

State of North Carolina  
Department of Environment and Natural Resources  
Division of Water Quality

Central [redacted] copy  
NPDES  
APPL.

Animal Waste Management Systems  
Request for Certificate of Coverage  
Facility Currently Covered by an Expiring NPDES General Permit 12 FEB 29 PM 4:11

On July 1, 2012, the North Carolina NPDES General Permits for Animal Waste Management Systems will expire. Facilities that have been issued Certificates of Coverage to operate under these NPDES General Permits must apply for renewal within 30 days of receipt of this application.

Please do not leave any question unanswered. Please make any necessary corrections to the data below.

- Facility Number: 31-656 and Certificate of Coverage Number: AWS310656
- Facility Name: Lynn + Annette Smith Farm
- Landowner's name (same as on the Waste Management Plan): Timothy L. Smith
- Landowner's mailing address: 2430 NC 111 Hwy N  
City/State: Pink Hill NC Zip: 28572  
Telephone Number (include area code): <sup>252</sup> 559-3396 E-mail: \_\_\_\_\_
- Facility's physical address: 2213 NC 111 Hwy N  
City/State: Pink Hill NC Zip: 28572
- County where facility is located: Duplin
- Farm Manager's name (If different than the Landowner): \_\_\_\_\_
- Farm Manager's telephone number (include area code): \_\_\_\_\_
- Integrator's name (if there is not an integrator write "None"): "None"
- Lessee's name (if there is not a lessee write "None"): "None"
- Indicate animal operation type and number:

Swine

Wean to Finish \_\_\_\_\_  
Wean to Feeder \_\_\_\_\_  
Farrow to Finish \_\_\_\_\_  
Feeder to Finish 3672  
Farrow to Wean \_\_\_\_\_  
Farrow to Feeder \_\_\_\_\_  
Boar/Stud \_\_\_\_\_  
Gilts \_\_\_\_\_  
Other \_\_\_\_\_

Cattle

Dairy Calf \_\_\_\_\_  
Dairy Heifer \_\_\_\_\_  
Milk Cow \_\_\_\_\_  
Dry Cow \_\_\_\_\_  
Beef Stocker Calf \_\_\_\_\_  
Beef Feeder \_\_\_\_\_  
Beef Brood Cow \_\_\_\_\_  
Other \_\_\_\_\_

Dry Poultry

Non Laying Chickens \_\_\_\_\_  
Laying Chickens \_\_\_\_\_  
Turkeys \_\_\_\_\_  
Other \_\_\_\_\_  
Pullets \_\_\_\_\_  
Turkey Poults \_\_\_\_\_

Wet Poultry

Non Laying Pullets \_\_\_\_\_  
Layers \_\_\_\_\_

Submit two (2) copies of the most recent Certified Animal Waste Management Plan (CAWMP). The CAWMP must include the following components. Some of these components may not have been required at the time the facility was certified but should be added to the CAWMP for permitting purposes:

- The Waste Utilization Plan (WUP) must include the amount of Plant Available Nitrogen (PAN) produced and utilized by the facility
- The method by which waste is applied to the disposal fields (e.g. irrigation, injection, etc.)
- A map of every field used for land application
- The soil series present on every land application field
- The crops grown on every land application field
- The Realistic Yield Expectation (RYE) for every crop shown in the WUP
- The PAN to be applied to every land application field
- Phosphorous to be applied on every land application field with a "HIGH" PLAT rating.
- The waste application windows for every crop utilized in the WUP
- The required NRCS Standard specifications
- A site schematic
- ✓ Emergency Action Plan
- ✓ Insect Control Checklist with chosen best management practices noted
- ✓ Odor Control Checklist with chosen best management practices noted
- ✓ Mortality Control Checklist with the selected method noted. A mass mortality plan must also be included.
- Site-Specific Conservation Practices necessary to prevent runoff of pollutants to waters of the State.
- ✓ PLAT results including datasheets for each field.
- ✓ Lagoon/storage pond capacity documentation (design, calculations, etc.); please be sure to include any site evaluations, wetland determinations, or hazard classifications that may be applicable to your facility
- Operation and Maintenance Plan

RECEIVED  
 02/28/12  
 09:11  
 NCDENR  
 DIVISION OF WASTE MANAGEMENT

I attest that this application has been reviewed by me and is accurate and complete to the best of my knowledge. I understand that, if all required parts of this application are not completed and that if all required supporting information and attachments are not included, this application package will be returned to me as incomplete. **Note:** In accordance with NC General Statutes 143-215.6A and 143-215.6B, any person who knowingly makes any false statement, representation, or certification in any application may be subject to civil penalties up to \$25,000 per violation. (18 U.S.C. Section 1001 provides a punishment by a fine of not more than \$10,000 or imprisonment of not more than 5 years, or both for a similar offense.)

Printed Name of Signing Official (Landowner, or if multiple Landowners all landowners should sign. If Landowner is a corporation, signature should be by a principal executive officer of the corporation):

Name: Timothy Lynn Smith Title: Owner

Signature: Timothy Lynn Smith Date: 2-28-12

Name: \_\_\_\_\_ Title: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

THE COMPLETED APPLICATION SHOULD BE SENT TO THE FOLLOWING ADDRESS:

**NCDENR – DWQ Animal Feeding Operations Unit**  
**1636 Mail Service Center**  
**Raleigh, North Carolina 27699-1636**  
**Telephone Number: (919) 807-6300**  
**Fax Number: (919) 807-6354**



North Carolina Department of Environment and Natural Resources

Division of Water Quality

Coleen H. Sullins

Director

Beverly Eaves Perdue  
Governor

Dee Freeman  
Secretary

October 1, 2009

Timothy L Smith  
Lynn & Annette Smith Farm  
2430 NC 111 Hwy N  
Pink Hill, NC 28572

Subject: Certificate of Coverage No. AWS310656  
Lynn & Annette Smith Farm  
Swine Waste Collection, Treatment,  
Storage and Application System  
Duplin County

Dear Timothy L Smith:

In accordance with your renewal request, we are hereby forwarding to you this Certificate of Coverage (COC) issued to Timothy L Smith, authorizing the operation of the subject animal waste management system in accordance with General Permit AWG100000.

This approval shall consist of the operation of this system including, but not limited to, the management and land application of animal waste as specified in the facility's Certified Animal Waste Management Plan (CAWMP) for the Lynn & Annette Smith Farm, located in Duplin County, with a swine animal capacity of no greater than the following annual averages:

Wean to Finish:	Feeder to Finish: <b>3672</b> ✓	Boar/Stud:
Wean to Feeder:	Farrow to Wean:	Gilts:
Farrow to Finish:	Farrow to Feeder:	Other:

If this is a Farrow to Wean or Farrow to Feeder operation, there may be one boar for each 15 sows. Where boars are unnecessary, they may be replaced by an equivalent number of sows. Any of the sows may be replaced by gilts at a rate of 4 gilts for every 3 sows.

The COC shall be effective from the date of issuance until September 30, 2014, and shall hereby void Certificate of Coverage Number AWS310656 that was previously issued to this facility. Pursuant to this COC, you are authorized and required to operate the system in conformity with the conditions and limitations as specified in the General Permit, the facility's CAWMP, and this COC. An adequate system for collecting and maintaining the required monitoring data and operational information must be established for this facility. Any increase in waste production greater than the certified design capacity or increase in number of animals authorized by this COC (as provided above) will require a modification to the CAWMP and this COC and must be completed prior to actual increase in either wastewater flow or number of animals.

Please carefully read this COC and the enclosed State General Permit. Please pay careful attention to the record keeping and monitoring conditions in this permit. Record keeping forms are unchanged with this General Permit. Please continue to use the same record keeping forms.

Existing COC

If your Waste Utilization Plan (WUP) has been developed based on site-specific information, careful evaluation of future samples is necessary. Should your records show that the current WUP is inaccurate you will need to have a new WUP developed.

The issuance of this COC does not excuse the Permittee from the obligation to comply with all applicable laws, rules, standards, and ordinances (local, state, and federal), nor does issuance of a COC to operate under this permit convey any property rights in either real or personal property.

Per 15A NCAC 2T .0105(h) a compliance boundary is provided for the facility and no new water supply wells shall be constructed within the compliance boundary. Per NRCS standards a 100-foot separation shall be maintained between water supply wells and any lagoon, storage pond, or any wetted area of a spray field.

Please be advised that any violation of the terms and conditions specified in this COC, the General Permit or the CAWMP may result in the revocation of this COC, or penalties in accordance with NCGS 143-215.6A through 143-215.6C including civil penalties, criminal penalties, and injunctive relief.

If you wish to continue the activity permitted under the General Permit after the expiration date of the General Permit, then an application for renewal must be filed at least 180 days prior to expiration.

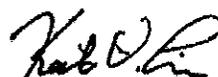
This COC is not automatically transferable. A name/ownership change application must be submitted to the Division prior to a name change or change in ownership.

If any parts, requirements, or limitations contained in this COC are unacceptable, you have the right to apply for an individual permit by contacting the Animal Feeding Operations Unit for information on this process. Unless such a request is made within 30 days, this COC shall be final and binding.

In accordance with Condition II.22 of the General Permit, waste application shall cease within four (4) hours of the time that the National Weather Service issues a Hurricane Warning, Tropical Storm Warning, or a Flood Watch associated with a tropical system for the county in which the facility is located. You may find detailed watch/warning information for your county by calling the Newport/Morehead City, NC National Weather Service office at (252) 223-5737, or by visiting their website at: [www.erh.noaa.gov/er/mhx/](http://www.erh.noaa.gov/er/mhx/)

This facility is located in a county covered by our Wilmington Regional Office. The Regional Office Aquifer Protection Staff may be reached at (910) 796-7215. If you need additional information concerning this COC or the General Permit, please contact the Animal Feeding Operations Unit staff at (919) 733-3221.

