



Delaware Nutrient Management Commission

April 1, 2010



Introduction

Nutrient management continues to be a very important topic for farmers, nutrient handlers, state officials, federal officials and the general public. The level of attention facing animal production, crop production and general agriculture is unlike any time in history. Water quality is the focus of this attention and there is no more important time for the agricultural industry to join in demonstrating accountability for nutrient use. The 2009 Annual Report of the Delaware Nutrient Management Commission (Commission) demonstrates a significant level of accountability and fulfills the requirements of the Nutrient Management Law.

History

The Nutrient Management Law was passed in 1999 and mandates that all farmers, golf courses and other nutrient handlers develop and implement phosphorus-limited nutrient management plans, maintain nutrient handling records, maintain nutrient certification and submit an annual report. Voluntary programs are comprised of many practices offered by the County Conservation Districts, Natural Resources Conservation Districts (NRCS) and stand-alone initiatives by the property owners, farmers and nutrient handlers across the State.

In the past several years, the U.S. Environmental Protection Agency (EPA) has become much more interested in agriculture's influence on water quality and how Delaware officials, such as the Commission, were regulating nutrient runoff. EPA recognizes the success of the Nutrient Management Law but is very focused on two elements of the Clean Water Act called Concentrated Animal Feeding Operation (CAFO) permits and Total Maximum Daily Load (TMDL) limits. Both elements consist of EPA regulations that the States must address.

The Commission is working jointly with the Delaware Department of Agriculture (DDA) and the Department of Natural Resources and Environmental Control (DNREC) to evaluate these federal requirements. The University of Delaware and the NRCS are valuable resources for understanding and addressing these requirements.

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Organizational Purpose

The organizational structure of the Nutrient Management Program is important and critical as budget shortfalls within state government are present and difficult decisions are needed. The mission of the Commission and program is “To manage those activities involving the generation and application of nutrients in order to help improve and protect the quality of Delaware’s ground and surface waters, sustain and promote a profitable agricultural community, and to help meet or exceed federally mandated water quality standards, in the interest of the overall public welfare.” In order to accomplish this mission, the following strategic goals are in place:

Strategic Goals

1. Promote alternative use practices for excess nutrients generated in Delaware by developing and implementing incentive and market-based programs.
2. Implement nutrient management certification requirements by providing nutrient handlers with initial and continuing educational opportunities.
3. Implement the State’s National Pollutant Discharge Elimination System (NPDES) Permitting program for concentrated animal feeding operations (CAFO) in cooperation with the Department of Natural Resources and Environmental Control and according to the Clean Water Act and Federal regulations.
4. Institute a program to assist in developing and funding nutrient management plans according to law and program standards.
5. Audit nutrient management activities to ascertain legal compliance and high quality services.
6. Respond to informal and formal complaints against nutrient management practices.
7. Recognize environmental stewards within the agricultural community with the cooperation and financial support of the

agribusinesses and poultry companies operating within the state.

8. Develop and implement demonstration projects within the farm community for best management practices.
9. Facilitate and actively fund research projects according to priorities that will better balance science-based policy development with modern and responsible nutrient management practices.

Performance Measure Goals

	FY2008 Actual	FY2009	FY2010
Tons of poultry litter/manure relocated within Delaware for land application	28,604	20,107	25,000
Tons of poultry litter/manure exported from Delaware for land application	19,640	19,396	18,000
Tons of poultry litter/manure relocated to an alternative use project	38,592	38,776	30,000
% of cropland and nutrient-applied land managed under a current plan developed by a certified consultant	95	95	95
Acres managed under an updated nutrient management plan	97,043	89,243	100,000
# of nutrient consultants	103	105	100
# of commercial handlers	88	56	70
# of private applicators	1,489	1,106	1,200
# of nutrient generators	694	416	450
# of nutrient management farm audits	20	29	25
# of constituent complaints:			
received	48	36	50
resolved	46	36	50
# of CAFO permits	16	367	360

Nutrient Management Training, Education and Certification

The Commission continues to view education as a priority for many nutrient management topics and depends on the University of Delaware and agribusinesses to educate nutrient handlers. As farmers and other nutrient handlers become certified and continue the educational requirements, better nutrient handling decisions are made. The Commission has issued over 2,700 certifications since the January 2004 deadline. Currently, 1,683 different nutrient

management certifications are maintained by the program and can be individually viewed on the program’s Web site: http://dda.delaware.gov/nutrients/forms/2009/062009_Certified%20Users.pdf. They include:

- 416 Nutrient Generator certifications valid for three years;
- 1,106 Private Nutrient Handler certifications valid for three years;



Between 2004 and 2009, 11,994 people have attended 403 different continuing education classes or events. These poultry growers were preparing to hear a nutrient management session held during Delaware Ag Week in January 2010.

- 56 Commercial Nutrient Handler certifications valid for one year;
- 105 Nutrient Consultant certifications valid for one year.

Nutrient Management Certification classes continue to be offered throughout the year for both initial and continuing certification. The University of Delaware Cooperative Extension conducts most of these classes. In 2009, 21 different classes were offered for initial certification along with eight different testing opportunities. The number of continuing education credits offered continued to increase in 2009. Public and private organizations conducted 119 continuing education programs, a total of 253 continuing education credits, and these programs were attended by 3,260 individuals.

In order to become certified as a consultant or a commercial nutrient handler, one must pass an examination. Four examination sessions

Summary Initial Certification Classes

Certification Session	# of Sessions	Total Attendance
Session I: General	5	93
Session II: Nutrient Generator	5	73
Session II: Horticulture	1	14
Session III: Private Nutrient Handler	5	69
Session IV: Commercial Nutrient Handler	2	15
Session IV: Nutrient Consultant	3	22
Commercial Nutrient Handler Exam	4	16
Nutrient Consultant Exam	4	19

for nutrient consultants and four examinations for commercial nutrient handlers were offered in 2009, resulting in 21 (60%) passing scores and 14 (40%) failing scores. Nutrient consultant test questions are pulled from a databank of questions shared by Delaware, Maryland, Virginia and Pennsylvania for reciprocal purposes. The test sessions are also coordinated with the national Certified Crop Advisor (CCA) program to expand the opportunities for crop consultants. The exam for commercial nutrient handlers was generated by University and Program Staff. All certifications, except Nutrient Consultants, are certified over a three-year period. Nearly one third of all certifications will expire on May 1 of each year.

