

DIN 25049

Approved by SWS - 9/11/2015



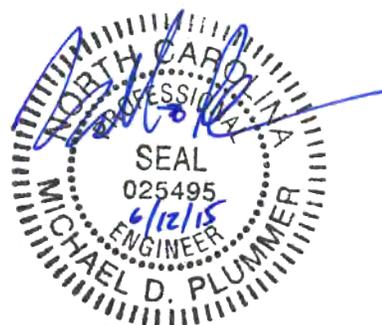
Forum 52 Yard Waste Facility

Permit Application

City/County Utility Commission

Winston-Salem, North Carolina

June 2015



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Appendices

Appendix A – Related Correspondence

- 2010 Compost Facility Permit
- 2005 Compost Facility Permit
- Email: Ken Pickle, NC DENR DWQ Stormwater Permitting Unit
- With Memo from HDR
- Erosion and Sedimentation Control Plan
- Letter: Lanny Gough, Zoning Code Enforcement Supervisor
- With Letter from Ed Gibson requesting land use verification
- Hand Auger Memo
- Waters of the United States Delineation
- Deeds

Appendix B – Operations Plan

- Operations Plan
- Emergency Action Plan
- Compost Monitoring Report Form
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- Aerial Photograph Map
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Background

This Permit Application was prepared by HDR on behalf of the City/County Utility Commission of Winston-Salem, North Carolina (City), for the Forum 52 Yard Waste Facility (Facility) located on Northstar Drive in Forsyth County, NC.

This Permit Application was prepared in accordance with North Carolina Solid Waste Rule 15A NCAC 13B Section .1400.

In accordance with Rule .1402 (f)(1), this Facility will receive only yard and garden waste, silviculture waste, untreated and unpainted wood waste, or any combination thereof. Therefore, the Facility will be designated as a Type 1 Facility.

General

The waste stream for this Facility is primarily from City curbside pickup, landscaping companies, local industry, and private citizens. The facility is sized to handle 45,000 tons per year of yard waste, pallets, woody waste, grass clippings, and leaves.

The operation and management of this facility may be contracted to an independent company. The City will maintain personnel to operate the scale onsite. The operating schedule for this Facility will be open from 8:00 a.m. to 4:00 p.m. Monday through Friday; however, this schedule may change to meet the City's needs. The site accepts yard waste, limbs, brush, leaves, grass clippings, and other similar debris. Untreated and unpainted wood, such as shipping pallets and dimensional lumber, are also accepted.

All materials except loose leaves are ground. They may also be transferred to a permitted Compost Facility for further processing. At the present time this permitted facility is Wallace Farm's Davie County site. Finished products may include mulch and compost, soil amendment (composted leaves and grass clippings), and boiler fuel (pallets and woody waste). The public may acquire the mulch and compost products during hours of operation. The untreated, unpainted product will be processed and delivered to other facilities such as the Wallace Farm Davie County Compost Facility to be used as a bulking agent or a mulch product or to several industrial plants to be used as fuel.

Process Narrative

The purpose of this narrative is to provide additional operational details of the Facility. Refer to the Site Plan and Process Flow Diagrams in Appendix C.

Incoming waste managed at the Facility includes curbside collected yard waste from the City, materials dropped off by the general public, yard waste, pallets, and materials such as untreated, unpainted wood waste, and storm debris. A City staff person manages the scale area where the material is weighed. The scale attendant confirms the material make-up of the load and directs the customer to one of three locations. Yard waste and other woody waste is dumped in the waste receiving area. Pallets and other untreated, unpainted wood are unloaded

in a separate pile in the waste receiving area. Leaves and grass clippings are received in the leaf processing area

The yard waste, pallets, woody waste, and other untreated, unpainted wood are processed through a grinder. Yard waste is generally processed separately from the other materials. As the yard waste is processed through the grinder, a conveyor is operated to create a stockpile. The ground material is managed in bulk piles where it can then be offered to the general public (who pick up the material on-site), sent to a permitted compost facility such as the Wallace Farm Davie County Compost Facility, and/or hauled to area businesses for use as a boiler fuel.

The pallets, woody waste (such as large tree limbs), and unpainted, untreated wood is processed separately through the grinder. Again, a conveyor is used to develop a stockpile of processed material. The ground material is then offered to the public, hauled to a Wallace Farm Compost Facility, and/or hauled to area businesses for use as a boiler fuel.

When the grinder is in operation, the loader operators visually screen the material for contaminants. Contaminants include materials which are not accepted at the facility but were not discovered by the scale attendant, or materials which would harm the equipment. Unacceptable waste includes material such as construction & demolition waste, painted wood, and metal. The “reject” material is stockpiled in a separately designated area within the waste receiving area and hauled to the City’s landfill.

Leaves and grass clippings which arrive on-site may be processed through a grinder located in the leaf processing area or placed directly into compost windrows. Sometimes a small quantity of yard waste may be mixed with the leaves and grass clippings to avoid potential odors. Processed material from the grinder has three potential end uses. It may be ground and sold as a soil amendment to a local business, it may be composted, or it may be transferred to another composting facility. If composted, the leaf/grass compost windrows are turned. After the compost process has been completed, the finished compost product is made available to the public or delivered to area customers.

Composting will only occur on the leaf/grass composting area of the facility.

Application Format

This application has been prepared in accordance with Section .1400 of the North Carolina Solid Waste Management Rules. In order to facilitate review of this application, the format precisely follows the structure of the Section .1400 Rules. The following subsections of Section .1400 are restated in their entirety:

- .1404 Siting/Design Requirements for Solid Waste Compost Facilities.
- .1405 Application Requirements for Solid Waste Compost Facilities.
- .1406 Operational Requirements for Solid Waste Compost Facilities.

Responses to each item are shown in *italics*.

.1404 - Siting/Design Requirements for Solid Waste Compost Facilities

(a) A site shall meet the following requirements at the time of initial permitting and shall continue to meet these requirements throughout the life of the permit only on the property owned or controlled by the applicant or by the landowner(s) at the time of permitting:

- (1) A site located in a floodplain shall not restrict the flow of the 100-year flood; reduce the temporary storage capacity of the floodplain; or result in washout of solid waste so as to pose a hazard to human life, wildlife, land or water resources;

The site operations are not located within the 100-year floodplain. This was determined by looking at the FEMA Map dated February 29, 1996, for Forsyth County, North Carolina.

- (2) A 100-foot minimum buffer is required between all property lines and compost areas for Type 3 and 4 facilities, 50-foot for Type 1 or 2 facilities;

The Facility will maintain more than the 50-foot buffer between all property lines and compost areas as required for Type 1 facilities. Please refer to the Site Plan in Appendix C.

- (3) A 500-foot minimum buffer is required between compost areas and residences or dwellings not owned and occupied by the permittee, except that Type 1 and Small Type 2 and 3 facilities shall have a 200-foot minimum buffer;

There are no dwellings or residences within 200 feet of the Facility as shown on the Aerial Photograph Map in Appendix C.

- (4) A 100-foot minimum is required between all wells and compost areas, except monitoring wells;

There are no wells within 100 feet of the Facility as shown on the Aerial Photograph Map in Appendix C.

- (5) A 50-foot minimum buffer is required between perennial streams/rivers and compost areas;

A 50-foot buffer is maintained between Grassy Creek and the compost areas. Please refer to the Site Plan in Appendix C.

- (6) A compost facility shall be located in accordance with 15A NCAC 2B .0200, Classification and Water Quality Standards Applicable to Surface Waters in North Carolina;

According to the NCDENR, Grassy Creek, to which the Facility drains, has a Class C surface water classification.

- (7) All portions of any compost facility located over a closed-out disposal area shall be designed with a pad adequate to protect the disposal area cap from being disturbed, as defined in Part (a)(10)(E) of this Rule, and there shall be no runoff from the pad onto the cap or side slopes of the closed-out area;

The compost area will not be located over a closed-out disposal area.

- (8) A 25-foot minimum distance is required between compost areas and swales or berms to allow for adequate access of firefighting equipment;

A 25-foot buffer will be maintained around the windrows and stockpiles to allow adequate access for fire fighting equipment. Please refer to the Site Plan in Appendix C.

- (9) A site shall meet the following surface water requirements:

- (A) A site shall not cause a discharge of materials or fill materials into waters or wetlands of the state that is in violation of Section 404 of the Clean Water Act;

HDR personnel delineated wetland areas across this property. The site plan identified wetland locations agreed upon with the Corp of Engineers and the North Carolina Department of Water Quality (DWQ) in an onsite meeting on November 16, 2004. Approximately 24 feet of isolated stream channel has been impacted by the leaf processing area.

In addition, the North Carolina Department of Environment and Natural Resources (NCDENR) Land Quality Division approved the Erosion and Sedimentation Control Plan for the Facility. The erosion and sedimentation control plan was designed to prevent the discharge of materials or fill materials into waters or wetlands of the State during construction.

- (B) A site shall not cause a discharge of pollutants into waters of the state that is in violation of the requirements of the National Pollutant Discharge Elimination System (NPDES), under Section 402 of the Clean Water Act; and

The Facility is required to comply with NCDENR's NPDES permit for Composting Facilities and has a certificate of coverage (COC# NCG240008).

- (C) A site shall not cause non-point source pollution of waters of the state that violates assigned water quality standards;

The Facility generally drains to the east side of the site. The Facility should not cause non-point source pollution.

(10) A site shall meet the following groundwater requirements:

(A) A site shall not contravene groundwater standards as established under 15A NCAC 2L;

No specific information regarding groundwater quality exists for the site (there are no groundwater monitoring wells). However, based on the materials to be managed at the site, no groundwater impacts are expected. Additionally, processing areas for yard waste and woody materials are paved.

(B) Portions of a site used for waste receipt and storage, active composting, and curing shall have a soil texture finer than loamy sand and the depth to the seasonal high water table shall be maintained at least 12 inches for a Type 1 or 2 facility and 24 inches for a Type 3 facility, unless pad is provided;

The waste receiving area and load-out area is paved. The leaf processing area has a soil texture finer than loamy sand. Based on site topography and hand augering, depth to seasonal high groundwater exceeds 12 inches. Please refer to Appendix A for a field hand auger report to verify groundwater on site and geology.

(C) A pad shall be provided for portions of a Type 4 facility used for waste receiving and storage, active composting, and curing;

Not required for a Type 1 Facility.

(D) A pad is not required for storage of finished product that is dried so as to pass the Paint Filter Liquids Test (EPA Method 9095), and for which the storage area is prepared in such a manner that water does not collect around the base of the stored material, and where the depth to the seasonal high water table is maintained at least 12 inches; and

Not required for a Type 1 facility.

(E) The liner coefficient of permeability of pads required in accordance with this Rule shall not be greater than 1×10^{-7} centimeters per second. If natural soils are used, the liner must be at least 18 inches thick.

Not required for a Type 1 facility.

(b) For Subparagraphs (a)(2) through (a)(4) and Part (a)(10)(B) of this Rule (dependent upon waste type, facility design, and regional topography), alternative minimum buffers

or requirements may be increased if deemed necessary by the Division in order to protect public health and the environment or to prevent the creation of a nuisance.

(c) A site shall meet the following design requirements;

(1) A site shall not allow uncontrolled public access;

There is a gated entrance into the site, which is locked when the Facility is closed each day.

(2) A site shall meet the requirements of the Sedimentation Pollution Control Law (15A NCAC 4);

The site is operated in accordance with NCDENR Sedimentation Pollution Control Laws.

(3) A site shall meet the requirements of the Air Pollution Control Requirements (15A NCAC 2D) to minimize fugitive emissions and odors; and

When processing dry waste, water can be added at the grinder processing area to reduce fugitive dust.

(4) A site shall be designed to minimize odors at the property boundary.

Static piles and windrows are turned in an effort to minimize odors.

.1405 - Application Requirements for Solid Waste Compost Facilities

(a) The following information is required for an application for a permit to construct and operate a proposed Type 1 or a Small Type 2 or 3 solid waste compost facility, unless the permitting requirements are exempted by Paragraph (g) of Rule. 1402 of this Section;

This Facility receives leaves, yard, untreated, and unpainted wood waste and any combination thereof. Therefore this application addresses a Type 1 Solid Waste Compost facility.

(1) An aerial photograph or scaled drawing, where 1 inch is less than or equal to 400 feet, accurately showing the area within 1/4 mile of the proposed site's boundaries with the following specifically identified:

Refer to the Aerial Photograph Map in Appendix C.

(A) Entire property owned or leased by the person proposing the Facility;

Refer to the Aerial Photograph Map for an outline of the entire property owned by the City of Winston-Salem in Appendix C.



- (B) Location of all homes, wells, industrial buildings, public or private utilities, roads, watercourses, dry runs, and other applicable information regarding the general topography within 500 feet of the proposed facility; and

Refer to the Aerial Photograph Map in Appendix C. The Site Plan, also in Appendix C, shows the topography immediately surrounding the Facility.

- (C) Land use zoning of the proposed site.

Refer to the zoning map in Appendix A.

- (2) A letter from the unit of government having zoning jurisdiction over the site which states that the proposed use is allowed within the existing zoning, if any, and that any necessary zoning approval or permit has been obtained.

Refer to the letter (located in Appendix A) from the City of Winston-Salem Inspections Division stating that the property is zoned General Industrial (GI), and that the land use is consistent with the zoning.

- (3) An explanation of how the site complies with siting and design standards in Rule .1404 of this Section.

Refer to Section .1404 responses above.

- (4) A detail report indicating the following:

- (A) Waste type(s), source and estimated quantity of the solid waste to be composted, including the source and expected quantity of any bulking agent or amendment (if applicable), any expected recycle of bulking agent or compost, and any seasonal variations in the solid waste type or quantity; and

The types of waste that enter the Facility include yard waste, leaves, grass clippings, tree parts, shipping pallets, and some unpainted, untreated wood such as scraps from building truss fabrications.

Under normal operating conditions the facility is estimated to process as much as approximately 45,000 tons per year of yard waste, pallets and woody waste, grass clippings, and leaves.

This total is broken up into the following categories:

- *Tree parts/yard waste (curbside brush)*
- *Shipping pallets and unpainted/untreated wood*
- *Grass clippings*
- *Leaves*

The yard waste comes to the site primarily from curb-side pickup, landscape companies, and private citizens. Unpainted, untreated wood waste (such as pallets) comes from local industry.

No specific bulking agents are expected to be used.

Typical seasonal variations are experienced at the site for leaves, grass, clippings, etc.

- (B) For facilities that utilize natural soils as a pad, a soil evaluation of the site conducted by a soil scientist down to a depth of 4 feet, or to bedrock or evidence of a seasonal high water table, to evaluate all chemical and physical soil properties and depth of the seasonal high water table.

HDR conducted a hand auger survey by a licensed geologist to evaluate the soil properties and groundwater elevation onsite. Based on a visual classification, a red-brown clayey silt was encountered in the leaf processing area to a depth of 4 to 7 feet. A brown fine grained sandy, clayey, silt was encountered in the yard waste, pallet, and woody waste area to a depth of 5 feet. Based on the hand auger results being dry and the majority of the composting area being on structural fill, HDR would anticipate the depth to the estimated seasonal high water table shall be greater than one (1) foot.

- (5) Site plan at a scale where 1 inch is less than or equal to 100 feet to the inch that delineates the following:

- (A) Existing and proposed contours, at intervals appropriate to the topography;

Please refer to the Site Plan in Appendix C.

- (B) Location and elevations of dikes, trenches, and other water control devices and structures for the diversion and controlled removal of surface water;

Please refer to the Erosion and Sedimentation Control Plan in Appendix A.

- (C) Designated setbacks and property lines;

Please refer to the Site Plan found in Appendix C.

- (D) Proposed utilities and structures; and

Please refer to the Site Plan found in Appendix C.

- (E) Areas for unloading, processing, active composting, curing, and storing of material.

Please refer to the Site Plan found in Appendix C.



(6) A description of the operation of the Facility, which must include at a minimum:

(A) Name, address and phone number for the person responsible for the operation of the Facility;

Physical address of the site:

*180 Northstar Drive
Rural Hall, NC 27045*

Property Owner and City Contact:

*Ms. Jan McHargue
Solid Waste Administrator
Winston-Salem/Forsyth County Utilities Division
P.O. Box 2511
Winston-Salem, NC 27102
(336) 747-7310*

Proposed Facility Operator:

*Eric Wallace
Wallace Farm, Inc.
14410 Eastfield Rd.
Huntersville, NC 28078
(704) 875-2975 ext. 17*

The City is in the process of selecting a contractor for the operations of the Facility. If the selection is not Wallace Farms then the new contact information of the chosen operator will be sent to NCDENR.

(B) List of personnel required and the responsibilities of each position;

The following is a list of expected personnel and their responsibilities:

<u><i>Personnel</i></u>	<u><i>Responsibility</i></u>
<i>Operations Manager</i>	<i>Operation of the Facility</i>
<i>Scale House Attendant</i>	<i>Inspect incoming waste and record incoming waste weight (City employee)</i>
<i>Loader Operators (2-4)</i>	<i>Oversee waste processing and load shredded waste in public vehicles</i>
<i>Excavator Operator</i>	<i>Manage and feed tub grinder</i>
<i>Truck Driver (2)</i>	<i>Deliver ground waste to industry or other permitted facility</i>

- (C) Operation plan for the Facility;

The Operations Plan for the Facility can be found in Appendix B.

- (D) Special precautions or procedures for operating during wind, heavy rain, snow, freezing, or other adverse conditions;

Refer to the Operations Plan in Appendix B.

- (E) A description of actions to be taken to minimize noise, vectors, air borne particulates, and odors; and

The site is located within a lightly developed industrial area. The noise generated at the site from equipment engines and electric motors is typical of other neighboring industries. No residential communities adjoin the property. The Facility operates during daylight hours, which further minimize noise complaints.

The windrows should be placed with the slope to allow free drainage between the windrows and to maintain proper moisture content. Please refer to the Site Plan in Appendix C for an approximate layout of the windrows. In the event odor becomes a problem with the compost, several measures could be taken to minimize the odor. The windrows could be turned or ground leaves could be incorporated into the windrows. The windrows would be turned using the on-site front-end loader or compost turner. Another method to control odor would be to cover the compost with more mature compost that would act as a biofilter.

There is little, if any, odor associated with mulch. In the event odor does become a problem with the mulch, the mulch should be turned using the front-end loader.

In order to minimize airborne particulates of either the compost or mulch, the material can be sprayed with water at the grinder. In addition, efforts are made to minimize grinding during windy conditions.

- (F) A description of the ultimate use for the finished compost, method for removal from the site, and a contingency plan for disposal or alternative usage of residues or finished compost that cannot be used in the expected manner due to poor quality or change in market conditions.

Leaves and grass clippings are composted to give away, sell, or use in-house by the City. In addition, uncomposted leaves may be diverted to other permitted compost facilities.

Yard waste, pallets, and woody waste are ground into fine and coarse mulch to be given away, sold or used by the City, sent to Wallace Farm Compost Facilities, or sold for boiler fuel.

The City has the ability to direct wastes to other City owned facilities to manage the operation of this Facility.

(7) A report on the design of the Facility, including:

(A) Design capacity of the Facility;

Under normal operating conditions, this facility has the capacity to process approximately 45,000 tons per year of yard waste, pallets, woody waste, grass clippings, and leaves.

In addition, the Facility operates the electrical machines on off-peak power usage time. To accommodate occurrences of above normal waste and product levels, operating hours will be extended until the level of waste and product are returned to normal. The capacities of the major equipment used are listed below:

- *Horizontal grinder – 50 tons/hr*
- *Tub Grinder – 150 tons/hr*
- *Compost Turner – 1,200 cy/hr*

(B) A process flow diagram of the entire Facility, including the type, size, and location of all major equipment, and feedstock flow streams. The flow streams shall indicate the quantity of materials on a wet weight and volumetric basis;

Incoming material is separated into four categories, grass, leaves, tree parts, and pallets. Each category is recorded on a tonnage basis with the exception of leaves which are recorded on a per cubic yard basis. Outgoing material may be sold on a weight basis for mulch and compost and on a volume basis for boiler fuel. The materials may also be sent to a Wallace Farm Compost Facility. The annual outgoing tonnage for each material type is reported to NCDENR.

Refer to the process flow diagrams found in Appendix C. The Overall Process Flow Diagram depicts the flow of yard waste, pallets, woody waste, grass clippings, and loose leaves. The Flow Diagram for Leaf Processing Area depicts the flow of the leaves.

(C) The means for measuring, shredding, mixing, and proportioning input materials;

Should odors from the grass clippings become a problem, the grass will be mixed with other materials immediately. If enough material is available, leaves and grass will be mixed together at a ratio of approximately 3 lbs. of leaves to 1 lb. of grass.

- (D) Anticipated process duration, including receiving, preparation, composting, curing, and distribution;

From the time the material arrives on-site to the time it leaves is generally short, except for the compost material. In the event of an ice or windstorm, unprocessed material may remain for up to two months.

When composting is initially performed at this Facility, the compost material should be turned so that the internal temperature remains at or above 55 degrees Celsius (131 degrees F) for three days. The compost material should be monitored regularly throughout the composting process in order to ensure that the temperature requirement is being fulfilled. After the temperature requirement is met, the temperature of the material does not need to be monitored.

- (E) A description of the location of all temperature, air, and any other type of monitoring points, and the frequency of monitoring;

Internal temperature of the windrow is taken and recorded approximately every two weeks after completion of the windrow at approximately 50 foot intervals along each windrow and increased to daily readings during business hours once internal temperatures near 131°F. Once internal temperatures reach 131°F for 3 consecutive days, composting has met pathogen reduction requirements and windrows are allowed to cure on site. Once it is determined that the temperature requirement is being met, the temperature can be monitored less frequently. Temperature monitoring should be recorded on the Compost Monitoring Form (or similar form) found in Appendix B.

Temperature of the mulch and boiler fuel will not be monitored or recorded at this Facility. If the material is not completely removed in a short amount of time, a staff member will visually inspect and estimate the temperature of the material. If the mulch is hot or steam is coming from the pile, the mulch will be turned using the on-site front-end loader. If the mulch or boiler fuel is not heating up, there is no need for it to be turned.

- (F) A description of how the temperature control and monitoring equipment will demonstrate that the Facility meets the requirements in Rule .1406 Items (10), (11), or (12) of this Section, as appropriate for the feedstock;

Rule .1406 (10) applies to this Facility (a Type 1 facility). Rule .1406 (11) & (12) do not apply to this Facility. Please refer to .1405(7)(E).

- (G) The method of aeration provided and the capacity of aeration equipment;
and

When composting is performed at this Facility, the windrows are turned using equipment such as a front-end loader or compost turner.

- (H) A description of the method to control surface water run-on and run-off; and the method to control, collect, treat, and dispose of leachate generated.

The surface water flows generally from the west side of the site to the east toward Grassy Creek.

- (8) A description of the label or other information source that meets the requirements of Rule .1407(k) of this Section.

This is a Type 1 facility and it produces a product suitable for public distribution. The product may be distributed to the public in an unlimited and unrestricted manner provided the product is free from offensive odor and does not contain sharp particles that would cause injury to those handling the product. A handout is available to the public at the scale house. The handout contains the information as required in .1407(g). Please refer to Appendix B for the handout.

- (9) Plans and specifications for the Facility, including manufacturer's performance data for all equipment selected.

The following is an example list of the equipment used at this type of facility:

- *7' x 36' chain conveyor*
- *20' x 7' vibrating feeder*
- *Arasmith 50' x 86" horizontal salvage hog*
- *Radial stacker conveyor*
- *84" x 36" stacking belt conveyor*
- *Barlo 160D double boom loader*
- *JD 644G wheel loaders with 10 cy bucket*
- *Kenworth truck-tractors*
- *44' open top trailers*
- *45' walking floor trailers*
- *International dump truck, 24 cy body*
- *CB1 4000 HZ portable grinder/shredder*
- *Ford 445C wheel loader*
- *Innovator 7221 trommel screen*
- *624H John Deere wheel loaders (1 with bush forks, and 1 with a loadout bucket)*
- *Vermeer TG7000 Tub Grinder*
- *Cat or John Deere Excavator*
- *2014 Sittler Compost Turner, Model #512*

- (10) A detailed operation and maintenance manual outlining:
- (A) A quality assurance plan for the process and final product which lists the procedures used in inspecting incoming material, monitoring, sampling and analyzing the compost process and final product, test schedule, and record keeping requirements;
 - (B) Contingency plans detailing corrective or remedial action to be taken in the event of equipment breakdown; non-conforming waste delivered to the Facility; spills, and undesirable conditions such as fires, vectors and odors; and
 - (C) An explanation of how the Facility will comply with operational requirements as outlined in Rule .1406 of this section, detailed operational information and instruction, an outline of reports to be submitted in compliance with this section, and safety instructions.

Please refer to Appendix B for the Operations Plan and section .1406 below.

- (11) As-built drawings where applicable.

Please refer to Appendix C for the Site Plan.

The remaining requirements in .1405 do not apply to this Facility because those requirements are for a Large Type 2, 3, or a Type 4 facility (this Facility is a Large Type 1 facility) or are about requirements for a permit modification.

.1406 - Operational Requirements for Solid Waste Compost Facilities

Any person who maintains or operates a solid waste compost facility shall maintain and operate the site to conform with the following practices:

- (1) Plan and Permit Requirements:
 - (A) Construction plans and conditions of permit shall be followed; and
The construction plans and the conditions of the permit shall be followed.
 - (B) A copy of the permit, plans, and operational reports shall be maintained on-site at all times.
A copy of this approved permit, plans, and operational reports are maintained on-site at all times.
- (2) Adequate erosion control measures shall be practiced to prevent on-site erosion and to control the movement of soil or contaminants from the site.

The facility adheres to the NCDENR approved erosion and sedimentation control plan.

- (3) Surface water shall be diverted from the operational, compost curing, and storage areas.

Diversion berms on channels are located at the top of slopes to prevent run-on into the working area. Stormwater that traverses disturbed areas is directed to the erosion control features.

- (4) Leachate shall be contained on-site and treated to meet the standards of the off-site disposal method.

Stormwater from the leaf/grass composting area will be handled in accordance with NPDES NCG240000 under which the Facility has a Certificate of Coverage (COC# NCG240008).

- (5) Access and Security Requirements:

- (A) Large sites shall be secured by means of gates, chains, berms, fences, or other security measures demonstrated to provide equivalent protection approved by the Division, to prevent unauthorized entry.

The Facility is only accessible by one gate that is locked when the Facility is closed.

- (B) An operator shall be on duty at the site at all times while the Facility is open for public use to ensure compliance with operational requirements, and access to such facilities shall be controlled.

When the Facility is open, there is a scale house attendant on site.

- (C) The access road to the site shall be of all-weather construction and maintained in good condition.

The access road into the Facility is paved.

- (6) A site shall only accept those solid wastes that it is permitted to receive.

The site only accepts those materials within this permit. The waste is visually inspected at the scale house by the scale house attendant. Any waste that does not meet acceptable criteria is rejected. Further visual screening is performed by the operators.

- (7) Safety Requirements:

- (A) Open burning of solid waste is prohibited.

No open burning will occur on-site.

- (B) Equipment shall be provided to control accidental fires and arrangements made with the local fire protection agency to immediately provide fire-fighting services when needed.

Fire control will be managed by the operations personnel. A fire station is located within 4.8 miles of the site.

- (C) Personnel training shall be provided to ensure that all employees are trained in site specific safety, remedial and corrective action procedures.

Training of City personnel is provided to ensure that all employees are trained in site-specific safety, remedial and corrective action procedures.

(8) Sign Requirements:

- (A) Signs providing information on waste that can be received, dumping procedures, the hours during which the site is open for public use, the permit number, and other pertinent information shall be posted at the site entrance.

Signs designating the types of waste that can be received, hours of operation, and permit number are displayed at the site entrance and at the scale house.

- (B) Traffic signs/markers shall be provided as necessary to promote an orderly traffic pattern to and from the discharge area and to maintain efficient operating conditions.

The site is signed as necessary.

- (C) Signs shall be posted stating that no hazardous waste, asbestos containing waste, or medical waste can be received at the site.

Signs with these statements are installed at the Facility.

(9) Monitoring Requirements:

- (A) Specified monitoring and reporting requirements shall be met.
- (B) The temperature of all compost produced shall be monitored sufficiently to ensure that the pathogen reduction criterion is met.

Please refer to .1405(a)(7)(D) & (E).