Sincerely,



for Coleen H. Sullins

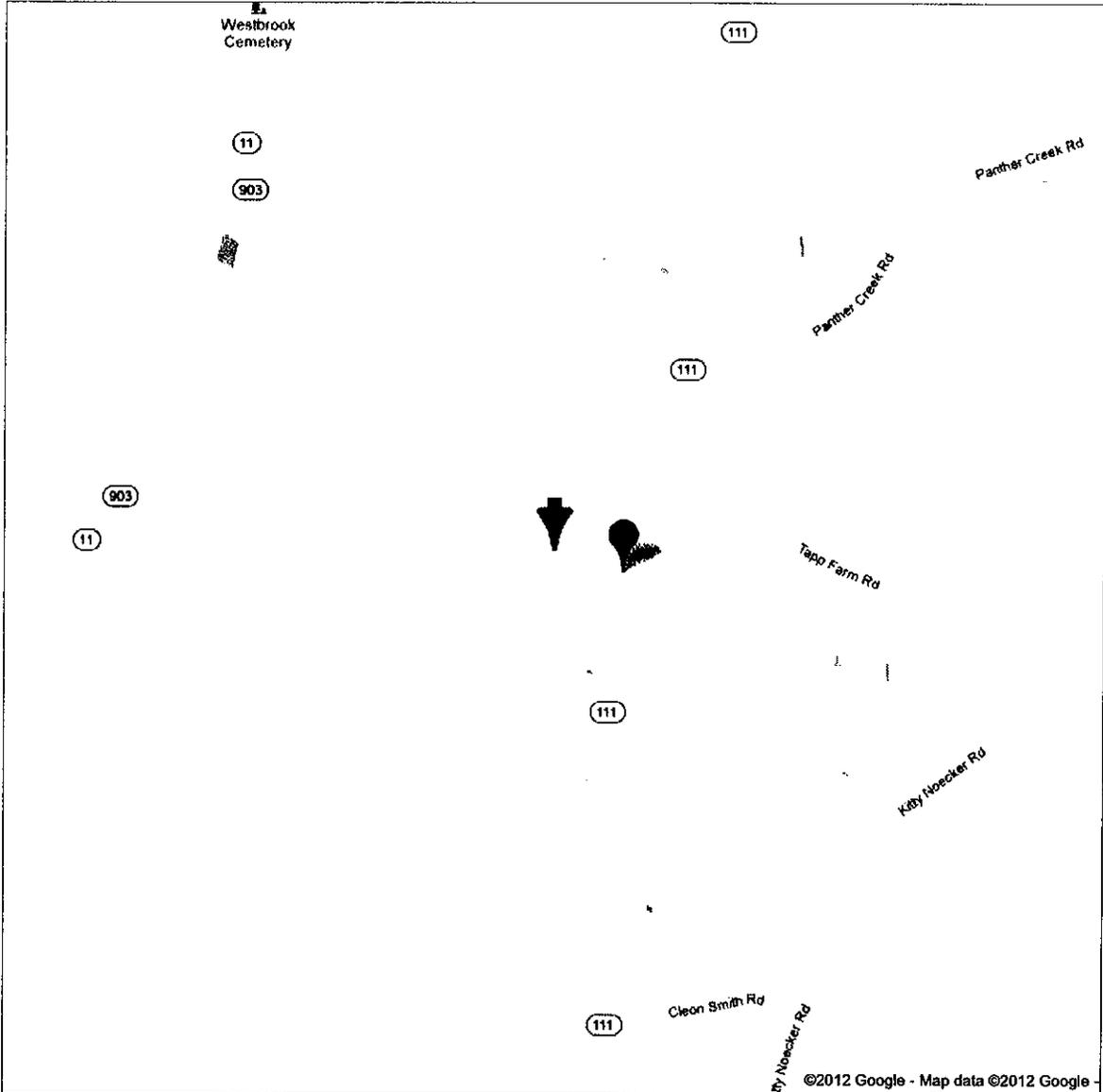
Enclosure (General Permit AWG100000)

cc: (Certificate of Coverage only for all ccs)  
Wilmington Regional Office, Aquifer Protection Section  
Duplin County Health Department  
Duplin County Soil and Water Conservation District  
APS Central Files (Permit No. AWS310656)  
AFO Notebooks  
Coharie Farms



Address **Unnamed Rd**  
**Pink Hill, NC 28572**

**Get Google Maps on your phone**  
Text the word "GMAPS" to 466453



OCT 01 2012

Nutrient Management Plan For Animal Waste Utilization

Aquifer Protection Section

08-30-2012

This plan has been prepared for:

Lynn Smith Farm  
Timothy Lynn Smith  
2430 N NC hwy 111  
Pink Hill, NC 28572

This plan has been developed by:

Johnny Lanier  
Hygro Inc  
441 Cabin St  
Pink Hill, NC 28572  
1910-298-5426

*Johnny Lanier*

Developer Signature

Type of Plan: Nitrogen Only with Manure Only

Owner/Manager/Producer Agreement

I (we) understand and agree to the specifications and the operation and maintenance procedures established in this nutrient management plan which includes an animal waste utilization plan for the farm named above. I have read and understand the Required Specifications concerning animal waste management that are included with this plan.

*Lynn Smith*  
Signature (owner)

8-30-2012  
Date

\_\_\_\_\_  
Signature (manager or producer)

\_\_\_\_\_  
Date

This plan meets the minimum standards and specifications of the U.S. Department of Agriculture - Natural Resources Conservation Service or the standard of practices adopted by the Soil and Water Conservation Commission.

Plan Approved By: *Angie B. Quinn*  
Technical Specialist Signature

8/30/2012  
Date

**Nutrients applied in accordance with this plan will be supplied from the following source(s):**

Commercial Fertilizer is not included in this plan.

S7	Swine Feeder-Finish Lagoon Liquid waste generated 3,403,944 gals/year by a 3,672 animal Swine Finishing Lagoon Liquid operation. This production facility has waste storage capacities of approximately 180 days.				
Estimated Pounds of Plant Available Nitrogen Generated per Year					
Broadcast	7840				
Incorporated	13464				
Injected	14828				
Irrigated	8522				
	Max. Avail. PAN (lbs) *	Actual PAN Applied (lbs)	PAN Surplus/ Deficit (lbs)	Actual Volume Applied (Gallons)	Volume Surplus/ Deficit (Gallons)
Year 1	8,522	9459	-937	3,778,322	-374,378
Year 2	8,522	9892	-1,370	3,951,321	-547,377

Note: In source ID, S means standard source, U means user defined source.

\* Max. Available PAN is calculated on the basis of the actual application method(s) identified in the plan for this source.

The table shown below provides a summary of the crops or rotations included in this plan for each field. Realistic Yield estimates are also provided for each crop in the plan. In addition, the Leaching Index for each field is shown, where available.

### Planned Crops Summary

Tract	Field	Total Acres	Useable Acres	Leaching Index (LI)	Soil Series	Crop Sequence	RYE
5134	p1a	3.89	3.89	N/A	NoA	Corn, Grain	N/A
						Wheat, Grain	N/A
						Soybeans, Manured, Double Crop	N/A
5134	p1b	4.00	4.00	N/A	Norfolk	Corn, Grain	115 bu.
						Wheat, Grain	60 bu.
						Soybeans, Manured, Double Crop	35 bu.
5134	p2	3.09	3.09	N/A	Norfolk	Corn, Grain	115 bu.
						Wheat, Grain	60 bu.
						Soybeans, Manured, Double Crop	35 bu.
5134	p3	2.42	2.42	N/A	Norfolk	Corn, Grain	115 bu.
						Wheat, Grain	60 bu.
						Soybeans, Manured, Double Crop	35 bu.
71502	p5a	3.22	3.22	N/A	Norfolk	Hybrid Bermudagrass Hay	6.5 Tons
						Small Grain Overseed	1.0 Tons
71502	p5b	5.01	5.01	N/A	Norfolk	Hybrid Bermudagrass Hay	6.5 Tons
						Small Grain Overseed	1.0 Tons
71502	p5c	4.73	4.73	N/A	Norfolk	Hybrid Bermudagrass Hay	6.5 Tons
						Small Grain Overseed	1.0 Tons
71502	p5d	5.07	5.07	N/A	Norfolk	Hybrid Bermudagrass Hay	6.5 Tons
						Small Grain Overseed	1.0 Tons
71502	p6	5.03	5.03	N/A	Norfolk	Corn, Grain	115 bu.
						Wheat, Grain	60 bu.
						Soybeans, Manured, Double Crop	35 bu.

PLAN TOTALS: 36.46 36.46

<i>LI</i>	<i>Potential Leaching</i>	<i>Technical Guidance</i>
< 2	Low potential to contribute to soluble nutrient leaching below the root zone.	None
$\geq 2$ & $\leq 10$	Moderate potential to contribute to soluble nutrient leaching below the root zone.	Nutrient Management (590) should be planned.
> 10	High potential to contribute to soluble nutrient leaching below the root zone.	Nutrient Management (590) should be planned. Other conservation practices that improve the soils available water holding capacity and improve nutrient use efficiency should be considered. Examples are Cover Crops (340) to scavenge nutrients, Sod-Based Rotations (328), Long-Term No-Till (778), and edge-of-field practices such as Filter Strips (393) and Riparian Forest Buffers (391).

The Waste Utilization table shown below summarizes the waste utilization plan for this operation. This plan provides an estimate of the number of acres of cropland needed to use the nutrients being produced. The plan requires consideration of the realistic yields of the crops to be grown, their nutrient requirements and proper timing of applications to maximize nutrient uptake.

This table provides an estimate of the amount of nitrogen required by the crop being grown and an estimate of the nitrogen amount being supplied by manure other by-products, commercial fertilizer and residual from previous crops. An estimate of the quantity of solid and liquid waste that will be applied on each field order to supply the indicated quantity of nitrogen from each source is also included. A balance of the total manure produced and the total manure applied is included in the table to ensure that the plan adequately provides for the utilization of the manure generated by the operation.

Tract		Field	Source ID	Soil Series	Total Acres	Use. Acres	Crop	Applic. Period	Nitrogen PA Nutrient Req'd (lbs/A)	Comm. Fert. Nutrient Applied (lbs/A)	Res. (lbs/A)	Applic. Method	Manure PA Nutrient Applied (lbs/A)	Liquid Manure Applied (acre)	Solid Manure Applied (acre)	Liquid Manure Applied (Field)	Solid Manure Applied (Field)
									N	N	N		N	1000 gal/A	Tons	1000 gals	tons
5134	p1a	S7	NoA		3.89	3.89	Corn, Grain	N/A	*131	0	20	Irrig.	111	44.34	0.00	172.48	0
5134	p1a	S7	NoA		3.89	3.89	Wheat, Grain	N/A	*125	0	0	Irrig.	64	25.46	0.00	99.06	0
5134	p1b	S7	Norfolk		4.00	4.00	Corn, Grain	115 bu.	131	0	20	Irrig.	111	44.34	0.00	177.35	0
5134	p1b	S7	Norfolk		4.00	4.00	Wheat, Grain	60 bu.	125	0	0	Irrig.	64	25.46	0.00	101.86	0
5134	p2	S7	Norfolk		3.09	3.09	Corn, Grain	115 bu.	131	0	20	Irrig.	111	44.34	0.00	137.00	0
5134	p2	S7	Norfolk		3.09	3.09	Wheat, Grain	60 bu.	125	0	0	Irrig.	64	25.46	0.00	78.68	0
5134	p3	S7	Norfolk		2.42	2.42	Corn, Grain	115 bu.	131	0	20	Irrig.	111	44.34	0.00	107.30	0
5134	p3	S7	Norfolk		2.42	2.42	Wheat, Grain	60 bu.	125	0	0	Irrig.	64	25.46	0.00	61.62	0
71502	p5a	S7	Norfolk		3.22	3.22	Hybrid Bermudagrass Hay	6.5 Tons	296	0	0	Irrig.	296	118.24	0.00	380.72	0
71502	p5a	S7	Norfolk		3.22	3.22	Small Grain Overseed	1.0 Tons	50	0	0	Irrig.	50	19.97	0.00	64.31	0
71502	p5b	S7	Norfolk		5.01	5.01	Hybrid Bermudagrass Hay	6.5 Tons	296	0	0	Irrig.	296	118.24	0.00	592.36	0
71502	p5b	S7	Norfolk		5.01	5.01	Small Grain Overseed	1.0 Tons	50	0	0	Irrig.	50	19.97	0.00	100.06	0
71502	p5c	S7	Norfolk		4.73	4.73	Hybrid Bermudagrass Hay	6.5 Tons	296	0	0	Irrig.	296	118.24	0.00	559.25	0
71502	p5c	S7	Norfolk		4.73	4.73	Small Grain Overseed	1.0 Tons	50	0	0	Irrig.	50	19.97	0.00	94.47	0
71502	p5d	S7	Norfolk		5.07	5.07	Hybrid Bermudagrass Hay	6.5 Tons	296	0	0	Irrig.	296	118.24	0.00	599.45	0
71502	p5d	S7	Norfolk		5.07	5.07	Small Grain Overseed	1.0 Tons	50	0	0	Irrig.	50	19.97	0.00	101.26	0