Continuing education opportunities can be integrated with any meeting or gathering of nutrient handlers. One continuing education credit is equivalent to approximately 50 minutes and is measured in quarter-credit increments. Credits are approved by providing the meeting or class agenda to the University of Delaware Carvel Research and Education Center or the State Nutrient Management Program prior to the event.

Summary Approved Continuing Education Classes

Year	Number of Programs	Number of Continuing Education Credits Available	Attendance
2004	8	46.25	285
2005	33	87.25	1458
2006	56	114	1930
2007	92	200.75	3028
2008	95	234.75	2033
2009	119	253	3,260
Total	403	936	11,994

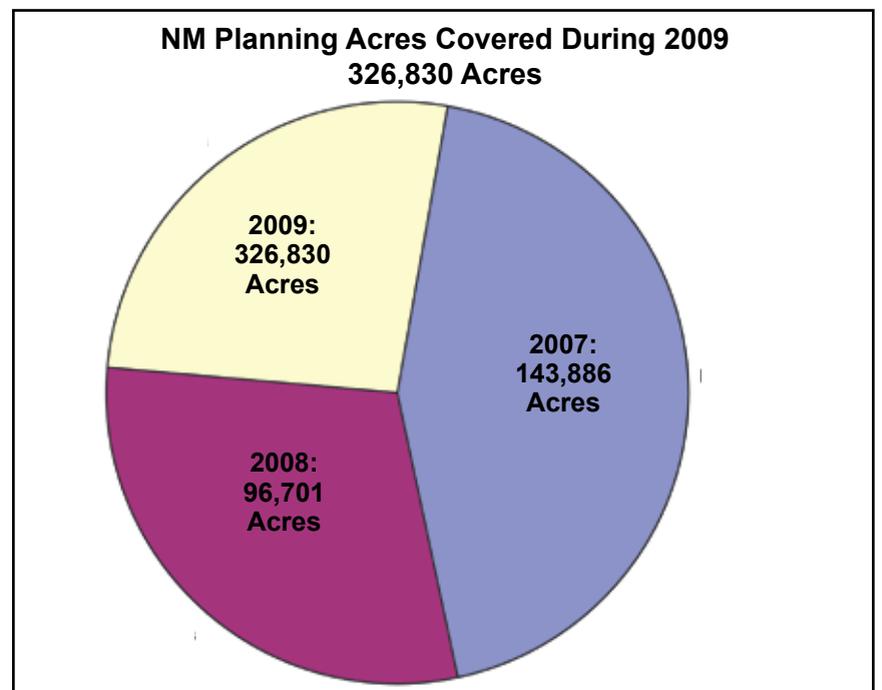
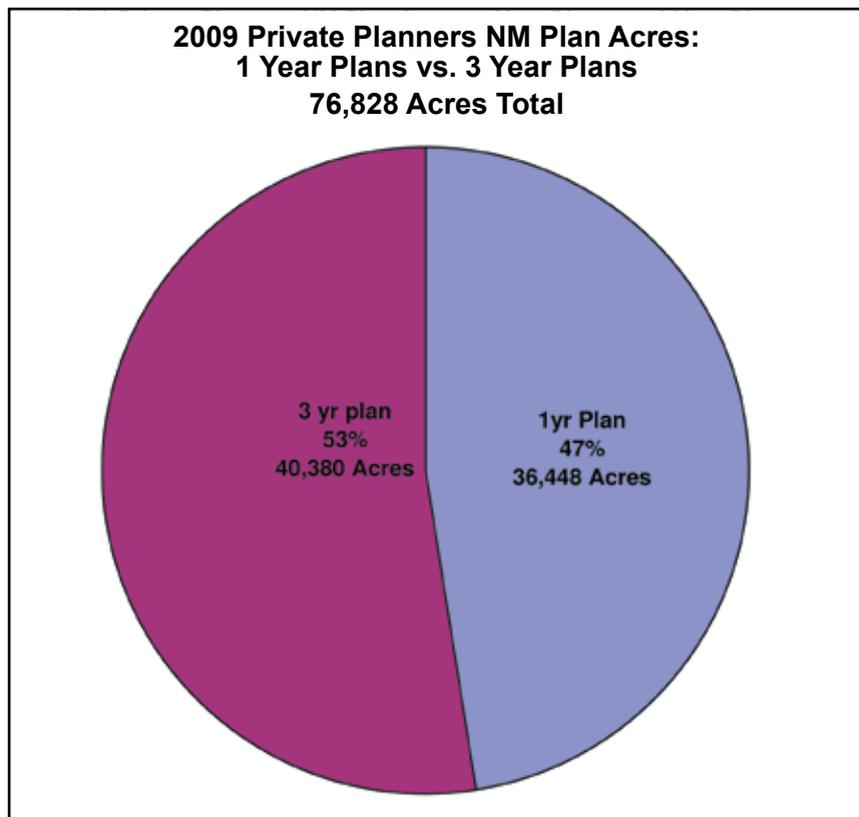
Nutrient Management Planning

A nutrient management plan is a farmer's "business plan" for nutrients. The more efficiently fertilizers are used on the farm; the less nutrients escape to waterways. A plan is developed by a certified nutrient consultant and includes contents such as maps, soil analysis, manure analysis, crop yield goals and a budget for nutrients.

The Commission depends on private and public nutrient consultants

to develop nutrient management plans. In 2009, 127 farms, one non-profit organization, and two golf courses representing 76,828 acres were reimbursed at a capped rate for a plan developed by a private consultant. Kent and Sussex Conservation Districts assisted farms representing 11,944 acres in the development of nutrient management plans. These acres represent an obligation for at least three years of nutrient management planning. Also, 47 farms were assisted with animal waste management plans by the Conservation District.

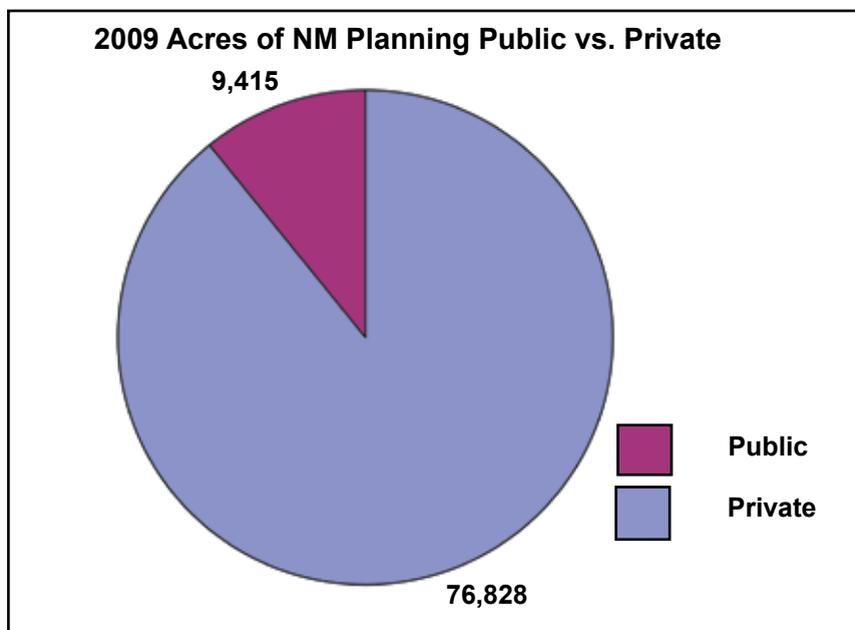
The total acreage covered by nutrient management planning reimbursement during 2009, including those farms that were



