Guilford Cty. Permit #41-10

Ingleside Comp. Facility

DOC ID 16531
4110 - compost
4-30-12 DW

Permit Renewal Application

City of High Point
Ingleside Composting Facility
High Point, North Carolina

Prepared For:

City of High Point Department of Public Services
211 South Hamilton Street
High Point, North Carolina 27260

Prepared By:

G.N. Richardson & Associates, Inc.
Engineering and Geological Services
14 N. Boylan Avenue
Raleigh, North Carolina 27603

April 2004
Revised: December 2004

G.N. RICHARDSON & ASSOCIATES
Engineering and Geological Services

December 7, 2004

Mr. Ted Lyon, Supervisor
Composting and Land Application Branch
NC DENR Division of Waste Management
401 Oberlin Road, Suite 150
Raleigh, North Carolina 27605

RE: Permit Renewal Application - Revised
City of High Point - Ingleside Composting Facility (Permit No. 41-10)
High Point, North Carolina

Dear Mr. Lyon:

On behalf of the City of High Point, G.N. Richardson & Associates, Inc. (GNRA) would like to submit for your review and approval two (2) copies of a revised permit renewal application for the Ingleside Composting Facility.

Should you have any questions or require clarification, please contact us at your earliest convenience.

Sincerely,
G.N. Richardson & Associates, Inc.

Pieter K. Scheer, P.E.
Project Manager

Attachment: Permit Renewal Application (x 2)

cc: Steve Pendry, City of High Point (x 3)

Received
DEC 2004
Waste Management

G.N. RICHARDSON & ASSOCIATES, INC.
Engineering and Geological Services

TRANSMITTAL FORM

If enclosures are not as noted or
if you require additional information,
please notify us immediately

December 9, 2004

Mr. Ted Lyon
NC DENR Division of Waste Management
401 Oberlin Road, Suite 150
Raleigh, NC 27605
(919) 733-0692

SUBJECT: **City of High Point - Ingleside Composting Facility**

GNRA PROJECT NO: **HPOINT-24**

We are sending you the following items:

COPIES	ITEM	DESCRIPTION
3	Binders	Copies of Permit Renewal Application

These are transmitted as checked below:

[ ] For Information
[ ] As Requested
[ ] For Review and Comments
[ ] For Revision
[X] **For Approval**
[ ] Approved
[ ] Approved as Noted
[ ] Approved as Noted-Revise and Resubmit
[ ] Not Approved-Revise and Resubmit
[ ] For Record and File
[ ] Submittal
[ ] For Recording

REMARKS: Ted: Per my email. Just let me know when they are ready to pick up. Thanks again for your assistance.

cc:

Pieter K. Scheer, P.E.

14 N. BOYLAN AVENUE • RALEIGH, NORTH CAROLINA 27603 • TEL. 919-828-0577 • FAX. 919-828-3899

G.N. RICHARDSON & ASSOCIATES
Engineering and Geological Services

December 7, 2004

Mr. Ted Lyon, Supervisor
Composting and Land Application Branch
NC DENR Division of Waste Management
401 Oberlin Road, Suite 150
Raleigh, North Carolina 27605

RE: Permit Renewal Application - Revised
City of High Point - Ingleside Composting Facility (Permit No. 41-10)
High Point, North Carolina

Dear Mr. Lyon:

On behalf of the City of High Point, G.N. Richardson & Associates, Inc. (GNRA) would like to submit for your review and approval two (2) copies of a revised permit renewal application for the Ingleside Composting Facility.

Should you have any questions or require clarification, please contact us at your earliest convenience.

Sincerely,
G.N. Richardson & Associates, Inc.

Pieter K. Scheer, P.E.
Project Manager

Attachment: Permit Renewal Application (x 2)

cc: Steve Pendry, City of High Point (x 3)

Permit Renewal Application

City of High Point
Ingleside Composting Facility
High Point, North Carolina

APPROVED
DIVISION OF WASTE MANAGEMENT
SOLID WASTE SECTION
DATE 12/9/04 BY TL

Prepared For:

City of High Point Department of Public Services
211 South Hamilton Street
High Point, North Carolina 27260

Prepared By:

G.N. Richardson & Associates, Inc.
Engineering and Geological Services
14 N. Boylan Avenue
Raleigh, North Carolina 27603

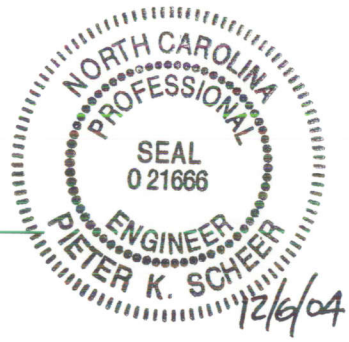
April 2004
Revised: December 2004

PERMIT RENEWAL APPLICATION

City of High Point
Ingleside Composting Facility
High Point, North Carolina

Prepared for:
City of High Point Department of Public Services
211 South Hamilton Street
High Point, North Carolina

GNRA Project No. HPOINT-24



Pieter K. Scheer, P.E.
Project Manager

April 2004
Revised: December 2004

G.N. Richardson & Associates, Inc.
Engineering and Geological Services
14 N. Boylan Avenue
Raleigh, North Carolina 27603

CITY OF HIGH POINT
INGLESIDE COMPOSTING FACILITY

PERMIT RENEWAL APPLICATION

TABLE OF CONTENTS

Page

1.0 EXECUTIVE SUMMARY 1

2.0 GENERAL FACILITY DESCRIPTION 1
- 2.1 Requirement for Permit - .1401 1
- 2.2 General Provisions - .1402 1
- 2.3 Prohibitions - .1403 1

3.0 SITING/DESIGN CRITERIA - .1404 2
- 3.1 Floodplain - .1404 (a)(1) 2
- 3.2 Buffers - .1404 (a)(2) through (5) 2
- 3.3 Surface Waters - .1404 (a)(6) 2
- 3.4 Closed Disposal Area - .1404 (a)(7) 2
- 3.5 Fire Equipment Access - .1404 (a)(8) 3
- 3.6 Surface Water Discharge - .1404 (a)(9) 3
- 3.7 Ground Water Protection - .1404 (a)(10) 3
- 3.8 Other Design Criteria - .1404 (c) 3

4.0 APPLICATION REQUIREMENTS - .1405 3
- 4.1 Aerial Photograph - .1405 (a)(1) 3
- 4.2 Zoning Requirements - .1405 (a)(2) 4
- 4.3 Siting/Design Compliance - .1405 (a)(3) 4
- 4.4 Waste Types - .1405 (a)(4)(A) 4

5.0 SOILS INFORMATION - .1405 (a)(4)(B) 4

6.0 SITE PLAN - .1405 (a)(5) 5

7.0 OVERVIEW OF OPERATIONS - .1405 (a)(6) 5
- 7.1 Responsible Party - .1405 (a)(6)(A) 5
- 7.2 Site Personnel - .1405 (a)(6)(B) 5
- 7.3 Operation Plan - .1405 (a)(6)(C) 5
- 7.4 Adverse Weather - .1405 (a)(6)(E) 6
- 7.5 Nuisance Control - .1405 (a)(6)(E) 6
- 7.6 Product Distribution - .1405 (a)(6)(F) 6

Table of Contents (Continued)

Page

8.0 FACILITY REPORT - .1405 (a)(7) 6
- 8.1 Design Capacity - .1405 (a)(7)(A) 6
- 8.2 Process Flow Diagram - .1405 (a)(7)(B) 6
- 8.3 Measurement and Processing - .1405 (a)(7)(C) 7
- 8.4 Process Duration - .1405 (a)(7)(C) 7
- 8.5 Material Monitoring - .1405 (a)(7)(E) 7
- 8.6 Temperature Control - .1405 (a)(7)(F) 7
- 8.7 Material Aeration - .1405 (a)(7)(G) 8
- 8.8 Surface Water Control - .1405 (a)(7)(H) 8
- 8.9 Product Information - .1405 (a)(8) 8
- 8.10 Equipment Specifications - .1405 (a)(9) 8

9.0 OPERATION AND MAINTENANCE - .1405 (a)(10) 8
- 9.1 Quality Assurance Plan - .1405 (a)(10)(A) 8
- 9.2 Contingency Plan - .1405 (a)(10)(B) 8
- 9.3 Operational Compliance - .1405 (a)(10)(C) 9

10.0 OPERATIONAL REQUIREMENTS - .1406 9
- 10.1 Plan and Permit Requirements - .1406 (1) 9
- 10.2 Erosion Control - .1406 (2) 9
- 10.3 Surface Water Diversion - .1406 (3) 9
- 10.4 Leachate - .1406 (4) 10
- 10.5 Access and Security - .1406 (5) 10
- 10.6 Waste Acceptance - .1406 (6) 10
- 10.7 Safety Requirements - .1406 (7) 10
- 10.8 Sign Requirements - .1406 (8) 10
- 10.9 Temperature Monitoring Requirements - .1406 (9) and (10) 10
- 10.10 Miscellaneous Requirements - .1406 (14) 10

11.0 MATERIAL CLASSIFICATION AND DISTRIBUTION - .1407 10

12.0 TESTING AND REPORTING - .1408 11
- 12.1 Composite Sample .1408 (a) 11
- 12.2 Record Keeping - .1408 (b) 11
- 12.3 Annual Reporting - .1408 (c) 11
- 13.4 Yearly Recycling Totals - .1408 (d) 12

Table of Contents (Continued)

APPENDICES

Appendix A Facility and Process Documentation
Appendix B Site Maps and Photos
Appendix C Soils Report
Appendix D Operations Plan

CITY OF HIGH POINT
INGLESIDE COMPOSTING FACILITY

PERMIT RENEWAL APPLICATION

1.0 EXECUTIVE SUMMARY

The following is a Permit Renewal Application submitted on behalf of the City of High Point for continued operation of the City's existing Ingleside Composting Facility (ICF). Permitted under North Carolina Solid Waste Permit #41-10, the ICF is a Large Type 1 Solid Waste Composting Facility, located off of Ingleside Drive on the northwest side of High Point.

The ICF has been in operation since 1993. The facility accepts yard wastes, including grass clippings, limbs, leaves and trees. The facility has operated according to an Operations Plan, originally prepared by the City of High Point in 1992-1993. The Record of Operation indicates a good history of compliance and a consistently high quality product. The ICF is operated as a service to the public; not as a profit-making venture.

The facility meets the requirements of North Carolina Solid Waste Rules 15A NCAC 13B .1400 et. seq. The following text and supplements are organized according to the regulations to expedite review by the NC DENR.

2.0 GENERAL FACILITY DESCRIPTION

2.1 Requirement for Permit - .1401

This facility has been (and will continue to be) permitted and operated in accordance with North Carolina Solid Waste Rules .1402 through .1408 of 15A NCAC 13B.

2.2 General Provisions - .1402

The ICF was originally permitted to receive yard wastes generated in the City of High Point and its incorporated service area, including portions of Guilford, Randolph, Davidson, and Forsyth Counties. The facility does not accept waste water treatment sludge. The ICF is classified as a Large Type 1 facility. The finished products for distribution meet the requirements of Rule .1407.

2.3 Prohibitions - .1403

No hazardous waste or asbestos-containing materials are accepted at the ICF. In general, household wastes are not accepted. The facility keeps a container on site for trash or other non-compostable wastes that might be screened out of the finished product. These materials are disposed of at the Kersey Valley Landfill. The waste acceptance policy and

quality control process (outlined in the Section 7.0) ensure that the finished product meets regulatory requirements for distribution.

3.0 SITING/DESIGN CRITERIA - .1404

3.1 Floodplain - .1404 (a)(1)

The facility is not located on a floodplain (see the Flood Insurance Rate Map, in **Appendix A**).

3.2 Buffers - .1404 (a)(2) through (5)

A site map is presented in **Appendix B**. The map clearly depicts that the ICF meets all regulatory buffer requirements, described as follows:

- Minimum 50-foot buffer from all compost areas to property lines.
- 200-foot buffer from all compost areas to residences.
- Minimum 100-foot buffer from all compost areas to water supply wells (all local residences are served by City water).
- Minimum 50-foot buffer from all compost areas to perennial streams.

3.3 Surface Waters - .1404 (a)(6)

Based on examination of USGS topographic quadrangle mapping (Kernersville, High Point West and Lexington East quadrangles), the ICF is located along a headwater tributary to Rich Fork Creek, in the Yadkin River (Cape Fear) basin. Rich Fork Creek merges with Abbots Creek approximately 14 miles down stream of the site – the confluence is located below a public water supply reservoir (City of Thomasville) on Abbots Creek. Rich Fork Creek and its tributaries are classified as Class C waters per 15A NCAC 2B .0200 provisions, as confirmed by the NC DENR Division of Water Quality (Index 12-119-7 – Rich Fork from source to Abbots Creek). The ICF does not affect any public drinking water supply.

3.4 Closed Disposal Area - .1404 (a)(7)

The ICF is not located over a closed disposal facility. This site was filled using a mixture of soil and inert debris from the City's Street Department (roadway, curbing, and sidewalk demolition, etc.). A soils investigation (see Section 5.0) confirmed verbal reports that the site had received an overlay of compacted clayey soil, derived from a nearby construction project. Storm water runoff is managed such as to prevent erosion of surficial soils.

3.5 Fire Equipment Access - .1404 (a)(8)

The facility layout (see **Appendix B**) depicts ample access to the compost areas (windrow areas) and finished product stockpiles for fire fighting equipment. A fire hydrant is located on the premises near the scale house.

3.6 Surface Water Discharge - .1404 (a)(9)

The ICF does not accept any raw feed stocks or produce any products which generate a leachate or process water discharge containing substances that would violate the NPDES provisions of the Clean Water Act (Section 402) or non-point source water quality criteria. Only storm water is discharged from the site (thus a NPDES permit is not required). The waste is not allowed to enter any waters or wetlands of the state that would violate Section 404 of the Clean Water Act.

3.7 Ground Water Protection - .1404 (a)(10)

Due to the classification of the facility (Type 1) and the nature of the wastes, ground water monitoring is not required at the ICF. The site does contain an asphalt-paved composting area (windrow area) for the initial material processing. The soils investigation (Section 5.0) indicates that most of the surface area outside the asphalt pad is underlain by a minimum of 18 inches of compacted clayey soil, which limits percolation of surface water into the subgrade. These provisions exceed the requirements for a Type 1 facility. No evidence of the seasonal high ground water table was observed during the soils investigation.

3.8 Other Design Criteria - .1404 (c)

The ICF site is completely fenced to control public access. The ICF operates under an approved Sedimentation and Erosion Control Permit per NC DENR Division of Land Quality Rule 15A NCAC 4. A copy of the plan approval certificate and the most recent inspection report (see **Appendix A**) indicates compliance with these permit requirements. There have been no reported problems with dust or fugitive emissions. Care is taken not to turn compost on windy days. The ICF controls odor and insects with a commercial deodorizer/insecticide, applied to the windrows twice daily.

