

Permit No.	Date	Document ID No.
20-02	November 17, 2010	12225

SECTION 2.0

OPERATION PLAN

2.1 Introduction

The County Landfill will only accept Municipal Solid Wastes (MSW) from Cherokee, Clay, Graham and Swain Counties. The County will perform a vertical expansion on the existing 10.5 acre Municipal Solid Waste Landfill (Phases 1 and 2) according to Subtitle D requirements.

The perimeter of the lined area is marked off by 3 inch PVC pipe at 100' intervals that are placed in the anchor trenches. Solid waste will not be placed within four (4) feet of this boundary to assure that it is being placed directly above the liner system so that no leachate can flow outside of this area.

All stormwater that comes in contact with solid waste will be handled as leachate. The leachate is collected in the sump area, where it is pumped by force main to the lagoon.

Leachate will be treated at the Town of Andrews Waste Water Treatment Plant. The leachate will have to be tested according to the pretreatment conditions outlined in the pre-treatment agreement.

Leachate will be recirculated. (See Appendix IV)

The leachate lagoon will be inspected on a monthly basis and a report generated and placed in the landfill records. The report will include the date the liner was inspected, the inspector, general observations since the last inspection, visible abrasions, possible stress cracks, or obvious punctures. Stress cracks can occur in wrinkles that are generated from heat expansion or contraction due to freezing. Also, the HDPE liner may deteriorate due to ultra violet light and this can appear as an abrasion where material can be scraped away with a hard object. If any damage or possible weak spots due to ultra violet exposure has been detected, a qualified HDPE installation company shall be notified immediately so that a repair patch can be installed. The leachate level shall not be allowed to exceed the depth of the damaged liner until it has been repaired and tested by the liner installation company. Once this has been accomplished all testing documentation shall be placed in the operating records.

Daily cover will be the combination of soil and synthetic cover. The synthetic cover will be used on days that the next days fill will be placed directly on top of the fill. Soil cover will be used when the next day's waste will not be placed directly on top or the synthetic cover is not large enough to cover the entire area. Soil cover will be placed at least once a week. (See cover requirements under operational requirements).

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 Section 2.3-Appendix I).

The County will monitor for explosive gases at landfill structures and the perimeter of the landfill. There are eight(8) existing methane monitoring probes. 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. (See Section 2.5 - Appendix III) 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, temporarily abandon the structure and notify the Division of Solid Waste Management.
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 of Solid Waste management that the plan has been implemented. The plan will describe the nature and extent of the problem and the proposed remedy.

Off 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) Waste determination, Leachate sampling data, leachate levels, meteorological data ;
- (4) Gas monitoring results and any remediation plans;
- (5) Any demonstration, certification, findings, monitoring, testing or analytical data required for surface and groundwater monitoring;
- (6) Any monitoring, testing or analytical data required for closure or post-closure;
- (7) Any cost estimates and financial assurance documentation.

All information contained in the operating record will be furnished upon request to the Division of Solid Waste Management 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(Section 2.3) 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.

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 of Solid Waste 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 of Solid Waste. 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.

2.2 Operational Requirements

1. Waste Acceptance and Disposal Requirements

- a. The Municipal Solid Waste Landfill (MSWLF) will only accept those solid wastes that it is permitted to receive. Cherokee County will notify the Division within 24 hours of attempted disposal of any waste the landfill is not permitted to receive. Signs are placed at the entrance to the Landfill stating that Hazardous and Liquid wastes are not accepted and that random waste screening is performed.

i. Household Waste Disposal

- (i) The County will maintain approximately 18 six-yard dumpsters for disposal of residential household garbage across from the scale house. Site is always open with five cameras used to maintain compliance. County personnel empty dumpsters daily.

- b. The following wastes are prohibited from disposal at the MSWLF:

- i. Hazardous waste as defined within 15A NCAC 13A, to also include hazardous waste from conditionally exempt small quantity generators.

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

- iii. Bulk or non-containerized liquid waste will not be placed in the landfill unless:

- (i) The waste is household waste other than septic waste and waste oil,
(ii) The waste is leachate or gas condensate derived from the landfill.

- iv. White Goods, Yard Waste, Tires.

- (i) White goods without refrigerants will be unloaded in the metal recycling area, crushed, placed in an open-bed trailer, and delivered to a metal recycling facility (by a third party).

- (ii) White goods with refrigerants will be unloaded on a concrete pad at the end of the recycling building. After a third party removes Freon, the appliances will be placed in the metal recycling area and handled as white goods without refrigerants.

- (iii) Yard waste (brush, clippings and grass) will be disposed in one of three concrete bunkers located between the scale house and working face.

- (iv) All limbs, brush, trees, and stumps (except for yard waste) will be unloaded at the treatment and processing facility. Periodically, this waste will be ground and will be sold as mulch to the public.

- (v) Scrap tires will be stored on trailers provided (by a third party). Tires still on the wheel will be loaded on the back of the trailer just prior to shipment. Trailers will be delivered to a disposal/recycling facility (by a third party).

- v. Containers holding liquid wastes will not be placed in the landfill unless:

- (i) The container is a small container similar in size to that normally found in household waste;
(ii) The container is designed to hold liquids for use other than storage; or
(iii) The waste is household waste.

