

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

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NOV 20 2017

Animal Waste Management Systems
Request for Certificate of Coverage
Facility Currently Covered by an Expiring NPDES General Permit
Water Quality
Regional Operations Section

On June 30, 2017, 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 verify all information and make any necessary corrections below.

Application must be signed and dated by the Permittee.

1. Facility Number: 310655 and Certificate of Coverage Number: NCA231655
2. Facility Name: Sloan Brothers
3. Landowner's name (same as on the Waste Management Plan): Troy Sloan
4. Landowner's mailing address: 1705 S NC 111
City/State: Chinquapin NC Zip: 28521
Telephone Number (include area code): (910)298-4023 E-mail: _____
5. Facility's physical address: 168 Arthur Sloan Rd
City: Chinquapin State: NC Zip: 28521
6. County where facility is located: Duplin
7. Farm Manager's name (If different than the Landowner): _____
8. Farm Manager's telephone number (include area code): _____
9. Integrator's name (if there is not an integrator write "None"): Murphy-Brown LLC
10. Operator in Charge (OIC) name: Troy Sloan
11. Lessee's name (if there is not a lessee write "None"): _____
12. Indicate animal operation type and number:

Swine

Wean to Finish
Wean to Feeder
Farrow to Finish
Feeder to Finish 2448
Farrow to Wean
Farrow to Feeder
Boar/Stud
Gilts
Other

Horses - Horses
Horses - Other

Cattle

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

Sheep - Sheep
Sheep - 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

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: Cory Sloan Title: Owner
Signature: Cory Sloan Date: 11-13-17
Name: Troy Sloan Title: Owner
Signature: Troy Sloan Date: 11-13-17

THE COMPLETED APPLICATION SHOULD BE SENT TO THE FOLLOWING ADDRESS:

NCDENR - DWR Animal Feeding Operations Program
1636 Mail Service Center
Raleigh, North Carolina 27699-1636

Telephone Number: (919) 707-9129
Fax Number: (919) 807-6480



North Carolina Department of Environment and Natural Resources

Division of Water Quality

Pat McCrory
Governor

Charles Wakild, P.E.

Director

John E. Skvarla, III
Secretary

May 1, 2013

Troy and Corey Sloan
Sloan Brothers Farm
168 Arthur Sloan Road
Chinquapin, NC 28521

Subject: Certificate of Coverage No. NCA231655
Sloan Brothers Farm
Animal Waste Management System
Duplin County

Dear Troy and Corey Sloan:

In accordance with your permit application received March 19, 2013, we are hereby forwarding to you this Certificate of Coverage (COC) issued to Troy and Corey Sloan, authorizing the operation of the subject animal waste management system in accordance with NPDES General Permit NCA200000.

This COC shall be effective from the date of issuance until June 30, 2017 and replaces the State COC (AWS310655) dated October 1, 2009.

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 Sloan Brothers Farm, located in Duplin County, with an animal capacity of no greater than the following swine annual averages:

Wean to Finish: 0
Wean to Feeder: 0
Farrow to Finish: 0

Feeder to Finish: 2448 ✓
Farrow to Wean: 0
Farrow to Feeder: 0

Boar/Stud: 0
Gilts: 0

If this is a Farrow to Wean or Farrow to Feeder operation, there may also 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

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 pay careful attention to the record keeping and monitoring conditions in this permit. The Animal Facility Annual Certification Form must be completed and returned to the Division of Water Quality by no later than March 1st of each year.

1636 Mail Service Center, Raleigh, North Carolina 27699-1636
Location: 512 N. Salisbury St. Raleigh, North Carolina 27604
Phone: 919-807-6464 \ FAX: 919-807-6492
Internet: www.ncwaterquality.org

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One
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Naturally

Existing COC

Your nutrient management plan has a field (Tract 744, Field No. 4) that is being cleared for land application and has not been evaluated for phosphorus status. A phosphorus-loss evaluation (PLAT) must be performed on this field prior to any application of waste. Please be reminded that upon completion of such evaluation, the CAWMP shall be updated to include the current risk ratings and a copy of the CAWMP be submitted to this Division for approval.

Upon abandonment or depopulation for a period of four years or more, the Permittee must submit documentation to the Division demonstrating that all current NRCS standards are met prior to restocking of the facility.

Per 15A NCAC 02T .0111(c), 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 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, the Clean Water Act and 40 CFR 122.41 including civil penalties, criminal penalties, and injunctive relief.

If any parts, requirements, or limitations contained in this COC are unacceptable, you have the right to apply for an individual NPDES Permit by contacting the staff member listed below 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 III.27 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/

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) 807-6464.

Sincerely,



for Charles Wakild, P.E.

Enclosures (General Permit NCA200000, Record Keeping and Reporting Package)

cc: (Certificate of Coverage only for all cc's)
Wilmington Regional Office, Aquifer Protection Section
Duplin County Health Department
Duplin County Soil and Water Conservation District
APS Central Files (Permit No. NCA231655)
AFO Notebooks
Murphy-Brown, LLC

Crower Copy

Nutrient Management Plan For Animal Waste Utilization

03-13-2013

This plan has been prepared for:

*Sloan Brothers
Troy & Corey Sloan Brothers
168 Arthur Sloan Rd*

*Chinquapin, NC 28521
910-298-4158*

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JAN - 5 2017

Water Quality Regional
Operations Section

This plan has been developed by:

*Billy W Houston
Duplin Soil & Water Conservation
165 Agriculture Dr
Suite B
Kenansville, NC 28349
910-296-2120*

Billy W Houston
Developer Signature

Type of Plan: Nutrient Management 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.

Troy Sloan
Signature (owner)

3-13-13
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: *Billy W Houston*
Technical Specialist Signature

3/13/13
Date

Narrative

Acres shown in the WUP for fields 1 thru 4 are for the maximum irrigatable acres, which includes buffer areas not wetted by traveling gun. These acres will be irrigated using a Honey Wagon. Sloan Brothers will be responsible for obtaining a lease agreement or purchasing required equipment[IE: Honey Wagon] for this WUP to be considered valid. An irrigation (wetted acres) design showing individual pulls on all available fields must be completed after clearing and establishing field number 4 (See Attached Aerial Map).

BASED ON AN IRRIGATION DESIGN(WETTED ACRES FOOTPRINT), AFTER COMPLETION OF LAND CLEARING, IF A MINIMUM OF 22.5 ACRES IS WETTED BY THE TRAVELER(Irrigation Gun), FROM ESTABLISHED HYDRANT LOCATIONS, THE ABOVE STATEMENT WILL BE NULL AND VOID

XX Field number four(4) will not be used for waste application until PLAT has been completed XX

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 2,269,296 gals/year by a 2,448 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	5227				
Incorporated	8976				
Injected	9885				
Irrigated	5681				
	Max. Avail. PAN (lbs) *	Actual PAN Applied (lbs)	PAN Surplus/ Deficit (lbs)	Actual Volume Applied (Gallons)	Volume Surplus/ Deficit (Gallons)
Year 1	5,681	6663	-982	2,661,536	-392,240

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, as well as the crop's P2O5 Removal Rate. The Leaching Index (LI) and the Phosphorous Loss Assessment Tool (PLAT) Rating are also provided for each field, where available.

If a field's PLAT Rating is High, any planned manure application is limited to the phosphorous removal rate of the harvested plant biomass for the crop rotation or multiple years in the crop sequence. Fields with a Very High PLAT Rating should receive no additional applications of manure. Regardless of the PLAT rating, starter fertilizers may be recommended in accordance with North Carolina State University guidelines or recommendations. The quantity of P2O5 applied to each crop is shown in the following table if the field's PLAT rating is High or Very High.

Planned Crops Summary

↓ updated PLAT

Tract	Field	Total Acres	Useable Acres	Plat Rating	LI	Soil Series	Crop Sequence	RYE	P2O5	
									Removal (lbs/acre)	Applied (lbs/acre)
7400	1	5.38	5.38	Low	N/A	Foreston	Small Grain Overseed	1.0 Tons	15	N/A
				Med			Hybrid Bermudagrass Pasture	6.0 Tons	7	N/A
7400	2	7.24	7.24	Low	N/A	Foreston	Small Grain Overseed	1.0 Tons	15	N/A
				Med			Hybrid Bermudagrass Pasture	6.0 Tons	7	N/A
7400	3	4.93	4.93	Low	N/A	Noboco	Small Grain Overseed	1.0 Tons	15	N/A
							Hybrid Bermudagrass Pasture	6.0 Tons	7	N/A
7400	4	12.26	8.58	Unknown	N/A	Foreston	Small Grain Overseed	1.0 Tons	15	N/A
				Med			Hybrid Bermudagrass Pasture	6.0 Tons	7	N/A

PLAN TOTALS: 29.81 26.13

LI	Potential Leaching	Technical Guidance
< 2	Low potential to contribute to soluble nutrient leaching below the root zone.	None
>= 2 & <= 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).

PLAT Index	Rating	P Management Recommendation
0 - 25	Low	No adjustment needed; N based application
25 - 50	Medium	No adjustment needed; N based application
51 - 100	High	Application limited to crop P removal
> 100	Very High	Starter P application only

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 or 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 in 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.

Waste Utilization Table

Year 1

Tract	Field	Source ID	Soil Series	Total Acres	Use Acres	Crop	RYE	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							
7400	1	S7	Foreston	5.38	5.38	Small Grain Overseed	1.0 Tons	10/1-3/31	50	0	0	0	0	Irrig.	50	19.97	0.00	107.45	0.00
7400	1	S7	Foreston	5.38	5.38	Hybrid Bermudagrass Pasture	6.0 Tons	3/1-9/30	205	0	0	0	0	Irrig.	205	81.89	0.00	440.54	0.00
7400	2	S7	Foreston	7.24	7.24	Small Grain Overseed	1.0 Tons	10/1-3/31	50	0	0	0	0	Irrig.	50	19.97	0.00	144.60	0.00
7400	2	S7	Foreston	7.24	7.24	Hybrid Bermudagrass Pasture	6.0 Tons	3/1-9/30	205	0	0	0	0	Irrig.	205	81.89	0.00	592.85	0.00
7400	3	S7	Noboco	4.93	4.93	Small Grain Overseed	1.0 Tons	10/1-3/31	50	0	0	0	0	Irrig.	50	19.97	0.00	98.46	0.00
7400	3	S7	Noboco	4.93	4.93	Hybrid Bermudagrass Pasture	6.0 Tons	3/1-9/30	205	0	0	0	0	Irrig.	205	81.89	0.00	403.70	0.00
7400	4	S7	Foreston	12.26	8.58	Small Grain Overseed	1.0 Tons	10/1-3/31	50	0	0	0	0	Irrig.	50	19.97	0.00	171.36	0.00
7400	4	S7	Foreston	12.26	8.58	Hybrid Bermudagrass Pasture	6.0 Tons	3/1-9/30	205	0	0	0	0	Irrig.	205	81.89	0.00	702.58	0.00
															Total Applied, 1000 gallons		2,661.54		
															Total Produced, 1000 gallons		2,269.30		
															Balance, 1000 gallons		-392.24		
															Total Applied, tons		0.00		
															Total Produced, tons		0.00		
															Balance, tons		0.00		

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)
7400	1	Foreston	0.50	1.0
7400	2	Foreston	0.50	1.0
7400	3	Noboco	0.50	1.0
7400	4	Foreston	0.50	1.0

The Nutrient Management Recommendations table shown below provides an annual summary of the nutrient management plan developed for this operation. This table provides a nutrient balance for the listed fields and crops for each year of the plan. Required nutrients are based on the realistic yields of the crops to be grown, their nutrient requirements and soil test results. The quantity of nutrient supplied by each source is also identified.

