STATE OF NORTH CAROLINA
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF WASTE MANAGEMENT

PERMIT TO OPERATE A SEPTAGE LAND APPLICATION SITE

C.S. Hines, Inc.
C.S. Hines
1828 Mount Pleasant Rd.
Chesapeake, VA. 23322

is hereby issued a permit to operate a septage land application site with permit # **SLAS-15-04** located on SR 1107 in Camden County at approximate position 36.33687° N latitude and -76.05817° W longitude. The site is to be operated in accordance with 15A NCAC 13B .0800 Septage Management, the information stated in the approved application, and the conditions of this permit. The unauthorized disposal of any liquid or solid wastes other than those specified in the conditions of this permit will be considered a violation of the conditions of this permit. Failure to comply with the conditions of this permit may result in permit suspension, permit revocation, action for injunctive relief, administrative penalties, or other remedies as provided in G.S. 130A, Article 1., Part 2.

This permit shall be reviewed annually to determine if soil test results and management activities are in compliance with the Septage Management Rules and the conditions of this permit. Modifications, where necessary, shall be made in accordance with rules in effect at the time of review.

Date Issued 11/8/11

Michael E. Scott, Chief
Solid Waste Section

Permit Conditions:

1. This permit shall become void if the soils fail to adequately assimilate the septage and shall be rescinded unless the site is maintained and operated in a manner which will protect the assigned water quality standards of both surface and ground waters.

2. This site shall be operated and maintained in accordance with the nutrient management plan submitted by C.S. Hines and approved by the Division of Waste Management. The 16.9-acre site shall be established in Wrangler or Cheyenne bermudagrass. The bermudagrass shall be planted at a rate of 5 to 7 lbs/ac between April 15 and May 15. Areas that fall below 80% coverage in bermudagrass shall be planted in Wrangler or Cheyenne bermudagrass. The field shall be overseeded annually with wheat during September and October at a rate of 120 lbs/ac (broadcast) or 100 lbs/ac (drilled). The bermudagrass shall be cut as hay and baled whenever it reaches approximately 12 inches in height, or roughly every 4 to 6 weeks beginning in June of each year. At least three bermudagrass harvests shall be made each year. The wheat shall be cut as hay and baled in April of each year. The hay shall not be used for animal feed. All discharges shall be at locations on the site consistent with the crop rotation in the approved plan.

3. This site shall be operated and maintained in accordance with the erosion and runoff control plan submitted by C.S. Hines in such a manner as to prevent the migration of wastes off of the designated waste receiving site. A 50-feet vegetative buffer shall be maintained around the perimeter of the field. Any site improvements noted in the plan must be installed within 30 days of plan approval. The installation of groundwater monitoring wells shall be required as deemed necessary by the Division.

4. The issuance of this permit does not preclude the Permittee from complying with any and all statutes, rules, regulations, or ordinances that may be imposed by other local, state, and federal government agencies which have jurisdiction. It is the responsibility of the Permittee to be in compliance with the Federal Regulations listed in the Code of Federal Regulations, 40 CFR Part 503.

5. This permit may be modified or reissued at any time to incorporate any conditions, limitations and / or monitoring requirements the Division deems necessary to adequately protect the environment and public health.

6. **This site is only permitted for the land application of domestic septage, grease trap pumpings and commercial / industrial septage. Commercial / industrial septage shall only be land applied after the waste from each source is tested and the results approved by the Solid Waste Section.** Domestic septage shall be raised to a pH of 12 or higher by alkali addition and, without the addition of additional alkali, shall remain at 12 or higher for 30 minutes prior to land application. Grease septage or grease septage mixed with domestic septage shall be raised to a pH of 12 or higher by alkali addition and, without the addition of additional alkali, shall remain at 12 or higher for 2 hours prior to land application.

7. **This site contains approximately 16.9 acres that are available for the land application of septage.** The maximum annual application rate shall be 50,000 gal/ac/yr for a total, maximum annual application amount of 845,000 gallons. This application rate assumes equal septage distribution, on an annual basis, over the permitted area. Monthly septage applications shall not exceed the monthly relative application rates given in the approved nutrient management plan for the site.

8. An approved above ground septage detention system with a minimum design capacity of 16,000 gallons shall be available prior to operation of this site unless an approved wastewater treatment plant is available for use during periods of adverse weather. The storage capacity may be adjusted if it is demonstrated during the operation of the site that this volume of storage is inappropriate.

9. Only the area designated on the attached site map(s) shall be utilized for septage disposal. Each load of septage discharged at the site shall be distributed from a moving vehicle in such a manner that there is no standing water when the discharge is complete.

10. Septage shall not be applied during any precipitation event, or if there is standing water on the soil surface, if the soil surface is frozen, or if the soil surface is snow covered. The Permittee shall consider pending weather conditions when making the decision to land apply in order to prevent any discharge of septage outside of the permitted boundary.

11. Septage applications that will result in ruts greater than three inches in the soil surface are prohibited.

12. Any discharge of septage outside of the permitted boundaries via runoff, aerial drift, etc. is prohibited.

13. This permit shall become void unless the land application activities are carried out in accordance with the conditions of this permit and in the manner approved by this Division. No one other than the Permittee shall discharge septage at this site without prior appropriate notification and written approval from the Division.

14. Prior to any transfer of this land, a notice shall be given to the new owner that gives full details of the materials applied or incorporated at this site. The Division shall be notified prior to site closure. This permit is non-transferable.

15. **This permit shall expire on November 8, 2012.** Modifications, when necessary, shall be made in accordance with the rules in effect at the time of renewal. An application for permit renewal shall be submitted at least ninety (90) days prior to the permit renewal date. A septage application log for the period of time this permit was valid shall be submitted along with an application for permit renewal or modification. The information required in the log is described in Rule 15A NCAC 13B .0838 (e) (1) of the NC Septage Management Rules and the Code of Federal Regulations, 40 CFR Part 503.17 (b).