Waste Utilization Table

Year 1

Tract	Field	Source ID	Soil Series	Total Acres	Use. Acres	Crop	Applic. Period	Nitrogen PA Nutrient Req'd (lbs/A)	Comm. Fert. Nutrient Applied (lbs/A)	Res. (lbs/A)	Applic. Method	Manure PA Nutrient Applied (lbs/A)	Liquid Manure Applied (acre)	Solid Manure Applied (acre)	Liquid Manure Applied (Field)	Solid Manure Applied (Field)
71502	p6	S7	Norfolk	5.03	5.03	Com, Grain	2/15-6/30	131	0	20	Irrig.	111	44.34	0.00	223.02	0
71502	p6	S7	Norfolk	5.03	5.03	Wheat, Grain	9/1-4/30	125	0	0	Irrig.	64	25.46	0.00	128.09	0
Total Applied, 1000 gallons													3,778.32			
Total Produced, 1000 gallons													3,403.94			
Balance, 1000 gallons													-374.38			
Total Applied, tons														0		
Total Produced, tons														0		
Balance, tons														0		

Notes: 1. In the tract column, ~ symbol means leased, otherwise, owned. 2. Symbol \* means user entered data.

Waste Utilization Table

Year 2

Tract	Field	Source ID	Soil Series	Total Acres	Use. Acres	Crop	Applic. Period	Nitrogen PA Nutrient Req'd (lbs/A)		Comm. Fert. Nutrient Applied (lbs/A)		Res. (lbs/A)	Applic. Method	Manure PA Nutrient Applied (lbs/A)	Liquid Manure Applied (acre)	Solid Manure Applied (acre)	Liquid Manure Applied (Field)	Solid Manure Applied (Field)
								N	N	N	N							
5134	p1a	S7	NoA	3.89	3.89	Wheat, Grain	9/1-4/30	*125	0	0	0	0	Irrig.	61	24.47	0.00	95.17	0.
5134	p1a	S7	NoA	3.89	3.89	Soybeans, Manured, Double Crop	4/1-9/15	*137	0	0	0	0	Irrig.	137	54.72	0.00	212.87	0.
5134	p1b	S7	Norfolk	4.00	4.00	Wheat, Grain	9/1-4/30	125	0	0	0	0	Irrig.	61	24.47	0.00	97.86	0.
5134	p1b	S7	Norfolk	4.00	4.00	Soybeans, Manured, Double Crop	4/1-9/15	137	0	0	0	0	Irrig.	137	54.72	0.00	218.89	0.
5134	p2	S7	Norfolk	3.09	3.09	Wheat, Grain	9/1-4/30	125	0	0	0	0	Irrig.	61	24.47	0.00	75.60	0.
5134	p2	S7	Norfolk	3.09	3.09	Soybeans, Manured, Double Crop	4/1-9/15	137	0	0	0	0	Irrig.	137	54.72	0.00	169.10	0.
5134	p3	S7	Norfolk	2.42	2.42	Wheat, Grain	9/1-4/30	125	0	0	0	0	Irrig.	61	24.47	0.00	59.21	0.
5134	p3	S7	Norfolk	2.42	2.42	Soybeans, Manured, Double Crop	4/1-9/15	137	0	0	0	0	Irrig.	137	54.72	0.00	132.43	0.
71502	p5a	S7	Norfolk	3.22	3.22	Hybrid Bermudagrass Hay	*3/1-10/31	296	0	0	0	0	Irrig.	296	118.24	0.00	380.72	0.
71502	p5a	S7	Norfolk	3.22	3.22	Small Grain Overseed	10/1-3/31	50	0	0	0	0	Irrig.	50	19.97	0.00	64.31	0.
71502	p5b	S7	Norfolk	5.01	5.01	Hybrid Bermudagrass Hay	*3/1-10/31	296	0	0	0	0	Irrig.	296	118.24	0.00	592.36	0.
71502	p5b	S7	Norfolk	5.01	5.01	Small Grain Overseed	10/1-3/31	50	0	0	0	0	Irrig.	50	19.97	0.00	100.06	0.
71502	p5c	S7	Norfolk	4.73	4.73	Hybrid Bermudagrass Hay	*3/1-10/31	296	0	0	0	0	Irrig.	296	118.24	0.00	559.25	0.
71502	p5c	S7	Norfolk	4.73	4.73	Small Grain Overseed	10/1-3/31	50	0	0	0	0	Irrig.	50	19.97	0.00	94.47	0.
71502	p5d	S7	Norfolk	5.07	5.07	Hybrid Bermudagrass Hay	*3/1-10/31	296	0	0	0	0	Irrig.	296	118.24	0.00	599.45	0.
71502	p5d	S7	Norfolk	5.07	5.07	Small Grain Overseed	10/1-3/31	50	0	0	0	0	Irrig.	50	19.97	0.00	101.26	0.
71502	p6	S7	Norfolk	5.03	5.03	Wheat, Grain	9/1-4/30	125	0	0	0	0	Irrig.	61	24.47	0.00	123.06	0.
71502	p6	S7	Norfolk	5.03	5.03	Soybeans, Manured, Double Crop	4/1-9/15	137	0	0	0	0	Irrig.	137	54.72	0.00	275.26	0.

Waste Utilization Table

Year 2

Tract	Field	Source ID	Soil Series	Total Acres	Use Acres	Crop	Applic. Period	Nitrogen PA Nutrient Req'd (lbs/A)	Comm. Fert. Nutrient Applied (lbs/A)	Res. (lbs/A)	Applic. Method	Manure PA Nutrient Applied (lbs/A)	Liquid Manure Applied (acre)	Solid Manure Applied (acre)	Liquid Manure Applied (Field)	Solid Manure Applied (Field)
Total Applied, 1000 gallons																
Total Produced, 1000 gallons																
Balance, 1000 gallons																
Total Applied, tons																
Total Produced, tons																
Balance, tons																

Notes: 1. In the tract column, ~ symbol means leased, otherwise, owned. 2. Symbol \* means user entered data.

The Irrigation Application Factors for each field in this plan are shown in the following table. Infiltration rate varies with soils. If applying waste nutrients through an irrigation system, you must apply at a rate that will not result in runoff. This table provides the maximum application rate per hour that may be applied to each field selected to receive wastewater. It also lists the maximum application amount that each field may receive in any one application event.

### Irrigation Application Factors

Tract	Field	Soil Series	Application Rate (inches/hour)	Application Amount (inches)
5134	p1a, p1b	Norfolk	0.50	1.0
5134	p2	Norfolk	0.50	1.0
5134	p3	Norfolk	0.50	1.0
71502	p5a	Norfolk	0.50	1.0
71502	p5b	Norfolk	0.50	1.0
71502	p5c	Norfolk	0.50	1.0
71502	p5d	Norfolk	0.50	1.0
71502	p6	Norfolk	0.50	1.0

The following Lagoon Sludge Nitrogen Utilization table provides an estimate of the number of acres needed for sludge utilization for the indicated accumulation period. These estimates are based on average nitrogen concentrations for each source, the number of animals in the facility and the plant available nitrogen application rates shown in the second column.

Lagoon sludge contains nutrients and organic matter remaining after treatment and application of the effluent. At clean out, this material must be utilized for crop production and applied at agronomic rates. In most cases, the priority nutrient is nitrogen but other nutrients including phosphorous, copper and zinc can also be limiting. Since nutrient levels are generally very high, application of sludge must be carefully applied.

Sites must first be evaluated for their suitability for sludge application. Ideally, effluent spray fields should not be used for sludge application. If this is not possible, care should be taken not to load effluent application fields with high amounts of copper and zinc so that additional effluent cannot be applied. On sites vulnerable to surface water moving to streams and lakes, phosphorous is a concern. Soils containing very high phosphorous levels may also be a concern.

Lagoon Sludge Nitrogen Utilization Table

Crop	Maximum PA-N Rate lb/ac	Maximum Sludge Application Rate 1000 gal/ac	Minimum Acres 5 Years Accumulation	Minimum Acres 10 Years Accumulation	Minimum Acres 15 Years Accumulation
<b>Swine Feeder-Finish Lagoon Sludge - Standard</b>					
Corn 120 bu	150	13.16	46.03	92.07	138.10
Hay 6 ton R.Y.E.	300	26.32	23.02	46.03	69.05
Soybean 40 bu	160	14.04	43.16	86.31	129.47

The Available Waste Storage Capacity table provides an estimate of the number of days of storage capacity available at the end of each month of the plan. Available storage capacity is calculated as the design storage capacity in days minus the number of days of net storage volume accumulated. The start date is a value entered by the user and is defined as the date prior to applying nutrients to the first crop in the plan at which storage volume in the lagoon or holding pond is equal to zero.

Available storage capacity should be greater than or equal to zero and less than or equal to the design storage capacity of the facility. If the available storage capacity is greater than the design storage capacity, this indicates that the plan calls for the application of nutrients that have not yet accumulated. If available storage capacity is negative, the estimated volume of accumulated waste exceeds the design storage volume of the structure. Either of these situations indicates that the planned application interval in the waste utilization plan is inconsistent with the structure's temporary storage capacity.

#### Available Waste Storage Capacity

Source Name	Swine Feeder-Finish Lagoon Liquid		Design Storage Capacity (Days)
Start Date	9/1		180
Plan Year	Month	Available Storage Capacity (Days) *	
1	1	35	
1	2	31	
1	3	52	
1	4	67	
1	5	83	
1	6	100	
1	7	99	
1	8	98	
1	9	108	
1	10	124	
1	11	113	
1	12	100	
2	1	88	
2	2	78	
2	3	93	
2	4	121	
2	5	138	
2	6	156	
2	7	173	
2	8	180	
2	9	180	
2	10	180	
2	11	157	
2	12	132	

\* Available Storage Capacity is calculated as of the end of each month.