The total quantity of nitrogen applied to each crop should not exceed the required amount. However, the quantity of other nutrients applied may exceed their required amounts. This most commonly occurs when manure or other byproducts are utilized to meet the nitrogen needs of the crop. Nutrient management plans may require that the application of animal waste be limited so as to prevent over application of phosphorous when excessive levels of this nutrient are detected in a field. In such situations, additional nitrogen applications from nonorganic sources may be required to supply the recommended amounts of nitrogen.

Nutrient Management Recommendations Test

YEAR		0			N (lbs/A)	P2O5 (lbs/A)	K2O (lbs/A)	Mg (lbs/A)	Mn (lbs/A)	Zn (lbs/A)	Cu (lbs/A)	Lime (tons/A)
Tract	Field	7400	1	Req'd Nutrients	50	0	30	0	0	0	0	0
Acres	App. Period	5.38	10/1-3/31	Supplied By:								
CROP		Small Grain Overseed		Starter	0	0	0	0	0	0	0	0
				Commercial	0	0	0	0	0	0	0	0
Soil Series		Foreston		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	1.0 Tons	03-08-13	Manure	50	27	68	6	0	1	0	0
P Removal	Rating	15 lbs/ac.	Low	BALANCE	0	27	38	6	0	1	0	0
Tract	Field	7400	2	Req'd Nutrients	50	0	10	0	0	0	0	0
Acres	App. Period	7.74	10/1-3/31	Supplied By:								
CROP		Small Grain Overseed		Starter	0	0	0	0	0	0	0	0
				Commercial	0	0	0	0	0	0	0	0
Soil Series		Foreston		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	1.0 Tons	03-08-13	Manure	50	27	68	6	0	1	0	0
P Removal	Rating	15 lbs/ac.	Low	BALANCE	0	27	58	6	0	1	0	0
Tract	Field	7400	3	Req'd Nutrients	50	0	0	0	0	0	0	0
Acres	App. Period	4.93	10/1-3/31	Supplied By:								
CROP		Small Grain Overseed		Starter	0	0	0	0	0	0	0	0
				Commercial	0	0	0	0	0	0	0	0
Soil Series		Noboco		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	1.0 Tons	03-08-13	Manure	50	27	68	6	0	1	0	0
P Removal	Rating	15 lbs/ac.	Low	BALANCE	0	27	68	6	0	1	0	0
Tract	Field	7400	4	Req'd Nutrients	50	0	0	0	0	0	0	0
Acres	App. Period	8.58	10/1-3/31	Supplied By:								
CROP		Small Grain Overseed		Starter	0	0	0	0	0	0	0	0
				Commercial	0	0	0	0	0	0	0	0
Soil Series		Foreston		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	1.0 Tons	03-08-13	Manure	50	27	68	6	0	1	0	0
P Removal	Rating	15 lbs/ac.	Unknown	BALANCE	0	27	68	6	0	1	0	0

Nutrient Management Recommendations Test

YEAR	0		N (lbs/A)	P2O5 (lbs/A)	K2O (lbs/A)	Mg (lbs/A)	Mn (lbs/A)	Zn (lbs/A)	Cu (lbs/A)	Lime (tons/A)
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NOTE: Symbol * means user entered data.

Nutrient Management Recommendations Test

YEAR		1			N (lbs/A)	P2O5 (lbs/A)	K2O (lbs/A)	Mg (lbs/A)	Mn (lbs/A)	Zn (lbs/A)	Cu (lbs/A)	Lime (tons/A)
Tract	Field	7400	1	Req'd Nutrients	205	0	100	0	0	0	0	0
Acres	App. Period	5.38	3/1-9/30	Supplied By:								
CROP		Hybrid Bermudagrass Pasture		Starter	0	0	0	0	0	0	0	0
				Commercial	0	0	0	0	0	0	0	0
Soil Series		Foreston		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	6.0 Tons	03-08-13	Manure	205	112	281	25	1	5	1	0
P Removal	Rating	7 lbs/ac.	Low	BALANCE	0	112	181	25	1	5	1	0
Tract	Field	7400	2	Req'd Nutrients	205	0	60	0	0	0	0	0
Acres	App. Period	7.24	3/1-9/30	Supplied By:								
CROP		Hybrid Bermudagrass Pasture		Starter	0	0	0	0	0	0	0	0
				Commercial	0	0	0	0	0	0	0	0
Soil Series		Foreston		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	6.0 Tons	03-08-13	Manure	205	112	281	25	1	5	1	0
P Removal	Rating	7 lbs/ac.	Low	BALANCE	0	112	221	25	1	5	1	0
Tract	Field	7400	3	Req'd Nutrients	205	0	30	0	0	0	0	0
Acres	App. Period	4.93	3/1-9/30	Supplied By:								
CROP		Hybrid Bermudagrass Pasture		Starter	0	0	0	0	0	0	0	0
				Commercial	0	0	0	0	0	0	0	0
Soil Series		Noboco		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	6.0 Tons	03-08-13	Manure	205	112	281	25	1	5	1	0
P Removal	Rating	7 lbs/ac.	Low	BALANCE	0	112	251	25	1	5	1	0
Tract	Field	7400	4	Req'd Nutrients	205	0	30	0	0	0	0	0
Acres	App. Period	8.58	3/1-9/30	Supplied By:								
CROP		Hybrid Bermudagrass Pasture		Starter	0	0	0	0	0	0	0	0
				Commercial	0	0	0	0	0	0	0	0
Soil Series		Foreston		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	6.0 Tons	03-08-13	Manure	205	112	281	25	1	5	1	0
P Removal	Rating	7 lbs/ac.	Unknown	BALANCE	0	112	251	25	1	5	1	0

NOTE: Symbol * means user entered data.

The Required Soil Test Values shown in the following table provide a summary of recommended actions that should be taken if soil tests indicate excessive levels of copper or zinc. Fields that receive manure must have an annual soil analysis for these elements. High levels of zinc and copper can adversely affect plant growth. Alternative crop sites must be used when the concentration of these metals approach excessive levels. Site life can be estimated by dividing the amount of copper and zinc to be applied in lbs/acre by 0.036 and 0.071, respectively and multiplying the result by 0.85. By adding this quantity to the current soil index for copper or zinc, we can predict life of the site for waste disposal

In addition to copper and zinc indices, this table also provides a summary of lime recommendations for each crop based on the most recent soil sample. Application of lime at recommended rates is necessary to maintain soil pH in the optimum range for crop production.

Required Soil Test Values

Tract	Field	Crop	pH	Lime Recom. (tons/acre)	Cu-I	Copper Recommendation	Zn-I	Zinc Recommendation
7400	1	Small Grain Overseed	7.0	0.0	188	None	161	None
7400	1	Hybrid Bermudagrass Pasture	7.0	0.0	188	None	161	None
7400	2	Small Grain Overseed	6.9	0.0	214	None	194	None
7400	2	Hybrid Bermudagrass Pasture	6.9	0.0	214	None	194	None
7400	3	Small Grain Overseed	6.8	0.0	244	None	241	None
7400	3	Hybrid Bermudagrass Pasture	6.8	0.0	244	None	241	None
7400	4	Small Grain Overseed	6.8	0.0	244	None	241	None
7400	4	Hybrid Bermudagrass Pasture	6.8	0.0	244	None	241	None

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
Swine Feeder-Finish Lagoon Sludge - Standard					
Corn 120 bu	150	13.16	30.69	61.38	92.07
Hay 6 ton R.Y.E.	300	26.32	15.34	30.69	46.03
Soybean 40 bu	160	14.04	28.77	57.54	86.31

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): 1, 2, 4

Small Grain: CP, Mineral Soil, low-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): 3

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): 1, 2, 4

Bermudagrass CP, Mineral Soil, Poorly Drained to Somewhat Poorly Drained.

Adaptation: Effective artificial drainage MUST be in place to achieve Realistic Yield Expectations provided for these soils.

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): 3

Bermudagrass: CP, 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.

Sloan Brothers Farm Fac 31-655 Tract -7400

NOTE: Field Acres As Shown Have Required Buffers Removed




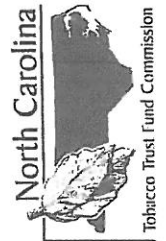
1 inch = 300 feet



Sloan Brothers Farm Fac 31-655
Tract 7400
Soils Map

1 inch = 688 feet

NCDA&CS Agronomic Division		Phone: (919) 733-2655		Website: www.ncagr.gov/agronom/		Report No. FY17-SL033378																																											
 <p>Predictive Soil Report Links to Helpful Information</p>		<p>Client: Sloan Brothers 189 Arthur Sloan Rd Chinquapin, NC 28521</p> <p>Sampled: Not Provided Received: 05/09/2017 Completed: 05/17/2017</p>		<p>Advisor: Joseph Lanier Hygro Inc. 441 Cabin St. Pink Hill, NC 28572</p> <p>Advisor ID: 405296</p>		<p>Sample ID: SB1</p> <p>Lime History: 2 -</p>																																											
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Reprogramming of the laboratory-information-management system that makes this report possible is being funded through a grant from the North Carolina Tobacco Trust Fund Commission.

Thank you for using agronomic services to manage nutrients and safeguard environmental quality.
- Steve Troxler, Commissioner of Agriculture

NCDA&CS Agronomic Division				Phone: (919) 733-2655		Website: www.ncagr.gov/agronomi/		Report No. FY17-SL033378												
														Page 2 of 3						
Sample ID: SB4		Recommendations: Crop 1 - Small Grain (SG) 2 -		Lime (tons/acre) 0.9	Nutrients (lb/acre)								More Information Note: 3							
					N 80-100	P2O5 0	K2O 140	Mg 25	S 25	Mn 10	Zn 0	Cu 0			B 0					
Lime History:																				
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Soil Class: Mineral																				
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0.36	1.40	2.2	38	1.4	4.8	175	5	32	5	22	14	18		64	64	151	0.1	5		

Understanding the Soil Report: explanation of measurements, abbreviations and units

Recommendations

Lime

If testing finds that soil pH is too low for the crop(s) indicated, a *lime recommendation* will be given in units of either ton/acre or lb/1000 sq ft. For best results, mix the lime into the top 6 to 8 inches of soil several months before planting. For no-till or established plantings where this is not possible, apply no more than 1 to 1.5 ton/acre (50 lb/1000 sq ft) at one time, even if the report recommends more. You can apply the rest in similar increments every six months until the full rate is applied. If MG is recommended and lime is needed, use dolomitic lime.

Fertilizer

Recommendations for *field crops or other large areas* are listed separately for each nutrient to be added (in units of lb/acre unless otherwise specified). Recommendations for N (and sometimes for B) are based on research/field studies for the crop being grown, not on soil test results. K-I and P-I values are based on test results and should be > 50. If they are not, follow the fertilizer recommendations given. If Mg is needed and no lime is recommended, 0-0-22 (11.5% Mg) is an excellent source; 175 to 250 lb per acre alone or in a fertilizer blend will usually satisfy crop needs. SS-I levels appear only on reports for greenhouse soil or problem samples.