4.0 APPLICATION REQUIREMENTS - .1405

4.1 Aerial Photograph - .1405 (a)(1)

An aerial photograph prepared by the City of High Point Department of Planning and Development is presented in **Appendix B**. The photo is shown at a scale of 1 inch equals 400 feet and clearly shows property boundary and the following within 500 feet of the facility boundary: roads, homes, commercial and/or industrial buildings, water courses,

and other applicable information, i.e. current zoning (Agricultural).

4.2 Zoning Requirements - .1405 (a)(2)

A letter from the City of High Point Planning Department, stating that the ICF operation is consistent with the applicable zoning of the site, is presented in **Appendix A**. The letter refers to Special Use Permit 92-9, also included in **Appendix A**, which defines the property and its approved use. These documents constitute the local government approval for the site.

4.3 Siting/Design Compliance - .1405 (a)(3)

A description of how the ICF complies with applicable siting/design criteria defined in Rule .1404 is provided by item in Section 3.0 of this report.

4.4 Waste Types - .1405 (a)(4)(A)

Per records for July 2002 through June 2003, the waste types processed by the ICF consisted of leaves and grass (6,374 tons) and limbs, brush and stumps (13,656 tons). Based on the annual report for the fiscal year ended June 30, 2003 (**Appendix A**), the division of tonnages by month and location within the public service area (by individual County areas within the City limits) are shown in the report. There are no bulking agents or admixtures used in the compost process, with the exception that the City proposes to add municipal sludge incinerator ash as an amendment to the stabilized compost. This material will be tested as described in Section 12.0 and added to the compost in accordance with the Operations Plan (**Appendix D**, page 5).

5.0 SOILS INFORMATION - .1405 (a)(4)(B)

A brief investigation report was prepared by G.N. Richardson & Associates in December 1998 (see **Appendix C**). That report, prepared by a North Carolina licensed professional geologist, described a soils investigation conducted at the site to characterize soil and ground water conditions at the site. The near surface soils located outside the asphalt compost processing pad were characterized in five test pits as clayey silt and silty clay, classified by Unified Soil Classification System (USCS) criteria as ML and CL, respectively. The test pits encountered relict compost at the surface at a few locations. A rock outcrop (granite bedrock) and sandy soils (SM) derived from bedrock were encountered along the south side of the site. A majority of the active areas of the site exist on man-made embankment fill. No ground water was encountered within four feet beneath the surface.

6.0 SITE PLAN - .1405 (a)(5)

The site plan map (see **Appendix B**) shows existing topographic contours and other relevant features at a scale of 1 inch equals 100 feet. Included on the drawing are the locations of water control devices (e.g. drainage features, sediment basins), property lines and setback distances, existing utilities and structures, and areas for unloading, processing, active composting, curing, and storing of material. Since the last permit renewal in 1999, a new maintenance building was constructed, replacing the original equipment shed. Planned facility changes include the construction of new scales and a new scale house to the south of the existing scales.

7.0 OVERVIEW OF OPERATIONS - .1405 (a)(6)

7.1 Responsible Party - .1405 (a)(6)(A)

Name of Facility:	Ingleside Composting Facility
Address:	3001 Ingleside Drive High Point, North Carolina 27265
Phone Number:	(336) 883-8514
Responsible Parties:	Mr. Randall Lee – Composting Supervisor Mr. Steve Pendry – Landfill Superintendent

7.2 Site Personnel - .1405 (a)(6)(B)

Composting Supervisor:	Supervises site operations and site personnel under the direction of the Landfill Superintendent.
Scale House Operator:	Weighs, records, and directs incoming vehicles.
Equipment Operators (3):	Operates various equipment associated with composting operations.
Sanitation Worker:	Performs labor type tasks at the site.

7.3 Operation Plan - .1405 (a)(6)(C)

A complete and current Operations Plan, prepared by the City of High Point, is presented in **Appendix D**. The Operations Plan is the operational guideline for the facility, presented here for documentation and completeness of the permit renewal application. The Operations Plan is updated periodically by the City. Other than some minor wording changes, the only changes since the last permit renewal are the designated Composting Supervisor (**Appendix D**, page 2) and the proposed addition of municipal sludge incinerator ash as an amendment to the stabilized compost (**Appendix D**, page 5).

7.4 Adverse Weather - .1405 (a)(6)(D)

The Operations Plan (**Appendix D**, page 4) provides a description of inclement weather precautions that are applicable to the ICF. The City will mobilize additional manpower and equipment as needed to maintain access to the facility; however, it is anticipated that during periods of inclement weather the need to access the facility to receive or distribute compost and mulch materials will be slight. Under conditions of severe weather, the Operations Plan makes a provision for the facility to close.

7.5 Nuisance Control - .1405 (a)(6)(E)

The Operations Plan (**Appendix D**, page 4) provides a description of actions to eliminate nuisances, including but not limited to noise, vectors, air-borne particulates, and odors. Operations personnel are sensitive to their neighbors and have consistently maintained a good record of compliance with regulatory and public relations issues.

7.6 Product Distribution - .1405 (a)(6)(F)

The finished products (mulch and compost) are distributed to the public for various uses. A majority of the material is sold to commercial landscapers and other professional users. A relative small portion of the material is given away to individuals. The materials are distributed in commercial trucks or private vehicles. There is adequate on-site space for storage of finished materials that cannot be distributed in a year's time. Finished stocks are rotated so that material does not accumulate for long periods of time.

8.0 FACILITY REPORT - .1405 (a)(7)(A)

8.1 Design Capacity - .1405 (a)(7)(A)

The ultimate design capacity of the ICF is approximately 25,000 tpy or 100 tpd (based on 250 working days per year). The current utilization is approximately 20,000 tpy (80 tpd). The utilization varies slightly with public need for the services. The excess capacity is available in the event of disaster, but no plans are under consideration at present to increase the through-put of the facility.

8.2 Process Flow Diagram - .1405 (a)(7)(B)

A process flow diagram for the ICF is presented in **Appendix A**. This diagram lists the general information required for equipment and feed stocks, including typical material quantities.

8.3 Measurement and Processing - .1405 (a)(7)(C)

The facility Operations Plan (**Appendix D**, page 8) provides a complete description of procedures for weighting, depositing, and processing the incoming materials. Each incoming load shall be weighted and inspected by the scale house operator and/or the site supervisor, then directed to the appropriate receiving area by classification.

Initial processing consists of grinding or placing in windrows, as appropriate to material classification. Windrows shall be constructed on slopes to promote positive drainage. Trash and other unsuitable materials screened from the feed stocks are placed into a 40-yard roll-off box and taken to Kersey Valley Landfill for disposal.

Site operations tend to be seasonal, that is, leaves and brown stocks typically are received in the autumn, while grass clippings and green stocks are received in the spring and summer months. The windrows for compost are formed in the autumn using leaves, then grass clippings are blended into the windrows using front-end loaders and/or specialized windrow turning equipment (described elsewhere in this report). After composting for the required duration and temperature, the composted materials are stockpiled for final curing. Woody feed stocks are processed into mulch; these materials are placed directly into finished stockpiles after grinding and screening.

8.4 Process Duration - .1405 (a)(7)(D)

For composts, a minimum process duration of nine months is provided for composting and curing. Some materials may stay on site longer during the distribution phase. Woody mulch materials are processed and distributed as dictated by public use.

8.5 Material Monitoring - .1405 (a)(7)(E)

The facility Operations Plan (**Appendix D**, page 12) describes the procedure for temperature monitoring, e.g. equipment and locations. Windrow temperatures are taken daily at 100-foot spacings, using a commercially available thermometer probe.

8.6 Temperature Control - .1405 (a)(7)(F)

The facility Operations Plan (**Appendix D**, page 12) describes the procedure for temperature control, subject to daily measurement by the facility staff. The Operations Plan specifies that the compost will be maintained at a temperature of at least 131°F (55°C) for a minimum of three days. The plan makes a provision to turn the materials to prevent overheating and for the facility staff to troubleshoot and correct any problems that result in low temperatures.

8.7 Material Aeration - .1405 (a)(7)(G)

Materials are turned and aerated with a SCAT Model 482B or 483B tow type compost turner. Manufacturer's specifications do not give the machine capacity, but the facility operators report that they can process (turn) 100 cubic yards of material per hour (600 to 800 c.y. per day).

8.8 Surface Water Control - .1405 (a)(7)(H)

Storm water run-on and run-off is controlled by best management practices in accordance with the approved Sedimentation and Erosion Control Plan. This consists of a system of berms, ditches, and sediment basins located as shown on the facility plan (**Appendix B**). Regular inspection reports indicate satisfactory historical performance over the operational life of the facility. An example report is provided in **Appendix A**.

8.9 Product Information - .1405 (a)(8)

A handbill provided by the City of High Point to its customers, which describes the product and its recommended uses, is presented in **Appendix A**.

8.10 Equipment Specifications - .1405 (a)(9)

Equipment used on the site is described in the Operations Plan (**Appendix D**, page 16). Manufacturer's specification sheets are provided for each listed piece of equipment in **Appendix A**.

9.0 OPERATIONS AND MAINTENANCE - .1405 (a)(10)

9.1 Quality Assurance Plan - .1405 (a)(10)(A)

The Operations Plan (**Appendix D**, page 8) describes the procedures for material acceptance and preparation. Windrow construction is detailed on page 9, and stabilization and curing procedures are detailed beginning on page 13. Windrow quality control monitoring and reporting procedures are provided beginning on page 14. Temperature reporting procedures are described on page 12. Final product quality control is assured through careful attention to the material acceptance criteria and on-site processing and screening. Analytical testing of the final product is typically not required at Type 1 facilities. Record keeping and reporting requirements are discussed in Section 12.0.

9.2 Contingency Plan - .1405 (a)(10)(B)

The contingency plan for mechanical breakdown of equipment is to substitute equipment from another solid waste unit under the City's jurisdiction or, at the discretion of the

Landfill Superintendent, activities at the ICF may be temporarily suspended (without adversely affecting long-term site operations) while equipment repairs are made.

The Operations Plan (**Appendix D**, page 18) describes the contingency plan for non-conforming/unauthorized material. If an off-spec material can be processed into an acceptable material, that material is segregated and stored separately for later processing. All unacceptable material is rejected and haulers are directed to the Kersey Valley Landfill, located on Kivett Drive.

The facility handles no liquid wastes, eliminating the concern for spillage. A contingency for fuel spills includes calling the proper authorities to contain, report, and clean up the spill. Any compost that might be affected by a fuel spill shall be removed from the processing area and disposed off-site along with any soil or absorbent material. Contingencies for other undesirable conditions such as fire are described on page 18 of the Operations Plan, and for vectors and odors on pages 4 and 14 of the Plan.

9.3 Operational Compliance - .1405 (a)(10)(C)

An explanation of how the facility does (and will continue to) comply with the requirements of Rule .1406 will be given in the next section of this report.

10.0 OPERATIONAL REQUIREMENTS - .1406

10.1 Plan and Permit Requirements - .1406 (1)

Other than periodic upgrades and improvements to site infrastructure (see Section 6.0), the facility construction has been completed and no significant operational changes are planned. The Operation Plan, permit documents, and records are kept on site at all times.

10.2 Erosion Control - .1406 (2)

The site is operated in accordance with the approved Sediment and Erosion Control permit issued by NC DENR Division of Land Quality (NC DLQ). Periodic inspection shall be conducted by the ICF staff, e.g. after heavy rains, to verify that no erosion has taken place, and any erosion noted shall be corrected.

10.3 Surface Water Diversion - .1406 (3)

Surface water is diverted from the active operational areas by way of a system of berms and ditches. All site grades promote positive drainage away from the operational areas.

10.4 Leachate - .1406 (4)

The nature of the waste material does not generate leachate. Due to the facility type (Type 1) the drainage from active composting areas and stockpiles is managed as storm water.

10.5 Access and Security - .1406 (5)

Access is limited to the public with a fully enclosed fence and entrance gate. The site is manned full-time during normal working hours. The site is locked during non-working hours. The entrance road is paved and allows all-weather access.

10.6 Waste Acceptance - .1406 (6)

The waste acceptance criteria is detailed in the Operations Plan (**Appendix D**, page 8). The site has been successfully operated in accordance with this plan with a history of regulatory compliance.

10.7 Safety Requirements - .1406 (7)

Safety issues pertaining to the operation of the ICF are outlined in the Operations Plan (**Appendix D**, page 17). No open fires are permitted at the facility. The Operations Plan details procedures for personnel training and the proper response in the event of fire.

10.8 Sign Requirements - .1406 (8)

All required signs are posted on the premises, including the permit number, hours of operation, vehicle traffic flow, waste acceptance criteria, and emergency contact numbers.

10.9 Temperature Monitoring Requirements - .1406 (9) and (10)

Please refer to Section 8.6 of this document.

10.10 Miscellaneous Requirements - .1406 (14)

Finished compost and allowable uses meet the requirements of Rule .1407 (see Section 11). The compost does not contain non-compostable or unacceptable material (such materials are screened out of the finished product and disposed in an appropriate solid waste landfill).

11.0 MATERIAL CLASSIFICATION AND DISTRIBUTION - .1407

The solid waste compost and mulch produced at the Ingleside Compost Facility, a Type 1 facility, is comprised entirely of vegetative wastes (leaves, grass, limbs, small trees,

stumps) which are processed according to all applicable regulatory requirements. The materials, by nature, contain minimal pathogenic organisms, are free from offensive odors, and contain no sharp objects that would be injurious to the public. The site and production process are managed under close daily supervision in order to obtain the highest quality finished product. The materials produced from a Type 1 facility do not have a regulatory requirement for analytical testing. Based on the nature of the material and the closely controlled process of production, the finished product has historically met the requirements for distribution for a Type 1 facility.

12.0 TESTING AND REPORTING - .1408

12.1 Composite Sample - .1408 (a)

Sampling and analytical testing are generally not required for Type 1 facilities. However, testing of municipal sludge incinerator ash will be required should the City choose to use this material as an amendment to stabilized compost. The incinerator ash will be tested quarterly for total metals (including arsenic, cadmium, lead, mercury, molybdenum, nickel, and selenium) prior to shipment to the site and must meet the criteria shown in the Operations Manual (**Appendix D**, Table 1). Also, a NC Department of Agriculture (NCDA) waste analysis (including analyses for nutrients, metals, and calcium carbonate equivalence) will be performed for every 1,000 CY of ash to be delivered to the site.

12.2 Record Keeping - .1408 (b)

On-site facility records are maintained by the operator. These records include daily scale house records of incoming material and distributed finished products, as well as weekly records on temperature measurements and information on the windrows (e.g. pile dimensions, moisture, and turning frequency). A copy of the weekly operations form is presented in Operation Plan. Scale house records are kept in the facility office on site. The computerized scale house records, tabulated monthly, provide all of the following information:

- Quantity, type, and source of incoming materials.
- Test data for municipal sludge incinerator ash (if used as amendment).
- Quantity and type of material processed into compost (only one type is produced) or mulch, by product classification.
- Quantity and type of material removed for use, by product classification and market segment, or removed for disposal (all non-suitable material is disposed at the Kersey Valley Landfill).