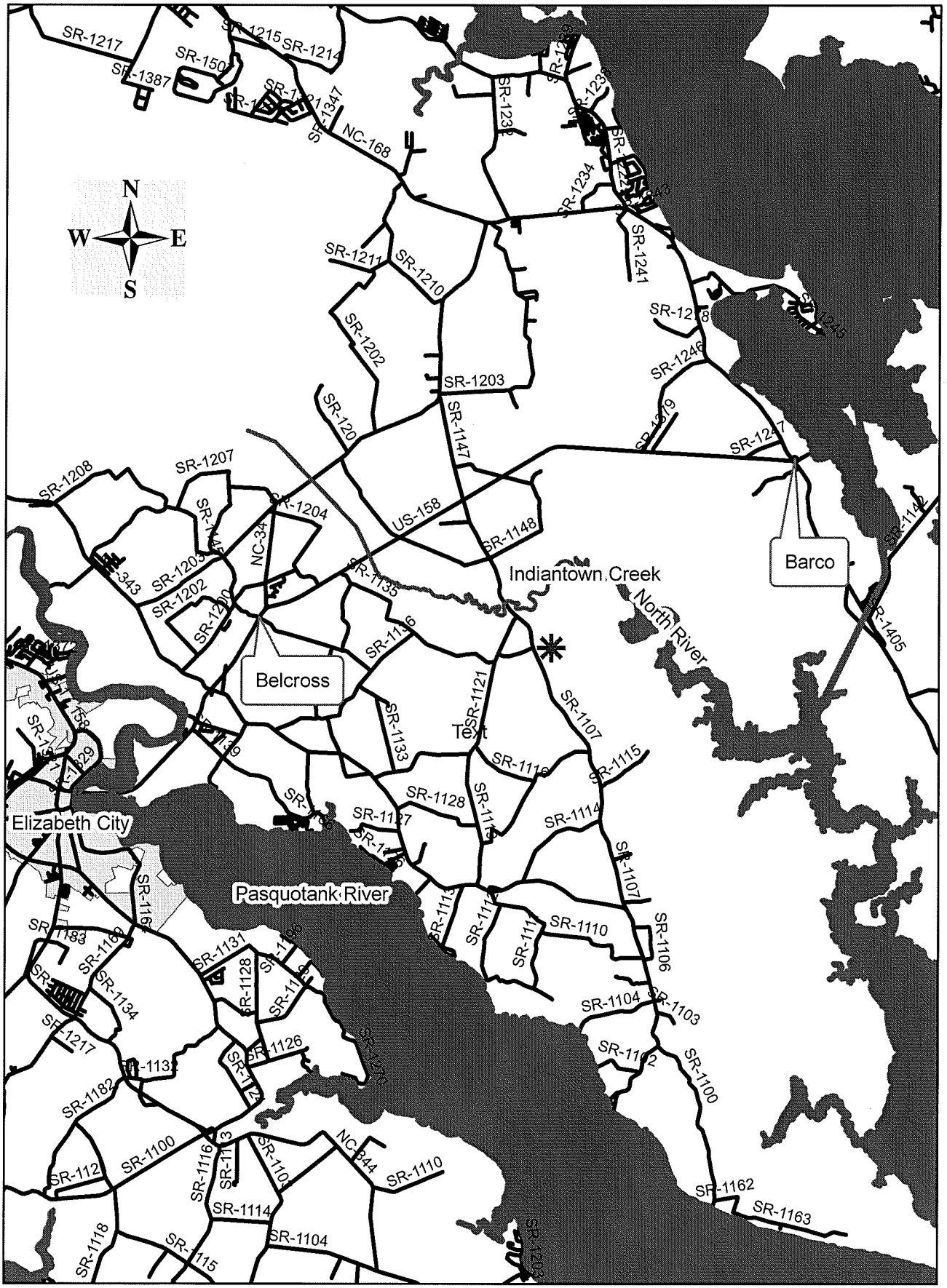
16. Records shall be kept in accordance with 40 CFR 503.17(b). These records shall be made available to a representative of the Division upon request.

17. Any duly authorized officer, employee, or representative of the Division may, upon presentation of credentials, enter and inspect any property, premises, or place on or related to the disposal site and facility at any reasonable time for the purpose of determining compliance with this permit; may inspect or copy any records that must be kept under the conditions of this permit; or may obtain samples of groundwater, surface water, or leachate.

18. All pertinent setbacks shall be clearly located on the site. Boundaries of the permitted septage land application field shall be clearly marked on the ground.

19. The areas that can be used for land application of septage shall be maintained at least 500 feet from any existing wells (unless a perennial forage buffer is established), residences, places of business, or places of public assembly. Septage shall not be disposed of within 50 feet of any property line or within 100 feet of any ditch.

20. **The bermudagrass stand in the field must be inspected by the Division in the spring of 2012 prior to septage applications to the bermudagrass. The stand will be evaluated for at least 80% bermudagrass coverage across the field. Please notify the Division when the wheat has been harvested.**



SLAS-15-04

Site is located in Camden County off of SR 1107 at approximately 36.33687° N latitude and -76.05817° W longitude.

crc, Nov. 2011

SLAS-15-04

Source: 2010 NAIP Color Imagery, NCDA; site boundary, NC DENR Division of Waste Management.
Map created by NC DENR Division of Waste Management, Compost and Land Application Branch for permitting purposes only.

crc, Nov. 2011

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

Beverly Eaves Perdue
Governor

Dexter R. Matthews
Director

Dee Freeman
Secretary

November 9, 2011

Mr. C. S. Hines
C. S. Hines, Inc.
1828 Mount Pleasant Rd.
Chesapeake, VA. 23322

RE: SLAS 15-04 Permit Issuance
C. S. Hines, Inc.
SR 1107 in Camden County

Dear Mr. Hines:

The NC Division of Waste Management has reviewed your application for a permit to operate a septage land application site in Camden County. Your application has been approved in accordance with NC Septage Management Rules and your permit, **SLAS-15-04**, is enclosed. Please read all permit conditions carefully. Your nutrient management and soil erosion and runoff control plans you submitted have been included in your permit. In particular, pay close attention to **Permit Conditions 2, 6, 7, 10, 11, 12, 13, 15, and 20**. The following is a summation of those Conditions.