## **Required Specifications For Animal Waste Management**

- 1. Animal waste shall not reach surface waters of the state by runoff, drift, manmade conveyances, direct application, or direct discharge during operation or land application. Any discharge of waste that reaches surface water is prohibited.**
- 2. There must be documentation in the design folder that the producer either owns or has an agreement for use of adequate land on which to properly apply the waste. If the producer does not own adequate land to properly dispose of the waste, he/she shall provide evidence of an agreement with a landowner, who is within a reasonable proximity, allowing him/her the use of the land for waste application. It is the responsibility of the owner of the waste production facility to secure an update of the Nutrient Management Plan when there is a change in the operation, increase in the number of animals, method of application, receiving crop type, or available land.**
- 3. Animal waste shall be applied to meet, but not exceed, the nitrogen needs for realistic crop yields based upon soil type, available moisture, historical data, climatic conditions, and level of management, unless there are regulations that restrict the rate of applications for other nutrients.**
- 4. Animal waste shall be applied to land eroding less than 5 tons per acre per year. Waste may be applied to land eroding at more than 5 tons per acre per year but less than 10 tons per acre per year provided grass filter strips are installed where runoff leaves the field (see USDA, NRCS Field Office Technical Guide Standard 393 - Filter Strips).**
- 5. Odors can be reduced by injecting the waste or by disking after waste application. Waste should not be applied when there is danger of drift from the land application field.**
- 6. When animal waste is to be applied on acres subject to flooding, waste will be soil incorporated on conventionally tilled cropland. When waste is applied to conservation tilled crops or grassland, the waste may be broadcast provided the application does not occur during a season prone to flooding (see "Weather and Climate in North Carolina" for guidance).**

- 7. Liquid waste shall be applied at rates not to exceed the soil infiltration rate such that runoff does not occur offsite or to surface waters and in a method which does not cause drift from the site during application. No ponding should occur in order to control odor and flies.**
- 8. Animal waste shall not be applied to saturated soils, during rainfall events, or when the soil surface is frozen.**
- 9. Animal waste shall be applied on actively growing crops in such a manner that the crop is not covered with waste to a depth that would inhibit growth. The potential for salt damage from animal waste should also be considered.**
- 10. Nutrients from waste shall not be applied in fall or winter for spring planted crops on soils with a high potential for leaching. Waste/nutrient loading rates on these soils should be held to a minimum and a suitable winter cover crop planted to take up released nutrients. Waste shall not be applied more than 30 days prior to planting of the crop or forages breaking dormancy.**
- 11. Any new swine facility sited on or after October 1, 1995 shall comply with the following: The outer perimeter of the land area onto which waste is applied from a lagoon that is a component of a swine farm shall be at least 50 feet from any residential property boundary and canal. Animal waste, other than swine waste from facilities sited on or after October 1, 1995, shall not be applied closer than 25 feet to perennial waters.**
- 12. Animal waste shall not be applied closer than 100 feet to wells.**
- 13. Animal waste shall not be applied closer than 200 feet of dwellings other than those owned by the landowner.**
- 14. Waste shall be applied in a manner not to reach other property and public right-of-ways.**

- 15. Animal waste shall not be discharged into surface waters, drainageways, or wetlands by a discharge or by over-spraying. Animal waste may be applied to prior converted cropland provided the fields have been approved as a land application site by a "technical specialist". Animal waste shall not be applied on grassed waterways that discharge directly into water courses, and on other grassed waterways, waste shall be applied at agronomic rates in a manner that causes no runoff or drift from the site.**
- 16. Domestic and industrial waste from washdown facilities, showers, toilets, sinks, etc., shall not be discharged into the animal waste management system.**
- 17. A protective cover of appropriate vegetation will be established on all disturbed areas (lagoon embankments, berms, pipe runs, etc.). Areas shall be fenced, as necessary, to protect the vegetation. Vegetation such as trees, shrubs, and other woody species, etc., are limited to areas where considered appropriate. Lagoon areas should be kept mowed and accessible. Berms and structures should be inspected regularly for evidence of erosion, leakage, or discharge.**
- 18. If animal production at the facility is to be suspended or terminated, the owner is responsible for obtaining and implementing a "closure plan" which will eliminate the possibility of an illegal discharge, pollution, and erosion.**
- 19. Waste handling structures, piping, pumps, reels, etc., should be inspected on a regular basis to prevent breakdowns, leaks, and spills. A regular maintenance checklist should be kept on site.**
- 20. Animal waste can be used in a rotation that includes vegetables and other crops for direct human consumption. However, if animal waste is used on crops for direct human consumption, it should only be applied pre-plant with no further applications of animal waste during the crop season.**
- 21. Highly visible markers shall be installed to mark the top and bottom elevations of the temporary storage (pumping volume) of all waste treatment lagoons. Pumping shall be managed to maintain the liquid level between the markers. A marker will be required to mark the maximum storage volume for waste storage ponds.**

- 22. Waste shall be tested within 60 days of utilization and soil shall be tested at least annually at crop sites where waste products are applied. Nitrogen shall be the rate-determining nutrient, unless other restrictions require waste to be applied based on other nutrients, resulting in a lower application rate than a nitrogen based rate. Zinc and copper levels in the soils shall be monitored and alternative crop sites shall be used when these metals approach excessive levels. pH shall be adjusted and maintained for optimum crop production. Soil and waste analysis records shall be kept for a minimum of five years. Poultry dry waste application records shall be maintained for a minimum of three years. Waste application records for all other waste shall be maintained for five (5) years.**
- 23. Dead animals will be disposed of in a manner that meets North Carolina regulations.**

## Crop Notes

The following crop note applies to field(s): p1b, p2, p3, p6

Corn: CP, Mineral Soil, medium leaching

In the Coastal Plain, corn is normally planted when soil temperatures reach 52 to 55 degrees fahrenheit. Review the Official Variety "green book" and information from private companies to select a high yielding variety with the characteristics needed for your area and conditions. Plant 1-2" deep. Plant populations should be determined by the hybrid being planted. Increase the seeding rate by 10% when planting no-till. Phosphorus and potassium recommended by a soil test can be broadcast or banded at planting. When planting early in cool, wet soil, banded phosphorus will be more available to the young plants. An accepted practice is to apply 20-30 lbs/acre N and 20-30 lbs/acre phosphorus banded as a starter and one-half the remaining N behind the planter. The rest of the N should be applied about 30-40 days after emergence. The total amount of N is dependent on soil type. When including a starter in the fertilizer program, the recommended potassium and any additional phosphorus is normally broadcast at planting. Plant samples can be analyzed during the growing season to monitor the overall nutrient status of the corn. Timely management of weeds and insects are essential for corn production.

The following crop note applies to field(s): p5a, p5b, p5c, p5d

Bermudagrass Coastal Plain, Mineral Soil, Moderately Well Drained.

Adaptation: Well-adapted.

In the Coastal Plain, hybrid bermudagrass sprigs can be planted Mar. 1 to Mar. 31. Cover sprigs 1" to 3" deep (1.5" optimal). Sprigs should be planted quickly after digging and not allowed to dry in sun and wind. For Coastal and Tifton 78 plant at least 10 bu/ac in 3' rows, spaced 2' to 3' in the row. Generally a rate of 30 bu/ac is satisfactory to produce full groundcover in one or two years under good growing conditions. Tifton 44 spreads slowly, so use at least 40 bu/ac in 1.5' to 2' rows spaced 1' to 1.5' in row. For broadcast/disked-in sprigs use about 60 bu/ac. Soil test for the amounts of lime, phosphorus, potassium and micronutrients to apply preplant and for annual maintenance. Apply 60 to 100 lb/ac N in the establishment year in split applications in April and July. For established stands apply 180 to 240 lb/ac N annually in split applications, usually in April and following the first and second hay cuts. Reduce N rates by 25% for grazing. Refer to NCSU Technical Bulletin 305 Production and Utilization of Pastures and Forages in North Carolina for more information or consult your regional agronomist or extension agent for assistance.

The following crop note applies to field(s): p5a, p5b, p5c, p5d

Small Grain: CP, Mineral Soil, medium leachable

In the Coastal Plain, oats and barley should be planted from October 15-October 30; and rye from October 15-November 20. For barley, plant 22 seed/drill row foot and increase the seeding rate by 5% for each week seeding is delayed beyond the optimum time. See the seeding rates table for applicable seeding rate modifications in the current NCSU "Small Grain Production Guide". Also, increase the initial seeding rate by at least 10% when planting no-till. Oats should be planted at 2 bushels/acre and rye at 1-1 1/2 bushels/acre. Plant all these small grains at 1-1 1/2" deep. Adequate depth control is essential. Review the NCSU Official Variety "green book" and information from private companies to select a high yielding variety with the characteristics needed for your area and conditions. Apply no more than 30 lbs/acre N at planting. Phosphorus and potash recommended by a soil test can also be applied at this time. The remaining N should be applied during the months of February-March.

The following crop note applies to field(s): p1b, p2, p3, p6

Wheat: Coastal Plain, Mineral Soil, medium leachable

In the Coastal Plain, wheat should be planted from October 20-November 25. Plant 22 seed/drill row foot at 1-1 1/2" deep and increase the seeding rate by 5% for each week seeding is delayed beyond the optimum time. See the seeding rates table for applicable seeding rate modifications in the current NCSU "Small Grain Production Guide". Also, increase the initial seeding rate by at least 10% when planting no-till. Adequate depth control when planting the wheat is essential. Review the NCSU Official Variety "green book" and information from private companies to select a high yielding variety with the characteristics needed for your area and conditions. Apply no more than 30 lbs/acre N at planting. Phosphorus and potash recommended by a soil test report can also be applied at this time. The remaining N should be applied during the months of February-March. The total N is dependent on the soil type. Plant samples can be analyzed during the growing season to monitor the nutrient status of the wheat. Timely management of diseases, insects and weeds are essential for profitable wheat production.

The following crop note applies to field(s): p1b, p2, p3, p6

Double-Crop Soybeans, Coastal Plain: Mineral soil, medium leachable

Double-crop soybeans should be planted as early in June as possible with planting completed by July 4th. When no-tilling soybeans in small grain straw, it is essential to manage the straw to achieve adequate plant populations. Review the NCSU Official Variety "green book" and information from private companies to select a high yielding variety with the characteristics needed for your area and conditions. Plant 2-4 seed/row foot for 7-8" drills; 4-6 seed/row foot for 15" rows; 6-8 seed/row foot for 30" rows and 8-10 seed/row foot for 36" rows. Increase the seeding rate by at least 10% for no-till planting. Seeding depth should be 1-1 1/2" and adequate depth control is essential. Phosphorus and potash recommended for the soybeans can be applied to the wheat in the Fall. Soybeans produce their own nitrogen and are normally grown without additions of nitrogen. However, applications of 20-30 lbs/acre N are sometimes made at planting to promote early growth and vigor. Tissue samples can be analyzed during the growing season to monitor the overall nutrient status of the soybeans. Timely management of weeds and insects is essential for profitable double crop soybean production.