12.3 Annual Reporting - .1408 (c)

Annual reports are prepared for each fiscal year beginning July 1 to June 30 and are submitted by the facility owner by each following August 1. The computerized scale

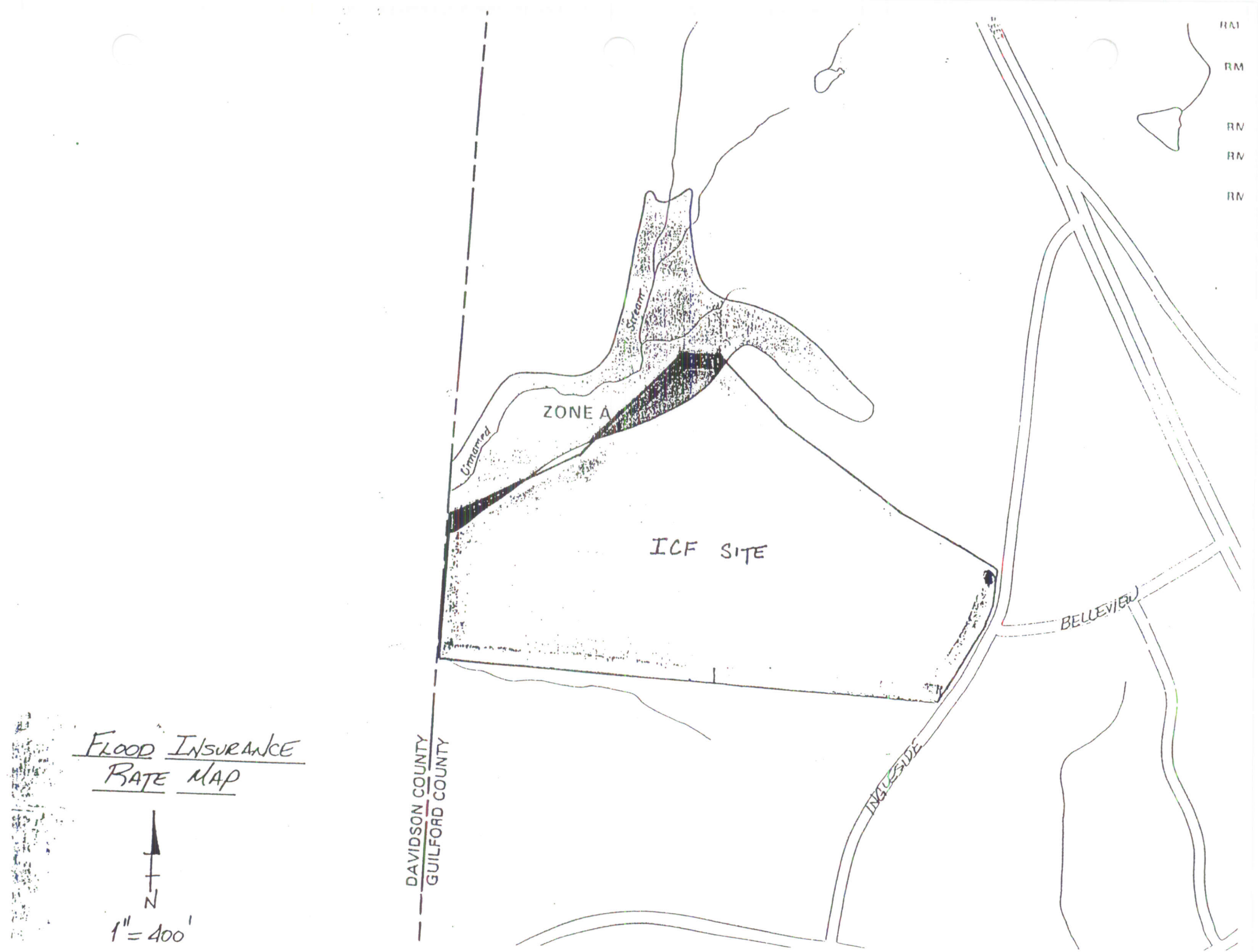
house records are tabulated for the period for an Annual Report (see **Appendix A**), which presents the following information:

- The facility name, address, permit number.
- Total quantity in tons of wastes received from local governments of origin.
- The total quantity in tons and type of compost (one type is produced) and mulch processed at the facility, by product classification.
- The total quantity in tons and by type of products removed from the facility for use and the market percentages.
- Monthly temperature readings (tabulated weekly data).

Copies of the Annual Report are kept at the site. Note that there are no sludges accepted at the ICF and no analytical testing is required (except for municipal sludge incinerator ash).

12.4 Yearly Recycling Totals - .1408 (d)

Yearly totals of wastes received and composted are reported back to the local governments of origin for annual recycling reporting.


RM
RM
RM
RM
RM
Stream
Unnamed
ZONE A
ICF SITE
BELLEVIEW
INGLESIDE
DAVIDSON COUNTY
GUILFORD COUNTY
FLOOD INSURANCE
RATE MAP
N
1" = 400'

CERTIFICATE OF PLAN APPROVAL

The posting of this certificate certifies that an erosion and sedimentation control plan has been approved for this project by the North Carolina Department of Environment, Health, and Natural Resources in accordance with North Carolina General Statute 113A - 57 (4) and 113A - 54 (d) (4) and North Carolina Administrative Code, Title 15A, Chapter 4B.0007 (c). This certificate must be posted at the primary entrance of the job site before construction begins and until establishment of permanent groundcover as required by North Carolina Administrative Code, Title 15A, Chapter 4B.0027(b).

INGLESIDE COMPOST FACILITY - GUILFORD

Project Name and Location

3-17-93

Date of Plan Approval

Asst Regional Engineer

Case #_____

SEDIMENTATION INSPECTION REPORT

NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

LAND QUALITY SECTION: 585 Waughtown St. Winston-Salem, NC 27107 (336)771-4600

County: Guilford Project: CHP Ingleside Compost Facility River Basin Cape Fear

Person Financially Responsible: City of High Point

Address: P.O. Box 230, High Point, NC 27261

1. Project Location: Ingleside Drive Pictures: Yes ☐ No ☒ Prints ☐ Slides ☐ Video ☐

2. Weather and Soil Conditions: Sunny 60's Soil dry

3. **Is site currently under notice of violation?** Yes ☐ No ☒

4. Is the site in compliance with the S.P.C.A. and the rules? Yes ☒ No ☐ If No, check violations below:

5. Violations:

☐ a. No approved plan, G.S. 113A-57(4) and 15A NCAC 4B.0007(c)

☐ b. Failure to follow approved plan, G.S. 113A-61.1

☐ c. Failure to submit revised plan, G.S. 113A -54.1(b) and 15A NCAC 4B.0018(a)

☐ d. Failure to provide adequate groundcover, G.S. 113A-57(3) and 15A NCAC 4B.0007(b) or 15A NCAC 4B.0024(e)

☐ e. Insufficient measures to retain sediment on site, G.S. 113A-57(3)

☐ f. Failure to take all reasonable measures, 15A NCAC 4B.0005

☐ g. Inadequate buffer zone, G.S. 113A-57(1)

☐ h. Graded slopes and fills too steep, G.S. 113A-57(2) or 15A NCAC 4B.0024 (d)

☐ i. Unprotected exposed slopes, G.S. 113A-57(2)

☐ j. Failure to maintain erosion control measures, 15A NCAC 4B.0013

☐ k. Other (describe)_____

6. Has sedimentation damage occurred since the last inspection? Yes ☐ If yes, where? (check all that apply): No ☒

Lake/natural watercourse on the tract ☐ Lake/natural watercourse off the tract ☐ Other property ☐

Description:_____

Degree of damage: Slight ☐ Moderate ☐ Severe ☐

7. Contact made with (Name) Steve Poindexter Title_____

Inspection report given ☒ or sent ☐ to the Person Financially Responsible Date given/sent _____

8. **Corrective actions needed:** N/A

9. Comments: Sediment Trap cleaned out and rebuilt as requested in 7-30-98 inspection.

Rep. by: G. Gray Harris Jr. Others present:_____

Date of Inspection: 12-1-98 Time arriving at site: 10:40 Am Time leaving site: 11:00 Am

cc: _____, _____, _____

CITY OF HIGH POINT
NORTH CAROLINA

June 28, 1999

David Garrett
G. N. Richardson & Associates
425 N. Boylan Avenue
Raleigh, NC 27603

Re: Ingleside Dr. Composting Facility

Dear Mr. Garrett:

This letter will advise you that the Ingleside Composting Facility was approved and established in accordance with the City of High Point Development Ordinance. The facility received a Special Use Permit on May 21, 1992 in accordance with Development Ordinance procedures to allow a non-hazardous solid waste disposal facility in an Agricultural (AG) District. To the best of my knowledge, this facility continues to meet applicable zoning requirements.

If you have any questions please feel free to contact me at 336-883-3538.

Sincerely,

Robert L. Robbins

Robert L. Robbins, AICP
Development Administrator
Department of Planning and Development

Cc: SUP 92-9 file

CITY OF HIGH POINT
NORTH CAROLINA

SPECIAL USE PERMIT 92-9

CITY OF HIGH POINT, NORTH CAROLINA

THE HIGH POINT CITY COUNCIL, PURSUANT TO TITLE 9, CHAPTER 3 OF THE CITY CODE, APPROVED A SPECIAL USE PERMIT FOR THE FOLLOWING USE, SUBJECT TO THE CONDITION(S) LISTED BELOW ON MAY 21, 1992.

USE

To allow a nonhazardous solid waste disposal facility in an Agricultural (AG) District.

CONDITION

Development of the site shall be pursuant to Section 9-4-5(a) of the Development Ordinance and in accordance with the site plan approved by City Council.

The property is located on the west side of Ingleside Drive opposite the western terminus of West Bellevue Drive.

It is known as County Tax Map Number 299, Block Number 1, Lot Number 1.

DESCRIPTION OF PROPERTY: Being one lot totalling approximately 32.80 acres as shown on Guilford County Tax Map 229, Block 1, Lot 1. The property is located on the west side of Ingleside Drive opposite the western terminus of West Bellevue Drive.

If the property involved in this Special Use Permit is used as approved, the property described in this Special Use Permit will be subject to such conditions as imposed on said Special Use, unless subsequently changed or amended as provided for in Title 9, Chapter 3 of the City Code. The Special Use Permit and its conditions shall bind the owner(s) of the above described property and any successors in interest.

The issuance of a Special Use Permit shall not allow the development of the site for the Special Use, but shall merely authorize the filing of an application for a required building permit, site plan, subdivision or other approval required by the Technical Review Committee.

Construction of the project specified within this Permit shall begin within eighteen (18) months from the date of City Council approval or the Special Use Permit shall expire.

Director of Public Works — June 1, 1992
Date

Director of Planning and Development — June 1, 1992
Date

City Manager — June 2, 1992
Date

Attest: Patricia Paris Simmons
Patricia Paris Simmons
City Clerk

CITY OF HIGH POINT NORTH CAROLINA

State of North Carolina

Department of Environment and Natural Resources
Division of Waste Management

SOLID WASTE COMPOST FACILITY ANNUAL REPORT

FOR THE PERIOD OF JULY 1, 2002- JUNE 30, 2003

A copy of this report must be sent to the county manager of each county from which waste was received.

INGLESIDE COMPOST FACILITY
PO BOX 230
HIGH POINT, NC 27261
Attn: STEVE PENDRY

Phone: 336-883-3215
Fax: 336-883-3419

Permit: 4110 Id: P0491

If you have questions or require assistance in completing this report, contact your Regional Waste Management Specialist. According to (G.S. 130A-309D(b)) completed forms must be returned by August 1, 2003. Please mail reports to your Regional Waste Management Specialist listed below.

Hugh Jernigan
585 Waughtown Street
Winston-Salem, NC 27107-2241 (336) 771-4600

Tipping Fee $ 36.00 /Ton (Attach a schedule of tipping fees if appropriate.)

GS 130A-309D(b) states that on or before 1 August, the owner of a privately owned solid waste management facility shall report to the Department, for the previous year beginning 1 July and ending 30 June, the amount of the weight of solid waste that was received at the facility.

1. Indicate waste received for composting at this facility during the period of July 1, 2002, through June 30, 2003 by county of origin.

MONTH	TONS FROM Guilford COUNTY	TONS FROM Randolph COUNTY	TONS FROM Davidson/Forsyth COUNTY		TOTAL
July	851.92	.60	0	.43	852.95
August	547.12	.22	.28	.06	547.68
September	749.63	0	.18	.00	749.81
October	739.24	.18	.19	.24	739.85
November	1335.89	.24	0	.57	1336.70
December	2747.10	3.87	12.21	.94	2764.12
January	2926.91	0	0	.00	2926.91
February	1364.09	0	0	.00	1364.09
March	3890.65	2.71	7.30	9.19	3909.85
April	2018.05	.84	1.21	2.17	2022.27
May	1550.38	2.66	1.18	2.40	1556.62
June	1252.56	1.66	1.72	3.25	1259.19
TOTAL	19973.54	12.98	24.27	19.25	20030.04

(Photocopy the Table and use when waste is received from more than three counties.)

2. What type and quantity of waste was composted by your facility?

Materials COMPOSTED	Tons
Grass and Leaves	6373.96
Brush and Limbs	13655.78
TOTAL	20029.74

3. What type and quantity of compost was produced by your facility?

Type of Compost PRODUCED by Product Classification	Tons
Compost	3000.00
Mulch	13655.78
Total	16655.78

4. What type and quantity of Compost was removed or disposed by your facility?

Type of Compost REMOVED or DISPOSED by Product Classification	Tons
Compost	2011.20
Mulch	8341.63
Total	10351.83

5. How was the final product ultimately used? If the final product had multiple uses, please indicate approximate percentages of each.

Sold to Citizens	50%
City use	15%
Sales to Commerical	35%

6. Please also attach results of monthly temperature monitoring for the period of July 1, 2002 thru June 30, 2003.

Other Comments

We would appreciate your comments about this report or other matters regarding solid waste management in North Carolina. Thank you for your cooperation. (Attach additional sheets if needed.)

** This report must be sent to the Regional Waste Management Specialist for your area. **

CERTIFICATION: I certify that the information provided is an accurate representation of the activity at this facility.