- vi. For the purpose of this paragraph:
 - (i) Liquid waste means any waste material that is determined to contain "free liquids" as defined by Method 9095 (Paint Filter Liquids Test), S. W. 846.
- c. Spoiled foods, animal carcasses, abattoir waste, hatchery waste, and other animal waste delivered to the disposal site will be covered immediately.
- d. The following are items that are banned from the landfill:
 - i. Beverage containers that are required to be recycled under G.S. 18B-1006.1
 - ii. Recyclable rigid plastic containers that are required to be labeled as provided BELOW that have a neck smaller than the body of the container and that accept a screw top, snap cap, or other closure. The prohibition on disposal of recyclable rigid plastic containers in landfills does not apply to rigid plastic containers that are intended for use in the sale or distribution or motor oil.
 - (a) For polyethylene terephthalate, the letters "PETE" and the number 1.
 - (b) For high density polyethylene, the letters "HDPE" and the number 2.
 - (c) For vinyl, the letter "V" and the number 3.
 - (d) For low density polyethylene, the letters "LDPE" and the number 4.
 - (e) For polypropylene, the letters "PP" and the number 6.
 - (f) For polystyrene, the letters "PS" and the number 7.
 - (g) For any other, the letters "OTHER" and the number 7.
 - iii. Motor vehicle oil filters.
 - iv. Wooden pallets, except that wooden pallets maybe disposed of in a landfill that is permitted to only accept construction and demolition debris.
 - v. Discarded computer equipment (effective April 1, 2011).
- e. Asbestos waste will be accepted and managed in accordance with 40 CFR 61. The waste will be covered immediately with soil in a manner that will not cause airborne conditions and must be disposed of separate and apart from other solid wastes:
 - i. At the bottom of the working face or;
 - ii. In an area not contiguous with other disposal areas. Separate areas will be clearly designated so that asbestos is not exposed by future land disturbing activities.
- f. Wastewater treatment sludges may be accepted either as a soil conditioner incorporated into or applied onto vegetative growth layer but in no case greater than six inches in depth. Or wastewater treatment sludges may be co-disposed in the lined area.
- g. The County will continue a program at the Landfill for detecting and preventing the disposal of hazardous and liquid wastes. (Section 2.3-Appendix I) This program will include, at a minimum:
 - i. Random inspections of incoming loads or other comparable procedures;
 - ii. Records of any inspections;
 - iii. Training of facility personnel to recognize hazardous and liquid wastes.

- iv. If hazardous wastes are identified by facility personnel, Emergency Management or personnel trained, shall be notified to identify the waste and address removal, storage and final deposition of the waste.
 - h. Waste placement will be within the areal limits of the base liner system and in a manner consistent with the effective permit.
2. Cover material requirements.
- a. Except as in Part (b), Cherokee County must cover disposed solid waste with six inches of earthen material at the end of each operating day, or at more frequent intervals if necessary, to control disease vectors, fires, odors blowing litter, and scavenging.
 - b. Alternative materials such as synthetic cover may be used as daily cover on the working face or until it is necessary to cover with earthen material. The alternative material must be approved by the Division of Solid Waste and applied according to manufacturers recommendations. At a minimum soil cover will be used once a week. (Section 2.4-Appendix II)
 - c. Areas which will not have additional wastes placed on them for 12 months or more, but where final termination of disposal operations has not occurred, will be covered with a minimum of one foot of intermediate cover.
3. Disease vector control
- a. Cherokee County will prevent or control on-site populations of disease vectors using techniques appropriate for protection of human health and the environment. At the end of every day, waste will be covered either by synthetic cover or 6" of soil cover. At a minimum soil will be used once a week. Any waste that requires immediate cover, will be covered immediately with soil.
 - b. "Disease vectors" means any rodents, flies, mosquitoes, or other animals, including insects, capable of transmitting disease to humans.
4. Explosive gases control
- a. Cherokee County must ensure that:
 - i. The concentration of methane gas generated by the landfill does not exceed 25 percent of the lower explosive limit for methane in landfill structures (excluding gas control or recovery system components); and
 - ii. The concentration of methane gas does not exceed 100 percent of the lower explosive limit for methane at the landfill property boundary.
 - b. Cherokee County will implement a routine methane monitoring program to ensure that the standards of 4 (a) are met. (Section 2.5-Appendix III)
 - i. The type and frequency of monitoring must be determined based on the following factors:
 - (i) Soil conditions;
 - (ii) The hydrogeologic conditions surrounding the facility;
 - (iii) The hydraulic conditions surrounding the facility;

- (iv) The location of facility structures and property boundaries.
 - ii. The minimum frequency of monitoring will be quarterly.
 - c. If methane gas levels exceeding the limits specified in 4 (a) are detected, the owner or operator will:
 - i. Immediately take all necessary steps to ensure protection of human health, i.e. no smoking, temporarily abandon the structure and notify the Division of Solid Waste Management.
 - ii. 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
 - iii. 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 of Solid Waste Management that the plan has been implemented. The plan will describe the nature and extent of the problem and the proposed remedy.
 - d. "Lower explosive limit" means the lowest percent by volume of a mixture of explosive gases in air that will propagate a flame at 25° C and atmospheric pressure.
 - e. [Emergency response, if necessary, will be provided by the Marble Volunteer Fire Department \(VFD\) located across Highway 19/74 in Marble, NC. The Marble VFD is reached by dialing "911".](#)

5. Air Criteria

- a. The County will ensure that the landfill does not violate any applicable requirements developed under a State Implementation Plan (SIP) approved or promulgated by the US. EPA Administrator pursuant to Section 110 of the Clean Air Act, as amended.
- b. Open burning of solid waste, except for the infrequent burning of land clearing debris generated on site or debris from emergency clean-up operations, is prohibited. Any such infrequent burning will be approved by the Division of Solid Waste Management.
- c. Earth moving equipment will be provided to control accidental fires and leachate tank trucks used for water or leachate that would be recirculated can also be used. Arrangements have been made with the local fire department to provide actual fire protection. This Fire department has access at all times to the landfill to provide fire fighting services when needed. Landfill personnel can use soil to isolate the fire so it will not spread any further but actual fighting of the fire should be the responsibility of the trained fire department.
- d. Fires that occur at the landfill will be reported to the Division of Solid Waste Management within 24 hours and written notification will be submitted within 15 days.