Farmers and other commercial producers should pay special attention to *micronutrient levels*. If \$, pH\$, \$pH, C or Z notations appear on the soil report, refer to *\$Note: Secondary Nutrients and Micronutrients*. In general, homeowners do not need to be concerned about micronutrients. Various crop notes also address lime fertilizer needs; visit ncagr.gov/agronomi/pubs.htm.

Recommendations for *small areas, such as home lawns/gardens*, are listed in units of lb/1000 sq ft. If you cannot find the exact fertilizer grade recommended on the report, visit www.ncagr.gov/agronomi/obpart4.htm to find information that may help you choose a comparable alternate. For more information, read *A Homeowner's Guide to Fertilizer*.

Test Results

The first seven values [soil class, HM%, W/V, CEC, BS%, Ac and pH] describe the soil and its degree of acidity. The remaining 16 [P-I, K-I, Ca%, Mg%, Mn-I, Mn-AI1, Mn-AI2, Zn-I, Zn-AI, Cu-I, S-I, SS-I, Na, ESP, SS-I, NO3-N (not routinely available)] indicate levels of plant nutrients or other fertility measurement. Visit www.ncagr.gov/agronomi/uyrst.htm

Report Abbreviations

Ac	exchangeable acidity
B	boron
BS%	% CEC occupied by basic cations
Ca%	% CEC occupied by calcium
CEC	cation exchange capacity
Cu-I	copper index
ESP	exchangeable sodium percent
HM%	percent humic matter
K-I	potassium index
K2O	potash
Mg%	% CEC occupied by magnesium
MIN	mineral soil class
Mn	manganese
Mn-AI1	Mn-availability index for crop 1
Mn-AI2	Mn-availability index for crop 2
Mn-I	manganese index
M-O	mineral-organic soil class
N	nitrogen
Na	sodium
NO3-N	nitrate nitrogen
ORG	organic soil class
pH	current soil pH
P-I	phosphorus index
P2O5	phosphate
S-I	sulfur index
SS-I	soluble salt index
W/V	weight per volume
Zn-AI	zinc availability index
Zn-I	zinc index

RUSLE2 Worksheet Erosion Calculation Record

Info:

Owner name	Tract #	Field name
Sloan Brothers	7400	3

Location	Soil	T value, t/ac/yr	Slope length (horiz), ft	Avg. slope steepness, %
USAINorth Carolina\Duplin County	Duplin County, North Carolina\NbA Noboco loamy fine sand, 0 to 2 percent slopes\Noboco Loamy sand 90%	5.0	90	1.5

Alternatives:

Description	Base management	Contouring	Strips / barriers	Diversion/terrace, sediment basin
	CMZ 67\A.Single Year/Single Crop Templates\Hay\Coastal bermuda grass; harvested for hay, manure irr, rye overseed. high yield, CMZ67	default	(none)	(none)

Alternatives Results:

Description	Cons. plan. soil loss	Annual total biomass removal, lb/ac	Soil conditioning index (SCI)	SCI OM subfactor	SCI FO subfactor	SCI ER subfactor	STIR value	Wind & irrigation- induced erosion for SCI, t/ac/yr	Equiv. diesel use, gal/ac	Energy use, BTU/ac	Fuel cost, US\$/ac
	0.53	7300	0.53	0.027	0.91	0.79	9.1	0	13.4	1850000	0

The **SCI** is the **Soil Conditioning Index** rating. If the calculated index is a negative value, soil organic matter levels are predicted to decline under that production system. If the index is a positive value, soil organic matter levels are predicted to increase under that system.

PLAT Results For: Duplin 9/21/2017 3:03:55 PM

INPUTS

Calendar Year:
County: Duplin
Producer Identifier: Sloan Brothers
Tract Number: 7400
Field Number: 1
Soil Series: FoA: Foreston loamy fine sand, 0 to 2 percent slopes
Crop: Common Bermudagrass (Pasture) :
Fertilizers: Swine-Lagoon liquid
Yearly Applied Amount: 3 ac in
Lb P2O5: 53.4 lb
Application Method: All other surface applications
Soil Loss: .54 t/ac/yr
Receiving Slope Distance 30-49 ft
Soil Test 0" - 4" 169
WV Factor (DATABASE) 1.3
Artificial Drainage System: NO
Hydrologic Condition: FAIR

OUTPUTS

PARTICULATE P	=	1
SOLUBLE P	=	15
LEACHATE P	=	0
SOURCE P	=	11
<hr/>		
TOTAL P RATING	=	27 (MEDIUM)

PLAT Results For: Duplin 9/21/2017 3:04:15 PM

INPUTS

Calendar Year:	
County:	Duplin
Producer Identifier:	Sloan Brothers
Tract Number:	7400
Field Number:	2
Soil Series:	FoA: Foreston loamy fine sand, 0 to 2 percent slopes
Crop:	Common Bermudagrass (Pasture) :
Fertilizers:	Swine-Lagoon liquid
	Yearly Applied Amount: 3 ac in
	Lb P2O5: 53.4 lb
	Application Method: All other surface applications
Soil Loss:	.54 t/ac/yr
Receiving Slope Distance	30-49 ft
Soil Test 0" - 4"	163
WV Factor (DATABASE)	1.3
Artificial Drainage System:	NO
Hydrologic Condition:	FAIR

OUTPUTS

PARTICULATE P	=	1
SOLUBLE P	=	14
LEACHATE P	=	0
SOURCE P	=	11
<hr/>		
TOTAL P RATING	=	26 (MEDIUM)

PLAT Results For: Duplin 9/21/2017 3:06:29 PM

INPUTS

Calendar Year:	
County:	Duplin
Producer Identifier:	Sloan Brothers
Tract Number:	7400
Field Number:	3
Soil Series:	NbA: Noboco loamy fine sand, 0 to 2 percent slopes
Crop:	Common Bermudagrass (Pasture) :
Fertilizers:	Swine-Lagoon liquid
	Yearly Applied Amount: 3 ac in
	Lb P2O5: 53.4 lb
	Application Method: All other surface applications
Soil Loss:	.53 t/ac/yr
Receiving Slope Distance	50-99 ft
Soil Test 0" - 4"	179
WV_Factor (DATABASE)	1.4
Hydrologic Condition:	GOOD

OUTPUTS

PARTICULATE P	=	1
SOLUBLE P	=	3
LEACHATE P	=	0
SOURCE P	=	2
<hr/>		
TOTAL P RATING	=	6 (LOW)

PLAT Results For: Duplin 9/21/2017 3:04:35 PM

INPUTS

Calendar Year:
County: Duplin
Producer Identifier: Sloan Brothers
Tract Number: 7400
Field Number: 4
Soil Series: FoA: Foreston loamy fine sand, 0 to 2 percent slopes
Crop: Common Bermudagrass (Pasture) :
Fertilizers: Swine-Lagoon liquid
Yearly Applied Amount: 3 ac in
Lb P2O5: 53.4 lb
Application Method: All other surface applications
Soil Loss: .54 t/ac/yr
Receiving Slope Distance 30-49 ft
Soil Test 0" - 4" 175
WV_Factor (DATABASE) 1.3
Artificial Drainage System: NO
Hydrologic Condition: FAIR

OUTPUTS

PARTICULATE P = 1
SOLUBLE P = 15
LEACHATE P = 0
SOURCE P = 11
TOTAL P RATING = 27 (MEDIUM)

RUSLE2 Worksheet Erosion Calculation Record

Info:

Owner name	Tract #	Field name
Sloan Brothers	7400	1, 2, 4

Location	Soil	T value, t/ac/yr	Slope length (horiz), ft	Avg. slope steepness, %
USA\North Carolina\Duplin County	Duplin County, North Carolina\FoA Foreston loamy fine sand, 0 to 2 percent slopes\Foreston Loamy fine sand 80%	5.0	90	1.5

Alternatives:

Description	Base management	Contouring	Strips / barriers	Diversion/terrace, sediment basin
	CMZ 67\1a. Single Year/Single Crop Templates\Hay\Coastal bermuda grass; harvested for hay, manure irr, rye overseed. high yield, CMZ67	default	(none)	(none)

Alternatives Results:

Description	Cons. plan. soil loss	Annual total biomass removal, lb/ac	Soil conditioning index (SCI)	SCI OM subfactor	SCI FO subfactor	SCI ER subfactor	STIR value	Wind & irrigation-induced erosion for SCI, t/ac/yr	Equiv. diesel use, gal/ac	Energy use, BTU/ac	Fuel cost, US\$/ac
	0.54	7300	0.53	0.027	0.91	0.79	9.1	0	13.4	1850000	0

The **SCI** is the **Soil Conditioning Index** rating. If the calculated index is a negative value, soil organic matter levels are predicted to decline under that production system. If the index is a positive value, soil organic matter levels are predicted to increase under that system.

RUSLE2 Worksheet Erosion Calculation Record

Info:

Owner name	Tract #	Field name
Sloan Brothers	7400	3

Location	Soil	T value, t/ac/yr	Slope length (horiz), ft	Avg. slope steepness, %
USAINorth Carolina\Duplin County	Duplin County, North Carolina\NbA Noboco loamy fine sand, 0 to 2 percent slopes\Noboco Loamy sand 90%	5.0	90	1.5

Alternatives:

Description	Base management	Contouring	Strips / barriers	Diversion/terrace, sediment basin
	CMZ 67a.Single Year/Single Crop Templates\Hay\Coastal bermuda grass; harvested for hay, manure irr, rye overseed. high yield, CMZ67	default	(none)	(none)

Alternatives Results:

Description	Cons. plan. soil loss	Annual total biomass removal, lb/ac	Soil conditioning index (SCI)	SCI OM subfactor	SCI FO subfactor	SCI ER subfactor	STIR value	Wind & irrigation-induced erosion for SCI, t/ac/yr	Equiv. diesel use, gal/ac	Energy use, BTU/ac	Fuel cost, US\$/ac
	0.53	7300	0.53	0.027	0.91	0.79	9.1	0	13.4	1850000	0

The **SCI** is the **Soil Conditioning Index** rating. If the calculated index is a negative value, soil organic matter levels are predicted to decline under that production system. If the index is a positive value, soil organic matter levels are predicted to increase under that system.