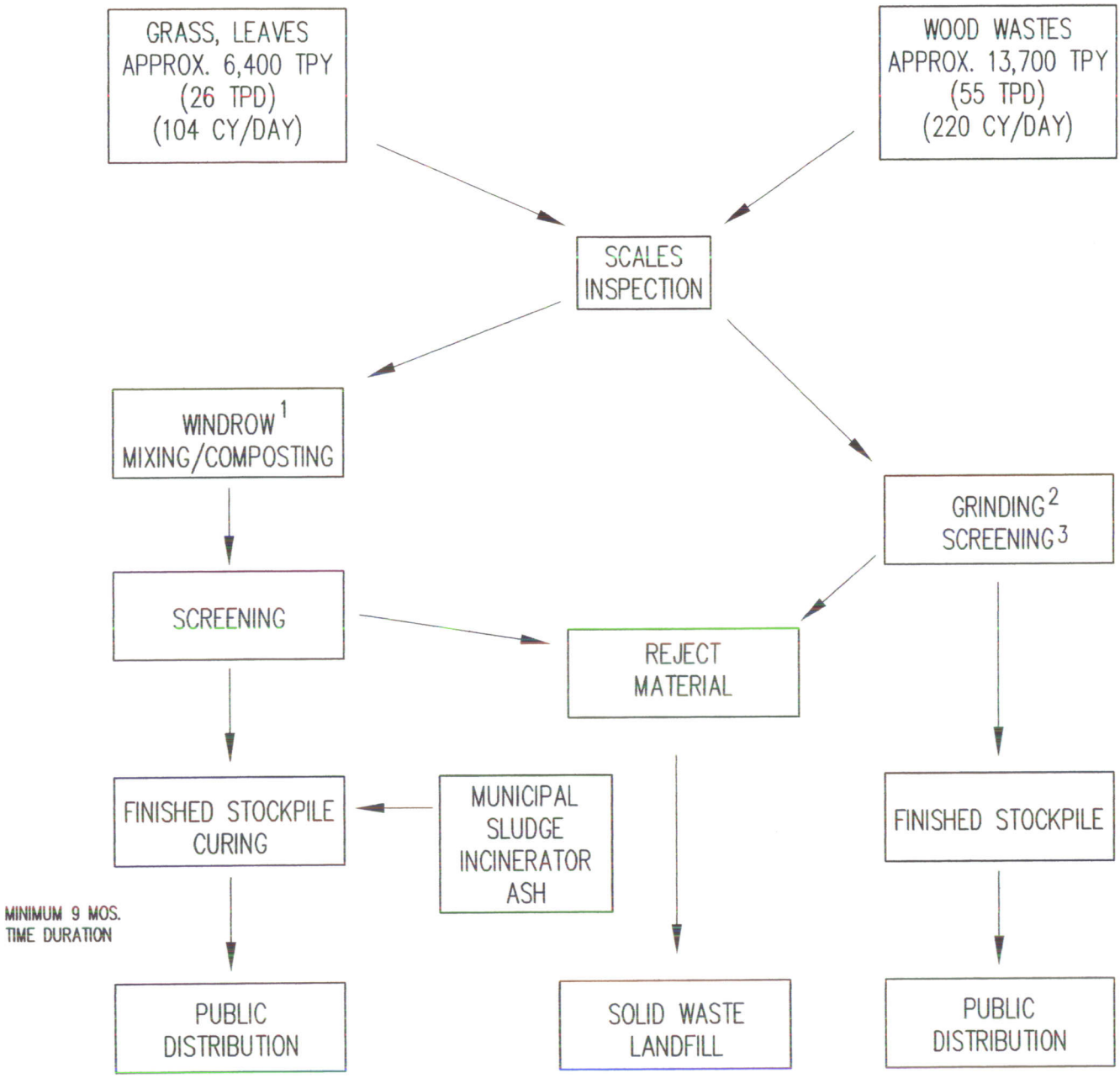
Signature: Steven M Pendry Date: 7/03

Name STEVEN M. PENDRY Phone (336) 883-3434
(Print legibly)

City of High Point – Ingleside Composting – windrows and temperatures

Date	Number of rows	Avr. Temp
7/1-7/5/02	11	126
7/8-7/12/02	16	129
7/15-7/19/02	16	131
7/22-7/26/02	15	133
7/29-8/2/02	14	135
8/5-8/9/02	13	135
8/12-8/16/02	14	136
8/26-8/30/02	11	135
9/3-9/6/02	11	128
9/9-9/13/02	10	126
9/16-9/20/02	11	133
9/23-9/27/02	10	127
9/30-10/4/02	9	133
10/7-10/11/02	9	135
10/14-10/18/02	11	132
10/21-10/25/02	11	123
10/28-11/1/02	11	125
11/4-11/8/02	8	115
11/11-11/15/02	8	116
11/18-11/22/02	8	119
11/25-11/29/02	8	115
12/2-12/06/02	8	105
12/10-12/14/02	8	104
12/16-12/20/02	8	96
12/26-12/27/02	5	94
12/30-01/04/03	5	94
01/06-01/10/03	5	98
01/13-01/17/03	1	106
01/20-01/24/03	1	108
01/27-01/31/03	1	102
05/07-05/09/03	4	105
05/12-05/16/03	4	119
05/19-05/23/03	4	120
05/27-05/30/03	4	117
06/02-06/06/03	4	126
06/09-06/13/03	5	122
06/16-06/20/03	8	121
06/23-06/27/03	8	126
06/30-07/03/03	8	134

PROCESS FLOW DIAGRAM
INGLESIDE COMPOSTING FACILITY
HIGH POINT, NORTH CAROLINA



MAJOR EQUIPMENT

1. SCAT ENGINEERING MOD. 482-B WINDROW TURNER
2. MORBARK MOD 1400 TUBGRINDER
3. SATELLITE MOD. 11A PORTABLE SCREEN

OTHER EQUIPMENT CONSISTS OF A JD624G FRONT-END LOADER
AND A KOMATSU WA 320-3 FRONT-END LOADER

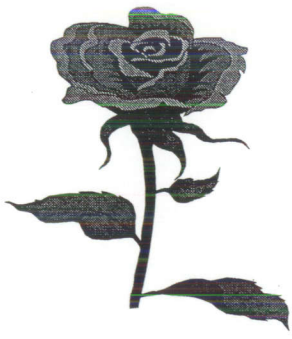
NOTE: ESTIMATED DESIGN CAPACITY = 25,000 TPY (100 TPD)
CURRENT AVERAGE UTILIZATION = 20,000 TPY (80 TPD)

CITY OF HIGH POINT
NORTH CAROLINA

The compost and mulch produced at Ingleside Compost Facility are Type 1 facility products:

- Contain minimal pathogenic organisms
- Are free from offensive odor
- Contain no sharp particles that would cause injury to persons handling compost
- Have unrestricted applications and distributions

- Recommended uses
  - soil additives for gardens and lawns
  - use for natural areas around shrubbery and flowers
  - newer mulch should not be placed around young plants



P.O. BOX 230, 211 S. HAMILTON STREET, HIGH POINT, NORTH CAROLINA 27261 FAX 910-883-3419 TDD 910-883-8517

Morbark Tub Grinder

Product Information

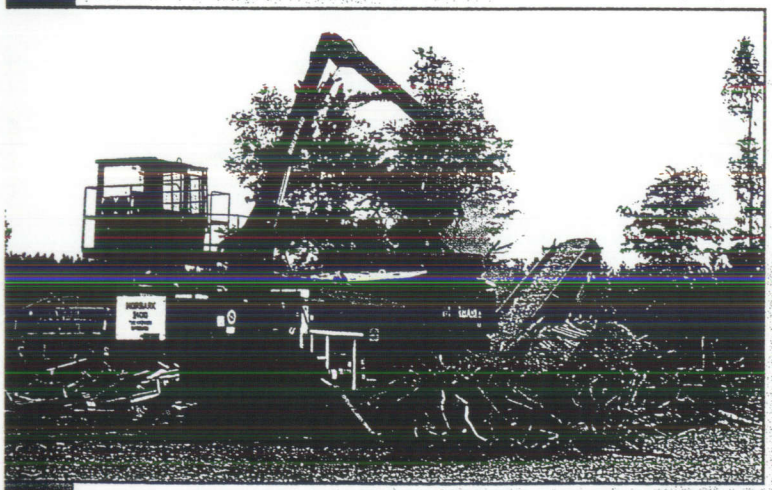
Model 1400

When the application calls for high volume grinding—and a standard 11 or 12-foot tub grinder can't meet the requirements—the Morbark Model 1400 Tub Grinder answers the call. The 1400 has the power, ruggedness and technology necessary to process wood and other organic waste at rates up to **400 cubic yards or 75 to 100 tons per hour,** depending on the type of material.

This self-contained, portable unit is fed with its own knuckleboom loader, offering 14,000 pounds of lifting power at 10'. Morbark's telescoping cab elevates to an operating height of 15'6", providing the operator with excellent visibility for material processing. Protecting the engine and clutch from shock or overload is Morbark's high torque reduction gear box with torque limiter.

The Model 1400 can also be equipped with an optional 159 horsepower auxiliary power unit, for all hydraulic functions. This option results in 800 horsepower being directly transmitted to the hammermill, resulting in even higher production.

For high volume processing of stumps, logs, brush, pallets, yard waste, demolition debris and up to 1,300 railroad ties per hour, the Morbark 1400 Tub Grinder is in a class by itself.



Morbark Sales Corporation

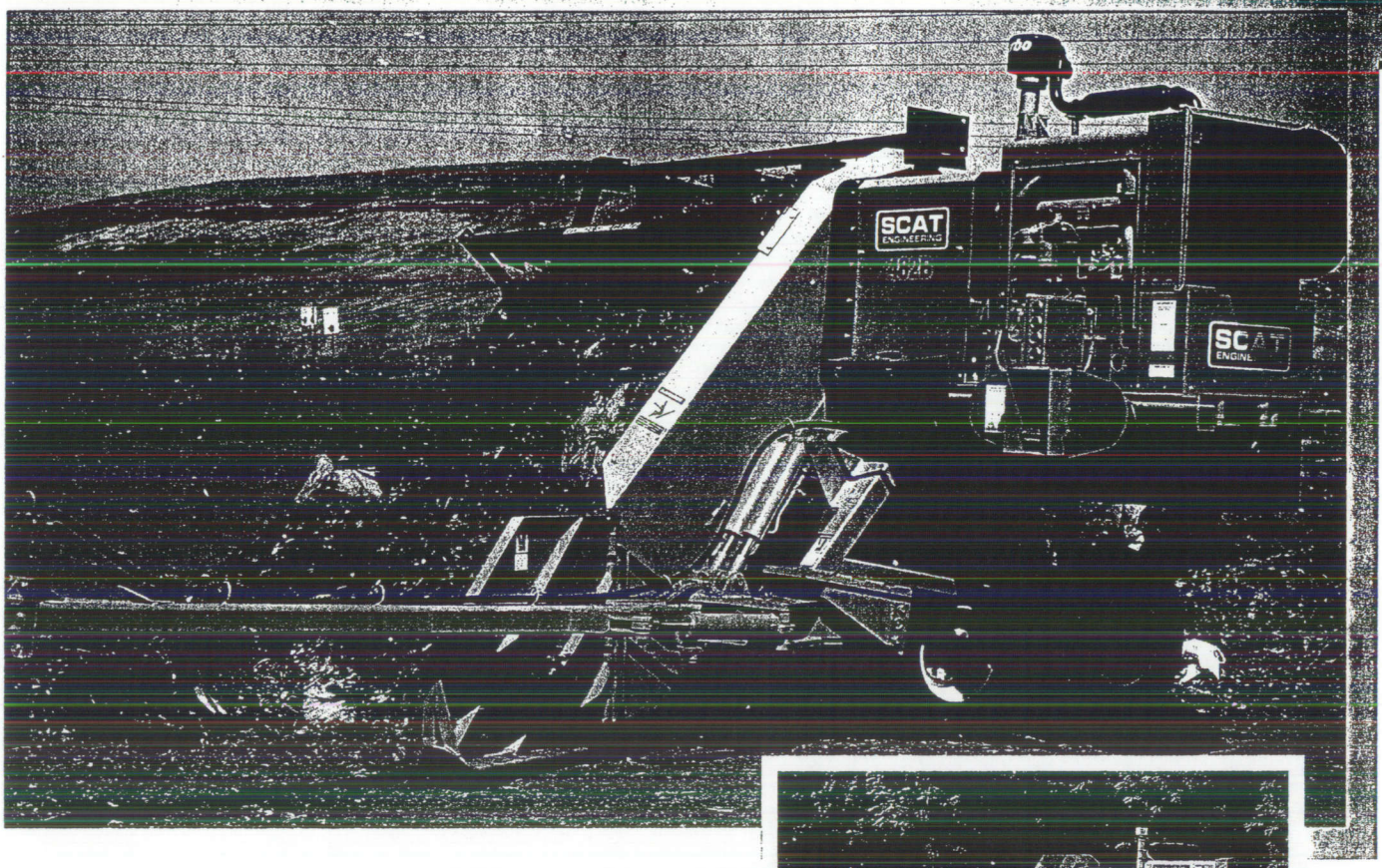
8507 S. Winn Road
P.O. Box 1000
Winn, MI 48896

(800) 233-6065
(517) 866-2381
Fax (517) 866-2280

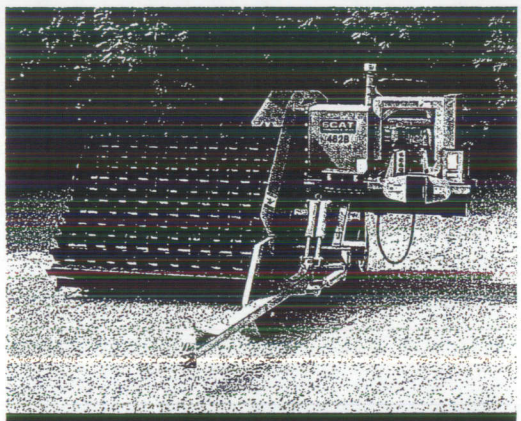
MORBARK WINN, MICHIGAN

SCAT® ENGINEERING

SCAT 482B & 483B
Tow-Type Compost and Bioremediation Turners



The unique Elevating Face allows taller windrows and *maximizes the blending of materials.*



- Optimal Aeration
- Superior Mixing
- Complete Inversion
- Greater Capacity
- Accelerated Bio Reduction
- Higher Quality Compost
- Thorough Bioremediation

SCAT handles material with ease.

In contrast to methods which tend to compress or compact materials, SCAT's unique elevating face gently turns the material in high windrows with optimal aeration and mixing. Taller windrows together with maximum aeration and mixing result in better inner thermal currents, shorter bio reduction time, better odor control, higher quality compost, and efficient use of available space.

- Able to service multiple sites
- Minimizes compaction/compression of windrow
- Debagging Teeth and Bag-Breaking Bar optional
- Versatile and economical

SCAT Turners are easy to use and have low operating costs per cubic yard/meter. SCAT Turners help provide optimal composting and bioremediation environments.

