

North Carolina
Department of Environment and Natural Resources



Division of Waste Management

Michael F. Easley, Governor
William G. Ross Jr., Secretary
Dexter R. Matthews, Interim Director

July 15, 2003

Mr. Craig Coker
McGill Environmental Systems
634 Christian Chapel Church Road
New Hill, North Carolina 27562

Re: The McGill Regional Composting Facility at Merry Oaks
Permit #: SWC-19-06

Dear Mr. Coker

The Division of Waste Management, Solid waste Section, has reviewed the results of the tests conducted on the compost produced at your compost facility in Chatham County. The test results meet the minimum requirements for pathogens, regulated metals and man made inerts in the Solid Waste Compost Rules. The compost is therefore approved for distribution.

This approval is ongoing as long as the required tests are conducted every 6 months or 20,000 tons, the results are acceptable and are submitted to the Division in a timely manner. In addition, operational records must be maintained and be available to Division staff during inspections.

If you have any questions please feel free to contact me at 919-733-0692, extension 253.

Sincerely,

Ted Lyon, Supervisor
Composting & Land Application Branch

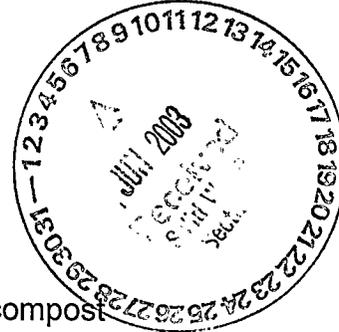
cc: Robert Hearn, Waste Management Specialist, Raleigh Regional Office

h:cla/compost/Distribu/19-Chatham/McGill-app-07-03

MCGILL

The McGill Regional Composting Facility at Merry Oaks
June 4, 2003

634 Christian Chapel Church Road
New Hill, NC 27562
TEL: 919-362-1161
FAX: 919-362-1141
www.mcgillcompost.com



Mr. Ted Lyon
Division of Waste Management
401 Oberlin Rd., Ste. 150
Raleigh, NC 27605

Re: Approval for distribution and marketing of solid waste compost

Dear Mr. Lyon:

In accordance with Section .1407(e) of the Solid Waste Compost Rules, McGill Environmental Systems requests your approval to distribute and market the solid waste compost produced by our new composting facility in Chatham County. Enclosed with this letter is a copy of the laboratory analysis conducted on a representative sample of our finished product.

To summarize the laboratory data:

<u>Parameter</u>	<u>Analytical Result</u>	<u>Regulatory Standard</u>
Foreign Matter	< 1%	< 6%
Arsenic	8 mg/kg	41 mg/kg
Cadmium	1 mg/kg	39 mg/kg
Copper	67 mg/kg	1500 mg/kg
Lead	13 mg/kg	300 mg/kg
Mercury	< 1 mg/kg	17 mg/kg
Nickel	7 mg/kg	420 mg/kg
Selenium	1 mg/kg	36 mg/kg
Zinc	126 mg/kg	2800 mg/kg
Fecal Coliform	2 MPN/g dw	<1000 MPN/g dw
Total Nitrogen	1.8%	N/A

In accordance with Section .1407(g), also enclosed are copies of the information sheets provided to customers of McGill's Leprechaun Organic Products. These sheets contain all the information required for conformance with this section. If you have any questions, please contact me at (828) 230-6266.

Very Truly Yours,

Craig S. Coker
Technical Adviser

Manufacturer of **Leprechaun** brand composts, topsoils, and soil amendments

ANALYTICAL CHEMISTS

and
BACTERIOLOGISTS
Approved by State of California

Tel: 831 724-5422
FAX: 831 724-3188

SOIL CONTROL LAB

42 HANGAR WAY
WATSONVILLE

42 Hangar Way
Watsonville Ca 95076

Account No.:
172782-1-2215
Group: May-2-03 15

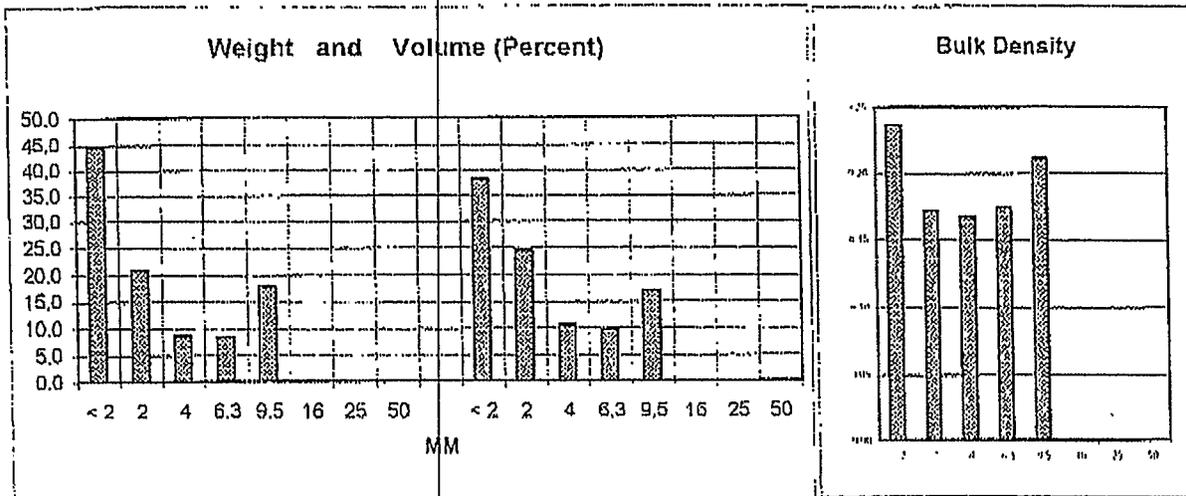
Lewis Flynn
McGill Leprechaun
PO Box 61
Harrells, NC 28444

DATE RECEIVED: 12 May 03
SAMPLE ID: Compost Chatham Soil Builder
SAMPLE ID. No.: 1 172782

Size & Volume Distribution, Bulk Density and Inerts

Method: TMECC 02.02-B	Weight percent	Volume percent	Bulk Density g/cc
MM Inches			
> 50 > 2.0	0.0	0.0	0.00
25 to 50 1.0 to 2.0	0.0	0.0	0.00
16 to 25 0.64 to 1.0	0.0	0.0	0.00
9.5 to 16 0.38 to 0.64	17.7	16.9	0.21
6.3 to 9.5 0.25 to 0.38	8.4	9.7	0.17
4.0 to 6.3 0.16 to 0.25	8.7	10.6	0.17
2.0 to 4.0 0.08 to 0.16	20.7	24.6	0.17
< 2.0 < 0.08	44.5	38.1	0.24
Total	100.0	100.0	

Bulk density = < 0.35 Light materials; 0.35 to 0.60 Mid Weight materials; > 0.60 Heavy Materials



Percent (> 4mm fraction): Glass, Plastic, Metal and Sharps. Method: TMECC 02-02-C
Plastic < 1 Glass < 1 Metal < 1 Sharps < 1

PAGE 1

Analyst: Frank Shields

Frank Shields

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Watsonville Ca 95076

Account No.:

172782 1 2215

Group: May-2-03 15

Lewis Flynn
McGill Leprechaun
PO Box 61
Harrells, NC 28444

DATE RECEIVED: 12 May 03

SAMPLE ID: Compost Chitham Soil Builder

SAMPLE ID. No.: 1 172782

GERMINATION & GROWTH		Clopyralid Sensitive Plants	
	Cucumber TMECC 05.05-A	Red Clover	Red Clover
Emergence (relative to control)	100 %	100 %	100 %
Relative Seedling Vigor	100 %	100 %	100 %
Description of plants:	healthy	healthy	healthy
Test Conditions:	50%:50% v/v Compost/Vermiculite	Direct planting	1:4 with potting mix
Clopyralid-Control: Potting Mix watered 50% with 25ppb solution:		Results: Less than 25 ug/kg dw (ppb)	
Positive Control: Sunland Garden Products (Watsonville, CA) potting mix: Negative Control: Grace Vermiculite			

This test uses a salt tolerant plant (cucumber) grown in a high concentration of test compost and a salt sensitive plant (clover) grown in compost diluted with potting mix. The degree of toxicity can be determined using both a concentrated mix and diluted mix. If both show toxicity the compost is very toxic. If the diluted mix indicated no toxicity it may mean the compost could be diluted with receiving soil. Also, red clover is sensitive to clopyralid therefore toxic effects shown in the red clover may indicate presence of clopyralid. Compost that show phytotoxic effects under test conditions may not show toxic effect when used in actual field conditions. Conditions of high salts, acid or alkali pH and ammonia toxicity can be corrected with added dilution or adjustments resulting from mixing with receiving soil. Composts showing phytotoxic effects should be used with caution.

Carbon Dioxide Evolution Rate	Respiration Rate	Biological Available Carbon
Test Conditions:	(as received)	(carbon made the limiting factor)
Pre-incubated:	3 day-20 deg.C	3 day-36 deg. C
Incubation:	36 deg.C	36 deg.C
Moisture adjusted:	saturated	saturated
pH	Not adjusted	6.5 to 7.5
Porosity	Not provided	#20 quartz sand
Nutrients	Not provided	NPK+trace
TMECC Method	05.08-B	05-08-F
RESULTS mg CO ₂ -C/g OM/day	2.7	2
mg CO ₂ -C/g OC/day	5.6	4
mg CO ₂ -C/g TS/day	2.0	1.4

INTERPRETATION:	Very Stable	< 2	< 2
	Stable	2 to 8	2 to 10
	Moderately Unstable	8 to 15	10 to 20
	Unstable	15 to 40	20 to 40
	Very Unstable	> 40	> 40

RESPIRATION RATE

Analyst: Frank Shields

Optimizing moisture with pre-incubation to simulate maximum biological activity in a source pile.

BIOLOGICAL AVAILABLE CARBON

Optimizing all conditions (except carbon) makes rate of degradation limited by the available carbon in the compost. Purpose is to simulate condition of end use in an agriculture environment where nutrients, porosity, pH adj. and moisture are provided from the grower or receiving soil when optimizing conditions for plant growth.