- (10) Compost process at Type 1 facilities shall be maintained at or above 55 degrees Celsius (131 degrees F) three days and aerated to maintain elevated temperatures.

Please refer to .1406(9) above.

- (11) Types 2, 3, and 4 facilities shall maintain the compost process at a temperature above 40 degrees Celsius (104 degrees F) for 14 days or longer and the average temperature for that time shall be higher than 45 degrees Celsius (113 degrees F), or Types 2, 3, and 4 facilities shall meet the vector attraction reduction requirements in 40 CFR 503.33(b)(4) or (7). Requirements of 40 CFR 503.33(b)(4) and (7) are hereby incorporated by reference, including any subsequent amendments or additions.

This is a Type 1 facility; therefore, this rule does not apply.

- (12) The composting process shall qualify as a process to further reduce pathogens for all Types 3 and 4 facilities. The following are acceptable methods:

- (A) The windrow composting method, in which the following requirements apply: Aerobic conditions shall be maintained during the compost process. A temperature of 131 degrees F (55 degrees Celsius) or greater shall be maintained in the windrow for at least 15 days. During the high temperature period, the windrow shall be turned at least five times.

Does not apply to this site.

- (B) The static aerated pile composting method, in which the following requirements apply: Aerobic conditions shall be maintained during the compost process. The temperature of the compost pile shall be maintained at 131 degrees F (55 degrees Celsius) or greater for at least three days.

Does not apply to this site.

- (C) The within-vessel composting method, in which the temperature in the compost piles shall be maintained at a minimal temperature of 131 degrees F (55 degrees Celsius) for at least three days.

Does not apply to this site.

- (13) Nitrogen bearing wastes shall be incorporated as necessary to minimize odor and the migration of nutrients.

Nitrogen bearing wastes will be incorporated as necessary to minimize odor and the migration of nutrients.

- (14) Miscellaneous Requirements:

- (A) The finished compost shall meet the classification and distribution requirements outlined in Rule .1407 of this Section.

The compost and mulch provided at the Facility, based on the materials processed, meets the criteria outlined in .1407 (d)(3) (minimal pathogenic

organisms, free of offensive odor, and no known sharp particles). Therefore, the mulch and compost is managed with “unrestricted application and distribution.”

- (B) The quality of the final product shall determine the allowable uses as outlined in Rule .1407 of this Section.

See (14)(A) above.

- (C) The final product shall be approved by the Solid Waste Section as outlined in Rule .1407 Paragraph (e) of this Section.

This is a Type 1 Facility and it is understood that testing is not required.

- (i) Non-compostable solid waste and unacceptable compost shall be disposed in a solid waste management facility permitted to receive the particular type of waste under 15A NCAC 13B.

Unacceptable waste and process reject waste are disposed properly.

- (ii) The amount of compost stored at the Facility shall not exceed the designed storage capacity.

The stored compost will not exceed the site capacity.

A

Appendix A – Related Correspondence

2010 Compost Facility Permit
2005 Compost Facility Permit
Email: Ken Pickle, NC DENR DWQ Stormwater Permitting Unit
With Memo from HDR
Erosion and Sedimentation Control Plan
Letter: Lanny Gough, Zoning Code Enforcement Supervisor
With Letter from Ed Gibson requesting land use verification
Hand Auger Memo
Waters of the United States Delineation
Deeds



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North Carolina Department of Environment and Natural Resources
Division of Waste Management

Beverly Eaves Perdue
Governor

Dexter R. Matthews
Director

Dee Freeman
Secretary

October 6, 2010

Ms. Jan McHargue
Solid Waste Administrator
P. O. Box 2511
Winston-Salem, NC 27102

Subject: City of Winston-Salem
Forum 52 Large Type-1 Solid Waste Composting Facility
Permit Application and Operations Plan
Facility Permit No.: SWC-34-23

Dear Ms. McHargue:

Enclosed is your permit to operate a Large, Type-1 Solid Waste Compost Facility in the city of Winston-Salem, Forsyth County, North Carolina. Please carefully read all permit conditions. The operation plan submitted with your application has been incorporated into your permit. Your permit number is SWC-34-23 with an expiration date of October 6, 2015.

Mr. John Patrone, Environmental Senior Specialist, will be responsible for facility inspections. Mr. Patrone can be contacted at (336)-771-5095. If you have any questions please feel free to contact our staff engineer Mr. Zi-Qiang Chen, Ph.D. at 919-508-8523, or myself at 919-508-8508.

Sincerely,

Michael E. Scott, Supervisor
Composting & Land Application Branch

ZQC:dr

Attachment (all cc's)

cc: Michael Plummer, PE, HDR Inc. 440 S Church St, Suite 1000, Charlotte, NC 28202
John Patrone, NCDWM Field Operations Branch
Zi-Qiang Chen, Ph.D., Environmental Engineer II
DWM/SWS/CLA/PERMIT/FORSYTH/FORUM 52

STATE OF NORTH CAROLINA
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF WASTE MANAGEMENT
1646 MAIL SERVICE CENTER, RALEIGH, NORTH CAROLINA 27699-1646

City of Winston-Salem

is hereby issued a permit to operate a

LARGE, TYPE 1 SOLID WASTE COMPOST FACILITY

On Northstar Drive

Permit Number SWC-34-23

in accordance with Article 9, Chapter 130A, of the General Statutes of North Carolina and all rules promulgated there under and subject to the conditions set forth in this permit.

10/6/10
Date


Michael E. Scott, Branch Head
Solid Waste Section

Permit Conditions:

1. Operation and maintenance of this facility shall be in accordance with the Solid Waste Compost Rules (15A NCAC 13B, Section .1400), the Permit Application and the Operation and Maintenance Manual submitted with the permit application. Failure to comply may result in compliance actions or permit revocation.
2. This facility shall be operated in such a manner that erosion and runoff from the site shall be controlled. Any leachate generated at the facility and any runoff from the facility shall be managed in such a manner that ground or surface water quality will not be adversely affected. The facility shall be maintained to prevent the accumulation of stormwater or leachate on travel areas or active composting sites.
3. An appropriate Division of Water Quality permit for managing any stormwater or wastewater at the facility shall be maintained as required.
4. Only materials specifically listed in the permit application may be managed at this facility without adequate testing and prior approval by the Division of Waste Management in writing.
5. All compost produced at the facility shall meet the requirements of Rule .1407 of the Solid Waste Compost Rules and the permit application.
6. Testing and reporting shall be conducted in accordance with the requirements of Rule .1408 and the permit application. An annual report of facility activities for the fiscal year July 1 to June 30 shall be submitted to the Division by August 1 of each year on forms provided by the Division. This report shall include the amount of materials received and composted in tons.
7. The compost operation and the compost pad shall be operated and maintained with sufficient dust control measures to minimize airborne emissions and to prevent dust from becoming a nuisance or safety hazard.
8. Windrow dimensions for active composting shall be limited to a maximum of 15-foot high x 30-foot wide unless otherwise approved by the Division.
9. In the event of a mechanical failure, the facility shall immediately use its best effort to utilize substitute equipment for completion of the composting operation.

Facility: Forum 52, City of Winston-Salem
SWC Permit #: SWC-34-23
County: Forsyth

Page 3 of 3

10. Upon receipt of an odor complaint, the facility operator shall investigate and take actions as necessary to minimize the cause of the complaint. A copy of all written complaints regarding this facility shall be maintained for the duration of the permit including the operator's actions taken to resolve the complaints.
11. The odor management procedures shall be followed to minimize odors at the facility boundary. In response to a verified offsite odor complaint resulting from the compost windrows, the facility shall immediately cover the odor-generating windrow(s) with a 6-inch layer of finished compost.
12. Wastes shall not be received that are in an anaerobic state.
13. The facility shall be operated in a manner that reduces the potential for vector attraction.
14. Stockpiling of finished product shall be limited to dimensions of 35' in height by 50' in width.
15. The facility operational capacity for this permit shall be limited to 45,000 tons of yard waste, pallets and leaves received for composting per year.
16. Groundwater monitoring wells may be required if there is indication of the potential for groundwater contamination.
17. This permit shall expire on October 6, 2015. Changes in ownership, increase in facility capacity, or receiving feedstocks not identified in the permit application shall require a permit modification.



North Carolina Department of Environment and Natural Resources

Dexter R. Matthews, Director

Division of Waste Management

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

July 26, 2005

Ms. Jan McHargue
Solid Waste Administrator
City of Winston-Salem
P.O. Box 2511
Winston-Salem, North Carolina 27102

Re: City of Winston-Salem – Compost Facility – Permit #SWC-34-23

Dear Ms. McHargue:

Enclosed is your permit to operate a Large, Type I Solid Waste Compost Facility in the City of Winston-Salem, NC on Northstar Drive in Forsyth County, NC. Please carefully review the permit conditions.

Mr. Jason Watkins, Waste Management Specialist in the Winston-Salem Regional Office will be the contact person for facility inspections. Please notify Mr. Watkins when construction will start, Mr. Watkins can be contacted at 336-771-4600. If I can be of further assistance, please call me at 919-508-8508.

Sincerely,

Ted Lyon, Supervisor
Composting & Land Application Branch

cc: Michael Plummer, PE - HDR Engineering, Inc. of the Carolinas
Jason Watkins, Winston-Salem Regional Office

h:cia/compost/permits/34-forsy/Winston-Salem/swc34-23-cl_07-05

STATE OF NORTH CAROLINA
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF WASTE MANAGEMENT
1646 Mail Service Center RALEIGH, N.C. 27699-1646

City of Winston-Salem, NC

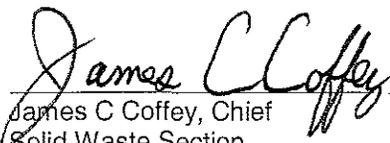
is hereby issued a permit to operate a

LARGE, TYPE 1 SOLID WASTE COMPOST FACILITY

On Northstar Drive

Permit Number SWC-34-23

In accordance with Article 9, Chapter 130A, of the General Statutes of North Carolina and all rules promulgated thereunder and subject to the conditions set forth in this permit.

 07/26/05
James C Coffey, Chief Date
Solid Waste Section

Permit Conditions

1. Operation and maintenance of this facility shall be in accordance with the Solid Waste Compost Rules (15A NCAC 13B, Section .1400), the permit application and the Operation and Maintenance Manual submitted with the permit application. Failure to comply may result in compliance actions or permit revocation.
2. The facility layout shall be maintained in accordance with the approved site plan submitted July 8, 2005.
3. Waste shall not be received at the facility until a pre-operation inspection has been conducted and the facility construction determined to be consistent with the approved application.
4. This facility shall be operated in such a manner that erosion and runoff from the site shall be controlled. Any leachate generated at the facility shall be managed in such a manner that it will not be allowed to adversely impact ground or surface waters.
5. Only materials specifically listed in the permit application may be managed at this facility without adequate testing and prior approval of the Division of Waste Management. Ash shall not be added to the windrows or the finished compost product until tested for total metals and approved by the Division of Waste Management.
6. Engineered wood products received at this facility shall only be distributed as boiler fuel.
7. Wastes with low carbon-nitrogen ratios, such as grass clippings, shall be incorporated into the windrows prior to the waste starting to compost (heat) or generate odors.
8. Odor shall be controlled at the property boundary.
9. Compost produced at the facility shall meet the requirements of Rule .1407 of the Solid Waste Compost Rules and the permit application.
10. Windrows shall be of appropriate size and turned as needed to maintain aerobic conditions.
11. Testing and reporting shall be conducted in accordance with the requirements of Rule .1408 and the permit application. An annual report of facility activities for the fiscal year July 1 to June 30 shall be submitted to the Division by August 1 of each year. This report shall include the amount of materials composted in tons.
12. Groundwater monitoring wells may be required if there is indication of the potential for groundwater contamination.
13. The compost operation and the compost pad shall be operated and maintained with sufficient dust control measures to minimize airborne emissions and to prevent dust from becoming a nuisance or safety hazard.
14. This permit shall expire on August 1, 2010. Changes in ownership, increase in facility capacity, or receiving additional feedstocks shall require a permit modification.

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North Carolina Department of Environment and Natural Resources

Pat McCrory
Governor

John E. Skwarek
Secretary

April 22, 2014

Jan McHargue
City of Winston-Salem
101 North Main Street
Winston-Salem, NC 27102

Rec'd 4/29/14

Subject: General Permit No. NCG240000
Forum 52 Composting Facility
COC NCG240008
Forsyth County

Dear Jan McHargue:

In accordance with your application for an NPDES stormwater discharge permit received on June 27, 2012, we are forwarding herewith the subject certificate of coverage to discharge under the subject state – NPDES general permit. This permit is issued pursuant to the requirements of North Carolina General Statute 143-215.1 and the Memorandum of Agreement between North Carolina and the US Environmental Protection Agency dated October 15, 2007 (or as subsequently amended).

Based on your representation in the permit application that the Forum 52 Composting Facility is a Type 1 compost facility, the provisions of the recently enacted Session Law 2012-200 pertain to the facility. Consistent with the provisions of SL 2012-200, DWQ will permit all the composting discharges from your Type 1 facility under the stormwater discharge provisions of the permit, and the General Permit requirements related to process wastewater discharges do not apply to the composting discharges from your Type 1 facility.

This permit does not affect the legal requirements to obtain other permits which may be required by the Division of Energy Mineral and Land Resources, or any other federal, state, or local governmental permit that may be required.

Please note that this certificate of coverage is not transferable except upon the specific action of the Division of Energy Mineral and Land Resources.

If you have any questions concerning this permit, please contact Ken Pickle at telephone number (919) 807-6376, or at ken.pickle@ncdenr.gov.

Sincerely,


for Tracy E. Davis, P.E.

cc: Winston-Salem Regional Office
Central Files
Stormwater Permitting Unit Files

Enclosures

Certificate of Coverage NCG240008
Copy of General Permit NCG2400000, permittee only
4. Quarterly stormwater monitoring forms, permittee only
4. Visual monitoring forms, permittee only

STATE OF NORTH CAROLINA
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF ENERGY MINERAL & LAND RESOURCES

CERTIFICATE OF COVERAGE No. NCG240008: authorizing SURFACE WATER DISCHARGES under the National Pollutant Discharge Elimination System (NPDES) program.

In compliance with the provision of North Carolina General Statute 143-215.1 as amended by North Carolina Session Law 2012-200, other lawful standards and regulations promulgated and adopted by the North Carolina Environmental Management Commission, and the Federal Water Pollution Control Act, as amended,

City of Winston-Salem

is hereby authorized to discharge from a Type 1 composting facility (as defined in 15A NCAC 13B .1400) located at

Forum 52 Composting Facility
180 North Star Drive
Rural Hall
Forsyth County

to receiving waters designated as Grassy Creek, a class C, water in the Yadkin / Pee Dee River Basin.

Pursuant to the provisions of Session Law 2012-200, a Type 1 composting facility is not required to have a NPDES permit for discharge of process wastewater. Notwithstanding any contrary provisions in the General Permit, all discharges of stormwater, including stormwater which comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product are authorized which comply with the stormwater pollution management requirements, monitoring requirements, reporting requirements, and other conditions set forth in Part I, Part II A - D, Part IV, Part V, Part VI, and Part VII of General Permit No. NCG240000. In accordance with the provisions of Session Law 2012-200, the process wastewater management requirements do not apply to the composting discharges from this Type 1 facility, and all composting operation discharges are authorized when the facility complies only with the stormwater provisions of the General Permit. To the extent any provisions may be read to impose the process wastewater standards in the General Permit to discharges from the permittee's facility, the provisions are suspended and do not apply.

This Certificate of Coverage is an enforceable part of General Permit NCG240000, and shall become effective for the permittee on April 22, 2014.

This Certificate of Coverage shall remain in effect for the duration of the General Permit.

Signed this day, April 22, 2014.



for Tracy E. Davis, P.E., Director
Division of Energy Mineral & Land Resources
By the Authority of the Environmental Management Commission

STATE OF NORTH CAROLINA
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF WATER QUALITY
GENERAL PERMIT NO. NCG240000

TO DISCHARGE STORMWATER AND PROCESS WASTEWATER UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
for
Compost Facilities

IMPORTANT CHANGES & GUIDANCE

December 8, 2011:

In response to Section 9 of Session Law 2011-394, DWQ will not implement some of the ~~Authorization to Construct~~ requirements in the current version of the permit, and we will revise the printed text of the General Permit to be consistent at the next scheduled renewal period. Specifically:

- a. In the permit text, Part III Section A items 1, 2, 3, 4, 6, and 7 will be of no effect.
- b. The permit text will retain the requirement for Regional Office notification before a process wastewater system comes on-line, as required by Part III Section A item 5.
- c. Part III Section B generally as to the requirements to effectively operate any wastewater system remains in effect.
- d. DWQ will implement any other internal references in the permit as to ~~Authorization to Construct~~, or as to Part III, in accordance with items a, b, and c above.
- e. Other DWQ development and supporting documentation outside of the permit text will be amended to reflect the implementation of these changes as time allows.

STATE OF NORTH CAROLINA
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF WATER QUALITY
GENERAL PERMIT NO. NCG240000

TO DISCHARGE STORMWATER AND PROCESS WASTEWATER UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
for
Compost Facilities

In compliance with the provisions of North Carolina General Statute 143-215.1, other lawful standards and regulations promulgated and adopted by the North Carolina Environmental Management Commission and the Federal Water Pollution Control Act, as amended, this permit is hereby issued to all owners or operators, hereinafter permittees, which are covered by this permit as evidenced by receipt of a Certificate of Coverage by the Environmental Management Commission to allow the **discharge of stormwater and process wastewater to the surface waters of North Carolina** or to a separate storm sewer system conveying discharges to surface waters in accordance with the terms and conditions set forth herein.

Coverage under this General Permit is applicable to:

- ◆ Stormwater point source discharges associated with composting operations (Standard Industrial Classification 2875) classified as: large Type 1, Type 2, and small Type 3 Facilities as described in regulations administered by the Division of Waste Management and found at 15A NCAC 13B .1402(f); and associated vehicle and equipment maintenance activities;
- ◆ Process wastewater discharges associated with the same composting operations;
- ◆ Stormwater point source discharges and process wastewater discharges from like industrial activities deemed by DWQ to be similar to composting operations in the process, or the discharges, or the exposure of raw materials, intermediate products, by-products, products, or waste products.

Except upon DWQ determination of similarity as provided immediately above, the following activities and associated discharges are excluded from coverage under this General Permit:

- ◆ Composting operations classified as small Type 1 Facilities as also described in 15A NCAC 13B .1402(g);
- ◆ Backyard composting and on-farm composting as also described in 13B .1402(g);
- ◆ Composting operations classified as Type 4 and large Type 3 Facilities in 13B .1402(f).
- ◆ Composting operations for residuals management as described in regulations administered by the Aquifer Protection Section of DWQ and found at 15A NCAC 2T .1100.
- ◆ Composting operations with discharges to especially protected receiving waters classified as ORW, HQW, trout waters, PNA waters, or zero-flow streams as described at 15A NCAC 2B .0206.
- ◆ Stand-alone mulching-only facilities with no accelerated biological decomposition.

The General Permit shall become effective on October 1, 2011.

The General Permit shall expire at midnight on September 30, 2016.

Signed this day September 23, 2011.

Original signed by Matt Matthews
for Coleen H. Sullins, Director
Division of Water Quality
By the Authority of the Environmental Management Commission

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PART I – INTRODUCTION

SECTION A: GENERAL PERMIT COVERAGE

All persons desiring to have facilities covered by this General Permit must register with the Division of Water Quality (DWQ) by the filing of a Notice of Intent (NOI) and applicable fees. The NOI shall be submitted and a certificate of coverage issued prior to any point source discharge of stormwater associated with industrial activity or process wastewater.

This General Permit covers composting operations that discharge stormwater that has come in contact with qualifying finished compost, and site stormwater which has not come in contact with any raw materials, intermediate products, final products, by-products, or waste products during the compost manufacturing process; and stormwater runoff from vehicle and equipment maintenance activities.

This General Permit also covers composting operations with discharges of process wastewater arising from raw materials, intermediate products, final products not qualifying as finished compost, by-products, or waste products.

This General Permit also authorizes the construction and operation of process wastewater treatment facilities.

Any owner or operator not wishing to be covered or limited by this General Permit may make application for an individual NPDES permit in accordance with NPDES procedures in 15A NCAC 2H .0100, stating the reasons supporting the request. Any application for an individual permit should be made at least 180 days prior to commencement of discharge.

This General Permit does not cover activities or discharges covered by an individual NPDES permit until the individual permit has expired or has been revoked. Any person conducting an activity covered by an individual permit but which could be covered by this General Permit may request that the individual permit be revoked and coverage under this General Permit be provided.

Any facility may apply for new or continued coverage under this permit until a Total Maximum Daily Load (TMDL) for pollutants for stormwater or wastewater discharges is established. A TMDL sets a pollutant-loading limit that affects a watershed, or portion of a watershed, draining to a specific impaired water. **For discharges to watersheds affected by a TMDL, coverage under this permit may depend on the facility demonstrating it does not have reasonable potential to violate applicable water quality standards for those pollutants as a result of discharges.** If DWQ determines that discharges have reasonable potential to cause water quality standard violations, the facility shall apply for an individual permit 180 days prior to the expiration date of this General Permit. Once that individual permit is effective, the facility will no longer have coverage under this General Permit. Note that the permittee must identify impaired waters (scheduled for TMDL development) and waters already subject to a TMDL in the Site Plan, as outlined in the Stormwater Pollution Prevention Plan, Part II, Section A.

SECTION B: PERMITTED ACTIVITIES

Until coverage under this permit expires or is modified or revoked, the permittee is authorized to discharge stormwater and process wastewater to the surface waters of North Carolina, or to a separate storm sewer system, which has been adequately treated and managed in accordance with

the terms and conditions of this General Permit. **The types of authorized discharges are dependent upon DWQ approval and are detailed in the permittee's individual Certificate of Coverage (COC); where applicable, the COC also details DWQ's Authorization to Construct (ATC) and authorization to operate process wastewater treatment facilities.**

Any other point source discharge to surface waters of the state is prohibited unless it is an allowable non-stormwater discharge or is covered by another permit, authorization, or approval. If composting operations will expand or change such that the types of discharges are affected, the permittee shall contact DWQ in advance to determine if modifications to the COC are necessary.

Where wetlands are located on, or nearby, composting operations, discharges allowed by this permit, and site operations, must meet applicable wetland standards as outlined in 15A NCAC 2B .0230 and .0231 and water quality certification requirements as outlined in 15A NCAC 2H .0500.

The discharges allowed by this General Permit shall not cause or contribute to violations of Water Quality Standards.

This permit does not relieve the permittee's responsibility for compliance with any other applicable federal, state, or local law, rule, standard, ordinance, order, or decree.

SECTION C: COMPLIANCE SCHEDULE FOR NEW AND EXISTING DISCHARGERS

For the first term of this permit from October 1, 2011 until September 30, 2016 (or as the term may subsequently be administratively extended, or shortened, by DWQ action), the permit provides for the following different compliance schedules for new and existing dischargers.

1. **New dischargers.** New dischargers are subject to the compliance schedule contained in Part IV Section A 1. A new discharger is any regulated composting facility initiating the discharge of stormwater or process wastewater on or after January 1, 2011.
2. **Existing dischargers.** Existing dischargers are subject to the following compliance schedule in lieu of the schedule contained in Part IV Section A 1. An existing discharger is any regulated composting facility that discharged stormwater or wastewater before January 1, 2011.
 - (a) The permittee is required to come into full compliance with this permit as soon as possible.
 - (b) Within 6 months of DWQ's issuance of the permittee's COC the permittee shall submit to the DWQ Regional Office Surface Water Protection Supervisor a schedule of activities to achieve full compliance with the requirements of this permit.
 - a. The permittee's proposed schedule for full compliance may present considerations related to annual budgeting constraints, and/or additional sampling requirements; however, the Regional Office Surface Water Protection Supervisor will evaluate whether such considerations, in his/her judgment, unreasonably delay the permittee's pursuit of expedited full compliance as soon as possible.

- b. The Regional Office Surface Water Protection Supervisor may require revisions to the permittee's proposed plan for full compliance, and may withhold approval of it.
 - c. The permittee shall comply with the requirements of the approved plan for full compliance.
 - d. The permittee shall submit to DWQ all analytical data collected if a sampling plan is part of the plan for full compliance;
-
- (c) For stormwater discharges, the quarterly monitoring and reporting actions required in Part II Section B remain in effect under this compliance schedule. The requirement for Tiered response actions are stayed until a date set in the approved plan for full compliance.
 - (d) For wastewater discharges, the quarterly monitoring and reporting actions required in Part II Section E remain in effect under this compliance schedule. The requirement to comply with the effluent limitations is stayed until a date set in the approved plan for full compliance.
 - (e) This General Permit does not allow the continuation of the required compliance schedule beyond four years from the date of the initial issuance of the COC.

**PART II – MONITORING, CONTROLS, AND LIMITATIONS FOR PERMITTED
DISCHARGES**

**SECTION A: STORMWATER DISCHARGES: STORMWATER POLLUTION PREVENTION
PLAN**

The permittee shall **develop and implement** a Stormwater Pollution Prevention Plan (SPPP). The SPPP is public information in accordance with Part IV, Standard Conditions, Section E, paragraph 3 of this General Permit. The SPPP shall include, at a minimum, the following items:

1. **Site Plan.** The site plan shall provide a description of the physical facility and the potential pollutant sources that may be expected to contribute to contamination of stormwater discharges. The site plan shall contain the following:
 - (a) A general location map (USGS quadrangle map or appropriately drafted equivalent map), showing the facility's location in relation to transportation routes and surface waters, the name of the receiving waters to which the stormwater outfalls discharge, or if the discharge is to a municipal separate storm sewer system, the name of the municipality and the ultimate receiving waters, and accurate latitude and longitude of the points of discharge. The general location map (or alternatively the site map) shall identify whether each receiving water is **impaired** (on the state's 303(d) list of impaired waters) or is located in a **watershed for which a TMDL has been established**, and what the parameters of concern are.
 - (b) A narrative description of storage practices, loading and unloading activities, outdoor process areas, dust or particulate generating or control processes, and waste disposal practices. A narrative description of the potential pollutants that could be expected to be present in the stormwater discharge from each outfall.
 - (c) A site map drawn at a scale sufficient to clearly depict: the site property boundary, the stormwater discharge outfalls, all on-site and adjacent surface waters and wetlands, industrial activity areas (including but not limited to scales, receiving, staging, blending, storage, composting, screening, rejects, curing, warehousing, packaging, labeling, loading, and other manufacturing activities), site topography and finished grade, all drainage features and structures, drainage area boundaries and total contributing area for each outfall, direction of flow in each drainage area, industrial activities occurring in each drainage area, buildings, stormwater Best Management Practices (BMPs) with design capacities, process wastewater treatment facilities, and permanent impervious surfaces, such as roads or process areas that are unlikely to change frequently. The site map shall include a graphic scale indication and north arrow. In addition, the following industrial activity areas must also be identified on the site map: fueling, vehicle and equipment maintenance and repair, washing, painting, welding, and metal fabrication.
 - (d) A list of significant spills or leaks of pollutants that have occurred during the previous three (3) years and any corrective actions taken to mitigate spill impacts. A list of the occurrence and duration of every process wastewater bypass or diversion from treatment units, along with the on-site rain gauge reading on the day before, the day(s) of, and the day after the bypass or diversion. The permittee must insert the written record of the bypass or diversion into the SPPP within 24 hours of the beginning of the bypass or diversion, and must note the end of the bypass or diversion as part of the same written record.

