this facility once closure of the MSW unit is complete.
6. If, during the operational life of the C&D unit, it becomes apparent that the operations at the facility are impacting ground water adversely, the Solid Waste Section will require landfilling activities to cease and closure of the operating unit.

CONSTRUCTION AND OPERATION

7. This permit is for development of the Alexander County Construction and Demolition Landfill Unit, Phase 1 area located in the central part of the landfill, in accordance with the approved plan, sheet #2 of 4 dated 22 December 1997 and received 23 December 1997 as part of permit submittal binder dated 1 December 1997 from Municipal Engineering Services Co.

FACILITY PERMIT NUMBER: 02-01

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ORIGINAL DATE ISSUED (MSW): 11/19/79

DATE OF INTERIM PERMIT (MSWLF): 9/5/91

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DATE MODIFIED (CD Unit Phase 1): 12/31/97

DATE MODIFIED (C&D Extension): 12/22/2005

8. This solid waste management facility is permitted to receive the following waste types:
- a. Land-clearing debris as defined in G.S. 130A-290, specifically, solid waste which is generated solely from land-clearing activities, such as stumps, trees, etc.;
 - b. Inert debris defined as solid waste which consists solely of material that is virtually inert, such as brick, concrete, rock and clean soil; and
 - c. Asphalt in accordance with G.S. 130-294(m).
 - d. Construction and demolition debris defined as solid waste resulting solely from construction, remodeling, repair or demolition operations on pavement, buildings, or other structures.
 - e. C&D like waste that are similar to wastes typically found in the land clearing-inert debris and C&D waste streams consisting of wastes at this time: roofing shingle waste from the manufacturer, waste building materials from mobile home/modular home manufacturer and wooden pallets. Other wastes **MAY** be approved by the Division upon receipt of a written request with the specific waste type, how its generated, how much is generated; along with any additional information the Division may request to render a final decision on the disposal options for the waste.

Yard trash as defined in G.S. 130A-290, shall not be disposed in the landfill area. However, yard trash, along with land-clearing debris, may be accepted for processing in the Yard Waste Composting Area.

9. All sedimentation/erosion control activities will be conducted in accordance with the Sedimentation Control Act codified at 15 NCAC 4. Native vegetation shall be established on the completed landfill.
10. The following requirements shall be met prior to operation of **PHASE 1** at this facility:
- a. Site preparation and or closure of that area of the MSW unit shall be in accordance with the construction closure plans (dated 12/22/1997).
 - b. Signs shall be posted at the facility in accordance with the Access and Safety Requirements under Operation Condition No. 14 listed below and permanent boundary markers shall be installed to identify the limits of waste placement.
 - c. The existing groundwater monitoring system will be utilized for ground water monitoring for the C&D unit(s) in accordance with .1630 thru .1633. Assessment monitoring shall continue in accordance with Solid Waste Management Rules and any additional requirements set forth by Solid Waste Section Hydrogeologist.

FACILITY PERMIT NUMBER: 02-01

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ORIGINAL DATE ISSUED (MSW): 11/19/79

DATE OF INTERIM PERMIT (MSWLF): 9/5/91

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DATE MODIFIED (CD Unit Phase 1): 12/31/97

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- d. Closure certification and documentation shall be submitted to the Solid Waste Section and approved by the Section prior to receiving C&D waste in the proposed unit(s). Partial closure of units will be accepted with certification and documentation of partial unit closure submitted for approval. Seeding and stabilization of cover soils shall be performed prior to receiving C&D waste.
 - e. A pre-operational meeting shall be held with the Solid Waste Section prior to waste placement.
11. Operation of the C&D landfill units shall conform to the operating procedures described in the approved plan, in accordance with Section .1626 of the Solid Waste Management Rules, and in accordance with the following requirements:

Waste Acceptance and Disposal

12. a. The facility shall accept only those solid wastes which it is permitted to receive.
- b. No municipal solid waste, hazardous waste, industrial waste, liquid waste or waste not characterized as LCID or C&D shall be accepted for disposal.
- c. The permittee shall implement a program at the facility for detecting and preventing the disposal wastes listed in item "b" of this section. The program shall include, at a minimum:
 - (I) Random inspections of incoming loads or other comparable procedures;
 - (ii) Records of any inspections;
 - (iii) Training of personnel to recognize hazardous and liquid wastes;
 - (iv) Development of a contingency plan to properly manage any identified wastes listed in item "b" of this section; the plan must address identification, removal, storage, and final disposition of waste.

Cover Material Requirements

13. a. Operational soil cover of at least six inches shall be placed at least once per week or when the active area reaches ½ acre in size or more often as necessitated by the nature of the waste so as to prevent the site from becoming a visual nuisance and to prevent fire, windblown materials, vectors or water infiltration.
- b. Areas which will not have additional waste placed on them for 12 months or more, but where final termination of operations has not occurred, shall be covered with a minimum of one foot of soil cover.
- c. After final termination of disposal operations at the site or major part thereof, or upon revocation of a permit, the fill areas shall be covered with a cap in accordance with .1627(C) or in accordance with the rules at the time of closure.

