
**THE ENVIRONMENTAL REVIEW COMMISSION AND
FISCAL RESEARCH DIVISION OF
THE NORTH CAROLINA GENERAL ASSEMBLY**

**2008 INTERIM REPORT ON THE LAGOON CONVERSION PROGRAM
FOR INNOVATIVE SWINE WASTE MANAGEMENT SYSTEMS
November 25, 2008**

North Carolina Department of Environment and Natural Resources
Division of Soil and Water Conservation

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II. INTRODUCTION

Through Senate Bill 1465, the Lagoon Conversion Program (LCP) was established by the General Assembly and signed into law on August 31, 2007 as General Statute 143-215.10I. The intent of this program is to reduce environmental hazards of swine production and to turn swine waste into value-added by-products by converting conventional anaerobic lagoon and sprayfield waste systems to proven, innovative animal waste management systems.

The Division of Soil and Water Conservation (DSWC) within the NC Department of Environment and Natural Resources (NCDENR) was charged with the responsibility of administering the LCP through the NC Agriculture Cost-Share Program for Nonpoint Source Pollution Control pursuant to G.S. 143-215.74. The General Assembly appropriated \$2,000,000 for the first round of projects. These funds are capped at

\$500,000 per application and are to be allocated at 90% of the average cost for each system with the recipient to provide the remaining 10% either directly or through in-kind services.

The LCP is intended to be *technology-neutral*, however, until the performance standards are made permanent through rulemaking, approved technologies for the first round of funding must be consistent with the NC State University Animal and Poultry Waste Management Center's March 2006 report entitled, "Development of Environmentally Superior Technologies – Phase 3 Report: for Technology Determinations per Agreement Between the Attorney General of North Carolina and Smithfield Foods, Premium Standard Farms, and Frontline Farmers" (APWMC Phase 3 Report). At this time, the following innovative animal waste management systems have met the performance standards in the APWMC Phase 3 Report:

- Super Soils Solids Separation/Nitrification – Denitrification/Soluble Phosphorus Removal System (only system approved for treatment of liquid portion of waste); to be used in conjunction with one of the following solids treatment systems:
- Super Soils Centralized Composting System (solids)
- ORBIT – High Solids High Temperature Anaerobic Digester (solids)
- Gasification of Solids System (solids)
- BEST Fluidized Bed Combustion Solids System in Idaho (solids)

Senate Bill 1465 prohibits permitting of a new or expanding swine management system utilizing an anaerobic lagoon and sprayfield as the swine farm's primary method of treatment and land application. Senate Bill 1465 also charged the Environmental Management Commission (EMC) to adopt rules to make the performance standards permanent thus allowing for the construction of innovative swine waste management systems for either new farms or for the expansion of existing farms. The swine waste management system performance standards are to:

- Eliminate swine waste discharge to surface water and groundwater through direct discharge, seepage or runoff
- Substantially eliminate atmospheric emission of ammonia
- Substantially eliminate odor detectable beyond the swine farm property boundaries
- Substantially eliminate disease-transmitting vectors and pathogens
- Substantially eliminate nutrient and heavy metals in soils and groundwater

On November 13, 2008, the EMC approved rules to implement the new provisions of Senate Bill 1465. The rules have been submitted to the Rules Review Commission (RRC) for final approval on December 18, 2008. If approved by the RRC, the rules including the new performance standards may become effective as early as January 1, 2009. See Attachment A for the proposed definitions and changes to 15A NCAC 02T .1307 *Swine Management System Performance Standards*.

Other components of the rule were changed to facilitate the new performance standards and the lagoon conversion program. See:

- Attachment B for 15A NCAC 02T .1308 *Evaluation and Approval of Swine Waste Management Systems*

- Attachment C for 15A NCAC 02T .1309 *Lagoon Conversion Requirements*
- Attachment D for 15A NCAC 02D .1808 *Evaluation of New or Modified Swine Farms*

III. SELECTION PROCESS

In October 2007, the DSWC Director appointed a LCP Advisory Committee to develop the program's criteria and selection process, and overall guidance for program implementation. Members are:

- Mary Combs, State Conservationist, Natural Resources Conservation Services/US Dept. of Agriculture
- Molly Diggins, State Director, NC Sierra Club
- Lamont Futrell, Swine Producer and President, Frontline Farmers
- Dewitt Hardee, Environmental Program Manager, NC Dept. of Agriculture and Consumer Services
- Heather Jacobs, Riverkeeper, Pamlico-Tar River Foundation
- Deborah Johnson, Chief Executive Officer, NC Pork Council
- Dr. Joe Rudek, Senior Scientist, Environmental Defense
- Coleen Sullins, Director, Division of Water Quality, NC Dept. of Environment and Natural Resources
- Dr. Mike Williams, Director, Animal Poultry Waste Management Center, NC State University