- (e) Certification that the stormwater outfalls have been evaluated for the presence of non-stormwater discharges. **The permittee shall re-certify annually that the stormwater outfalls have been evaluated for the presence of non-stormwater discharges.** The certification statement will be signed in accordance with the requirements found in Part IV, Standard Conditions, Section B, paragraph 5.
2. **Stormwater Management Plan.** The stormwater management plan shall contain a narrative description of the materials management practices employed which control or minimize the stormwater exposure of significant materials, including finished compost as well as materials that may be present on site but not intentionally within the manufacturing process (i.e., wind-blown, tracked-out, dragged-out, or otherwise accidentally dispersed on-site materials). The stormwater management plan, at a minimum, shall incorporate the following:
- (a) **Feasibility Study.** A review of the technical and economic feasibility of changing the methods of operations and/or storage practices to eliminate or reduce exposure of materials and processes to rainfall and run on flows. Wherever practical, the permittee shall prevent exposure of all storage areas, material handling operations, and manufacturing or fueling operations. In areas where elimination of exposure is not practical, the stormwater management plan shall document the feasibility of diverting stormwater run on away from areas of potential contamination.
- (b) **Secondary Containment Requirements and Records.** Secondary containment is required for: bulk storage of liquid materials; storage in any amount of Section 313 of Title III of the Superfund Amendments and Reauthorization Act (SARA) water priority chemicals; and storage in any amount of hazardous substances, in order to prevent leaks and spills from contaminating stormwater runoff. A table or summary of all such tanks and stored materials and their associated secondary containment areas shall be maintained. If the secondary containment devices are connected to stormwater conveyance systems, the connection shall be controlled by manually activated valves or other similar devices (which shall be secured closed with a locking mechanism), and any stormwater that accumulates in the containment area shall be at a minimum visually observed for color, foam, outfall staining, visible sheens and dry weather flow, prior to release of the accumulated stormwater. Accumulated stormwater shall be released if found to be uncontaminated by any material. Records documenting the individual making the observation, the description of the accumulated stormwater, and the date and time of the release shall be kept for a period of five years.
- (c) **BMP Summary.** A listing of site structural and non-structural Best Management Practices (BMP) shall be provided. The installation and implementation of BMPs shall be based on the assessment of the potential for sources to contribute significant quantities of pollutants to stormwaters discharges and data collected through monitoring of stormwater discharges. The BMP Summary shall include a written record of the specific rationale for installation and implementation of the selected site BMPs. The BMP Summary shall be reviewed and updated annually.
- (d) **Rain gauge.** The permittee shall maintain a rain gauge and daily rainfall amount records on site.

3. **Spill Prevention and Response Plan.** The Spill Prevention and Response Plan (SPRP) shall incorporate an assessment of potential pollutant sources based on a materials inventory of the facility. Facility personnel responsible for implementing the SPRP shall be identified in a written list incorporated into the SPRP and signed and dated by each individual acknowledging their responsibilities for the plan. A responsible person shall be on-site at all times during facility operations that have the potential to contaminate stormwater runoff through spills or exposure of materials associated with the facility operations. The SPRP must be site stormwater specific. Therefore, an oil Spill Prevention Control and Countermeasure plan (SPCC) may be a component of the SPRP, but may not be sufficient to completely address the stormwater aspects of the SPRP. The common elements of the SPCC with the SPRP may be incorporated by reference into the SPRP.
4. **Preventative Maintenance and Good Housekeeping Program.** A preventative maintenance and good housekeeping program shall be developed and implemented. The program shall ensure that equipment present on the site must be operated and maintained to prevent potential pollution of the surface water or groundwaters of the state. Fuels, lubricants, coolants, hydraulic fluids, or any other petroleum products shall not be discharged on the ground or into surface waters. Spent lubricants and fuels shall be disposed of properly and in accordance with applicable federal disposal regulations. Spilled fluids shall be cleaned up to the maximum extent practicable and properly disposed of to prevent entry to surface waters or groundwaters of the state. The program shall establish schedules of inspections, maintenance, and housekeeping measures for vehicle and equipment maintenance and industrial activity areas (including material storage and handling areas, disposal areas, process areas, loading and unloading areas, and haul roads), where not already addressed under another element of the SPPP. Schedules for inspections, maintenance, and housekeeping, and documentation that these program elements are being implemented, shall be recorded and maintained in the SPPP.
5. **Employee Training.** Training programs shall be developed and training provided at a minimum on an annual basis for facility personnel with responsibilities for: spill response and cleanup, preventative maintenance activities, and for any of the facility's operations that have the potential to contaminate stormwater runoff. Where the materials or activities are present, specific training is required for: used oil management, spent solvent management, spent abrasives management, fueling, sanding, painting, and used battery management. The facility personnel responsible for implementing the training shall be identified, and their annual training shall be documented by the signature of each employee trained.
6. **Responsible Party.** The SPPP shall identify a specific position responsible for the overall coordination, development, implementation, and revision to the SPPP. Responsibilities for all components of the SPPP shall be documented and position assignments provided.
7. **SPPP Amendment.** The permittee shall amend the SPPP whenever there is a change in design, construction, operation, waste receipts, site drainage, maintenance, or configuration of the physical features, which may have a significant effect on the potential for the discharge of pollutants to surface waters. All aspects of the SPPP shall be reviewed and updated on an annual basis. The annual update shall include:
 - (a) an updated list of significant spills or leaks of pollutants for the previous three (3) years, or the notation that no spills have occurred;
 - (b) a written re-certification that the stormwater outfalls have been evaluated for the presence of non-stormwater discharges;

- (c) a documented re-evaluation of the effectiveness of the on-site stormwater BMPs.

The Director may notify the permittee when the SPPP does not meet one or more of the minimum requirements of the permit. Within 30 days of such notice, the permittee shall submit a time schedule to the Director for modifying the SPPP to meet minimum requirements. The permittee shall provide certification in writing (in accordance with Part IV, Standard Conditions, Section B, paragraph 5) to the Director that the changes have been made.

8. **Facility Inspections.** Inspections of the facility and all stormwater systems shall occur as part of the Preventative Maintenance and Good Housekeeping Program at a minimum on a quarterly schedule. These facility inspections are different from, and in addition to, the stormwater discharge characteristic qualitative monitoring required in Part II Section D of this permit.
9. **SPPP Implementation.** The permittee shall implement the SPPP and all appropriate BMPs to ensure that contaminants do not enter surface waters via stormwater. Implementation of the SPPP shall include documentation of all monitoring, measurements, inspections, maintenance activities, and training provided to employees, including the log of the sampling data and of actions taken to implement BMPs associated with the industrial activities, including vehicle and equipment maintenance activities. Such documentation shall be kept on-site for a period of five years and made available to the Director or the Director's authorized representative immediately upon request.

SECTION B: STORMWATER DISCHARGES: ANALYTICAL MONITORING REQUIREMENTS

Analytical monitoring for stormwater discharges shall be performed as specified in **Tables 1 through 3**. All analytical monitoring shall be performed during a measurable storm event. This Section B does not apply to process wastewater discharges which may originate as precipitation on materials during the manufacturing process.

Table 1 Analytical Monitoring Requirements for Stormwater Discharges

Discharge Characteristics	Units	Measurement Frequency¹	Sample Type²	Sample Location³
Total suspended solids	mg/L	Quarterly	Grab	SDO
Chemical oxygen demand	mg/L	Quarterly	Grab	SDO
Fecal coliform	colonies/100 mL	Quarterly	Grab	SDO
Total nitrogen	mg/L	Quarterly	Grab	SDO
Total phosphorus	mg/L	Quarterly	Grab	SDO
Total copper	mg/L	Quarterly	Grab	SDO
Total lead	mg/L	Quarterly	Grab	SDO
Total zinc	mg/L	Quarterly	Grab	SDO
pH	standard units	Quarterly	Grab	SDO
Total rainfall ⁴	inches	Quarterly	--	--

Footnotes:

1. Measurement Frequency: Four times per year during a measurable storm event. *The permittee may petition DWQ to reduce the monitoring frequency for any parameter after four consecutive quarters of analytical results below the benchmark values in Table 3.*
2. Grab samples shall be collected within the first 30 minutes of discharge.
3. Sample Location: Samples shall be collected at each stormwater discharge outfall (SDO) unless representative outfall status (ROS) has been granted in writing by DWQ. A copy of the letter granting ROS shall be kept on site in the SPPP.
4. For each sampled measurable storm event the total precipitation must be reported. An on-site rain gauge reading must be recorded. Where isolated sites are unmanned for extended periods of time, a local rain gauge reading may be substituted for an on-site reading. *The permittee is not required to sample stormwater discharges resulting from a rainfall greater than the 25-yr, 24-hr event for the site location.*

A measurable storm event is a storm event that **results in an actual** discharge from the permitted site outfall. The time between this storm event and the previous storm event must have been at **least 48 hours**. One storm event may have a time period within it that has no precipitation. This time period may last up to 10 hours. For example, if it rains but stops before producing any collectable discharge, a sample may be collected if the next rain producing a discharge begins within 10 hours.

The permittee shall complete the analytical samplings in accordance with the schedule specified in **Table 2**. A minimum of 30 days must separate each sample event unless monthly monitoring has been instituted under a Tier 2 response. Failure to comply with quarterly monitoring is a violation of the terms and conditions of this permit, unless adverse weather conditions (e.g., lightning storms, or no rain and/or no discharge) prevent sample collection during the sample collection period. Inability to sample due to adverse weather conditions must be documented in the SPPP with date, time, and written narrative and reported on the quarterly Discharge Monitoring Reports (DMR).

Table 2 Stormwater Annual Monitoring Schedule

Quarterly Monitoring Events^{1,2}	Start Date³	End Date³
1	January 1	March 31
2	April 1	June 30
3	July 1	September 30
4	October 1	December 31

Footnotes:

1. The permittee is required to maintain quarterly monitoring during the permit renewal process (unless tiers prompt monthly monitoring).
2. *If no discharge occurs during the sampling period, the permittee must record "No Flow" or "No Discharge" within 30 days of the end of the quarterly sampling period in the SPPP. "No Flow" or "No Discharge" shall be reported on the individual quarterly DMRs.*
3. Annual monitoring periods remain constant throughout the five-year permit term.

In all cases, the permittee shall report (as required in Part IV, Section E) the analytical results from each sample within the monitoring period. The permittee shall compare those results to the benchmark values in **Table 3**.

Table 3 Benchmark Values for Stormwater Discharges

Discharge Characteristics	Benchmark Values
Total suspended solids	100 mg/L
Chemical oxygen demand	120 mg/L
Fecal coliform	1000 colonies/100 mL
Total nitrogen	30 mg/L
Total phosphorus	2 mg/L
Total copper	0.007 mg/L
Total lead	0.03 mg/L
Total zinc	0.067 mg/L
pH	6 - 9 standard units

Tier One

If: The first valid sampling results are above a benchmark value, or outside of the benchmark range, for any parameter at any outfall;

Then: The permittee shall

1. Conduct a stormwater management inspection of the facility **within two weeks of receiving sampling results.**
2. Identify and evaluate possible causes of the benchmark value exceedence.
3. Identify potential and select the specific: source controls, operational controls, or physical improvements to reduce concentrations of the parameters of concern, or to bring concentrations within the benchmark range.
4. Implement the selected actions **within two months of the inspection.**
5. Record each instance of a Tier One response in the SPPP. Include the date and value of the benchmark exceedence, the inspection date, the personnel conducting the inspection, the selected actions, and the date the selected actions were implemented.

Tier Two

If: During the term of this permit, the first valid sampling results from **two (2) consecutive** monitoring periods are above the benchmark values, or outside of the benchmark range, for any specific parameter at a specific discharge outfall;

Then: The permittee shall

1. Repeat all the required actions outlined above in Tier One.
2. Immediately institute monthly monitoring for all parameters at every outfall where a sampling result exceeded the benchmark value for two (2) consecutive samples. Monthly (analytical and qualitative) monitoring shall continue until three (3) consecutive samples are below the benchmark values or within the benchmark range for all parameters at that outfall.
3. If no discharge occurs during the sampling period, the permittee is required to record "No Flow" or "No Discharge" in the SPPP for the sampling the period to comply with monthly monitoring requirements and must submit reports in accordance with this permit.
4. Maintain a record of Tier Two responses in the SPPP.

Tier Three

During the term of this permit, if the valid sampling results required for the permit monitoring periods exceed the benchmark value, or are outside the benchmark range, for any specific parameter at any specific outfall on **four (4) occasions**, the permittee shall notify the DWQ Regional Office Supervisor in writing **within 30 days of receipt of the fourth analytical result.** DWQ may but is not limited to:

- Require that the permittee revise, increase, or decrease the monitoring frequency for the remainder of the permit;
- Rescind coverage under the General Permit, and require the permittee to apply for an individual stormwater discharge permit;
- Require the permittee to install or modify structural stormwater controls; or
- Require the permittee to implement other stormwater control measures;
- Require the permittee to install process wastewater treatment facilities for the flow, or portions of the flow, not successfully treated by the stormwater control measures.

SECTION C: STORMWATER DISCHARGES: ON-SITE VEHICLE AND EQUIPMENT MAINTENANCE MONITORING REQUIREMENTS

Facilities which have any on-site vehicle and equipment maintenance activity that uses more than 55 gallons per month total of new motor oil and/or new hydraulic oil when averaged over the calendar year shall perform analytical monitoring as specified below in **Table 4**.

The permittee shall complete the analytical samplings in accordance with the schedule specified in **Table 2**. Failure to comply with quarterly monitoring is a violation of the terms and conditions of the permit, unless adverse weather conditions (e.g., lightning storms, or no rain and/or no discharge) prevent sample collection during the sample collection period. Inability to sample due to adverse weather conditions must be documented in the SPPP with date, time, and written narrative and reported on the quarterly Discharge Monitoring Reports (DMR). This monitoring shall be performed at all outfalls discharging stormwater runoff from vehicle and equipment maintenance activities.

Table 4 Analytical Monitoring Requirements from On-Site Vehicle and Equipment Maintenance Activities

Discharge Characteristics	Units	Measurement Frequency ¹	Sample Type ²	Sample Location ³
pH	standard	Quarterly	Grab	SDO
Total petroleum hydrocarbons <i>EPA Method 1664 (SGT-HEM)</i>	mg/L	Quarterly	Grab	SDO
Total suspended solids	mg/L	Quarterly	Grab	SDO
Total rainfall ⁴	inches	Quarterly	Grab	--
New oil usage	gallons/month	Quarterly	Estimate	--

Footnotes:

1. Measurement Frequency: Four times per year during a measurable storm event. A minimum of 30 days must separate each sampling event. *The permittee may petition DWQ to reduce the monitoring frequency for any parameter after four consecutive quarters of analytical results below the benchmark values in Table 5.*
2. Grab samples shall be collected within the first 30 minutes of discharge.
3. Sample Location: Samples shall be collected at each stormwater discharge outfall (SDO) that discharges stormwater runoff from vehicle and equipment maintenance activities.
4. For each sampled measurable storm event the total precipitation must be recorded. An on-site rain gauge reading must be recorded. Where isolated sites are unmanned for extended periods of time, a local rain gauge reading may be substituted for an on-site reading. *The permittee is not required to sample stormwater discharges resulting from a rainfall greater than the 25-yr, 24-hr event for the site location.*

In all cases, the permittee shall report (as required in Part IV, Section E) the analytical results from each sample within the monitoring period. The permittee shall compare those results to the benchmark values in **Table 5**. Exceedences of benchmark values require the permittee to comply with the tiered response actions identified above in Section B.

Table 5 Benchmark Values for On-Site Vehicle and Equipment Maintenance Activities

Discharge Characteristics	Benchmark Values
pH	6 - 9 standard units
Total petroleum hydrocarbons	15 mg/L
Total suspended solids	100 mg/L

SECTION D: STORMWATER DISCHARGES: QUALITATIVE MONITORING REQUIREMENTS

Qualitative monitoring requires a visual inspection of each stormwater outfall regardless of representative outfall status and shall be performed as specified below in **Table 6**.

Qualitative monitoring of stormwater outfalls must be performed during a measurable storm event, unless adverse weather conditions prevent monitoring during the monitoring period. Inability to monitor due to adverse weather conditions must be documented in the SPPP with date, time and written narrative. Qualitative monitoring will be performed four times per year, in accordance with the schedule in **Table 2**.

Table 6 Qualitative Monitoring Requirements

Discharge Characteristics	Frequency¹	Monitoring Location^{2,3}
Color	Quarterly	SDO
Odor	Quarterly	SDO
Clarity	Quarterly	SDO
Floating Solids	Quarterly	SDO
Suspended Solids	Quarterly	SDO
Foam	Quarterly	SDO
Oil Sheen	Quarterly	SDO
Deposition at or immediately below the outfall	Quarterly	SDO
Erosion at or immediately below the outfall	Quarterly	SDO
Other obvious indicators of stormwater pollution	Quarterly	SDO

Footnotes:

1. A minimum of 30 days must separate each monitoring event.
2. Monitoring Location: Qualitative monitoring shall be performed at each stormwater discharge outfall (SDO) regardless of representative outfall status. *The quarterly monitoring frequency for qualitative monitoring is not eligible for a reduced monitoring frequency.*
3. *The permittee is not required to monitor stormwater discharges resulting from a rainfall greater than the 25-yr, 24-hr event for the site location.*

Qualitative monitoring records shall be on facsimiles of the forms supplied by DWQ, and shall be maintained on site as part of the SPPP. Qualitative monitoring records shall not be submitted to DWQ except upon request.

If the permittee's qualitative monitoring indicates either that existing stormwater BMPs are ineffective, or that significant stormwater contamination is present, the permittee shall investigate potential causes, evaluate the feasibility of corrective actions, and implement those corrective

actions appropriate. **A written record of the permittee’s investigation, evaluation, and response actions shall be kept in the SPPP.**

Qualitative monitoring is for the purposes of evaluating the effectiveness of the SPPP, assessing new sources of stormwater pollution, and prompting the permittee’s response actions to pollution. If the permittee repeatedly fails to respond effectively to correct problems identified by qualitative monitoring, or if the discharge causes or contributes to a water quality standard violation, DWQ may, but is not limited to:

- Require that the permittee revise, increase, or decrease the monitoring frequency for the remainder of the permit;
- Rescind coverage under the General Permit, and require the permittee to apply for an individual stormwater discharge permit;
- Require the permittee to install or modify structural stormwater controls; or
- Require the permittee to implement other stormwater control measures.

SECTION E: PROCESS WASTEWATER DISCHARGES: EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

Process wastewater discharges are discharges that have contacted any raw materials, intermediate products, final products not qualifying as finished compost, by-products, or waste products during compost manufacturing. Discharges of leachates, wash waters, and rinse waters are considered process wastewater discharges.

Finished Compost

‘Finished compost’ is a specific level of compost maturity, or degree of completion of the compost degradation process. Not all final products produced at composting operations are necessarily ‘finished compost’ as the term is used in this permit. DWQ relies on the Division of Waste Management to determine whether the final product from a composting operation is ‘finished compost’, or not. Discharges arising from qualifying ‘finished compost’ may be permitted as stormwater discharges. Other discharges from final products will be permitted as process wastewater discharges under this Section E.

Analytical monitoring for process wastewater discharges shall be performed as specified below in **Table 7**. For each parameter, the process wastewater effluent limitation is contained in **Table 8**. An exceedence of a process wastewater effluent limitation is a violation of the permit conditions and may be subject to enforcement action as specified in Part IV, Section A.2 of this permit.

Table 7 Monitoring Requirements for Process Wastewater Discharges

Discharge Characteristics	Units	Measurement Frequency¹	Sample Type	Sample Location²
Biochemical oxygen demand, 5-day	mg/L	Quarterly	Grab	E
Total suspended solids	mg/L	Quarterly	Grab	E
Fecal coliform	colonies/100mL	Quarterly	Grab	E
pH	standard units	Quarterly	Grab	E
Total flow ³	MG	Quarterly	-	E

Footnotes:

1. Measurement frequency: Four times per year, in accordance with the periods identified in **Table 9**. *The quarterly monitoring frequency for process wastewater discharges is not eligible for a reduced monitoring frequency.*
2. Sample Location: E – Effluent
3. Total Flow volume shall be recorded by a continuous flow measurement instrument. Alternatively, pump curves and pump logs may be used as a means to calculate flow volume; alternate means of calculating the total flow may be approved by DWQ on a case-by-case basis. Permittee shall not calculate total flow based on an assumed runoff coefficient or other similar methodology that attempts to correlate surface conditions with total flow.

Table 8 Effluent Limitations for Process Wastewater Discharges

Discharge Characteristics	Effluent Limitations ¹	
	Quarterly Average	Daily Maximum
Biochemical oxygen demand, 5-day	30 mg/L	45 mg/L
Total suspended solids	30 mg/L	45 mg/L
Fecal coliform	200 colonies/100mL	400 colonies/100 mL
pH ²	--	--

Footnote:

1. Effluent limitations do not apply for discharges directly generated by rainfall greater than the 2-year, 24-hour event, provided that the permittee has a rainfall record establishing that the actual rainfall amount at the time of the discharge or bypass exceeded the 2-year, 24-hour event.
2. The pH for freshwater classifications shall be within the range of 6.0 to 9.0 standard units. The pH for saltwater classifications shall be within the range of 6.8 to 8.5 standard units.

The permittee shall complete the analytical samplings of process wastewater discharges in accordance with the schedule in **Table 9**. Failure to comply with quarterly monitoring is a violation of the terms and conditions of the permit.

Table 9 Process Wastewater Discharge Monitoring Schedule

Quarterly Monitoring Events ^{1,2}	Start Date ³	End Date ³
1	January 1	March 31
2	April 1	June 30
3	July 1	September 30
4	October 1	December 31

Footnotes:

1. The permittee is required to maintain quarterly monitoring during the permit renewal process.
2. *If no discharge occurs during the sampling period, the permittee must record "No Flow" or "No Discharge" within 30 days of the end of the quarterly sampling period in the SPPP. "No Flow" or "No Discharge" shall be reported on the individual quarterly DMR.*
3. Annual monitoring periods remain constant throughout the five-year permit term.

**PART III – AUTHORIZATION TO CONSTRUCT AND OPERATE A PROCESS
WASTEWATER TREATMENT FACILITY**

**SECTION A: REQUIREMENTS TO CONSTRUCT A PROCESS WASTEWATER TREATMENT
FACILITY AT A NEW COMPOSTING FACILITY**

1. Existing facilities that discharged stormwater or process wastewater before January 1, 2011 are not required to obtain DWQ's authorization to construct (ATC) process wastewater treatment facilities. New facilities that initiated discharges of stormwater or process wastewater on or after January 1, 2011 must submit process wastewater facility construction plans and design calculations as part of the permit application, and are subject to the requirements of this Section A.
2. The permittee shall cause the authorized process wastewater treatment facility to be constructed in accordance with the conditions of this permit, approved plans and calculations, and other supporting data.
3. The process wastewater treatment facility shall be constructed to meet the effluent limitations in Part II, Section E of this General Permit.
4. Upon completion of construction and prior to operation of the process wastewater treatment facility, the permittee shall submit a certification by the designing professional engineer in accordance with G.S. 89-25, certifying that the permitted facility has been installed in accordance with this permit, the approved plans and specifications, and other supporting materials. The permittee shall deliver the engineer's certification to the Division of Water Quality, Stormwater Permitting Unit, 1617 Mail Service Center, Raleigh, NC 27699-1617.
5. The permittee shall notify the DWQ Regional Office Supervisor at least seventy-two (72) hours in advance of operation of the installed facility so that an in-place inspection can be made if the Regional Office so desires. Such notification to the Regional Office Supervisor shall be made during normal business hours from 8:00 a.m. until 5:00 p.m. on Monday through Friday, excluding state holidays.
6. The permittee shall retain the approved plans and calculations on site for the life of the process wastewater treatment facility.
7. This permittee is not required to obtain subsequent ATCs for any subsequent additions to the process wastewater treatment facility identified in the initial COC.

**SECTION B: REQUIREMENTS FOR OPERATION OF A PROCESS WASTEWATER
TREATMENT FACILITY**

1. For both existing and new composting facilities: For composting sites with a process wastewater treatment facility, the permittee shall operate and maintain the process wastewater treatment facility in accordance with the requirements of this General Permit.
2. The diversion or bypass of untreated process wastewater from the process wastewater treatment facility is prohibited except under provisions of this permit in Part IV, Section C.4 and Part IV, Section E.7.

3. In the event that the process wastewater treatment facility fails to perform satisfactorily, including the creation of nuisance conditions, the permittee shall take immediate corrective action, including those actions that may be required by DWQ, such as the construction of additional or replacement treatment or disposal facilities.
4. The issuance of this permit does not relieve the permittee of the responsibility for damages to surface waters of the State resulting from the operation of the process wastewater treatment facility.

Plummer, Michael

From: Ken Pickle [ken.pickle@ncmail.net]
Sent: Thursday, May 26, 2005 9:11 AM
To: Plummer, Michael
Cc: Rose Pruitt; Bradley Bennett; Bethany Georgoulas
Subject: Re: Forum 52 Yardwaste

Mike,

Thanks for providing written notes on our discussion about Winston-Salem's proposed mulching and composting facility on Forum Parkway.

Based on my review of the reduced site plan you sent me, and based on your description of site conditions over the phone, and based on the final removal of the sediment traps once construction is complete and final regrading to remove the two sediment trap outlets, and based on your description of spreading the flow from the 24"RCP, I concur that it appears that upon completion of construction your site will not have a point source discharge of stormwater. If there will be no point source discharge as you assert in your 5/25/05 memo to me, then the facility does not come under the jurisdiction of the DWQ's NPDES stormwater discharge permitting program, i.e. an NPDES stormwater discharge permit is not required.

Please note that if at any time after construction a point source discharge of stormwater occurs, the facility would be in violation of the Clean Water Act by discharging without a valid permit. The facility would be subject to enforcement action and significant monetary penalties.

Please contact me with any additional questions.

Ken Pickle
Stormwater Permitting Unit, DWQ
(919) 733-5083 x 584

Plummer, Michael wrote:

> Ken,
>
> Attached is a memo documenting our phone conversation today. Please
> let me know if you want to see any changes.
>
> In response to your voicemail about the wetlands; we met with both DWQ
> and the Corp to delineate the wetlands. We based our design to avoid
> impacting the wetlands and therefore were told that we didn't need to
> permit anything. I can get you contact names if you need them.
>
> Thanks for your assistance,
>
> Mike
>
> <<20050525 MDP Memo to Ken Pickle.doc>>
>

To: Ken Pickle w/ NCDENR	
From: Mike Plummer	Project: Forum 52 Yardwaste Facility
CC: Ed Gibson w/ City of Winston-Salem	
Date: 5-25-05	Job No:

RE: Forum 52 Stormwater Permitting Phone Conversation

This memo is to document our telephone conversation on May 25, 2005 about the proposed Winston-Salem Forum 52 Yardwaste Facility. We discussed the three main topics listed below:

1. **Point Source Discharge** – As discussed the temporary sediment traps shown on drawing C-02 “Proposed Development Plan”, are strictly for sediment and erosion control during construction. Once the site has been stabilized via grass, stone, or pavement these features will be removed and regraded to the original contours thus eliminating a point source discharge. In addition, the 24-inch drainage pipe in the center of the property will have an oversized outlet apron to aide in the dispersion of flow.
2. **Removal of Trees** – We discussed the impact to runoff from clearing the wooded area. It was agreed that the potential for greater runoff is possible although the existing conditions are on very steep slopes and by creating large flat areas we will interrupt the direct flow and provide some minor retention thereby lessening any impacts.
3. **Composting Process** – Mr. Pickle asked about the use of fertilizer (i.e. manure, sludge, etc.) in the composting process as well as the wetting process. The City of Winston-Salem currently has two yardwaste facilities in operation in which they have never used fertilizer and they will modify the Permit Application for this facility to not allow the use of fertilizer. There will be a fire hydrant onsite for wetting the compost pile although in the experience with the other two facilities this will happen infrequently and in most instances is for dust control.

North Carolina
Department of Environment and Natural

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

James D. Simons, P.G., P.E., Director
And State Geologist



WINSTON-SALEM REGIONAL OFFICE
DIVISION OF LAND RESOURCES
LAND QUALITY SECTION

January 7, 2005

LETTER OF APPROVAL WITH MODIFICATIONS

City of Winston Salem
Forsyth County Utilities Commission
P.O. Box 2511
Winston Salem, NC 27102

Dear Sir or Madam:

This office has reviewed the subject erosion and sedimentation control plan and hereby issues this letter of approval with modifications. A list of the modifications is attached. This plan approval shall expire three (3) years following the date of approval, if no land-disturbing activity has been undertaken, as is required by Title 15A NCAC 4B .0029. Should the plan not perform adequately, a revised plan will be required (G.S. 113A-54.1 (b)).

Please be advised that Title 15 NCAC 4B.0018 (a) requires that a copy of the approved erosion control plan be on file at the job site. Also, you should consider this letter to give the notice required by GS 113A-61.1 (a) of our right of periodic inspection to insure compliance with the approved plan.