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SOIL CONTROL LAB

42 HANGAR WAY
WATSONVILLE
CALIFORNIA
95076
USA

42 Hangar Way
Watsonville Ca 95076

Account No.:
172782 - 1 - 2215
May-2-03 15

Lewis Flynn
McGill Leprechaun
PO Box 61
Harrells, NC 28444

DATE RECEIVED: 12 May 03
SAMPLE ID: Compost Chitham Soil Builder
SAMPLE ID. No.: 1 172782

Nutrients-Primary + Secondary	WET Basis		DRY Basis		TMECC Method
	Total Nitrogen:	%	0.76		1.8
Ammonia (NH4-N):	mg/kg	1583		3690	4.02-C
Nitrate (NO3-N):	mg/kg	12		27	4.02-B
Organic Nitrogen (Org.-N):	%	0.60		1.4	Calc.
Phosphorus (as P2O5):	%	0.50		1.2	Calc.
Phosphorus (P):	mg/kg	2196		5121	4.03-A
Potassium (as K2O):	%	0.16		0.38	Calc.
Potassium (K):	mg/kg	1367		3188	4.04-A
Calcium (Ca):	%	1.2		2.9	4.05
Magnesium (Mg):	%	0.134		0.31	4.05
Sulfate (SO4):	mg/kg	8231		19190	4.12-D/IC
Nutrients - Trace elements					
Copper (Cu):	mg/kg	29		67	4.05-Cu
Zinc (Zn):	mg/kg	54		126	4.05-Zn
Iron (Fe):	mg/kg	3858		8995	4.05-Fe
Manganese (Mn):	mg/kg	218		509	4.05-Mn
Boron (B):	mg/kg	15		35	4.05-B
Salts, pH, Bulk Density, Carbonates					
Sodium (Na):	%	0.11		0.25	4.05-Na
Chloride (Cl):	%	0.071		0.17	04.05/IC
pH Value:	units	8.00		NA	04.11-A
Electrical Conductivity (EC5 dw):	mmhos/c	4.72		11.01	04.08-A
Bulk Density :	lb/cu ft	38		16	SCL
Carbonates :	as CaCO3 lb/ton	1		1	04.08-A
Organic Matter:	%	32.3		75.4	05.07-A
Organic Carbon:	%	15.7		36.6	4.01
Ash:	%	10.6		24.6	3.02
C/N Ratio	ratio	20.5		20.5	calc.
Moisture:	%	57.1		0.0	3.09

NOTE: Wet Basis values based on a moisture content 57.1 percent. Analyst: Frank Shields.

To Calculate: WetBasis = (Dry Basis) X ((100-%Moisture)/100)

To Calculate: lb/cu yd = % WetBasis X 16.31 X (27)/(100-%moisture)

To Calculate: lb/cu yd = mg/kg WetBasis X 16.31 X (0.0027)/(100-%moisture)

PAGE 3

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AND BACTERIOLOGISTS

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SOIL CONTROL LAB

42 HANGAR WAY

42 Hangar Way
Watsonville Ca 95076

Account No.:
172782-1-2215
Group: May-2-03 No. 15

Lewis Flynn
McGill Leprechaun
PO Box 61
Harrells, NC 28444

DATE RECEIVED: 12 May 03
SAMPLE ID: Compost Chitham Soil Builder
SAMPLE ID. No.: 1 172782

Metals & Coliform Bacteria

Method (metals): EPA 3050B / EPA 6010
Method (metals): TMECC 04.12-B / 04.14-A
Method (Mercury Hg) TMECC 04.06 / EPA 7471
Method (Fecal Coliform): Standard Methods 9221E

	Units	MDL	% Recover	Date Tested
Arsenic (As):	8 mg/kg dw	1 mg/kg	99	18 May.03
Cadmium (Cd):	1 mg/kg dw	1 mg/kg	100	18 May.03
Chromium (Cr):	14 mg/kg dw	1 mg/kg	100	18 May.03
Copper (Cu):	67 mg/kg dw	1 mg/kg	111	18 May.03
Lead (Pb):	13 mg/kg dw	1 mg/kg	101	18 May.03
Mercury (Hg): Less than	1 mg/kg dw	0.1 mg/kg	84	18 May.03
Molybdenum (Mo):	3 mg/kg dw	1 mg/kg	95	18 May.03
Nickel (Ni):	7 mg/kg dw	1 mg/kg	99	18 May.03
Selenium (Se):	1 mg/kg dw	1 mg/kg	96	18 May.03
Zinc (Zn):	126 mg/kg dw	1 mg/kg	96	18 May.03
Total Solids (tmecc 03.09)	42.9 Percent	0.05%		13 May 03
Aluminum (Al)	11690 mg/kg dw			
Fecal Coliform	2 MPN/g dry weight			12 May 03

Pollutant Loading Rate:
Multiply mg/kg dry weight values times 0.0389 to give you kilograms pollutant per 100 metric ton compost as-received based on a moisture content of 57.11 percent.

Analyst: Frank Shields

PAGE 4 *Frank Shields*



US COMPOSTING COUNCIL

Seal of Testing Assurance

McGill Leprechaun
Lewis Flynn
PO Box 61
Harrells
NC 28444

Date Sampled/Received: 05 May 03 / 12 May 03

<i>Product Identification</i> Compost
Chitham Soil Builder

COMPOST TECHNICAL DATA SHEET

LABORATORY: Soil Control Lab; 42 Hangar Way; Watsonville, CA 95076 tel: 831.724.5422 fax: 831.724.3188			
<i>Compost Parameters</i>	<i>Reported as (units of measure)</i>	<i>Test Results</i>	<i>Test Results</i>
Plant Nutrients:	% weight basis	% wet weight basis	% dry weight basis
Nitrogen	Total N	0.76	1.8
Phosphorus	P ₂ O ₅	0.50	1.2
Potassium	K ₂ O	0.16	0.38
Calcium	Ca	1.2	2.9
Magnesium	Mg	0.13	0.31
Moisture Content	% wet weight basis	57.1	
Organic Matter Content	% dry weight basis	75.4	
pH	units	8.00	
Soluble Salts <i>(electrical conductivity EC_s)</i>	dS/m (microhos/cm)	11.01	
Particle Size	% under 9.5 mm, dw basis	82.3	
<i>Stability Indicator (respirometry)</i>		<i>Stability Rating:</i>	
CO ₂ Evolution	mg CO ₂ -C/g OM/day	2.7	Stable
	mg CO ₂ -C/g TS/day	2.0	
<i>Maturity Indicator (bioassay)</i>			
Percent Emergence	average % of control	100	
Relative Seedling Vigor	average % of control	100	
Select Pathogens	PASS/FAIL: per US EPA Class A standard, 40 CFR § 503.32(a)	Pass	<i>Fecal Coliform</i>
Trace Metals	PASS/FAIL: per US EPA Class A standard, 40 CFR § 503.13, Tables 1 and 3.	Pass	<i>As, Cd, Cr, Cu, Pb, Hg Mo, Ni, Se, Zn</i>

Participants in the US Composting Council's Seal of Testing Assurance Program have shown the commitment to test their compost products on a prescribed basis and provide this data, along with compost end use instructions, as a means to better serve the needs of their compost customers.

Laboratory Batch Number: May-2-03	Laboratory Number: 1727821221515
Analyst: Frank Shields	

straight bill of lading

ORIGINAL - NOT NEGOTIABLE

SHIPPER (FROM)

LEPRECHAUN ORGANIC PRODUCTS
634 CHRISTIAN CHAPEL CHURCH RD
NEW HILL, NC 27582

DATE

CARRIER INFORMATION

MCGILL ENVIRONMENTAL SYSTEMS
OTHER: _____

REFERENCE NO.

CASH CUSTOMER

CONSIGNEE (TO)

MCGILL ENVIRONMENTAL SYSTEMS
OF NORTH CAROLINA, INC.
1100 HERRING ROAD
ROSE HILL, NC 28458
910-532-2538

BILL OR REMIT

NAME: _____
ADDRESS: _____

PHONE NUMBER: _____

ISSUE OFFICE OR AGENT

MERRY OAKS

GENERAL COMMENTS

WHITE - OFFICE
YELLOW - FREIGHT
PINK - CLIENT

UNITS	HAZ*	DESCRIPTION	CLASS	WEIGHT	CHARGE
CYDS	NA	<input type="checkbox"/> SOIL BUILDER COMPOST <input type="checkbox"/> LANDSCAPE MIX <input type="checkbox"/> CHATHAM SOIL MIX NO. OF BUCKETS: _____ BY: _____		CYDS	
			GROSS		
			TARE		
			NET		

As with any fertilizer or soil Amendment product do not apply in or near any water supply source or any body of water including wells, streams, rivers and lakes or applied to any site that is flooded, frozen or snow covered. Use of compost products is prohibited except in accordance with instructions above.

REMIT C.O.D. TO ADDRESS

CASH CUSTOMER
Paid in Full: \$ _____

C.O.D. AMOUNT: \$

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

C.O.D. FEE: \$

PREPAID OR COLLECT

TOTAL CHARGES: \$

PREPAID OR COLLECT

NOTE - Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.

The Agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding

\$ _____ per

(Signature of Consignor)

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and conditions of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout the contract as meaning any person or corporation in possession of property under the contract) agrees to carry to its usual place of delivery at said destination if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all of any of said property, over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment.

Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

NOTICE: Freight moving under this Bill of Lading is subject to the classifications and lawfully filed tariffs in effect on the date of this Bill of Lading. This notice supersedes and negates any claimed, alleged or asserted oral or written contract, promise, representation or understanding between the parties with respect to this freight, except to the extent of any written contract which establishes lawful contract carriage and is signed by authorized representatives of both parties to the contract.

Signature below is to certify that the material named above are properly described, packaged, classified, marked and labeled and are otherwise in a proper condition for transportation according to the applicable department of transportation regulations, including regulations pertaining to hazardous materials or substances.

SHIPPER CUSTOMER SIGNATURE	CARRIER MCGILL ENVIRONMENTAL SYSTEMS
PER	PER _____ DATE _____

* Mark "X" in the HAZ column to designate hazardous material as defined in Title 49 of Federal Regulations.