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Access and Safety

- 14. a. The facility shall be adequately secured by means of gates, chains, berms, fences, or other security measures approved by the DSWM to prevent unauthorized entry.
- b. An attendant shall 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 shall be of all-weather construction and maintained in good condition.
- d. Dust control measures shall be implemented when necessary.
- e. Signs providing information on dumping procedures, the hours of operation, the permit number, and other pertinent information shall be posted at the site entrance.
- f. Signs shall be posted stating that no MSW, hazardous waste or liquid waste can be received.
- g. Traffic signs or markers shall 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 facility is prohibited unless the owner/operator approves and the removal is not performed on the working face.
- i. Barrels and drums shall not be disposed of unless they are empty and perforated sufficiently to ensure that no liquid or hazardous waste is contained therein, except fiber drums containing asbestos.
- j. Open burning of solid waste is prohibited.
- k. The concentration of explosive gases generated at the facility shall not exceed:
 - i. twenty-five percent of the limit for gases in site structures (excluding gas control or recovery system components; and
 - ii. the lower explosive limit for gases at the facility boundary.

Erosion and Sedimentation Control

- 15. a. Adequate sedimentation and erosion control measures shall be practiced to prevent silt from leaving the site.
- b. Adequate sedimentation and erosion control measures shall be practiced to prevent excessive on-site erosion.
- c. Provisions for a vegetative ground cover sufficient to restrain erosion must be accomplished within 30 working days or 120 calendar days upon completion of any phase of C&D landfill development.

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Drainage Control and Water Protection Requirements

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16.
 - a. Surface water shall be diverted from the operational area.
 - b. Surface water shall not be impounded over or in waste.
 - c. A separation distance of at least four feet shall be maintained between waste and the ground-water table.
 - d. Solid waste shall not be disposed of in water.
 - e. Leachate shall be contained on site or properly treated prior to discharge. An NPDES permit may be required prior to discharge of leachate to surface waters.
17. All pertinent landfill operating personnel will receive training and supervision necessary to properly operate this landfill.
18. Ground water quality at this facility is subject to the classification and remedial action provisions referenced in Rule .1634 thru .1637 of 15A NCAC 13B.
19. A closure and post-closure plan must be submitted for approval at least 90 days prior to closure or partial closure of any landfill unit. The plan must include all steps and measures necessary to close and maintain the facility in accordance with all rules in effect at that time. At a minimum, the plan shall address the following:
 - a. Design of a final cover system; using the cap requirements outlined in Rule .1627
 - b. Construction and maintenance/operation of the final cover system and erosion control structures;
 - c. Surface water, ground water, and explosive gas monitoring.

MONITORING AND REPORTING REQUIREMENTS

20. Ground-water monitoring wells and monitoring requirements for the C&D landfill units shall be in accordance with the monitoring system approved in the TRANSITION PLAN for the facility and these additional conditions:
 - a. Monitoring well design and construction shall conform to the specifications outlined in Attachment 2, "North Carolina Water Quality Monitoring Guidance Document for Solid Waste Facilities".
 - b. A geologist shall be in the field to supervise well installation, if necessary. The exact locations, screened intervals, and nesting of the wells shall be established after consultation with the SWS Hydrogeologist at the time of well installation for new monitoring wells.

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- c. For each new monitoring well constructed, a well completion record shall be submitted to DSWM within 30 days upon completion.
 - d. Sampling equipment, procedures, and parameters shall conform to specifications outlined in the above-referenced guidance document, (Attachment 2), or the current guidelines established by DSWM at the time of sampling and in accordance with the approved TRANSITION PLAN OR ASSESSMENT AND REMEDIATION PLAN.
 - e. In order to determine ground-water flow directions and rates, each monitoring well shall be surveyed, and hydraulic conductivity values and effective porosity values shall be established for the screened intervals for each new monitoring well.
 - f. The permittee shall sample the monitoring wells semi-annually or as directed by the SWS Hydrogeologist.
 - g. A readily accessible unobstructed path shall be initially cleared and maintained so that four-wheel drive vehicles may access the monitoring wells at all times.
21. The permittee shall maintain a record of all monitoring events and analytical data. Reports of the analytical data for each water quality monitoring sampling event shall be submitted to DSWM in a timely manner.
 22. The permittee shall maintain a record of the amount of solid waste received at the facility, compiled on a monthly basis. Scales shall be used to weigh the amount of waste received.
 23. On or before 01 August 1998 (or an earlier date as requested by the Solid Waste Section), and each year thereafter, the permittee shall report the amount of waste received (in tons) at this facility and disposed of in the landfill to the Solid Waste Section and to all counties from which waste was accepted, on forms prescribed by the Section. This report shall include the following information:
 - a. The reporting period shall be for the previous year, beginning 01 July and ending on 30 June;
 - b. The amount of waste received and landfilled in tons, compiled on a monthly basis, according to Condition 22 described above; and
 - c. Documentation that a copy of the report has been forwarded to all counties from which waste was accepted.
 24. All records shall be maintained on-site and made available to the SWS upon request.
 25. The Post-Closure plan approved in the TRANSITION PLAN and also described in Section IV of the C&D Landfill Application dated December 1, 1997 shall be implemented and followed upon capping and closing the operating unit(s).

ATTACHMENT LIST

List of Additional Documents for the Approved Transition Plan

1. Site and Construction Transition Plan modification application for the Alexander County Landfill, Permit #02-01. Document titled "Construction and Demolition Landfill for Alexander County, North Carolina" dated 22 December 1997 and received 23 December 1997.