North Carolinas Sedimentation Pollution Control Program is performance-oriented, requiring protection of existing natural resources and adjoining properties. If, following the commencement of this project, it is determined that the erosion and sedimentation control plan is inadequate to meet the requirements of the Sedimentation and Pollution Control Act of 1973 (North Carolina General Statute 113A-51 through 66), this office may require revisions to the plan and implementation of the revisions to insure compliance with the Act.

Acceptance and approval of this plan is conditioned upon your compliance with Federal and State water quality laws, regulations, and rules. In addition, local city or county ordinances or rules may also apply to this land-disturbing activity. This approval does not supersede any other permit or approval.

585 Waughtown Street, Winston-Salem, North Carolina 27107-2241

Phone: 336-771-4600 \ FAX: 336-771-4631 \ Internet: www.enr.state.nc.us/ENR/

AN EQUAL OPPORTUNITY \ AFFIRMATIVE ACTION EMPLOYER - 50% RECYCLED / 10% POST CONSUMER PAPER

LETTER OF APPROVAL WITH MODIFICATIONS – Forum 52 Yard Waste Facility

January 7, 2005

Page 2

Please note that all land disturbing activities over one acre in size are covered by the enclosed general stormwater permit NCGO1000 (Construction Activities). You should first become familiar with all of the requirements for compliance with the enclosed general permit.

Please note that this approval is based in part on the accuracy of the information provided in the Financial Responsibility Form, which you have provided. You are requested to file an amended form if there is any change in the information included on the form. In addition, it would be helpful if you notify this office of the proposed starting date for this project. Please notify us if you plan to have a preconstruction conference, and we will plan to attend.

Your cooperation is appreciated, and we look forward to working with you on this project.

Sincerely,



Brooks Cole, C.P.E.S.C.
Assistant Regional Engineer

BC/lb

Enc: Certificate of Approval With Modifications
NPDES

cc: HDR Engineering
Water Quality – Daryl Lamb
WSRO File

PROJECT NAME:	Forum 52 Yard Waste Facility
COUNTY:	Forsyth
RIVER BASIN:	Yadkin
WATER CLASSIFICATION:	Other
FACILITY NUMBER:	Forsy 2005-025
SUBMITTED BY:	HDR Engineering
RECEIVED BY L.Q.S.:	December 13, 2004

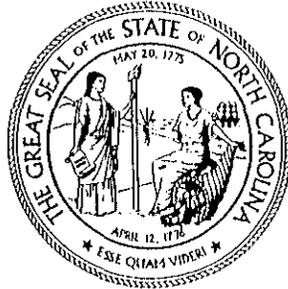
NEW SUBMITTAL (X)

MODIFICATIONS

This plan is approved with the following modifications:

1. All silt fencing and limits of disturbance must be installed such that a minimum 15' undisturbed buffer is maintained between all measures and the top of the bank for grassy creek closest to the project.

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 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.0107 (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.0127 (b).

Forum 52 Yardwaste Facility

Project Name and Location

Forsy - 2005 - 025

1-7-05

Date of Plan Approval

w/mods.



Bruce C. [Signature]
Assist. Regional Engineer

North Carolina
Department of Environment and Natural

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

James D. Simons, P.G., P.E., Director
And State Geologist



WINSTON-SALEM REGIONAL OFFICE
DIVISION OF LAND RESOURCES
LAND QUALITY SECTION

December 22, 2004

LETTER OF RECEIPT OF EROSION CONTROL PLAN

City of Winston Salem
Forsyth County Utilities Commission
P.O. Box 2511
Winston Salem, NC 27102

Dear Sir or Madam:

This office has received a soil erosion and sediment control plan for the project listed below which was submitted as required by the North Carolina Sedimentation Pollution Control Act (G.S. 113A-57 (4)).

The Act requires that all persons disturbing an area of one or more acres of land must obtain approval of a soil erosion control plan prior to the commencement of the land-disturbing activity (G.S. 113A-54 (d) (4)). The Act further states that this plan must be filed a minimum of 30 days prior to the activity and the approving authority must approve or disapprove the submitted plan within 30 days of receipt. Failure of the approving authority to approve or disapprove the submitted plan within the 30-day period will be deemed approval of the plan if the submitted plan is complete. Commencement or continuation of a land disturbing activity under the jurisdiction of this Act prior to the approval of an erosion and sediment control plan is a violation of the Act.

The approval of an erosion and sediment control plan is conditioned on the applicant's compliance with Federal and State water quality laws, regulations and rules.

585 Waightown Street, Winston-Salem, North Carolina 27107-2241

Phone: 336-771-4600 \ FAX: 336-771-4631 \ Internet: www.enr.state.nc.us/ENR/

AN EQUAL OPPORTUNITY \ AFFIRMATIVE ACTION EMPLOYER - 50% RECYCLED / 10% POST CONSUMER PAPER

Letter of Receipt – Forum 52 Yard Waste Facility

December 22, 2004

Page 2

If you have questions please do not hesitate to contact this office. Your cooperation in this matter is appreciated and we look forward to working with you on this project.

Sincerely,



Brooks Cole, C.P.E.S.C.
Assistant Regional Engineer

BC/lb

cc: HDR Engineering
WSRO File

PROJECT NAME:	Forum 52 Yard Waste Facility
COUNTY:	Forsyth
RIVER BASIN:	Yadkin
WATER CLASSIFICATION:	Other
FACILITY NUMBER:	Forsy 2005
SUBMITTED BY:	HDR Engineering
DATE RECEIVED BY L.Q.S.:	December 13, 2004
NEW SUBMITTAL (X)	

EROSION AND SEDIMENT CONTROL PLAN

FOR THE

FORUM 52 YARD WASTE FACILITY

WINSTON-SALEM, NORTH CAROLINA

Prepared for:

**City/County Utility Commission
City of Winston-Salem
P.O. Box 2511
Winston-Salem, NC 27102**

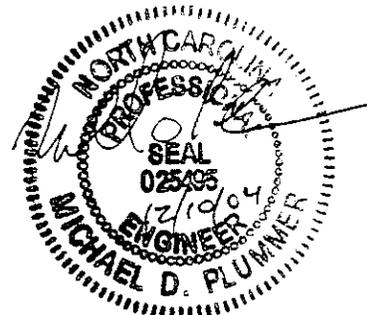
Prepared by:

**HDR Engineering, Inc. of the Carolinas
128 S. Tryon Street, Suite 1400
Charlotte, NC 28202-5001
HDR Project #0162-18088-018**

HDR

HDR Engineering, Inc.
of the Carolinas

December 2004



December 10, 2004

Mr. Brooks Cole, CPESC
Assistant Regional Engineer
North Carolina Department of Environment
and Natural Resources
Land Quality Section
585 Waughtown Street
Winston-Salem, NC 27107

Re: Forum 52 Yard Waste Facility
Erosion and Sediment Control Plan
Winston-Salem, NC
HDR Project No. 00162-18088-018

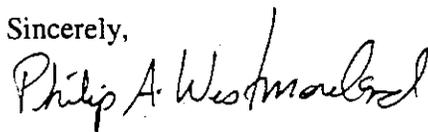
Dear Mr. Cole:

On behalf of the City of Winston-Salem (City), enclosed is one copy of the Erosion and Sediment Control Plan (Plan) submittal for the above-referenced project. This Plan addresses the proposed land disturbance of approximately 12 acres located at the end of Northstar Drive in Winston-Salem, NC.

The City will forward a check in the amount of \$600 for the 12 acres of disturbance, along with an executed Financial Responsibility and Ownership Form, under separate cover.

If you have any questions regarding this submittal, please contact me.

Sincerely,



Philip A. Westmoreland, EI
Project Engineer

PAW/

Enclosure

cc: Jan McHargue, (City of Winston-Salem) w/o enclosures
Ed Gibson, (City of Winston-Salem) w/o enclosures
Joe Reading, (HDR) w/o enclosures

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APPENDICES

APPENDIX A – CALCULATIONS

TEMPORARY SEDIMENT TRAPS

APPENDIX B – TECHNICAL SPECIFICATIONS

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02220	EARTH WORK
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02900	GEOTEXTILE

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C-02	EROSION AND SEDIMENT CONTROL PLAN
C-03	GRADING PLAN
C-04	EROSION CONTROL DETAILS

1.0 PURPOSE

The purpose of this Erosion and Sediment Control Plan (Plan) is to obtain a Certificate of Plan Approval from the North Carolina Department of Environment and Natural Resources (NCDENR) to construct the Forum 52 Yard Waste Facility. This Plan describes the erosion and sedimentation control features for the development of this site. This Plan addresses disturbance for approximately 12 acres and has been prepared in accordance with the *North Carolina Erosion and Sediment Control Planning and Design Manual Guidelines*.

2.0 BACKGROUND

The City of Winston-Salem, North Carolina (City) owns the property located on Northstar Drive. The site is comprised of approximately 17 acres in Forsyth County (County).

3.0 CONTACT INFORMATION

Owner: The owner of the site and the person to contact should sediment control issues arise during the land-disturbing activity is as follows:

City/County Utilities Commission
Attn.: Edward Gibson, P.E., Solid Waste Administrator
City of Winston-Salem
100 East First Street, Suite 131
Winston-Salem, NC 27102
Telephone: (336) 61-4900 Fax: (336) 661-4905

Engineer: For questions regarding this Plan, please contact the following:

HDR Engineering, Inc. of the Carolinas
Attn.: Michael D. Plummer, P.E.
128 South Tryon Street, Suite 1400
Charlotte, NC 28202-5001
Telephone: (704) 338-6700 Fax: (704) 338-6760

4.0 PROJECT DESCRIPTION

The City plans to expand its current yard waste operations to this new facility in order to handle disposal from the northern half of the County. The site will consist of a leaf processing area where grass clippings and leaves will be brought to be composted. In addition, there will be a waste receiving area where bulky wood products (i.e. pallets, engineered wood products, etc.) will be ground for mulch. The site will include infrastructures (i.e. scales, scalehouse, roads, etc.) necessary to operate the facility. The total disturbed area within the clearing limits is 12 acres. The work consists of clearing and grubbing, installing erosion and sediment control features, construction of the roadways, and excavation of soils.

5.0 EXISTING CONDITIONS

The site is currently a wooded forest. A portion of the site near the entrance was cleared and grubbed by the previous land owner. Grassy Creek borders the site on the east, Highway 52 on the south, an industrial warehouse on the west and north. Existing ground surface elevations on the site vary from Elevation 910 (feet) at the top of the hill to Elevation 848(feet) along Grassy Creek

6.0 DESIGN GUIDELINES AND PROCEDURES

This Plan for was conducted based on guidelines and procedures as set forth in the *North Carolina Erosion and Sediment Control Planning and Design Manual* and *Elements of Urban Stormwater Design* by H. Rooney Malcom, P.E. Design calculations are provided as an attachment to this Plan.

Stormwater runoff flows were calculated using the Rational Method based on the maximum rate of runoff from a 25-year storm event for the sediment basins and drainage channels. Runoff coefficients for various groundcover conditions are referenced in the above-mentioned documents. Drainage areas were determined using a planimeter and/or AutoCAD on topographic sheets of the project area.

7.0 EROSION AND SEDIMENTATION CONTROL MEASURES

The following erosion and sedimentation control measures are to be used in construction of the site: Temporary Sediment Traps, Temporary Diversion Channels, Silt Fence, and Seeding. Attachments A, B, and C to this Plan include technical specifications, calculations, plans, and details for each of these measures.

7.1 SEDIMENT TRAPS

There are two proposed temporary sediment traps (TST #1 and TST #2), which will serve the site throughout construction. Temporary sediment trap design is subject to several requirements. The temporary sediment trap must provide a basin volume of 1,800 ft³/acre of disturbed area and a minimum surface area of 1 percent (1%) of the peak flow runoff. The top of the dam is set 1.5 feet above the weir. The design of these temporary sediment traps was performed in accordance with criteria from the *North Carolina Design Manual*.

7.2 TEMPORARY DIVERSION BERMS

Temporary diversion berms are to be installed above cut slopes to prevent runoff from flowing over the slope. The temporary diversion berms will divert stormwater runoff away from the disturbed area. Diversion berm capacity, velocity, and ridge design were designed in accordance the *North Carolina Design Manual*, Section 6.20.

7.3 VEGETATIVE STABILIZATION

Vegetative stabilization will be in accordance with the seeding schedule in the project specifications and on the plans. The seeding schedule was prepared with reference to the *North Carolina Design Manual*, Sections 6.10 and 6.11, and seeding regimes used in the geographic location.

7.4 SILT FENCE

Silt fence will be installed at or outside the clearing limits as shown on the plans prior to land-disturbing activity. Silt fence is an adequate runoff control measure provided that less than one-fourth an acre per 100 linear feet drains to it according to the North Carolina Design Manual Section 6.62.1.

8.0 MAINTENANCE AND SEDIMENT DISPOSAL

All erosion and sedimentation control devices will be inspected at regular intervals and immediately following any major storm event. Repairs will be made as needed and accumulated sediment removed when one half of the holding capacity is depleted.

All sediments which are removed from erosion and sedimentation control measures will be disposed of in a manner such that further erosion and sedimentation will not occur.

9.0 CONSTRUCTION SEQUENCE

The Construction Sequence can be found on the drawings.

Appendix A

CALCULATIONS

HDR Computation

Job No. 162-18088-018

Project:	Forum 52 yard Wate Facility	Computed: PAW	Date: 12/10/04
Subject:	Storm Water Drainage	Checked:	Date:
Task:	Temporary Sediment Trap TST #1	Sheet	Of

Objective Design a temporary sediment trap near the proposed scalehouse

References

1. North Carolina Erosion and Sediment Control Planning and Design Manual.

Calculate Peak Flow

$$Q=CIA$$

C=	0.4	smooth, bare packed soil (0.30 - 0.60)	Ref 1, p. 8.03.2
I (in/hr)=	7.2	25-yr, 5-min storm	Ref 1, 8.03.6, figure 8.03d Greensboro
A (Ac.) =	4.40	Drainage Area (Existing Condition)	
A (Ac.) =	5.00	Drainage Area (Post Condition)	
A (Ac.) =	5.00	Drainage Area (used in calculations)	
Q ₁₀ (cfs)=	14.4		

Sediment Storage

Minimum Storage Required (cf / Ac) 1,800 Ref 1, p 6.60.2

Sediment Storage (cf) 9,000 min required storage volume

Surface Area

A (SF) = 0.01*Q₁₀* 43,560 Ref 1, p 6.60.2

A (SF)= 6,273 min required surface area for 75% efficiency

Trap Design

Elevation (ft)	stage (ft)	area (sf)	volume (cf)	cum. vol. (cf)	
848	0	2,516	0	0	
850	2	11,501	12,931	12,931	
851.5	3.5	18,230	22,105	35,036	Adequate Sed Storage Vol & Surface Area @ min of 3.5'

Conclusion:

The minimum requirements are met.

HDR Computation

Job No. 162-18088-018 |

Project:	Forum 52 yard Wate Facility	Computed: PAW	Date: 12/10/04
Subject:	Storm Water Drainage	Checked:	Date:
Task:	Temporary Sediment Trap	TST #2	Sheet Of

Objective Design a temporary sediment trap near the southern end of the leaf processing area

References

1. North Carolina Erosion and Sediment Control Planning and Design Manual.

Calculate Peak Flow

$$Q=CIA$$

C=	0.4	smooth, bare packed soil (0.30 - 0.60)	Ref 1, p. 8.03.2
I (in/hr)=	7.2	25-yr, 5-min storm	Ref 1, 8.03.6, figure 8.03d Greensboro
A (Ac.) =	1.70	Drainage Area (Existing Condition)	
A (Ac.) =	4.60	Drainage Area (Post Condition)	
A (Ac.) =	5.00	Drainage Area (used in calculations)	
Q ₁₀ (cfs)=	14.4		

Sediment Storage

Minimum Storage Required (cf / Ac) 1,800 Ref 1, p 6.60.2

Sediment Storage (cf) 9,000 min required storage volume

Surface Area

A (SF) = 0.01*Q₁₀* 43,560 Ref 1, p 6.60.2

A (SF) = 6,273 min required surface area for 75% efficiency

Trap Design

Elevation (ft)	stage (ft)	area (sf)	volume (cf)	cum. vol. (cf)	
844	0	3,634	0	0	
846	2	5,450	9,023	9,023	
847.5	3.5	6,598	9,022	18,045	Adequate Sed Storage Vol & Surface Area @ min of 3.5'

Conclusion:

The minimum requirements are met.

Appendix B

TECHNICAL SPECIFICATIONS

1
2 **SECTION 02110**
3 **SITE CLEARING**

4 **PART 1 - GENERAL**

5 **1.1 SUMMARY**

6 A. Section Includes:

- 7 1. Site clearing, tree protection, stripping topsoil and demolition.

8 B. Related Sections include but are not necessarily limited to:

- 9 1. Division 0 - Bidding Requirements, Contract Forms, and Conditions of the Contract.
10 2. Division 1 - General Requirements.
11 3. Section 02220 - Sitework.
12 4. Section 02270 - Soil Erosion and Sediment Control.

13 **1.2 QUALITY ASSURANCE**

- 14 A. North Carolina Erosion and Sediment Control Planning and Design Manual, Current Edition.

15 **PART 2 - PRODUCTS - (NOT APPLICABLE TO THIS SECTION)**

16 **PART 3 - EXECUTION**

17 **3.1 PREPARATION**

18 A. Protect existing trees and other vegetation to remain outside limits of construction (shown on
19 drawing) against damage.

- 20 1. Do not smother trees by stockpiling construction materials or excavated materials within
21 drip line.
22 2. Avoid foot or vehicular traffic or parking of vehicles within drip line.
23 3. Provide temporary protection as required.

24 B. Repair or replace trees and vegetation outside clearing limits damaged by construction
25 operations.

- 26 1. Repair to be performed by a qualified tree surgeon.
27 2. Remove trees which cannot be repaired and restore to full-growth status.
28 3. Replace with new trees of minimum 4 IN caliper.

29 **3.2 SITE CLEARING**

30 A. Clearing and Grubbing:

- 31 1. Clear from within limits of construction.
32 a. Include shrubs, brush, downed timber, rotten wood, heavy growth of grass and weeds,
33 vines, rubbish, structures and debris.
34 2. Grub (remove) from within limits of construction all stumps, roots, root mats, logs and
35 debris encountered.

36 B. Disposal of Waste Materials (Non-Saleable Material):

- 37 1. Do not burn combustible materials on site.
38 2. Do not bury organic matter on site.
39 3. All waste materials shall be ground and removed from the site.

- 1 D. Available Subsurface Information: Where provided, data on subsurface soil conditions are not intended
2 as representations or warranties of the continuity of such conditions between borings or indicated
3 sampling locations. It shall be expressly understood that neither the Owner nor the Engineer will be
4 responsible for any interpretation or conclusion drawn therefrom by the Contractor. Data is made
5 available for the convenience of the Contractor.
- 6 E. Additional or supplementary soil borings or other exploratory operations may be made by the Contractor
7 at no additional cost to the Owner. The Contractor shall provide the Owner with a copy of any data
8 obtained/developed during such work. Such additional work shall be performed in a timely manner in
9 accordance with and not impacting or changing the project schedule set forth in the Contract Documents.

10 1.5 TOLERANCES

- 11 A. Grading shall be to a tolerance of + 0.2 FT unless otherwise noted in the construction documents and then
12 the stricter criteria shall be used.

13 PART 2 - PRODUCTS

14 2.1 MATERIALS

- 15 A. Fill and Backfill: Selected material approved by Soils Engineer and Owner from site excavation or from
16 site stockpile.
- 17 B. The Contractor shall conduct his own quantity and quality investigations and testing to determine
18 availability and suitability of (on-site) borrow materials, as allowed by the Owner.
- 19 C. All earth materials proposed for use in the Work shall be adequately characterized prior to the Work by
20 the Contractor.

21 PART 3 - EXECUTION

22 3.1 PROTECTION

- 23 A. Protect existing surface and subsurface features on-site and adjacent to site as follows:
- 24 1. Provide barricades, coverings, or other types of protection necessary to prevent damage to existing
25 items indicated to remain in place.
 - 26 2. Protect and maintain benchmarks, monitoring wells, existing structures, monuments, or other
27 established reference points and property corners. If disturbed or destroyed, replace at own expense
28 to full satisfaction of Owner and controlling agency.
 - 29 3. Verify location of utilities. Omission or inclusion of utility items does not constitute non-existence or
30 definite location. Secure and examine local utility records for location data.
 - 31 a. Take necessary precautions to protect existing utilities from damage due to any construction
32 activity.
 - 33 b. Repair damages to utility items at own expense.
 - 34 c. In case of damage, notify Engineer at once so required protective measures may be taken.
 - 35 4. Any item known or unknown or not properly located that is inadvertently damaged shall be repaired
36 to original condition. All repairs to be made and paid for by Contractor.
 - 37 5. Provide full access to public and private premises, fire hydrants, street crossings, sidewalks, and
38 other points as designated by Owner to prevent serious interruption of travel.
 - 39 6. Maintain stockpiles and excavations in such a manner to prevent inconvenience or damage to
40 structures on-site or on adjoining property.
 - 41 7. Avoid surcharge or excavation procedures which can result in heaving, caving, or slides.
 - 42 8. Conduct operation with minimum interference to daily landfill operations.
- 43 B. Construction erosion and sedimentation controls prior to beginning earthwork.
- 44 C. Dispose of waste materials, legally, off site. Burning, as a means of waste disposal, is not permitted.

1 **3.2 SITE EXCAVATION AND GRADING**

- 2 A. The Work includes all operations in connection with excavation, borrow, construction of fills and
3 embankments, rough grading, and stockpiling of excess materials in connection with the preparation of
4 the site(s) for construction of the proposed facilities.
- 5 B. Excavation and Grading: Perform as required by the Contract Drawings.
6 1. Contract Drawings may indicate both existing grade and finished grade required for construction of
7 Project. Stake all units, structures, piping, and roads and establish their elevations. Perform other
8 layout work required. Replace property corner markers to original location if disturbed or destroyed.
9 2. Preparation of ground surface for embankments or fills: Before fill is started, scarify to a minimum
10 depth of 6 IN in all proposed embankment and fill areas. Where ground surface is steeper than one
11 vertical to four horizontal, plow surface in a manner to bench and break up surface so that fill
12 material will bind with existing surface.
13 3. Protection of finish grade: During construction, shape and drain embankment and excavations.
14 Maintain ditches and drains to provide drainage at all times. Protect graded areas against action of
15 elements prior to acceptance of work. Re-establish grade where settlement or erosion occurs.
- 16 C. Construct embankments and fills as required by the Contract Drawings:
17 1. Construct embankments and fills at locations and to lines of grade indicated. Completed fill shall
18 correspond to shape of typical cross section or contour indicated regardless of method used to show
19 shape, size, and extent of line and grade of completed work.
20 2. Provide approved fill material which is free from roots, organic matter, trash, frozen material, and
21 stones having maximum dimension greater than 6 IN. Ensure that stones larger than 4 IN are not
22 placed in upper 6 IN of fill or embankment. Do not place material in layers greater than 8 IN loose
23 thickness. Place layers horizontally and compact each layer prior to placing additional fill.
24 3. Compact by sheepsfoot, pneumatic rollers, vibrators, or by other equipment as required to obtain
25 specified density. Control moisture for each layer necessary to meet requirements of compaction.
- 26 D. Upon reaching subgrade elevations shown, proofroll subgrade soils and obtain the Engineer's approval.
27 If unsuitable materials are encountered at the subgrade elevation, repair as directed by the Engineer to
28 remove unsuitable materials. Excavation of 1 cy or greater should be preapproved by the Engineer.
- 29 E. Proofrolling shall be conducted with a pneumatic-tired vehicle of at least 20 tons GVW, approved by the
30 Engineer. An alternate approved by the Engineer may be used in constricted areas.
- 31 F. Where subgrade materials are determined to be unsuitable, such materials shall be removed to the lengths,
32 widths, and depths directed by the Engineer, and backfilled with suitable material unless further
33 excavation or earthwork is required. No additional payment will be made for such excavation and
34 backfill 6 IN or less than the finished subgrade. Payment for unsuitable material excavation greater than
35 6 IN beneath the finished subgrade shall be negotiated.
- 36 G. The subgrade of areas to receive fill shall be smooth and free of all vegetation, sticks, roots, rocks, and
37 debris.
- 38 H. Do not place fill when the subgrade is frozen, wet, loose, or soft.
- 39 I. Moisture control:
40 1. Moisture content of materials prior to, and during compaction, shall be uniform throughout each
41 layer of material.
42 2. Granular materials shall be thoroughly wetted during or immediately prior to compaction.
43 3. Supplementary water shall be added as required to materials by sprinkling and mixing uniformly
44 throughout layer.
45 4. Materials too wet for placing shall be temporarily spread or aerated until moisture content is
46 acceptable. If these materials cannot be processed in time to use, the Contractor shall find
47 alternatives acceptable to the Engineer.

1 **3.3 ROCK EXCAVATION**

- 2 A. Rock is defined as natural material that cannot be moved or ripped with a D-9 equipped with a single
3 tooth ripper or approved equal. A demonstration is required. The Contractor shall not remove rock until
4 authorized by the Engineer.
- 5 B. All rock excavation shall be under one classification. This classification shall include solid ledge rock in
6 its natural location that requires systematic quarrying, drilling, and/or blasting for its removal and also
7 boulders that exceed 2 CY in volume.
- 8 C. When rock is encountered, strip free of earth. Employ an independent surveyor to determine rock
9 quantities before removal operation begins. In computing the volumetric content of rock excavation for
10 payment, the pay lines shall be taken from rock surface to below proposed subgrade and 10 FT outside
11 the construction baseline for the landfill phase.
- 12 D. The use of explosives shall be limited to the magnitude and location of the charge that will not cause
13 damage to adjacent existing construction and utilities through shock vibrations or other stress loadings.
14 Provide adequate blanket protection to ensure that there will not be fragments of rock or other debris
15 flying through the air when discharging explosives. Any damage to existing construction or other
16 features caused by blasting operations to be repaired and paid for by Contractor.
 - 17 1. Explosive permits shall be obtained from the appropriate local authorities.
 - 18 2. The Contract unit price for rock excavation shall include all equipment and materials and other work
19 necessary for excavation and hauling the rock from the site, and for furnishing and placing suitable
20 replacement material as specified in its place.
- 21 E. Where explosives and blasting are used, comply with all laws and ordinances of municipal, state and
22 Federal agencies relating to the use of explosives. Use qualified personnel for blasting and take proper
23 precautions to protect persons, property or the work from damage or injury from blast or explosion.
24 Conduct preblast survey in the company of the Engineer to aid in determining any damage caused by
25 blasting.

26 **3.4 FIELD QUALITY CONTROL**

- 27 A. Moisture density relations, to be established by the Soils Engineer are required for all materials to be
28 compacted.
- 29 B. Extent of compaction testing will be as necessary to assure compliance with Specifications.
- 30 C. Give minimum of 24 HR advance notice to Soils Engineer when ready for compaction or subgrade
31 testing and inspection.
- 32 D. Should any compaction density test or subgrade inspection fail to meet Specification requirements,
33 perform corrective work as necessary.
- 34 E. Pay for all costs associated with corrective work and retesting resulting from failing compaction density
35 tests.

36 **3.5 COMPACTION DENSITY REQUIREMENTS**

- 37 A. Obtain approval from Soils Engineer with regard to suitability of soils and acceptable subgrade prior to
38 subsequent operations.
- 39 B. Provide dewatering system necessary to successfully complete compaction and construction
40 requirements.
- 41 C. Remove frozen, loose, wet, or soft, material and replace with approved material as directed by Soils
42 Engineer.
- 43 D. Stabilize subgrade with well graded granular materials as directed by Soils Engineer.
- 44 E. Assure by results of testing that compaction densities comply with the following requirements:
 - 45 1. Sitework:
 - 46

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LOCATION

COMPACTION DENSITY

UNDER PIPING/PAVED ROADS

Cohesive Soils 95 percent, ASTM D698
Cohesionless Soils 75 percent relative density
per ASTM D4253 and D4254

UNPAVED AREAS

Cohesive Soils 85 percent, ASTM D698
Cohesionless Soils 60 percent relative density
per ASTM D4253 and D4254

2. Perform testing at a minimum frequency of 1 test per lift per 10,000 square feet.

3.6 SPECIAL REQUIREMENTS

A. Erosion Control: Conduct work to minimize erosion of site. Construct stilling areas to settle and detain eroded material. Remove eroded material washed off site. Clean streets daily of any spillage of dirt, rocks, or debris from equipment entering or leaving site.