North Carolina
Department of Environment and Natural Resources

Division of Waste Management

Michael F. Easley, Governor
William G. Ross Jr., Secretary
Dexter R. Matthews, Director



May 12, 2003

Mr. Noel Lyons
McGill Environmental Systems, of NC, Inc.
634 Christian Chapel Church Road
New Hill, North Carolina 27562

Re: McGill Environmental Systems -- SWC-19-06

Dear Mr. Lyons:

Enclosed is the permit for McGill Environmental Systems of North Carolina, Inc. to operate a Large Type IV compost facility in Chatham County. Your permit number is SWC-19-06.

Please carefully review all permit conditions. Due to odor complaints received, during the period you were operating under an interim permit to operate, this permit has only been issued for one year. If odor issues are resolved and no other compliance issues arise we do not foresee a problem with re-issuing the permit

Mr. Robert Hearn, Waste Management Specialist, is responsible for inspecting solid waste facilities in Chatham County. Mr. Hearn can be contacted at 919-571-4700.

Should you have any questions please feel free to contact me at 919-733-0692, extension 253.

Sincerely,

Ted Lyon, Supervisor
Composting & Land Application Branch

cc: Robert Hearn, Waste Management Specialist, Raleigh Regional Office
Central File, Solid Waste Section

h:cla/Compost/permits/19-chatham/Mcgill/SWC-19-06-03paper-cl

STATE OF NORTH CAROLINA
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF WASTE MANAGEMENT
PO BOX 29603 RALEIGH, N.C. 27611

McGill Environmental

is hereby issued a permit for the operation of a

LARGE, TYPE 4 SOLID WASTE COMPOST FACILITY

At 634 Christian Chapel Church Road
In Chatham County, NC

Permit Number SWC-19-06

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.

James Coffey 5/12/03
James C. Coffey, Chief Date
Solid Waste Section

Permit Conditions

1. Operation and maintenance of this facility shall be in accordance with the Solid Waste Compost Rules (15A NCAC 13B, Section .1400), the permit application and the Operation and Maintenance Manual submitted with the permit application. Failure to comply may result in compliance actions or permit revocation.
2. This facility shall be operated in such a manner that runoff from the site shall be controlled. Any leachate generated at the facility shall be managed in such a manner that it will not be allowed to adversely impact ground or surface waters.
3. Only materials specifically listed in the permit application may be managed at this facility without adequate testing and prior approval of the Division of Waste Management. Additional materials shall only be added in accordance with the procedure in the application.
4. Odor shall be controlled at the property boundary in accordance with Rule .1404(c) (3) & (4).
5. Wastes with low carbon-nitrogen ratios shall be blended and composting started or covered prior to creating odors or attracting vectors.
6. Compost produced at the facility shall meet the requirements of Rule .1407 of the Solid Waste Compost Rules and the permit application.
7. **Compost shall not be distributed prior to approval by the Division of Waste Management, in accordance with .1407(e) of the Municipal Solid Waste Compost Facility Rules.**
8. Testing and reporting shall be conducted in accordance with the requirements of Rule .1408 and the permit application. Any compost containing wastewater treatment plant sludge shall be tested in accordance with and shall meet the requirements of 40 CFR 503 as well as the Solid Waste Compost Rules.
9. An annual report of facility activities for the fiscal year July 1 to June 30 shall be submitted to the Solid Waste Section and to the Waste Management Specialist that inspects the facility by August 1 of each year. This report shall include the amount of materials composted in tons.
10. Groundwater monitoring wells may be required if there is indication of the potential for groundwater contamination.
11. A plan for testing and improvement of the outdoor curing pad shall be submitted and improved within two weeks of the date of this permit. The improvements shall be properly completed and inspected within 60 days of plan approval.
12. An as built topographic map of the facility and surroundings shall be submitted within 60 days of the date of this permit.
13. This permit shall expire on June 1, 2004. A properly completed application shall be submitted at least 90 days prior to the permit expiration date. Changes in ownership, increase in facility capacity, or receiving additional feedstocks shall require a permit modification.



The McGill Regional Composting Facility at Merry Oaks

634 Christian Chapel Church Road
New Hill, NC 27562
TEL: 919-362-1161
FAX: 919-362-1141
www.mcgillcompost.com

February 25, 2003

Mr. Ted Lyon, Supervisor
Composting and Land Application Branch
DENR Division of Waste Management
1646 Mail Service Center
Raleigh, NC 27699



RE: Permit #SWC-19-06 -- Steps to address off-site odors

Dear Mr. Lyon:

As requested in your correspondence dated February 12, 2003, we are pleased to provide the following update on our progress in addressing odor concerns at our new compost manufacturing facility in Chatham County.

About eight weeks ago, McGill Environmental Systems initiated start-up activities at the Merry Oaks plant, gradually bringing various components and systems online as we work toward full operational status. During this period, odor control has been identified as an area that needs additional attention, and we have made it a top priority.

To date, we have taken the following steps:

1. Evaluated the potential odor contribution of certain feedstock. As a result, we promptly eliminated two feedstocks from our process. The first was an aged DAF sludge that we deemed to be a significant source of odor during transport, off-loading, storage, and processing at the plant. The second material was a cotton by-product that caused significant problems with the blending system and, ultimately, negatively affected the uniformity of aeration in the process bays. We ceased acceptance of the DAF sludge by Feb 4 and cotton by Feb 14.
2. Before the end of the workday, odorous feedstocks delivered to the facility are either processed or piles remaining in the preparation area are covered with at least six inches of an appropriate material (sawdust, wood chips, compost, etc.).
3. We have installed and are evaluating GOC Tru-Vapor LF-3 units on the liquid tank exhaust outlet, the roof exhaust fan in the preparation area, and two of the roof exhaust fans in the composting section of the building. These units are designed to generate gas containing amino hydroxyl groups that react with odorous gases (Ammonia, Hydrogen Sulfide, Mercaptans, etc.) and accelerate their decomposition into harmless,

Manufacturer of **Leprechaun** brand composts, topsoils, and soil amendments

non-odorous compounds such as sulfate ions and amino groups. Our research indicates GOC Tru-Vapor has a very fast reaction time and acts like an air scrubber. In addition, we are adding a second treatment system to all seven fans that uses a similar odor control product. We intend to alternate use of these products during the evaluation period.

4. An odor-control product (BAT 508) is being used at the vehicle wash station.
5. Installation of the biofilter is complete. By now, we are confident that the biofilter is fully colonized with the appropriate microbial populations and working quite effectively.
6. An oxygen meter has been purchased and is being used in addition to temperature readings to assess the process.
7. A Gastec meter has been purchased to monitor for the existence of various odor-causing compounds. Initially, we are monitoring for Ammonia, Hydrogen Sulfide, and Total Mercaptans.
8. We routinely monitor the neighborhood to assess any impact we might be causing.

On February 20, 2003, the technical representative from McGill/Ireland was flown in to spend a couple of weeks evaluating the process in the following key areas: aeration levels, oxygen levels and uniformity of blend. We are already implementing some of his changes.

In addition, we have hired Craig Coker from Mountain Organic Materials as a technical adviser at the plant who will continue to assess operations and make recommendations to the Plant Manager.

Start-up difficulties aside, we now have all of the necessary technical skills, practices, and technologies in place to run a successful facility.

Sincerely,



Steven Cockman, Plant Manager
MOBILE: 919-542-8903
EMAIL: scockman@mcgillcompost.com

cc: Robert Hearn, Waste Management Specialist, Raleigh Regional Office
Noel Lyons, Craig Coker, and Lynn Lucas, McGill Environmental Systems

AIR TREATMENT SYSTEM ENGINEERING CALCULATIONS

The air treatment system directing process exhaust air to the composting system biofilter was tested by The Air Systems Specialists (Raleigh, NC) on February 25 and 26, 2003. The results of that testing are:

<u>Side</u>	<u>Blower No.</u>	<u>Air Flow (cubic feet/minute)</u>
East	2	7,000
	4	9,500
	6	9,000
	8	8,900
	9	<u>10,300</u>
	Subtotal	44,700
West	1	7,500
	3	7,000
	5	10,000
	7	9,300
	10	<u>9,600</u>
	Subtotal	43,400
Total Air Treatment System Flow		88,100 cfm

The biofilter system is sized for a loading rate of 5 cubic feet per minute air flow per square foot of biofilter area (5 cfm/sf, source: Haug, R.T., *Compost Engineering*, 1993). The biofilter area is 36,000 square feet, therefore, the maximum loading rate is 180,000 cfm. The biofilter is only receiving 48.9% of its maximum loading rate.



L.R. GORRELL CO.