Timothy Ryan Smith

2430 W NE Hwy 111

Pink Hill, NC. 28572

Facility # 31-656

5.03 ac. p1a

3.50 ac. p1b

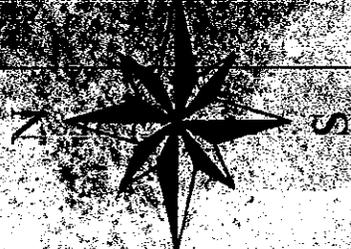
3.21 ac. p5a

5.01 ac. p5b

4.73 ac. p5c

5.07 ac. p5d

T 71502



T-5134  
H, I

INPUTS

Calendar Year: 2006  
 County: Duplin  
 Producer Identifier: Dennis Smith Farm, Lynn Smith, 31-656  
 Tract Number: 5134  
 Field Number: P1A, P1B  
 Soil Series: NOB: Norfolk loamy sand, 2 to 6 percent slopes  
 Crop: Corn (Grain) : Conventional Tillage  
 BMPs: Vegetative Buffer Width = 10 ft.  
 Fertilizers: Swine-Lagoon liquid  
                     Yearly Applied Amount: 1.57 ac in  
                     Lb P2O5: 53.4 lb  
                     Application Method: All other surface

applications

Soil Loss: 4.89 t/ac/yr  
 Receiving Slope Distance 0-9 ft  
 Soil Test 0" - 8" 199  
     WV\_Factor (DATABASE) 1.4  
 Hydrologic Condition: GOOD

OUTPUTS

PARTICULATE P	=	8
SOLUBLE P	=	12
LEACHATE P	=	0
SOURCE P	=	4
<hr/>		
TOTAL P RATING	=	24 (LOW) ✓

T-5134

INPUTS

Calendar Year: 2006  
 County: Duplin  
 Producer Identifier: Dennis Smith Farm, Lynn Smith, 31-656  
 Tract Number: 5134  
 Field Number: P2  
 Soil Series: NoB: Norfolk loamy sand, 2 to 6 percent slopes  
 Crop: Corn (Grain) : Conventional Tillage  
 BMPs: Vegetative Buffer Width = 10 ft.  
 Fertilizers: Swine-Lagoon liquid  
                     Yearly Applied Amount: 1.57 ac in  
                     Lb P205: 53.4 lb  
                     Application Method: All other surface

applications

Soil Loss: 4.89 t/ac/yr  
 Receiving Slope Distance 0-9 ft  
 Soil Test 0" - 8" 329  
     WV Factor (DATABASE) 1.4  
 Soil Test 28" - 32" 0  
     WV Factor (DATABASE) 1.4  
 Hydrologic Condition: GOOD

OUTPUTS

PARTICULATE P = 13  
 SOLUBLE P = 20  
 LEACHATE P = 0  
 SOURCE P = 4  


---

 TOTAL P RATING = 37 (MEDIUM) ✓

T-5134

M

INPUTS

Calendar Year: 2006  
 County: Duplin  
 Producer Identifier: Dennis Smith Farm, Lynn Smith, 31-656  
 Tract Number: 5134  
 Field Number: P3  
 Soil Series: NoB: Norfolk loamy sand, 2 to 6 percent slopes  
 Crop: Corn (Grain) : Conventional Tillage  
 BMPs: Vegetative Buffer Width = 10 ft.  
 Fertilizers: Swine-Lagoon liquid  
                     Yearly Applied Amount: 1.57 ac in  
                     Lb P205: 53.4 lb  
                     Application Method: All other surface

applications

Soil Loss: 4.89 t/ac/yr  
 Receiving Slope Distance 0-9 ft  
 Soil Test 0" - 8" 299  
     WV\_Factor (DATABASE) 1.4  
 Soil Test 28" - 32" 0  
     WV\_Factor (DATABASE) 1.4  
 Hydrologic Condition: GOOD

OUTPUTS

PARTICULATE P	=	12
SOLUBLE P	=	18
LEACHATE P	=	0
SOURCE P	=	4
<hr/>		
TOTAL P RATING	=	34 (MEDIUM) ✓

T-71502  
5A

INPUTS

Calendar Year: 2006  
 County: Duplin  
 Producer Identifier: Dennis Smith Farm, Lynn Smith, 31-656  
 Tract Number: 71502  
 Field Number: 5A  
 Soil Series: NoB: Norfolk loamy sand, 2 to 6 percent slopes  
 Crop: Hybrid Bermudagrass (Hay) :  
 BMPs: Vegetative Buffer Width = 10 ft.  
 Fertilizers: Swine-Lagoon liquid  
                     Yearly Applied Amount: 1.57 ac in  
                     Lb P2O5: 53.4 lb  
                     Application Method: All other surface

applications

Soil Loss: .3 t/ac/yr  
 Receiving Slope Distance 0-9 ft  
 Soil Test 0" - 4" 149  
     WV\_Factor (DATABASE) 1.4  
 Hydrologic Condition: GOOD

OUTPUTS

PARTICULATE P	=	0
SOLUBLE P	=	1
LEACHATE P	=	0
SOURCE P	=	0
<hr/>		
TOTAL P RATING	=	1 (LOW) ✓

T-71502

5B

INPUTS

Calendar Year: 2006  
 County: Duplin  
 Producer Identifier: Dennis Smith Farm, Lynn Smith, 31-656  
 Tract Number: 71502  
 Field Number: 5B  
 Soil Series: NOB: Norfolk loamy sand, 2 to 6 percent slopes  
 Crop: Hybrid Bermudagrass (Hay) :  
 BMPs: Vegetative Buffer Width = 10 ft.  
 Fertilizers: Swine-Lagoon liquid  
                     Yearly Applied Amount: 1.57 ac in  
                     Lb P2O5: 53.4 lb  
                     Application Method: All other surface

applications

Soil Loss: .3 t/ac/yr  
 Receiving Slope Distance 0-9 ft  
 Soil Test 0" - 4" 240  
     WV Factor (DATABASE) 1.4  
 Soil Test 28" - 32" 0  
     WV Factor (DATABASE) 1.4  
 Hydrologic Condition: GOOD

OUTPUTS

PARTICULATE P = 1  
 SOLUBLE P = 1  
 LEACHATE P = 0  
 SOURCE P = 0  


---

 TOTAL P RATING = 2 (LOW) ✓

T-71502  
5-C

INPUTS

Calendar Year: 2006  
 County: Duplin  
 Producer Identifier: Dennis Smith Farm, Lynn Smith, 31-656  
 Tract Number: 71502  
 Field Number: 5C  
 Soil Series: NoB: Norfolk loamy sand, 2 to 6 percent slopes  
 Crop: Hybrid Bermudagrass (Hay) :  
 BMPs: Vegetative Buffer Width = 10 ft.  
 Fertilizers: Swine-Lagoon liquid  
                     Yearly Applied Amount: 1.57 ac in  
                     Lb P2O5: 53.4 lb  
                     Application Method: All other surface

applications  
 Soil Loss: .3 t/ac/yr  
 Receiving Slope Distance 0-9 ft  
 Soil Test 0" - 4" 156  
     WV Factor (DATABASE) 1.4  
 Hydrologic Condition: GOOD

OUTPUTS

PARTICULATE P	=	0
SOLUBLE P	=	1
LEACHATE P	=	0
SOURCE P	=	0
<hr/>		
TOTAL P RATING	=	1 (LOW) ✓

T-71502  
5D

INPUTS

Calendar Year: 2006  
 County: Duplin  
 Producer Identifier: Dennis Smith Farm, Lynn Smith, 31-656  
 Tract Number: 71502  
 Field Number: 5D  
 Soil Series: NoB: Norfolk loamy sand, 2 to 6 percent slopes  
 Crop: Corn (Grain) : Conventional Tillage  
 BMPs: Vegetative Buffer Width = 10 ft.  
 Fertilizers: Swine-Lagoon liquid  
                   Yearly Applied Amount: 1.57 ac in  
                   Lb P2O5: 53.4 lb  
                   Application Method: All other surface

applications  
 Soil Loss: 4.89 t/ac/yr  
 Receiving Slope Distance 0-9 ft  
 Soil Test 0" - 8" 317  
   WV Factor (DATABASE) 1.4  
 Soil Test 28" - 32" 0  
   WV Factor (DATABASE) 1.4  
 Hydrologic Condition: GOOD

OUTPUTS

PARTICULATE P = 12  
 SOLUBLE P = 19  
 LEACHATE P = 0  
 SOURCE P = 4  
 -----  
 TOTAL P RATING = 35 (MEDIUM) ✓

PLAT Results For: Duplin 2/8/2006 2:14:15 PM

T-71502  
5E-F  
(P6)

INPUTS

Calendar Year: 2006  
 County: Duplin  
 Producer Identifier: Dennis Smith Farm, Lynn Smith, 31-656  
 Tract Number: 71502  
 Field Number: 5E, 5F (P6)  
 Soil Series: NoB: Norfolk loamy sand, 2 to 6 percent slopes  
 Crop: Corn (Grain) : Conventional Tillage  
 BMPs: Vegetative Buffer Width = 10 ft.  
 Fertilizers: Swine-Lagoon liquid  
                     Yearly Applied Amount: 1.57 ac in  
                     Lb P2O5: 53.4 lb  
                     Application Method: All other surface

applications  
 Soil Loss: 4.89 t/ac/yr  
 Receiving Slope Distance 0-9 ft  
 Soil Test 0" - 8" 156  
     WV Factor (DATABASE) 1.4  
 Hydrologic Condition: GOOD

OUTPUTS

PARTICULATE P = 7  
 SOLUBLE P = 9  
 LEACHATE P = 0  
 SOURCE P = 4

---

TOTAL P RATING = 20 (LOW) ✓

Operator:=====>Dennis Smith  
 County:=====>Duplin  
 Date:=====>03/04/94  
 Dist. to nearest residence(other than owner): 1000 ft.  
 sows (farrow to finish):=====>  
 (farrow to feeder):=====>  
 (finishing only):=====> 2448  
 sows (farrow to wean):=====>  
 head (wean to feeder):=====>  
 Ave. Live Weight for other operations(lbs.):>  
 Storage volume for sludge accum. (cu. ft.):=>  
 Treatment Volume (min. 1 cu. ft./lb.):=====> 1.0  
 25 Year - 24 Hour Rainfall (in.):=====> 7.5  
 Rainfall in excess of evaporation (in.)=====> 7.0  
 Drainage area of buildings & lots (sq. ft.):>  
 Volume of wash water (gallons/day)=====>  
 Temporary storage period (days):=====> 180  
 Freeboard (ft.):=====> 1  
 Side slopes (inside lagoon):=====> 2.5 : 1  
 Inside top length (ft.):=====> 158.5  
 Inside top width (ft.):=====> 400  
 Top of dike elevation (ft.):=====> 50  
 Bottom of lagoon elevation (ft.):=====> 38  
 Seasonal high water table(SHWT) elev.(ft.):=>  
 Total required volume:=====> 487794 cu. ft.  
 Actual design volume:=====>512127.92 cu. ft. ✓  
 Stop pumping el. (> or = to 0.0 ft SHWT> ft.