approved during 2007 and 2008, was 292,572 acres. During this same period public nutrient management planning covered 34,258 acres. The combined total of both public and private nutrient management planning was 326,830 acres.

Mandate Phase-In Complete

The last phase-in date for developing and implementing nutrient management plans was January 1, 2007. The Nutrient Management Law required the Commission to phase in the nutrient planning, reporting and implementation over a five-year period. These compliance deadlines started January 1, 2003 with incremental deadlines being every January 1st.



The Commission established a database in 2001 consisting of 6,775 property owners whose properties demonstrated characteristics that may require a nutrient management plan. All property owners were notified of the mandate during the summer prior to each January. There were 1,158 property owners who responded as the person responsible for implementing nutrient management practices; 2,662 respondents indicated that they lease their property. The remaining property owners were not affected by the law for various reasons. The notification process resulted in 453,291 acres (100%) of cropland being notified of nutrient management requirements.

Nutrient Reports due March 1, Annually

The Nutrient Management Law requires farmers and other nutrient handlers to submit an annual report by March 1 of every year summarizing the nutrients handled and applied within their operation. For 2009, the program sent out 856 reports, which will be entered into a watershed-based database for aggregating progress and accountability.

County Conservation Districts

The Commission works cooperatively with County Conservation Districts to promote and implement nutrient related Best Management Practices. Many practices that are coordinated by the Conservation Districts result in success that helps both the environment and the farmer. Kent and Sussex Conservation District offices staff a total of seven Conservation Planners who develop nutrient management plans. The following is a 2009 summary of the Districts' accomplishments:

NEW CASTLE COUNTY

Construction/Planting Contracts

- Manure storage – 3
- Cover crop – 3,722 acres
- Roof runoff structures – 1
- Stream fencing – 3,365 ft

In-House Accomplishments

- Conservation plan development – 158 “planned” totaling 18,939 acres with 142 “applied” totaling 12,573 acres.

KENT COUNTY

Construction/Planting Contracts

- Manure storage – 3
- Mortality storage – 3
- Cover crop – 12,058.9 acres
- Concrete pads for manure handling – 51

In-House Accomplishments

- Nutrient Management Plan development – 19 plans representing 5,098.1 acres
- Animal Waste Plan development – 34
- Conservation plan development – 19,675 acres
- Pre-side dress soil nitrate test – 163 tests representing 6,796.95 acres

SUSSEX COUNTY

Construction/Planting Contracts

- Manure storage – 4
- Mortality storage – 2
- Cover crop – 36,126.7 acres
- Concrete pads for manure handling – 31

In-House Accomplishments

- Nutrient Management Plan development – 64 plans representing 4,727.3 acres
- Animal Waste Plan development – 72
- Conservation plan development – 7,444.8 acres
- Pre-side dress soil nitrate test – 200 representing 4,587.75 acres

Nutrient Management Plan Audits

Each year program staff audits a number of selected facilities required to have a nutrient management plan, records and certification. This process helps to ensure that plans meet the intent of the nutrient management law and regulations. During 2009, program staff audited the nutrient management plans for ten agricultural operations, one golf course and one lawn care company. In addition, nutrient management audits were performed at 11 Concentrated Animal Feeding Operations located in the state, for a total of 23 compliance audits.

Nutrient Management Financial Audit

Over 65% of the program budget goes toward relocating excess poultry litter/manure and developing nutrient management plans by the private sector. Financial audits are conducted by staff to ensure proper accountability and integrity of public funds. During 2009 five financial audits were conducted to check recordkeeping and generally accepted business practices. The relocation audits focus on proper accounting practices and are conducted annually.



Private and public nutrient management planners are available to assist farmers in developing animal waste management plans and nutrient management plans.