THE AIR SYSTEMS SPECIALISTS

Raleigh, NC - Home Office / Warehouse

T (919) 821-1161 F (919) 832-1542

Ashville, NC (828) 283-1858	Charleston, SC (843) 534-2443	Charlotte, NC (774) 527-8543	Greensboro, NC (336) 572-1251	Greenville, SC (854) 297-7910	Wilmington, NC (910) 452-4480
F (828) 282-4875	F (843) 624-2437	F (774) 527-8553	F (336) 572-0821	F (854) 297-5641	F (910) 452-4481

JOB: H^c Gun, Merry Oaks BY: Don Bair DATE: 3-10-93

919-262-1788
fax 1141

Air Flow Test Results

Bio Filter Blowers

Aeration Blowers

- * 1 - 7,500 CFM
- 2 - 7,000 CFM
- 3 - 7,000 CFM
- 4 - 9,500 "
- 5 - 10,000 "
- 6 - 9,000 "
- 7 - 9,500 "
- 8 - 8,500 "
- 9 - 9,600 "
- 10 - 10,300 "

Average CFM

(Reverse) Ducted Inlet 3,600 CFM EA.
Non Ducted Inlet 4,000 CFM EA

Page Break

STORAGE TANK

4" Steel Pipe

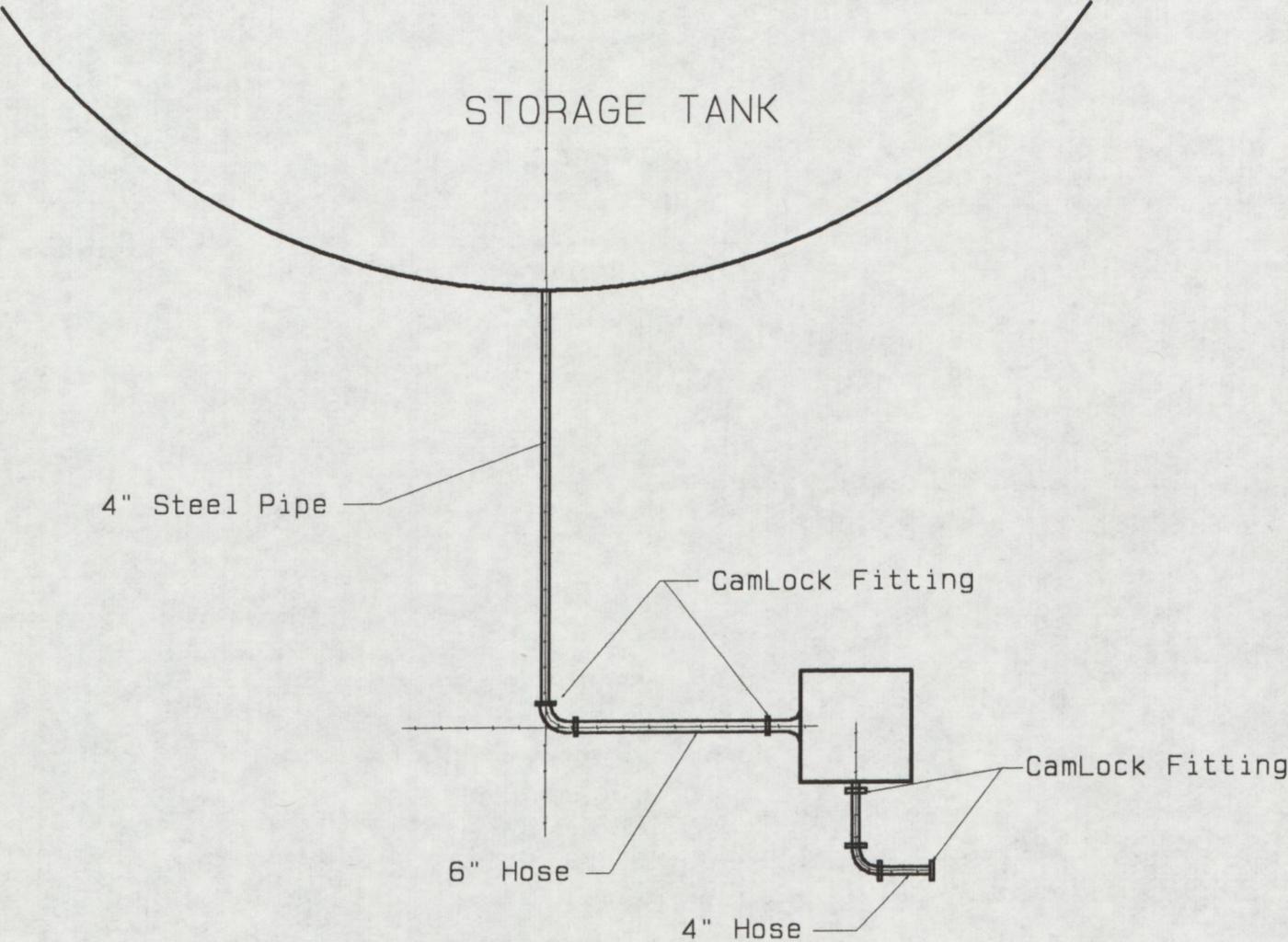
CamLock Fitting

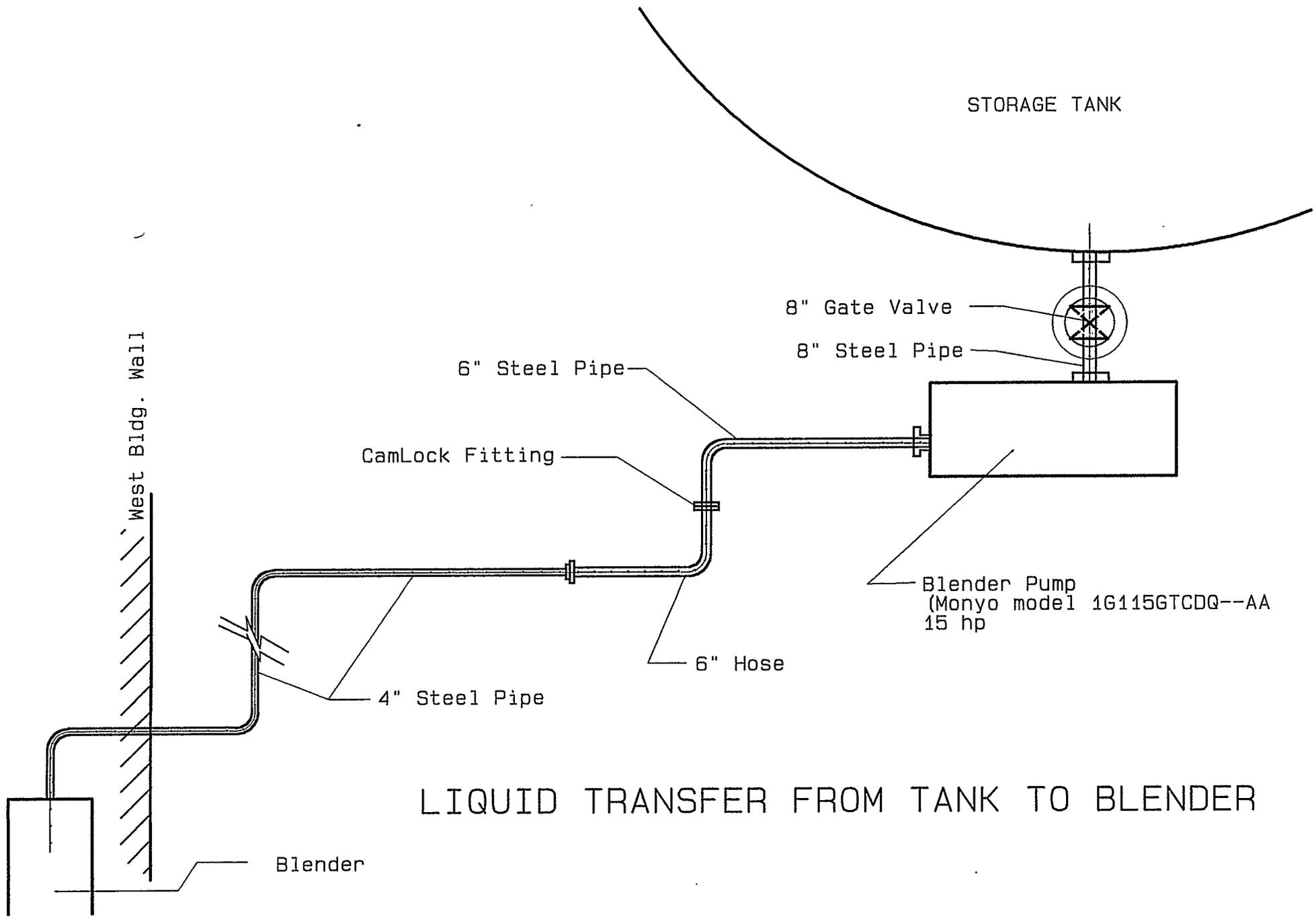
CamLock Fitting

6" Hose

4" Hose

LIQUID TRANSFER INTO TANK





STORAGE TANK

8" Gate Valve

8" Steel Pipe

6" Steel Pipe

CamLock Fitting

Blender Pump
(Monyo model 1G115GTCDQ--AA
15 hp)

6" Hose

4" Steel Pipe

West Bldg. Wall

Blender

LIQUID TRANSFER FROM TANK TO BLENDER

Page Break

Ted, follow-up to specific construction/operations points in your letter dated Feb. 12 --

1. Biofilter is complete.
2. Biofilter was constructed in one unit, reflected in revised drawings.
3. Screening plant has a cover, which we believe will be adequate for dust control. We have already purchased an inline fan, which will be installed later, if the manufacturer's cover is insufficient.
4. Erosion and sediment control structures installed as per approved E&SC plan as revised. A copy of this plan will be included in the final submittal package. The updated drawing reflects all of the changes.
5. Air collection system for the composting building has changed. In the original concept, allowed for partial air supply from within the building and from outside the building to the supply fans (fresh and recycled air supplying the same fan). Some fans now get only fresh air, others only recycled air. This change was made upon evaluation of a similar system at another McGill plant, which had the advantage of simplicity over the original. Aeration zones 2, 4, and 14 and now supplied with recycled air only.
6. Construction of pad at north end of building now complete and shown on as-built drawing.
7. At that of this letter, McGill was in possession of a Letter of Approval for the outdoor storage area for wood waste, and it is now reflected on the as-built drawings.
8. Further evaluation of biofilters during construction led to the conclusion that the condensate would contribute to maintaining more desirable moisture levels within the biofilter media. We will evaluate this over the first year. If necessary, the system allows easy retrofit of condensate collection traps.
9. Sawdust is being stored in the dry materials bunker instead of a separate storage silo. We now anticipate managing considerably less sawdust than original marketing projections; therefore, we do not anticipate needing the silo in the near future. However, should this change, we will seek permission for this installation from your office.

At some point in the future, we will probably add the silo and conveyor depicted in the original construction drawings and will submit a request to you at that time.

As far as location goes, the position of the tank area was "flipped" when the position of the entire preparation area was rotated and shifted.

10. We are pulling air out of two sources: the biofilter and the roof fans. Roof fans are only on when visibility becomes a problem. The biofilter extracts air 24-hours a day.

The design of the air extraction system is sufficient to remove at least an equal volume of air being delivered into the building by the supply fans. The central aisle roof fans are in place to compliment drafting in the direction of the biofilter extraction fans. In addition, it was anticipated that at least tthe first three fans (beginning from the south end of the building) would have to extract air during periods of poor visibility. Hence, the BAT treatment system designed for those three blowers. It has since been decided to install a BAT system on all seven roof fans to allow for more rapidly clearing during poor visibility.