Date:=====>03/04/94  
 Dist. to nearest residence(other than owner): 1000 ft.  
 sows (farrow to finish):=====>  
 sows (farrow to feeder):=====>  
 (finishing only):=====> 1224  
 (farrow to wean):=====>  
 head (wean to feeder):=====>  
 Ave. Live Weight for other operations(lbs.):>  
 Storage volume for sludge accum. (cu. ft.):=>  
 Treatment Volume (min. 1 cu. ft./lb.):=====> 1.0  
 25 Year - 24 Hour Rainfall (in.):=====> 7.5  
 Rainfall in excess of evaporation (in.):=====> 7.0  
 Drainage area of buildings & lots (sq. ft.):>  
 Volume of wash water (gallons/day)=====>  
 Temporary storage period (days):=====> 180  
 Freeboard (ft.):=====> 1  
 Side slopes (inside lagoon):=====> 2.5 : 1  
 Inside top length (ft.):=====> 316  
 Inside top width (ft.):=====> 155  
 Top of dike elevation (ft.):=====> 50  
 Bottom of lagoon elevation (ft.):=====> 38  
 Seasonal high water table(SHWT) elev.(ft.):=>  
 Total required volume:=====> 264777 cu. ft.  
 Actual design volume:=====>384789.17 cu. ft. ✓  
 Stop pumping el. (> or = to 0.0 ft SHWT> ft.

## OPERATION & MAINTENANCE PLAN ✓

Proper lagoon liquid management should be a year-round priority. It is especially important to manage levels so that you do not have problems during extended rainy and wet periods.

Maximum storage capacity should be available in the lagoon for periods when the receiving crop is dormant (such as wintertime for bermudagrass) or when there are extended rainy spells such as the thunderstorm season in the summertime. This means that at the first signs of plant growth in the later winter/early spring, irrigation according to a farm waste management plan should be done whenever the land is dry enough to receive lagoon liquid. This will make storage space available in the lagoon for future wet periods. In the late summer/early fall the lagoon should be pumped down to the low marker (see Figure 2-1) to allow for winter storage. Every effort should be made to *maintain* the lagoon close to the minimum liquid level as long as the weather and waste utilization plan will allow it.

Waiting until the lagoon has reached its maximum storage capacity before starting to irrigate does not leave room for storing excess water during extended wet periods. Overflow from the lagoon for any reason except a 25-year, 24-hour storm is a violation of state law and subject to penalty action.

The routine maintenance of a lagoon involves the following:

- Maintenance of a vegetative cover for the dam.  
Fescue or common bermudagrass are the most common vegetative covers. The vegetation should be fertilized each year, if needed, to maintain a vigorous stand. The amount of fertilizer applied should be based on a soils test, but in the event that it is not practical to obtain a soils test each year, the lagoon embankment and surrounding areas should be fertilized with 800 pounds per acre of 10-10-10, or equivalent.
- Brush and trees on the embankment must be controlled. This may be done by mowing, spraying, grazing, chopping, or a combination of these practices. This should be done at least once a year and possibly twice in years that weather conditions are favorable for heavy vegetative growth.

NOTE: If vegetation is controlled by spraying, the herbicide must not be allowed to enter the lagoon water. Such chemicals could harm the bacteria in the lagoon that are treating the waste.

Maintenance inspections of the entire lagoon should be made during the initial filling of the lagoon and at least monthly and after major rainfall and storm events. Items to be checked should include, as a minimum, the following:

- Waste Inlet Pipes, Recycling Pipes, and Overflow Pipes---look for:
  1. separation of joints
  2. cracks or breaks
  3. accumulation of salts or minerals
  4. overall condition of pipes

- . Lagoon surface---look for:
  1. undesirable vegetative growth
  2. floating or lodged debris
  
- . Embankment---look for:
  1. settlement, cracking, or "jug" holes
  2. side slope stability---slumps or bulges
  3. wet or damp areas on the back slope
  4. erosion due to lack of vegetation or as a result of wave action
  5. rodent damage

Larger lagoons may be subject to liner damage due to wave action caused by strong winds. These waves can erode the lagoon sidewalls, thereby weakening the lagoon dam. A good stand of vegetation will reduce the potential damage caused by wave action. If wave action causes serious damage to a lagoon sidewall, baffles in the lagoon may be used to reduce the wave impacts.

Any of these features could lead to erosion and weakening of the dam. If your lagoon has any of these features, you should call an appropriate expert familiar with design and construction of waste lagoons. You may need to provide a temporary fix if there is a threat of a waste discharge. However, a permanent solution should be reviewed by the technical expert. Any digging into a lagoon dam with heavy equipment is a serious undertaking with potentially serious consequences and should not be conducted unless recommended by an appropriate technical expert.

- . Transfer Pumps---check for proper operation of:
  1. recycling pumps
  2. irrigation pumps

Check for leaks, loose fittings, and overall pump operation. An unusually loud or grinding noise, or a large amount of vibration, may indicate that the pump is in need of repair or replacement.

NOTE: Pumping systems should be inspected and operated frequently enough so that you are not completely "surprised" by equipment failure. You should perform your pumping system maintenance at a time when your lagoon is at its low level. This will allow some safety time should major repairs be required. Having a nearly full lagoon is not the time to think about switching, repairing, or borrowing pumps. Probably, if your lagoon is full, your neighbor's lagoon is full also. You should consider maintaining an inventory of spare parts or pumps.

- . Surface water diversion features are designed to carry *all* surface drainage waters (such as rainfall runoff, roof drainage, gutter outlets, and parking lot runoff) away from your lagoon and other waste treatment or storage structures. The only water that should be coming from your lagoon is that which comes from your flushing (washing) system pipes and the rainfall that hits the lagoon directly. You should inspect your diversion system for the following:
  1. adequate vegetation
  2. diversion capacity
  3. ridge berm height

Identified problems should be corrected promptly. It is advisable to inspect your system during or immediately following a heavy rain. If technical assistance is needed to determine proper solutions, consult with appropriate experts.

You should record the level of the lagoon just prior to when rain is predicted, and then record the level again 4 to 6 hours after the rain (assumes there is no pumping). This will give you an idea of how much your lagoon level will rise with a certain rainfall amount (you must also be recording your rainfall for this to work). Knowing this should help in planning irrigation applications and storage. If your lagoon rises excessively, you may have an inflow problem from a surface water diversion or there may be seepage into the lagoon from the surrounding land.

## **Lagoon Operation**

### **Startup:**

1. Immediately after construction establish a complete sod cover on bare soil surfaces to avoid erosion.
2. Fill new lagoon design treatment volume at least half full of water before waste loading begins, taking care not to erode lining or bank slopes.
3. Drainpipes into the lagoon should have a flexible pipe extender on the end of the pipe to discharge near the bottom of the lagoon during initial filling or another means of slowing the incoming water to avoid erosion of the lining.
4. When possible, begin loading new lagoons in the spring to maximize bacterial establishment (due to warmer weather).
5. It is recommended that a new lagoon be seeded with sludge from a healthy working swine lagoon in the amount of 0.25 percent of the full lagoon liquid volume. This seeding should occur at least two weeks prior to the addition of wastewater.
6. Maintain a periodic check on the lagoon liquid pH. If the pH falls below 7.0, add agricultural lime at the rate of 1 pound per 1000 cubic feet of lagoon liquid volume until the pH rises above 7.0. Optimum lagoon liquid pH is between 7.5 and 8.0.
7. A dark color, lack of bubbling, and excessive odor signals inadequate biological activity. Consultation with a technical specialist is recommended if these conditions occur for prolonged periods, especially during the warm season.

### **Loading:**

The more frequently and regularly that wastewater is added to a lagoon, the better the lagoon will function. Flush systems that wash waste into the lagoon several times daily are optimum for treatment. Pit recharge systems, in which one or more buildings are drained and recharged each day, also work well.

- Practice water conservation---minimize building water usage and spillage from leaking waterers, broken pipes and washdown through proper maintenance and water conservation.
- Minimize feed wastage and spillage by keeping feeders adjusted. This will reduce the amount of solids entering the lagoon

### Management:

- Maintain lagoon liquid level between the permanent storage level and the full temporary storage level.
- Place visible markers or stakes on the lagoon bank to show the minimum liquid level and the maximum liquid level (Figure 2-1).
- Start irrigating at the earliest possible date in the spring based on nutrient requirements and soil moisture so that temporary storage will be maximized for the summer thunderstorm season. Similarly, irrigate in the late summer/early fall to provide maximum lagoon storage for the winter.
- The lagoon liquid level *should never* be closer than 1 foot to the lowest point of the dam or embankment.
- Do not pump the lagoon liquid level lower than the permanent storage level unless you are removing sludge.
- Locate float pump intakes approximately 18 inches underneath the liquid surface and as far away from the drainpipe inlets as possible.
- Prevent additions of bedding materials, long-stemmed forage or vegetation, molded feed, plastic syringes, or other foreign materials into the lagoon.
- Frequently remove solids from catch basins at end of confinement houses or wherever they are installed.
- Maintain strict vegetation, rodent, and varmint control near lagoon edges.
- Do not allow trees or large bushes to grow on lagoon dam or embankment.
- Remove sludge from the lagoon either when the sludge storage capacity is full or before it fills 50 percent of the permanent storage volume.
- If animal production is to be terminated, the owner is responsible for obtaining and implementing a closure plan to eliminate the possibility of a pollutant discharge.

### Sludge Removal:

Rate of lagoon sludge buildup can be reduced by:

- . proper lagoon sizing,
- . mechanical solids separation of flushed waste,
- . gravity settling of flushed waste solids in an appropriately designed basin, or
- . minimizing feed wastage and spillage.

Lagoon sludge that is removed annually rather than stored long term will:

- . have more nutrients,
- . have more odor, and
- . require more land to properly use the nutrients.

Removal techniques:

- . Hire a custom applicator.
- . Mix the sludge and lagoon liquid with a chopper-agitator impeller pump through large-bore sprinkler irrigation system onto nearby cropland; and soil incorporate.
- . Dewater the upper part of lagoon by irrigation onto nearby cropland or forageland; mix remaining sludge; pump into liquid sludge applicator; haul and spread onto cropland or forageland; and soil incorporate.
- . Dewater the upper part of lagoon by irrigation onto nearby cropland or forageland; dredge sludge from lagoon with dragline or sludge barge; berm an area beside lagoon to receive the sludge so that liquids can drain back into lagoon; allow sludge to dewater; haul and spread with manure spreader onto cropland or forageland; and soil incorporate.