6. Access and safety requirements

- a. The landfill will be adequately secured by means of gates, chains, beams, fences and other security measures approved by the Division of Solid Waste Management 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 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 public 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 landfill will be prohibited unless the County approves and the removal is not performed on the working face.
- i. Barrels and drums will 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. Emergency response, if necessary, will be provided by the Marble Volunteer Fire Department (VFD) located across Highway 19/74 in Marble, NC. The Marble VFD is reached by dialing "911".

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 **15 working days** or **30 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.

9. Liquids Restriction

- a. Bulk or non-containerized liquid waste will not be placed in the landfill unless:
 - (i) The waste is household waste other than septic waste and waste oil,
 - (ii) The waste is leachate or gas condensate derived from the landfill.
- b. Containers holding liquid wastes will not be placed in the landfill unless:
 - (i) The container is a small container similar in size to that normally found in household waste;
 - (ii) The container is designed to hold liquids for use other than storage; or
 - (iii) The waste is household waste.
- c. For the purpose of this paragraph:
 - (i) Liquid waste means any waste material that is determined to contain "free liquids" as defined by Method 9095 (Paint Filter Liquids Test), S. W. 846.
- d. Test for free liquids:

Sludges or other wastes may be tested for free liquids after previous screening tests have shown that the waste is not hazardous and does not contain PCB's. The specified test to determine whether or not a material is considered to be a liquid is the Paint Filter Test method 9095. The procedure for conducting this test is as follows:

 - (i) Obtain standard 400- micron paint filter;
 - (ii) Place a properly-sized, clean, dry funnel in a ring stand or similar device;
 - (iii) Fold the filter and line the funnel with it;
 - (iv) Place a 100 ml sample of waste into the funnel;
 - (v) Place a clean, dry container under the funnel; and,
 - (vi) Check in exactly 5 minutes to see if any liquid is in the container.
 - (vii) If any liquid passes through the filter in 5 minutes or less, the waste is considered to be a liquid. The filtrate can be water, oil or any combination of any non-hazardous liquids.

10. Record keeping Requirements

- a. Cherokee County MSWLF will record and retain at the facility, or an alternative location near the facility approved by the Division of Solid Waste Management, 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) Waste determination, Leachate sampling data, leachate levels, meteorological data ;
 - (iv) Gas monitoring results and any remediation plans;

- (v) Any demonstration, certification, findings, monitoring, testing or analytical data required for surface and groundwater monitoring;
 - (vi) Any monitoring, testing or analytical data required for closure or post-closure; and,
 - (vii) Any cost estimates and financial assurance documentation.
- b. All information contained in the operating record will be furnished upon request to the Division of Solid Waste Management or be made available at all reasonable times for inspection by the Division.
 - c. Cherokee County will maintain a copy of the operation plan at the landfill.

11. Spreading and Compacting Requirements

- a. The initial lift of solid waste will be placed over Phase 2. This lift will be covered with six (6) inches of daily cover. This lift will absorb the rain water and allow some of it to evaporate prior to reaching the leachate collection system. When a heavy rain does occur, the impact on the leachate collection system will not be immediate. Prior to placement of solid waste over any leachate pipe, the geotextile fabric that is covering the stone will be folded back so that solid waste will be in direct contact with the stone. This method will not allow biological growth to develop on the geotextile which could eventually clog the system.
- b. The initial lift of solid waste will be placed loosely at a depth of 4 feet. As this lift is being placed, a spotter should be placed in the landfill to assure that the compactor does not drive any long, sharp objects through the protective cover into the liner system. If an object were to penetrate the liner system, the protective cover must be removed and the penetration repaired. The subsequent lifts can be placed up to final grades. Heavy landfill equipment including articulating dump trucks, and compactor will only be allowed on areas that have a minimum of 4' of solid waste. Only low pressure equipment such as a D6 LGP Caterpillar will be allowed on the protective cover.
- c. The landfill will restrict solid waste into the smallest area feasible, typically 60' x 75' area.
- d. Solid waste will be compacted as densely as practical into cells. The compactor should run over an area of solid waste a minimum of 6 times.
- e. Appropriate methods such as fencing and diking will be provided within the area to confine solid waste subject to be blown by the wind. At the conclusion of each day of operation, all windblown material resulting from the operation will be collected and returned to the area.

12. Leachate Management Plan

- a. The County will periodically maintain the leachate collection system.
- b. The County will maintain records for the amount of leachate collected.
- c. The County will quality sample their leachate bi-annually for Appendix I (Section 2.3) constituents, pH, BOD, COD, TDS, phosphate, nitrate, and sulfate. The sample will be obtained from the lagoon and sampled the same time as the monitoring wells.
- d. The leachate is being treated by the Town of Andrews Waste Water Treatment Plant.
- e. Under extreme operational conditions Cherokee County has the option of shutting down the flow of leachate to the lagoon by shutting off the pump. The leachate will be temporarily

stored within the MSWLF units until such a time the flow of leachate can continue to the lagoon. If any rain or other event requires storage of leachate or storm water in the cell, the Division of Solid Waste will be notified immediately followed by written communication.