The LCP Advisory Committee met four times during the last quarter of 2007. The Committee determined early in the process that until the Performance Standard Rules were made permanent in 2009, the program's first round of funding would only be considered for (1) *existing* swine farms and (2) centralized waste collection and treatment systems serving a minimum of one existing swine farm, that proposes to install the approved technologies outlined in the APWMC Phase 3 Report. Applications must include pilot scale or full scale data to substantiate the proposed technology is capable of meeting the specified performance standards.

The Committee also compiled a rating matrix to reflect the criteria written in Senate Bill 1465, section 2.(d)(2) to give funding priority to *"...systems that are affordable, easily maintained, produce marketable by-products, reduce or eliminate the emission of ammonia and greenhouse gases and are capable of being connected to a centralized waste collection and treatment system"*. Through the rating matrix, priority points were awarded to projects that:

- Will result in complete removal of the swine waste management system from the 100 year floodplain
- Have the capability to connect to a centralized waste collection and treatment system
- Will be more easily maintained as determined by the type and level of waste operator certification needed to operate the system

- Is more affordable based on the fixed cost of converting the existing system to treat both the liquid and solid waste components per 1,000 lbs. of steady state live weight
- Will reduce or eliminate ammonia emissions from the swine housing. (Note: approved innovative waste management system must address ammonia emissions from the system's collection, treatment and storage components, therefore priority points will be given to projects that also address swine housing.)
- Capture or offset methane and/or other greenhouse gases
- Have established markets for the generated waste by-products
- Have good compliance histories for the current year and previous three years as determined by the potential environmental impact model developed through the *Pilot Program for Inspections of Animal Waste Management Systems*.

DSWC staff and the LCP Advisory Committee determined all selected applicants must undergo a financial review to ensure solvency and a technical review to ensure the proposed project meets the performance standards established in the APWMC Phase 3 Report. The NC Agricultural Finance Authority agreed, at no cost to the program, to compile the reporting form and evaluate completed financial reports provided by first round applicants. The financial evaluations must be completed and approved by the NC Agricultural Finance Authority, prior to approval for funding of the selected applications, to ensure the swine farms and/or centralized systems are solvent and to reduce potential for financial failure of the projects. The technical review of the projects will be provided by a team of engineers and technical specialists from DSWC, Division of Water Quality (DWQ), and the NCSU Animal and Poultry Waste Management Center, prior to approval for funding of the selected applications. Selected projects will undergo construction checks and continual monitoring, as determined by each facility's permit, by various technical staff with the DSWC, DWQ, NCSU Animal and Poultry Waste Management Center, and the local Soil and Water Conservation Districts.

State appropriated funds for selected innovative swine waste management systems will be allocated through the NC Agriculture Cost-Share Program (ACSP). Applicants must complete and submit the required ACSP forms to their respective local Soil and Water Conservation District. Because ACSP is a water quality program and only addresses existing water quality issues, the program will only allow funding for *existing* swine farms and for centralized waste collection and treatment systems receiving waste from a minimum of one *existing* swine farm. Once the DSWC Director approves applications for participation, the NC Soil and Water Conservation Commission must concur and approve the allocation of cost-share funds to the respective Soil and Water Conservation Districts in order for the process to proceed in accordance with the ACSP.

The LCP will use a rolling application process allowing applications to remain "active" even if they are not approved for funding. Participants may submit updated applications to reflect improvements such as further development and/or modification of the system, new or additional data, updated business model, and adjusted cost projections.

The following timeline was established, with guidance from the LCP Advisory Committee, for selection of the first round applicants for the program:

- Feb. 1, 2008 - Request for applications
- March 17, 2008 - Applications for round 1 funding due
- March, 2008 - NCDENR in-house review of applications
- April, 2008 - Site visits conducted at potential project sites
- May 5, 2008 - DSWC approves initial group applications for further review
- May 8, 2008 - Financial reports due from potential applicants
- May 23, 2008 - DSWC Director selects applicants for first round funding
- May 27, 2008 - Soil & Water Conservation Commission approves allocations

IV. FIRST ROUND APPLICATIONS SELECTED

By March 17, 2008, the DSWC had received seven applications, totaling almost \$4M for consideration for the LCP.