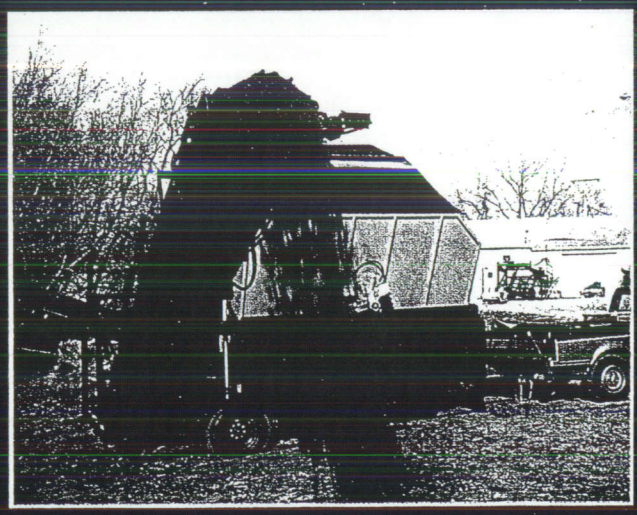
SATELLITE SCREENS

A TRULY EFFECTIVE, MULTI- PURPOSE, PORTABLE SCREENING MACHINE

Photos show Model 11A with available options

APPLICATIONS

- Compost
- Top Soil
- Backfill Dirt
- Aggregates
- Sawdust
- Wood Chips
- Mulch
- Bark
- Granular Materials
- Moist or Dry Materials
- Many Others

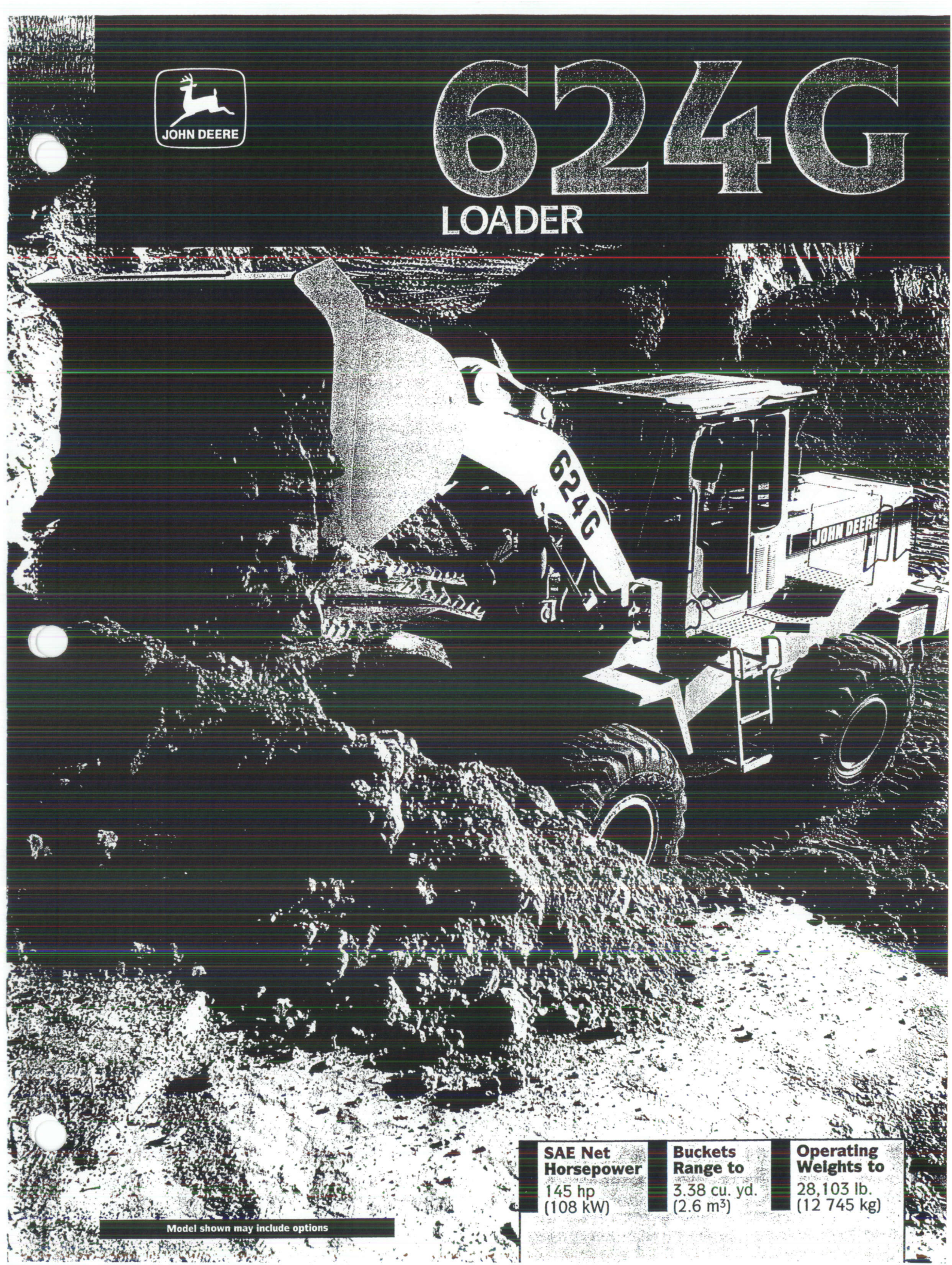


SATELLITE SCREENS

JOHN DEERE

624G

LOADER



Model shown may include options

SAE Net Horsepower	Buckets Range to	Operating Weights to
145 hp (108 kW)	3.38 cu. yd. (2.6 m³)	28,103 lb. (12 745 kg)

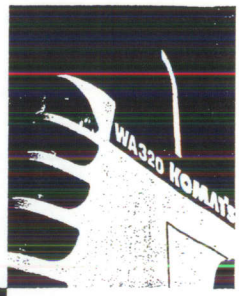
WA320-3

KOMATSU

BUCKET CAPACITIES

3.0 - 4.2 yd³

2.3 - 3.2 m³



WA320-3

WHEEL LOADER

LEGEND

Property Owned by the City of High Point

Current Zoning
Agriculture

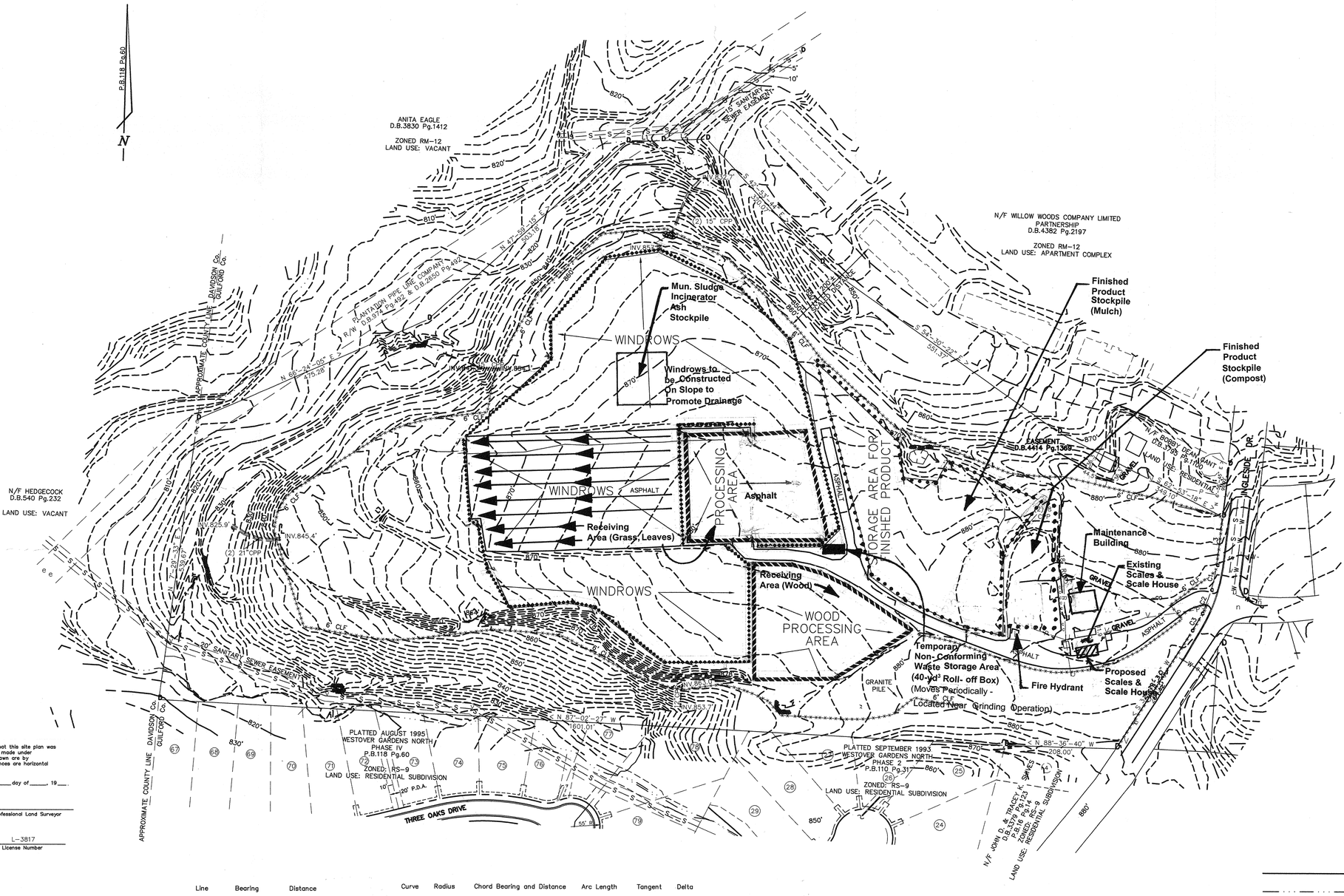
N

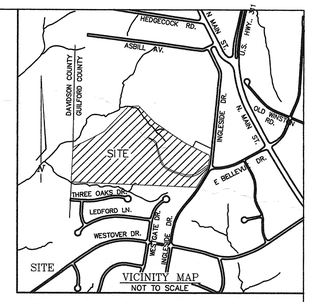
November 1998
Scale: 1"=400'

Department of Planning and Development

Geographic Information Systems

g:\maps\projects\pservice\sol\wstgr.apr





I, LAWRENCE A. DAMBA, certify that this site plan was drawn from actual field locations made under my supervision; that all areas shown are by coordinate computation; all distances are horizontal ground unless otherwise noted.

Witness my hand and seal this ____ day of ____, 19___.

NORTH CAROLINA PROFESSIONAL SEAL L-3817 LAND SURVEYOR LAWRENCE A. DAMBA

Professional Land Surveyor

L-3817
License Number

Line	Bearing	Distance
L1	N 87°-37'-52" E	66.06'
L2	N 87°-42'-36" E	84.05'
L3	S 7°-01'-28" W	94.72'

Curve	Radius	Chord Bearing and Distance	Arc Length	Tangent	Delta
C1	323.34'	S 12°-43'-59" W 49.17'	49.22'	24.66'	8°-43'-16"
C2	323.34'	S 21°-22'-18" W 48.24'	48.28'	24.19'	8°-33'-22"
C3	323.34'	S 29°-52'-39" W 37.54'	37.56'	18.80'	6°-39'-21"

ELECTRONICALLY TRANSMITTED DRAWINGS

THIS INFORMATION IS PASSED TO YOU VIA ELECTRONIC MEDIA.
THIS DOCUMENT ORIGINALLY ISSUED AND SEALED BY LAWRENCE A. DAMBA, L-3817, ON FEB. 3, 1999.
THIS MEDIA SHALL NOT BE CONSIDERED A CERTIFIED DOCUMENT.

Note:

This drawing was modified on behalf of the City of High Point Department of Public Services by G.N. Richardson & Associates, Inc. in July 1999 (Facility Labeling), March 2004 (Deleted Equipment Shed; Added Maintenance Building and Proposed Scales & Scale House), and December 2004 (Added Municipal Sludge Incinerator Ash Stockpile).

SITE DATA

1. TOTAL NUMBER OF LOTS = 1
2. SITE ZONING = AG
3. LAND USE = SOLID WASTE COMPOST FACILITIES
4. AREA = 34.432 acres±

LEGEND

⊙ EIP	EXISTING IRON PIN FOUND	ACM	CONCRETE MONUMENT
● NIP	NEW IRON PIN SET	CR/W DISK	RIGHT OF WAY DISK
C/L	CENTERLINE	V	POWER POLE
R/W	RIGHT-OF-WAY	U	LIGHT POLE
Sq. Ft.	SQUARE FEET	A	CATCH BASIN
D.B.	DEED BOOK	AGM	GAS METER
P.B.	PLAT BOOK	I GV	GAS VALVE
P.P.	POWER POLE	V	SANITARY SEWER MANHOLE
RCP	REINFORCED CONCRETE PIPE	vCO	SEWER LINE CLEAN OUT
CMP	CORRUGATED METAL PIPE	U	STORM DRAIN MANHOLE
CPP	CORRUGATED PLASTIC PIPE	A	YARD INLET
e	UNDERGROUND GAS LINE MARKER	A	CATCH BASIN
		L	FIRE HYDRANT
	RIP RAP	n	WATER VALVE
6' CLF	6 FOOT CHAIN LINK FENCE	AWM	WATER METER
		WELL	WELL

PROPERTY LINE
C/L OF CREEK
C/L OF DITCH
FENCE
SANITARY SEWER (EXISTING)
STORM SEWER (EXISTING)
OVERHEAD POWER LINE

NOTES
1. THE BOUNDARY WAS FIELD SURVEYED, EXISTING UTILITIES WERE FIELD LOCATED, THE TOPOGRAPHY WAS TAKEN FROM THE "PLANIMETRIC SURVEY BY THE CITY OF HIGH POINT" SHEET NUMBERS 6891.01 & 6892.03 LAST REVISED DEC., 1997 AND FIELD LOCATED INSIDE OF 6' CHAIN LINK FENCE.
2. TOTAL AREA = 34.432 acres±
3. DEED REFERENCE D.B.666 Pg.115

JAMESTOWN ENGINEERING GROUP, INC.
CONSULTING ENGINEERS
117 EAST MAIN STREET
P.O. BOX 365
JAMESTOWN, N.C. 27282
Telephone (336) 886-5523

REV.	DATE	DESCRIPTION
	2/5/99	ADDED LOADING AREAS

LAD	JOB NUMBER 98270
	DATE 1/18/98
	DESIGNED
	DRAWN LAD
	CHECKED
BY	SCALE 1"=100'

SITE PLAN FOR
THE CITY OF HIGH POINT SOLID WASTE COMPOST FACILITIES
INGLESIDE DRIVE
HIGH POINT, NORTH CAROLINA

SHEET NO. 1 OF 1

G.N. RICHARDSON & ASSOCIATES
Engineering and Geological Services

December 15, 1998

Mr. Duane Jarman
Solid Waste Manager
Department of Public Services
P.O. Box 230
High Point, North Carolina 27261

RE: Report of Site Evaluation
Ingleside Composting Facility

Dear Duane:

G.N. Richardson & Associates (GNRA) is pleased to present this report of a site evaluation performed on December 9, 1998 at the referenced site. The evaluation consisted of a site reconnaissance and test pit investigation to characterize subsurface conditions, in partial fulfillment of NC DENR Division of Waste Management (NC DWM) requirements for a permit renewal application. This evaluation was performed at your request and was assisted by Mr. Steve Pendry and Mr. James Hussey of the City of High Point. This report describes the findings of our site evaluation and draws specific conclusions regarding facility capacity, as well as soil and ground water conditions at the site.