- f. Leachate will be recirculated. (See Section 2.6-Appendix IV).
- g. The leachate lines shall be flushed at least once per year. This can be done by using a tanker full of either leachate or plain water. The liquid can either be pumped or gravity flow into the cleanouts provided at the ends of the lines. Once the water is unloaded into the collection system, there needs to be a visual inspection at the lagoon to assure that the water unloaded into the system appears at the lagoon in a short period of time. This is observed as an increase in the flow that is observed prior to unloading the water into the system.

In the event that it cannot be visually determined whether or not the flow in the leachate line at the lagoon has not increased, a flow measuring device shall be used at the end of the leachate line flowing into the lagoon. The measurements need to be done prior to dumping water into the collection system and after.

If it is determined that a blockage is in the line, the line shall be pressure cleaned and videoed to assure that the blockage has been removed.

Records of all flushing either by gravity or pressurized shall become part of the operating record. Any videos that have been taken shall also become part of the operating record.

13. Recycling Plan

i. Metal Recycling

- (i) All metal will be unloaded on the ground near the scale house building, crushed, loaded into an open-bed trailer and transported to market (by a third party).

ii. Glass Recycling

- (i) Glass will be collected at the facility and at convenience centers around the county. The material will be picked up at the convenience centers by County personnel and transported to the landfill facility where it will be unloaded into two concrete bunkers (one for clear glass-the other for green/brown glass) The glass will be crushed by County personnel and then transported to market (by a third party).

iii. Batteries

- (i) Automobile/boat batteries will be stored on a pallet near the metal collection area and will be transported to market (by a third party).
- (ii) Recyclable batteries/cell phones are collected inside the scale house and at county convenience centers. Each battery/cell phone is individually wrapped in a plastic bag, placed in a transportation box, then transported to market (by a third party).

iv. Electronics

- (i) Electronics will be collected on a concrete pad located at one end of the facility where they will be placed on pallets, wrapped and secured in stretch wrap, and delivered to market (by a third party).

v. Other Recycling

- (i) Cardboard, plastic, newspapers, and aluminum cans from the convenience centers will be transported to the facility recycling center by County personnel. The materials will be sorted, baled and stored at the facility until there is enough weight of each type material to constitute a shipment. Materials will be delivered to market (by a third party). Fluorescent bulbs are recycled by the vendor.

2.3 Appendix I

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 ≤ 2.0 or ≥ 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 MSWLF 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 MSWLF 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 municipal solid 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.

Loads will be inspected on the working face of the landfill.

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 of Solid Waste 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.

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

- Segregate the wastes;
- Question the driver;
- Review the manifest (if applicable);
- Contact possible source;
- Call the State Solid Waste Management Department;
- 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 corrosivity, 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, Cherokee 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 MSWLF 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.

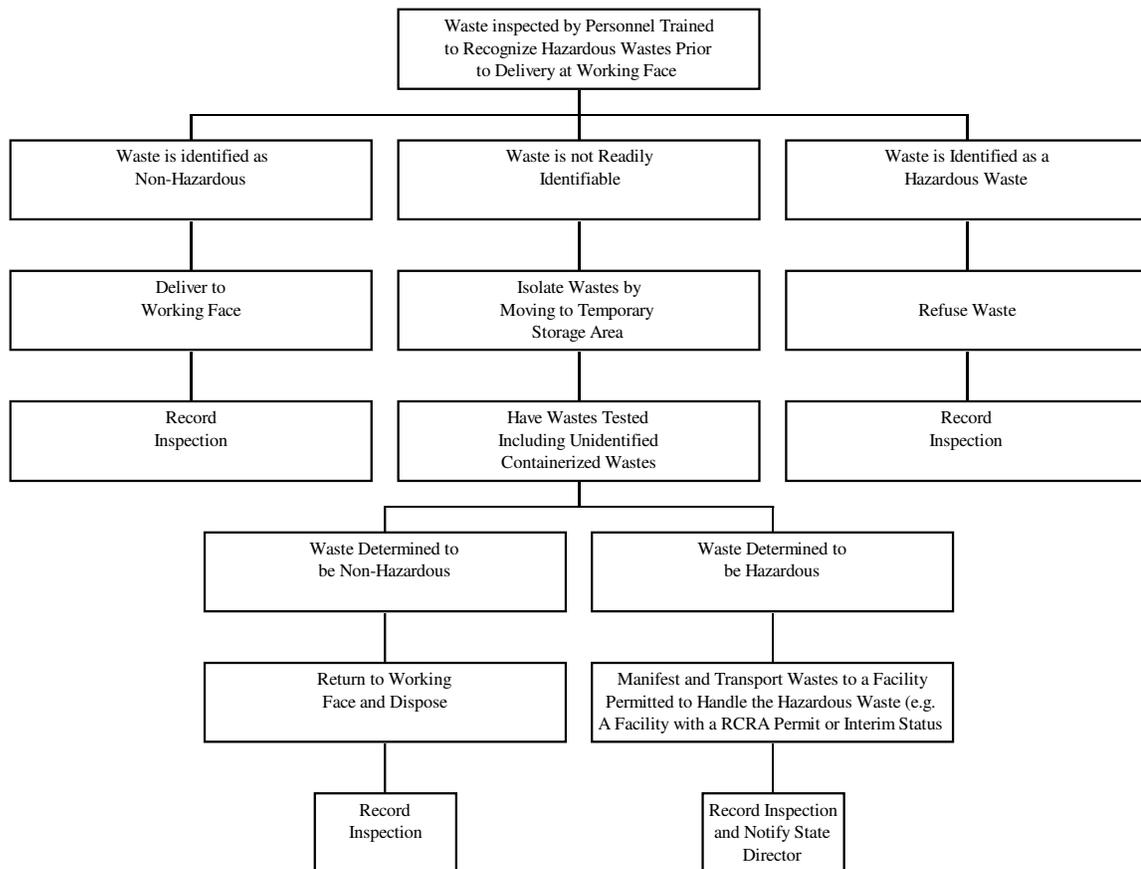


FIGURE 1
Hazardous Waste Inspection Decision Tree
Inspection Prior to Working Face