11. All three Tru-Vapor units have now been installed.

12. We have now produced sufficient quantities of compost to begin using compost to cap each bay with a 6" layer over the front and back 6 ft.

AS-BUILT DRAWINGS

1. The new drawings show all erosion control measures approved by the Division of Land Quality.
2. All exterior structures/equipment are depicted on the drawing.
3. Location of equipment, pipes, and valve (there is only one) are indicated on the drawing.
4. The location of the air collection piping and fans is shown on the drawing.
5. In addition to the drawing, a diagram showing the configuration of the exterior aeration-extraction piping system may be found on Page 14 (Figure 1-2) of the review document
6. Liquid storage tank is shown on the drawing. Specs will be included in the final submittal package.
7. Permeability documentation for storage and biofilter pads will be included with the final submittal package.
8. Finished topo features are included on drawing.

9. Product and feedstock will be stored outdoors in piles. Locations of storage areas are indicated on the final drawing. Capacity figures are included in Section 1.3. PHYSICAL PLANT/Outdoor Areas and Features.

APPLICATION REVIEW COMMENTS

1. Two copies of the erosion and run-off plan will be included in the final review package.
2. Main components of the aeration and extraction system are listed on Page 13 of the review document. A discussion of how the roof fans impact the biofilter may be found in the footnote on Page 14 of the review document.
3. Engineering calculations will be included with the stamped version of the final review package.
4. These units are operated with an on-off switch and the entire system is relatively simple ... no real maintenance other than refilling reservoir tanks. Refer to Page 37 of the review document.
5. Reference Pile Construction, Page 33 of the review document
6. Such material will not be used in the process. Spent Biofilter media will not be used as a product ingredient.
7. With your concurrence we will pull three samples from the first 3,000 cyds of compost containing engineered wood products will be composite sample tested for formaldehyde prior to distribution.
8. We have revised the feedstock list, Page 26 of the review document.
9. Please refer to the revised feedstock list as referenced above, also the footnote on the same page and Acceptance Notification on Page 52 of the review document.
10. Leachate management for the biofilter is described on Page 19 of the review document.
11. Please ref: Ratios and recipes on Page 30 and Blending procedures, Page 31.
12. Please refer to blending equipment section in the chart, Page 41.
13. Reference Paragraph 4 of the Prep and Blending section, Page 30.

*what do
with it
not
enough
how much
in*

14. Reference the Biofilter section on Page 9 and Page 36, and the odors section on the Troubleshooting chart on Page 41. In addition, we will occasionally measure the air delivery from the biofilter blowers. If this falls below the volume air of entering the building from the supply fans, it is time to change the media. The extent of the inherent biological activity in the bulking agent of a biofilter is not critical to the success of the biofilter. Hence, the frequent use of inert materials such as rock, shredded tires, and plastic materials as a bulking agent. What is more critical is the amount of surface area and its ability to maintain a porous mix. In a typical biofilter media is colonized with the appropriate microbes in about two weeks. A mix of up to 30% compost is quite adequate to insure good colonization throughout all of the surfaces.

15. Reference Page 39 and 40 under Manual monitoring.

16. Addressed in Section 2.9, Sampling and Analysis. A copy of a representative USCC Seal of Testing Assurance report will be included in the final submittal package.

17. Appropriate language will be included on our Bill of Lading document (since we do not market a bagged product) and a copy will be included in the final submittal package.

18. Reference Sampling Protocols beginning on Page 50.

19. Reference Page 33, Pile construction.

20. Bay identification markings have been completed. Since this facility only has one building, bays are identified by number only – odd numbers on the left, even numbers on the right.

21. Reference Receiving-Page 29, Prep and Blending - Page 30, and Leachate Management - Page 34.

22. Final review package, including all drawings and manual document, will carry an engineer's seal.

Page Break



US COMPOSTING COUNCIL

Seal of Testing Assurance

McGill Leprechaun
Lewis Flynn
PO Box 61
Harrells
NC 28444

Date Sampled/Received: 03 Jan. 03 / 10 Jan. 03

Product Identification	Compost
NOP	

COMPOST TECHNICAL DATA SHEET

LABORATORY: Soil Control Lab; 42 Hangar Way; Watsonville, CA 95076 tel: 831.724.5422 fax: 831.724.3188			
Compost Parameters	Reported as (units of measure)	Test Results	Test Results
Plant Nutrients:	% weight basis	% wet weight basis	% dry weight basis
Nitrogen	Total N	0.67	1.4
Phosphorus	P ₂ O ₅	2.2	4.7
Potassium	K ₂ O	0.55	1.2
Calcium	Ca	1.8	3.9
Magnesium	Mg	0.25	0.54
Moisture Content	% wet weight basis	53.6	
Organic Matter Content	% dry weight basis	42.0	
pH	units	8.08	
Soluble Salts <i>(electrical conductivity EC_s)</i>	dS/m (mmhos/cm)	4.62	
Particle Size	% under 9.5 mm, dw basis	100.0	
Stability Indicator (<i>respirometry</i>)			
CO ₂ Evolution	mg CO ₂ -C/g OM/day	1.2	Stability Rating: Very Stable
	mg CO ₂ -C/g TS/day	0.5	
Maturity Indicator (bioassay)			
Percent Emergence	average % of control	100	
Relative Seedling Vigor	average % of control	100	
Select Pathogens	PASS/FAIL: per US EPA Class A standard, 40 CFR § 503.32(a)	Pass	Fecal Coliform
Trace Metals	PASS/FAIL: per US EPA Class A standard, 40 CFR § 503.13, Tables 1 and 3	Pass	As, Cd, Cr, Cu, Pb, Hg
			Mo, Ni, Se, Zn

Participants in the US Composting Council's Seal of Testing Assurance Program have shown the commitment to test their compost products on a prescribed basis and provide this data, along with compost end use instructions, as a means to better serve the needs of their compost customers.

Laboratory Batch Number: Jan.-3-03	Laboratory Number: 169481122154
Analyst: Frank Shields <i>F/S</i>	

BACTERIOLOGISTS
Approved by State of California

SOIL CONTROL LAB

Tel: 831 724-5422
FAX: 831 724-3188

42 HANGAR WAY
WATSONVILLE
CALIFORNIA

42 Hangar Way
Watsonville Ca 95076

Account No.:
169481-1-2215
Group: Jan.-3-03 No. 4

Lewis Flynn
McGill Leprechaun
PO Box 61
Harrells, NC 28444

DATE RECEIVED: 10 Jan. 03
SAMPLE ID: Compost NOP
SAMPLE ID. No.: 1 169481

Metals & Coliform Bacteria

Method (metals): EPA 3050B / EPA 6010
Method (metals): TMECC 04.12-B / 04.14-A
Method (Mercury Hg) TMECC 04.06 / EPA 7471
Method (Fecal Coliform): Standard Methods 9221E

	Units	MDL	% Recover	Date Tested
Arsenic (As):	8 mg/kg dw	1 mg/kg		112 16 Jan. 03
Cadmium (Cd):	2 mg/kg dw	1 mg/kg		108 16 Jan. 03
Chromium (Cr):	13 mg/kg dw	1 mg/kg		110 16 Jan. 03
Copper (Cu):	341 mg/kg dw	1 mg/kg		116 16 Jan. 03
Lead (Pb):	6 mg/kg dw	1 mg/kg		104 16 Jan. 03
Mercury (Hg): Less than	1 mg/kg dw	0.1 mg/kg		119 16 Jan. 03
Molybdenum (Mo):	3 mg/kg dw	1 mg/kg		98 16 Jan. 03
Nickel (Ni):	11 mg/kg dw	1 mg/kg		109 16 Jan. 03
Selenium (Se):	1 mg/kg dw	1 mg/kg		111 16 Jan. 03
Zinc (Zn):	419 mg/kg dw	1 mg/kg		99 16 Jan. 03
Total Solids (tmecc 03.09)	46.4 Percent	0.05%		15 Jan. 03
Fecal Coliform	< 2 MPN/g dry weight			10 Jan. 03

Pollutant Loading Rate:

Multiply mg/kg dry weight values times 0.0421 to give you kilograms pollutant per 100 metric ton compost as-received based on a moisture content of 53.63 percent.

Analyst: Frank Shields

PAGE 4

Frank Shields

BACTERIOLOGISTS
Approved by State of California

SOIL CONTROL LAB

Tel: 831 724-5422
FAX: 831 724-3188

42 HANGAR WAY
WATSONVILLE

42 Hangar Way
Watsonville Ca 95076

Account No.:
169481-1-2215
Group: Jan.-3-03 No. 4

Lewis Flynn
McGill Leprechaun
PO Box 61
Harrells, NC 28444

DATE RECEIVED: 10 Jan. 03
SAMPLE ID: Compost NOP
SAMPLE ID. No.: 1 169481

Metals & Coliform Bacteria

Method (metals): EPA 3050B / EPA 6010
Method (metals): TMECC 04.12-B / 04.14-A

Aluminum (Al)	Units	MDL	Date Tested
	2900 mg/kg dw	1 mg/kg	16 Jan. 03

Pollutant Loading Rate:
Multiply mg/kg dry weight values times 0.0421 to give you kilograms pollutant per 100 metric ton compost as-received based on a moisture content of 53.63 percent.