END OF SECTION

1 **SECTION 02270**
2 **SOIL EROSION AND SEDIMENT CONTROL**

3 **PART 1 - GENERAL**

4 **1.1 SUMMARY**

- 5 A. Section Includes:
6 1. Soil erosion and sediment control.
- 7 B. Related Sections include but are not necessarily limited to:
8 1. Division 0 - Bid Requirements, Contract Forms, and Conditions of the Contract.
9 2. Division 1 - General Requirements.
10 3. Division 2 - Section 02220, Earthwork.
11 4. Division 2 - Section 02485, Seeding.
12 5. Division 2 - Section 02720, Erosion Control Blankets.
13 6. Division 3 - Section 03002, Concrete.

14 **1.2 QUALITY ASSURANCE**

- 15 A. Referenced Standards:
16 1. North Carolina Erosion and Sediment Control Planning and Design Manual, current edition.
17 2. North Carolina State Department of Transportation Standard Specifications for Roads and Structures
18 Construction, current edition.

19 **1.3 SUBMITTALS**

- 20 A. Pipe riser and barrel assembly. Submittal should include but not limited to Section 2.1 of this
21 specification.
- 22 B. All appurtenances necessary to completely install erosion and sediment control features.

23 **PART 2 - PRODUCTS**

24 **2.1 MATERIALS**

- 25 A. Stone: NCDOT #57, NCDOT Class B Rip Rap.
26 B. Grass Seed: Refer to Section 02485, Seeding.
27 C. Silt Fence: Premanufactured or constructed on site.
28 D. Erosion Control Blankets: Refer to Section 02720.

29 **PART 3 - EXECUTION**

30 **3.1 PREPARATION**

- 31 A. Prior to General Stripping Topsoil, Tree Clearing, and Excavating:
32 1. Install silt fence, ditches, and channels.
33 2. Excavate and shape sediment basins and traps.
34 3. Construct spillways and install stone filter where required.
35 4. Machine compact all berms, dikes, and embankments for basins and traps in accordance with Section
36 02220.
37 5. Refer to the construction sequence on the plans for further detail.
- 38 B. Temporarily seed all disturbed slopes and stockpiles:

- 1 1. Refer to Section 2485, Seeding, for application rates.
- 2 2. Reseed as required until good stand of grass is achieved.

3 **3.2 DURING CONSTRUCTION PERIOD**

- 4 A. Maintain Basins, Dikes, Traps, Stone Filters, Straw Bales, Etc.:
 - 5 1. Inspect regularly especially after rainstorms.
 - 6 2. Repair or replace damaged or missing items.
- 7 B. After rough grading, sow temporary grass cover over all exposed earth areas not draining into sediment
- 8 basin or trap.
- 9 C. Construct inlets as soon as possible.
 - 10 1. Excavate and tightly secure silt fence completely around inlets as detailed on Drawings.
- 11 D. Provide necessary swales and dikes to direct all water towards and into sediment basins and traps.
- 12 E. Do not disturb existing vegetation (grass and trees).
- 13 F. Excavate sediment out of basins and traps when capacity has been reduced by 50 percent.
 - 14 1. Remove sediment from siltfence to prevent overtopping.
- 15 G. Topsoil and Fine Grade Slopes and Swales, Etc.:
 - 16 1. Seed and mulch as soon as areas become ready.
- 17 H. The erosion control features shown on the plans are performance based. If the feature does not
- 18 adequately control erosion and sediment control to the satisfaction of the project manager, the contractor
- 19 will be required to install additional erosion and sediment control features. The project manager will
- 20 work with the contractor to determine the extent of the additional measures.

21 **3.3 NEAR COMPLETION OF CONSTRUCTION**

- 22 A. Grade to finished or existing grades.
- 23 B. Fine grade all remaining earth areas, then seed and mulch in accordance with Section 02485, Seeding.

24 **END OF SECTION**

25

- 1 2. Control tests: Perform control tests including one specific gravity, one soundness in magnesium
2 sulfate solution test, and one soundness in freezing and thawing test for each type of stone protection
3 material for every 1,000 tons of material.
- 4 D. Specific gravity test: ASTM C127.
5 1. Not less than 2.40 min.
- 6 E. Soundness in magnesium sulfate solution test: ASTM C88, except maintain samples immersed in solution
7 at a temperature of 80 degF (26 degC) plus or minus 2 deg.
8 1. Loss at 5 cycles: Not more than 12 percent.
- 9 F. Soundness of aggregates in freezing and thawing test:
10 1. Ensure loss at 12 cycles of not more than 10 percent.
11 2. Modify and use AASHTO Designation T 103 Method.
12 3. Maintain temperature of cold liquid in range of -5 to 0 degF (-20 to -18 degC).
13 4. Maintain thaw fluid temperature in range of 45 to 50 degF (7 to 10 degC).
14 5. Permit length of freezing and of thawing cycles of two hours with one hour of freezing following by
15 one hour of thawing.
16 6. Perform thawing by circulating thaw fluid around pan containing stone immersed in a depth of 1/4
17 IN (6 mm) rather than by total immersion.

18 **1.3 SUBMITTALS**

- 19 A. See Section 01300.
- 20 B. Supplier's certification of all materials.
- 21 C. Submit all tests and certification in a single coordinated submittal. Partial submittals will not be accepted.
- 22 D. Description of location for use.
- 23 E. Geotextile fabric (if used) in accordance with Section 02900.

24 **PART 2 - PRODUCTS**

25 **2.1 MATERIALS**

- 26 A. Stone: Approved durable broken stone quarry run.
27 1. Durable and of such quality that it will not disintegrate on exposure to water or weathering and free
28 from structural fractures and defects.
29 2. Not containing shale, unsound sandstone, or other material which will readily disintegrate.
30 3. Graded within limits specified.
31 4. Neither breadth nor thickness of any stone less than one-third of its length.
32 5. Ensure that dirt and fines accumulated from interledge layers or from blasting or handling operation
33 is less than 5 percent by weight.
34 6. The gradation of the material shall be well-graded from small to large of the sizes as indicated on the
35 plans or as directed by the Engineer. The rock shall be sized so as to permit its interlocking.
- 36 B. Geotextile: In accordance with Section 02900, Geotextile.

37 **PART 3 - EXECUTION**

38 **3.1 PREPARATION**

- 39 A. Trim and dress all areas to conform to the Plans as indicated with tolerance of ± 0.1 FT from theoretical
40 slope lines and grades.
- 41 B. Bring areas that are below allowable minus tolerance limit to grade by filling with embankment material
42 similar to adjacent material.

- 1 C. Machine compact in accordance with Section 02220.
- 2 D. Do not place any stone material on prepared base prior to inspection and approval to proceed.
- 3 E. Lay geotextile fabric prior to placing rip rap.
- 4 **3.2 PLACING RIP RAP**
- 5 A. Place dumped riprap on prepared foundation within limits indicated.
- 6 B. Place on prepared base to produce a well-graded mass of rock with minimum practicable percentage of
- 7 voids, to required thickness and grades.
- 8 C. Place to full thickness in a single operation to avoid displacing the underlying material.
- 9 D. Distribute larger stones and entire mass in final position, roughly graded to conform to approximate
- 10 gradation specified.
- 11 E. Keep finished rip rap free from objectionable pockets of small stones or clusters of larger stone.
- 12 1. Hand place and rearrange individual stones as necessary to obtain a reasonably well-graded
- 13 distribution.
- 14 F. Ensure a final tolerance of within 3 IN (75 mm) from indicated grade lines.
- 15 1. Neither tolerance extreme continuous over an area greater than 200 SQ/FT (20 SM).
- 16 G. Distribute stones throughout mass either by selective loading at quarry or by controlled dumping of
- 17 successive loads during final placing or by a combination of these methods.
- 18 1. Do not place stone by dumping into chutes or by similar method likely to cause segregation.
- 19 H. Place stone revetment (rip rap) in conjunction with embankment construction at toe of revetment as
- 20 necessary to prevent mixture of embankment and stone protection materials.
- 21 1. Maintain stone revetment until accepted.
- 22 2. Replace any displaced material to lines and grades shown.

23

END OF SECTION

1 **SECTION 02485**
2 **SEEDING**

3 **PART 1 - GENERAL**

4 **1.1 DESCRIPTION**

5 A. General:

- 6 1. Furnish all labor, materials, tools, equipment and services for seeding in accordance with provisions
7 of Contract Documents.
8 2. Completely coordinate with work of all other trades.
9 3. See Division 1 for General Requirements.

10 B. Related work specified elsewhere:

- 11 1. Section 02220 - Earthwork.
12 2. Section 02221 - Trenching, Backfilling, and Compacting.
13 3. Section 02270 - Soil Erosion and Sediment Control.
14 4. Section 02720 - Erosion Control Blankets.

15 C. Location of work: All disturbed areas, exclusive of lined landfill area.

16 **1.2 QUALITY ASSURANCE**

17 A. Fertilizer testing: Current methods of Association of Official Agricultural Chemists.

- 18 1. Testing will be conducted at discretion of Engineer.

19 **1.3 SUBMITTALS**

20 A. See Section 01300.

21 B. Certificates for each grass seed mixture, stating botanical and common name, percentage by weight, and
22 percentages of purity, germination, and weed seed.

23 C. Copies of fertilizer invoices, showing grade furnished and total quantity applied.

24 D. Grass seed mix that will be used for the project and application rate.

25 **PART 2 - PRODUCTS**

26 **2.1 MATERIALS**

27 A. Establish a smooth, healthy, uniform, close strand of grass from specified seed.

28 B. Grass seed: Fresh, clean, latest available crop.

- 29 1. Seeds shall meet state seed requirements and those of the Federal Seed Act.
30 2. Species, proportions and minimum percentage of purity, germination, and maximum percentage of
31 weed seed, as specified.
32 a. Minimum percent purity 96%.
33 b. Minimum percent germination 80%.
34 c. Maximum percent weed seed 1%.
35 3. All seed used shall comply with state noxious weed seed requirements.

36 C. Mulch: Clean, seed-free, threshed straw of oats, wheat, barley, rye, beans, or other locally available mulch
37 material.

- 38 1. Do not use mulch containing a quantity of matured noxious weed seeds or other species that will be
39 detrimental to seeding, or provide a menace to surrounding land.
40 2. Do not use mulch material which is fresh or excessively brittle, or which is decomposed and will
41 smother or retard growth of grass.

- 1 D. Fertilizer: Commercial grade fertilizer meeting applicable requirements of State and Federal law.
2 1. Do not use cyanamic compounds of hydrated lime.
- 3 E. Limestone: agricultural grade ground limestone containing not less than 85 percent of combined calcium
4 and magnesium carbonates.
5 1. 50 percent passing 100 mesh sieve.
6 2. 90 percent passing 20 mesh sieve.
- 7 F. Asphalt binder: Emulsified asphalt per State Specifications.
- 8 G. Water: Potable, free of substances harmful to growth.
- 9 H. Erosion Control Matting: Refer to Section 02720, Erosion Control Blankets. Contractor shall provide
10 erosion control matting as required on slopes and ditchlines to obtain suitable vegetative cover.

11 2.2 DELIVERY, STORAGE AND HANDLING

- 12 A. Deliver seed in standard sealed containers labeled with producer's name and seed analysis, and in accord
13 with US Department of Agriculture Rules and Regulations under Federal Seed Act.
- 14 B. Deliver fertilizer in original containers labeled with content analysis.

15 PART 3 - EXECUTION

16 3.1 JOB CONDITIONS

- 17 A. This project shall comply with the planting regime for the Piedmont Region.
- 18 B. Perform spring seeding between March 1 and May 15, and fall seeding between September 1 and
19 November 1, or upon approval of the Engineer.
- 20 C. Permanent Seeding Regime
- 21 1. Spring (March 1 – April 30) and Fall (September 1 – November 15)
- 22 a. Kentucky-31: 175 lbs/ac.
- 23 b. Unhulled sercia lespedeza: 50 lbs/ac.
- 24 c. Rye grain: 1 bushel/ac.
- 25 2. Winter (November 16 – February 28)
- 26 a. Kentucky-31: 200 lbs/ac.
- 27 b. Unhulled sercia lespedeza: 50 lbs/ac.
- 28 c. Rye Grain: 3 bushels/ac.
- 29 3. Summer (May 1 – August 31)
- 30 a. Kentucky-31: 50 lbs/ac.
- 31 b. Unhulled sercia lespedeza: 50 lbs/ac.
- 32 c. Korean or kobe lespedeza: 50 lbs/ac.
- 33 d. Weeping love grass: 5 lbs/ac.
- 34 e. Bermuda grass: 10 lbs/ac.
- 35 f. Millet: 1 bushel/ac.
- 36 D. Temporary Seeding
- 37 1. Establish temporary or intermediate seeding within 15 working days or 90 calendar days (whichever
38 is shorter) if construction has ceased for more than 15 working days or 90 calendar days.
- 39 2. Temporary Seeding Regime
- 40 a. Spring (March 1 – April 30) and Winter (November 16-February 28)
- 41 1) Rye: 120 lbs/ac.
- 42 2) Sercia Lespedeza: 50 lbs/ac
- 43 b. Summer (May 1 – August 31)
- 44 1) German Millet: 40 lbs/ac
- 45 c. Fall (September 1 – November 15)
- 46 1) Rye: 120 lbs/ac

1 E. Seeding is a performance based construction activity. Refer to paragraph 3.4 Maintenance.

2 **3.2 SOIL PREPARATION**

3 A. Project manager to approve area after the surface is prepared and prior to seeding.

4 B. Limit preparation to areas which will be planted soon after preparation.

5 C. Loosen surface to minimum depth of four (4) IN.

6 D. Remove stones over one IN in any dimension, sticks, roots, rubbish and other extraneous matter.

7 E. Test soil pH using test kits approved by USDA NRCS. Use test results to determine rate of lime
8 application needed to make soil circumneutral. Provide application rate to Engineer for approval prior to
9 its application.

10 F. Spread lime uniformly over designated areas at rate determined by soil testing.

11 G. After application of lime, prior to applying fertilizer, loosen areas to be seeded with double disc or other
12 suitable device if soil has become hard or compacted. Correct any surface irregularities in order to
13 prevent pocket or low areas which will allow water to stand.

14 H. Test soil fertility according to USDA NRCS approved methods. Use test results to determine rate of
15 fertilizer application. Engineer will approve fertilizer application rate prior to application.

16 I. Distribute fertilizer uniformly over areas to be seeded at a rate determined by soil testing.

17 1. Use suitable distributor.

18 2. Incorporate fertilizer into soil to depth of at least two (2) IN.

19 3. Remove stones or other substances which will interfere with turf development or subsequent
20 mowing.

21 J. Grade seeded areas to smooth, even surface with loose, uniformly fine texture.

22 1. Roll and rake, remove ridges and fill depressions, as required to meet finish grades.

23 2. Fine grade just prior to planting.

24 K. Restore seeded areas to specified condition if eroded or otherwise disturbed between fine grading and
25 planting.

26 L. If fertilizer application rate is determined (by invoices submitted) to be less than that specified, apply
27 additional fertilizer.

28 M. Cover seeded areas with mulch.

29 **3.3 SEEDING**

30 A. Do not use seed which is wet, moldy, or otherwise damaged.

31 B. Use approved mechanical power driven drills or seeders, or mechanical hand seeders, or other approved
32 equipment.

33 C. Distribute seed evenly over entire area at not less than 7LB/1000 SF, 50 percent sown in one direction,
34 remainder at right angles to first sowing.

35 D. Stop work when work extends beyond most favorable planting season for species designated, or when
36 satisfactory results cannot be obtained because of drought, high winds, excessive moisture, or other
37 factors.

38 E. Resume work only when favorable condition develops.

39 F. Lightly rake seed into soil followed by light rolling or Culti-packing.

40 G. Immediately protect seeded areas against erosion by mulching or placing netting.

41 1. Spread mulch in a continuous blanket using 1-1/2 TON/ACRE to depth of 4 or 5 straws.

42 2. Immediately following spreading mulch, secure with evenly distributed emulsified asphalt at rate of
43 200 gal/acre.

- 1 3. Protect all seeded slopes greater than 3:1 (horizontal to vertical) and ditches against erosion with
2 approved erosion control netting or mats.
- 3 H. Immediately after planting, water to a reasonable depth.
- 4 I. Clean-up: Remove any soil or similar material from paved areas within same working day. Upon
5 completion of seeding, remove all excess soil, stones, and other debris from site or dispose as directed by
6 Owner. Repair all damages to existing construction caused by lawn operations to the satisfaction of
7 Engineer and Owner at no additional cost to Owner

1 **PART 2 - PRODUCTS**

2 **2.1 EROSION CONTROL BLANKETS**

3 A. Material shall be Curlex II Excelsior as manufactured by American Excelsior, or approved equal.

4 **PART 3 - EXECUTION**

5 **3.1 SITE PREPARATION**

6 A. Before placing erosion control blanket, the subgrade shall be inspected by Contractor to insure that it has
7 been properly compacted; has been graded smooth; has no depressed, void, soft or uncompacted areas; is
8 free from obstructions, such as tree roots, projecting stones or other foreign matter; and has been seeded.
9 Contractor shall not proceed until all unsatisfactory conditions have been remedied. By beginning
10 construction, Contractor signifies his approval of preceding work.

11 B. Contractor shall fine grade the subgrade by hand dressing where necessary to remove local deviations.

12 C. No vehicular traffic shall be permitted directly on the blankets.

13 **3.2 CHANNEL INSTALLATION**

14 A. Erosion control blankets shall be installed as directed by the Engineer in accordance with manufacturer's
15 instructions. The extent of erosion control blankets shall be as shown on Drawings.

16 B. Erosion control blankets shall be installed parallel to the flow of water. The first roll shall be centered
17 longitudinally in mid-channel and anchored. Subsequent rolls shall follow from channel center outward.

18 C. Successive lengths of erosion control blankets shall be overlapped ("shingled") sufficiently for a common
19 row of connections with the upstream end on top. Connect the overlap across the end of each of the
20 overlapping lengths.

21 D. A trench shall be located at the upstream termination. Erosion control blanket shall be connected to the
22 bottom of the trench. Backfill and compact the trench.

23 **3.3 SLOPE INSTALLATION**

24 A. Before placing erosion control blanket, the subgrade shall be inspected by Contractor to insure that it has
25 been properly compacted; has been graded smooth; has no depressed, void, soft or uncompacted areas; is
26 free from obstructions, such as tree roots, projecting stones or other foreign matter; and has been seeded.
27 Contractor shall not proceed until all unsatisfactory conditions have been remedied. By beginning
28 construction, Contractor signifies his approval of preceding work.

29 B. Place on all slopes within limits of construction on slopes greater than or equal to 2H:1V.

30 **3.4 QUALITY ASSURANCE**

31 A. Erosion control blankets shall not be defective or damaged. Any such problems shall be corrected by
32 Contractor at no cost to Owner and to the satisfaction of Engineer.

33 **3.5 CLEAN-UP**

34 A. At the completion of this scope of work, Contractor shall remove from the job site and properly dispose
35 of all remaining debris, waste materials, excess materials, and equipment required of or created by
36 Contractor. Disposal of waste materials shall be solely the responsibility of Contractor and shall be done
37 in accordance with applicable waste disposal regulations.

38 **END OF SECTION**

1 **SECTION 02900**
2 **GEOTEXTILE FABRIC**

3 **PART 1 - GENERAL**

4 **1.1 SUMMARY**

5 A. Section Includes:

- 6 1. Geotextile fabric for all uses as shown in Drawings including but not limited to:
7 a. Cushion geotextile to protect geomembrane from leachate collection layer.
8 b. Separator geotextile between leachate collection system and operational cover.

9 B. Related Sections include but are not necessarily limited to:

- 10 1. Section 02220 - Earthwork.

11 **1.2 QUALITY STANDARDS**

12 A. Reference Standards:

- 13 1. American Society for Testing and Materials (ASTM):
14 a. D1987, Biological Clogging of Geotextile or Soil/Geotextile Filters.
15 b. D3776, Test Method for Mass Per Unit Area of Woven Fabric.
16 c. D4354, Practice for Sampling of Geosynthetics for Testing.
17 d. D4355, Test Method for Deterioration of Geotextiles from Exposure to Ultraviolet Light and
18 Water.
19 e. D4491, Test Method for Water Permeability of Geotextiles by Permittivity.
20 f. D4595, Tensile Properties of Geotextiles by the Wide-Width Strip Method.
21 g. D4632, Test Method for Grab Breaking Load and Elongation.
22 h. D4751, Determining Apparent Opening Size of a Geotextile.
23 i. D4833, Test Method for Index Puncture Resistance of Geotextiles, Geomembrane, and Related
24 Products.
25 j. D4873, Guide for Identification, Storage, and Handling of Geotextiles.
26 k. D5261, Measuring Mass Per Unit Acre of Geotextiles.

27 **1.3 SUBMITTALS**

28 A. Shop Drawings:

- 29 1. See Sections 01300 and 01340.
30 2. Product technical data.
31 3. Manufacturer's delivery, storage, handling, and installation instructions.

32 **PART 2 - PRODUCTS**

33 **2.1 ACCEPTABLE MANUFACTURERS**

34 A. Subject to compliance with the Contract Documents, the following Manufacturers are acceptable:

- 35 1. Geotextiles:
36 a. Amoco Fabrics and Fibers Co.
37 b. Advanced Drainage Systems Inc.
38 c. Nicolon Mirafi Group.
39 d. Synthetic Industries, Inc.
40 e. Or approved equal.

41 **2.2 FABRICATION**

- 42 A. Geotextile: Non-woven, needle punched; polyester or polypropylene; continuous filament or staple fibers;
43 conforming to the following properties:

Property	Test Method	Minimum Required Value
Unit Weight	ASTM D5261	8 oz/sy
Grab Tensile Strength	ASTM D4632	210 lb
Elongation	ASTM D4632	50%
Puncture Strength	ASTM D4833	95 lb
Maximum Apparent Opening Size	ASTM D4751	#70 US Sieve
Permittivity	ASTM D4491	0.5 sec-1

B. Roadbed Geotextile Fabric: The geotextile shall be composed of synthetic fibers formed into a woven fabric. Fibers used in the manufacture of the geotextile shall be polyolefins, polyesters or polyamides and conform to the following properties.

Property	Test Method	Minimum Required Value
Grab Tensile	ASTM D4632	200 lbs
Grab Elongation	ASTM D4632	15 %
Puncture Strength	ASTM D4833	100 lbs
Trapezoidal Tear	ASTM D4533	75
UV Resistance	ASTM D4355	90 %

PART 3 - EXECUTION

3.1 INSTALLATION

A. General Handling and Layout

1. General storage and handling of geotextiles must meet requirements of ASTM D4873.
2. Exercise care when installing to prevent damage to geotextile.
3. Lay out geotextile smooth and free of wrinkles, but loose enough that placement of overlying materials will not stretch or tear the fabric.
4. Repair or replace geotextile that is torn or punctured. Repair by placing a geotextile patch over the damaged area, overlapping the existing geotextile by 12 IN (minimum) from any part of the damaged area. Repair or replace at no extra cost to Owner.
5. No equipment may operate directly on geotextiles. A minimum vertical separation of 9 IN must be maintained between all geotextiles and equipment tracks or wheels.

B. Seaming and Joining

1. Cushion: Join sheets without sewing but with a minimum of 4 IN longitudinal overlap.
2. Separator: Join sheets as specified below.
 - a. With Sewing: Overlap adjacent panels a minimum of 4 IN. Use Type SSa (prayer) seam and a Type 401 stitch having a minimum distance from the edge of the geotextile to the stitch line of 2.0 IN or follow recommendations of geotextile manufacturer.
 - b. With Heat Bonding: Overlap adjacent panels a minimum of 4 IN. Heat bond seam must develop a minimum of 60% of the tensile strength of the parent geotextile as measured in ASTM D4632.

C. Geotextile

1. Place fabric directly on a relatively smooth subgrade, free of obstructions, abrupt depressions or humps, debris, or deposits of loose or soft soil.
2. Care must be taken to avoid damaging the geotextile during placement of the soil over the geotextile. This may require use of a thicker loose lift or a smooth drum roller to limit damage due to penetration of compactor feet.

1 D. Roadbed Geotextile Fabric: Woven

- 2 1. Place woven geotextile directly on a relatively smooth subgrade, free of obstructions, abrupt
3 depressions or humps, debris, or deposits of loose or soft soil.
4 2. If required, the geotextile may be held in place with staples.
5 3. Geotextile shall be overlapped in the direction of the subbase placement.

6 **3.2 CQC TESTING**

- 7 A. The CQC Consultant shall confirm that the identification, storage, and handling of geotextiles is in
8 accordance with ASTM D4873. Any deviation from this requirement will be reported to the Engineer.
9 B. The CQC Consultant will examine all manufacturer's certifications to ensure that the property values
10 listed on the certifications meet or exceed these specifications. Any deviations will be reported to the
11 Engineer.
12 C. The CQC Consultant will observe placement of the geotextiles to confirm that the panel overlaps and
13 seams are in accordance with these specifications. Any deviations will be reported to the Engineer.

14 **END OF SECTION**

Appendix C
DRAWINGS



NOTES

1. TOPOGRAPHY PROVIDED BY THE CITY OF WINSTON-SALEM WITH UNKNOWN DATA.
2. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS AND APPROVALS PRIOR TO COMMENCING WORK. THE OWNER HAS APPLIED FOR THE FOLLOWING PERMITS: EROSION AND SEDIMENT CONTROL. REFER TO TECHNICAL SPECIFICATIONS.
3. THE CONTRACTOR SHALL RESTORE TO THE OWNERS SATISFACTION ALL AREAS DISTURBED BY CONSTRUCTION; INCLUDING ROADWAY SURFACES, ROADWAY SHOULDERS AND DITCHES, DRAINAGE STRUCTURES, UTILITIES AND OTHER EXISTING FEATURES.
4. THESE DRAWINGS ACCOMPANY TECHNICAL SPECIFICATIONS. ANY CONFLICTS BETWEEN THESE DRAWINGS AND THE SPECIFICATIONS SHOULD BE BROUGHT TO THE ATTENTION OF THE DESIGN ENGINEER (HDR ENGINEERING, INC. OF THE CAROLINAS).
5. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING SITE CONDITIONS PRIOR TO COMMENCING WORK. CONDITIONS AT THE SITE MAY VARY FROM THOSE SHOWN, AND IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO INCORPORATE THE ACTUAL EXISTING CONDITIONS IN THE EXECUTION OF THE WORK.
6. ELEVATIONS REFER TO USGS DATUM. HORIZONTAL CONTROL BASED UPON NORTH CAROLINA STATE PLANE COORDINATE SYSTEM.
7. THE CONTRACTOR IS RESPONSIBLE FOR DEVELOPING AND MAINTAINING A SITE SAFETY PROGRAM TO ADDRESS ONSITE MONITORING OF THE WORK AND PERSONAL SAFETY REQUIREMENTS. REFER TO SECTION 02575 - ENVIRONMENTAL CONTROL PROGRAM REQUIREMENTS - FOR FURTHER INFORMATION.
8. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR SITE SAFETY ASSOCIATED WITH THE WORK UNDER THIS CONTRACT AND FOR COMPLIANCE WITH ALL FEDERAL, STATE AND LOCAL HEALTH AND SAFETY LAWS, CODES, REGULATIONS AND ORDINANCES INCLUDING BUT NOT LIMITED TO THOSE MANDATED BY OSHA.
9. SOLE ACCESS TO THE SITE IS FROM THE ENTRANCE FROM NORTHSTAR DRIVE.
CONTRACTOR MAY ONLY WORK DURING THE FOLLOWING HOURS:
M-F: 7AM-6PM
SAT: 8AM-4PM
10. CONTACT THE WINSTON-SALEM SOLID WASTE ADMINISTRATOR PRIOR TO A SITE VISIT AT (336)-747-7310.
11. THE CITY OF WINSTON-SALEM HAS AN EASEMENT AGREEMENT TO USE THE EXISTING ACCESS ROAD AS PERMANENT ACCESS INTO THE YARD WASTE FACILITY. REFER TO DEED BOOK 2459, PAGE 1845 RECORDED ON MARCH 26, 2004.