NCDA&CS Agronomic Division	Phone: (919) 733-2655	Website: www.ncagr.gov/agronomi/	Report No. FY17-SL033378
			Page 3 of 3
Understanding the Soil Report: explanation of measurements, abbreviations and units			
<p>Recommendations</p> <p><u>Lime</u></p> <p>If testing finds that soil pH is too low for the crop(s) indicated, a <i>lime recommendation</i> will be given in units of either ton/acre or lb/1000 sq ft. For best results, mix the lime into the top 6 to 8 inches of soil several months before planting. For no-till or established plantings where this is not possible, apply no more than 1 to 1.5 ton/acre (50 lb/1000 sq ft) at one time, even if the report recommends more. You can apply the rest in similar increments every six months until the full rate is applied. If MG is recommended and lime is needed, use dolomitic lime.</p> <p><u>Fertilizer</u></p> <p>Recommendations <i>for field crops or other large areas</i> are listed separately for each nutrient to be added (in units of lb/acre unless otherwise specified). Recommendations for N (and sometimes for B) are based on research/field studies for the crop being grown, not on soil test results. K-I and P-I values are based on test results and should be > 50. If they are not, follow the fertilizer recommendations given. If Mg is needed and no lime is recommended, 0-0-22 (11.5% Mg) is an excellent source; 175 to 250 lb per acre alone or in a fertilizer blend will usually satisfy crop needs. SS-I levels appear only on reports for greenhouse soil or problem samples.</p> <p>Farmers and other commercial producers should pay special attention to <i>micronutrient levels</i>. If \$, pH\$, \$pH, C or Z notations appear on the soil report, refer to <i>\$Note: Secondary Nutrients and Micronutrients</i>. In general, homeowners do not need to be concerned about micronutrients. Various crop notes also address lime fertilizer needs; visit ncagr.gov/agronomi/pubs.htm.</p> <p>Recommendations <i>for small areas, such as home lawns/gardens</i>, are listed in units of lb/1000 sq ft. If you cannot find the exact fertilizer grade recommended on the report, visit www.ncagr.gov/agronomi/obpart4.htm to find information that may help you choose a comparable alternate. For more information, read <i>A Homeowner's Guide to Fertilizer</i>.</p> <p>Test Results</p> <p>The first seven values [soil class, HM%, W/V, CEC, BS%, Ac and pH] describe the soil and its degree of acidity. The remaining 16 [P-I, K-I, Ca%, Mg%, Mn-I, Mn-AI1, Mn-AI2, Zn-I, Zn-AI, Cu-I, S-I, SS-I, NO3-N (not routinely available)] indicate levels of plant nutrients or other fertility measurement. Visit www.ncagr.gov/agronomi/uvrst.htm</p>			<p>Report Abbreviations</p> <p>Ac exchangeable acidity</p> <p>B boron</p> <p>BS% % CEC occupied by basic cations</p> <p>Ca% % CEC occupied by calcium</p> <p>CEC cation exchange capacity</p> <p>Cu-I copper index</p> <p>ESP exchangeable sodium percent</p> <p>HM% percent humic matter</p> <p>K-I potassium index</p> <p>K2O potash</p> <p>Mg% % CEC occupied by magnesium</p> <p>MIN mineral soil class</p> <p>Mn manganese</p> <p>Mn-AI1 Mn-availability index for crop 1</p> <p>Mn-AI2 Mn-availability index for crop 2</p> <p>Mn-I manganese index</p> <p>M-O mineral-organic soil class</p> <p>N nitrogen</p> <p>Na sodium</p> <p>NO3-N nitrate nitrogen</p> <p>ORG organic soil class</p> <p>pH current soil pH</p> <p>P-I phosphorus index</p> <p>P2O5 phosphate</p> <p>S-I sulfur index</p> <p>SS-I soluble salt index</p> <p>W/V weight per volume</p> <p>Zn-AI zinc availability index</p> <p>Zn-I zinc index</p>



Predictive

Soil Report

[Links to Helpful Information](#)

Client: Sloan Brothers
189 Arthur Sloan Rd
Chinquapin, NC 28521

Advisor: Joseph Lanier
Hygro Inc.
441 Cabin St.
Pink Hill, NC 28572

Mehlich-3 Extraction

Sampled County: Duplin

Sampled: Not Provided
Received: 05/09/2017
Completed: 05/17/2017

Advisor ID: 405296

Client ID: 442292

Farm: Not Provided

Sample ID: SB1	Lime History:	Recommendations:		Nutrients (lb/acre)										More Information Note: 3
		Crop	Lime (tons/acre)	N	P2O5	K2O	Mg	S	Mn	Zn	Cu	B		
		1 - Small Grain (SG)	0.9	80-100	0	140	25	25	10	0	0	0		
		2 -												

Test Results [units - W/V in g/cm ³ ; CEC and Na in meq/100 cm ³ ; NO ₃ -N in mg/dm ³]:													
HM%	W/V	CEC	BS%	Ac	pH	P-I	K-I	Ca%	Mg%	S-I	Mn-I	Mn-Al/1	NO ₃ -N
0.36	1.43	2.2	39	1.3	4.8	169	5	33	5	20	12	17	5

Sample ID: SB2	Lime History:	Recommendations:	Lime (tons/acre)	Nutrients (lb/acre)										More Information Note: 3
				Crop	N	P2O5	K2O	Mg	S	Mn	Zn	Cu	B	
		1 - Small Grain (SG)	0.9	80-100	0	140	25	25	10	0	0	0		
		2 -												

Test Results [units - W/V in g/cm ³ ; CEC and Na in meq/100 cm ³ ; NO ₃ -N in mg/dm ³]:													
HM%	W/V	CEC	BS%	Ac	pH	P-I	K-I	Ca%	Mg%	S-I	Mn-I	Mn-Al/1	NO ₃ -N
0.36	1.43	2.2	39	1.3	4.8	163	5	32	6	20	15	19	5

Sample ID: SB3	Lime History:	Recommendations:	Lime (tons/acre)	Nutrients (lb/acre)										More Information Note: 3
				Crop	N	P2O5	K2O	Mg	S	Mn	Zn	Cu	B	
		1 - Small Grain (SG)	0.9	80-100	0	140	25	25	10	0	0	0		
		2 -												

Test Results [units - W/V in g/cm ³ ; CEC and Na in meq/100 cm ³ ; NO ₃ -N in mg/dm ³]:													
HM%	W/V	CEC	BS%	Ac	pH	P-I	K-I	Ca%	Mg%	S-I	Mn-I	Mn-Al/1	NO ₃ -N
0.36	1.43	2.2	40	1.3	4.8	179	4	34	5	22	14	18	5

SOIL INVESTIGATION TO DETERMINE SUITABILITY OF PROPOSED POND SITE

FARMER'S NAME Troy Sloan DISTRICT 1
DATE 6-11-91 COUNTY _____
S. C. S. PHOTO SHEET NO. _____ WORK UNIT _____

WATERSHED AREA MEASUREMENTS

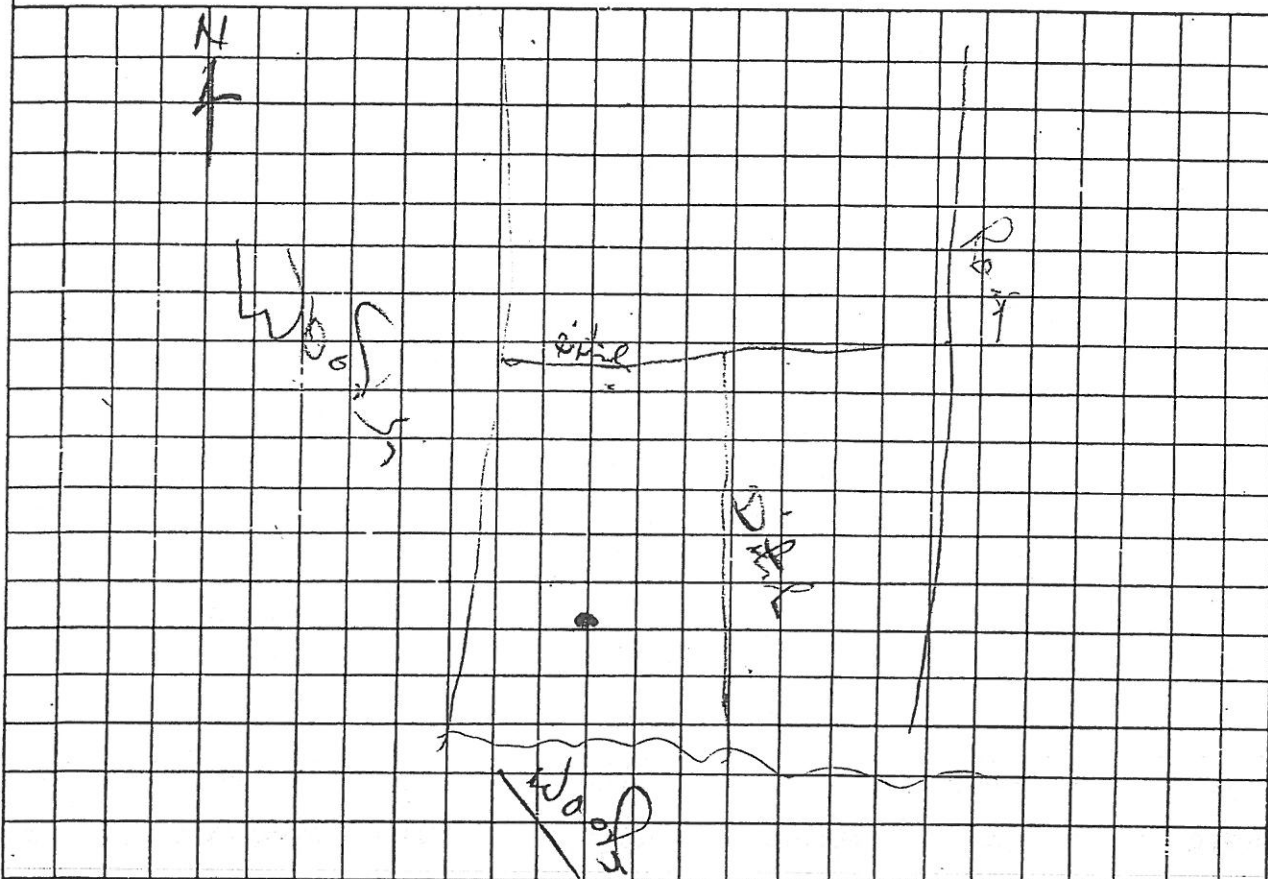
CROPLAND _____ ACRES PASTURE _____ ACRES

WOODLAND _____ ACRES TOTAL _____ ACRES

POND CLASS _____

WORK UNIT CONSERVATIONIST _____

SKETCH OF PROPOSED POND SHOWING WHERE BORINGS WERE MADE (Approx. scale 1" = _____ feet)
Locate reference point on center line of dam and identify on sketch.

SHOW
DEPTH
SCALE

BORING NUMBER AND PROFILE

Make and list dam-site and spillway borings first - then ponded area and borrow pit borings - separate with vertical red line.
(Continued on back where necessary) Show water table elevations on dam-site borings.

#	2	3	4	5	6	#7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
0-1	SM					0-1	SM															
1-2	SC					1-2	SM	SC														
2-3	SC					2-3	SM	SC														
3-4	SC	SM				3-4	SM	SC														
4-5	SC	SM	WT			4-5	SM	SC	WT													
5-6	SM	stick				5-6	SM	SC														
6-7	SM	stick				6-7	SM	SC														
7-8	SM	stick				7-8	SM	SC														
8-9	SM	stick				8-9	SM	SC														
9-10	SM	stick				9-10	SM	SC														
						10-11	SM	stick														
						11-12	SM	stick														

BORINGS MADE BY

SIGNATURE & TITLE

Barle Hae

B. W. B.
DET

HAZARD CLASSIFICATION DATA SHEET FOR DAMS

Landowner Troy Sloan County Duplin
Community or Group No. M-11 Conservation Plan No. _____
Estimated Depth of Water to Top of Dam 9.2 Ft. Length of Flood Pool _____ Ft.
Date of Field Hazard Investigation 1-10-92

Evaluation by reach of flood plain downstream to the point of estimated minor effect from sudden dam failure.

Reach	Length Ft.	Width Ft.	Slope %	Land Use	Kind of Improvements	Est. Elev. Improvements Above Flood Plain Ft.	Est. Elevation of Breach Floodwater Above Flood Plain Ft.
1							
2							
3							

Describe potential for loss of life and damage to existing or probable future downstream improvements from a sudden breach none. Muddy Creek tributary approx 300 ft
downstream from operation.