WASTE SCREENING CHECK LIST
(CHECK ALL THAT APPLY)

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.....	_____	_____

Action Taken

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

2.4 Appendix II

CHEROKEE COUNTY SYNTHETIC COVER OPERATION PLAN

1. Determine the size of the area to be covered. Be sure to allow for five to ten feet extra on each measurement to ensure that the refuse is completely covered.
2. The synthetic cover is shipped to the landfill site with panels folded accordion-type, then rolled up. Unroll the cover along the working face (depending upon operations), and attach the leading edge of the unrolled panel to existing landfill equipment with ropes(i.e., to the top of the blade).
3. Pull the sewn panels of cover across the compacted trash. The synthetic cover maybe pulled from any direction, which may vary from day to day. Keep the leading edge between the two machines (or people) as high as possible to eliminate drag.
4. Anchor the edges of synthetic cover every 20 feet with tires or sandbags to hold the synthetic cover in place. If it is windy, more anchoring may be required. Make sure a large enough panel has been ordered to completely cover the refuse (base this on the heaviest day to the week). If complete coverage is not possible, cover the exposed refuse with soil; but take care not to place too much dirt on the synthetic cover if it is to be re-used.
5. On the next day of operations, remove the tires and/or sandbags. Simply pull the synthetic cover across itself (to reduce drag) and off the refuse to an area that is inactive. Anchor the edges again to prevent wind from lifting the blanket. At the end of the day, pull the synthetic cover back across the refuse by repeating steps 3 and 4 until a new panel is needed.

Synthetic Cover is designed to be used as landfill daily cover on a working face. For best results, it is recommended that the area to be covered be kept as close to a square shape as possible not to exceed 75' X 75' in size. Not only does this procedure allow for easier coverage, it allows for better management of the working face and saves time at the end of the working day.

The County will use a panel of synthetic cover that is pulled over the working face on a daily basis by two pieces of landfill equipment. At the end of the working day, the panel will be secured in place. This is attained by one of two methods : the panel may be heavy enough to hold itself in place due to accumulation of soil and is left in that manner; or tires are placed on the panel to secure it in place.

The working face is operated in this manner, brought to an intermediate grade and then covered with the required six (6) inches of soil. The process will continue until a lift is completed. The process is then started over on the next lift until the landfill is filled to final grade and a section is closed. At a minimum six (6) inches of soil cover will be used once a week.

TIPS TO REMEMBER

1. Always pull the fabric across itself during installation and removal to make each panel last as long as possible.
2. Avoid driving on the panel(s); this may cause punctures and tears.
3. Tie the panel(s) to the top of the dozer blade and raise the blade to minimize dragging on refuse.
4. Use tires or sandbags to hold the panel(s) down overnight. Soil can be used if you plan to leave panel(s) in place and cover with refuse.
5. Minimize stress between dozer/compactors while pulling on the panel(s).

2.5 Appendix III

EXPLOSIVE GAS CONTROL PLAN FOR - CHEROKEE COUNTY

Quarterly, the 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 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 six foot depth of the monitoring probes is to ensure a stable monitoring point. 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. If a clay layer is encountered during the construction of the monitoring points, it will either be moved beyond the clay or excavated to a depth that is in the conductive zone below the clay.

There are 8 existing permanent probes surrounding Phases 1 and 2. Cherokee County's landfill is designed with a base liner system and cap system, there should be no migration of methane in the permeable *in situ* soils.

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 eight(8) existing monitoring points. Quarterly, a County employee will visit each monitoring point either the temporary or permanent. The monitoring points consist of all methane probes and leachate collection system cleanouts. 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 Cherokee 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.

2.6 Appendix IV

CHEROKEE COUNTY'S RECIRCULATION PLAN

The County does intend to utilize recirculation as a means of disposal of their leachate. The intention is to utilize recirculation as a method by which some relief can be given to the pumping and hauling. This relief will come in the form of evaporation and retention of water within the solid waste. The remaining leachate will be hauled to the Town of Andrews Waste Water Treatment Plant for disposal. Cherokee County must obtain a permit from the Division of Solid Waste before leachate recirculation can begin.

No water that comes in contact with the present surface of solid waste runs off any where other than the leachate collection system.

The County will spread the leachate over the surface of the solid waste, that is at a minimum five feet (5') deep, within the landfill. The spreading will be accomplished by one of two methods. The first method is by simply backing their leachate hauling truck into the landfill. A spreader hose will then be attached to the leachate tank and Cherokee County personnel will manually discharge the leachate over the solid waste. The second method will utilize the tank truck except the leachate will be used to wet down solid waste that is piled up from being dumped from a truck or trucks. Once this pile is wet, it will be spread around the working face by the trash compactor.

At a later date, a pump system may be incorporated into the system. The pump system will pump directly from the leachate lagoon and the leachate spread in a manner as it was from the tank truck.

Monthly monitoring will be performed to measure the leachate head at the leachate head detection well and analyze the leachate for BOD, COD, temperature and pH.