VICINITY MAP
NOT TO SCALE



HDR Engineering, Inc.

ISSUE	DATE	DESCRIPTION
A	12/04	ISSUED FOR NCDENR LAND QUALITY APPROVAL

PROJECT MANAGER	M.D. PLUMMER, P.E. P. WESTMORELAND J. GAUL
PROJECT NUMBER	00009095.018

**Forum 52 Yard Waste Facility
Erosion and Sediment
Control Plans**

WINSTON-SALEM NORTH CAROLINA

EXISTING CONDITIONS

FILENAME	00C-01	SHEET	C-01
SCALE	1"=100'		

C:\WINDOWS\00000005\01\BIBALNUT COVER\FORUM 52 YARD WASTE\00C-01.DWG, Pk1, 12/10/2004 04:17:34 PM, gmf



60 0 60 120
SCALE IN FEET

EROSION AND SEDIMENTATION CONTROL GENERAL CONSTRUCTION SEQUENCE

1. ESTABLISH LIMITS OF CONSTRUCTION.
2. INSTALL SILT FENCE.
3. INSTALL A GRAVEL CONSTRUCTION ENTRANCE AND ASSOCIATED APPURTANCES.
4. CLEAR AND GRUB THE AREA IN THE VICINITY OF TEMPORARY SEDIMENT TRAP #1 (TST #1).
5. INSTALL TST #1. SOIL FOR THE CONSTRUCTION OF TST #1 SHOULD BE FROM THE DESIGNATED ON SITE SOIL BORROW AREA.
6. INSTALL TEMPORARY DIVERSION CHANNELS AS SHOWN. INSTALL ADDITIONAL CHANNELS AS NEEDED.
7. CLEAR AND GRUB THE AREA IN THE VICINITY OF TEMPORARY SEDIMENT TRAP #2 (TST #2).
8. INSTALL TST #2. SOIL FOR THE CONSTRUCTION OF TST #2 SHOULD BE FROM THE DESIGNATED ON SITE SOIL BORROW AREA.
9. INSTALL DIVERSION CHANNELS AS SHOWN TO DIRECT FLOW TO EITHER TST #1 OR TST #2. INSTALL ADDITIONAL DIVERSION CHANNELS OR DEVICES AS NECESSARY.
10. AFTER THE EROSION AND SEDIMENT CONTROL FEATURES ARE OPERATIONAL, BEGIN CLEARING, GRUBBING, AND SOIL EXCAVATION ACTIVITIES.
11. STABILIZE AND PERFORM PERMANENT SEEDING ON EXPOSED SLOPES OR DISTURBED AREAS IMMEDIATELY FOLLOWING COMPLETION OF ANY PHASE OF GRADING.
12. PERIODICALLY AND AFTER A MAJOR STORM EVENT, INSPECT ALL EROSION AND SEDIMENT CONTROL DEVICES. REPAIR AS NEEDED. ACCUMULATED SEDIMENT TO BE REMOVED WHEN 1/2 OF THE HOLDING CAPACITY IS DEPLETED.

SEDIMENTATION AND EROSION CONTROL NOTES

1. THIS DRAWING ILLUSTRATES THE EROSION CONTROL PLAN SUBMITTED TO NCDENR FOR APPROVAL. CONTRACTOR IS REQUIRED TO COMPLY WITH THE APPROVED PLAN.
2. EROSION CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED TO THE SATISFACTION OF THE ENGINEER. FAILURE TO DO SO WILL RESULT IN STOPPAGE OF ALL OTHER WORK UNTIL SAID MEASURES COMPLY WITH ACCEPTABLE STANDARDS.
3. THE EROSION AND SEDIMENT CONTROL DEVICES ARE PERFORMANCE BASED. IF THE DEVICE IS NOT PERFORMING ADEQUATELY, THE CONTRACTOR SHALL IMPROVE THE DEVICE SO THAT IT OPERATES MORE EFFECTIVELY AT NO ADDITIONAL COST TO THE OWNER. THE ENGINEER WILL ASSIST THE CONTRACTOR IN MAKING SUCH MODIFICATIONS.
4. SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED IN STRICT ACCORDANCE WITH STANDARDS IN THE CONSTRUCTION DOCUMENTS AND APPLICABLE ENVIRONMENTAL REGULATIONS INCLUDING THOSE SET FORTH BY NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL AND NATURAL RESOURCES - LAND QUALITY SECTION (NCDENR).
5. ALL STORM WATER MANAGEMENT AND EROSION CONTROL MEASURES SHALL BE INSTALLED AND MADE OPERATIONAL IN EACH WORK ZONE PRIOR TO COMMENCEMENT OF EARTHWORK ACTIVITIES WITHIN THAT WORK ZONE.
6. ADDITIONAL TEMPORARY DITCHES AND/OR DIVERSIONS MAY BE REQUIRED TO PERFORM CONSTRUCTION. WHERE SUCH MEASURES ARE REQUIRED, THEY SHALL BE CONSTRUCTED SO AS TO DIRECT RUNOFF FROM DISTURBED AREAS TO SEDIMENT TRAPS OR OTHER APPROPRIATE TEMPORARY CONTROL FEATURES.
7. ALL SEDIMENT CONTROL MEASURES SHALL BE INSPECTED AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND AFTER ANY STORM EVENT OF GREATER THAN ONE-HALF INCH OF PRECIPITATION DURING ANY 24-HOUR PERIOD. ALL SEDIMENT CONTROL FEATURES SHALL BE MAINTAINED UNTIL FINAL STABILIZATION HAS BEEN OBTAINED.
8. RESTORE AND STABILIZE ALL DISTURBED AREAS INCLUDING STOCKPILES AND STORAGE AREAS. PERFORM PERMANENT SEEDING IN ACCORDANCE WITH NCDENR STANDARDS AND THE PROJECT SPECIFICATIONS.



ISSUE	DATE	DESCRIPTION
A	12/04	ISSUED FOR NCDENR LAND QUALITY APPROVAL

PROJECT MANAGER	M.D. PLUMMER, P.E. P. WESTMORELAND J. GAUL
PROJECT NUMBER	00009095.018

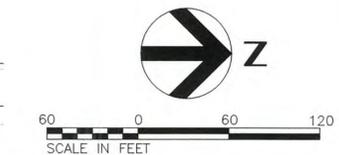
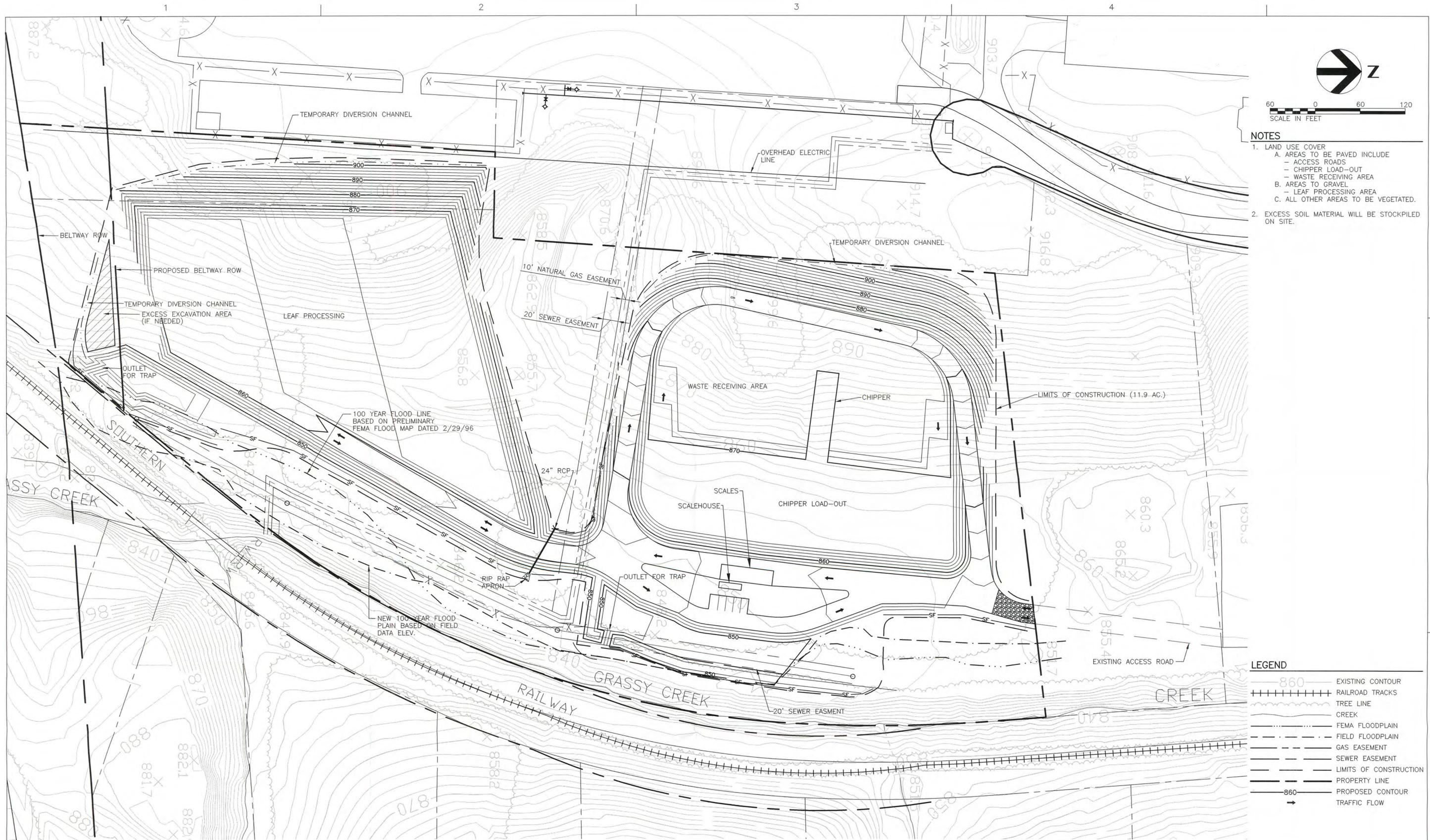
**Forum 52 Yard Waste Facility
Erosion and Sediment
Control Plans**

WINSTON-SALEM NORTH CAROLINA

EROSION CONTROL PLAN

FILENAME	00C-02	SHEET
SCALE	1"=60'	C-02

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- NOTES**
- LAND USE COVER
 - AREAS TO BE PAVED INCLUDE
 - ACCESS ROADS
 - CHIPPER LOAD-OUT
 - WASTE RECEIVING AREA
 - AREAS TO GRAVEL
 - LEAF PROCESSING AREA
 - ALL OTHER AREAS TO BE VEGETATED.
 - EXCESS SOIL MATERIAL WILL BE STOCKPILED ON SITE.

- LEGEND**
- 860 ——— EXISTING CONTOUR
 - ||||| RAILROAD TRACKS
 - — — TREE LINE
 - — — CREEK
 - — — FEMA FLOODPLAIN
 - — — FIELD FLOODPLAIN
 - - - - - GAS EASEMENT
 - - - - - SEWER EASEMENT
 - - - - - LIMITS OF CONSTRUCTION
 - - - - - PROPERTY LINE
 - 860 ——— PROPOSED CONTOUR
 - ——— TRAFFIC FLOW



ISSUE	DATE	DESCRIPTION
A	12/04	ISSUED FOR NCDENR LAND QUALITY APPROVAL

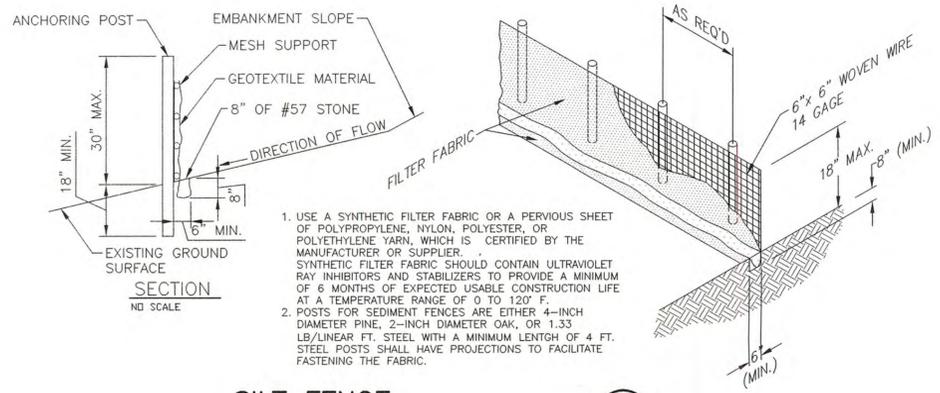
PROJECT MANAGER	M.D. PLUMMER, P.E. P. WESTMORELAND J. GAUL
PROJECT NUMBER	00009095.018

**Forum 52 Yard Waste Facility
Erosion and Sediment
Control Plans**

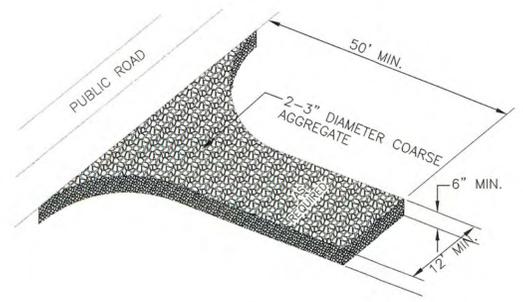
WINSTON-SALEM NORTH CAROLINA

SITE PLAN			FILENAME	00C-03	SHEET	
SCALE	1"=60'				C-03	

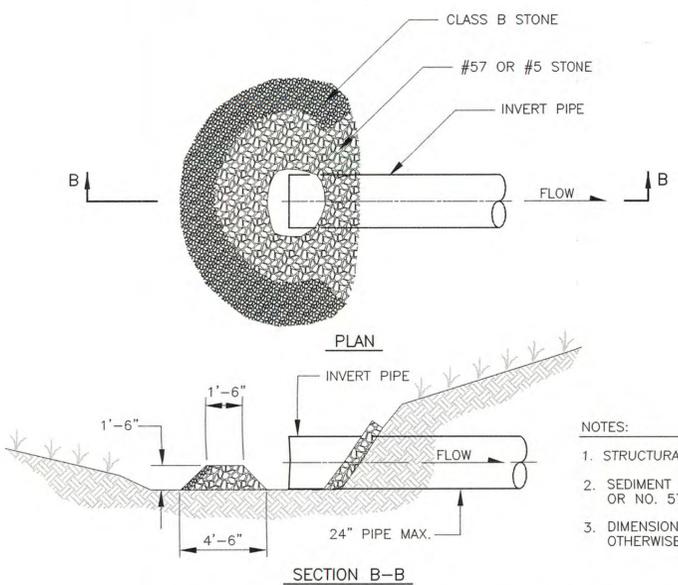
C:\WORK\00009095.D1\BVALNUT COVER\FORUM 52 YARD WASTE\00C-03.DWG, Pld, 12/10/04 04:16:20 PM, jgml



SILT FENCE
N.T.S. 1
C-02

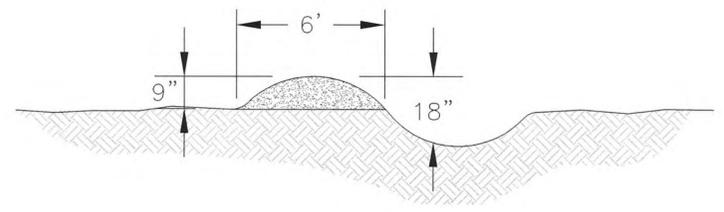


TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT
N.T.S. 3
C-02

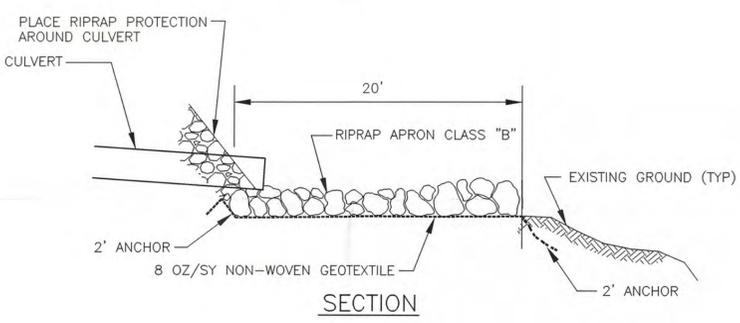
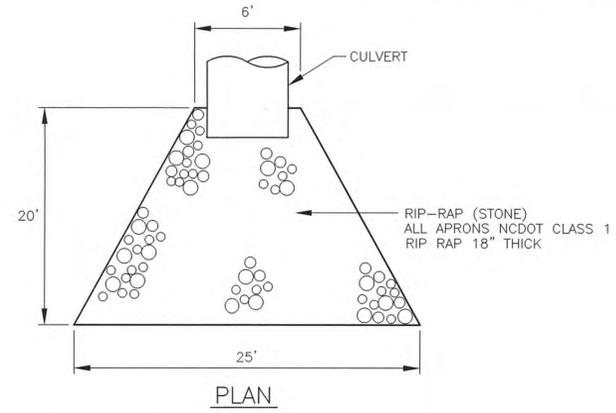


CULVERT INLET PROTECTION
N.T.S. 5
C-02

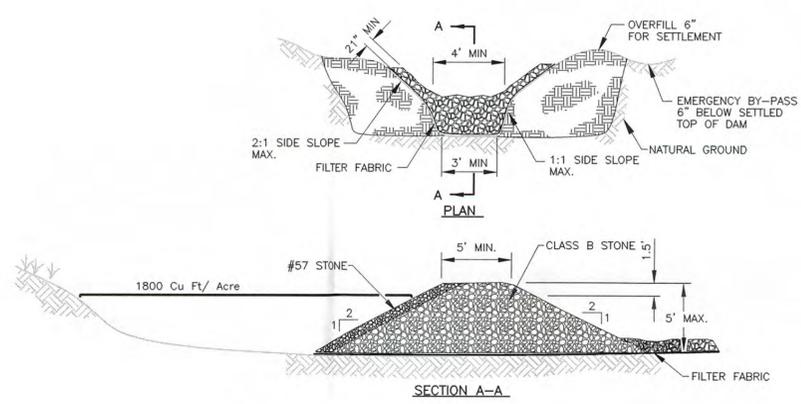
- NOTES:
- STRUCTURAL STONE SHALL BE CLASS A STONE
 - SEDIMENT CONTROL STONE SHALL BE NO. 5 OR NO. 57 STONE.
 - DIMENSIONS ARE MINIMUM ACCEPTABLE UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.



TEMPORARY DIVERSION CHANNEL
N.T.S. 2
C-02

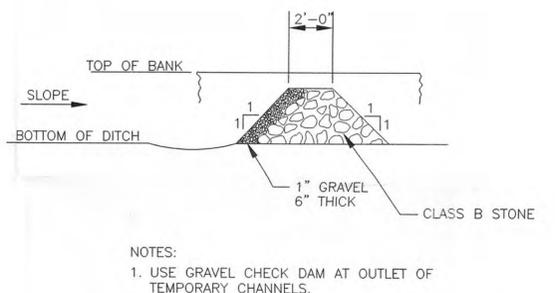
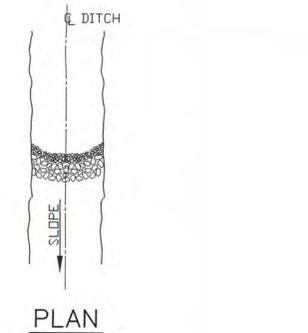


RIP RAP APRON
N.T.S. 4
C-02



TEMPORARY SEDIMENT TRAP
N.T.S. 6
C-02

- SEEDING SPECIFICATIONS:**
- TEST SOIL TO DETERMINE NUTRIENT CONTENT.
 - LOOSEN SURFACE TO MINIMUM DEPTH OF FOUR (4) INCHES.
 - INCORPORATE NEEDED NUTRIENTS AS DETERMINED AS DETERMINED FROM SOIL TEST INTO SOIL.
 - SEEDING REGIME:
 - PERMANENT SEEDING
 - SPRING (MARCH 1-APRIL 30) AND FALL (SEPTEMBER 1-NOVEMBER 15)
 - KENTUCKY-31: 175 LBS/AC
 - UNHULLED SERCIA LESPEDEZA: 50 LBS/AC
 - RYE GRAIN: 1 BUSH/AC
 - WINTER (NOVEMBER 16 - FEBRUARY 28)
 - KENTUCKY-31: 200 LBS/AC
 - UNHULLED SERCIA LESPEDEZA: 50 LBS/AC
 - RYE GRAIN: 3 BUSH/AC
 - SUMMER (MAY 1 - AUGUST 31)
 - KENTUCKY-31: 50 LBS/AC
 - UNHULLED SERCIA LESPEDEZA: 50 LBS/AC
 - KOREAN OR KOBE LESPEDEZA: 50 LBS/AC
 - WEEPING LOVE GRASS: 5 LBS/AC
 - BERMUDA GRASS: 10 LBS/AC
 - MILLET: 1 BUSH/AC
 - TEMPORARY SEEDING
 - SPRING (MARCH 1-APRIL 30) AND WINTER (NOVEMBER 16-FEBRUARY 28)
 - RYE: 120 LBS/AC
 - SERCIA LESPEDEZA: 50 LBS/AC
 - SUMMER (MAY 1 - AUGUST 31)
 - GERMAN MILLET: 40
 - FALL (SEPTEMBER 1 - NOVEMBER 15)
 - RYE: 120 LBS/AC
 - CULTIPACK SEEDED AREAS.
 - GRADE SEEDED AREAS TO SMOOTH, EVEN SURFACE WITH LOOSE, UNIFORMLY FINE TEXTURE.
 - MULCH WITH WHEAT STRAW @ 3,000 LBS/ACRE.
 - ANCHOR MULCH WITH EMULSION OR APPROVED EQUAL ANCHORING METHOD.



GRAVEL CHECK DAM DETAIL
N.T.S. 7
C-02

- NOTES:
- USE GRAVEL CHECK DAM AT OUTLET OF TEMPORARY CHANNELS.

C:\WORK\090995.01\B\N\UT COVER\FORUM 52 YARD WASTE\090995-01.dwg, Pk1, 12/10/2004 04:18:41 PM, jgm



ISSUE	DATE	DESCRIPTION
A	12/04	ISSUED FOR NCDENR LAND QUALITY APPROVAL

PROJECT MANAGER	M.D. PLUMMER, P.E. P. WESTMORELAND J. GAUL
PROJECT NUMBER	00009095.018

**Forum 52 Yard Waste Facility
Erosion and Sediment
Control Plans**

WINSTON-SALEM NORTH CAROLINA

EROSION CONTROL DETAILS

0 1" 2"

FILENAME	00C-04	SHEET
SCALE	AS SHOWN	C-04

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ADMINISTRATIVE LETTER # 22034

ZONING LETTER

100 East First Street
Winston-Salem, NC 27101
(336) 727-2628

Property Address: 00 NORTHSTAR DR
RURAL HALL, NC

Tax Block: 4942A
Tax Lot: 003F; 106

Zoning District: GI

Map Page: 618894

Owner:
Same as Contractor

Applicant:
CITY OF WINSTON-SALEM UTILITIES ADMIN
P.O. BOX 2511
WINSTON-SALEM, NC 27101

To Whom It May Concern:

The property in question per your letter dated November 17, 2004, known as Tax Block 4942A; Lots 3F & 106 is zoned General Industrial(GI). The proposed use as you describe in this letter is classified as a Recycling Plant per the Unified Development Ordinance and is a permitted use within this zoning district. A building/zoning permit will be required prior to use of this property and plans must be submitted to the Inspections Division for approval. Since this property is not contiguous to a public street right of way, proof of access must be established prior to a permit being approved. The minimum width of an access easement is 25 feet.

Should you have any question feel free to contact Lanny Gough at 727-2626.

This document is provided by the Winston-Salem/Forsyth County Inspections Division in response to your request regarding the above described property, and serves as official confirmation of the information stated above, as of the date shown.

LANNY GOUGH

AUTOSTAGE

Processed By

Issued By

Issue Date: 11/23/2004

Authorized Signature

WINSTON-SALEM-FORSYTH COUNTY
CITY-COUNTY UTILITIES
HANES MILL ROAD LANDFILL
325 HANES MILL ROAD
WINSTON-SALEM, NC 27105

November 17, 2004

Mr. Lanny Gough
Zoning/Inspections Department
City of Winston-Salem
P.O. Box 2511
Winston-Salem, NC 27102

Re: Verification of land use

Dear Lanny:

Please consider this a request for verification that the below mentioned proposed facility is a permitted use within the facility boundary.

BACKGROUND INFORMATION

The City-County Utility Commission is planning to design, permit, construct, and operate a facility that would be located on the following Lot-Blocks, the facility boundary:

- Tax Lot 3F, Block 4942A, containing approximately 3.95 acres
- Tax Lot 106, Block 4942A, containing approximately 12.98 acres

The present zoning designation for both parcels mentioned above is *GI*. The above lots are presently unused lots belonging to the Forum 52 Industrial subdivision. See attached map delineating the project property lines.

The proposed use under this project would be the following: a public facility whereby residential and commercial customers would be able to transport their yard waste, leaves, grass, and other wood waste such as wood pallets for processing. This facility would then process this waste: stockpiling, mixing, grinding, chipping, composting. Once processed, the final product would be removed from the site, i.e. either sold or given away. Planned buildings include a scale house w/scales and appropriate roadways. The facility entrance is planned through the north side of Lot 3F, via Northstar Drive.

REQUEST

In order to begin the construction of this proposed facility, one of the major approvals we would need is a permit from the North Carolina Department of Environment and Natural Resources (NCDENR). The permit application to NCDENR requires that we supply evidence that we would be operating on parcels that allow the proposed use. The City-County Utilities Administration understands that since these parcels have a *GI* designation, a change in zoning is not necessary for the proposed facility and that no new special use permits are necessary. We are requesting that your department provide written documentation of such. If you need further information please do not hesitate to call me at 399-5051.