Hazard Classification of Dam (a, b, c) (see NEM-Part 520.21) _____

Dam Classification (I, II, III, IV, V) IV

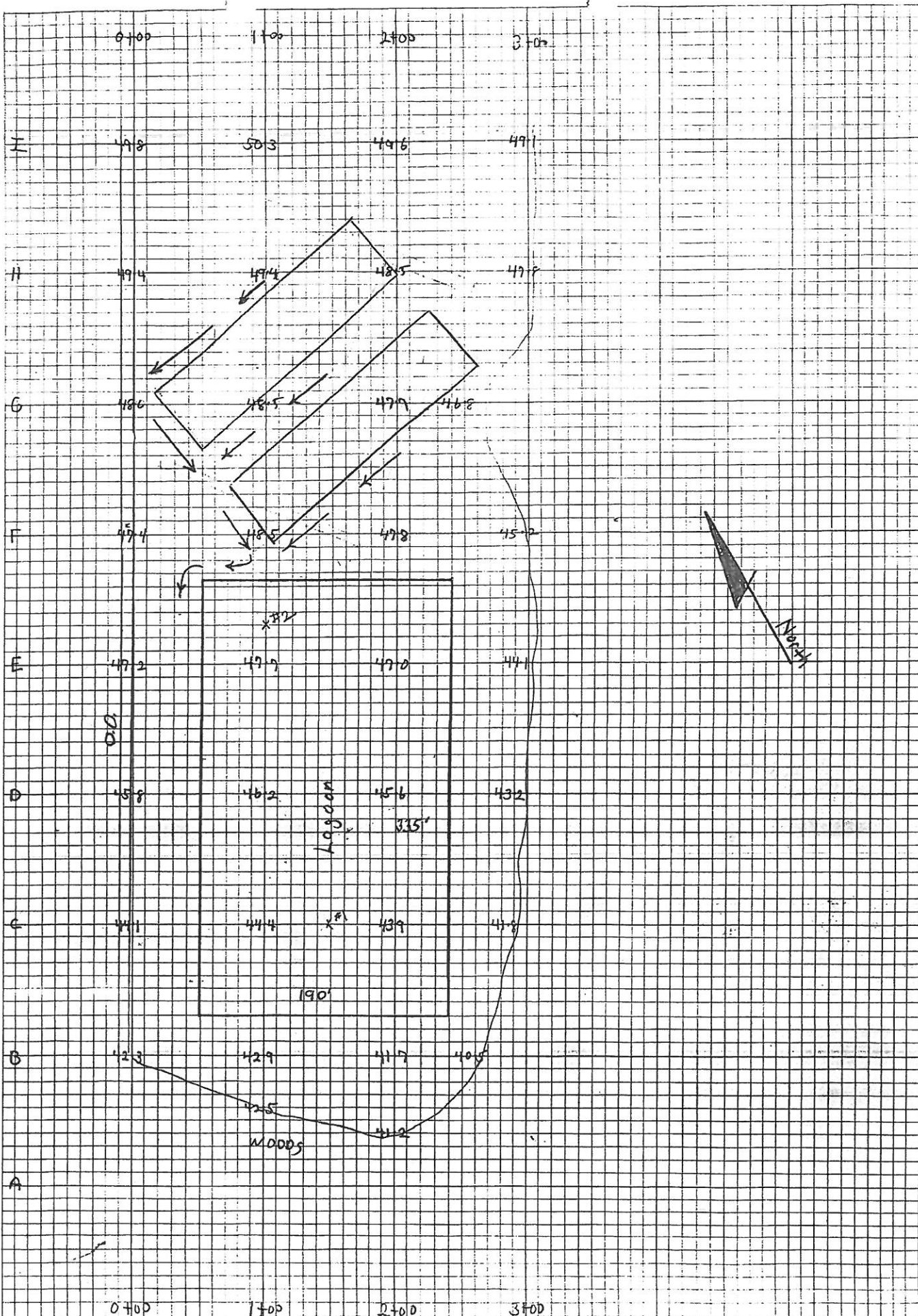
By Billy W. Hunter (name) DIST (title)

Date 1-10-92

Concurred By M E Suggs (name) DC (title)

Date 1/17/92

- NOTE: 1. Instructions on reverse side.
2. Attach additional sheets as needed.



Exc - 13149 cu yds

Fill

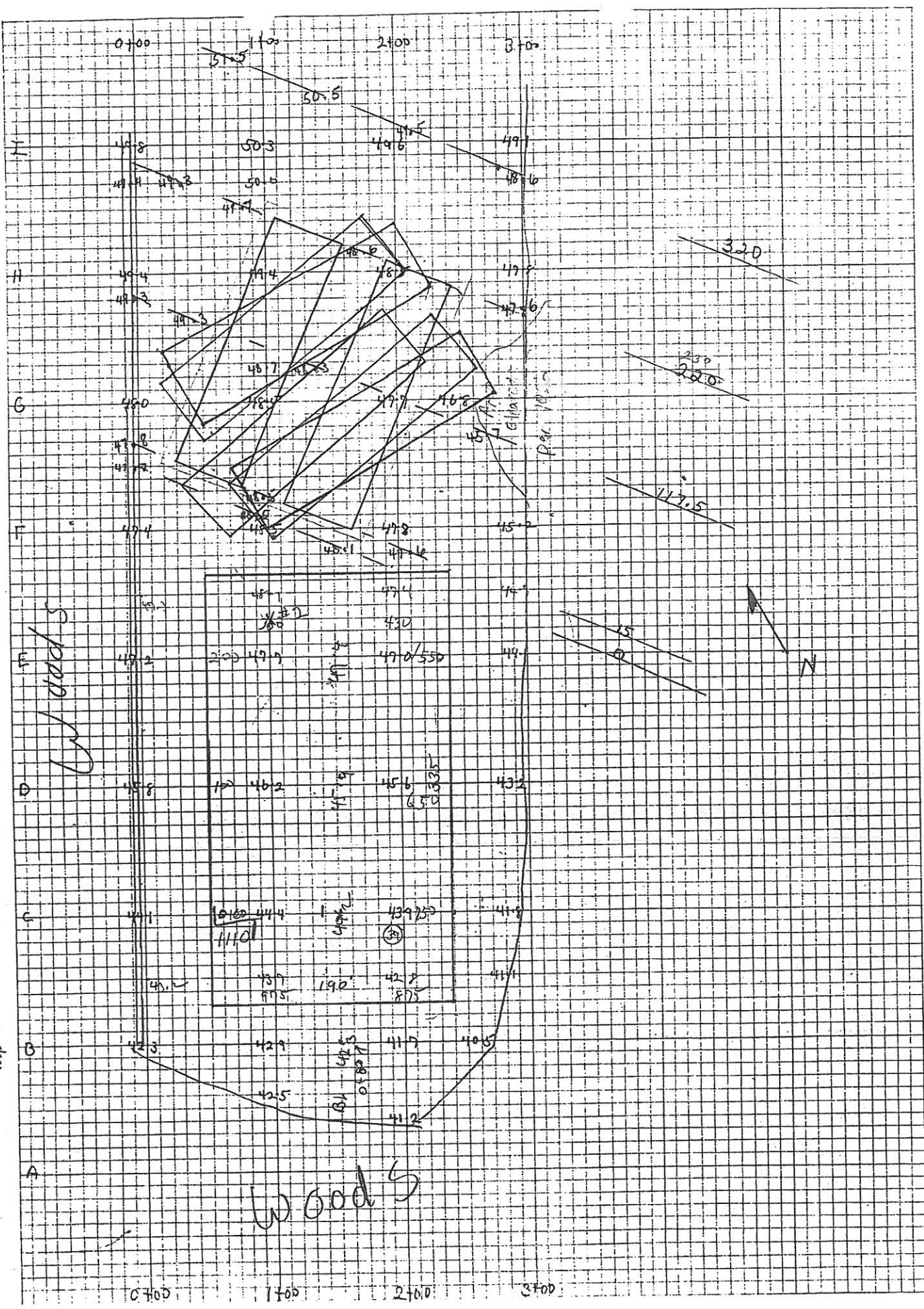
PAD - 4830

Dike - 5622

10452

C/F 1.26/1.0

Tray Sloan



1.5 ft. B.A.
2.5 ft. S.S. 6 ft. 12 ft. deep

FPI-M-10 x 10 1 inch
10th LINE HEAVY



United States
Department of
Agriculture

Soil
Conservation
Service

P. O. BOX 277
KENANSVILLE, NC 28349
TELEPHONE 919-296-1958

WASTE MANAGEMENT FACILITY SITE EVALUATION AND MANAGEMENT PLAN

TO: CHARLIE PARKER
NCNR
KENANSVILLE, N.C. 28349

PRODUCER TROY SLOAN
RT. 1 BOX 186
CHINQUAPIN, N.C. 28521

LOCATION OF SITE APPROX. 3 MI. EAST OF LYMAN ON
S. R. 1821

SIZE OF PROPOSED OPERATION 2 - 1224 HOUSES

IS SOIL SUITABLE FOR LAGOON? YES ☒ NO ☐ SOIL CLASS. NOA

DISTANCE FROM THE LAGOON SITE TO NEAREST RESIDENCE OTHER THAN
LANDOWNER OR HIS TENANT 1200

NUMBER OF HOUSES WITHIN 2000 FEET OF LAGOON SITE 17

ACREAGE/CROP REQUIRED TO PUMP EFFLUENT 37 CORN OR 14 COASTAL

DOES LANDOWNER HAVE ENOUGH ACREAGE YES ☒ NO ☐

IF NO, DOES LANDOWNER HAVE ACCESS TO MORE ACREAGE? YES ☐ NO ☐

WILL FACILITY INVOLVE ALTERING WETLANDS? YES ☐ NO ☒

IF THE ABOVE QUESTION CONCERNING WETLANDS IS CHECKED "YES", THE
LANDOWNER IS HEREBY ADVISED THAT THIS CONSTRUCTION MAY REQUIRE
PERMITS FROM THE ARMY CORP OF ENGINEERS. IT IS THE LANDOWNERS
RESPONSIBILITY TO DETERMINE IF PERMITS ARE NECESSARY AND TO
OBTAIN THE REQUIRED PERMITS. THE ARMY CORP REPRESENTATIVE FOR
DUPLIN COUNTY IS:

JEFF RICHTER,
US ARMY CORP OF ENGINEERS
P. O. BOX 1890
WILMINGTON, NC 28402
TELEPHONE 919-251-4636

DOES SITE MEET SCS CRITERIA FOR WASTE TREATMENT FACILITIES?