Regardless of the method, you must have the sludge material analyzed for waste constituents just as you would your lagoon water. The sludge will contain different nutrient and metal values from the liquid. The application of the sludge to fields will be limited by these nutrients as well as any previous waste applications to that field and crop requirement. Waste application rates will be discussed in detail in Chapter 3.

When removing sludge, you must also pay attention to the liner to prevent damage. Close attention by the pumper or drag-line operator will ensure that the lagoon liner remains intact. If you see soil material or the synthetic liner material being disturbed, you should stop the activity immediately and not resume until you are sure that the sludge can be removed without liner injury. If the liner is damaged it must be repaired as soon as possible.

Sludge removed from the lagoon has a much higher phosphorus and heavy metal content than liquid. Because of this it should probably be applied to land with low phosphorus and metal levels, as indicated by a soil test, and incorporated to reduce the chance of erosion. Note that if the sludge is applied to fields with very high soil-test phosphores, it should be applied only at rates equal to the crop removal of phosphorus. As with other wastes, always have your lagoon sludge analyzed for its nutrient value.

The application of sludge will increase the amount of odor at the waste application site. Extra precaution should be used to observe the wind direction and other conditions which could increase the concern of neighbors.

## Possible Causes of Lagoon Failure

Lagoon failures result in the unplanned discharge of wastewater from the structure. Types of failures include leakage through the bottom or sides, overtopping, and breach of the dam. Assuming proper design and construction, the owner has the responsibility for ensuring structure safety. Items which may lead to lagoon failures include:

- . Modification of the lagoon structure---an example is the placement of a pipe in the dam without proper design and construction. (Consult an expert in lagoon design before placing any pipes in dams.)
- . Lagoon liquid levels---high levels are a safety risk.
- . Failure to inspect and maintain the dam.
- . Excess surface water flowing into the lagoon.
- . Liner integrity---protect from inlet pipe scouring, damage during sludge removal, or rupture from lowering lagoon liquid level below groundwater table.

NOTE: If lagoon water is allowed to overtop the dam, the moving water will soon cause gullies to form in the dam. Once this damage starts, it can quickly cause a large discharge of wastewater and possible dam failure.

# EMERGENCY ACTION PLAN

This plan will be implemented in the event that animal manure or lagoon effluent from your operation is leaking, overflowing, or running off the site:

**Step (1)** Stop the release or flow of manure/effluent.

**Step (2)** Assess the extent of the spill and note any obvious damages.

**Step (3)** Contact appropriate personnel and agencies.

Murphy Family Farms: 800-311-9458 or 910-289-6439 (See Land & Nutrient Management phone list attached.)

Department of Environmental Management (DEM) Regional Office:

(910) 395-3900

DEM after hours emergency: 919-733-3942

Local Emergency Management System: 919-734-0961 (910-296-2160)

Local Natural Resource Conservation Service: 910-296-2126

Local Cooperative Extension Service: 910-296-2143

Local Soil and Water Conservation District: 910-296-2120

Local dirt-moving/heavy equipment companies:

	Name	Phone #
1.	DEANIS & ANTHONY SMITH	919-568-4780
2.	A.G. Ridenbeck	910-285-5901
3.	Tim Nobles	910-298-3293

Local contract pumping/irrigation equipment companies:

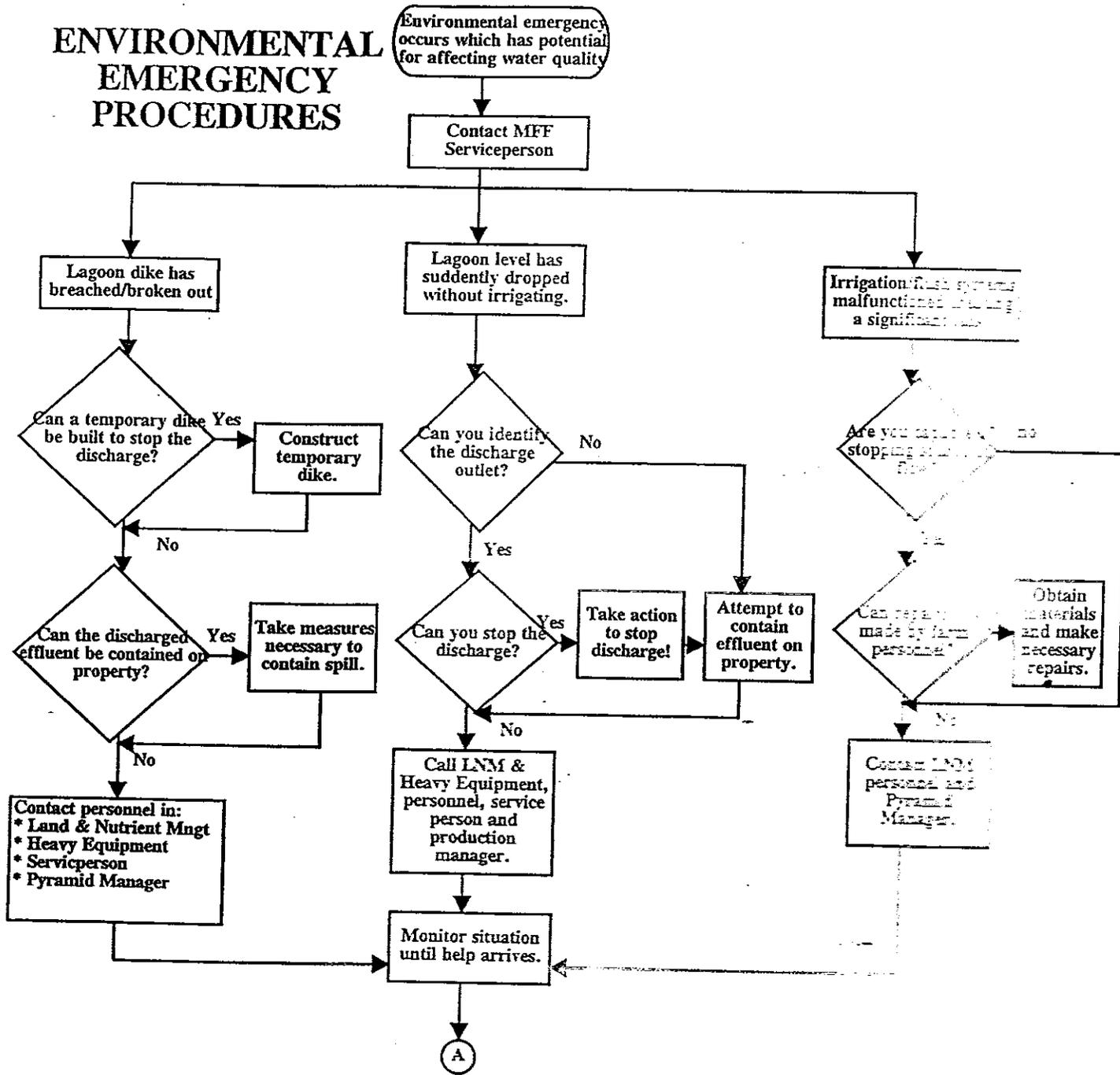
	Name	Phone #
1.	JEFF & W.T. DAVIS	919-568-4337
2.	ANTHONY SMITH	919-568-4780
3.	Murphy Family Farms	910-289-2111

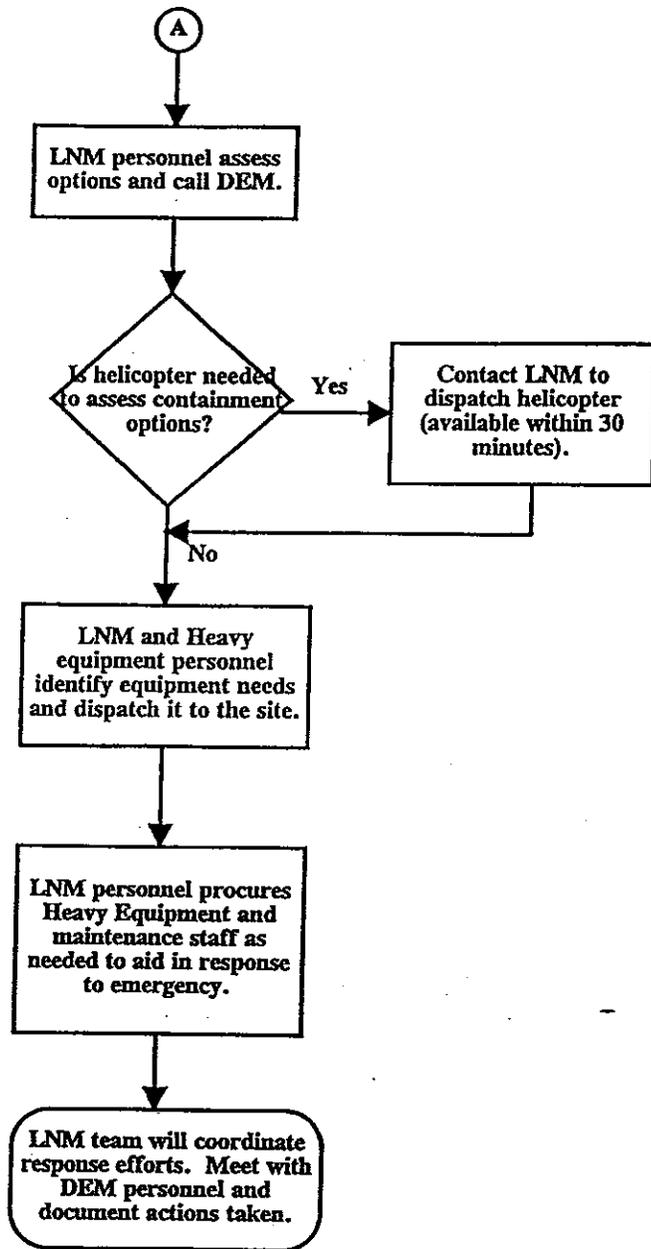
**Step (4)** Implement procedures as advised by MFF, DEM, and technical assistance agencies to rectify the damage, repair the system, and reassess the nutrient management plan to prevent future problems.

Note 1: See MFF Environmental Emergency Procedures Flowchart attached.

Note 2: See pages 89-91 of the Certification Training Manual for more details.

