

SEMIANNUAL REPORT ON THE PILOT PROGRAM FOR INSPECTIONS OF ANIMAL WASTE MANAGEMENT SYSTEMS January 1, 2012 – June 30, 2012

Introduction

In accordance with Section 12.7(b) of S.L. 2005-276, the objective of the Animal Waste Management Inspection Pilot (hereinafter the Pilot Program), is to determine how Division of Soil and Water Conservation (DSWC) staff can respond more quickly and effectively, with technical assistance, to complaints and problems to help farms achieve compliance with environmental regulations. In addition, the Pilot Program allows staff to test approaches for earlier identification of problems and to target resources for expediting corrective actions.

The Pilot Program started in 1997 with Columbus and Jones Counties and was expanded in 1999 and in 2005 to include Brunswick and Pender Counties, respectively. The General Assembly, through Session Law 2011-391, extended the pilot program through June 30, 2013.

In non-pilot counties, the NCDENR Division of Water Quality (DWQ) performs annual routine compliance inspections of all permitted livestock operations; however, in the pilot counties, DSWC staff conducts *routine* compliance inspections instead of DWQ. Prior to changes made in the 2011 session of the General Assembly, DSWC would also perform *routine* operation reviews of all permitted livestock operations statewide. Routine operation reviews were typically completed in the spring and compliance inspections completed in the fall.

In the pilot counties, DWQ staff continue to provide regulatory oversight, performs compliance audits with DSWC staff of "targeted" potential high environmental impact farms, responds to DSWC referrals, and conducts additional compliance inspections for further investigation and enforcement actions as warranted.

There are 165 active swine farms in the pilot area of Brunswick, Columbus, Jones, and Pender Counties. Currently, all 165 pilot farms are operating under State Non-discharge general permits.

2011 Session Law Changes

During this reporting period, the Pilot Program was implemented as described above. However, effective July 1, 2011, Session Law 2011-145 removed the requirement for routine operation reviews to be conducted by DSWC on permitted animal operations. Each facility will continue to receive an annual compliance inspection by DWQ or DSWC in the pilot counties. The DSWC continues to offer operation reviews and

technical assistance on a voluntary basis as requested by animal operation owners. In addition to the elimination of operation reviews, the Division lost 12 positions through reduction in force. Seven of these positions had direct animal waste management responsibilities, including conducting operation reviews and providing technical assistance to animal operations. Session Law 2011-145 also transferred the DSWC to the Department of Agriculture and Consumer Services from the Department of Environment and Natural Resources (DENR). This transition will not affect the continuance of service or implementation of the pilot program.

Technical Assistance

The elimination of the operation reviews has allowed DSWC staff to focus their efforts on technical assistance in addition to implementing the Pilot Program. Currently staff has been able to broaden the services that they can offer not only to the specific owner/operator for the animal operation, but also to technical specialists and other conservation partners that assist with animal waste issues. Below are just a few examples of technical assistance that is being provided:

- Provide guidance and support for operators regarding record keeping,
- Respond and provide technical/engineering support to emergency situations,
- Draft and/or provide guidance for Plans of Actions when needed,
- Provide group and one-on-one trainings with individuals that wish to become a designated technical specialist,
- Provide guidance and support on proper sludge sampling and removal practices,
- Revise and/or provide guidance for waste management and/or irrigation plans,
- Assist with irrigation equipment calibrations,
- Provide support to individuals regarding the Nutrient Management Software,
- Conduct operation reviews as requested,
- Continue to connect the landowner with the correct agency or resource as issues related to their operation arise.

Site Visit Data

Activity from January 1 through June 30, 2012, both in and out of the pilot area, is reflected in the following summary. This data was either queried from DWQ's Basinwide Implementation Management Systems (BIMS) database, DSWC Performance accounting methods or is presented in DWQ's Data Reports:

- Approximately 2,300 animal operations are covered under General Permits and are subject to inspection.
- Statewide, 1,141 site visits were conducted (56 by DSWC & SWCD and 1,085 by DWQ). These site visits include compliance inspections, structural evaluations and operation reviews.

- Approximately 130 occurrences of technical assistance was provided (125 by DSWC and 5 by DWQ)
- Within the Pilot Area 166 animal operations were subject to permitting and inspection. 54 routine compliance inspections were completed during this period.

Precipitation

Annual precipitation events and total amounts have the greatest impact on compliance performance by farms in the pilot program area. In addition to the storage and treatment volume for waste and wash water, anaerobic lagoons and waste storage ponds are generally designed to store one 25-year, 24-hour storm event (ranges from 7 to 8 inches in pilot area), and 180 days of normal rainfall. Precipitation amounts that are significantly greater than the historical average and/or periods of prolonged precipitation can strain the storage capacity of the waste system. In addition, the waste system's capacity to apply waste to receiving crops is also diminished due to wet or frozen soil conditions, wind, and/or limited availability of adequate crops to utilize the nutrients in the waste. Conversely, dry conditions can negatively impact vegetative cover on dike walls of waste structures and damage receiving crops.