YES ☒ NO ☐

ADDITIONAL COMMENTS Location is not in a flood plain

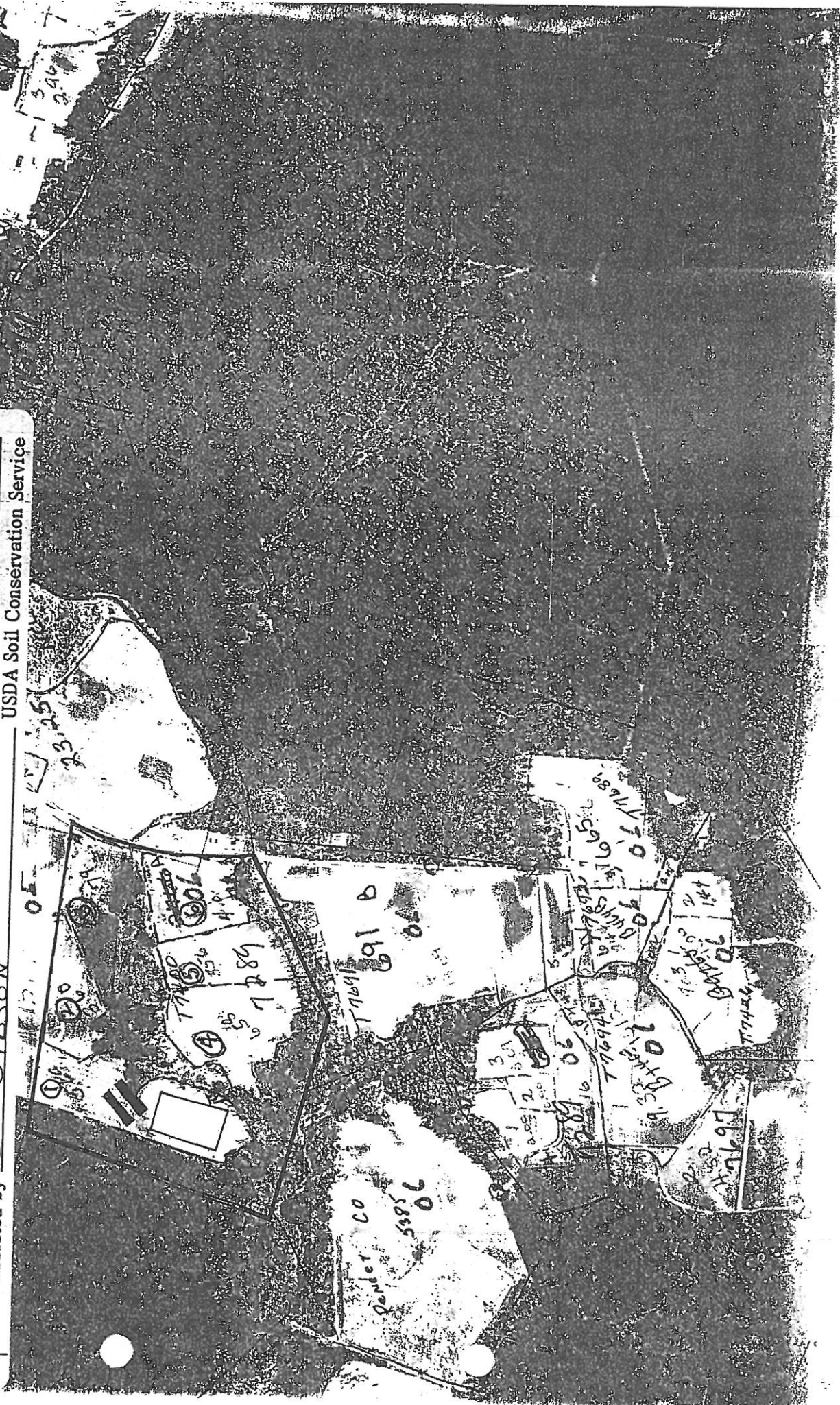
SIGNATURE Boyce Boyette DATE 6-13-91
DCT



The Soil Conservation Service
is an agency of the
Department of Agriculture

CONSERVATION PLAN MAP

Owner Troy Sloan Operator Same
County Duplin State North Carolina Date 1-15-92
Approximate acres 1" = 660'
Cooperating with Duplin Soil & Water
Plan identification Conservation District
Assisted by D. Gibson Photo number ASC5
USDA Soil Conservation Service

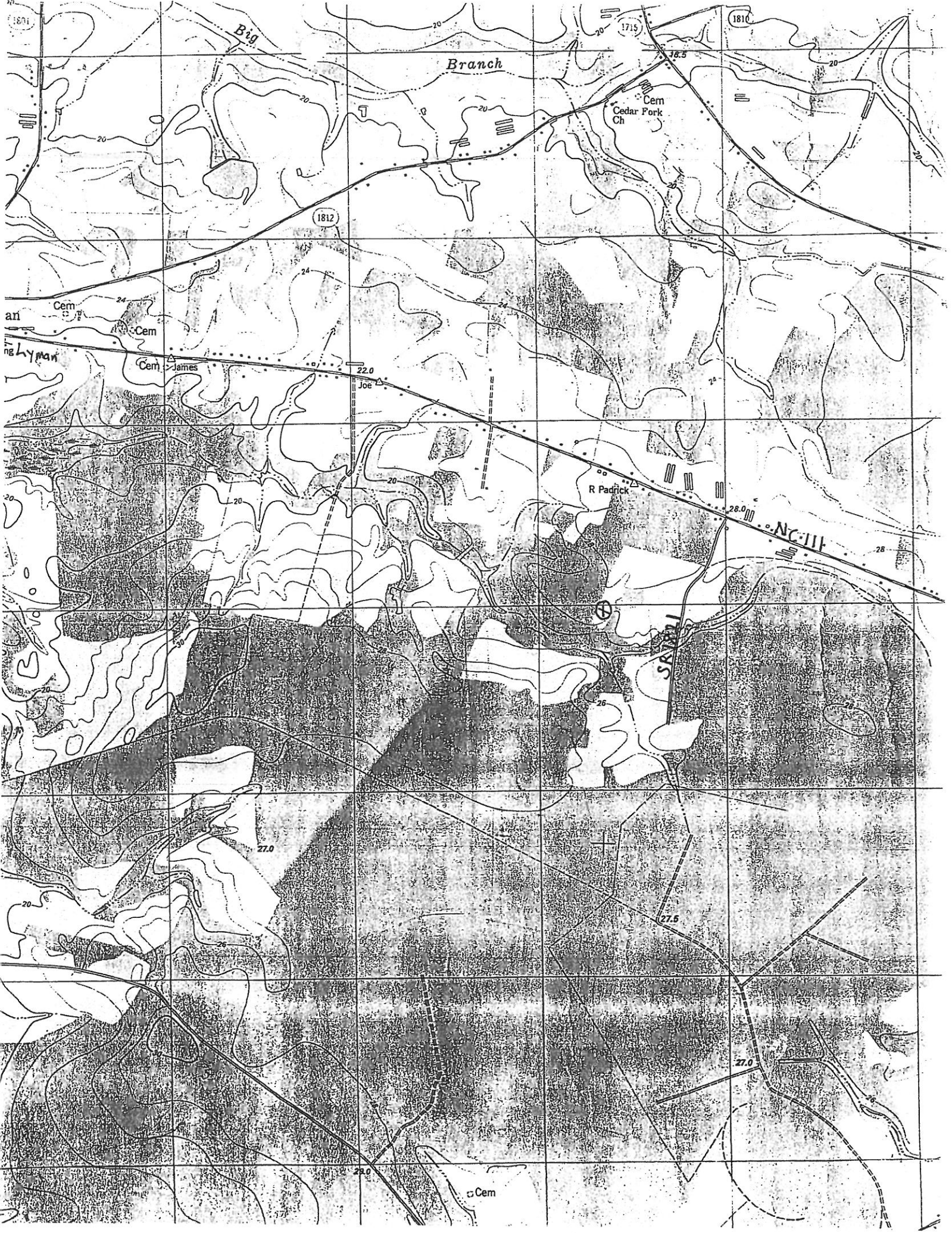


SOIL MAP

Owner TROY SLOAN Operator SAME
County Duplin State NORTH CAROLINA
Soil survey sheet (s) or code nos. E-3 1983 Approximate scale 1" = 1000'

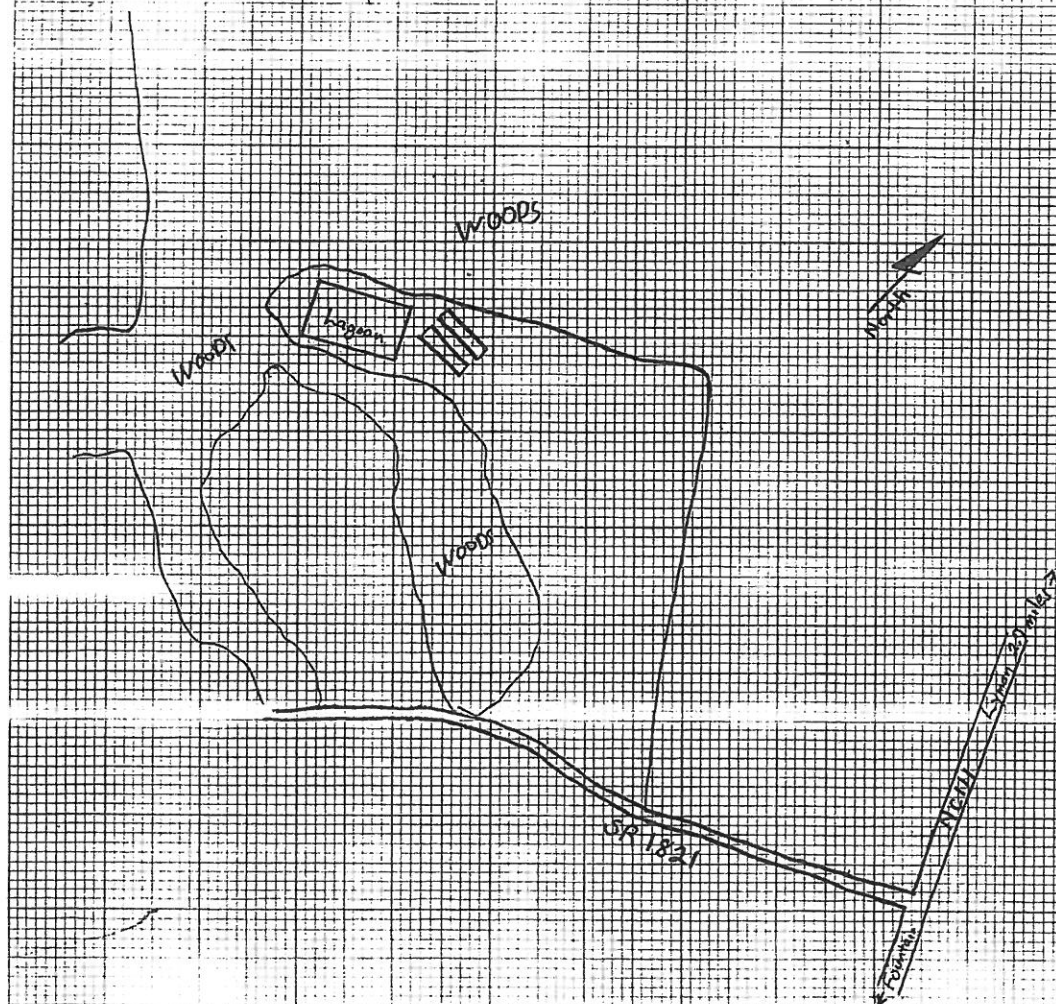
Prepared by U. S. Department of Agriculture, Soil Conservation Service cooperating
with Duplin Soil & Water Conservation District





Troy Sloan
Chinquapin, NC
2-1224 Topping
Lagoon-S-3-1992
pg 30

BEFORE BEGINNING EXCAVATION
LANDOWNER IS ADVISED TO CONTACT
ULOCO TO ASSURE THAT UNDERGROUND
UTILITIES ARE NOT DESTROYED 1-800-
632-4949





United States
Department of
Agriculture

Soil
Conservation
Service

OPERATOR: Troy Sloan

Please review the attached plan and specifications carefully. Retain this plan for your use and records. It is strongly recommended that you, your contractor, and Soil Conservation Service personnel are in agreement as to how the waste lagoon is to be constructed. The Soil Conservation Service personnel will meet with all concerned parties and walk over the site to explain all flags and markings. It is important that everyone understand what is expected so that final construction meets plans and specification and the job can be certified for payment (if cost-sharing is involved).