Nutrient Management Relocation

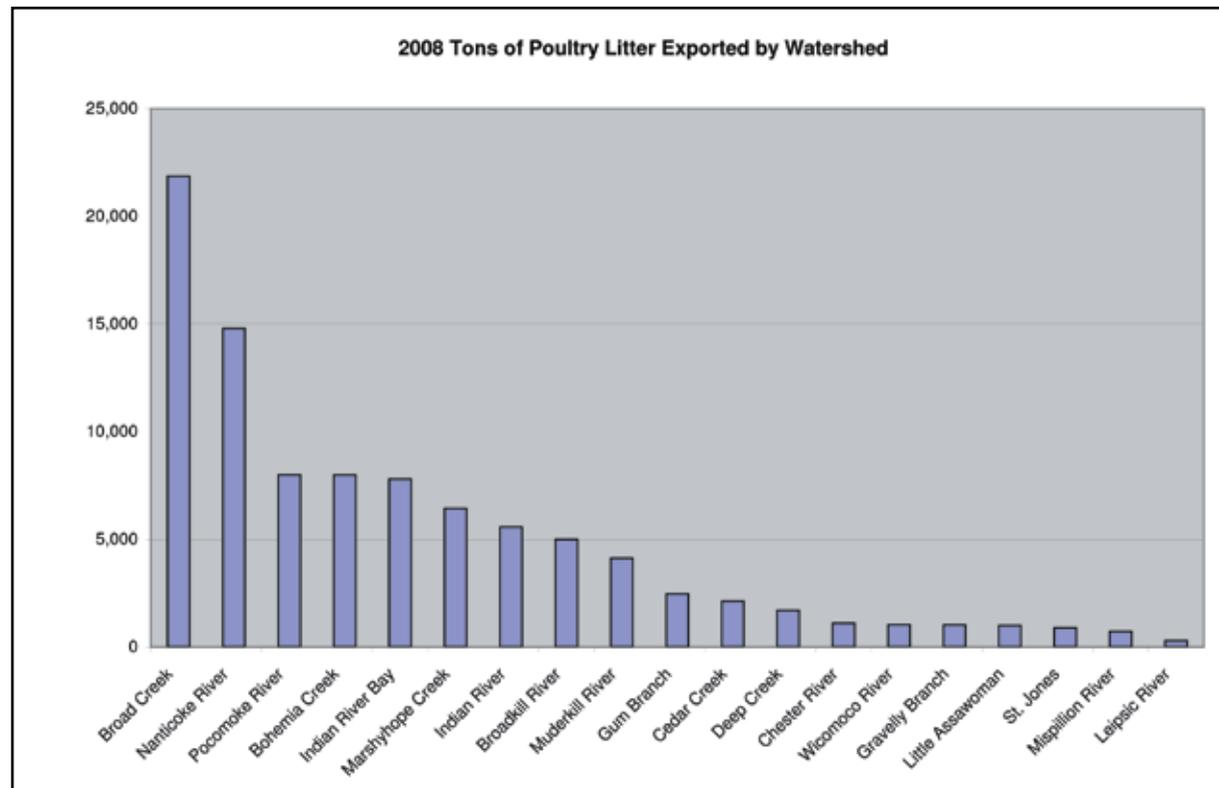
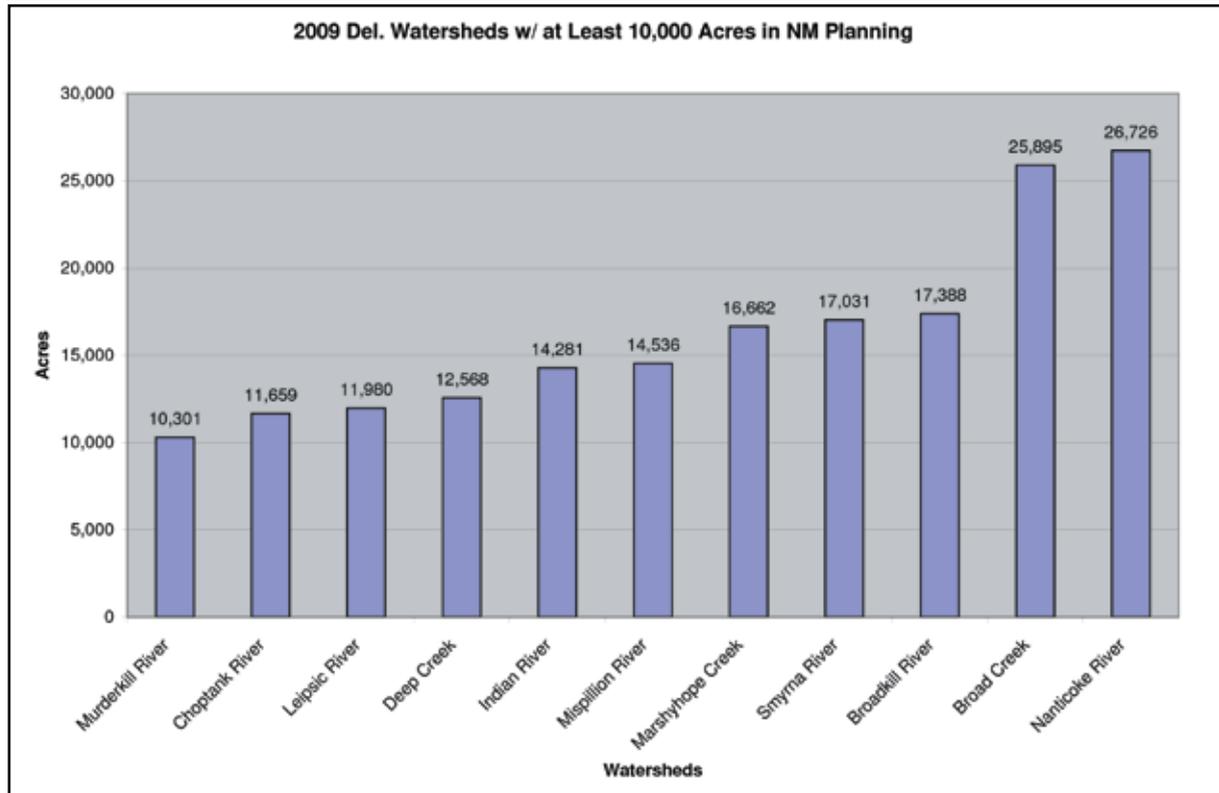
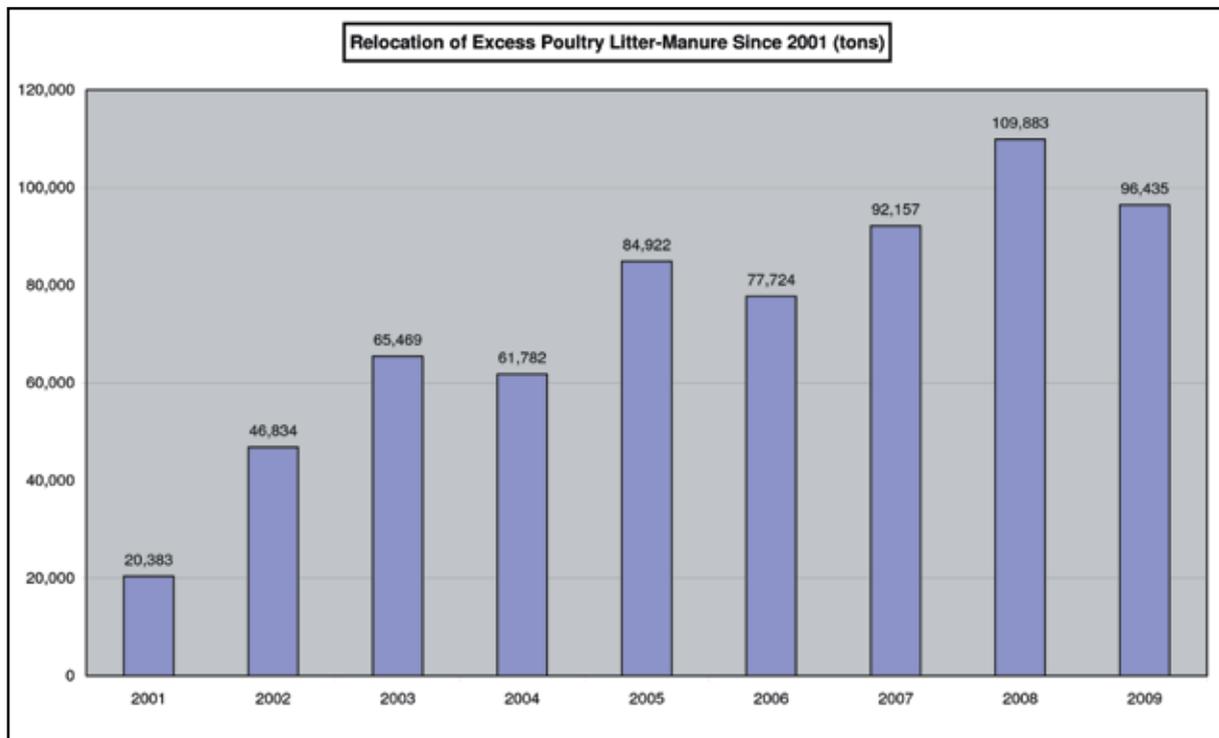
Managing excess poultry litter/manure has been a priority of the Commission since inception. Many farmers who demonstrate insufficient land or high soil phosphorus levels must find alternative uses for poultry litter/manure. Many businesses have surfaced over the past few years to help manage excess litter/manure. The Relocation Program is one of several effective solutions to excess litter/manure generated in Delaware.