- **Condition 2.** Incorporates crop management details listed in the submitted nutrient management plan.
- **Condition 6.** States that this site is permitted to receive domestic septage, grease trap pumpings, and commercial / industrial septage. Remember that commercial / industrial septage can only be land applied after the waste from each source is tested and the results approved by the Solid Waste Section.
- **Condition 7.** States that there are 16.9 acres available at this site for land application of septage at a rate of 50,000 gal/ac/yr. This allows for an annual maximum application amount of 845,000 gallons. These rates along with the monthly rates listed in the nutrient management plan are not to be exceeded.
- **Condition 10.** Septage shall only be applied when soil and weather conditions are favorable for application.
- **Condition 11.** Soil conditions must be monitored such that any septage application will not result in ruts greater than three inches in the soil surface.
- **Condition 12.** Any discharge, including aerial drift, of septage outside of the permitted boundaries is prohibited.
- **Condition 13.** Prior to any other permitted septage management firm discharging septage at this site, written approval must be granted from the Division.

- **Condition 15.** This permit is set to expire on November 8, 2012. Ninety (90) days prior to the expiration of your permit, you must submit an application for permit renewal along with your septage land application logs for the entire time your current permit was valid.
- **Condition 20.** The bermudagrass stand in the field must be inspected by the Division in the spring of 2012 prior to septage applications to the bermudagrass.

Again, please pay close attention to all of the conditions within the enclosed permit. Remember that violations to the NC Septage Management Rules or this permit could subject you to administrative penalties of up to $15,000 per violation per day. If you have any questions concerning your permits or septage in general, please do not hesitate to contact me at (919) 707-8283. When communicating to the Division about this permit, please refer to it as **"SLAS-15-04"**.

Sincerely,

Chester R. Cobb, Soil Scientist
Composting & Land Application Branch

Enclosures
cc: Central Office
Garland Dunstan Jr., landowner
Camden County Health Department

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APPLICATION FOR A PERMIT TO OPERATE A SEPTAGE LAND APPLICATION SITE

North Carolina Department of Environment and Natural Resources
Division of Waste Management – Solid Waste Section
401 Oberlin Rd., Ste. 150, Raleigh, N.C. 27605

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I. Site and Operator Information

1. Applicant C.S. Hines, Inc.
   Address 1828 Mount Pleasant Rd.
   Chesapeake, VA 23322
   Phone 757-482-7001

2. Contact person for site operation (if different from applicant): Glenn Hines
   Title or position Vice President Phone 757-482-7001
   Address 1828 Mount Pleasant Rd. 252-232-3941
   Chesapeake, VA 23322

3. Landowner Garland Dunstan Jr.
   Address 509 West Wilkinson Street
   Kill Devil Hills, NC 27948

4. Site Location: County Camden State Road Number 1107
   Directions to site: 158 East, through Belcross, 158 (shortcut road) turn right on South Indian Town Rd. this becomes North Sandy Hook Road, at Currituck/Camden line. South past Ditch Bank Road, on east side where property starts.

5. Indicate whether request is: new X renewal _____ modification _____

   For a permit renewal or modification, provide the following information:
   Existing site permit number:_____ permit expiration date:_____

6. Number of acres meeting the requirements of the N.C. Septage Management Rules: 38.7 acres.

7. Substances other than septage or grease trap pumpings previously disposed of on the site:
   (a) None X, or (b) Attach a list indicating other substances, the amounts discharged, and the dates of discharge.

8. Attach written, notarized landowner authorization to operate a septage disposal site signed by the landowner (if the permit applicant does not own the property). ***If a corporation owns the land use a corporate landowner authorization form. If limited liability company owns the land, use a limited liability company landowner authorization form.***

9. Attach site evaluation report, including aerial photograph and soil analysis with metals results, unless the Division prepared the report.

10. Attach a vicinity map (county road map showing site location).

(over)

II. Site Management Information:

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The following information shall be included with the application form:

1. Nutrient Management Plan
2. Soil Erosion and Runoff Control Plan
3. Alternative plan for disposal (detention facility permit number or wastewater treatment plant authorization): SDTF-27-20, or HRSD (Hampton Roads Sanitation District) permit No. 002-1 Elizabeth City Treatment Plant
4. Types of septage proposed to be discharged at the site (check all that apply):
   (a) Domestic septage pumped from septic tanks X
   (b) Grease trap pumpings X
   (c) Portable toilet waste _____
   (d) Commercial / Industrial septage X
5. Proposed treatment method of each type of septage to be land applied (use additional paper to explain if necessary): EPA 503, Hydrated lime, to do lime stablization, for a PH of 12 for at least 30 minutes
6. Proposed method of applying septage to land, including septage distribution plan if required * (use additional paper to explain if necessary): Septage to be evenly applied over the entire site with a splash shield or side discharge extension.
7. Demonstration from the appropriate state or federal government agency that the land application site complies with the Endangered Species Law ** or if any part of the site specified is not agricultural land (use additional paper to explain if necessary): currently land acerage is under farm cultivation, and has been for some time.

III. Certification

I hereby certify that:

1. The information provided on this application is true, complete, and correct to the best of my knowledge.
2. I have read and understand the N.C. Septage Management Rules, and
3. I am aware of the potential consequences, including penalties and permit revocation, for failing to follow all applicable rules and the conditions of a Septage Land Application Site permit.

C. S. Hines — Signature***

3/8/11 — Date

C.S. Hines — Print name

president — Title

Note: This application will not be reviewed until all parts of the application are complete.

* Refer to Section .0821(e) of the N.C. Septage Management Rules.