The pad dimensions and grades are the best estimate. The BUILDER or CONTRACTOR is RESPONSIBLE for final layout and design of the pads. The Soil Conservation Service personnel will assist in a limited capacity, as its major concern is the proper design and construction of the waste treatment lagoon.

The actual amount of material required for pads and dam may vary from the estimates. The design will attempt to balance cuts and fills as close as possible. If additional material is required after construction is complete on the lagoon, the contractor and owner will negotiate on the price and location of borrow area.

NOTE: Design Requirement: 496650 cu.ft. = 18394 cu.yds.

Estimate of Excavation: _____ cu.ft. = 13149 cu.yds.

Estimate of Pad & Dike: _____ cu.ft. = 10452 cu.yds.

1.26:1.0 Ration

Job Class III 1-10-92
Date

Designed By B W Hester
Name

Design Approval M E Smyth DR
Name
1/22/92
Date



The Soil Conservation Service
is an agency of the
Department of Agriculture

Operator: Troy Sloan

County: Duplin

Date: 01/09/92

Distance to nearest residence (other than owner): 1200.0 feet

1. STEADY STATE LIVE WEIGHT

0 sows (farrow to finish)	x	1417 lbs.	=	0 lbs
0 sows (farrow to feeder)	x	522 lbs.	=	0 lbs
2448 head (finishing only)	x	135 lbs.	=	330480 lbs
0 sows (farrow to wean)	x	433 lbs.	=	0 lbs
0 head (wean to feeder)	x	30 lbs.	=	0 lbs

TOTAL STEADY STATE LIVE WEIGHT (SSLW) = 330480 lbs

2. MINIMUM REQUIRED TREATMENT VOLUME OF LAGOON

Volume = 330480 lbs. SSLW x Treatment Volume(CF)/lb. SSLW
Treatment Volume(CF)/lb. SSLW = 1 CF/lb. SSLW
Volume = 330480 cubic feet

3. STORAGE VOLUME FOR SLUDGE ACCUMULATION

Volume = 0.0 cubic feet

4. TOTAL DESIGN VOLUME

Inside top length 335.0 feet ; Inside top width 190.0 feet
Top of dike at elevation 49.7 feet
Freeboard 1.5 feet ; Side slopes 2.5 : 1 (Inside lagoon)
Total design lagoon liquid level at elevation 48.2 feet
Bottom of lagoon elevation 37.7 feet
Seasonal high water table elevation 39.0 feet

Total design volume using prismoidal formula

SS/END1	SS/END2	SS/SIDE1	SS/SIDE2	LENGTH	WIDTH	DEPTH
2.5	2.5	2.5	2.5	327.5	182.5	10.5

AREA OF TOP

LENGTH * WIDTH =
327.5 182.5

59768.8 (AREA OF TOP)

AREA OF BOTTOM

LENGTH * WIDTH =
275.0 130.0

35750.0 (AREA OF BOTTOM)

AREA OF MIDSECTION

LENGTH * WIDTH * 4
301.3 156.3

188281.3 (AREA OF MIDSECTION * 4)

CU. FT. = [AREA TOP + (4*AREA MIDSECTION) + AREA BOTTOM] * DEPTH/6
59768.8 188281.3 35750.0 1.8

VOLUME OF LAGOON AT TOTAL DESIGN LIQUID LEVEL = 496650 CU. FT.

NOT TO SCALE

TYPICAL X-SECTION

Troy Sloan

53.2
PAA

EXISTING
GROUND
LINE

49.5
PAA

47.5
PIPE OUTLET

48.2
Temp Storage

45.3
Perm. Storage

49.7
DIKE

DIKE
Top Width
15'

3.0/1.0
D.O.E SLOPES
OUTSIDE

2.5/1.0
SLOES SLOPES
TRANSITION

SOFT TRENCH
NOT needed

39.7

VOLUME ESTIMATES
EXCAVATION - 13149

FILL:
DIKE - 5622
PAD - 4880

~~1096~~ EQUIVALENT
TOTAL FILL = 10452
C-F RATIO 125/1.0

SOILS INFORMATION
SEE SOILS ENG. 538

TCM: Nail in tree approx
10ft North of

NOTES:
See attached plan for
important construction and
maintenance plans.

Sta F 0100

5. TEMPORARY STORAGE REQUIRED

DRAINAGE AREA:

Lagoon (top of dike)

Length * Width =

335.0 190.0 63650.0 square feet

Buildings (roof and lot water)

Length * Width =

0.0 0.0 0.0 square feet

TOTAL DA 63650.0 square feet

Design temporary storage period to be 180 days.

5A. Volume of waste produced

Approximate daily production of manure in CF/LB SSLW 0.00136

Volume = 330480 Lbs. SSLW * CF of Waste/Lb./Day * 180 days

Volume = 80705 cubic feet

5B. Volume of wash water

This is the amount of fresh water used for washing floors or volume of fresh water used for a flush system. Flush systems that recirculate the lagoon water are accounted for in 5A.

Volume = 0.0 gallons/day * 180 days storage/7.48 gallons
Volume = 0.0 cubic feet per CF

5C. Volume of rainfall in excess of evaporation

Use period of time when rainfall exceeds evaporation by largest amount.

180 days excess rainfall = 7.0 inches

Volume = 7.0 in * DA / 12 inches per foot

Volume = 37129.2 cubic feet

5D. Volume of 25 year - 24 hour storm

Volume = 7.5 inches / 12 inches per foot * DA

Volume = 39781.3 cubic feet

TOTAL REQUIRED TEMPORARY STORAGE

5A. 80705 cubic feet

5B. 0 cubic feet

5C. 37129 cubic feet

5D. 39781 cubic feet

TOTAL 157616 cubic feet

6. SUMMARY

Total required volume 488096 cubic feet

Total design volume avail. 496650 cubic feet

Min. req. treatment volume plus sludge accumulation 330480 cubic feet

At elev. 45.3 feet ; Volume is 333840 cubic feet (end pumping)

Total design volume less 25yr-24hr storm is 456869 cubic feet

At elev. 47.5 feet ; Volume is 455434 cubic feet (start pumping)

Seasonal high water table elevation 39.0 feet

7. DESIGNED BY: *Billy W. Hoveler*

APPROVED BY: *M E Sygdu*

DATE: 1/9/92

DATE: 1/22/92

NOTE: SEE ATTACHED WASTE UTILIZATION PLAN

OPERATION AND MAINTENANCE PLAN

This lagoon is designed for waste treatment with minimum odor control. The time required for the planned fluid level to be reached may vary due to soil conditions, flushing operations, and the amount of fresh water added to the system.

Land application of waste water is recognized as an acceptable method of disposal. Methods of application include solid set, center pivot, guns, and traveling gun irrigation. Care should be taken when applying waste to prevent runoff from the field or damage to crops.

The following items are to be carried out:

1. It is strongly recommended that the treatment lagoon be pre-charged to 1/2 its capacity to prevent excessive odors during start-up. Pre-charging reduces the concentration of the initial waste entering the lagoon thereby reducing odors. Solids should be covered with effluent at all times.
2. The attached waste utilization plan shall be followed. This plan recommends sampling and testing of waste (see Attachment B) before land application.
3. Begin pump-out of the lagoon when fluid level reaches elevation 47.5 as marked by permanent markers. Stop pump-out when the fluid level reaches elevation 45.3 or before fluid depth is less than 6 feet deep (this prevents the loss of favorable bacteria).
4. The recommended maximum amount to apply per irrigation is one (1) inch and the recommended maximum application rate is 0.4 inch per hour.
5. Keep vegetation on the embankment and areas adjacent to the lagoon mowed annually. Vegetation should be fertilized as needed to maintain a vigorous stand.
6. Repair any eroded areas or areas damaged by rodents and establish in vegetation.
7. All surface runoff is to be diverted from the lagoon to stable outlets.
8. The Clean Water Act of 1977 prohibits the discharge of pollutants into waters of the United States. The Department of Environment, Health, and Natural Resources, Division of Environmental Management, has the responsibility for enforcing this law.

SPECIFICATIONS FOR CONSTRUCTION OF WASTE TREATMENT LAGOONS

Clearing:

All trees and brush shall be removed from the construction area before any excavating or fill is started. Stumps will be removed within the area of the foundation of the embankment and fill areas and all excavated areas. All stumps and roots exceeding one (1) inch in diameter shall be removed to a minimum depth of one (1) foot. Satisfactory disposition will be made of all debris. The foundation area shall be loosened thoroughly before placement of embankment material.

Cut-off Trench:

A cut-off trench (when specified) shall be installed as shown in the plans.

Construction:

Construction of excavated and earthfill areas shall be performed to the neat lines and grades as planned. Deviations from this will require prior approval of the SCS. Earthfill shall not be placed in standing water and reasonable compaction of the fills shall be performed by the construction equipment or sheeps-foot roller during placement. The embankment of the lagoon shall be installed using the more impervious materials. Construction of fill heights shall include ten (10) percent for settlement. To protect against seepage, when areas of unsuitable material are encountered, they will need to be excavated a minimum of one (1) foot below grade and backfilled and compacted with a suitable material (ie-CL, SC, CH). Refer to the soils investigation information in the plans for special considerations. Precautions should be taken during construction to prevent excessive erosion and sedimentation.

Vegetation:

All exposed embankment and other bare constructed areas shall be seeded to the planned type of vegetation as soon as possible after construction.

SEEDING RECOMMENDATIONS

AREA TO BE SEEDED: 3.0 ACRES

USE THE SEED MIXTURE INDICATED:

- 0 LBS. FESCUE GRASS @ 60 LBS./ACRE
(BEST SUITED ON CLAYEY OR WET SOIL CONDITIONS)
SEEDING DATES: SEPTEMBER 15 TO NOVEMBER 30
- 0 LBS. 'PENSACOLA' BAHIA GRASS @ 60 LBS./ACRE
(SEE FOOTNOTE NO. 1)
SEEDING DATES: MARCH 15 TO JUNE 30
- 24 LBS. HULLED BERMUDA GRASS @ 8 LBS./AC.
(SUITED FOR MOST SOIL CONDITIONS)
SEEDING DATES: APRIL 1 TO JULY 31
- 90 LBS. RYE GRAIN @ 30 LBS./ACRE (NURSERY FOR FESCUE)
- 0 LBS. RYE GRASS @ 40 LBS./ACRE (TEMPORARY VEGETATION)
SEEDING DATES: DECEMBER 1 TO MARCH 30
- LBS. _____

APPLY THE FOLLOWING:

3000 LBS. OF 10-10-10 FERTILIZER (1000 LBS./ACRE)

6 TONS OF DOLOMITIC LIME (2 TONS/ACRE)

300 BALES OF SMALL GRAIN STRAW (100 BALES/ACRE)

ALL SURFACE DRAINS SHOULD BE INSTALLED PRIOR TO SEEDING. SHAPE ALL DISTURBED AREA IMMEDIATELY AFTER EARTH MOVING IS COMPLETED. APPLY LIME AND FERTILIZER THEN DISK TO PREPARE A 3 TO 4 INCH SMOOTH SEEDBED. APPLY SEED AND FIRM SEEDBED WITH A CULTIPACKER OR SIMILAR EQUIPMENT. APPLY MULCH AND SECURE WITH A MULCH ANCHORING TOOL OR NETTING.