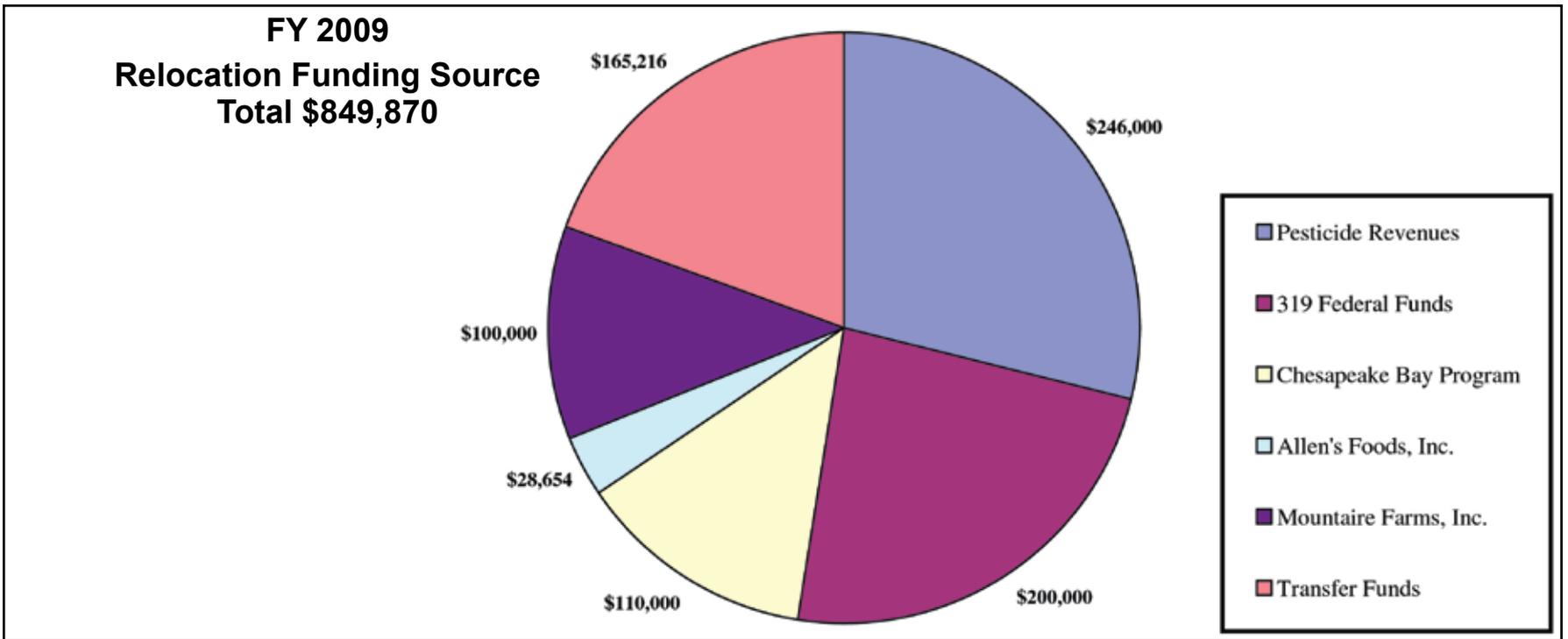
The Relocation Program provides financial reimbursement to farmers, brokers and trucking businesses for the transportation cost of relocating litter/manure from Delaware farms to alternative use projects or other farms for land application. The application process validates eligible senders, receivers, truckers and alternative use projects. Excess litter/manure continues to be transported for land application throughout Delaware as well as Maryland, New Jersey, and Virginia. Alternative use projects are essential for managing excess poultry litter/manure. In 2009, 96,435 tons of excess poultry litter/manure was relocated, for a nine-year total of nearly 655,000 tons. Over 50% of the excess litter/manure goes to alternative use projects such as the Perdue AgriRecycle fertilizer plant in Blades, DE. The plant processed a total of 70,824 tons in 2009, of which 39,508 tons was Delaware-generated.

Farmers and others wishing to participate in relocation projects can register with the nutrient management matching service by contacting (302) 698-4500. The Relocation Program provides farmers with the option to move the litter/manure themselves or hire a broker.



The Perdue AgriRecycle Plant in Blades, DE, processed a total of 70,824 tons of poultry litter/manure in 2009, 39,508 tons of it generated in Delaware.





FY 2009 Relocation Summary

Relocation Category	Tonnage
Delaware relocation projects with financial assistance	64,690
Perdue AgriRecycle Inc. without relocation assistance	22,820
Ellis Farms Inc. Brokerage without relocation assistance	8,925
Total Excess poultry litter relocated	96,435
DE Relocation Program (financial assistance)	
Farm to Farm within DE	20,107
Farm to Farm exported from DE	19,396
Farm to Alt. Use: Perdue AgriRecycle	12,422
Farm to Alt. Use: Mushrooms	12,765
Total	64,690
End Use Categories	
Perdue AgriRecycle	35,242
Land applied within DE	27,832
Land applied outside of DE	20,596
Mushroom Facilities	12,765

Note: Excess poultry litter/manure is defined as litter/manure generated from a DE farm with high soil phosphorus levels or insufficient land and relocated to a farm with soil phosphorus levels below 150 Fertility Index Value or an alternative use project.