** Refer to Section .0821(g) of the N.C. Septage Management Rules.

***Signature of company official required.

Addendum

"Application for a Permit to Operate a Septage Land Application Site"

Question II. 5.
Hydrated lime will be added to domestic septage to raise it to a pH of 12 or higher for 30 minutes prior to land application. For any septage containing a mixture of grease trap pumpings, the septage will be raised to a pH of 12 or higher for 2 hours prior to land application. Septage to be at a pH of 12 or higher when applied. Commercial/industrial septage shall only be land applied after the waste from each source is tested and the results approved by the Solid Waste Section.

T. A. Jones Jr.
Signature

11/1/11
Date

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Landowner's Authorization to Operate a Septage Land Application Site

North Carolina Department of Environment and Natural Resources
Division of Waste Management - Solid Waste Section
401 Oberlin Rd, Ste. 150, Raleigh, N.C. 27605

I, GARLAND N. DUNSTAN JR (name of site owner) hereby certify that I am the owner of 130 acres of land located ON SANDY HOOK ROAD IN Camden, NC - Camden County and identified by DB 148 P. 759 & DB 148, P 769 (book and page of recorded deed or tax map parcel) and that I agree to allow GLEN NINE (name of site operator) to use said land for septage land application for a period of 6 years (length of time), beginning JAN 1, 2011 (month, day and year) and that I have read the North Carolina Septage Management Rules *, and I understand and agree to maintain the restrictions on land use after septage land application ends **. I further understand that no septage may be land applied until the Division of Waste Management has issued a permit for a septage land application site. The above described property is owned solely by me or jointly with _____ (names of all co-owners, or state none).

Signature of landowner _____ Date March 7, 2011

Signature of landowner _____ Date _____

Sworn to and subscribed before me this 7th day of March, 20 11.

_____
(Notary Public)

My Commission expires: 09072013

(OFFICIAL SEAL)

JUNE E LIVESAY
NOTARY PUBLIC
DARE COUNTY, NC

* 15A N.C. Admin. Code 13B Section .0800

** As required by Rule .0826

Draft: February 22, 2011

C.S. Hines Inc.

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WASTE SECTION

Nutrient Management Plan for Septage Application to Bermudagrass and Rye

A. General Information

1. The septage disposal site (permit number to be determined) is located off of State Road 1107.

2. Total permitted site size is 52.5 acres and the application site is 38.7 acres. The entire site will be have septage applied to it during the year since the hay that is harvested from the site will not be used for consumption by any animals.

3. The dominant soil series at this site is Bojac loamy sand with lesser amounts of Tomotley fine sandy loam, Altavista fine sandy loam and Munden loamy sand.

4. Septage will not be applied where the site is untrafficable (untrafficable is defined as a soil that will allow a truck to leave a depression sod greater than 3 inches in depth).

5. Septage storage shall be provided to account for the average volume of septage pumped per week, or an alternative plan, such as disposal at a waste treatment plant, should be in place.

6. Sites utilized for application of septage are managed according to certain laws and regulations (see appendix for current regulations).

B. Crops Being Grown and Approximate Planting Times

1. The field will established by seeding Wrangler or Cheyenne bermudagrass for a

summer crop, at the rate of 5 - 7 pounds per acre. This will be accomplished during the time period of April 15 to May 15.

As a winter crop, these fields of bermudagrass will be overseeded annually with wheat. It is seeded at a rate of 120 pounds per acre by broadcasting or 100 pounds per acre by drilling during the months of September and October.

2. If there is not an agronomically acceptable stand of bermudagrass (i.e.ground covered with bermudagrass stolons) on at least 85% of the surface area of the site, then bermudagrass will be sown in those areas in the following

spring unless the determination of poor stands is made prior to or at the time of planting for bermudagrass of the current year. The bare areas should be lightly tilled and reseeded at the rate of 5-7 pounds of bermudagrass seed (i.e. 0.2 lbs of seed per 1000 square feet).

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C. Nitrogen (N) Needs for Crops Grown:

Table 1. Nitrogen Needs for Crops Grown

Crop (harvested for Hay)	R.Y.E.[1]	Nitrogen Application Rate[2]	Lbs N/Acre/Year
Hybrid Bermudagrass overseeded with Rescuegrass (Hay)	6.5 tons/ac	46 lbs/dry ton	299 lbs/ac/yr

1. R.Y.E. = Realistic Yield Expectation
2. Nitrogen Application Rate = Suggested nitrogen rate based on R.Y.E.

D. Annual Application Rate

MONTH	RATE
January	Low
February	Low
March	Medium
April	High
May	Medium
June	High
July	High
August	Medium
September	Low
October	Low
November	Low
December	Low

None = 0 gallons; Low = 5,000 gallons; Medium = 10,000 gallons; High = 15,000 gallons
Note: Cumulative application rate is not to exceed the permitted rate.

E. Application Method

The preceding information is based on septage being evenly applied over the entire site with a splash shield or side discharge extension.

F. Crop Management and Additional Fertility Requirements

For the bermudagrass, do not apply lime because of the lime supplied by the stabilized septage (see note below). Apply 100 pounds of 0-20-20 per acre prior to planting to help the crop to establish itself unless the report from the soil sample indicates that nutrient levels are sufficient. The remainder of the nutrients will be supplied by the septage, which will be surface applied to the crop during the growing season. If higher levels of production by the crop are desired, then supplemental nutrients may be needed. Incorporation of the fertilizer prior to planting the bermudagrass with a disk and/or chisel-plow will suffice for preparing the seedbed. Seeds will be planted with a drill.

In September/, clip the bermudagrass to a height of 1 inch or less. Prior to seeding the rye apply 200 pounds of 10-10-10 per acre unless otherwise indicated by the soil test report. This fertilizer is needed as a starter and only 20 pounds of nitrogen per acre is negligible when considering the cumulative net requirement of the two crops. Overseeding may be accomplished by using a sod-seeder or a grain drill. A light disking may be required prior to seeding (especially since septage application equipment may compact the soil) with a grain drill or a broadcast seeder.