The precipitation from September 2011 through March 2012 was below average. This resulted in a decreased frequency of waste levels being within the lagoon's storm storage. During this time farms were still overcoming the record rainfall from Hurricane Irene in August 2011. However, the below average winter reduced the concerns of ongoing high lagoon levels.

The pilot area experienced a tremendous spike in precipitation amounts in May 2012. This increase was caused by Tropical Depression Beryl which produced between 2.2 and 5.25 inches of rain in the pilot counties within a 24 hour period. Fortunately, as the system approached eastern NC it was moving northeast at 20 mph and did not regain its tropical storm status. Should the front have become stationary, it was predicted to produce up to 8 inches of rain. Tropical Depression Beryl was the second named storm in May, which was the before the Atlantic hurricane season officially started.

Figure A reflects the abnormally wet conditions experienced by the pilot area during May 2012 were from Tropical Depression Beryl. Variability in precipitation distribution can have an impact on animal farm compliance patterns even if annual precipitation totals are near normal or less.

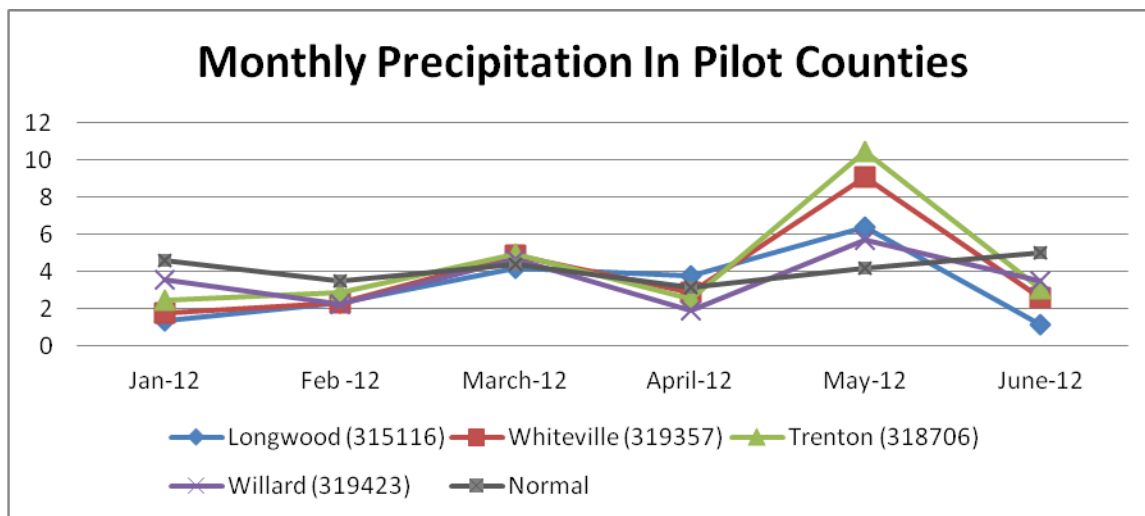


Figure A. January 2012 - June 2012 monthly normal and actual precipitation amounts measured at weather stations located within the four pilot counties.

Source: North Carolina State Climate Office - CRONOS Database.

Environmental Impact Groups

DSWC staff continued to use the environmental scale first described in the May 21, 2002 Addendum ERC Report. This scale is used to separate pilot animal operations based on their compliance performance and relative potential for environmental impact. Data is gathered through DENR's standard inspection form and entered into DWQ's Basinwide Information Management System (BIMS) database. The pilot's operational indicators and problem parameters are then queried and assessed from these documented site visits.

Table 1 lists the operational indicators used to assess the performance of animal waste management systems' on the pilot farms. Points are assigned to reflect the degree of "immediate" or "potential" threat a specific compliance deficiency would have on the environment. The program is based on the following 15 indicators, with relative point values remaining constant since 2002.

Operational Indicators	Point Value
<i>Offsite discharge</i>	20
<i>Structural integrity compromised</i>	18
<i>Waste in structural freeboard range</i>	16
<i>Hydraulic overloading or ponding</i>	15
<i>Nitrogen over-applied $\geq 10\%$</i>	12
Waste level in storm storage	11
Irrigation system maintenance deficiency	11
Structural maintenance deficiency	10
Receiving crop inconsistent with waste plan	10
Irrigation records deficient	10
Lagoon level records deficient	9
Nitrogen over-applied $<10\%$	8
Receiving crop/sprayfield needs improvement	8
Waste analysis deficient	8
Soil analysis deficient	7

Table 1. Operational indicators and related point values are used by staff to evaluate farm's potential impact on the environment. Items in italics represent "immediate threat" indicators.

Pilot farms were scored by the noncompliance points received for those operational indicators that were observed. The pilot farms were then ranked by the total points received. The farms were categorized into three potential impact groupings based on their total noncompliance scores.