Project Description

The site is a Type 1 Composting Facility, as defined by North Carolina solid waste rule 15A NCAC 13B .1405 et seq. The facility is owned and operated by the City of High Point for the exclusive use of the City and its constituents. The facility accepts only yard wastes, pursuant to its permit, which was observed to comprise leaves, limbs, some larger wood debris, grass clippings and other vegetative debris that is considered to be yard wastes. There is an on-site scales, with a certified operator, and a full-time crew and supervisor. Mr. Pendry estimated that the facility receives approximately 10,000 tons of yard wastes annually (average, last 3 years).

Mr. Hussey described the overall material handling process. Woody vegetative debris, received all year long, are ground or shredded as needed prior to stockpiling as wood mulch. Leaves are received by the facility in the autumn months, comprising the chief carbon source. The leaves are stored in windrows on an asphaltic concrete composting pad, which measures approximately 500 by 175 feet. The windrows are turned periodically, as needed determined by temperature measurement — typically every week or two during the winter season, more often in the warmer seasons.

In the spring and summer months, grass clippings provide the chief nitrogen source, which is added to the windrows and blended as needed based on temperature. The compost typically matures in a few weeks following introduction of nitrogen sources, and the mature compost is screened (using the City's equipment) and stockpiled until sold to the public. The stock pile area has much more potential storage area than is typically required.

The entire site covers approximately 14 acres, with an active working area of about 5 acres, including the asphaltic concrete windrow pad. The concrete is supported on a soil embankment. The facility was constructed about 5 years ago. The site is located on a relatively broad ridge top, with drainage divided to the west (primary drainage direction for the active composting/storage areas) and toward the north east (mowed area north of scale house). Traffic access is from the east via Bellevue Street, crossing Ingleside Drive at the gate). The entire site is fenced. Surface water drainage is good, with very little surface ponding, despite the 0.8 inches of rain that fell overnight prior to the site visit. Sedimentation and erosion control features appear to be functional.

Original site preparation required minor grade cuts to the eastern side of the site, where natural rock exposures were noted, and embankment fills estimated to vary to 12 feet in thickness to the west side of the property. Much of the fill was brought in during construction of the Wal-Mart on U.S. 311, according to Mr. Pendry, including a layer of reddish clayey soils that reportedly "capped" the entire embankment area prior to construction of the composting facility. These soils were encountered in some of the test pits, described later.

Facility Capacity

Based on the facility operations descriptions provided by the site managers, a full autumn season's leaves can be stored on the asphaltic concrete pad, followed by a full spring/summer season's grass and other vegetative debris above the leaves. After composting (and associated bulk volume reduction), the stockpiles provide in excess of a full year's storage of finished compost. This provides, at a minimum, two year's operating capacity at the estimated 10,000 tpy intake. However, there are unused portions of the site within the 50-foot buffers that could be utilized for composting and/or storage, if needed, and ample space for storing completed compost adjacent to the asphaltic concrete pad. In short, the facility has more than sufficient space and buffer for the current operations.

Soil and Ground Water

Five (5) test pits were dug on the premises with a rubber-tire backhoe, as shown on the attached site map. Three pits (TP-1, -2 and -3) were dug near the asphaltic concrete pad, in the active composting and storage areas, underlain by man-made embankment. Two others (TP-4 and -5) were dug in the eastern areas, underlain by natural ground. The test pits were extended to depths of 4 to 6 feet, except where asphaltic concrete debris (in the embankment fill) or bedrock resulted in refusal conditions. Representative samples of the various soils were taken for visual identification per the Unified Soil Classification System and further evaluation, if needed. Table 1 presents a summary of conditions encountered at each test pit location.

Near the asphaltic concrete pad, test pits encountered a layered mix of organic soils (silty clay mixed with composted materials and/or gravel), stiff orange clayey silt (imported borrow) and a dry gravelly silt (resembling crusher run). The clayey soils, found in a 3 to 6+ foot thick horizon, were moist and very plastic, owing to the high clay content (estimated at 30 to 40 percent) and the presence of abundant mica. The plasticity is generally an indication of a high field capacity

(moisture retention) and a low permeability. The embankment soils appeared to be well compacted.

There were no saturated zones encountered within the soil embankment, except that the surficial soils were wet from the previous night's precipitation. There was no indication of ground water movement within the upper 4 to 6 feet beneath the asphaltic concrete pad. The test pits in the central and west portions of the site did not encounter natural soils, due to depth of the embankment, but past experience suggests that permanent ground water levels are deeper than the embankment section.

To the east of the asphaltic concrete pad, test pits encountered tan slightly clayey silty fine to coarse sands, derived from a parent bedrock exposed near one of the test pits (TP-4). The natural soils were dry to slightly moist and showed no residual texture or staining that would suggest the presence of shallow ground water. These soils exhibited slight to moderate plasticity, indicating a rather high (estimated 15 to 20 percent) clay content and a moderately high field capacity.

The asphaltic concrete pad and clayey fill soils observed near the pad limit surface water infiltration. Much of the site is graded and compacted, or covered with pavements. Based on topographic relationships and the test pit observations, ground water recharge from the active composting and storage areas is minimal. Ground water levels across the site are probably in excess of 20 feet, including both the active composting and storage areas and the undeveloped areas to the east.

Summary of Findings

- The site appears to be well managed, with adequate surface grades and storm water management features to minimize surface ponding.
- The active composting occurs on an asphaltic concrete pad, which is supported on a man-made embankment fill, with fill depths varying to an estimated 12 feet along the west side of the active area.
- The embankment fill was capped with a 2 to 3 foot thickness of compacted clayey silt during construction of the composting facility.
- The clayey horizon, in conjunction with the pavements and other hardened surfaces on the site, is believed to provide a barrier against downward migration of water.
- Drainage within active areas is to the west.
- The overall site is underlain by stable soils derived from a granitic bedrock.
- None of the excavated soils showed signs of ground water movement. The soils were generally slightly moist to dry, except in the upper few inches beneath the surface.

- No ground water or saturated zones were encountered within 4 to 6 feet beneath the ground surface.

- Based on topographic relationships and subsurface conditions encountered in the test pits, ground water depths are estimated to be in excess of 20 feet.

- At the estimated 10,000 tpy intake, there is more than ample developed space to conduct site operations, with at least 2+ years of available material processing and storage capacity.

- This estimated facility capacity discounts potential undeveloped areas and public demand for the finished compost.

Closing

GNRA appreciates the opportunity to be of continued service to the City of High Point. If you should have further questions, or if we may be of further service, please contact us at your convenience.

Very Truly Tours,
G.N. Richardson & Associates

G. David Garrett, P.G.
Vice President, Senior Geologist
N.C. Geology License No. 983

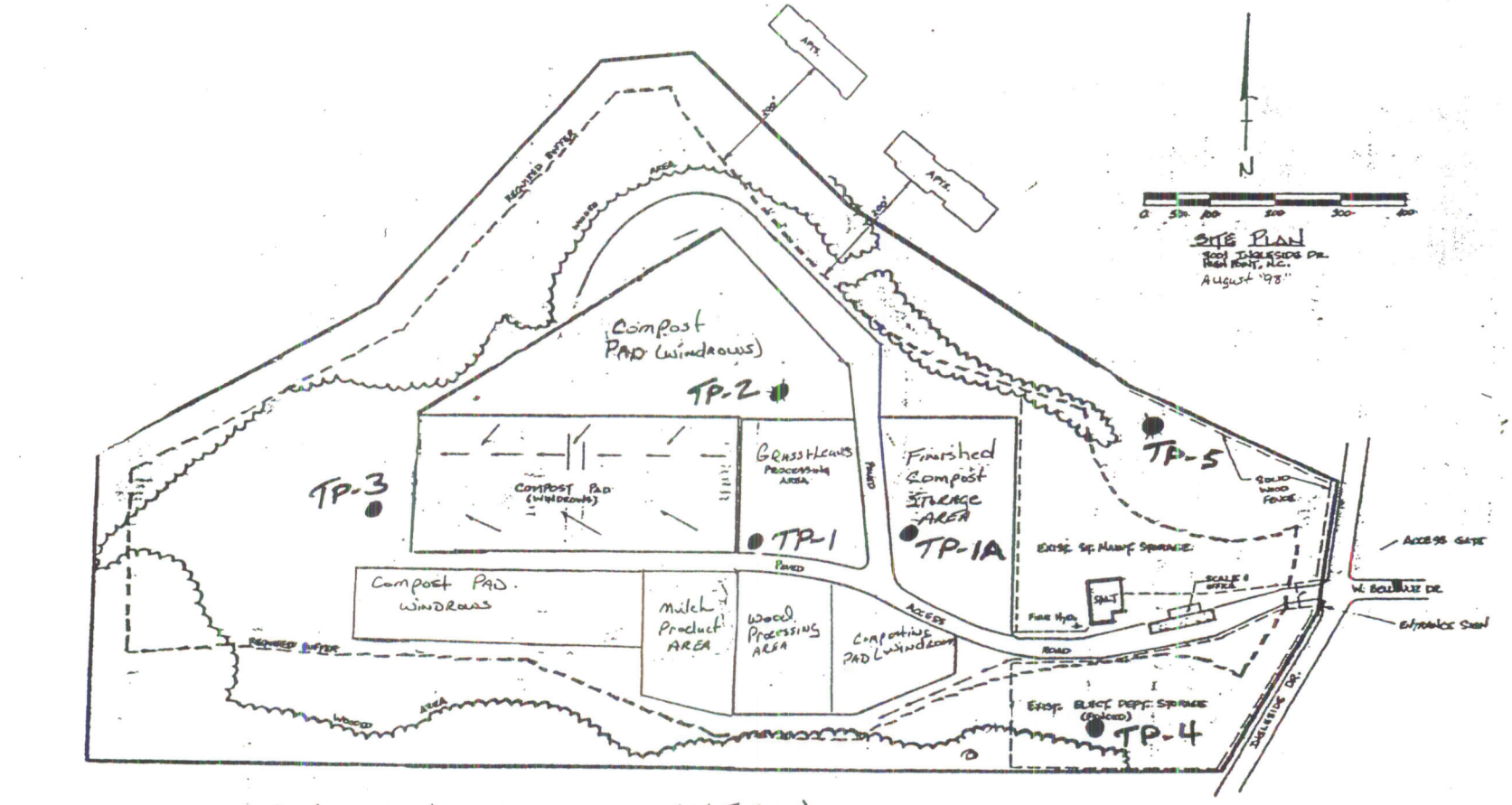
Table 1
Summary of Test Pit Data

TP-1	Southeast corner of asphaltic concrete pad
0"	Gravel and old compost
0 - 24"	Mixed clayey silt and gravelly silty fine sand — fill
	No water, difficult digging conditions due to relatively dense fill, no sample
TP-1A	Next to finished stockpile
0 - 29"	Old compost, clay, gravel
29 - 60"	Stiff orange-red micaceous clayey silt (CH-MH) — fill, sample taken
60+"	Dense gray-green gravelly fine sand with silt (SM, GM) — fill, sample taken
	No water, fill had some wood and concrete debris, appeared well compacted
TP-2	Northeast corner of asphaltic concrete pad
0 - 24"	Dense gravelly sand (SM) with old compost at surface — fill
	No water, difficult digging, no sample
TP-3	West side of asphaltic concrete pad, 150 feet from NW corner
0- 24"	Old compost, clay and gravel
24 - 72"	Stiff slightly fine sandy, clayey silt with mica (ML-MH) — fill, sample taken
	No water, uniform material, moderately well compacted, fill height estimated to be 10 - 12 feet at northwest corner
TP-4	Southeast side of property, about 200 feet south of scale house
0"	Surficial grass, area likely has been graded
0 - 24"	Dense, dry, tan slightly clayey silty fine sand with rock fragments (SM) — sample
	Difficult digging, refusal on bedrock (granite outcrop 45 feet west), no water, area high on slope with fairly good drainage (ground water several feet deep)

TP-5	Northeast side of property, 300 feet north of scale house
0"	Surficial grass, little to no grading
0 - 36"	Medium stiff, tan-white, very slightly moist, slightly clayey silty fine sand
	No water, no staining or residual texture, area high on slope with good drainage

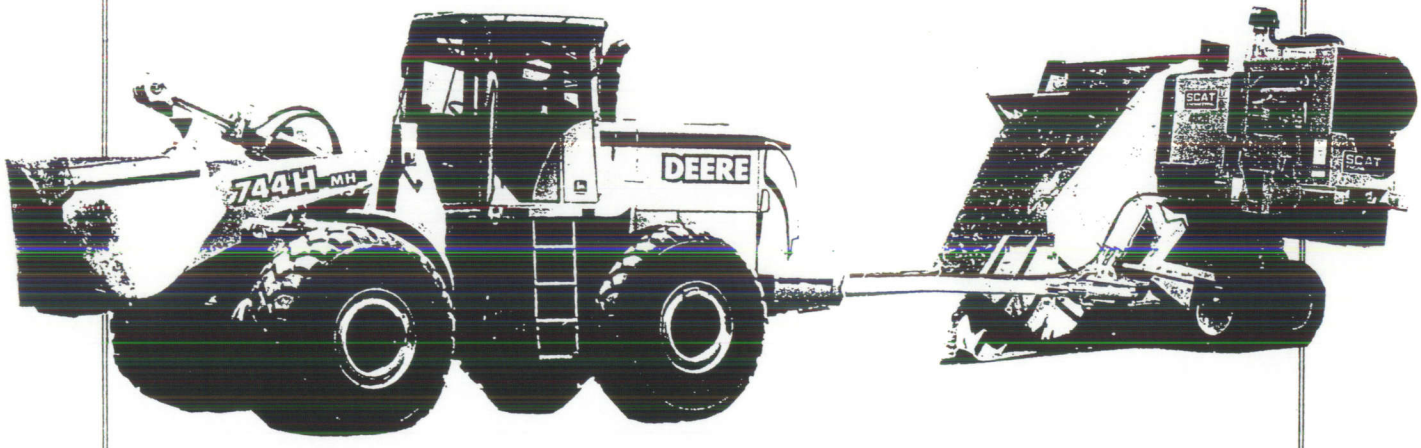
INGLESIDE COMPOST FACILITY

PUBLIC SERVICES DEPARTMENT



OPERATIONS PLAN
FOR THE
INGLESIDE COMPOST FACILITY

CITY OF HIGH POINT
NORTH CAROLINA



INGLESIDE COMPOST FACILITY
OPERATIONS PLAN

TABLE OF CONTENTS

Page

DESCRIPTION OF OPERATIONS 2

GENERAL OPERATIONS PLAN 3
- Receiving 3
- Preparation Area 3
- Inclement Weather Precautions 4
- Actions to Eliminate Nuisances 4
- Windrow Method 4
- Stabilization 5
- Curing, Screening, Quality Control 5
- Compost Amendment 5
- Storage, Transportation 6
- Use and Marketability of Compost 6

COMPOSTING PROCEDURES 8
- Acceptable Materials 8
- Preparation of Materials 8
- Windrow Construction 9
  - Moisture 10
  - Oxygen 10
  - Nutrients 11
  - pH 11
  - Physical Properties 12
- Compost Stabilizing and Curing 13
- Compost Screening, Amendment, and Storage 13
- Windrow Report, Sampling, Quality Control 14
- Odor, Dust, and Vector Control 14

EQUIPMENT 16

STORM WATER CONTROL 16

SAFETY AND NON-CONFORMING MATERIALS 17
- Security 17
- Safety 17
- Fire 18
- Non-Conforming/Unauthorized Materials 18
- Off-Specification Materials 18

SUMMARY 20

TABLE 1: INCINERATOR ASH QUALITY REQUIREMENTS
SITE PLAN
WINDROW REPORT FORM

DESCRIPTION OF OPERATIONS

NAME OF FACILITY
Ingleside Compost Facility (ICF)

ADDRESS
3001 Ingleside Dr.
High Point, NC 27265

RESPONSIBLE PERSONS
Mr. Randall Lee (Composting Supervisor)
Mr. Steve Pendry (Landfill Superintendent)

PHONE NUMBER
(336) 883-8514

SITE PERSONNEL

Composting Supervisor
Supervises site operations and site personnel under the direction of the Landfill Superintendent.