Note: Soil samples should be taken annually to monitor the pH of the soils as well as other nutrients in the soil. Since most waste materials do not contain optimum nutrient balance required for each crop and field, it is important to check the soil recommendations and, if necessary, supplement with commercial fertilizer. The pH of the soil at the site will be higher than that required for most crops because of the addition of lime stabilized septage. There should be no need for additional lime to meet the needs of the crop.

G. Harvest of the Crop and Their Use

1. The bermudagrass will be cut as hay and baled whenever it reaches approximately 12 inches in height and will be cut and baled 3 times.

2. The rye will be cut and baled as hay 1 time in April.

3. The hay will be used for some purpose off of the permitted site

H. Soil Erosion and Runoff Control Plan

Given that slopes on this site do not exceed five percent, a 50-foot buffer should suffice to prevent septage waste from migrating off of the fields. The buffers will be row crops that will not be used for human consumption. (More severe site conditions could require that soil erosion structures be installed before septage can be applied.)

Submitted by: _____ **Date:** 3-08-2011

Preparation Assisted by: _____ **Date:** 3-8-2011

Appendix

Management Requirements

By:

A.R. Rubin, Penny Mascaro, Ted Lyon and Joe Zublena

Septage Defined

The EPA 503 regulation (40 CFRPT 503) was printed in the Federal Register on February 19, 1993. The regulation addresses the management of septage and sludge produced from municipal and domestic sources. Septage is specifically defined as material from domestic sources only. If any commercial or industrial wastes are combined with domestic septage, then the 503 regulations do not apply. In the 503 regulation, septage is defined as liquid, solid, or semi-solid material removed from a septic tank, portable toilet, cesspool, type III marine sanitation or similar facility that receives only non-commercial septage. Some material such as grease trap residues is often referred to as septage but is not included in this definition. The Part 503 regulation offers a simple and manageable regulatory scheme for the land application of septage. This management scheme is applicable only if the septage is applied to "non-public contact sites." These non-public contact sites are defined as those where the potential for public exposure is minimal. An agricultural field, forestland, or a disturbed site in need of reclamation is considered a non-public contact site.

Land Application to Non-Public Sites

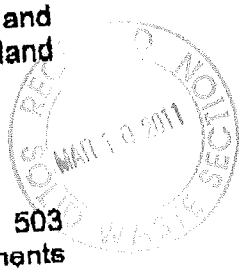
The Part 503 regulation mandates that domestic septage appliers be required to:

1. Meet and certify pathogen reduction and vector attraction reduction requirements prior to land application.
2. Follow a prescribed Best Management Practice for septage management
3. Utilize septage application rates based upon the nitrogen requirement of the crop.
4. Ensure that septage is from domestic sources only.
5. Develop and maintain a record-keeping system germane to their land application activities.

Much of this document was adopted from the Residuals Management Workshop 503 regulations handout provided by the EPA, the Water Environmental Federation and the NC Dep. Environ. Mgmt. May 6-7, 1993, Charlotte, NC.

Each of the requirements of the 503 regulations are discussed in this document. Septic tank pumpers who land apply septage are not required to obtain a Federal permit for these activities. However, North Carolina law requires that septic tank

pumpers who land-apply obtain two permits; one to transport and haul septage, and second to land apply it. The land application permit is specific to a defined land receiver site.



Pathogen Reduction

The pathogen reduction requirement on the receiver site in the EPA 503 regulation can be achieved through either defined management practices, requirements for soil incorporation or through alkaline stabilization of the septage. The management practices are primarily restrictions on harvesting and requirements for restricting public access to the site. The lime or alklaline stabilization process requires septage haulers to add sufficient lime ($Ca(OH)_2$) to the septage to achieve a pH of 12 for at least 30 minutes without the addition of more alkaline material.

On those sites, which rely on management practices only, certain crop restrictions must apply. The crop restrictions are:

1. Food crops with harvested parts that touch the soil surface, but are totally above ground, cannot be harvested for 14 months after application.

   Examples include: Melons and cucumbers

2. Root crops cannot be harvested for 20 months after application if the septage is not disked in and remains on the soil surface for less than 4 months.

   Examples include: Carrots and turnips

3. Root crops cannot be harvested for 38 months after application if the septage remains on the soil surface for less than 4 months.

4. No crop can be harvested for at least 30 days following application of septage.

5. Animals cannot be grazed on a septage receiver site for 30 days following land application.

6. Turf cannot be harvested for one year following application of septage if the turf is to be placed on any sites with high potential for public exposure.

In addition, public access must be restricted for at least 30 days. These restrictions include fencing and posting of signs. Any remotely situated site is considered to have a restricted access by virtue of the location.

When septage is lime stabilized prior to application, the first four restrictions (no food crop harvesting for 14 months, no root crop harvesting for either 20 or 38 months, and no harvesting for 30 days for all crop revisions) still apply. There are however, no restrictions on animal grazing or use as turf for sites on which stabilized septage are applied and there are no public restrictions to this site.

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Vector Attractions and Reduction

There are three vector attraction and reduction alternatives listed in the Part 503 regulation. One of the following of the vector attraction reduction requirements must be employed whenever septage is applied to land.

1. Septage can be injected into the soil surface at the time of application and no significant amount of septage can remain present on the soil surface one hour after application. The regulation does not define a significant amount of septage.

2. Septage must be incorporated into the surface soil within six hours of application.

3. The pH of septage must be elevated to and maintained at a pH of at least 12 for a minimum of 30 minutes without the addition of more alkaline material.

Application Rate Based on Nitrogen Requirements

The maximum volume of domestic septage, which can be applied to any receiver site, will depend upon the amount of nitrogen required by the crop grown on that site and the anticipated crop yield. The equation below is used in the regulation to calculate the annual application rate for septage: The annual application rate yielded will be expressed as gallons per acre year.

$$\text{Annual application rate (gal/ac/yr)} = \frac{\text{crop nitrogen requirement (lb/ac/yr)}}{.0026}$$

In addition to the requirement of the EPA 503 rules, the NC Div. of Solid Waste Management is proposing than no more than 50,000 gallons/acre/year be land applied. When designing application systems for NC, Agronomic N rates would be based on either the EPA formula or the NC 50,000 gal/ac/yr limited whichever is lowest.