	Requested	Match	Total Cost
1. Centralized - Sampson	\$ 500,000	\$ 75,000	\$ 575,000
2. Farm - Sampson	\$ 500,000	\$ 56,000	\$ 556,000
3. Farm - Sampson	\$ 500,000	\$ 56,000	\$ 556,000
4. Farm - Pitt	\$ 432,216	\$ 48,024	\$ 480,240
5. Farm - Wilson	\$ 500,000	\$ 175,865	\$ 675,865
6. Centralized - Greene	\$ 475,877	\$ 52,876	\$ 528,753
7. Farm - Greene	\$ 475,877	\$ 52,876	\$ 528,753
Totals	\$ 3,383,970	\$ 516,641	\$ 3,900,611

On March 24, staff from the DSWC and DWQ conducted a preliminary review of the applications. The first three applications from Sampson County utilized the proven Super Soils USA, Inc. technologies and were picked to proceed in the selection process. Projects #4 and #5 from Pitt and Wilson Counties were also approved to proceed in the selection process, however staff noted concerns with adequate system sizing and whether the systems could meet the ammonia emissions performance standard listed in APWMC Phase 3 Report. The two applications from Greene County listed in the table as #6 and #7 were rejected for round 1 funding due to lack of pilot scale or full scale data to substantiate the systems' abilities to meet specified performance standards.

Swine farm applications #2 through #5 all utilized existing anaerobic lagoons as components of the proposed innovative waste management systems. All applicants expressed concerns for the need to maintain current anaerobic lagoon and sprayfield systems in the event the innovative waste management system failed. To address this concern, a workgroup of LCP Advisory Committee members, Divisions of Water Quality and Soil and Water Conservation staff, and NCDENR's legal counsel was given the task to determine the permissibility of maintaining and/or incorporating a swine operation's "existing" anaerobic lagoon into a new innovative animal waste management system under the LCP.

The workgroup determined it was permissible to use an “existing” anaerobic lagoon in the LCP under the following conditions:

1. The permit for the anaerobic lagoon issued prior to 1 September 2007 is maintained as a valid permit, including compliance with its requirements such as maintaining the system components, submitting required reports and seeking renewal when necessary. The innovative system is not permitted as a *new* or *expanding* facility, but rather a *converted* facility. In essence, the farm will maintain two permits, the anaerobic lagoon system permit (NPDES or state general permit) and the converted innovative system permit. The converted innovative system permit does not allow the farm to increase its steady state live weight (herd size).
2. If the farm plans to maintain the “existing” anaerobic lagoon, the structure shall not continue to receive waste. All permit conditions apply under the farm’s NPDES or state general permit including maintenance of compliant sludge and freeboard levels. In addition, the waste application system and receiving crops (e.g. sprayfields) must be maintained in accordance with the farm’s existing permit.
3. The “existing” anaerobic lagoon may be incorporated as a component of the new innovative animal waste management system as long as the earthen structure is not located within the 100 yr. floodplain and:
 - As a treatment component, it is designed and constructed with a synthetic liner to eliminate discharge to groundwater or
 - As a storage component for final effluent only, it meets current permitting requirements. (Note: while the water quality parameters are not defined for final effluent, the waste system must reduce total nitrogen mass by 75% from influent levels for the whole farm, and phosphorus, copper and zinc mass by 50% from influent levels for the whole farm in accordance with the APWMC Phase 3 Report. Nitrogen, phosphorus, copper and zinc transported off of the farm is considered a reduction.)
4. In the event the new waste system fails (e.g. system is unable to meet performance standards as established in the permit), the farm may petition the Soil and Water Conservation Commission to allow it to *revert* back to the existing anaerobic lagoon and waste application (sprayfield) system without penalty through a “No Fault Failure” clause in the LCP contract. The “No Fault Failure” clause cannot be used if it is determined that the owner or operator either failed to properly maintain the “existing” anaerobic lagoon and land application system, or failed to properly construct, operate and maintain the innovative waste management system.
5. If a farm elects to *revert* back to the existing anaerobic lagoon and waste application (sprayfield) system for reasons other than system failure, the farm owner will be required to reimburse the cost-share funds back to the state at a pro-rated amount as required by the NC Agriculture Cost-Share Program.

Reversion will not be permitted if it is determined the owner or operator failed to properly maintain the “existing” anaerobic lagoon and land application system.