Markets for Excess Manure

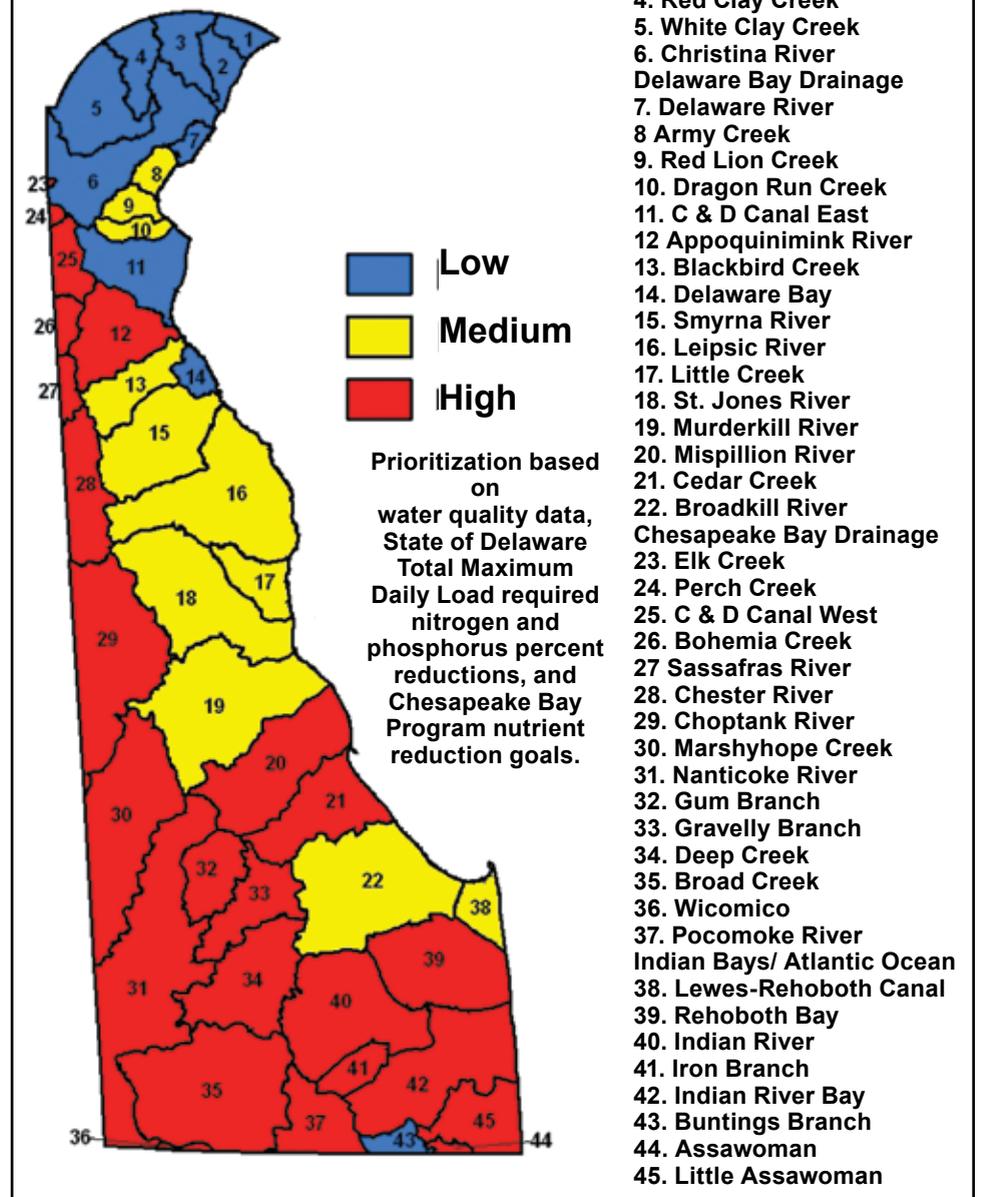
The following businesses have expressed interest in taking or buying excess manure for alternative use and/or brokerage. Please contact them directly:

Manure Type	Company
Horse (shavings)	Blessing Composting Milford DE 302 684-8990
Poultry	Bowles Enterprises LLC Loveville MD 301 475-2139
Poultry	Ellis Farms Inc Millsboro DE 302 238-7275
Poultry	Perdue AgriRecycle LLC Seaford DE 302 628-2360

Nutrient Management Critical Areas

The Commission established a “critical areas” map for Nutrient Management. The Department of Natural Resources and Environmental Control (DNREC) provided significant input based on water quality data for nitrogen and phosphorus impairments.

Nutrient Management Critical Area Priorities



Delaware Environmental Stewardship Program

The Commission partnered with the poultry companies operating in Delaware to recognize the 2009 environmental stewards. Allen's Family Food Inc., Mountaire Farms Inc., Perdue Farms, Inc. funded the stewardship program.

The environmental stewardship award was established in 2001 to recognize farmers whose stewardship and general farm practices contribute to the conservation of the environment, water quality and farmland. The program recognizes growers for nutrient management, best management practices, farm management, innovation, bio-diversity and wildlife management.

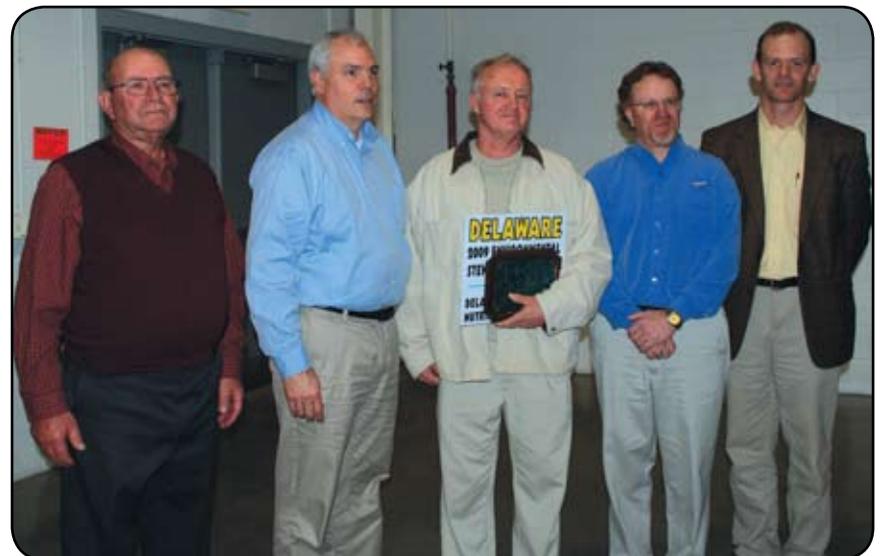
The 2009 Delaware Environmental Stewardship Award was presented during the Delaware Agriculture Week conference held at the Delaware State Fairgrounds in Harrington. Mary Bryan from Laurel was awarded the top award with \$1,000, a lane sign and a plaque. Two other 2009 environmental stewards were awarded \$500, a lane sign and plaque: Ray Tull, Woodpecker Farm, Seaford, and Matt Tull, Turtlecreek Farm, Seaford.