The following conditions will be met by Cherokee County:

- A rain gauge and thermometer will be placed on site
- A base line sampling of leachate has been performed (See Attachment 1)
- A brief description of the equipment and its associated specifications is submitted (see Attachment 2)
- Weekly record of leachate head measurements (see Attachment 3)
- Weekly record of leachate recirculated and leachate disposed (see Attachment 4)
- Weekly record of visual monitoring log (see Attachment 5)
- Weekly record of rainfall and lagoon depth (see Attachment 6)
- Records will be kept on a weekly basis
- No leachate will be applied on less than one lift (8 feet) of waste
- No leachate will be recirculated when it is raining, or when the waste is too wet
- No run off or side seepage will be allowed
- Odors will be controlled
- Leachate depth will be monitored in the leachate head detection well to ensure that the head on the liner does not exceed one foot for more than 24 hours.
- The application system will be properly maintained and documented
- Leachate will be tested every 30 days and a progress report will be submitted annually

ATTACHMENT 1

BASELINE DATA

TO BE ADDED IN THE FUTURE

2.7 Appendix V

Cherokee County Leachate Collection System Inspection Log

Rainfall

_____ inches (*measured after each occurrence*)

Pump Readings

Phase 1 Pump:

_____ Date
_____ Hrs. Run (total weekly)*
_____ Gallons Pumps (total weekly)**

Manually Operate Pump _____ Date (monthly)

Main Pumps:

_____ Date
_____ Hrs. Run Pump 1 (total weekly)*
_____ Hrs. Run Pump 2 (total weekly)*
_____ Gallons Pumps (total weekly)**

Manually Operate Pump _____ Date (monthly)

Leachate Lagoon

Inspection of Liner _____ Date (Monthly)
Repairs to Liner _____ Date

Leachate Lines

Date Videoed _____
Date Flushed _____

Comments

* **Hours Run/Week** = Previous Week's Hours – This Weeks Hours

** **Gallons Pumped/Week** = Previous week's gallons – This week's gallons

2.8 Engineering/Operation Drawings

- 2.8.1 Title Sheet
- 2.8.2 Index Sheet
- 2.8.3 Existing Conditions
- 2.8.4 Phase 3 Fill Plan
- 2.8.5 Phase 4 Fill Plan
- 2.8.6 Phase 4 Fill with Methane Venting Plan
- 2.8.7 Miscellaneous Details

MUNICIPAL SOLID WASTE LANDFILL FACILITY

ENGINEERING/OPERATION PLAN

Permit Number: 2002-MSW-1998

Site Location: 10160 US Hwy 19
Marble, NC 28905

Applicant: The County of Cherokee

Applicant's Address: Cherokee County Courthouse
75 Peachtree Street
Murphy, NC 28906

COUNTY COMMISSIONERS

David Sumpter, III, Chairman
Jonathan Dickey, Vice-Chairman
Dana Jones

COUNTY MANAGER

David Badger

SOLID WASTE DIRECTOR

Robert Allen

Engineer

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

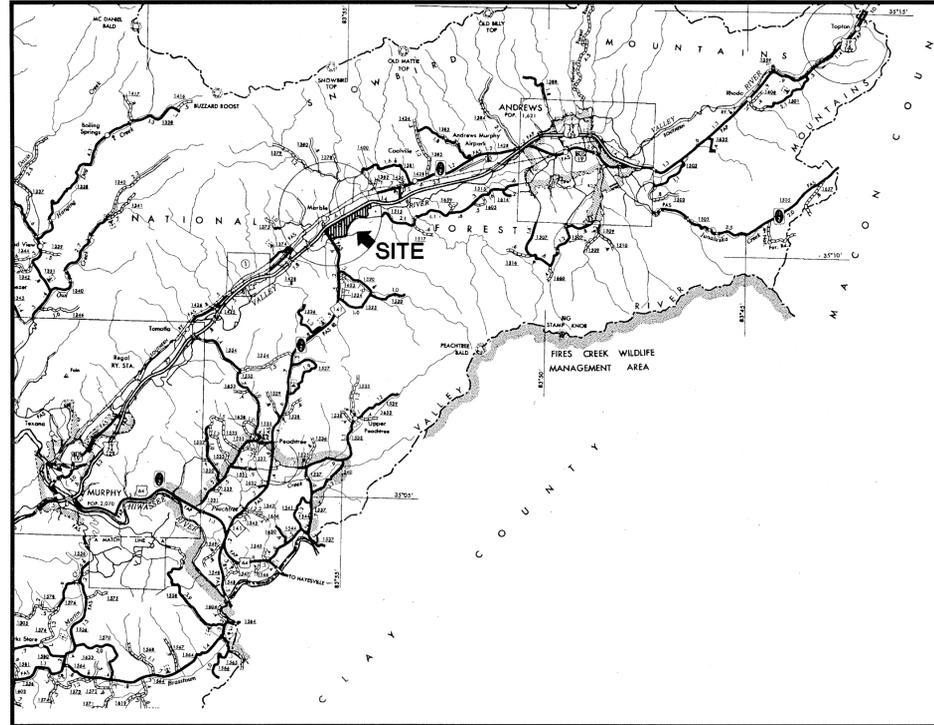
by  *J. Woodie*
Professional Engineer
(Garner Office)
2/22/2010



SCALE:	1:1
DATE:	1/20/2010
DRWN. BY:	L. HAMPTON
CHKD. BY:	J. WOODIE
PROJECT NUMBER	G09112
DRAWING NO.	T1
SHEET NO.	1 OF 7