Record-Keeping

There are no formal reporting requirements listed in the EPA 503 regulation. The regulation does specify that records must be maintained by individuals who land apply septage. The following information must be recorded and retained by the septage applier for five years following any application event:

1. Site location

2. Number of acres involved in the land application program.

3. Date and time of each application event.

4. The nitrogen requirement of the crop grown on the land receiver site.

5. The gallons of septage applied in each application event, certification that the material is domestic septage only, and that pathogen reduction and vector attraction reduction requirements have been met.

6. A description of the pathogen reduction methods.

North Carolina Requirements

Any individual or firm, who collects, transports, or handles septage in any manner, must obtain at least one, and perhaps two, permits. The septage management firm must obtain a permit to transport septage over state roads. In order to obtain a permit to operate, the owner must submit the following information to the State Solid Waste Management Branch:

1. The owner's name and the business name, address, and phone number.

2. The number and capacity of pump trucks.

3. The type of pumping equipment used on trucks.

4. License and serial numbers of vehicles.

5. A hazardous waste permit number, if appropriate.

6. The county or counties in which the firm operates.

7. The method for ultimate disposal of septage.

8. The location of all septage disposal of septage.

9. The method for managing washings and cleaning generated from the interior of the septage hauling containers and the location of the disposal site for those washings.

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In addition, if the septage is applied to agricultural lands, the permittee must also submit information concerning the operation of that site. The information, which must be submitted to the State Solid Waste Management Branch include:

1. Site location.

2. Name, address, and telephone number of the owner of the site.

3. The number of acres included in the receiver area on the site.

4. The estimated application rate onto this site.

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5. The crop to be grown on that site.

6. Method for managing septage during adverse weather.

7. Method for incorporation and pretreatment methods used for septage management.

8. The equipment to be utilized at that site.

The operator of that site must present to the State Solid Waste Management Branch an estimate of the nutrient and metal assimilative capacity of the site, evidence that the hydraulic components contained in septage will be assimilated on that site, and must document the nutrient requirements of the crop growing or to be grown on that site. In all cases, the state and federal regulatory agencies must consider the impact of the septage management program on rare and endangered species.

The state also limits septage application onto sites based on both a hydraulic and a nutrient load. The federal regulations list setback requirements from surface waters, which are less stringent than those utilized by the state. In all cases where state rules are more stringent than federal rules, then owners and operators of septage disposal sites must comply with state regulations. The state septage management rules are listed in Section .0800 of the State Solid Waste Management rules (15ANCAC13B). Copies of these rules can be obtained from the Department of Environment, Health, Natural Resources, Solid Waste Management Section or from local health departments.

Compliance

Any individual who land applies septage must maintain records of their activities after July 19, 1993. If septage hauling is required to construct any major facility to comply with the 503 provisions, then a one-year compliance period is allowed. Full compliance with the provisions of the 503 regulations will be required by February 19, 1995. These EPA rules are self-implementing. That is, anyone who handles, transports or land applies septage is expected to comply with all provisions of the EPA 503 rule.

Horizontal Buffer Requirements for Septage Receiver Sites

Feature	Buffer (ft)
Residence (off site)	500
Residence (on site)	250
Office (for septage mgmt firm)	100
Wells (up slope)	100
Wells (down slope)	250
Wells (community water supply)	500
Springs (up slope)	300
Springs (down slope)	500
Surface Waters (WS II, WS III, WS IV)	300
Surface Waters (class B, nutrient sensitive, or ORW)	300
Surface Waters (class C Swamps)	100 - 200

Waterways (with grass buffers)	25
Waterways (no cover)	100
Intermittent Streams (with vegetative buffers)	50
Intermittent Streams (no cover)	100
Ditches	25
Property Boundaries	50
Road	100
Food Crops	50
Vertical buffer requirements for septage receiver sites	
Feature	**Buffer (in)**
Seasonal wetness - Group I Soil (sands)	24
Seasonal Wetness - Group II Soil (loams)	18
Seasonal wetness - Group III Soil (clays)	12
Rock - Group I Soil	24
Rock - Group II Soil	18
Rock - Group III Soil	12

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SOLID WASTE SECTION

NCDA&CS Agronomic Division Phone: (919)733-2655 Web Site: www.ncagr.com/agronomi/

Report No: 39164

Soil Test Report

Grower: **Hines, C. S.**
3178 Caratoke Hwy
Currituck, NC 27929

Copies To:

Farm: Heavy Metal

Currituck County

4/27/2011 SERVING N.C. RESIDENTS FOR OVER 60 YEARS

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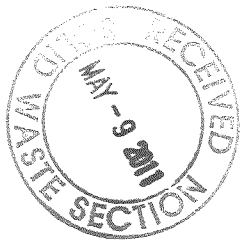


Agronomist Comments

The heavy metal report is found on a separate page. Using Mehlich 3 as a soil test extractant, background levels of these metals typically seen in NC soils when analyzed are as follows: arsenic (As)- 4.5 ppm, cadmium (Cd)- 0.1 ppm, chromium (Cr)- 0.2 ppm, lead (Pb)- 4.2 ppm, nickel (Ni)- 0.8 ppm, & selenium (Se)- 0.2 ppm (FY2005-2007). Although the above metals here are not believed to pose a concern for plant growth, continue to monitor these and note where elevated above background levels.

Note any lime and fertilizer recommendations. Where soil test phosphorus (P) is very high (P-I > 100), crops will not respond to additional P applied.