Gathered for the presentation of the 2009 Delaware Environmental Stewardship Award are Steve Brittingham, Mountaire Farms of Delaware; Bill Rohrer; Mary Bryan; her husband Robert Bryan between their sons Tyler and Wade; Wade's wife Bobbie Bryan; and Beth Sise.



Bill Vanderwende, left, and Bill Rohrer, far right, were on hand to congratulate Matt Tull, owner of Turtlecreek Farm, and Allen Family Foods representative Tom Brinson for Tull's nomination for the 2009 Environmental Stewardship Award.



With Ray Tull at the presentation were Bill Vanderwende, chairman of the Nutrient Management Commission, left; Ron Darnell and Jeff Smith of Perdue Farms; and Bill Rohrer, nutrient management program administrator.

2009 Mid Atlantic Certified Crop Advisor Award for Excellence

The Commission partnered with the Mid Atlantic Certified Crop Advisor Program and the Delaware Farm Bureau for the 2009 Award of Excellence. The award was presented to Mike Twining of Willard Agri-Service, Greenwood. The Commission depends on many certified crop advisors to develop nutrient management plans across the state.

Left to right: Robert Baldwin, DNREC; Mike Twining, Willard Agri-Service; Pam Thornburg, Delaware Farm Bureau Administrator; Bill Vanderwende, Commission chairman and Bill Rohrer, program administrator.



Permits for Certain Animal Feeding Operations

The Nutrient Management Program continues to administer national pollution permit regulations for Delaware's animal feeding operations. The 1972 Clean Water Act and revised Federal regulations require permits for some farms called Concentrated Animal Feeding Operations (CAFO).

Program Structure

The Environmental Protection Agency (EPA) maintains oversight authority of the Delaware CAFO program as the responsible agency of the Clean Water Act. The DNREC was delegated authority in 1974 to administer the National Pollutant Discharge Elimination System (NPDES) permits for surface water discharges. These permits are designed to limit discharges from CAFOs, combined sewage overflows, storm water construction projects, industrial activities and municipal treatment activities.

The Delaware Department of Agriculture (DDA) and DNREC implement the Delaware CAFO program under a formal agreement signed by the respective Cabinet Secretaries in June 2000. The Commission oversees the implementation of the State Nutrient Management Law and the administrative staff. CAFO regulations were adopted by DNREC and DDA, and became effective September 10, 2005. Nutrient Management Program staff primarily handles the enforcement of CAFO regulations.

Modification to the current state CAFO regulation will be presented to the agricultural community and general public during the summer of 2010. These modifications are required in response to changes in the federal CAFO regulation.

Current CAFO Permits

Farms that desire the highest level of accountability or which experience a discharge into the waters of the State apply for a Delaware CAFO permit. The CAFO requirements are activated when the person in charge of a farm signs and submits a Notice of Intent (NOI) to comply with the regulations. A copy of the nutrient management plan must accompany the NOI. In general, a discharge occurs in situations when animal manure is improperly stored, handled incorrectly, or over applied as defined by the nutrient management plan.

During 2009, 367 animal feeding operations were managed under a CAFO permit. A current list of Delaware CAFOs can be found on the program's Web site:
http://dda.delaware.gov/nutrients/nm_CAFO.shtml.

Any farm that operates under a CAFO permit is subject to an inspection by program staff. The permit requires a nutrient management plan, records of implementation, annual report, certification and other site-specific practices.

EPA, State and Congressional Delegation Meeting

The follow article provides a report of the meeting with EPA held August 2009 on a Greenwood poultry and grain farm:

At the request of Senator Tom Carper and Representative Michael Castle, top officials from the U.S. Environmental Protection Agency (EPA) in D.C. and Region III in Philadelphia, braved 90-plus degree weather and came to Delaware on August 18, to meet with state officials. The topic of discussion was Concentrated Animal Feeding Operation (CAFO) permits on certain farms in Delaware. State officials acknowledge that there are fundamental differences on this matter and hope that the meeting helped resolve their on-going differences.

A basic point of difference is the EPA's expanded definition of pollutants that includes any stormwater that has contacted any manure, feathers, or dust in the production area, or the area where buildings contain animals, manure, compost, and feed. Because Delaware has an extensive tax ditch/drainage ditch system throughout the state, the EPA thinks that many more farms require CAFO permits due to this expanded definition of pollutants. The state feels that the CAFO permit requirements may derail existing efforts and resources in implementing the Nutrient Management Law. The EPA wants to have a clean union between state programs and the National CAFO permit requirements.

The meeting was held on the Webb poultry and grain farm in Greenwood, which has a CAFO permit. Bill Rohrer, Program Administrator, said, "The Webb farm experienced a joint EPA and State CAFO permit applicability assessment in December 2008.



Left to right: U. S. Senator Tom Carper; U. S. Representative Michael Castle; Collin O'Mara, DNREC Secretary

The State determined that the farm did not need a permit while EPA concluded that it needed a permit. This farm has been implementing the requirements of the state Nutrient Management Law. It has excellent manure and stormwater management. Having a CAFO permit will not change the Webb farm's excellent stewardship on this farm. It will simply force us to manage permits versus solving problems elsewhere."

Ed Kee, Delaware Secretary of Agriculture, said, "I appreciate the willingness of the EPA to have a dialogue with us today and their



Left to right, front row: Bernadette Rappold, U.S. EPA Director for Special Litigation; Ed Kee, Delaware Secretary of Agriculture; Bill Rohrer, Delaware Nutrient Management Program Administrator. Back row: Tim Winstead, Sussex County Director for Senator Carper.



Left to right: Jon Capacasa, U.S. EPA Region III Director for Water Protection; Shawn Garvin (hidden), then Assistant to the Region III Administrator; Peter Silva, U.S. EPA Assistant Administrator for Water; Jim Hanlon, U.S. EPA Director for the Office of Wastewater Management; Kathy Bunting, Delaware Director for Water, DNREC; Cynthia Giles, U.S. EPA Assistant Administrator for Enforcement and Compliance.

sending such high level officials to help us resolve our differences on these important issues. I am looking forward to continued dialogue. I thank Senator Carper and Congressman Castle for their strong support of Delaware's agricultural industry and for arranging

today's meeting. Also, I want to thank the Webb family for allowing us to meet on their farm in Greenwood."