On April 24, 2008 site visits of the remaining five projects were conducted by a review team of representatives from the DSWC, DWQ, NCSU Animal and Poultry Waste Management Center and Environmental Defense. Each project was discussed at length including noted areas for improvement. Applicants were given the opportunity to ask questions and learn more about the program,



Each applicant was given a letter from the DSWC Director containing guidance for use of an existing lagoon along with copies of documents related to the entity’s financial report and general tax information. DSWC staff advised applicants to consult with a qualified tax professional since ACSP recipients receiving cost share funds of more than \$600 in a calendar year, will also receive a 1099-G form for income tax purposes. Documentation included:

- Memo from DSWC Director requesting a financial report be completed and returned to DSWC by May 8, 2008, and a memo from the NC Agricultural Finance Authority Executive Director discussing the request for information and the use of enclosed *USDA Farm Business Plan Worksheet forms* for this program.
- A copy of the Federal Register Notice Volume 52, Number 53 dated March 19, 1987 stating that the USDA Secretary “*determined that all cost-share payments under this program (NC Agricultural Cost-Share Program) are for soil and water conservation and protecting or restoring the environment. Subject to further determination by the Secretary of Treasury, this determination permits payment recipients to exclude from gross income, for federal tax purposes, all or part of such payments made under the North Carolina Agriculture Cost-Share Program*”. Applicants are advised to consult with a qualified tax professional to review IRS publication 225 (Farmer’s Tax Guide) to determine tax status of cost share payments and expenses for soil and water conservation purposes.

- The Division of Water Quality (DWQ) *Application for Tax Certification and Exemption* (form TC-WQ), to be used only for waste treatment systems and equipment as authorized by the DWQ.

On May 2, 2008 a second review of applications was conducted by members of the LCP Advisory Committee and DENR staff. The committee recommended approval of the three Sampson County applications and recommended placing applications #4 and #5 in a holding pattern pending additional information.

In addition to site visits, environmental compliance checks of the swine farms and centralized waste collection and treatment system were completed on May 7 by DSWC staff. The compliance checks were conducted for the current year and previous three years as determined by a potential environmental impact model developed through the *Pilot Program for Inspections of Animal Waste Management Systems*. All of the proposed projects were rated as having low potential for environmental impact.

Dr. Frank Bordeaux with the NC Agricultural Finance Authority provided DSWC, through a May 16, 2008 memorandum, the initial financial review results of the applications. In the memo it states, *“Our analysis consisted of reviewing “net worth” as expressed by material supplied by the applicants. Our conclusion was that the applicants are probably economically viable in the aspects reviewed.”*

Based on the applications, site visits and financial and technical review recommendations, DSWC Director Patricia Harris selected the following projects for round one funding:

1. *Super Soils Systems USA, Inc.* Centralized Composting System Expansion in Sampson County. This centralized system utilizes solids from swine farms and composts the material for stabilization and pathogen reduction. The resulting Class A compost will be used as a basic material in the manufacturing of soil amendments including container mix, potting soil and fertilizer. These value-added by-products will be sold in bulk or bagged for distribution in markets throughout the southeastern United States. The expansion of this existing operation is needed to facilitate additional solids from the following two farms in addition to a third swine farm funded by the Clean Water Management Trust Fund
2. The Tyndall Hog & Chicken Farm, Inc. is a 5,880 head feeder-to-finisher operation in Sampson County. The farm will implement the Super Soils waste treatment technology to separate solids for transport offsite, followed by soluble nitrogen and phosphorus removal from the remaining effluent. The treated effluent will be used to fill the waste collection pits in the houses. The solids will be transported to the Super Soils Centralized Composting System. Over time, the existing lagoon will be converted to an irrigation storage pond to support existing crop production.

3. The Pope & Son Swine Farm is an 8,820 head feeder-to-finisher operation in Sampson County. The farm will also implement the Super Soils waste treatment technology to separate solids for transport offsite, followed by soluble nitrogen and phosphorus removal from the remaining effluent. The treated effluent will be used to fill the waste collection pits in the houses. The solids will be transported to the Super Soils Centralized Composting System. Over time, the existing lagoon will be converted to an irrigation storage pond to support existing crop production.



Super Soils Systems USA, Inc.
Centralized Composting System for
treatment of solids into a Class A compost
for use in various soil amendments



Super Soils Systems USA, Inc.
on farm circulating loop liquid treatment system
utilizing nitrification and denitrification processes
for removal of soluble nitrogen & phosphorous

On May 27, 2008, the NC Soil and Water Conservation Commission approved allocating \$1.5M to the Sampson Soil and Water Conservation District to fund the three projects. The Sampson County applicants were notified by phone of the approved allocations. DSWC staff continued to work with applicants to answer questions. On August 1, 2008, grant award letters were sent to officially notify the Sampson County applicants of the allocation approvals. The letter also included the required DWQ permit applications and ACSP application forms due back to DSWC on October 1, 2008.