Scalehouse Operator/Attendant
Weighs, records, and directs incoming vehicles.

(3) Landfill Equipment Operators I
Operates various equipment associated with composting operations.

Sanitation Worker
Performs labor type tasks at the site.

SCHEDULED HOURS OPEN TO THE PUBLIC

Monday - Friday	9:00 am - 4:00 pm
Saturday	9:00 am - 1:00 pm
Sunday	closed

GENERAL OPERATIONS PLAN

The Ingleside Compost Facility (ICF) is designed to be a large Type 1 composting facility. The overall operational goals shall be to compliment the integrated solid waste management plan instituted by the City of High Point. This plan is designed to meet or exceed the State of North Carolina Solid Waste Management Rules and Solid Waste Laws, Section .1400, and aid in conserving the environmental resources available to the City of High Point residents and corporate business interest. This will be accomplished by the removal, processing, use and sale of the organic portion of the municipal waste stream commonly referred to as "Wood and Yard" waste.

It is the intent of the ICF to accept all yard waste and acceptable wood from residential and commercial enterprises for recycling. This will encourage the use of the facility and minimize illegal disposal of materials. The City collection vehicles designated for yard waste collection, leaf collection, organic construction debris collection, etc. will also deliver acceptable materials to the ICF.

RECEIVING

All vehicles entering the facility will be weighed and recorded according to the type of material. The scalehouse attendant will then instruct the vehicle driver to the appropriate off-loading area (i.e. wood processing area, grass and leave processing area, etc). The scalehouse attendant will notify the appropriate ICF employee to allow inspection of the materials as they are being off-loaded. The visual inspection insures received materials are compatible with the intent and goals of the ICF. Those materials not acceptable at the ICF shall be handled appropriately as outlined.

For the grass and leave processing area, bagged material will be placed on the west end of the pad and loose and/or ground material will be placed at the east end.

PREPARATION AREA

The receiving areas will be that portion of the ICF so designated (see attached site plan) for the off-loading of incoming materials and temporary storage of said materials. The processing areas will be used for the appropriate processing of the materials (i.e. grinding of

wood, de-bagging of leaves and grass, separation of large wood items, etc.). These areas will be designed and maintained to allow easy access and use in various weather conditions to facilitate the consistent use of the ICF.

INCLEMENT WEATHER PRECAUTIONS

During wind, heavy rain, snow, freezing or other adverse conditions appropriate changes will be made. Receiving and preparation areas will be made as accessible as possible to incoming vehicles. Appropriate fences and boundaries will be installed to secure materials. All other operations will cease if necessary. If the situation warrants it, the facility will be closed.

ACTIONS TO ELIMINATE NUISANCES

Since the opening of ICF, several actions have become established in our normal operating procedures to eliminate possible nuisances to the surrounding area. These include:

- construction of earthen berms which are approximately 8-10' high
- site is enclosed by 6' high chain-link fence with 2' of barbed wire
- 6' wooden fence on eastern boundary of site
- portable litter fences - used as needed around working areas
- deodorizer and insect control chemical is sprayed twice daily

Furthermore, the site is elevated higher than the surrounding area. Therefore, water run-on is minimal. Water run-off is controlled by the use of four sediment basins which surround the working areas.

WINDROW METHOD

The technology to be employed at the ICF shall be open "windrow". The windrows will be constructed on the designated windrow areas. The windrows shall be constructed using layered feedstocks, as materials are available. The height and width of the windrows shall be determined by the mechanical design of the machinery used for the turning process.

STABILIZATION

The stabilizing of the compost product is achieved through a process which allows for the gradual reduction of microbial activity in the presence of moisture and aeration. This stabilizing usually requires two to four weeks and may be performed in the original windrow placement.

CURING, SCREENING, QUALITY CONTROL

This stage of the Composting Process requires the movement of the stabilized compost to the final storage area. The compost product shall go through a screening process for the removal of large particles and improve the consistency and quality of the final product. Screening may occur as the compost is transferred from the windrow to the final storage area. If compost is transferred to the final storage without screening, final screening shall occur prior to transport of compost for final use.

Screened material is typically placed on berms around the perimeter of the site. Periodically, these berms are removed, rescreened, and replaced.

COMPOST AMENDMENT

The City proposes to add municipal sludge incinerator ash from their East Side Wastewater Treatment Plant sludge incinerator as an amendment to the stabilized compost. The incinerator ash will be tested quarterly for total metals (including arsenic, cadmium, lead, mercury, molybdenum, nickel, and selenium) prior to shipment to the site and must meet the criteria shown in Table 1. Should quarterly testing show the concentration of one or more metals in excess of that listed in Table 1, then the ash will not be accepted. Also, a NC Department of Agriculture (NCDA) waste analysis (including analyses for nutrients, metals, and calcium carbonate equivalence) will be performed for every 1,000 CY of ash to be delivered to the site to guide the quantity of ash to be added to the compost. Note that values for copper and zinc (and cadmium, lead, molybdenum, and nickel if reported) as reported in the waste analysis must meet the criteria shown in Table 1.

Municipal sludge incinerator ash will either be temporarily stockpiled on-site (see Site Plan in Appendix B) or be mixed directly with the stabilized compost upon delivery to the site. The mix ratio will be guided by the results of the waste analysis. If the ash should have a significant neutralizing value, as determined by the calcium-carbonate equivalence test, the ash

will be mixed with the compost only in such quantity as necessary to optimize the pH.

If stockpiled on-site, ash stockpiles will be protected from runoff by placing straw bales, mounded compost, silt fence, or other suitable device just downslope of each stockpile. Additionally, the City will spray the surface of each stockpile as required to control dust generation. In no case will the City stockpile more ash than is anticipated to be used in a two (2) month time frame and will not exceed 5,000 CY at any time. Stockpile quantities will be guided by the results of the NCDA waste analysis.

STORAGE, TRANSPORTATION

In the final storage area, compost shall be stockpiled and final curing of the product may occur. The storage area shall be maintained to allow easy access and movement of equipment for screening and loading of materials for transporting to end-users. Trucks arriving at the ICF to load compost shall weigh-in at the scales. The scale operator will give direction to the final storage area and notify the ICF staff of the need to load the customer. The loaded vehicle will then exit across the scales so materials may be recorded by weight.

USE AND MARKETABILITY OF COMPOST

It is the intent of the City of High Point to develop products at the ICF which would have the ability to be used at parks, golf courses, road right-of-ways and beautification projects. In addition, commercial landscapers and private citizens could purchase the compost as soil amendments. Numerous studies conducted in North Carolina and the U.S. have proven the excellence of compost materials in the following uses: soil amendments are tilled into the soil to help retain the particle moisture, enhance soil drainage, improve nutrient transfer to plants, and enable deep root penetration resulting in healthier plants; soil mulch applied to the top of the soil to help control weeds, protect plant roots, and prevent soil from drying. Compost may also be used to help replace topsoil and aid in the prevention of erosion. The bulk application of compost in agricultural uses has proven to be an effective, economically viable method of improving nutrient depleted soils while reducing the need for commercial fertilizers.

The key to successful marketing will be the perception and acceptance of the product by the public. With good ICF public relations, education and marketing expertise, the compost product should have readily available markets within the Piedmont/Triad metro in governmental,

commercial, agricultural and private applications. Our previous experience has proven this to be true and we expect more of the same for the future.

COMPOSTING PROCEDURES

The purpose of this section is to establish the procedures for producing compost at the ICF. These procedures may be refined or modified as experience is gained in the composting process.

ACCEPTABLE MATERIALS

The ICF is designed as a wood and yard waste composting facility. Materials accepted at the ICF from the public (commercial & private) shall include:

- untreated, unpainted, and unglued wood waste
- yard waste (leaves, grass, brush, limbs)
- silvicultural waste
- other biodegradable waste determined as suitable for the composting process by authorized personnel and by Section .1400 of the Solid Waste Management Rules of North Carolina

After weighing in, the acceptable materials shall be off loaded at the appropriate location as determined by the ICF Staff (receiving area, windrow area, over-flow area). Each load will be examined for contaminants and non-conforming or unauthorized material. The ICF Staff will be responsible for the coordination of removal of these products. Acceptable materials may be expanded as knowledge, technology, and expertise allow processing of these materials.

PREPARATION OF MATERIALS

The preparation of materials will consist of grinding/mulching of wood waste, brush, leaves, etc., and also the debagging of leaves and grass. This preparation will be performed at the designated areas. The ICF staff will be responsible for preparation of the material in a manner suitable for application as feedstock in the windrow area. The ICF staff will be responsible for the "timely" processing and transfer of material from the processing area to the windrow area.

Grass clippings shall be incorporated into windrows and turned within 48 hours of on-site

arrival. This will prevent odors and insure space availability at the receiving and processing areas for incoming materials.

WINDROW CONSTRUCTION

The windrows shall be constructed in the designated areas as shown on the attached site plan. The dimension of the windrows shall be approximately 12 feet wide by 4 - 6 feet high. The height and width of the windrows shall be determined by the mechanical design of the machinery used for the turning process. The windrows shall be constructed using layered feedstocks as materials are available. The materials may be placed in the original windrow by one of the following methods:

- Dumping bed or eject bed trucks may off-load the first layer of feedstock (leaves, wood chips, grass, etc.) in the windrow in a contiguous length dumping method. This method shall be done at the direction and supervision of the ICF staff.
- Materials may be moved from the receiving or processing area and placed in the windrows by a front-end loader.

The original layer of feedstock may range in depth from 12 to 60 inches depending on the percentage and number of feedstocks being used to generate the desired type of compost. The second layer of feedstock may be placed on the windrow by dumping material from a truck onto the original layer, if the layer is less than 18 inches in depth. The preferred method is to place the second layer of feedstock on the windrow with a front end loader. The feedstock for the subsequent layers shall be placed by a front-end loader. These feedstock layers shall be placed 12 feet wide at the base, 4-6 feet high at the center and may be triangular or trapezoidal in shape.

The various feedstocks for the second and subsequent layers may be moved to the windrow area from the processing area by dump truck or front end loader. The feedstocks may be dumped next to the windrow under construction to allow easy front-end loader application to the windrow. During the layering of the feedstocks it is permissible to have a "mixing" of feedstocks in the windrow. The front-end loader, while placing feedstocks in the appropriate quantities, shall be accomplishing the desired windrow shape. During the layering of the feedstocks it is desirable to check and adjust the moisture of the windrow. This will assure a proper moisture level throughout the windrow during it's construction.

Moisture

The percentage of water in the composting material is a vital element in achieving the desired aerobic composting results. The bacteria required in the aerobic process need adequate quantities of moisture, oxygen and nutrients to accomplish particle decomposition. The initial formation of the windrow should strive to achieve a 60% moisture to 40% solid ratio. The water should be applied during the layering of feedstocks to assure adequate mixing and retard runoff. As the composting process begins, the initial turning and temperature rise will create a substantial loss of moisture. After this initial loss of moisture, the desired moisture content should be approximately 50% until initial stabilization of the material begins. A 40% moisture to 60% solid ratio is optimum during the stabilization and curing stages. The moisture content during the composting cycle is critical to producing a satisfactory final product. Excessive water will cause undesirable odors. Insufficient water will slow the decomposing process by "drying" of the bacteria prior to the final energy release of the process. The ICF staff has established good operating and testing procedures to insure proper moisture. The exposed windrows may allow rain to penetrate and change the moisture content. The ICF staff should be aware of current weather conditions and forecast weather when determining moisture additions to the windrows. The shape of the windrow will help reduce moisture penetration by shedding the rain, thereby minimizing excess moisture. The grade of the pad will allow rapid drainage of the composting area. Free moisture on the compost pad should not be allowed to occur. The ICF staff will be responsible for proper drainage of the compost pad.

Oxygen

The composting process is best in the aerobic state – in the presence of oxygen. While decomposition will occur in the anaerobic (without oxygen) state, it is much slower and is normally associated with severe odor problems. The windrows should be formed without mechanical compaction. This will automatically leave voids in the materials allowing the area required for oxygen. The windrow should be turned periodically to "fluff" and mix the composting material. This will allow a more consistent availability of oxygen for microbial activity. While oxygen is necessary for aerobic composting, too much oxygen (turning too frequently) will slow down the metabolic process by allowing the heat formed in the pile to escape also causing excess moisture evaporation.

Nutrients

Wood and yard wastes have the nutrients of nitrogen, phosphorus and potassium of which nitrogen is the key element in the composting process. The carbon to nitrogen ratio must take into account the difference between decomposable carbon and total carbon. Different feedstocks will have various levels of decomposable carbon. Normally, during windrow construction, the layering of feedstocks will be designed to allot the proper carbon to nitrogen ratio. This ratio should ideally be in the 20:1 to 35:1 range. The average carbon to nitrogen ratios for specific materials are as follows:

Materials	C:N Ratio
Wood Chips	800:1
Saw Dust	400:1
Straw	100:1
Leaves (dry)	90:1
Leaves (fresh)	40:1
Grass	20:1

The on-site construction of windrows should have goals of 20-35:1 ratios at the beginning of the composting process. The cured product may see reductions to 10-15:1 through carbon released during the decomposing process. The ICF staff should analyze incoming materials to determine the availability of low C:N ratio materials to be mixed. The use of partially decomposed or composted materials as a layered feedstock is permissible. This material would have a lower C:N ration and would act as an inoculate and help reduce the C:N ratio of higher feed stocks. (Example: materials in the middle of the composting process 3 - 6 weeks, may be layered into a new windrow of leaves and woodchips to provide a lower C:N ratio and aid in achieving the desired decomposition rate.)