# ENVIRONMENTAL EMERGENCY PROCEDURES





## Insect Control Checklist for Animal Operations

Source	Cause	BMPs to Control Insects	Site Specific Practices
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### Liquid Systems

<p>Flush gutters</p> <ul style="list-style-type: none"> <li>• Accumulation of solids</li> </ul>	<p><input checked="" type="checkbox"/> Flush system is designed and operated sufficiently to remove accumulated solids from gutters as designed</p> <p><input checked="" type="checkbox"/> Remove bridging of accumulated solids at discharge</p>		
<p>Lagoons and pits</p> <ul style="list-style-type: none"> <li>• Crusted solids</li> </ul>	<p><input checked="" type="checkbox"/> Maintain lagoons, settling basins and pits where pest breeding is apparent to minimize the crusting of solids to a depth of no more than 6 to 8 inches over more than 30 percent of surface</p>		
<p>Excessive vegetative growth</p> <ul style="list-style-type: none"> <li>• Decaying vegetation</li> </ul>	<p><input checked="" type="checkbox"/> Maintain vegetative control along banks of lagoons and other impoundments to prevent accumulation of decaying vegetative matter along water's edge on impoundment's perimeter.</p>		

### Dry Systems

<p>Feeders</p> <ul style="list-style-type: none"> <li>• Feed spillage</li> </ul>	<p><input type="checkbox"/> Design, operate, and maintain feed systems (e.g., bunkers and troughs) to minimize the accumulation of decaying wastage</p> <p><input checked="" type="checkbox"/> Clean up spillage on a routine basis (e.g., 7- to 10-day interval during summer; 15- to 30-day interval during winter)</p>		
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## Insect Control Checklist for Animal Operations

Source	Cause	BMPs to Control Insects	Site Specific Practices
Feed storage	<ul style="list-style-type: none"> <li>• Accumulations of feed residues</li> </ul>	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Reduce moisture accumulation within and around immediate perimeter of feed storage areas by ensuring drainage is away from site and/or providing adequate containment (e.g., covered bin for brewer's grain and similar high moisture grain products)</li> </ul>	
Animal holding areas	<ul style="list-style-type: none"> <li>• Accumulations of animal wastes and feed wastage</li> </ul>	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Inspect for and remove or break up accumulated solids in filter strips around feed storage as needed</li> <li><input checked="" type="checkbox"/> Eliminate low areas that trap moisture along fences and other locations where waste accumulates and disturbance by animals is minimal</li> <li><input checked="" type="checkbox"/> Maintain fence rows and filter strips around animal holding areas to minimize accumulations of wastes (i.e., inspect for and remove or break up accumulated solids as needed)</li> </ul>	
Dry manure handling systems	<ul style="list-style-type: none"> <li>• Accumulations of animal wastes</li> </ul>	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Remove spillage on a routine basis (e.g., 7- to 10-day interval during summer; 15- to 30-day interval during winter) where manure is loaded for land application or disposal</li> <li><input checked="" type="checkbox"/> Provide for adequate drainage around manure stockpiles</li> <li><input checked="" type="checkbox"/> Inspect for and remove or break up accumulated wastes in filter strips around stockpiles and manure handling areas as needed</li> </ul>	

**For more information contact:**  
 Cooperative Extension Service, Department of Entomology, Box 7613, North Carolina State University, Raleigh, NC 27695-7613.

## Swine Farm Waste Management Odor Control Checklist

Source	Cause	BMPs to Minimize Odor	Site Specific Practices
Flush alleys	<ul style="list-style-type: none"> <li>• Agitation during wastewater conveyance</li> </ul>	<input checked="" type="checkbox"/> Underfloor flush with underfloor ventilation	
Pit recharge points	<ul style="list-style-type: none"> <li>• Agitation of recycled lagoon liquid while pits are filling</li> </ul>	<input checked="" type="checkbox"/> Extend recharge lines to near bottom of pits with anti-siphon vents	
Lift stations	<ul style="list-style-type: none"> <li>• Agitation during sump tank filling and drawdown</li> </ul>	<input checked="" type="checkbox"/> Sump tank covers	
Outside drain collection or junction boxes	<ul style="list-style-type: none"> <li>• Agitation during wastewater conveyance</li> </ul>	<input checked="" type="checkbox"/> Box covers	
End of drainpipes at lagoon	<ul style="list-style-type: none"> <li>• Agitation during wastewater conveyance</li> </ul>	<input checked="" type="checkbox"/> Extend discharge point of pipes underneath lagoon liquid level	
Lagoon surfaces	<ul style="list-style-type: none"> <li>• Volatile gas emissions</li> <li>• Biological mixing</li> <li>• Agitation</li> </ul>	<input checked="" type="checkbox"/> Proper lagoon liquid capacity <input checked="" type="checkbox"/> Correct lagoon startup procedures <input checked="" type="checkbox"/> Minimum surface area-to-volume ratio <input checked="" type="checkbox"/> Minimum agitation when pumping <input checked="" type="checkbox"/> Mechanical aeration <input type="checkbox"/> Proven biological additives	
Irrigation sprinkler nozzles	<ul style="list-style-type: none"> <li>• High pressure agitation</li> <li>• Wind drift</li> </ul>	<input checked="" type="checkbox"/> Irrigate on dry days with little or no wind <input checked="" type="checkbox"/> Minimum recommended operating pressure <input checked="" type="checkbox"/> Pump intake near lagoon liquid surface <input type="checkbox"/> Pump from second-stage lagoon	

# Swine Farm Waste Management Odor Control Checklist

Source	Cause	BMPs to Minimize Odor	Site Specific Practices
Farmstead	<ul style="list-style-type: none"> <li>• Swine production</li> </ul>	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Vegetative or wooded buffers</li> <li><input checked="" type="checkbox"/> Recommended best management practices</li> <li><input checked="" type="checkbox"/> Good judgment and common sense</li> <li><input checked="" type="checkbox"/> Dry floors</li> </ul>	
Animal body surfaces	<ul style="list-style-type: none"> <li>• Dirty manure-covered animals</li> </ul>		
Floor surfaces	<ul style="list-style-type: none"> <li>• Wet manure-covered floors</li> </ul>	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Slotted floors</li> <li><input checked="" type="checkbox"/> Waterers located over slotted floors</li> <li><input checked="" type="checkbox"/> Feeders at high end of solid floors</li> <li><input checked="" type="checkbox"/> Scrape manure buildup from floors</li> <li><input checked="" type="checkbox"/> Underfloor ventilation for drying</li> </ul>	
Manure collection pits	<ul style="list-style-type: none"> <li>• Urine</li> <li>• Partial microbial decomposition</li> </ul>	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Frequent manure removal by flush, pit recharge, or scrape</li> <li><input checked="" type="checkbox"/> Underfloor ventilation</li> </ul>	
Ventilation exhaust fans	<ul style="list-style-type: none"> <li>• Volatile gases</li> <li>• Dust</li> </ul>	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Fan maintenance</li> <li><input checked="" type="checkbox"/> Efficient air movement</li> </ul>	
Indoor surfaces	<ul style="list-style-type: none"> <li>• Dust</li> </ul>	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Washdown between groups of animals</li> <li><input type="checkbox"/> Feed additives</li> <li><input type="checkbox"/> Feeder covers</li> <li><input checked="" type="checkbox"/> Feed delivery downspout extenders to feeder covers</li> </ul>	
Flush tanks	<ul style="list-style-type: none"> <li>• Agitation of recycled lagoon liquid while tanks are filling</li> </ul>	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Flush tank covers</li> <li><input checked="" type="checkbox"/> Extend fill lines to near bottom of tanks with anti-siphon vents</li> </ul>	



## Swine Farm Waste Management Odor Control Checklist

Source	Cause	BMPs to Minimize Odor	Site Specific Practices
Storage tank or basin surface	• Partial microbial decomposition	<input type="checkbox"/> Bottom or midlevel loading	
	• Mixing while filling	<input checked="" type="checkbox"/> Tank covers	
	• Agitation when emptying	<input checked="" type="checkbox"/> Basin surface mats of solids <input checked="" type="checkbox"/> Proven biological additives or oxidants	
Settling basin surface	• Partial microbial decomposition	<input checked="" type="checkbox"/> Extend drainpipe outlets underneath liquid level	
	• Mixing while filling	<input type="checkbox"/> Remove settled solids regularly	
	• Agitation when emptying		
Manure, slurry, or sludge spreader outlets	• Agitation when spreading	<input type="checkbox"/> Soil injection of slurry/sludges	
	• Volatile gas emissions	<input checked="" type="checkbox"/> Wash residual manure from spreader after use <input type="checkbox"/> Proven biological additives or oxidants	
Uncovered manure, slurry, or sludge on field surfaces	• Volatile gas emissions while drying	<input checked="" type="checkbox"/> Soil injection of slurry/sludges <input checked="" type="checkbox"/> Soil incorporation within 48 hours	
		<input checked="" type="checkbox"/> Spread in thin uniform layers for rapid drying	
		<input type="checkbox"/> Proven biological additives or oxidants	
Dead animals	• Carcass decomposition	<input checked="" type="checkbox"/> Proper disposition of carcasses	
Dead animal disposal pits	• Carcass decomposition	<input checked="" type="checkbox"/> Complete covering of carcasses in burial pits <input checked="" type="checkbox"/> Proper location/construction of disposal pits	
		<input checked="" type="checkbox"/> Secondary stack burners	
Incinerators	• Incomplete combustion		
	• Improper drainage	<input checked="" type="checkbox"/> Grade and landscape such that water drains away from facilities	
	• Microbial decomposition of organic matter		

## Swine Farm Waste Management Odor Control Checklist

Source	Cause	Site Specific Practice
Manure tracked onto public roads from farm access	<input checked="" type="checkbox"/> Poorly maintained access roads <input type="checkbox"/> Farm access road maintenance	BMPs to Minimize Odor

**Additional Information:**

Swine Manure Management; .0200 Rule/BMP Packet

Swine Production Farm Potential Odor Sources and Remedies; EBAE Fact Sheet

Swine Production Facility Manure Management: Pit Recharge—Lagoon Treatment; EBAE 128-88

Swine Production Facility Manure Management: Underfloor Flush—Lagoon Treatment; EBAE 129-88

Lagoon Design and Management for Livestock Manure Treatment and Storage; EBAE 103-83

Calibration of Manure and Wastewater Application Equipment; EBAE Fact Sheet

Controlling Odors from Swine Buildings; PIH-33

Environmental Assurance Program; NPPC Manual

Options for Managing Odor; a report from the Swine Odor Task Force

Nuisance Concerns in Animal Manure Management: Odors and Flies; PRO107, 1995 Conference Proceedings

**Available From:**

NCSU, County Extension Center

NCSU—BAE

NCSU—BAE

NCSU—BAE

NCSU—BAE

NCSU—BAE

NCSU—Swine Extension

N.C. Pork Producers Assoc.

NCSU Agricultural Communi-

Florida Cooperative Extension

**Mortality Management Methods**  
(check which method(s) are being implemented)

- Burial three feet beneath the surface of the ground within 24 hours after knowledge of the death. The burial must be at least 300 feet from any flowing stream or public body of water.
- Rendering at a rendering plant licensed under G.S. 106-168.7
- Complete incineration
- In the case of dead poultry only, placing in a disposal pit of a size and design approved by the Department of Agriculture
- Any method which in the professional opinion of the State Veterinarian would make possible the salvage of part of a dead animal's value without endangering human or animal health. (Written approval of the State Veterinarian must be attached)

December 18, 1996