DSWC staff continued to work with applicants #4 and #5 through review of additional information. The refined applications were reviewed on August 8, 2008 by engineers and technical specialists with DSWC, DWQ, NCSU Animal and Poultry Waste Management Center and Environmental Defense. The review team agreed the proposed anaerobic digestion with methane capture for energy generation systems were viable, but the technology basis for the projects remains deficient and warrants additional information to ensure the systems would meet the specified performance standards, particularly for reduction in ammonia emissions. On September 4, 2008, the engineering firm representing both applicants withdrew the LCP proposals from consideration, citing that when *“the LCP issued guidance on April 15, 2008 limiting the use of existing anaerobic lagoons to final storage only, and then only with documentation of a maximum hydraulic conductivity rate, it required additional construction expenditure for each project and eliminated some benefits to the farmer. Without the use of the existing structure, proving the performance criteria such as the*

substantial elimination of ammonia emissions added significant expense to these particular sites.”

V. ECONOMIC CHALLENGES

On October 3, 2008, Pope and Son Swine Farm withdrew their application from the program citing concerns with the present economic climate and uncertainty.

Based on information provided by the National Pork Producers Council and the NC Pork Council, the pork industry is facing an uncertain time including market volatility of unprecedented proportion. Nationally, the pork industry has experienced losses close to \$2B for the first four months of 2008. From May through August, producers held their own however in the last 90 days volatility has been the norm both in terms of costs and revenue. Most operations have lost 25% or more of their equity. In North Carolina, it's been estimated the general herd inventory has been reduced by at least 5% among most of the integrators with significant sow liquidation in a few of the production companies. In general, contract growers have been insulated from herd reductions but many are now realizing the seriousness of the situation as integrators cope with high input costs, low market prices and increasing market volatility. In North Carolina, both company and contract grower-owned farms now exist that are not populated and will likely remain empty for months to come.

VI. NEXT STEPS

The two remaining applicants in the LCP have submitted their ACSP forms and are currently completing their permit applications for approval. Both entities remain committed to the program. Also, DSWC staff remains positive that both projects will be installed by July 1, 2009 despite the fact that the program is now operating 60 days behind the ambitious schedule initially proposed.

A meeting of the LCP Advisory Committee will be scheduled between December 2008 and February 2009 to update the members on the progress of the program, make adjustments to the established selection process in anticipation of permanent Performance Standards, and assess the current economic situation to determine when the round 2 *Call for Proposals* will be implemented.

**RULES TO IMPLEMENT GENERAL STATUTE 143-215.10I
SWINE WASTE MANAGEMENT SYSTEM PERFORMANCE STANDARDS
(Approved November 13, 2008 by the EMC)**

1 15A NCAC 02T .1307 is adopted with changes as published in 23:03 NCR 197 as follows:
2

3 **15A NCAC 02T .1307 SWINE WASTE MANAGEMENT SYSTEM PERFORMANCE STANDARDS**

4 (a) This Rule applies to animal waste management systems subject to regulation under G.S. 143-215.10(I).

5 (b) An animal waste management system that serves a swine farm subject to regulation under G.S. 143-
6 215.10(I), shall meet or exceed all of the following performance standards:

7 (1) Eliminate the discharge of animal waste to surface waters and groundwater through direct
8 discharge, seepage, or runoff. To meet this standard:

9 (A) Earthen structures must be designed and constructed with synthetic liners to
10 eliminate seepage.

11 (B) Solids storage structures shall meet ~~proper~~applicable engineering practices and
12 ~~applicable~~ NRCS design standards.

13 (C) The Certified Animal Waste Management Plan (CAWMP) must meet current NRCS
14 ~~Standards standards~~ for a Comprehensive Nutrient Management Plan (CNMP) as
15 defined by Part 600, Subpart E of the NRCS National Planning Procedures
16 Handbook, which are hereby incorporated by reference, including any subsequent
17 additions or amendments. The handbook may be downloaded at no cost from the
18 NRCS website: http://www.nrcs.usda.gov/technical/afo/cnmp_guide_index.html

19 (D) Swine waste treatment structures that automatically convey swine waste using
20 pumps must have audible and visible high water alarms with an auto dialer device set
21 to contact the farm owner or farm ~~manager-manager~~; ~~or have a gravity overflow to a~~
22 ~~basin that can contain the flow rate of the largest pump in the system for the~~
23 ~~maximum amount of time that an operator will not be on-site. on-site; An alternative~~
24 ~~to this option is~~ or a secondary containment structure designed, constructed, and
25 operated to contain the ~~steady-state~~ volume of the largest animal waste treatment
26 structure and the flow rate of the largest pump in the system for the maximum
27 amount of time that an operator will not be on-site.