Sincerely,



Edward Gibson, P.E.
Solid Waste Engineer

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To: Mike Plummer	
From: Chris Randazzo	Project: Winston-Salem Forum 52 Yardwaste Site
CC:	
Date: 10/27/2004	Job No: 00162-18088-018-001

RE: The results of the hand augering site visit conducted on October 15, 2004 are as follows:

Location B-1:

Surface above soil: vegetation

0'-5': Red, brown, clayey SILT, little fine grained sand, sparse mica, medium stiff, dry, will not stay inside auger beyond 5'

Location B-2:

Surface above soil: sparse vegetation

0'-5': Red, brown, clayey SILT, little fine grained sand, micaceous, loose, dry, will not stay inside auger beyond 5'

Location B-3:

Surface above soil: organic, leaf litter, mossy

0'-7': Red, brown, clayey SILT, little fine grained sand, highly micaceous, very loose, dry, will not stay inside auger beyond 7'

Location B-4:

Surface above soil: organic, leaf litter, mossy

0'- 5': Brown, fine grained sandy, clayey, SILT, highly micaceous, very loose, dry, will not stay inside auger beyond 5'

Location B-5:

Surface above soil: vegetation

0'-4': Red, brown, tan, clayey, SILT, little fine grained sand, micaceous, hard augering, stiff, more tan with depth, dry, will not stay inside auger beyond 4'

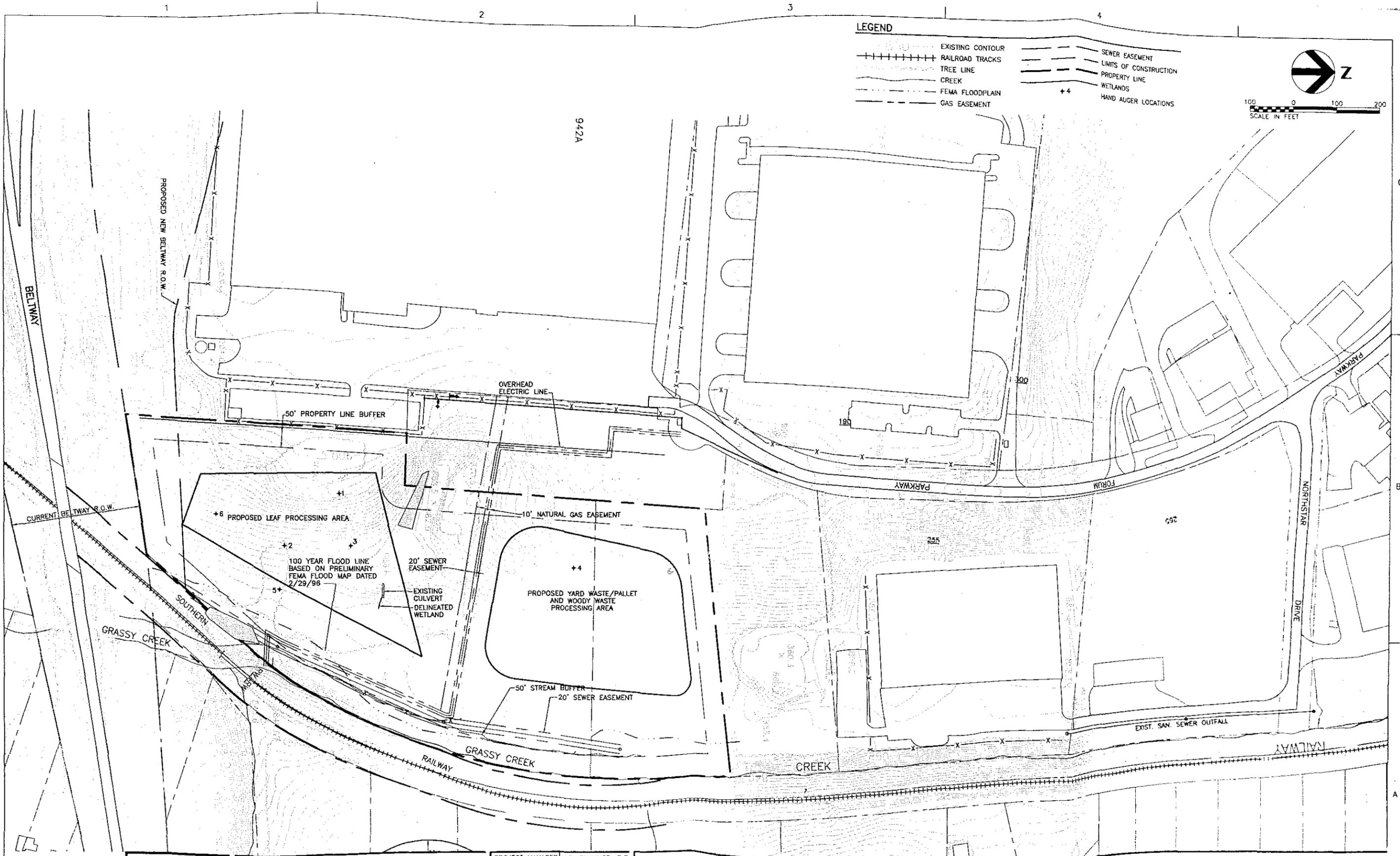
Location B-6:

Surface above soil: organic, leaf litter

0'-4': Red, brown, clayey, SILT, little fine grained sand, slightly micaceous, hard augering, stiff, dry, will not stay inside auger beyond 4'

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LEGEND

- EXISTING CONTOUR
- RAILROAD TRACKS
- TREE LINE
- CREEK
- FEMA FLOODPLAIN
- GAS EASEMENT
- SEWER EASEMENT
- LIMITS OF CONSTRUCTION
- PROPERTY LINE
- WETLANDS
- HAND AUGER LOCATIONS

North arrow pointing right with 'N' above it.

Scale bar: 0, 100, 200 FEET.

SCALE IN FEET



ISSUE	DATE	DESCRIPTION
A	12/04	

PROJECT MANAGER	M.D. PLUMMER, P.E. P. WESTMORELAND J. CAUL
PROJECT NUMBER	00009095.018

Forum 52 Yard Waste Facility
PERMIT APPLICATION PLANS
 WINSTON-SALEM NORTH CAROLINA

FIELD INVESTIGATION PLAN

Scale bar: 0, 1, 2 FEET.

FILENAME	01C-03	SHEET
SCALE	1"=100'	FIG. 1

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TO: Mike Plummer, PE
FROM: John Jamison
DATE: Tuesday, October 26, 2004
SUBJECT: Proposed Forum 52 Yardwaste Facility



*HDR Engineering, Inc.
of the Carolinas*

MEMORANDUM

This memorandum is to summarize the findings of my site visit conducted October 15, 2004 at the proposed City of Winston-Salem Forum 52 Yardwaste Facility off Forum Parkway, herein referred to as the Site. The Site is located southeast of the cul-de-sac of Forum Parkway in Forsyth County, North Carolina. The site visit was conducted to delineate and flag the extent of Waters of the United States within the property limits; the review did not include a survey of the Site.

Surface waters and wetlands are considered "Waters of the United States," as defined in Section 33 of Code of Federal Regulations (CFR) Part 328.3. Any action that proposes to dredge or place fill material into surface waters or wetlands falls under the jurisdiction of the United States Army Corps of Engineers (USACE) through Section 404 of the Clean Water Act (33 U.S.C. 1344). Surface waters include all standing or flowing waters that have commercial or recreational value to the public. Wetlands are identified based on the presence of hydric soils, hydrophytic vegetation, and wetland hydrology, as described in the 1987 USACE Wetland Delineation Manual.

The site is partially forested with significant areas impacted by land disturbing activities. Disturbed areas on site appear to be as a result of grading (on the northern ¼ of the Site) and utility right-of-way maintenance (natural gas and sewer). A berm or spoil pile bounds the east/southeast property limits along Grassy Creek, likely as a result of stream dredging activities in the first half of the 20th century. The forested portion of the site appears to have been impacted multiple times over the past 50 years and is now regenerating in a mixed pine/hardwood early-successional forest.

The Site generally slopes downward from west to east toward Grassy Creek, with a drainage feature near the center of the site. Grassy Creek is an entrenched stream that flows south along the eastern Site boundary toward Highway 52.

An intermittent stream and associated small riparian wetland were observed on-site and are situated immediately south of the natural gas easement that crosses through the center of the property. The stream channel dissipates into the wetland area. The wetland may have been historically created by the construction of an impoundment feature (possibly a road crossing or dam). The pipe that runs under this feature is filled in and thus not passing any significant flows. The intermittent stream channel continues below the feature for approximately 100 feet. The channel then becomes indiscernible as the flow enters an area that appears to have been cleared or graded in the past 10-15 years. This over-land flow eventually makes it way to a low area along the Grassy Creek berm. An

emergent wetland is present at this low point near the southeastern property limit (adjacent to the berm along Grassy Creek) and is generally contained within the existing utility right-of-way.

The aforementioned wetland areas exhibit field indicators of all three required wetland criteria: hydrophytic vegetation, wetland hydrology, and hydric soils. However, the hydric soil indicators were weak in most spots. Additional areas adjacent to those described above exhibited hydrophytic vegetation and wetland hydrology but did not appear to have hydric soils, and thus were not flagged during the delineation. Verification that these areas are not jurisdictional wetlands will be determined by the USACE site visit.

USACE jurisdiction of the wetlands and stream has not yet been determined. Based on the approximate size and location of these areas, in conjunction with the preliminary site design, the following conclusions may be reached:

- The most significant constraint to site development will be the intermittent stream and wetland located in the center of the site.
- The larger wetland area adjacent to Grassy Creek is contained primarily within the sanitary sewer right-of-way, which is not significantly impacted by the preliminary site design.
- Development of the site is feasible, although minor impacts to jurisdictional wetlands and streams are likely to occur.
 - These impacts, based on the brief field review, could potentially be permitted under a Nationwide Permit, which has a maximum 45- to 60-day review period.
 - Mitigation may be required for unavoidable impacts to wetlands and streams within the property. This can only be determined through a formal survey of the verified jurisdictional areas.
 - All effort should be made to avoid and minimize wetland and stream impacts during the site design process – this will be a major factor in determining the pace of a USACE permit approval.
 - A formal USACE wetland verification of the site should be performed, followed by a survey by a professional land surveyor.

Subject to easements, restrictions and rights of way of record, utility lines in existence over and under the above described property.

IN WITNESS WHEREOF, the Grantors have hereunto set their hands and seals, the day and year first above written.

R. J. REYNOLDS TOBACCO COMPANY

By: Ronald H. Morgan
Vice President *[Signature]*

STATE OF NORTH CAROLINA)
COUNTY OF FORSYTH)

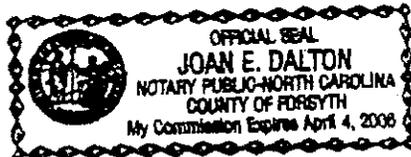
I, Joan E. Dalton, notary public of the County and State aforesaid, certify that Ronald H. Morgan personally came before me this day and acknowledged that he (or she) is _____ Vice President of R. J. REYNOLDS TOBACCO COMPANY, a New Jersey corporation, and that he/she, as _____ Vice President, being authorized to do so, executed the foregoing on behalf of the corporation.

WITNESS my hand and official stamp or seal, this the 30th day of January, 2004.

My Commission Expires: _____

Joan E. Dalton
Notary Public

[Notarial Stamp/Seal]



STATE OF NC - FORSYTH CO

The foregoing certificate(s) of:

Joan E. Dalton NP(s)

is certified to be correct at the date of recording shown on the first page thereof,
Dickie C. Wood, Register of Deeds by: [Signature]

EXHIBIT "A"

Lying and being in Bethania and Rural Hall Townships of Forsyth County, North Carolina and being all of Tax Lot 102C, Tax Block 4942A, and a portion of Tax Lot 101C, Tax Block 4942A.

Beginning at a Concrete Right-of-Way Monument found at the Southeast corner of said Lot 102C, said Monument being located North 16° 31' 56" West 151.81 feet from an NCGS Monument titled "For 29", said Monument being located on the Western right-of-way line for the Southern Railroad (100-foot width) and Northern right-of-way line of SR 1840, said Concrete Monument being the Point and Place of Beginning.

Running thence with the South lines of Lot 102C and Lot 101C, South 81° 04' 23" West 320.37 feet to an iron placed, said iron placed being located at the Northern right-of-way of SR 1840; thence leaving the Northern right-of-way of said SR 1840, North 03° 55' 41" East 667.52 feet to an iron placed in the South line of Lot 104; thence with the South line of Lot 104, South 85° 57' 45" East 122.78 feet to an iron found, the Southeast corner of Tax Lot 104; thence with the East line of Lot 104, North 04° 03' 47" East 423.24 feet to an iron found, the Southwest corner of Tax Lot 3F; thence with the South line of Lot 3F, South 85° 56' 23" East 561.61 feet to an iron found; thence along same line South 85° 56' 23" East 52.37 feet to a point, said point being the common corner of Tax Lots 3F and 102C, said point being located 50' from the center of the 100-foot Southern Railroad right-of-way; thence along the Western 100-foot railroad right-of-way the following calls, South 06° 31' 52" West 96.44 feet to a point, thence South 10° 39' 12" West 96.44 feet to a point, thence South 14° 30' 27" West 96.56 feet, thence South 18° 32' 04" West 96.54 feet to a point, thence South 22° 11' 13" West 96.50 feet to a point, thence South 27° 06' 36" West 96.45 feet to a point, thence South 30° 44' 17" West 96.32 feet to a point, thence South 34° 07' 48" West 96.50 feet to a point, thence South 38° 23' 15" West 97.44 feet to a point, thence South 39° 54' 08" West 99.73 feet to a point, thence South 40° 30' 12" West 157.62 feet to the Point and Place of Beginning.

Together with a permanent non-exclusive 30-foot access easement providing access to Northstar Drive, which is also known as N.C. State Road 4007. The access easement is shown on Plat Book 36, Page 191, in the Forsyth County Registry. The access easement crosses over Tax Lots 002, 003C, 105, and 003F of Tax Block 4942A.

The above-described parcel was found to contain 565,736 SF (12.98 acres) calculated by the coordinate method. The above described parcel is known as Tax Lot 102C, of Tax Block 4942A, and a portion of Tax Lot 101C, of Tax Block 4942A. This legal description is based upon a map prepared by Kale Engineering for R.J. Reynolds Tobacco Company with a Job Number of 2003102.

FORSYTH CO, NC **16** FEE: \$ 23.00
PRESENTED & RECORDED: 04/07/2004 09:54AM
DICKIE C. WOOD REGISTER OF DEEDS BY: THOMAS
STATE OF NC REAL ESTATE EXT: \$ 162.00
BK 2459 P1842 - P1845

Excise Tax

Recording Time, Book and Page

Tax Lot No. 003F, Block 4942A Parcel Identifier No. _____
Verified by _____ County on the ___ day of _____, 2004.
by _____

Mail after recording to: ~~Bell, Davis & Pitt, P.A. Box 100~~ *City Box 5*
This instrument was prepared by: Mallory M. Oldham

Brief Description for the index

NORTH CAROLINA GENERAL WARRANTY DEED

THIS DEED made this 26th day of March, 2004 by and between

GRANTOR

GRANTEE

Wolf Pond Development Corporation,
North Carolina corporation

City of Winston-Salem
City Hall
Winston-Salem, NC 27101

The designation Grantor and Grantee as used herein shall include said parties, their heirs, successors, and assigns, and shall include singular, plural, masculine, feminine or neuter as required by context.

WITNESSETH, that the Grantor, for a valuable consideration paid by the Grantee, the receipt of which is hereby acknowledged, has and by these presents does grant, bargain, sell and convey unto the Grantee in fee simple, all that certain lot or parcel of land, together with all improvements located thereon, situated in Bethania Township, Forsyth County, North Carolina and more particularly described as follows:

See Exhibit "A" attached hereto and incorporated herein by reference.

The property hereinabove described was acquired by Grantor by instrument recorded in Book 2147, Page 3856, Forsyth County Registry.

A map showing the above described property is recorded in Plat Book __, Page __.

TO HAVE AND TO HOLD the aforesaid lot or parcel of land and all privileges and appurtenances thereto belonging to the Grantee in fee simple.

And the Grantor covenants with the Grantee, that Grantor is seized of the premises in fee simple, has the right to convey the same in fee simple, that title is marketable and free and clear of all encumbrances, and that Grantor will warrant and defend the title against the lawful claims of all persons whomsoever except for the exceptions hereinafter stated.

Easements, restrictions, and rights-of-way of record, if any, and ad valorem taxes for the current year, prorated to date of closing, and each year subsequent thereto.

IN WITNESS WHEREOF, the Grantor has hereunto set his hand and seal, or if corporate, has caused this instrument to be signed in its corporate name by its duly authorized officers, the day and year first above written.

Wolf Pond Development Corporation, a North Carolina corporation

By: [Signature]
Title: President

SEAL-STAMP

STATE OF NORTH CAROLINA - COUNTY OF FORSYTH

I, a Notary Public of the County and State aforesaid, certify that W. David Shannon, President of Wolf Pond Development Corporation, a North Carolina corporation, Grantor, personally appeared before me this day and acknowledged the execution of the foregoing instrument on behalf of the corporation. Witness my hand and official stamp or seal, this 36th day of March, 2004.



My commission expires 8-17-08 [Signature]
NOTARY PUBLIC

SEAL-STAMP

NORTH CAROLINA, _____ COUNTY

I, a Notary Public of the County and State aforesaid, certify that _____ of Grantor, personally appeared before me this day and acknowledged the execution of the foregoing instrument on behalf of said company pursuant to authority duly granted. Witness my hand and official stamp or seal this _____ day of _____, 2004.

My commission expires: _____
NOTARY PUBLIC

The foregoing Certificate(s) of [Signature] is/are certified to be correct. This instrument and this certificate are duly registered at the date and in the Book and Page shown on the first page hereof.

REGISTER OF DEEDS FOR FORSYTH COUNTY

By [Signature] Deputy/Assistant-Register of Deeds.

Exhibit "A"
(Forum Parkway Property)

BEING a certain tract or parcel of land located in Bethania Township, Forsyth County, North Carolina and being more particularly described as follows:

COMMENCING at an existing iron pipe in the eastern right of way line of Forum Parkway said existing iron pipe marking the southwestern corner of property now or formerly owned by Richard E. Wagner as recorded in Deed Book 2048, page 724, Forsyth County Registry; running thence along Wagner's southern line South 86° 00' 26" East 125.49 feet to an existing iron pipe; thence South 04° 03' 47" West 43.91 feet to an iron pipe in the southern line of Wagner, the point and place of beginning; running thence from said beginning point along the southern line of Wagner North 86° 45' 06" East a total distance of 589.95 feet passing through an iron pipe set at 559.95 feet to a point within Grassy Creek; thence along Grassy Creek as it meanders the following three (3) courses and distances: (i) South 04° 15' 16" East 44.97 feet to a point; (ii) South 01° 09' 16" East 243.28 feet to a point; and (iii) South 07° 33' 35" West 35.66 feet to a point in the northeastern corner of property now or formerly owned by RJR Tobacco Company as recorded in Deed Book 1350, page 1571, Forsyth County Registry (Tax Lot 102C, Block 4942A as shown on the Forsyth County Tax Maps); thence along the northern line of said RJR Tobacco Company North 85° 55' 41" West 611.61 feet to an existing iron pipe; thence continuing along a common line of RJR Tobacco Company North 04° 03' 47" East 247.19 feet to an iron pipe set, the point and place of beginning, containing 3.94897 acres, more or less, in accordance with a survey prepared for North 52 Partners by Thomas A. Riccio, Registered Land Surveyor, L-2815, dated December 30, 1998 (Drawing No. 98551).

TOGETHER WITH two (2) non-exclusive easements for ingress, egress and regress to and from the above described tract, said easements being designated below as Easement #1 and Easement #2 and lying in, over and upon the following described property:

Easement #1 (See Plat recorded in Book 36 at page 191 of the Forsyth Public Registry)

Beginning at an iron in the eastern right-of-way line of Forum Parkway (70' right-of-way), said iron being the southwest corner of property owned by Jeffrey D. Long and wife Nanette described in deed recorded in Book 1668, Page 334, Forsyth County Registry; thence along the southern line of said Long property South 86° 47' 00" East 257.69 feet to a concrete monument at the southwest corner of property owned by R. J. Reynolds Tobacco Co. (see deed recorded in Book 1350, Page 1571, Forsyth County Registry); thence along the southern line of said Reynolds property South 86° 47' 00" East 448.60 feet to a point, thence South 04° 48' 24" East 70.69 feet to a point at the northeast corner of the 30' access easement described as Easement #2 below; thence along the northern terminus of said 30' access easement North 86° 47' 00" West 30.30 feet to a point, the northwestern corner of said 30' access easement; thence North 86° 47' 00" West 521.12 feet to a point; thence South 76° 47' 05" West 100.00 feet to a point in the eastern right-of-way line of said Forum Parkway; thence along the eastern right-of-way line of Forum Parkway the following two courses and distances: North 31° 25' 51"

West 99.90 feet to an iron and North 33° 32' 11" West 20.11 feet to an iron, the point and place of beginning and being the first access easement as shown on survey for North Fifty-Two Partners prepared by Kale Engineering dated October 1, 1993 and last revised October 15, 1993 and designated Project No. 93070.

Easement #2

Beginning at a point at the southeast terminus of the above described easement and running thence South 04° 48' 24" East 319.86 feet to a manhole; thence South 03° 03' 49" East 196.16 feet to a manhole in the northern line of the 15.00 acre fee tract conveyed to North-Fifty-Two Partners by deed recorded in Book 1800, Page 3697 of the Forsyth Public Registry, said manhole being located North 81° 26' 09" West 58.17 feet from the northeast corner of said 15.00 acre fee tract; thence along the northern line of said 15.00 acre fee tract North 81° 26' 09" West 30.63 feet to a point; thence North 03° 03' 49" West 189.53 feet to a point; thence North 04° 48' 24" West 323.63 feet to a point in the southern line of Easement #1 (described above) thence with the southern line of said Easement #1 South 86° 47' 00" East 30.30 feet to the point and place of beginning and being Easement #2 as shown on survey for North Fifty-Two Partners prepared by Kale Engineering dated October 1, 1993 and last revised October 15, 1993 and designated Project No. 93070.

TOGETHER FURTHER WITH AND SUBJECT TO the rights of others in and to a non-exclusive perpetual easement for ingress, egress and regress and the installation of utilities, said easement lying in, over and upon the following described property:

Beginning at a manhole in the northern line of the 15.00 acre fee tract conveyed to North Fifty-Two Partner by Deed recorded in Book 1800 at Page 3697 of the Forsyth Public Registry, said manhole being located North 81° 26' 09" West 58.17 feet from the northeast corner of said 15.00 acre fee tract; thence South 02° 34' 32" East 205.50 feet to a manhole; thence South 03° 55' 58" East 396.21 feet to a manhole; thence South 03° 02' 08" East 404.52 feet to a manhole; thence South 09° 06' 55" West 71.90 feet to a point in the southern line of said 15.00 acre fee tract said point being located North 85° 56' 23" West 70.44 feet from the southeast corner of said 15.00 acre fee tract; thence along the southern line of said 15.00 acre fee tract North 85° 56' 23" West 30.12 feet to a point; thence North 09° 06' 55" East 71.36 feet to a point; thence North 03° 02' 08" West 401.12 feet to a point; thence North 03° 55' 58" West 396.25 feet to a point; thence North 02° 34' 32" West 205.66 feet to a point; thence North 03° 03' 49" West 6.17 feet to a point in the northern line of said 15.00 acre fee tract; thence along the northern line of said 15.00 acre fee tract South 81° 26' 09" East 30.63 feet to a manhole, the point and place of beginning and being the third easement as shown on survey for North Fifty-Two Partners prepared by Kale Engineering dated October 1, 1993 and last revised October 15, 1993 and designated Project No. 93070.

TOGETHER FURTHER WITH all other rights, easements and appurtenances to the above.

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B

Appendix B – Operations Plan

Operations Plan
Emergency Action Plan
Compost Monitoring Report Form
Handout for the Product
Windrow Thermometer Calibration Procedure



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Operations Plan

Forum 52 Yard Waste Facility

City/County Utility Commission

Winston-Salem, North Carolina

June 2015

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Introduction

The purpose of this document is to identify protocols for the overall operation and maintenance of the Forum 52 Yard Waste Facility (Facility). This site is owned by the City of Winston-Salem (City). The site encompasses approximately 17 acres located on Northstar Drive on the eastern side of US Hwy 52 in Rural Hall, North Carolina. The plan provides details of the procedures and policies, which shall be implemented throughout operation of the Facility.

Hours and Days of Operation

The Facility is open for operation between the hours of 8:00 a.m. and 4:00 p.m. Monday through Friday. The City may adjust the hours of operation as warranted.

Special notices are posted at the scalehouse advising users of observed holidays.

Activity may occur at the site other than the stated hours to allow off-hour delivery of wastes by City Sanitation crews; to conduct facility maintenance or processing; or to extend distribution hours for the finished product.

Facility Access and Security Measures

Access

The site is accessed through an entrance on Northstar Drive by a 20 foot wide all weather surface road. All waste deliveries and distribution of finished compost occur via this entrance.

Security

Security for the compost site is maintained through a gate at the access road. The gate remains locked when the Facility is not occupied.

Facility Signage

Signage at the site addresses the location of the waste receiving areas, the compost area and proper covering required on all loads leaving the site, hours of operations, etc.

Facility Operations

Weighing Procedures

Incoming Material

All vehicles delivering material to the Facility are required to stop at the scalehouse, which is located at the entrance to the Facility. All vehicles delivering material are weighed on scales and the content of the load is assessed. Records of tonnages of received waste are maintained at the scalehouse.



The weighmaster requests from the driver of the vehicle a description of the waste it is carrying to ensure that unacceptable waste is not being brought into the Facility. The weighmaster then collects the payment and visually checks the vehicle as it crosses the scale. Please refer to the Record Keeping section of this Operations Plan for record keeping instructions of incoming material.

Outgoing Material

Outgoing material is recorded on a tonnage basis. Please refer to the Record Keeping section of this Operations Plan for record keeping instructions of outgoing material.

Wastes Accepted

This Facility is approved to receive only the following waste: Yard trash (as defined in G.S. 130 A-290), pallets, woody waste, and other untreated, unpainted wood, leaves, and grass clippings.

Unacceptable Waste

The following wastes are prohibited by the yard waste facility:

- Whole scrap tires
- Used oil
- Municipal solid waste
- Land clearing debris (stumps, etc.)
- Construction and demolition waste (C&D)
- White goods
- Lead acid batteries
- Hazardous waste
- Asbestos containing waste
- Medical wastes

Material Processing

After final inspection, the waste is loaded into the yard waste and pallet processing unit (horizontal salvage hog or Vermeer tub grinder). The conveyor is used to stockpile the processed material. Please refer to the Monitoring and Testing Section for instructions on monitoring and testing of the mulch.

Composting Process

Material Preparation

- a. Leaves are immediately unloaded in pre-designated windrow locations and formed into windrows with the loader the same day if possible, but no longer than three days from receipt. Each windrow is approximately 30 feet wide and 15 feet high if turned with a wheel loader or approximately 8-16 feet wide and 5-7 feet high if turned with a compost turner. Windrow lengths will vary depending on the location of the windrow on the site.
- b. Grass clippings may be mixed with other materials. Should odors become a problem, the grass clippings will be mixed immediately with other materials from the facility.



- c. The material is then removed from the processing area and placed into windrows in appropriate ratios.
- d. Upon placement of material into windrows, moisture requirements are determined.
- e. Moisture is added by using a water truck or turning the windrows in the rain.

Composting Process

- a. Refer to the Monitoring and Testing section for instructions on monitoring and testing of the compost.
- b. The windrows should be placed with the slope to allow free drainage between the windrows and to maintain proper moisture content. Please refer the Site Plan for an approximate layout of the windrows. If odor becomes a problem, the windrows should be turned or ground leaves could be incorporated into the windrows. Another method to control odor would be to cover the compost with more mature compost, which would act as a biofilter.

Final Product

- a. If the temperature requirement has been met as stated in the Monitoring and Testing section of this Operations Plan, the material may be screened or ground to remove any nonconforming waste (overs).
- b. The material passing the screen can be placed in a curing pile or distributed immediately.
- c. The material not passing the screen (overs) may be sold as mulch, boiler fuel, transported to a Wallace Farm compost facility, or landfilled.
- d. Monitoring and testing continues until the product is ready for distribution.

Contingency Plan

Equipment Breakdown

In the event of equipment downtime, the operating Contractor on site is responsible for arranging to have other equipment brought to the site.

Non-Conforming and Hazardous Waste

All waste is screened both at the scalehouse and in the receiving area. If nonconforming waste or hazardous waste is discovered at the scalehouse, it is rejected immediately. If nonconforming waste is found in the receiving area, it is sent to a separate area which has been dedicated for such material. The reject/non-conforming waste pile is hauled to the proper landfill when the area is full. Municipal Solid Waste (MSW) is sent directly to the Hanes Mill Road Landfill and Construction & Demolition (C&D) like material is sent to the OSR C&D Landfill. If hazardous waste is found in the receiving area, it will be properly disposed of and not allowed to accumulate onsite.

Fire Contingency

The local fire department, located approximately 4.8 miles from the Facility, is informed of the operation of the Facility. The threat of fire is minimized by the short duration of the material on-site.



Vectors and Odors

To minimize the threat of vectors, the yard waste is ground as necessary. To minimize potential odors, particularly odors from the compost, the windrows are turned or grass clippings are incorporated with other materials and placed into the windrows. In the event the windrow turner is inoperable, other equipment will be brought to the site.

Adverse Weather Conditions

The Emergency Action Plan will be followed during severe adverse weather conditions. During less severe adverse weather conditions the operator will determine if it is necessary to halt operations. After an adverse weather event, the operator will monitor the site and make any repairs as necessary.

Spills

The Facility is required to comply with NCDENR's NPDES permit for Composting Facilities and has a certificate of coverage (COC# NCG240008). Refer to the NPDES permit and associated documents for what to do in the event of a spill.

Monitoring and Testing

Compost

The on-site operator inspects the integrity of all windrows periodically, especially following severe weather, and maintains the windrows as necessary. Internal temperature of the windrow is taken and recorded approximately every two weeks after completion of the windrow at approximately 50 foot intervals along each windrow and increased to daily readings during business hours once internal temperatures near 131°F. Once internal temperatures reach 131°F for 3 consecutive days, composting has met pathogen reduction requirements and windrows are allowed to cure on site. No additional material will be added to windrows that have met the pathogen reduction requirements. The temperature is measured by inserting a three-foot long probe into the windrow approximately 6-feet above the ground surface to ensure the temperature is taken in the center of the windrow. Temperature monitoring should be recorded on the Compost Monitoring Form, or a similar form.