Analyst: Frank Shields

PAGE 4



BACTERIOLOGISTS
Approved by State of California

Tel: 831 724-5422
FAX: 831 724-3188

SOIL CONTROL LAB

42 Hangar Way
Watsonville Ca 95076

42 HANGAR WAY
WATSONVILLE
CALIFORNIA 95076

Account No.:
169481 - 1 - 2215
Jan.-3-03 4

Lewis Flynn
McGill Leprechaun
PO Box 61
Harrells, NC 28444

DATE RECEIVED: 10 Jan. 03
SAMPLE ID: Compost NOP
SAMPLE ID. No.: 1 169481

Nutrients-Primary + Secondary

		WET Basis	DRY Basis	TMECC Method
Total Nitrogen:	%	0.67	1.4	4.02-D
Ammonia (NH4-N):	mg/kg	109	234	4.02-C
Nitrate (NO3-N):	mg/kg	64	138	4.02-B
Organic Nitrogen (Org.-N):	%	0.65	1.4	Calc.
Phosphorus (as P2O5):	%	2.2	4.7	Calc.
Phosphorus (P):	mg/kg	9501	20488	4.03-A
Potassium (as K2O):	%	0.55	1.2	Calc.
Potassium (K):	mg/kg	4550	9811	4.04-A
Calcium (Ca):	%	1.8	3.9	4.05
Magnesium (Mg):	%	0.25	0.54	4.05
Sulfate (SO4):	mg/kg	1182	2550	4.12-D/IC

Nutrients - Trace elements

Copper (Cu):	mg/kg	158	341	4.05-Cu
Zinc (Zn):	mg/kg	194	419	4.05-Zn
Iron (Fe):	mg/kg	2086	4498	4.05-Fe
Manganese (Mn):	mg/kg	274	591	4.05-Mn
Boron (B):	mg/kg	18	39	4.05-B

Salts, pH, Bulk Density, Carbonates

Sodium (Na):	%	0.16	0.34	4.05-Na
Chloride (Cl):	%	0.072	0.16	04.05/IC
pH Value:	units	8.08	NA	04.11-A
Electrical Conductivity (EC5 dw):	mmhos/c	2.14	4.62	04.08-A
Bulk Density :	lb/cu ft	58	27	SCL
Carbonates :	as CaCO3 lb/ton	2	5	04.08-A
Organic Matter:	%	19.5	42.0	05.07-A
Organic Carbon:	%	15.3	33.1	4.01
Ash:	%	26.9	58.0	3.02
C/N Ratio	ratio	23.0	23.0	calc.
Moisture:	%	53.6	0.0	3.09

NOTE: Wet Basis values based on a moisture content 53.6 percent. Analyst: Frank Shields

To Calculate: WetBasis = (Dry Basis) X ((100-%Moisture)/100)

To Calculate: lb/cu yd = % WetBasis X 26.74 X (27)/(100-%moisture)

To Calculate: lb/cu yd = mg/kg WetBasis X 26.74 X (0.0027)/(100-%moisture)

PAGE 3

Page Break

BACTERIOLOGISTS

Approved by State of California

SOIL CONTROL LAB

Tel: 831 724-5422
FAX: 831 724-3188

42 HANGAR WAY

42 Hangar Way
Watsonville Ca 95076

Account No.:
169481-1-2215
Group: Jan.-3-03 4

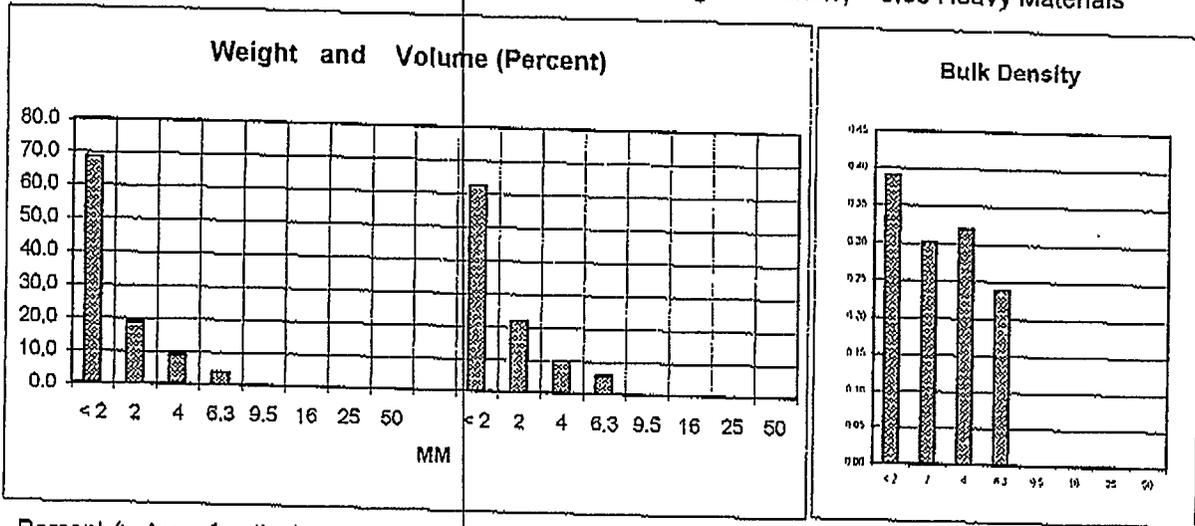
Lewis Flynn
McGill Leprechaun
PO Box 61
Harrells, NC 28444

DATE RECEIVED: 10 Jan. 03
SAMPLE ID: Compost NOP
SAMPLE ID. No.: 1 169481

Size & Volume Distribution, Bulk Density and Inerts

MM	Inches	Weight percent	Volume percent	Bulk Density g/cc
> 50	> 2.0	0.0	0.0	0.00
25 to 50	1.0 to 2.0	0.0	0.0	0.00
16 to 25	0.64 to 1.0	0.0	0.0	0.00
9.5 to 16	0.38 to 0.64	0.0	0.0	0.00
6.3 to 9.5	0.25 to 0.38	3.9	5.8	0.24
4.0 to 6.3	0.16 to 0.25	9.0	10.0	0.32
2.0 to 4.0	0.08 to 0.16	18.7	22.0	0.30
< 2.0	< 0.08	68.4	62.2	0.39
Total		100.0	100.0	

Bulk density = < 0.35 Light materials; 0.35 to 0.60 Mid Weight materials; > 0.60 Heavy Materials



Percent (> 4mm fraction): Glass, Plastic, Metal and Sharps.

Plastic < 1 Glass < 1

Metal < 1 Sharps < 1

Method: TMECC 02-02-C

Sharps < 1

PAGE 1

Analyst: Frank Shields

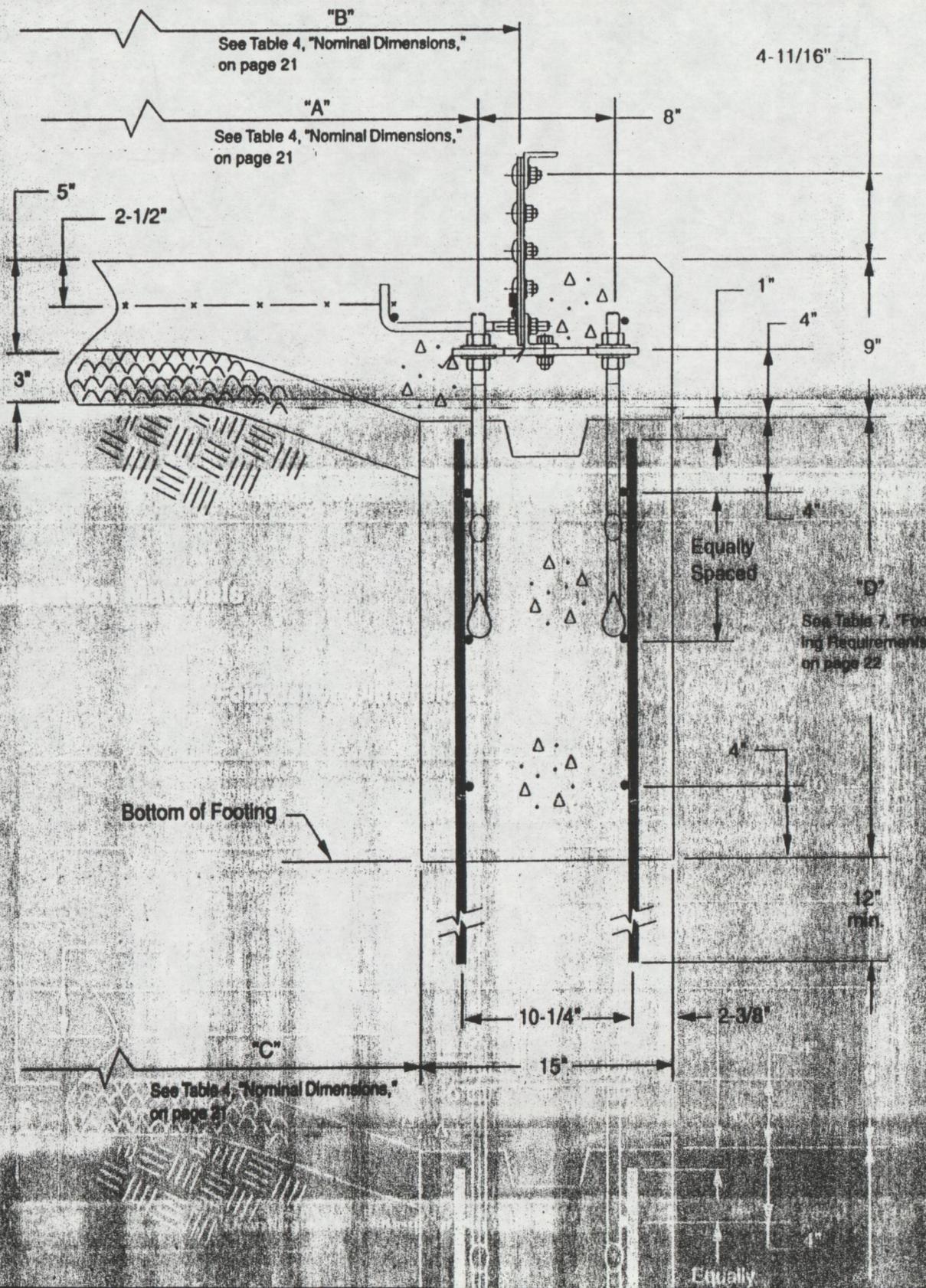
Frank Shields

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STORAGE
TANK

Foundation Materials

Foundation Dimensions



Building Materials Requirements

Table 4: Nominal Dimensions

Nominal Diameter	"A" Foundation Bolt Circle Radius	"B" Inside Foundation Sheet Radius	"C" Inside Footing Radius
ft	ft - in	ft - in	ft - in
42	20 - 9 3/8	21 - 0	20 - 5 15/16
62	30 - 7 1/16	30 - 9 9/16	30 - 3 5/8
70	34 - 9 1/2	35 - 0	34 - 6
81	40 - 4 11/16	40 - 7 3/16	40 - 1 1/4
101	50 - 2 3/8	50 - 4 13/16	49 - 10 7/8
120	59 - 11 9/16	60 - 2 7/16	59 - 8 7/16

Table 5: Floor Steel Requirements
(Furnished by Others)

Nominal Diameter	Circumferential Rebar Qty. (2) Size #4 Grade 60		4 x 4 - W4 x W4 Welded Wire Fabric		Alt. Floor Design Rebar 12" Centers Both Ways Size #3 Grade 60	
	Total Length	Total Weight	Area	Total Weight	Total Length	Total Weight
ft	ft	lb	sq ft	lb	ft	lb
42	286	192	1882	1600	2953	1110
62	422	282	4048	3442	6853	2388
70	480	321	5226	4444	5812	2088
81	557	372	7038	5981	11041	4151
101	691	462	10843	9217	17816	6388
120	826	552	15536	13206	24270	8125

*Quantities include overlap.