28 (E) No more than the equivalent volume of one month of design flow of untreated swine
29 waste shall be accumulated and stored prior to the initiation of treatment.

30 (2) Substantially eliminate atmospheric emission of ammonia. To meet this standard:

31 (A) Combined ammonia emissions from swine waste treatment and storage structures
32 may not exceed an annual average of 0.2 kg NH₃-N/wk/1,000 kg of steady-state live
33 weight;

**RULES TO IMPLEMENT GENERAL STATUTE 143-215.10I
SWINE WASTE MANAGEMENT SYSTEM PERFORMANCE STANDARDS
(Approved November 13, 2008 by the EMC)**

- 34 (B) Ammonia emissions from land application sites shall not exceed an annual average
35 of 0.2 kg NH₃-N/wk/1,000 kg of steady-state live weight; and
- 36 (C) Ammonia emissions from the swine farm must not exceed an annual average of 0.9
37 kg NH₃-N/wk/1,000 kg of steady-state live weight.
- 38 (3) Substantially eliminate the emission of odor that is detectable beyond the boundaries of the
39 parcel or tract of land on which the swine farm is located. To meet this standard, Swine swine
40 waste management systems must reduce odor levels, frequency, and duration from the whole
41 farm, such that there is no objectionable odor, as defined the requirements of 15A NCAC 02D
42 .1808, .1808 are met at the property boundary.
- 43 (4) Substantially eliminate the release of disease-transmitting vectors and airborne pathogens. To
44 meet this standard:
- 45 (A) Swine waste management systems shall meet the vector attraction reduction
46 requirements in Rule .1107 of this Subchapter for the land application of separated
47 solids and biological residuals.
- 48 (B) Swine waste management systems shall meet the pathogen reduction requirements in
49 Rule .1106 of this Subchapter for Class A biosolids that are to be land applied
50 pursuant to .1106(a)(1) or for Class B biosolids that are to be otherwise applied to
51 land.
- 52 (C) Fecal coliform concentrations in the final liquid effluent shall not exceed an annual
53 average of ~~400,000~~ 7,000 Most Probable Number/100mL.
- 54 (5) Substantially eliminate nutrient and heavy metal contamination of soil and groundwater. To
55 meet this standard, Swine swine waste management systems that land apply effluent shall:
- 56 (A) Meet the current NRCS requirements for a Comprehensive Nutrient Management
57 Plan (CNMP) as defined by Part 600, Subpart E of the NRCS National Planning
58 Procedures Handbook; and
- 59 (B) Demonstrate through predictive calculations or modeling that land application of
60 swine waste at the proposed rate will not cause or contribute to a violation of
61 groundwater standards under 15A NCAC 2L.

62
63 *History Note:* Authority G.S. 143-215.1; 143-215.3(a); 143-215.10A; 143-215.10I;
64 Eff. January 1, 2009.

**RULES TO IMPLEMENT GENERAL STATUTE 143-215.10I
EVALUATION AND APPROVAL OF SWINE WASTE MANAGEMENT SYSTEMS
(Approved November 13, 2008 by the EMC)**

1 15A NCAC 02T .1308 is adopted with changes as published in 23:03 NCR 197 as follows:
2

3 **15A NCAC 02T .1308 EVALUATION AND APPROVAL OF SWINE WASTE MANAGEMENT**
4 **SYSTEMS**

5 (a) This Rule ~~shall provide~~ establishes requirements for the evaluation, approval and permitting of swine waste
6 management systems that are required to meet the performance standards in Rule .1307 of this Section.