Grass Clippings

Grass clippings may be utilized as a compost amendment in appropriate ratios with leaves. The operator deposits the grass clippings in the windrows.

Mulch and Boiler Fuel

Temperature monitoring of the woody mulch is necessary in the event all of the mulch is not removed within a short period of time. To monitor this, a staff member visually inspects and estimates the temperature of the mulch. If the mulch is hot or steam is coming from the pile, the mulch will be turned using the on-site front-end loader.

Calibration

The temperature probe will be calibrated once a year by the manufacturer or in the field using the Windrow Thermometer Calibration Procedure.



Process Narrative

The purpose of this narrative is to provide additional operational details of the Facility. Refer to the Site Plan and Process Flow Diagrams in Appendix C.

Incoming waste managed at the Facility includes curbside collected yard waste from the City, materials dropped off by the general public, yard waste, pallets, and materials such as untreated, unpainted wood waste, and storm debris. A City staff person manages the scale area where the material is weighed. The scale attendant confirms the material make-up of the load and directs the customer to one of three locations. Yard waste and other woody waste are dumped in the waste receiving area. Pallets and other untreated, unpainted wood are unloaded in a separate pile in the waste receiving area. Leaves and grass clippings are received in the leaf processing area

The yard waste, pallets, woody waste, and other untreated, unpainted wood are processed through a grinder. Yard waste is generally processed separately from the other materials. As the yard waste is processed through the grinder, a conveyor is operated to create a stockpile area. The ground material is managed in bulk piles where it can then be offered to the general public (who pick up the material on-site), sent to a permitted compost facility such as the Wallace Farm Davie County Compost Facility, and/or hauled to area businesses for use as a boiler fuel.

The pallets, woody waste (such as large tree limbs), and unpainted, untreated wood is processed separately through the grinder. Again, a conveyor is used to develop a stockpile of processed material. The ground material is then offered to the public, hauled to a Wallace Farm Compost Facility, and/or to area businesses for use as a boiler fuel.

When the grinder is in operation, the loader operators visually screen the material for contaminants. Contaminants include materials which are not accepted at the facility but were not discovered by the scale attendant, or materials which would harm the equipment. Unacceptable waste includes material such as construction & demolition waste, painted wood, and metal. The “reject” material is stockpiled in a separately designated area within the waste receiving area and hauled to the City’s landfill.

Leaves and grass clippings which arrive on-site may be processed through a grinder located in the leaf processing area or placed directly into compost windrows. Sometimes a small quantity of yard waste may be mixed with the leaves and grass clippings to avoid potential odors. Processed material from the grinder has three potential end uses. It may be ground and sold as a soil amendment to a local business, it may be composted, or it may be transferred to another composting facility. If composted, the leaf/grass compost windrows are turned. After the compost process has been completed, the finished compost product is made available to the public or delivered to area customers.

Composting will only occur on the leaf/grass composting area of the facility.



Worker Safety and Training

All operating personnel shall receive training, safety equipment, and supervision necessary to carry out their assigned duties. Refer to the Emergency Action Plan regarding emergency protocols.

Record Keeping

Daily Record Keeping

Records shall be maintained for a minimum of five years. Records shall be available for inspection by North Carolina Department of Environment and Natural Resources (NCDENR) Solid Waste Section personnel during normal business hours and shall be sent to NCDENR upon request:

- a. Daily operational records must be maintained, which include, at a minimum, temperature data (length of the composting period) and quantity of material processed.
- b. The quantity and type of waste received.
- c. The quantity and type of waste processed into compost.
- d. The quantity and type of compost produced by product classification.
- e. The quantity and type of compost removed for use or disposal, by product classification, and the market or permitted disposal facility.

Annual Reporting

Annual Reporting: An annual report for the period July 1 to June 30 shall be submitted to the NCDENR in accordance with the Permit and by August 1, and shall contain:

- a. The Facility name, address, and permit number.
- b. The total quantity in tons and type of waste received at the Facility during the year covered by the report, including tons of waste received from local governments of origin.
- c. The total quantity in tons and type of waste processed into compost during the year covered by the report.
- d. The total quantity in tons and type of compost produced at the Facility, by product classification, during the year covered by the report.
- e. The total quantity in tons and type of compost removed for use or disposal from the Facility, by product classification, along with a general description of the market if for use during the year covered by the report.
- f. Monthly temperature monitoring to support Rule .1406 of the NC Composting Rules.

Emergencies

Please refer to the Emergency Action Plan.

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Suite 1000
Charlotte, NC 28202-2075
704.338.6700

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Emergency Action Plan

Forum 52 Yard Waste Facility
City/County Utility Commission

Winston-Salem, North Carolina
June 2015

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Purpose

The Forum 52 Yard Waste Facility (Facility) Emergency Action Plan (Plan) is to provide all City employees with the proper information to protect themselves, co-workers, and the public in the event of an emergency. This Plan is designed to meet the requirements of the Occupational Safety and Health Administration (OSHA) 1910.38(a) and 1910.120 and is updated as needed.

Definitions

Emergencies shall include such events as fire and explosion, tornado and hurricane, bomb threat, or chemical spills. This Plan will detail the appropriate emergency action for each.

Severe fires shall be any fire which is not extinguishable by a portable fire extinguisher, or a fire within a confined space which would require entering the space to extinguish it, or a fire involving explosive or toxic materials.

The assembly point shall be the area in which all employees gather in the event of an emergency.

Responsible Person and Emergency Numbers

The following person is responsible for implementing and training City employees on the Plan. If employees have questions, they should contact the supervisor listed below.

Solid Waste Operations Analyst
(336) 747-7320

See the Emergency Response Telephone Numbers list at the end of this document for other emergency numbers.

In the case of emergency evacuation, each section supervisor is responsible for accountability of his/her employees and all visitors. Every employee is responsible for his/her safety and for preventing job-related accidents or injuries by complying with all work place safety policies and related procedures.

This Plan shall be issued to the contractor for his training purposes.

Types of Emergencies

Fire and Explosion

In the event of a fire or explosion, all personnel shall evacuate the area with caution. Listed below are the assembly areas for a potential emergency event:

- Front gate at Facility entrance
- Northwest corner of the grinding pad
- Southernmost area of the facility, south of the windrows



Tornado

In the event of a tornado with sufficient warning, all Facility personnel shall move with caution to Fire Station #14 located at 5754 Shattalon Drive. In the event of a tornado without warning, personnel should temporarily retreat to low areas or one of the buildings located in the nearby business park.

Bomb Threat

In the event of a bomb threat, the highest ranking supervisor shall be responsible for making sure the site has been evacuated and the site secured (doors locked, access to site/or building prohibited, contractors notified, and proper warning signs posted).

To alert other personnel away from the main building the highest-ranking person shall notify them not to return to the Facility. They should be instructed to meet at the appointed safe area.

The procedures listed in the Bomb Threat Plan of the Utility Plants Emergency Action Plans should be followed with the exception of the safe area and method of notifying employees. The location listed below is a safe area in case of a bomb threat:

Forum 52 Yard Waste Facility - Evacuate to parking lot of Tractor Supply Company at 1011 Bethania-Rural Hall Road Rural Hall, NC 27405.

Chemical Spills

In the event of a spill, the highest ranking supervisor shall notify and instruct employees and staff members to meet at the Fire Station #14 at 5754 Shattalon Drive or one of the assembly areas for a fire or explosion. Under no circumstances shall an employee or staff member remain in a hazardous area to operate equipment. The highest ranking supervisor shall promptly notify proper authorities.

Emergency Procedures

Under no circumstances shall an employee remain in a hazardous area to operate equipment. Evacuation is mandatory.

Employee Accounting:

- In the event of an emergency, the site supervisor(s) or, in his/her absence, the senior person will take charge at the assembly point and account for all persons at the Facility.
- The highest ranking supervisor(s) at the assembly point will be responsible for accounting for all persons on-site. Once everyone has been accounted for, no one may leave the assembly point without the assembly point supervisor's permission.
- All persons should reach the assembly point within minutes of the alarm. All persons unaccounted for after this time will be assumed to be down and their names and last known location will be provided to the fire/rescue personnel by the assembly point supervisor.



Assigned Responsibilities:

- In the event of an emergency evacuation, the person discovering the emergency condition shall have these responsibilities:
 - Report the situation to 911.
 - Take first aid kit to the assembly point site supervisor(s) or senior person.
 - Report to the assembly point and begin accounting for persons on-site.
 - Coordinate actions with emergency response personnel; report all missing persons.
 - Close the facility until notified by a supervisor that it is safe to re-open.

Employees are not required to administer medical attention but may offer first aid normally given to any accident victim. Only properly trained personnel shall attempt rescue of an employee in a hazardous atmosphere.

The preferred means of reporting an emergency is by telephone (i.e., call 911). The next preferred method of reporting is by telephone (call City Link at (336) 727-8000 or 311). The least preferred method of reporting is by word of mouth. In all cases be sure to give emergency personnel an address, phone number, injuries, if any are known, and type of emergency.

Training

The supervisory employees shall be responsible to make sure all employees receive initial training on this policy. They also shall ensure that employees are retrained whenever sections of this policy are changed or updated.



Emergency Response Telephone Numbers

EMERGENCY (FIRE/POLICE)	911
Emergency Management (Local)	(336) 661-6440
Risk Management (Local)	(336) 734-1320
Emergency Service (Local – Forsyth County)	(336) 703-2750
NC Department of Environment and Natural Resources Winston-Salem Regional Office	(336) 776-9800
NC Department of Public Safety Emergency Management 24-Hour Operations	1-800-858-0368
US National Response Center	1-800-424-8802
NC Emergency Management.....	(919) 825-2500
Chemtrec	(800) 424-9300
Poison Control Center.....	1-800-222-1222

* If possible, consult your supervisor before using the number listed.

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440 S Church Street
Suite 1000
Charlotte, NC 28202-2075
704.338.6700

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Forum 52 Yard Waste Facility Handout

180 Northstar Drive
Rural Hall, NC 27045

Owned by: City of Winston-Salem
Operated by: Wallace Farm, Inc.

Mulch

Description of Mulch Material:	This coarse material consists of chipped tree branches and tree trunks.
Recommended Uses:	This material may be used in landscaping applications.
Application Rates:	Unrestricted. (Please read the planting instructions that accompany the plant before applying.)

Compost

Description of Compost Material:	This fine material consists of mostly leaves and grass clippings.
Material Class:	Unrestricted distribution and application compost pursuant to NC Solid Waste Management Rule .1407d(3).
Recommended Uses:	This material may be used in landscaping or gardening applications.
Application Rates:	Unrestricted. (Please read the planting instructions that accompany the plant before applying.)

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Windrow Thermometer Calibration Procedure

Description

This procedure is designed to allow the user to calibrate the windrow thermometer in the field without having to send it to the manufacturer. The windrow thermometer should be calibrated once a year and the date and time of the calibration should be recorded in the site's daily notes.

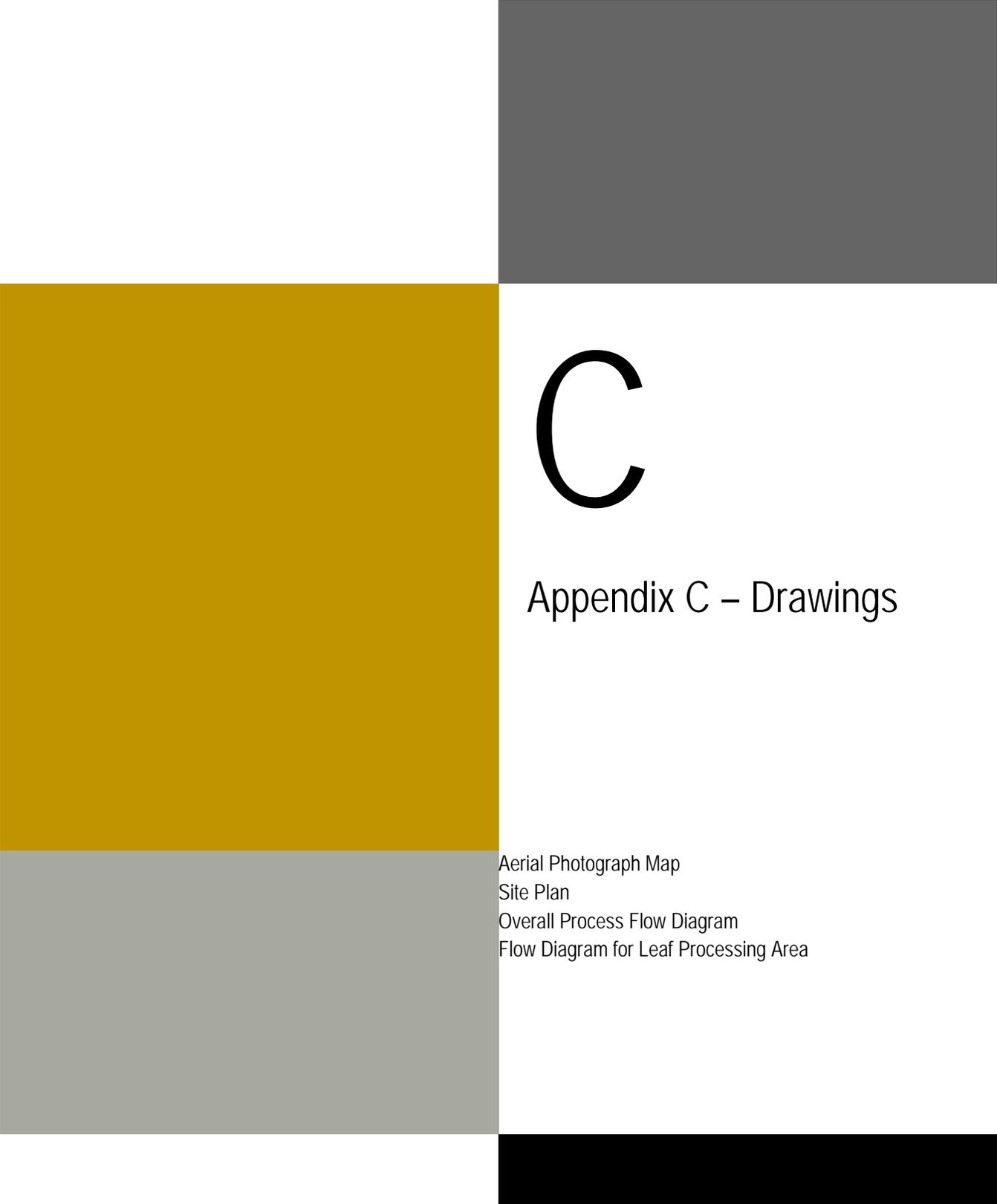
Materials Required

- Bucket (minimum 1 gallon)
- Ice
- Cold Water
- Windrow Thermometer
- Hex key/Allen wrench

The Calibration Process

- | | | |
|--------|-----------------------|--|
| Step 1 | Create Ice Water | <ul style="list-style-type: none">• Fill the bucket with a mixture of half ice and half cold water.• Stir the mixture occasionally for 5 minutes to insure the mixture has a uniform temperature. |
| Step 2 | Stabilize Thermometer | <ul style="list-style-type: none">• Place thermometer into ice water mixture about 6 to 8 inches.• Do not let thermometer touch the sides or bottom of the bucket.• Hold the thermometer in place in the ice water mixture while the thermometer stabilizes (approximately 2 minutes).• Do not remove the thermometer from the ice water mixture. |
| Step 3 | Adjust Thermometer | <ul style="list-style-type: none">• With the thermometer still in the water, adjust the hex screw on the back of the thermometer so that the thermometer reads 32°F (or 0°C).• Once the thermometer reads 32°F (or 0°C), the thermometer has been calibrated and may be removed from the ice water mixture. |
| Step 4 | Record Calibration | <ul style="list-style-type: none">• Record the date and time of the calibration in the site's daily notes. |

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C

Appendix C – Drawings

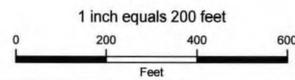
Aerial Photograph Map
Site Plan
Overall Process Flow Diagram
Flow Diagram for Leaf Processing Area



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Source: Forsyth County Geographic Information Systems



Legend

- Site Property Boundary
- 1/4 Mile Radius

- ~ Stream
- ~ Waterbody

Zoning

- GB, HB, HB-S, LB
- RM12, RM18, RM18-S, RM8, RM8-S
- RS20, RS30, RS9
- GI, GI-S, LI

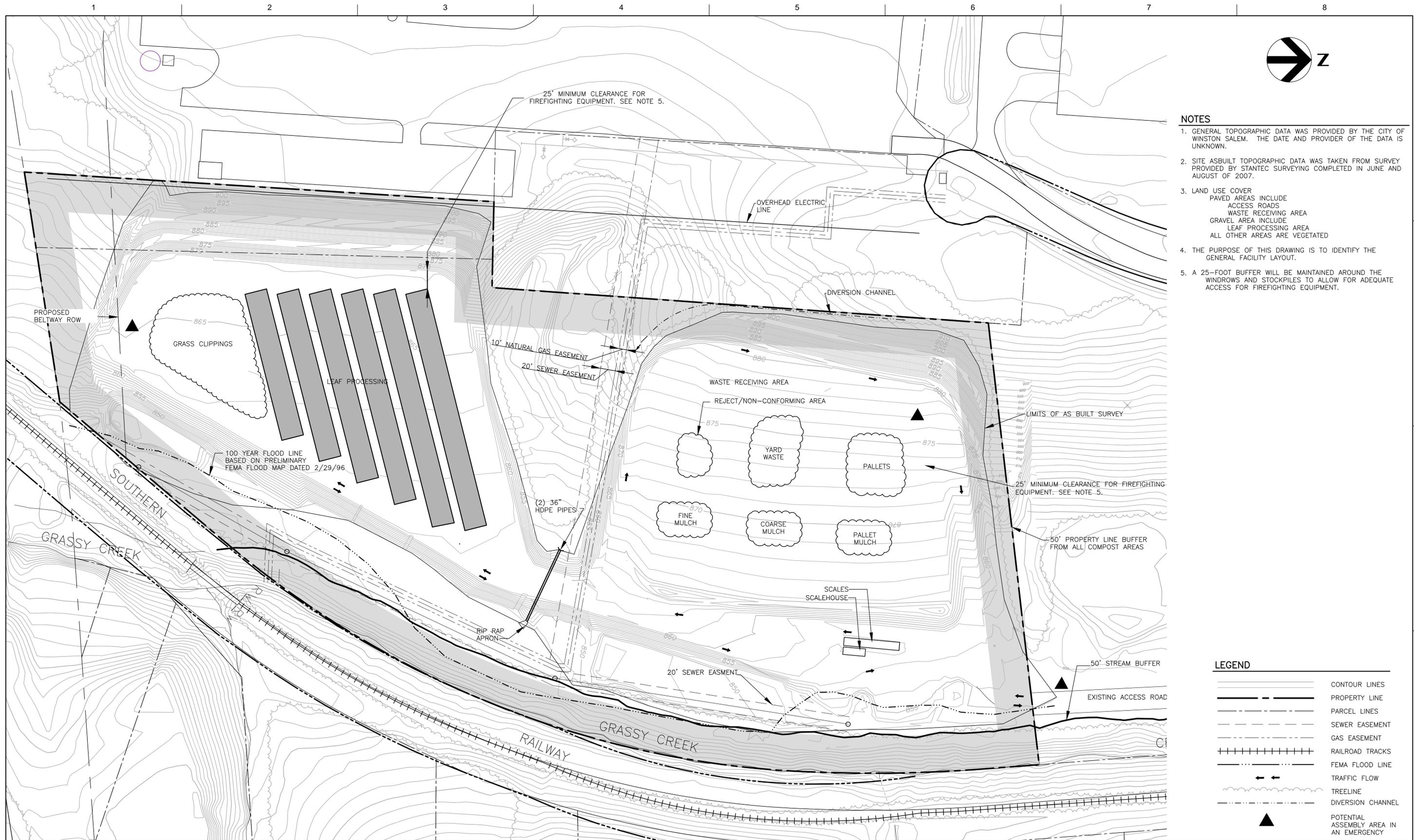
FORM 52 YARD WASTE FACILITY
Winston-Salem, NC

Date: December 2004 Project No.: 000162-18088-018

File Location: G:\G_Temp\DanC\WS\Form52\map_docs\arcmap

Figure: **1.0**

rev. June 2005 per NC DENR comments



- NOTES**
- GENERAL TOPOGRAPHIC DATA WAS PROVIDED BY THE CITY OF WINSTON SALEM. THE DATE AND PROVIDER OF THE DATA IS UNKNOWN.
 - SITE ASBUILT TOPOGRAPHIC DATA WAS TAKEN FROM SURVEY PROVIDED BY STANTEC SURVEYING COMPLETED IN JUNE AND AUGUST OF 2007.
 - LAND USE COVER
PAVED AREAS INCLUDE
ACCESS ROADS
WASTE RECEIVING AREA
GRAVEL AREA INCLUDE
LEAF PROCESSING AREA
ALL OTHER AREAS ARE VEGETATED
 - THE PURPOSE OF THIS DRAWING IS TO IDENTIFY THE GENERAL FACILITY LAYOUT.
 - A 25-FOOT BUFFER WILL BE MAINTAINED AROUND THE WINDROWS AND STOCKPILES TO ALLOW FOR ADEQUATE ACCESS FOR FIREFIGHTING EQUIPMENT.

LEGEND

	CONTOUR LINES
	PROPERTY LINE
	PARCEL LINES
	SEWER EASEMENT
	GAS EASEMENT
	RAILROAD TRACKS
	FEMA FLOOD LINE
	TRAFFIC FLOW
	TREELINE
	DIVERSION CHANNEL
	POTENTIAL ASSEMBLY AREA IN AN EMERGENCY



ISSUE	DATE	DESCRIPTION
A	06/2015	FINAL DRAWING- FOR REVIEW PURPOSES ONLY

PROJECT MANAGER	M.D. PLUMMER, P.E.
	S. FUTRELL, P.E.
	J. GAUL
	N. CROUSE
PROJECT NUMBER	00162-13625-018

**FORUM 52 YARD WASTE FACILITY
PERMIT APPLICATION PLANS**

Winston-Salem North Carolina

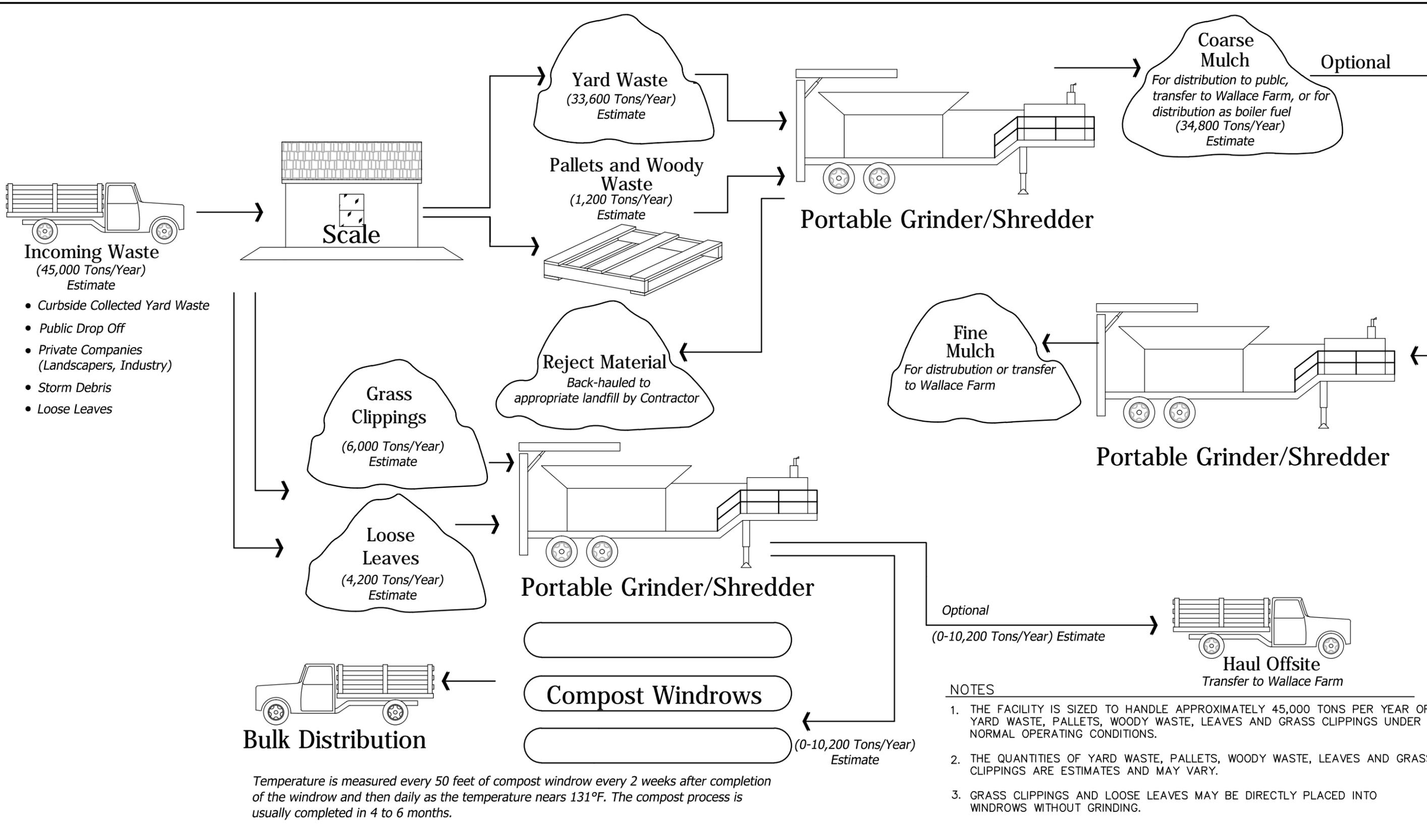


SITE PLAN

FILENAME | 00C-01
SCALE | 1"=60'

SHEET
C-01

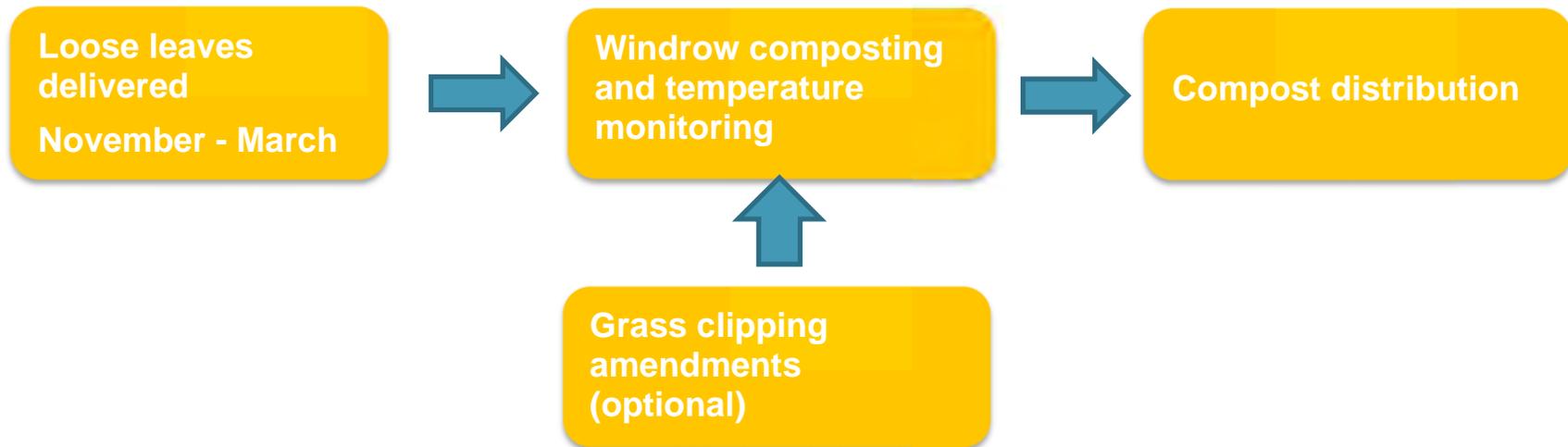
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C:\pwworking\tpa\022986700F-01.dwg, Plot, 6/11/2015 11:01:18 AM, ncrouse

Flow Diagram for Leaf Composting Area

Forum 52 Yard Waste Composting Facility – Winston-Salem, NC



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