Table 6: Concrete Floor and Footing Requirements
(Furnished by Others)

Nominal Diameter	Concrete Requirements		Crushed Rock
	Footing Per 1" Depth	Floor Per 5" Depth	Floor Per 3" Depth
ft	cu yd	cu yd	cu yd
42	0.5	25.8	12.3
62	0.8	52.4	26.8
70	0.9	66.7	34.6
81	1.0	88.4	46.9
101	1.2	133.7	72.6
120	1.5	188.3	104.5

Footing & Foundation Construction

Table 7: Footing Requirements
(Furnished by Others)

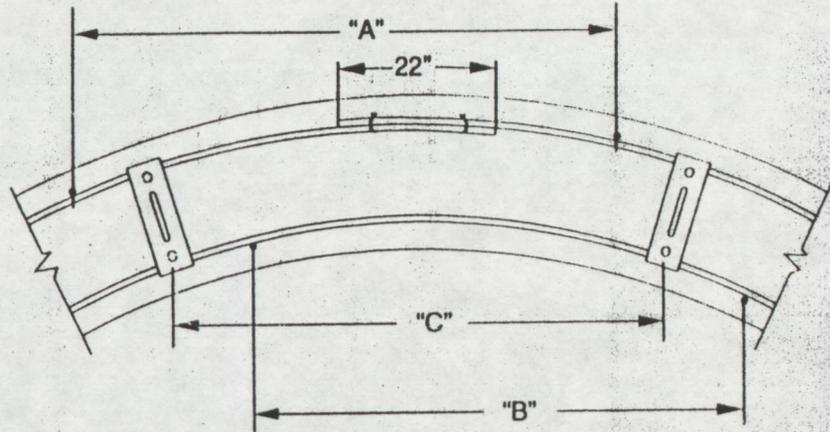
Nom. Dia.	"D" Footing Depth	Circumferential Rebar Size #4, Grade 60†			Support Rods Size #4, Grade 60			
		Rebar (Qty.)	Total Length	Total Weight	Rebar (Qty.)	Length per Bar	Total Length	Total Weight
			ft	lb		in	ft	lb
ft	in							
15 SHEETS	15 - 26	(4)	580	387	(60)	38	190	127
	27 - 40	(6)	869	581		52	260	174
	41 - 54	(8)	1159	774		66	330	221
	55 - 67	(10)	1449	968		79	395	264
	68 - 80	(12)	1739	1162		92	460	308
22 SHEETS	15 - 26	(4)	849	567	(88)	38	279	187
	27 - 40	(6)	1273	850		52	382	256
	41 - 54	(8)	1897	1134		66	484	324
	55 - 67	(10)	2122	1417		79	580	388
	68 - 80	(12)	2546	1701		92	675	451
25 SHEETS	15 - 26	(4)	964	644	(100)	38	317	217
	27 - 40	(6)	1446	966		52	433	289
	41 - 54	(8)	1928	1288		66	550	367
	55 - 67	(10)	2410	1610		79	658	440
	68 - 80	(12)	2892	1932		92	767	512
29 SHEETS	15 - 26	(6)	1677	1120	(116)	38	368	248
	27 - 40	(8)	2236	1493		52	503	337
	41 - 54	(10)	2794	1867		66	638	427
	55 - 67	(12)	3353	2240		79	764	511
	68 - 80	(14)	3912	2613		92	890	595
36 SHEETS	15 - 26	(6)	2060	1390	(144)	38	456	305
	27 - 40	(8)	2774	1853		52	624	417
	41 - 54	(10)	3467	2316		66	792	530
	55 - 67	(12)	4160	2779		79	948	634
	68 - 80	(14)	4854	3242		92	1104	738
43 SHEETS	15 - 24	(6)	2482	1658	(172)	36	516	345
	25 - 36	(8)	3310	2211		48	688	460
	37 - 48	(10)	4137	2764		60	860	575
	49 - 60	(12)	4965	3316		72	1032	689

* Quantities include overlap

† The 81, 101, and 120 nominal diameter footings require that six of the total specified quantity of #4 circumferential rebar be located at the top 24" of the footing. The remaining quantity of rebar is to be equally spaced within the remainder of the footing depth.

Footing Reinforcement Steel Placement

Plan View of Footing Chord Dimensions



Support Rod Placement

Place outer support rods per dimension "A". Place inner support rods per dimension "B".

Circumferential Footing Rebar Placement

Place circumferential rebar to conform to sheet curvature. Overlap the rebar 22 inches on each bar. For vertical spacing of circumferential rebars, see "Foundation Dimensions" on page 20. Use double wire ties to secure the circumferential rebar at each support rod and splice overlap.

Foundation Bolt and Leveling Plate Placement

Dimension "C" illustrates foundation bolt/leveling plate assembly placement.

Table 8: Chord Dimensions

Nom. Dia. (ft.)	42	62	70	81	101	121
"A" Chord (in.)	54-1/16	53-11/16	53-9/16	53-1/2	53-3/8	53-1/8
"B" Chord (in.)	51-15/16	52-1/4	52-5/16	52-3/8	52-7/16	52-1/2
"C" Chord (in.)	52-1/8	52-3/8	52-7/16	52-1/2	52-9/16	52-5/8

PO Box 964
 Sanford, N.C. 27331-0964
 919-775-5014



OPEN MON - FRI 7:00 - 5:00
 SAT
 By Appointment
 \$25.00 Return Check Fee

31693

SHIP TO
 MEG
 REGILL ENVIRONMENTAL
 MERRY DAKS

11-23-02	1	18.00 yd	0.00	15	6.00	31693
11-23-02	2	18.00 yd	23805		1.00	31693

WARNING

IRRITATING TO THE SKIN AND EYES

PROPERTY DAMAGE RELEASE
 TO BE SIGNED AT DELIVERY. HAVE MADE SURE TO SIGN AND RETURN TO THE SUPPLIER. THE SUPPLIER'S LIABILITY FOR ANY DAMAGE CAUSED BY THE SUPPLIER'S NEGLIGENCE OR THE NEGLIGENCE OF THE SUPPLIER'S EMPLOYEES OR AGENTS IS LIMITED TO THE ACTUAL DAMAGE CAUSED BY THE SUPPLIER'S NEGLIGENCE OR THE NEGLIGENCE OF THE SUPPLIER'S EMPLOYEES OR AGENTS. THE SUPPLIER'S LIABILITY FOR ANY DAMAGE CAUSED BY THE NEGLIGENCE OF THE USER OR THE NEGLIGENCE OF THE USER'S EMPLOYEES OR AGENTS IS LIMITED TO THE ACTUAL DAMAGE CAUSED BY THE NEGLIGENCE OF THE USER OR THE NEGLIGENCE OF THE USER'S EMPLOYEES OR AGENTS. THE SUPPLIER'S LIABILITY FOR ANY DAMAGE CAUSED BY THE NEGLIGENCE OF THE USER OR THE NEGLIGENCE OF THE USER'S EMPLOYEES OR AGENTS IS LIMITED TO THE ACTUAL DAMAGE CAUSED BY THE NEGLIGENCE OF THE USER OR THE NEGLIGENCE OF THE USER'S EMPLOYEES OR AGENTS.

DANNY HUFFMAN

NOTICE: MY SIGNATURE BELOW INDICATES THAT I HAVE READ THE HEALTH WARNING NOTICE AND SUPPLIER WILL NOT BE RESPONSIBLE FOR ANY DAMAGE CAUSED WHEN DELIVERING INSIDE CURE LINE

Excessive Water is Detrimental to Concrete Performance
 H₂O Added By Request Authorized By

[Signature]

301 RMR	3000 PSI W/AIR, WBT, RED	10.00
FIBER	FIBER	1.00
ENVCH	ENVIRONMENTAL CHARGE	1.00

RETURNED TO PLANT	LEFT JOB	FINISH UNLOADING	DELAY EXPLANATION/CYLINDER TEST TAKEN	TIME ALLOWED
	12:45	12:30	1. ADDITIONAL WATER 2. SLOW POUR OR PUMP 3. TRUCK WRENCH ON JOB 4. CONTRACTOR BROKE DOWN 5. ADDED WATER	
LEFT PLANT	ARRIVED JOB	START UNLOADING		TIME DUE
	12:05	12:10		
TOTAL BOUND TIME	TOTAL AT JOB	UNLOADING TIME		DELAY TIME
				ADDITIONAL CHARGE 1
				ADDITIONAL CHARGE 2
				GRAND TOTAL

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OPEN: MON - FRI 31583
 7:00 - 5:00
 SAT
 By Appointment
 \$25.00 Return Check Fee

SOLD TO:

SHIP TO:
 ME
 MCGILL ENVIRONMENTAL
 MERRY OAKS

09:59:47	10.00	24700 yd	0.00	05	2.00	MIKE HAIRE	PLANT/ANSALDO
09:45:14							
11-23-02	2	20.00 yd	23785		4.00		31682

WARNING
 IRRITATING TO THE SKIN AND EYES

Contains Potassium Chloride, Water, Rubber, Bore and Curing. EXHAUSTED BREATHING MAY CAUSE...
 CONCRETE IS A PERISHABLE COMMODITY AND BECOMES THE PROPERTY OF THE BUYER...
 Accounts not paid within 30 days of delivery will be charged at the rate of 1% per month...
 \$35.00 Service Charge and Loss of the Cash Receipt will be collected on all returned...
 31583

TO BE USED WITHIN THE CURE LINE...
 EXCESSIVE WATER IS DETRIMENTAL TO CONCRETE PERFORMANCE...
 NOTICE: MY SIGNATURE BELOW INDICATES THAT I HAVE READ THE HEALTH WARNING NOTICE AND SUPPLIER WILL NOT BE RESPONSIBLE FOR ANY DAMAGE CAUSED WHEN DELIVERING INSIDE CURE LINE.