INDEX

SHEET NO.	DRAWING NO.	DESCRIPTION
1	T1	TITLE SHEET
2	T2	INDEX AND VICINITY MAP
3	P1	EXISTING CONDITIONS
4	P2	PHASE 3 FILL PLAN
5	P3	PHASE 4 FILL PLAN
6	P4	METHANE VENTING PLAN
7	P5	MISCELLANEOUS DETAILS



VICINITY MAP

LICENSE NUMBER: C-0281
Municipal Services
Engineering Company, P.A.
 P.O. BOX 87 CARNER, N.C. 27529 (919) 772-5393
 P.O. BOX 349 BOONE, N.C. 28607 (828) 262-1767
 P.O. BOX 828 MONTELEONE CITY, N.C. 28557 (252) 733-9381

**MUNICIPAL SOLID WASTE
 LANDFILL FACILITY
 CHEROKEE COUNTY
 MARBLE, NORTH CAROLINA**

DATE	BY	REV.	DESCRIPTION

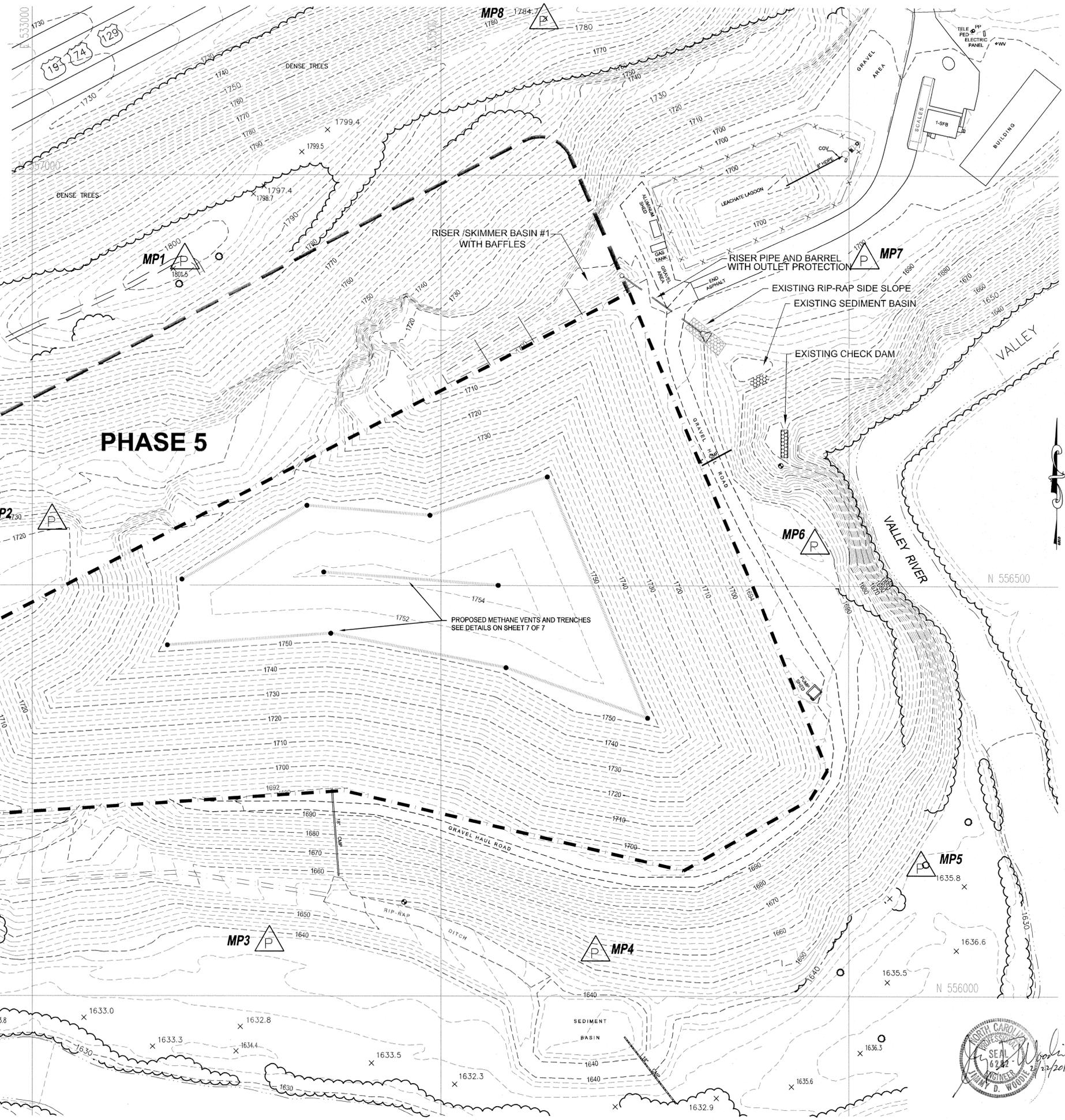
ENGINEERING/OPERATION PLAN
 INDEX AND VICINITY MAP

SCALE: 1:1
 DATE: 1/20/2010
 DRWN. BY: L. HAMPTON
 CHKD. BY: J. WOODIE
 PROJECT NUMBER: G09112
 DRAWING NO.: T2 SHEET NO.: 2 OF 7

W. D. Woodie
 2/22/2010

P:\SolidWaste\G09112-Cherokee Cnty. 2009 Permit Renewal\Dwg\G09112-P02.dwg, 2/22/2010 7:40:57 AM, lch, lch

- LEGEND**
- 150 --- EXISTING CONTOURS
 - 150 --- PROPOSED CONTOURS
 - --- EXISTING SOIL ROAD
 - --- EXISTING DRAINAGE FEATURE
 - --- PHASE LIMITS
 - --- LINER LIMITS
 - --- PROPOSED METHANE VENTS AND TRENCHES
 - MP1  EXISTING METHANE MONITORING PROBE



Engineering Company, P.A.