Jeana Myers, Agronomist
April 27, 2011

Field Information		Applied Lime			Recommendations											
Sample No.	Last Crop	Mo	Yr	T/A	Crop or Year		Lime	N	P_2O_5	K_2O	Mg	S	Cu	Zn	B	Mn	See Note
01					1st Crop:	Berm Hay/Pas,M	1.7T	180-220	0	50-70	0	0	0	0		0	12
					2nd Crop:	Berm Hay/Pas,M	0	180-220	0	50-70	0	0	0	0		0	12

Test Results

Soil Class	HM%	W/V	CEC	BS%	Ac	pH	P-I	K-I	Ca%	Mg%	Mn-I	Mn-AI(1)	Mn-AI(2)	Zn-I	Zn-AI	Cu-I	S-I	SS-I	NO_3-N	NH_4-N	Na
MIN	0.46	1.24	4.3	56.0	1.9	5.5	69	75	36.0	11.0	96	67	67	124	124	27	37				0.1

Field Information		Applied Lime			Recommendations											
Sample No.	Last Crop	Mo	Yr	T/A	Crop or Year		Lime	N	P_2O_5	K_2O	Mg	S	Cu	Zn	B	Mn	See Note
02					1st Crop:	Berm Hay/Pas,M	1.8T	180-220	0	40-60	0	0	0	0		0	12
					2nd Crop:	Berm Hay/Pas,M	0	180-220	0	40-60	0	0	0	0		0	12

Test Results

Soil Class	HM%	W/V	CEC	BS%	Ac	pH	P-I	K-I	Ca%	Mg%	Mn-I	Mn-AI(1)	Mn-AI(2)	Zn-I	Zn-AI	Cu-I	S-I	SS-I	NO_3-N	NH_4-N	Na
MIN	1.02	1.18	5.9	66.0	2.0	5.7	104	80	49.0	11.0	54	42	42	131	131	34	49				0.1

Field Information

Sample No.	*Last Crop*
03	

Applied Lime

Mo	*Yr*	*T/A*

Recommendations

Crop or Year		*Lime*	*N*	*P_2O_5*	*K_2O*	*Mg*	*S*	*Cu*	*Zn*	*B*	*Mn*	*See Note*
1st Crop:	Berm Hay/Pas,M	1.4T	180-220	0-20	20-40	0	0	0	0		0	12
2nd Crop:	Berm Hay/Pas,M	0	180-220	0-20	20-40	0	0	0	0		0	12

Test Results

Soil Class	*HM%*	*W/V*	*CEC*	*BS%*	*Ac*	*pH*	*P-I*	*K-I*	*Ca%*	*Mg%*	*Mn-I*	*Mn-Al(1)*	*Mn-Al(2)*	*Zn-I*	*Zn-Al*	*Cu-I*	*S-I*	*SS-I*	*NO_3-N*	*NH_4-N*	*Na*
MIN	1.49	1.16	8.2	79.0	1.7	6.1	65	98	61.0	13.0	36	31	31	97	97	27	38				0.1

Heavy Metal Soil Test Report

MEHLICH-3 EXTRACTION

Report #: 39164

Hines, C. S.
3178 Caratoke Hwy
Currituck, NC 27929

Currituck County

Questions concerning these analyses should be referred to the Agronomic Division, Soil Testing

Sample ID	Cd Cadmium	Ni Nickel	P b Lead	Se Selenium	Cr Chromium	As Arsenic	Al Aluminum	Fe Iron
	mg/dm3 (ppm)							
01	0.10	0.60	5.20	0.00	0.20	0.20	1,606.00	131.50
02	0.10	0.60	6.80	0.00	0.20	0.80	2,019.00	169.70
03	0.10	0.60	5.40	0.00	0.20	0.20	2,559.00	123.10

Kevin Carver
P.O. Box 2
Camden, NC 27921
Kcarver27921@gmail.com
252-339-7236

RECEIVED NCDENR MAR 10 2011 WASTE

March 5, 2011

Glen Hines
1828 Mt. Pleasant Rd.
Chesapeake, VA 23322

Re: Suitability of soil for land application of septic for Glen Hines (C.S. Hines) on Sandy Hook Rd., just south of Ditch Bank Rd. intersection

Mr. Hines:

A tract of land containing 125 acres +/- (excluding the woods and areas within required setbacks) was examined to determine the potential for land application of septic. After the field investigations were performed, the site has been found to have 38.7 acres +/- meeting state rules. These areas have been delineated using a GPS with sub-meter accuracy as shown on attached maps.

The site is characteristically flat and level with slight ridges. This topography is typical of the Coastal Plain. The slope appears to be less than 3% throughout. Examining resources onsite supported the soils information necessary to develop an understanding of material and seasonal wetness. In support of this evaluation, soil profiles were examined by evaluating soil materials from a hand auger and to a depth of 42 inches.

The soil profiles indicate that there is seasonal soil wetness of less than 12 to greater than 48 inches. The seasonal wetness was indicated by soil color patterns prevalent in the boring. The bright iron (red) stains on the soil material and the gray colors prevalent throughout the profile suggest the presence of seasonal saturation. This seasonal saturation is especially common during the winter months when rainfall is high and evapotranspiration is low. These conditions encourage the retention of liquid in the soil and this interferes with the potential of the soil to receive and treat wastewater. The soil material encountered as marked on attached map with soil wetness greater than 24 inches presents no major limitations for septage land application.

Soils:

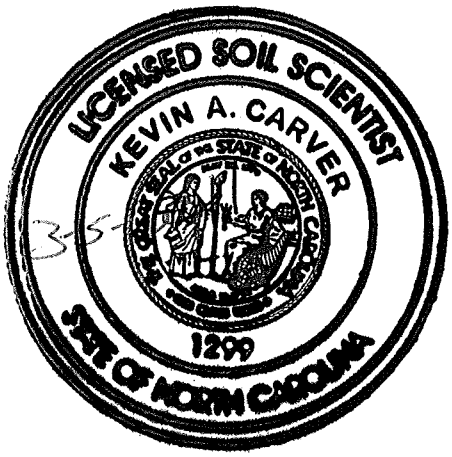
According to the Soil Survey of Camden County, North Carolina, the areas suitable for septage are mapped as well drained Bojac series that formed in loamy fluvial and marine sediments. In my professional opinion, the presence of sandy clay loam would classify this soil as a Conetoe soil series. Subsoil textures consist of sandy loam and sandy clay

loam throughout the parcel Very poorly drained Tomotley / Portsmouth series that formed in loamy fluvial and marine sediments was mapped on this property also. This soil is primarily less than 24 inches to seasonal wetness, therefore unsuitable for land application of septic.