WEIGHTS...
DOAN HUFFMAN
 NOTICE: MY SIGNATURE BELOW INDICATES THAT I HAVE READ THE HEALTH WARNING NOTICE AND SUPPLIER WILL NOT BE RESPONSIBLE FOR ANY DAMAGE CAUSED WHEN DELIVERING INSIDE CURE LINE.
 Excessive Water is Detrimental to Concrete Performance
 H₂O Added By Request Authorized By
 [Signature]
 GAL X

10.00	301 WR	3000 PSI W/ART. RED.	24.00
1.00	ENVCH	ENVIRONMENTAL CHARGE	1.00

RETURNED TO PLANT	LEFT JOB	FINISH UNLOADING	DELAY EXPLANATION/CYLINDER TEST TAKEN	TIME ALLOWED
		10:59	1. JOB NOT READY 2. SLOW POUR SET UP 3. HUNG UP HEAD ON JOB 4. CONTRACTOR BROKE DOWN 5. ADDED WATER 6. TRUCK BROKE DOWN 7. ACCIDENT 8. CHADON 9. OTHER	
LEFT PLANT	ARRIVED JOB	START UNLOADING		TIME DUE
	10:20	10:30		
TOTAL POUND TRIP	TOTAL AT JOB	UNLOADING TIME		DELAY TIME
				ADDITIONAL CHARGE 1
				ADDITIONAL CHARGE 2
				GRAND TOTAL

Page Break

North Carolina
Department of Environment and Natural Resources



Division of Waste Management

Michael F. Easley, Governor
William G. Ross Jr., Secretary
Dexter R. Matthews, Interim Director

February 12, 2003

Mr. Noel Lyons
McGill Environmental Systems – Merry Oaks
634 Christian Chapel Church Road
New Hill, North Carolina 27562

Re: The McGill Regional Composting Facility at Merry Oaks
Permit #: SWC-19-06

Dear Mr. Lyons:

The Division of Waste Management, Solid Waste Section, has reviewed McGill Environmental Systems' application for a permit to operate a Large Type IV Solid Waste Compost Facility in Chatham County. This facility was issued a permit to construct on July 10, 2001. No modifications to the permit to construct have been requested.

As part of the review process and in response to odor complaints an inspection of the facility was conducted on February 6, 2003. Robert Hearn with the Solid Waste Section and Tammy Manning with the NC Division of Air Quality were also present during the inspection.

Based on our inspection of the facility the following inconsistencies were noted between the approved application for a permit to construct and what was found on site.

1. The biofilter construction had not been completed at the time of our inspection.
2. The configuration of the biofilter area is not as was submitted in the application for a permit to construct or in the permit to operate.
3. The hood over the screening plant, indicated in the application to operate, has not been installed.
4. Erosion and sediment control structures have not been installed at the facility as indicated in the application for a permit to construct.
5. The design of the air collection system for the compost building has changed.
6. The construction of the clay/ash pad at the north end of the building has not been completed.
7. Waste wood is being stored on the outside of the south end of the building. There was no outside feedstock storage shown on the approved site plan.
8. A condensate collection system was included in the application to construct but, but has not been installed.
9. Only one waste storage tank is located on the outside of the facility. The approved application indicated there would be two. The one tank is not located where the two proposed.

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10. Approximately seven ventilation fans were located in the center of the roof over the blending and composting areas of the building. These fans were not apparent in the application for a permit to construct. The application for a permit to operate (page 5) indicated in item #7 under odor control "collection and treatment of compost building air through a biofilter".
11. The application for a permit to operate the facility indicated that three GOC Tru-Vapor LF-3 units would be installed in the roof vents. At least two of these units were not installed at the time of the inspection.
12. During the facility inspection it was noted that the front of each composting bay was not capped with previously composted material as specified in the application for a permit to construct and the application to operate.

The as built drawings submitted of the facility did not accurately represent the following:

1. Location of all erosion control structures along with the size, depth and shape of each as approved by the Division of Land Quality.
2. Location of clay/ash pads for outdoor storage of raw materials and product, vehicle parking areas, the biofilter and associated fans and header manifold, roll-off container, grinder and any other structures or equipment.
3. The location of equipment in the blending and curing areas of the building. This should include the location of pipes and valves associated with transferring liquids into the building from the storage tank.
4. The construction of the air collection system in the compost building.
5. The construction of the biofilter and the associated aeration system.
6. The location and size of the liquid storage tank and associated pipes and valves and the construction specifications for the tank, the underlying concrete and the associated piping and valves.
7. Documentation to show that the product storage pad, the waste storage pad and the biofilter pad meet the permeability specifications in the approved application for a permit to operate. *construct*
8. Finished site topo and slope and elevations of compost, curing and blending areas in the building and solid and liquid storage areas outside the building. Slope and elevations also need to be provided for the unloading ramp.
9. Approximate capacity of the outdoor storage areas for product and feedstocks and an indication of how the material will be stored (windrows or piles) and the size and orientation of storage.

Our review of the application for a permit to operate resulted in the following comments:

1. Two copies of the approved erosion and run-off control plan, including the type and size of structures required and construction specifications, must be provided with the application for a permit to operate.
2. The application for a permit to operate indicates in 2.6.2 on page 30 that all processing air passes through the biofilter. The application indicates (page 10) that three GOC Tru-Vapor LF-3 units will be installed at 3 of the roof exhaust fans, but not the other 4. It is unclear how all processing air passes through the biofilter, or is treated at all, if roof exhaust fans operate that do not provide treatment.
3. Engineering calculations should be shown to justify that the air treatment system as constructed will remove air equally from both sides of the building. Engineering calculations should also be provided to show that the air distribution system in the

biofilter is adequate to evenly distribute air over the entire 36,000 square feet of biofilter.

4. Operation and maintenance information needs to be provided for the GOC Tru-Vapor LF-3 units including how the BAT 508 NTX is applied.
5. The application should indicate the thickness of previously composted material to be used as cap material on the front of each composting bay and how far down the pile the material will be placed.
6. Some of the ground wood waste noted at the facility during the inspection appears to contain small quantities of treated and painted or varnished materials which are not normally managed at compost facilities due to the potential of contamination the final product. Please explain how this material will be dealt with or what testing will be done to guard against product contamination.
7. Engineered wood products are included in the list of waste materials to be received at the facility. However there is no discussion of testing for formaldehyde, contained in the glue, in the finished product.
8. The introduction to the application to operate refers to receiving furniture waste. This should refer to untreated, and unpainted or varnished unless testing will be performed on the compost product.
9. Feed stock lists should include specific information about what source separated organics are to be managed at the facility. Sheet rock should be specified as unpainted and new construction. The DWM, SWS should be notified at least quarterly of all sources of biosolids derived from the treatment of domestic and industrial wastewater. The section is to be notified of test results of all new industrial biosolids, other industrial wastes or special wastes prior to initial acceptance or pilot evaluation to determine if additional product testing will be necessary due to the contents of the waste.
10. An explanation should be provided as to what steps will be taken to filter and absorb nutrients from any lateral liquid movement out of the biofilter.
11. More specific operation information needs to be provided to indicate how much liquid waste is to be added during blending and how this may or may not effect the carbon:nitrogen ratio of the final blend. This is of particular concern given the variety of liquids that may be received.
12. The application refers to the "numerous backup options in place if any of the automated blended mechanisms fail". These options need to be outlined in the operation manual.
13. The application for a permit to operate indicates that "raw feedstocks not blended before the end of the workday are covered". More specific information needs to be provided as to how and with what the material will be covered and how much cover will be provided.
14. Specific information should be included in the application as to how to determine when the biofilter media needs to be changed, biofilter media recipes and possible modifications to the biofilter if odor is a problem. The pros and cons of using freshly ground processed wood waste in a biofilter as opposed to material with more biological activity and odor reducing potential such as pine bark should be discussed.
15. The application for a permit to construct discusses extra temperature monitoring that will be done to assure that the two temperature probes in each 30 X 100 section adequately reflect the temperature of the entire section. Details of this extra monitoring need to be discussed in the application for a permit to operate.

16. Record keeping sections of the application for a permit to operate need to outline reporting and record keeping information required to meet the requirements of 40 CFR 503. Testing sections of the application need to outline the testing required to meet the requirements of 40 CFR 503.
17. The application does not address the label requirements for compost to be distributed that are addressed in Rule .1407(g) of the NC Solid Waste Compost Rules.
18. Sterile techniques for taking pathogen samples need to be addressed in the application.
19. Operation information needs to address how loader operators will know where one compost bay, in the compost room, starts and stops.
20. The application for a permit to operate indicates that bays will be labeled by number and letter. During the investigation it was noted that the bays were not numbered.
21. Cleanup frequency and methods should be explained for leachate and other waste materials in the travel way between compost bays. Cleanup of waste unloading areas should also be addressed.
22. The application for a permit to operate must bear the seal of a professional engineer licensed to practice in North Carolina.

The interim approval to operate expires on March 18, 2003. If these issues are not adequately addressed, in a timely manner such that the application and facility construction can be reviewed, and a permit to operate issued by that date the facility will be considered an un-permitted site and must cease operation. Adequate steps to address all issues concerning off site odors must be addressed within 10 days of receipt of this letter.

If you have any questions concerning this review please feel free to contact me at

Sincerely,

Ted Lyon, Supervisor
Composting & Land Application Branch

cc: Robert Hearn, Waste Management Specialist, Raleigh Regional Office