P.O. BOX 349 BOONE, N.C. 28607
(828) 282-1767

Municipal Services

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

P.O. BOX 828 MOREHEAD CITY, N.C. 28557
(252) 726-5481

LICENSE NUMBER: C-4281

**MUNICIPAL SOLID WASTE
LANDFILL FACILITY
CHEROKEE COUNTY
MARBLE, NORTH CAROLINA**

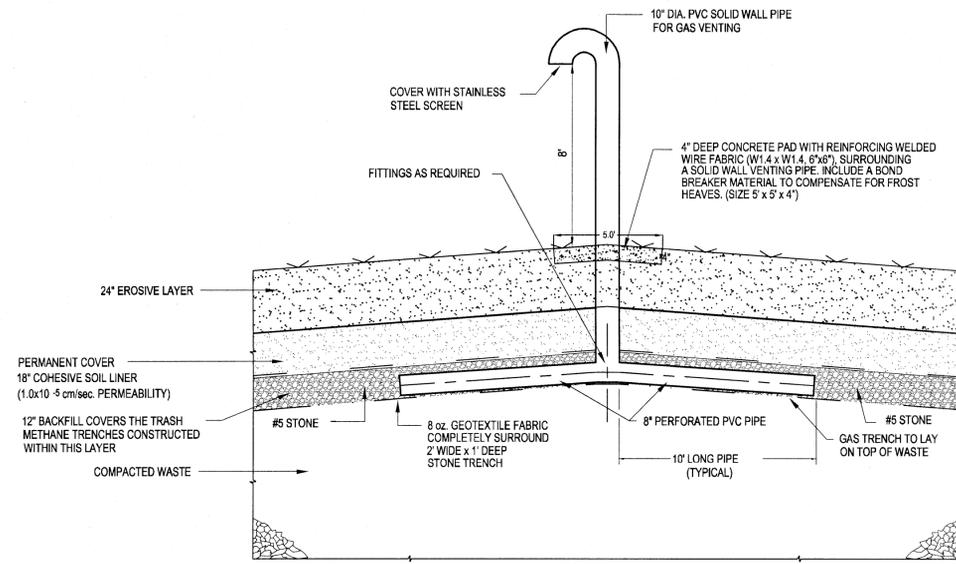
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**ENGINEERING/OPERATION PLAN
METHANE VENTING PLAN**

SCALE: 1" = 60'
DATE: 1/20/2010
DRWN. BY: L. HAMPTON
CHKD. BY: J. WOODIE
PROJECT NUMBER: G09112
DRAWING NO.: P4
SHEET NO.: 6 OF 7

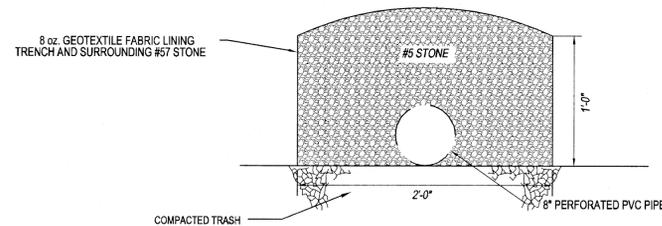


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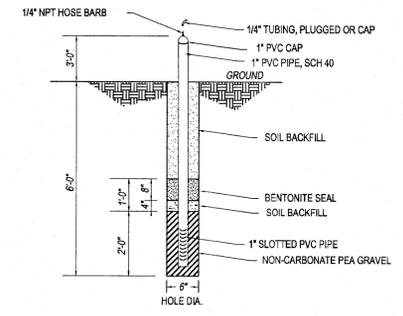
TYPICAL METHANE VENTING AND
CAP CLOSURE DETAIL

N.T.S.



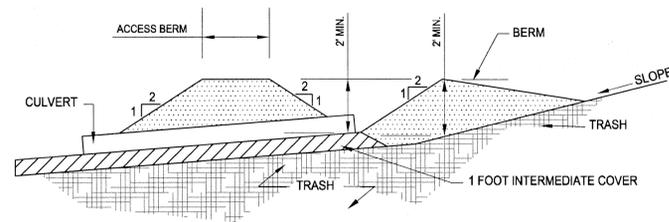
PERMANENT METHANE TRENCH DETAIL

N.T.S.



METHANE GAS MONITORING PROBE

N.T.S.



TYPICAL ACCESS ROAD, CULVERT, AND BERM DETAIL

N.T.S.



Engineering Company, P.A.
 P.O. BOX 349 BOONE, N.C. 28607
 (828) 362-1767
Municipal Services
 LICENSE NUMBER: C-0281
 P.O. BOX 97 GARNER, N.C. 27723
 (919) 772-5393
 P.O. BOX 928 MOREHEAD CITY, N.C. 28557
 (252) 736-9451

**MUNICIPAL SOLID WASTE
LANDFILL FACILITY
CHEROKEE COUNTY
MARBLE, NORTH CAROLINA**

DATE	BY	REV.	DESCRIPTION

ENGINEERING/OPERATION PLAN
MISCELLANEOUS DETAILS

SCALE:	1:1
DATE:	1/20/2010
DRWN. BY:	L. HAMPTON
CHKD. BY:	J. WOODIE
PROJECT NUMBER:	G09112
DRAWING NO.:	P5
SHEET NO.:	7 OF 7