Point ranges for these groupings, as shown in **Table 2**, were initially determined from farm performance in 2000 and remained unchanged through 2012.

Potential Impact Group	Noncompliance points
Low environmental impact	0 – 12 points per year
Medium environmental impact	13 – 30 points per year
High environmental impact	31 or more points per year

Table 2. Potential environmental impact groupings and corresponding noncompliance point ranges

Farms in the low and medium environmental impact groups are generally deemed to be responsive to technical assistance and subject to compliance inspections by DSWC. Farms scoring in the high impact group are subject to more intensive oversight by DSWC and DWQ staff.

Data from the first six months of the 2012 calendar year indicate an increase in the number of farms categorized in the low environmental impact group compared to recent

years. From January 1st to June 30th 2012, the percentage of pilot farms categorized as low environmental impact increased to 163 farms from 157 farms the previous year. Only 1 farm was categorized as high environmental impact.

Environmental Impact Group	Number of pilot farms	Percentage of total pilot farms
Low	163	98.2%
Medium	2	1.2%
High	1	0.6%

Table 3: Summary of Environmental Impact Group Rating for the pilot farms Jan – June 2011.

Table 4 summarizes the frequency of occurrence of Pilot Program operational indicators during the first six months of 2012. The decreased frequency of the *waste level in storm storage* indicator compared to the same period one year ago is attributed to the below normal precipitation amounts during the winter months.

Operational Indicator	2011(%)	2012 (%)
<i>Offsite discharge</i>	<i>0.6</i>	<i>0.6</i>
<i>Structural integrity compromised</i>	<i>0</i>	<i>0</i>
<i>Waste in structural freeboard range</i>	<i>1.2</i>	<i>0</i>
<i>Hydraulic overloading or ponding</i>	<i>1.2</i>	<i>0.6</i>
<i>Nitrogen over-applied ≥ 10%</i>	<i>0.6</i>	<i>0</i>
Waste level in storm storage	1.8	0
Irrigation system maintenance deficiency	0	0
Structural maintenance deficiency	1.8	1.2
Receiving crop inconsistent with waste plan	0	0
Irrigation records deficient	3.6	0
Waste level records deficient	1.2	0
Nitrogen over-applied < 10%	0	0
Receiving crop/sprayfield needs improvement	8.4	1.8
Waste analysis deficient	0.6	0
Soil analysis deficient	1.8	0

Table 4: Frequency of Occurrence displayed as a percentage for finding an operational indicator on a pilot farm from January 1, 2011 through June 30, 2012. Items in italics represent “immediate threat” indicators.

Cost & Labor Comparisons

Session Law 2005-276 requires the semiannual interim reports to compare the costs of conducting operations reviews and inspections under the pilot program with the costs of conducting operation reviews and inspections pursuant to GS 143-215.10D and G.S. 143-215.10F. The elimination of required routine operation reviews by Session Law 2011-

145 does not allow for this cost comparison to be relevant any longer. Division staff continues to provide operation reviews for animal operations upon request; however, the removal of the operation review requirement has allowed staff the opportunity to be responsive to an increasing volume and variety of technical assistance requests. Table 5 reflects this significant change and demonstrates that the required comparisons are not as relevant as they were in previous years. The Division will continue to monitor and provide updates on the cost comparisons when available.

Table 5 reflects number of operation reviews conducted statewide during the January-June time period for the last five years.

Year	DSWC	DWQ
2012	0	1
2011	1135	1
2010	1201	0
2009	1296	0
2008	1171	0

Salaries, office rent, administrative and operating costs, coded work hours, and actual mileage costs were compiled to determine the pilot program total operating cost of \$17,188; approximately \$246 per site visit conducted during the reporting period.

Table 6 reflects key cost and labor expenses related to the pilot program between January and June 2012.

Pilot Farms	
Salary and Benefits	\$13,548
Operating Expenses (office rent and mileage)	\$3,640
Total Expenses	\$17,188
Total DSWC Site Visits	70 site visits
Hours per Site Visit	7.63 hours per site visit
Cost per Site Visit	\$246 per DSWC visit

Conclusions

DSWC staff continue to use data from the past thirteen years of site visits to study and better understand the factors that influence compliance and affect the potential for environmental impact by conventional animal waste management systems. During the period covered in this report, DSWC experienced or observed the following:

- In the first two quarters of calendar year 2012, 99% of farms in the pilot counties were identified as having a medium or low potential impact based on operation indicators.
- The rainfall that occurred during May 2012 did not result in long term incidents of non-compliance related to high waste liquid levels. The occurrence of high waste liquid levels decreased by 90% and the occurrence of deficient receiving crops in spray fields decreased 67%.
- The impact of the elimination of statewide operation reviews will likely be more evident, both in and out of the pilot area, once all compliance inspections are complete for FY 2013.
- In accordance with current legislation, the Pilot Program is scheduled to terminate on June 30, 2013.