7 (b) APPLICATION: The applicant shall submit a permit application in writing to the Division ~~to qualify~~
8 showing that a swine waste management system ~~as meeting~~ meets the performance standards. The application
9 shall include the following:

- 10 (1) operation and maintenance procedures, system classification, proposed management entity
11 and system operator requirements;
- 12 (2) a description of the swine waste management system, including materials used in
13 construction, and its proposed use;
- 14 (3) a summary of any pertinent literature, published research, and previous experience with and
15 performance of a waste management system of similar waste characteristics;
- 16 (4) ~~12 months of results~~ Results of 12 months of testing, research or monitoring of pilot- or full-
17 scale operational system(s); and shall identify whether the testing, research or monitoring
18 provided was conducted by a third party research or testing organization;
- 19 (5) documentation of the protocol used to evaluate the performance of the swine waste
20 management system;
- 21 (6) the identity and qualifications, if applicable, of any proposed research or testing organization
22 and the principal investigators, and an affidavit certifying that the organization and principal
23 investigators have no conflict of interest and do not stand to gain financially from the sale of
24 the technology;
- 25 (7) an affidavit certifying that the swine waste management system submitted for approval is the
26 same as the certified or listed product; or identify any modifications made to the submitted
27 system;
- 28 (8) a procedure to address system malfunction and replacement;
- 29 (9) notification of any proprietary or trade secret information, system, component, or device;
- 30 (10) Engineering design documents. If required by G.S. 89C, a professional engineer shall prepare
31 these documents. The following documents shall be provided to the Division by the applicant:
32 ~~[Note: The North Carolina Board of Examiners for Engineers and Surveyors has determined,~~
33 ~~via letter dated December 1, 2005, that preparation of engineering design documents pursuant~~
34 ~~to this Paragraph constitutes practicing engineering under G.S. 89C.]~~

**RULES TO IMPLEMENT GENERAL STATUTE 143-215.10I
EVALUATION AND APPROVAL OF SWINE WASTE MANAGEMENT SYSTEMS
(Approved November 13, 2008 by the EMC)**

- 35 (A) engineering plans for the entire system, including treatment, storage, application, and
36 disposal facilities and equipment except those previously permitted unless those
37 previously permitted are directly tied into the new units or are critical to the
38 understanding of the complete process;
- 39 (B) specifications describing materials to be used, methods of construction, and means
40 for ensuring quality and integrity of the finished product including leakage testing;
41 and
- 42 (C) engineering calculations including hydraulic and pollutant loading for each treatment
43 unit, treatment unit sizing criteria, hydraulic profile of the treatment system, total
44 dynamic head and system curve analysis for each pump, buoyancy calculations, and
45 irrigation ~~design~~ design;
- 46 (11) a complete ~~animal waste management system~~ permit application in accordance with Section
47 .0100 of this ~~Subchapter~~ Subchapter; and
- 48 (12) ~~upon approval by the Division, in~~ In lieu of the requirements of Items (3)~~(6)~~, through (6), the
49 applicant may submit data from a full-scale facility previously permitted by the Division.
- 50 (c) APPROVAL OF NEW OR EXPANDING SWINE WASTE MANAGEMENT SYSTEMS: The Division
51 shall review all applications submitted in accordance with Rule .0107 of this Subchapter. The Division shall
52 approve the swine waste management system in accordance with Rule .0108 of this Subchapter, ~~and~~ when the
53 applicant can show that the performance standards of Rule .1307 of this Section will be met.
- 54 (d) MONITORING REQUIREMENTS: Once the newly permitted system ~~comes into steady state conditions~~
55 reaches full capacity or within 6 months, whichever comes sooner, the permittee shall monitor system
56 performance ~~shall be monitored~~ for two years with quarterly sampling to assure that the treatment system is
57 meeting performance standards. If, after two years the treatment system is compliant with Rule .1307 of this
58 Section, ~~monitoring the permittee shall monitor for compliance with~~ of the performance standards in Rule .1307
59 ~~shall be performed~~ on the following schedule:
- 60 (1) Ammonia emissions monitoring from swine waste treatment and storage structures shall be
61 ~~required~~ as follows:
- 62 (A) Ammonia air emissions from open-air structures shall be directly sampled once per
63 calendar year, with alternating years having sampling during the ~~warm and cold~~
64 summer and winter seasons, or
- 65 (B) Liquid from open-air waste treatment and storage structures shall be sampled at a
66 minimum of once per quarter.
- 67 (2) Monitoring of odor intensity shall be ~~required~~ on an annual basis, with alternating years
68 having sampling during the ~~warm and cold~~ summer and winter seasons.

**RULES TO IMPLEMENT GENERAL STATUTE 143-215.10I
EVALUATION AND APPROVAL OF SWINE WASTE MANAGEMENT SYSTEMS
(Approved November 13, 2008 by the EMC)**

69 (3) Effluent monitoring shall be ~~required~~ at a minimum of once per quarter.