1. PENSACOLA BAHIA GRASS IS SLOWER TO ESTABLISH THAN COMMON BERMUDA GRASS. WHEN USING BAHIA, IT IS RECOMMENDED THAT 8 LBS./ACRE OF COMMON BERMUDA BE INCLUDED TO PROVIDE COVER UNTIL BAHIA GRASS IS ESTABLISHED.

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

- 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:

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.

- 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

PHONE NUMBERS

DIVISION OF WATER QUALITY (DWQ)
EMERGENCY MANAGEMENT SERVICES (EMS)
SOIL AND WATER CONSERVATION DISTRICT (SWCD)
NATURAL RESOURCES CONSERVATION SERVICE (NRCS)
COOPERATIVE EXTENSION SERVICE (CES)

910 395 3900
910 296 2125
910 296 2126
910 296 2120
910 296 2143

This plan will be implemented in the event that wastes from your operation are leaking, overflowing or running off site. You should not wait until wastes reach surface waters or leave your property to consider that you have a problem. You should make every effort to ensure that this does not happen. This plan should be posted in an accessible location for all employees at the facility. The following are some action items you should take.

1. Stop the release of wastes. Depending on the situation, this may or may not be possible. Suggested responses to some possible problems are listed below.
 - A. Lagoon overflow-possible solutions are:
 - a. Add soil to berm to increase elevation of dam.
 - b. Pump wastes to fields at an acceptable rate.
 - c. Stop all flows to the lagoon immediately.
 - d. Call a pumping contractor.
 - e. Make sure no surface water is entering lagoon.
 - B. Runoff from waste application field-actions include:
 - a. Immediately stop waste application.
 - b. Create a temporary diversion to contain waste.
 - c. Incorporate waste to reduce runoff.
 - d. Evaluate and eliminate the reason(s) that cause the runoff.
 - e. Evaluate the application rates for the fields where runoff occurred.
 - C. Leakage from the waste pipes and sprinklers-action include:
 - a. Stop recycle pump.
 - b. Stop irrigation pump.
 - c. Close valves to eliminate further discharge.
 - d. Repair all leaks prior to restarting pumps.
 - D. Leakage from flush systems, houses, solid separators-action include:
 - a. Stop recycle pump.
 - b. Stop irrigation pump.
 - c. Make sure siphon occurs.
 - d. Stop all flows in the house, flush systems, or solid separators.
 - E. Leakage from base or sidewall of lagoon. Often this is seepage as opposed to flowing leaks-possible action:
 - a. Dig a small sump or ditch from the embankment to catch all seepage, put in a submersible pump, and pump back to lagoon.
 - b. If holes are caused by burrowing animals, trap or remove animals and fill holes and compact with a clay type soil.
 - c. Have a professional evaluate the condition of the side walls and lagoon bottom as soon as possible.

2. Assess the extent of the spill and note any obvious damages.
 - a. Did the waste reach any surface waters?
 - b. Approximately how much was released and for what duration?
 - c. Any damage notes, such as employee injury, fish kills, or property damage?
 - d. Did the spill leave the property?
 - e. Does the spill have the potential to reach surface waters?
 - f. Could a future rain event cause the spill to reach surface waters?
 - g. Are potable water wells in danger (either on or off the property)?
 - h. How much reached surface waters?
3. Contact appropriate agencies.
 - a. During normal business hours call your DWQ regional office; Phone --. After hours, emergency number: 919-733-3942. Your phone call should include: your name, facility number, telephone number, the details of the incident from item 2 above, the exact location of the facility, the location or direction of movement of the spill, weather and wind conditions. The corrective measures that have been under taken, and the seriousness of the situation.
 - b. If spill leaves property or enters surface waters, call local EMS phone number.
 - c. Instruct EMS to contact local Health Department.
 - d. Contact CEs, phone number --, local SWCD office phone number --, and local NRCS office for advice/technical assistance phone number --.
4. If none of the above works call 911 or the Sheriff's Department and explain your problem to them and ask the person to contact the proper agencies for you.
5. Contact the contractor of your choice to begin repair or problem to minimize off-site damage.
 - a. Contractors Name: Murphy Farms
 - b. Contractors Address: PO Box 759 Rose Hill, NC
 - c. Contractors Phone: 910 289-2111
6. Contact the technical specialist who certified the lagoon (NRCS, Consulting Engineer, etc.)
 - a. Name: Kraig Westerbeek
 - b. Phone: 910 289 2111
7. Implement procedures as advised by DWQ and technical assistance agencies to rectify the damage, repair the system, and reassess the waste management plan to keep problems with release of wastes from happening again.

INSECT CONTROL CHECKLIST FOR ANIMAL OPERATIONS

Source	Cause	BMP's to Minimize Odor	Site Specific Practices
(Liquid Systems)			
Flush Gutters	Accumulation of solids	<input checked="" type="checkbox"/> Flush system is designed and operated sufficiently to remove accumulated solids from gutters as designed. <input checked="" type="checkbox"/> Remove bridging of accumulated solids at discharge	
Lagoons and Pits	Crusted Solids	<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 6-8 inches over more than 30% of surface.	
Excessive Vegetative Growth	Decaying vegetation	<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.	
(Dry Systems)			
Feeders	Feed Spillage	<input type="checkbox"/> Design, operate and maintain feed systems (e.g., bunkers and troughs) to minimize the accumulation of decaying wastage. <input type="checkbox"/> Clean up spillage on a routine basis (e.g. 7-10 day interval during summer; 15-30 day interval during winter).	
Feed Storage	Accumulations of feed residues	<input type="checkbox"/> Reduce moisture accumulation within and around immediate perimeter of feed storage areas by insuring drainage away from site and/or providing adequate containment (e.g., covered bin for brewer's grain and similar high moisture grain products). <input type="checkbox"/> Inspect for and remove or break up accumulated solids in filter strips around feed storage as needed.	
Animal Holding Areas	Accumulations of animal wastes and feed wastage	<input type="checkbox"/> Eliminate low area that trap moisture along fences and other locations where waste accumulates and and disturbance by animals is minimal. <input 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).	

Dry Manure Handling
Systems

Accumulations of animal wastes

- () Remove spillage on a routine basis (e.g. 7-10 day interval during summer; 15-30 days interval during winter) where manure is loaded for land application or disposal.
- () Provide for adequate drainage around manure stockpiles.
- () Inspect for and remove or break up accumulated wastes in filter stripes around stockpiles and manure handling areas as needed.

The issues checked () pertain to this operation. The landowner/integrator agrees to use sound judgment in applying insect control measures as practical.

I certify the aforementioned insect control Best Management Practices have been reviewed with me.


(Landowner Signature)

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

AMIC—November 11, 1996

Storage tank or basin surface	Partial microbial decomposition Mixing while filling Agitation when emptying	() Bottom or midlevel loading () Tank covers () Basin surface mats of solids () Proven biological additives or oxidants
Settling basin surface	Partial microbial decomposition Mixing while filling Agitation when emptying	() Extend drainpipe outlets underneath liquid level () Remove settled solids regularly
Manure, slurry or sludge spreader outlets	Agitation when spreading Volatile gas emissions	() Soil injection of slurry/sludges () Wash residual manure from spreader after use () Proven biological additives or oxidants
Uncovered manure, slurry or sludge on field surfaces	Volatile gas emissions while drying	() Soil infection of slurry/sludges () Soil incorporation within 48 hours () Spread in thin uniform layers for rapid drying () Proven biological additives or oxidants
Dead animals	Carcass decomposition	(X) Proper disposition of carcasses
Dead animal disposal pits	Carcass decomposition	() Complete covering of carcasses in burial pits () Proper location/construction of disposal pits
Incinerators	Incomplete combustion	() Secondary stack burners
Standing water around facilities	Improper drainage Microbial decomposition of organic matter	(X) Grade and landscape such that water drains away from facilities
Manure tracked onto public roads from farm access	Poorly maintained access roads	(X) Farm access road maintenance

Additional Information:

Available From:

Swine Manure Management: O200 Rule/BMP Packet	NCSU-County Extension Center
Swine Production Farm Potential Odor Sources and Remedies, EBAE Fact Sheet	NCSU-BAE
Swine Production Facility Manure Management: Pit Recharge-Lagoon Treatment; EBAE 128-88	NCSU-BAE
Swine Production Facility Manure Management: Underfloor Fluse-Lagoon Treatment; EBAE 129-88	NCSU-BAE
Lagoon Design and Management for Livestock Manure Treatment and Storage; EBAE 103-83	NCSU-BAE
Calibration of Manure and Wastewater Application Equipment; EBAE Fact Sheet	NCSU-BAE
Controlling Odors from Swine Buildings; PIH-33	NCSU-Swine Extension
Environmental Assurance Program: NPPC Manual	NC Pork Producers Assoc
Options for Managing Odor; a report from the Swine Odor Task Force	NCSU Agri Communications
Nuisance Concerns in Animal Manure Management: Odors and Flies; PRO107, 1995 Conference Proceedings	Florida Cooperative Extension

The issues checked () pertain to this operation. The landowner/integrator agrees to use sound judgment in applying odor control measures as practical.

I certify the aforementioned odor control Best Management Practices have been reviewed with me.


(Landowner Signature)

SWINE FARM WASTE MANAGEMENT ODOR CONTROL CHECKLIST

Source	Cause	BMP's to Minimize Odor	Site Specific Practices
Farmstead	Swine production	(X) Vegetative or wooded buffers; (X) Recommended best management practices; (X) Good judgment and common sense	
Animal body surfaces	Dirty manure-covered animals	(X) Dry floors	
Floor surfaces	Wet manure-covered floors	(X) Slotted floors; (X) Waterers located over slotted floors; () Feeders at high end of solid floors; (X) Scrape manure buildup from floors; () Underfloor ventilation for drying	
Manure collection pits	Urine	(X) Frequent manure removal by flush, pit recharge, or scrape	
	Partial microbial decomposition	() Underfloor ventilation	
Ventilation exhaust fans	Volatile gases;	(X) Fan maintenance;	
	Dust	(X) Efficient air movement	
Indoor surfaces	Dust	(X) Washdown between groups of animals () Feed additives; () Feeder covers; () Feed delivery downspout extenders to feeder covers	
Flush tanks	Agitation of recycled lagoon liquid while tanks are filling	() Flush tank covers () Extend fill lines to near bottom of tanks with anti-siphon vents	
Flush alleys	Agitation during wastewater conveyance	() Underfloor flush with underfloor ventilation	
Pit recharge points	Agitation of recycled lagoon liquid while pits are filling	() Extend recharge lines to near bottom of pits with anti-siphon vents	
Lift stations	Agitation during sump tank filling and drawdown	() Sump tank covers	
Outside drain collection or junction boxes	Agitation during wastewater conveyance	() Box covers	
End of drainpipes at lagoon	Agitation during wastewater	() Extend discharge point of pipes underneath lagoon liquid level	
Lagoon surfaces	Volatile gas emissions Biological mixing Agitation	(X) Proper lagoon liquid capacity (X) Correct lagoon startup procedures () Minimum surface area-to-volume ratio (X) Minimum agitation when pumping () Mechanical aeration () Proven biological additives	
Irrigation sprinkler nozzles	High pressure agitation Wind draft	(X) Irrigate on dry days with little or no wind (X) Minimum recommended operation pressure (X) Pump intake near lagoon liquid surface () Pump from second-stage lagoon	

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 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)