Other nutrients, such as phosphorus and potassium, are normally not a limiting factor in wood and yard composting activities.

pH

pH is the measure of acidity/alkalinity. The correct pH balance plays another critical role in the composting process. The pH balance affects the quantity of nutrients available to support

the microbial activity. The overall metabolic rate may be affected and the heavy metal solubility is reduced if the correct pH balance is not maintained. It has been found through various programs and tests that a pH level in the 6 to 8 range (neutral) is the desired level for the composting process. Lime as an additive to the feedstock is recommended as necessary to increase pH levels. When used lime will be spread on top of windrows and turned in with the compost turner.

It is of paramount importance to monitor temperature, nutrient levels, etc. The monitoring procedures shall be performed by the ICF staff.

Physical Properties

The physical properties include particle size, temperature and their relation during the composting process. The role of particle size affects the rate of decomposition. The smaller particle size allows more surface area for microbial activity which results in a rapid decomposition rate and a natural volume reduction. The small particle size must be balanced by the need to have voids (airspace) available between particles for oxygen to the microorganisms. This often results in the blending of feedstocks to insure a good mix of small particles and larger "bulking" particles to maximize oxygen availability and microbial activity.

All microorganisms have an optimum temperature range. The ideal range for the decomposition process is 131 to 145 degrees Fahrenheit for several consecutive days. (Minimum of 3 days). It is also necessary to insure that all portions of the compost are exposed to this temperature for the minimum number of days to insure the pathogen destruction that must occur to have a quality compost.

Temperature is also a key element to internal windrow activity. If microbial activity is so great that temperatures rise above 150 degrees, this results in destruction of the microorganisms and the retarding or stopping of the microbial activity prior to the complete aerobic decomposition of the feedstocks. If the temperatures do not exceed 131 degrees, the microbial activity is not sufficient and the ICF staff shall troubleshoot and correct the cause of the low temperature.

Temperatures will be taken daily (M-F) while actively composting with a Reotemp thermometer approximately 50-60 feet apart. When temperatures reach a sustained 131 degrees for three days, windrows will be turned with a SCAT compost turner.

The ICF staff will be responsible for mixing feedstocks to achieve the blend of properly sized material and will be responsible for the testing of windrows to insure temperatures are met.

COMPOST STABILIZING AND CURING

The stabilizing and curing of compost are two separate steps which may take place at different locations at the facility.

Stabilizing is the gradual reduction of microbial activity while in the presence of oxygen and moisture. This microbial activity reduction results from the completion of the decomposition of the mixed feedstocks. The stabilizing process shall be done by combining windrows of similar feedstock age. This will maximize the utilization of the compost pad. The ICF staff should record when windrows are combined and keep appropriate records of materials. Stabilizing of the compost usually begins 9 to 12 weeks after windrow construction. Stabilizing is characterized by a substantial drop in temperature after the active composting period. The windrow will also visually be smaller with a distinct particle size reduction. The ICF staff shall use their discretion on stabilizing periods (normally 3 - 4 weeks) and combining of windrows.

The final curing period of the compost shall be accomplished in the final storage area. The ICF staff shall determine the appropriate time to transfer the compost to the final storage area. Screening to achieve correct particle size and compost quality should occur at this point if the ICF staff determines work conditions are appropriate. The curing process allows for "piling" of materials. The process is characterized by low temperatures and low microbial activity. Some further decomposition of cellulose and lignin may occur during curing.

COMPOST SCREENING, AMENDMENT, AND STORAGE

Screening of the material should occur before transfer from the windrow to the final storage area or prior to off site shipping. The market and end use will have a direct effect on final product size. The screening is the sifting of the compost through a screen to remove large particles and improve the quality and consistency of the compost. Typical screen sizes range from .25 inches to 1.0 inches and are interchangeable. Often, the larger screened particles will have a market allowing this larger material to be the final product. Large material may also be reintroduced as feedstock (the bulking agent) in new windrow construction.

Compost amendment with municipal sludge incinerator ash (if used) is also done just

prior to or upon transfer of the compost to the final storage area (see Compost Amendment, p. 5, for a description of the amendment process).

WINDROW REPORT, SAMPLING, QUALITY CONTROL

The composting process is a natural biological process. A composting program may have various degrees of success when compared to the goals and objectives desired. To insure a successful composting program, a systematic approach to recording and reporting shall be employed. The ICF staff shall be the responsible party for recording information for each windrow constructed. The windrow report will contain the following: the amounts and types of feedstocks, percentage of moisture at windrow construction and subsequent applications, the initial temperature of the windrow, periodic temperature of windrow, approximate distance between testing points, date of each turning of windrow, date when windrows are combined, comments section for general notes on processing, weather, etc.

The compost will have unrestricted applications and distribution provided that it contains no pathogenic organisms, is free from offensive odor, and has no sharp particles which would cause injury to persons handling the compost.

The ICF staff should maintain a daily calendar where notations of weather conditions may be recorded. This information will be used in comparing and analyzing windrow reports for processing rates, volume reduction and compost suitability.

The ICF staff shall be the responsible party for achieving and maintaining Quality Controls in the composting process. The success of the composting program is directly related to the quality of the final product. The ICF staff should seek the advice and input of Public Services staff and independent experts when areas of concern develop with regards to quality control of the compost product.

ODOR, DUST, AND VECTOR CONTROL

The ICF is intended to be a positive, environmentally friendly waste disposal alternative. The ICF shall be operated utilizing procedures which will minimize odor, dust, and vectors.

Odor control shall be of paramount importance for favorable acceptance and good public relations with users of the facility and surrounding neighbors.

Grass clippings may present the most consistent problem of minimizing odor at the ICF.

Grass clippings begin the decomposition process quickly and will go "anaerobic" quite easily. Odors are often released during mixing or turning of the windrow. Several factors should be incorporated to help negate the odor problem:

- Grass shall be processed and turned within 48 hours of arrival at the receiving area
- Windrows should be well aerated
- The ICF staff should be knowledgeable of "aerobic" and "anaerobic" characteristics of windrow composting
- Wind should be minimal or blowing away from neighbors when compost turning occurs (when feasible)
- ICF should maintain large natural buffers to help minimize the effect on neighbors

When areas in the windrows are deemed to be in the "anaerobic" state, an acidic condition occurs in the compost. Often, the application of lime will aid in the neutralizing of the acidic condition and be effective in odor control (see pH, p. 11).

The ICF shall be regularly patrolled for trash, wind blown debris, etc. These materials shall be placed in the appropriate area or containers for proper disposal. It shall be the responsibility of the ICF staff to minimize any problems in this area. The ICF staff shall maintain proper drainage and minimize standing water at the ICF to reduce the possibility of vector problems.

EQUIPMENT

The primary equipment required at the ICF and their general uses are listed below:

- Tubgrinder: used for grinding of bulk wood, limbs, etc.
  May also be used to reduce particle size of feedstocks.
- Two Front-End Loaders: used to transport, move materials, load trucks, mix feedstocks and form windrows
- Dump Truck: used to transport feedstocks from mixing area to windrows and compost from windrows to final storage area
- Compost Turning Machine: used to turn, mix, mulch and form the windrows of feedstocks
- Screening Machine: used to screen stabilized compost for product particle sizing, quality and consistency
- Compost Thermometer: used to determine temperatures in the windrows, stabilizing piles and curing piles

STORM WATER CONTROL

The ICF shall be engineered to provide optimum drainage for all areas of the facility.

SECURITY AND NON-CONFORMING MATERIALS

The ICF is intended for use by the public, commercial and governmental bodies for recycling of organic waste. Due to the use of the ICF by diverse groups, safety is of paramount importance. The implementation of the following guidelines should minimize incidents and allow ICF personnel suitable methods for reaction to any occurrences.

SECURITY

The ICF is designed to be a restricted access facility. As a restricted access facility there are posted hours of operation. The various parties will be allowed to use the facility during the posted hours and at other times mutually agreed by City of High Point Public Services staff.

To prevent access during non-operational hours, fencing at all areas of access shall be installed, maintained, and used by the ICF personnel. Fencing shall be adequate to control automobile, motorcycles, etc. as well as capable of deterring foot traffic. Security of the facility shall be aided by strategic placement of lights to restrict theft and miscellaneous nuisance behavior.

If it is deemed in the best interest of the City, a security guard may be located at the ICF during non-operational hours.

SAFETY

The safety of personnel and users at the ICF shall be of paramount importance. The categories of safety shall include: Human, Equipment, and Environmental.

Human safety: shall encompass all people working, delivering materials, or receiving finished product at the ICF. The City of High Point ICF operation shall be conducted in compliance with the applicable safety mandates. All appropriate telephone numbers of emergency agencies should be prominently displayed and all ICF staff shall be familiar with said numbers and location of telephones. Guidelines shall be utilized to insure proper response and reporting in the event of injury.

Property safety: It is the intent of the City of High Point to acquire adequate equipment to accomplish the goals and objectives of the ICF. As such, all equipment shall be used in the manner for which it was intended. The ICF staff shall take all necessary steps to maintain

equipment in a safe and operational condition. The staff should be familiar with and follow all manufacturers' recommendations in the use and maintenance of the equipment.

Environmental safety: The ICF is designed to be an environmentally friendly yard waste facility. As such, the ICF is designed to generate products which will compliment our environment by replacing lost soil components. The layout and operation of the facility will control the by-products of the composting process to insure the environmental compatibility of the ICF.

FIRE

The ICF will be implementing the natural process of composting. The process develops internal heat to aid in the natural decomposition process. When heat is in the presence of various flammable feedstocks, there is the potential for occasional fires.

The ICF personnel shall be trained in elementary, on-site fire reaction procedures. The ICF personnel shall have on-site accessible equipment to aid in the early suppression of fire. This equipment shall include but not be limited to: fire extinguishers, fire hoses for the on-site fire hydrant and hand shovels.

The ICF operation shall allow access and movement of emergency fire fighting equipment at all times. The ICF management shall arrange fire drills to test ICF personnel on proper response. Any and all occurrences of fire shall be recorded and analyzed by City of High Point staff and procedures established to prevent the reoccurrence of similar circumstances. Fire shall be reported to the state of North Carolina as required by the permit (41-10-yw).

NON-CONFORMING/UNAUTHORIZED MATERIALS

It is not the intent of the ICF to accept any materials not in the "Acceptable Material" category. Loads shall be inspected by ICF personnel prior to and during off loading to insure acceptable material types. Any non-conforming/unauthorized materials shall not be allowed to off-load. Any materials found during off-loading shall be reloaded into the delivery vehicle by the driver of the vehicle. ICF personnel shall be knowledgeable of approved disposal options for various non-conforming/unauthorized materials. Drivers with said materials shall be directed to appropriate disposal locations. Prior to the vehicle exiting the ICF with non-conforming/unauthorized material, the vehicle should weigh at the ICF scalehouse to insure

accurate weights of incoming materials.

In the event small quantities of non-conforming/unauthorized waste are found in the receiving/processing area, these materials shall be separated by the ICF staff. A location has been established for temporary storage of these materials (40 c.y. roll-off box). ICF personnel shall be responsible for the loading and transporting of said materials to the Kersey Valley Landfill for disposal. Weight and material reports shall be kept of all such disposal loads to facilitate accurate analysis of the ICF program.

OFF-SPECIFICATION MATERIALS

Due to the mixing of various feedstocks during the windrow construction and varying sizes and decomposition rates, the final compost product is expected to have large and small particles. Screening of the final product will allow seize separation according to screen dimensions. Materials too large for use as a soil amendment, mulch, or other suitable application, shall be classified as "Off Specification" material. Final compost materials which do not meet the conditions for unrestricted application shall also be considered "Off Specification" material. These "Off Specification" materials shall be handled as follows:

- If the Off Spec. material is suitable for use as a feedstock (bulking agent) it may be reintroduced in new windrow construction. Records of such use shall be included on the windrow report.
- If the Off Spec. material is not suitable for use as described above, and no alternative use is available, the Off Spec. material shall be disposed of in the same manner as described for non-conforming/unauthorized materials. Detail reports of weights, materials and reason for disposal shall be kept by the ICF staff.

SUMMARY

It is the intent of this Operations Plan to provide the basic information required to operate the ICF. While many operational problems and situations have been addressed, not every circumstance can be listed. The plan is designed to allow amending and expansion as day to day operations and experience are realized. All changes or additions to the Operations Plan shall be done by Public Services staff with appropriate consultation if required.

The ICF is a positive method of recycling yard and wood waste generated in the City of High Point area. The ICF may address future growth by expanding the acceptable materials to include other biodegradable organic matter which would produce a marketable final product.

The composting of biodegradable organic matter is given priority on the EPA hierarchy of waste management methods. The ICF will allow the City of High Point a complimentary program to aid in the overall waste reduction goals as established in the Solid Waste Management Plan adopted by the City of High Point City Council.

TABLE 1: INCINERATOR ASH QUALITY REQUIREMENTS[1]

POLLUTANT	CONCENTRATION (mg/kg) (See Note 2)
Arsenic	41
Cadmium	39
Copper	1,500
Lead	300
Mercury	17
Molybdenum	75 (See Note 3)
Nickel	420
Selenium	100
Zinc	2,800

Notes:

1. Reference: Table 3 of 40 CFR 503.13 (Pollutant Limits For Sludge - Average Concentration).
2. Concentrations shown are on a dry weight basis.
3. Molybdenum concentration is not listed in Table 3 of 40 CFR 503.13. Concentration shown is from Table 1 of 40 CFR 503.13 (Ceiling Concentration).

CITY OF HIGH POINT
INGLESIDE COMPOST FACILITY
Weekly Status Report Date: _____

1. Windrow Formation

Row: ___ Length _____ Height _____ Width _____

Primary Materials _____

Temperature: Mon_____Tue_____Wed_____Thur_____Fri_____

Moisture: Mon_____Tue_____Wed_____Thur_____Fri_____

Turned: _____ Misc._____

Row: ___ Length _____ Height _____ Width _____

Primary Materials _____

Temperature: Mon_____Tue_____Wed_____Thur_____Fri_____

Moisture: Mon_____Tue_____Wed_____Thur_____Fri_____

Turned: _____ Misc._____

Row: ___ Length _____ Height _____ Width _____

Primary Materials _____

Temperature: Mon_____Tue_____Wed_____Thur_____Fri_____

Moisture: Mon_____Tue_____Wed_____Thur_____Fri_____

Turned: _____ Misc._____

Row: ___ Length _____ Height _____ Width _____

Primary Materials _____

Temperature: Mon_____Tue_____Wed_____Thur_____Fri_____

Moisture: Mon_____Tue_____Wed_____Thur_____Fri_____

Turned: _____ Misc._____