In Conclusion, the parcel is suitable for the proposed use. These areas are mapped in a GIS format for easy on-site determination and location. Small isolated areas have the potential to be filled to meet any separation requirements between seasonal soil wetness and soil surface. In my professional opinion, the area proposed will provide adequate treatment and protection for the purpose proposed by Glen Hines.

Sincerely,

Kevin Carver, R.S., L.S.S
Registered Sanitarian
Licensed Soil Scientist



Number	Texture	Backfill	Wetness	Structure	Comments
1	SCL		36	SBK	
2	SCL		30	SBK	
3	SCL		29	SBK	
4	SCL		37	SBK	
5	SCL		36	SBK	
6	SCL		36	SBK	
7	SCL		36	SBK	
8	SCL		36	SBK	
9	SCL		36	SBK	
10	SCL		36	SBK	
11	SCL		22	SBK	
12	SCL		30	SBK	
13	SCL		18	SBK	
14	SCL		24	SBK	
15	SCL		32	SBK	
16	SCL		36	SBK	
17	SCL		26	SBK	
18	SCL		36	SBK	
19	SCL		36	SBK	
20	SCL		36	SBK	
21	SCL		25	SBK	
22	SCL		20	SBK	
23	SCL		36	SBK	
24	SCL		36	SBK	
25	SCL		20	SBK	
26	SCL		30	SBK	
27	SCL		18	SBK	
28	SCL		12	SBK	
29	SCL		16	SBK	
30	SCL		30	SBK	
31	SCL		36	SBK	
32	SCL		24	SBK	
33	SCL		26	SBK	
34	SCL		31	SBK	
35	SCL		26	SBK	
36	SCL		24	SBK	
37	SCL		29	SBK	
38	SCL		30	SBK	
39	SCL		26	SBK	
40	SCL		32	SBK	
41	SCL		15	SBK	sleugh
42	SCL		18	SBK	
43	SCL		16	SBK	
44	SCL		22	SBK	
45	SL		36	SBK	

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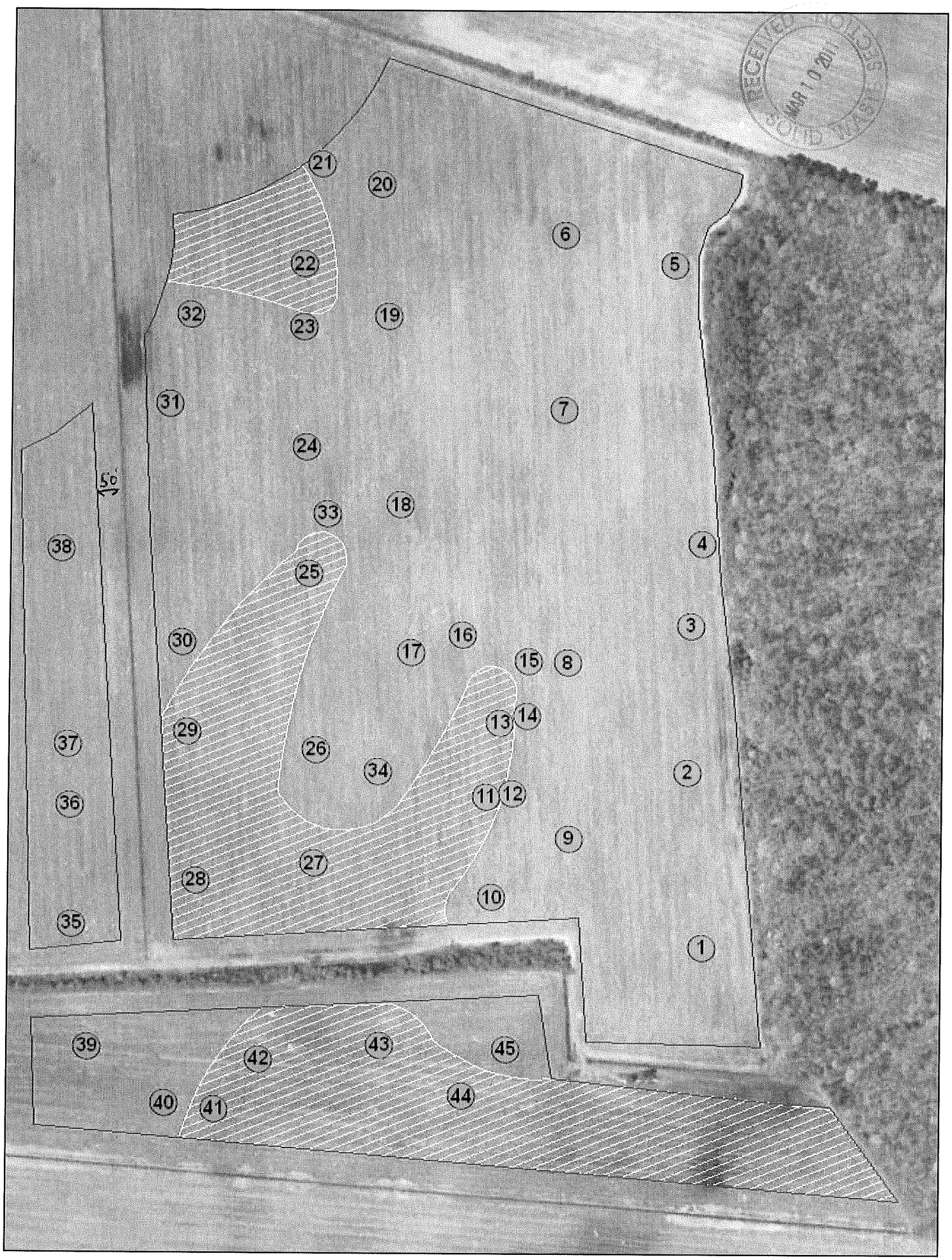
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