70

71 *History Note:* *Authority G.S. 143-215.1; 143-215.3(a); 143-215.10A; 143-215.10I;*

72 *Eff. January 1, 2009.*

**RULES TO IMPLEMENT GENERAL STATUTE 143-215.10I
EVALUATION AND APPROVAL OF SWINE WASTE MANAGEMENT SYSTEMS
(Approved November 13, 2008 by the EMC)**

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**RULES TO IMPLEMENT GENERAL STATUTE 143-215.10I
LAGOON CONVERSION REQUIREMENTS
(Approved November 13, 2008 by the EMC)**

1 15A NCAC 02T .1309 is adopted with changes as published in 23:03 NCR 197 as follows:

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3 **15A NCAC 02T .1309 LAGOON CONVERSION REQUIREMENTS**

4 (a) This Rule applies to existing animal waste management systems that convert from anaerobic lagoons as the
5 primary method of treatment to ~~innovative-an~~ animal waste management ~~systems~~ system that meets the
6 requirements of Rule .1307 of this Section, and have not expanded the steady-state live weight of the swine
7 farm.

8 ~~An innovative animal waste management system shall meet the requirements of Rules .1307 and .1308 of this~~
9 ~~Section.~~ (e)(b) Upon approval by the Division, a permittee may abandon and close out an ~~innovative~~ animal
10 waste management system permitted under Rules .1307 and .1308 of this Section and revert to the requirements
11 of Rule .1304 or .1305 of this ~~Section~~ Section. The Division shall approve the reversion if all of the following
12 criteria are met:

- 13 (1) The ~~innovative~~ animal waste management system is ~~properly~~ constructed according to the
14 ~~approved design and specifications,~~ specifications approved by the Division;
- 15 (2) The ~~innovative~~ animal waste management system is ~~properly~~ operated and ~~maintained.~~
16 maintained in accordance with the rules in this Section;
- 17 (3) The permit for the anaerobic lagoon animal waste management system issued prior to 1
18 September 2007 pursuant to Session Law 2007-523(1)(b) remains ~~valid,~~ valid; and
- 19 (4) The anaerobic lagoon animal waste management system has been maintained and ~~may can~~
20 operate in compliance with the requirements of its permit.

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22 *History Note:* Authority G.S. 143-215.1; 143-215.3(a); 143-215.10A; 143-215.10I;
23 Eff. January 1, 2009.

**RULES TO IMPLEMENT GENERAL STATUTE 143-215.10I
EVALUATION OF NEW OR MODIFIED SWINE FARMS
(Approved November 13, 2008 by the EMC)**

1 15A NCAC 02D .1808 is adopted with changes as published in 23:03 NCR 197 as follows:

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3 **15A NCAC 02D .1808 EVALUATION OF NEW OR MODIFIED SWINE FARMS**

4 (a) Purpose. The purpose of this Rule is to specify the methods for evaluating new or modified swine farms for
5 compliance with the performance ~~standards~~ standard in G.S. 143-215.10I (b)(3).

6 (b) Applicability. This rule ~~shall apply~~ applies to new or modified swine farms ~~that shall~~ required by G.S. 143-
7 215.10I to meet the performance ~~standards~~ standard in G.S. 143-215.10I (b)(3).

8 (c) Requirements. New or modified swine farms subject to this rule shall comply with the requirements in this
9 Section .1800 of this Chapter and the performance standards in G.S. 143-215.10I(b)(3). Section.

10 (d) Evaluation of new or modified swine farms. For the purpose of evaluating odor at new or modified swine
11 farms for compliance with the performance ~~standards~~ standard in G.S. 143-215.10I (b)(3), the following shall
12 apply:

- 13 (1) When a field olfactometry method and instrumentation is used to determine odor intensity at
14 the designated evaluation location, as specified in Paragraph .1802(e) of this Section, the
15 measured dilution-to-threshold ratio shall be less than or equal to 7:1 as determined using the
16 ~~published~~ manufacturer's instrument procedures and instructions; or
17 (2) When odor intensity is determined using an Odor Intensity Referencing Scale (OIRS) as
18 specified in ASTM 544-99, the instantaneous observed level shall be less than the equivalent
19 of 225 parts per million n-butanol in air. In addition, the average of 30 consecutive
20 observations conducted over a minimum of 30-minutes at designated evaluation locations
21 shall be less than the equivalent of 75 parts per million n-butanol in air and a minimum of 4
22 readings out of the minimum 30 readings shall be less than or equal to the equivalent 25 parts
23 per million n-butanol in air.

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25 *History Note:* G.S. 143-215.10I; 143-215.3(a)(1); 143-215.107(a)(11); 143-215.108(a);
26 *Eff. January 1, 2009.*