"I am very proud of Delaware's farmers," Kee continued. "They are environmental stewards that routinely employ best management practices for risks. If you go on a Delaware farm, you will find adequate manure storage facilities, vegetative buffers in drainage areas, water control structures within the drainage ditch systems, ponds or wetlands that provide storm flow control, nutrient sinks and erosion control, and more."

During the meeting, Chick Allen, Chairman of Allen Family Foods, Inc., commended Delaware's current approach to solving nutrient management challenges and explained to the EPA his role and relationship with contract growers in his poultry operation.

This was Assistant Administrator Peter Silva's first visit to Delaware. He comes from California and was recently appointed by President Obama to oversee EPA's Water Division in Washington, DC.

Assistant Administrator Cynthia Giles was also recently appointed by the President and comes from New England. She oversees the U.S. EPA's Compliance and Enforcement activities.

Total Daily Maximum Load (TMDL)

President Barack Obama signed an Executive Order on May 12, 2009, recognizing the Chesapeake Bay as a "national treasure." He called upon the federal government to lead a renewed effort to restore and protect the nation's largest estuary and its watershed. States within the bay's watershed will be expected to do their individual parts in cleaning up the bay. Delaware is taking proactive measures to be able to meet new regulations that may come along. Nearly 100 farmers in the Choptank and Gravelly Creek watersheds are cooperating in a pilot program in an effort to create factual information about nutrient and land use efficiency.

The U.S. Environmental Protection agency was charged with defining the next generation of tools and actions to restore water quality in the bay and to describe changes to be made to regulations, programs and policies to implement these actions. The EPA's draft report on water quality, submitted in September 2009, includes significant potential changes to existing programs. EPA proposes to develop new regulations for the Chesapeake Bay to significantly reduce runoff pollution from urban, suburban and agricultural sources. The EPA is establishing a federal Total Maximum Daily Load (TMDL) for nutrients and sediment for the bay and its tidal tributaries. It is expected to be complete by December 2010. The bay TMDL will allocate loadings of nutrients and sediment to all jurisdictions in its watershed.

EPA published regulations in 1992 establishing TMDL procedures. A TMDL represents the maximum amount of a pollutant that a body of water may receive and still meet its water quality standards, with a margin of safety. Pollutants are anything that prevents a waterbody from attaining the national goal of being "fishable and swimmable." The "loadings" are allocated to sources contributing to the problem. A TMDL is comprised of wasteload allocations for "point sources" like sewage treatment plants, urban stormwater systems and large animal feeding operations, load allocations for non-point sources such as polluted rainfall runoff from agricultural lands and impervious surfaces, and a margin of safety.

EPA will work with its partner states and the District of Columbia to develop individual Watershed Implementation Plans (WIP) and an overall TMDL implementation framework. The WIP will identify

specific reduction targets by geographic location and sector to achieve allowable loadings, as well as a description and schedule of actions that the states, DC, and local decision makers will take to achieve these reductions.

A meeting was held in Delaware in September 2009 to explore ideas in addressing performance-based nutrient management, for the purpose of establishing better accountability for agriculture. The group's goals were to provide accountability, paperwork relief and measurable nutrient load reductions. A plan was presented to the DNMC and approved.

A pilot project was developed for the Choptank and Gravelly Branch watersheds. In a letter to nutrient handlers in those watersheds dated Feb. 1, 2010, Nutrient Management Program Administrator Bill Rohrer explained: "There may be a significant 'data gap' between EPA's assessment of conservation practices and the State's assessment. The only way the State can report to the public and the EPA on progress within Delaware agriculture is by your cooperation in providing accurate information."

Nutrient handlers received annual reports to complete for 2007 through 2009. Each included a standard nutrient management report and a specific report for the Choptank or Gravelly Branch watersheds for the past three years. Rohrer explained, "The watershed specific report is part of a pilot project and should only represent crop and nutrient activities for that particular watershed. By Law, your individual reports are protected from public view, and will only be available to the public in an aggregated watershed report. Your time involved in completing this report will be minimal but necessary." Participating farmers will receive a minimum of one nutrient management continuing education credit for completing the report. Informational and assistance sessions are to be offered.

"The DNMC will evaluate the results of these watershed reports and will determine the best use of the data," Rohrer wrote. "We also plan to provide feedback on your specific farm as a report on nutrient efficiency performance."

— Carol Kinsley, American Farm Publications

Storm Water Management

For the past two years, many farms experienced EPA and State inspections where the runoff of storm water was the primary issue of concern. The Commission asked DNREC to evaluate storm water management for typical poultry operations and provide

recommendations in the form of BMPs. The following BMPs were provided and adopted by the Commission for consideration:

1. Further promote the use of existing BMPs, policies and

procedures: Growers need to follow existing Commission policy and NRCS standards. This includes the use of the appropriate BMPs for each individual production area. Some of the critical BMPs that will assist in preventing runoff from polluting nearby waters follows:

- Time cleanouts to avoid rain events during litter/manure handling;
 - Handle litter/manure under roof when practical;
 - Prevent overfilling loaders and crusting machines that may result in spillage;
 - Minimize exposed litter/manure in the production area;
 - Clean up any spilled manure as soon as practical.
2. Adopt “good housekeeping” as a BMP. Proper procedures during clean-out and crust-out can prevent litter/manure from entering the environment and is essential. Many of the proposed BMPs include maintenance of grass around poultry houses, manure shed, and any ditches or waterways. Vigorous, well maintained grass areas between water courses and poultry houses, manure sheds and composters will provide healthy vegetation that will facilitate filtering of nutrients and trapping sediments.
 3. Follow new farm construction recommendations for poultry houses, manure sheds and composters. For those houses and manure sheds that have yet to be built, we stress the importance of working with the integrator, NRCS and the conservation districts to ensure the structures are properly sited. This would include the consideration of:
 - Soils
 - Wetlands

- Floodplains
- Tax ditch rights-of-way
- Utility easement
- Property lines
- Waterbodies, including ditches

4. Promote the construction of new buildings within the production area in a manner consistent with the State Sediment and Stormwater Law and policies. These include practices such as silt fences, stabilized construction entrance, sediment traps on some sites and vegetative stabilization. BMPs used during construction would be in accordance with the conservation plan for the farm and may include current county building code setbacks such as the following:
 - 100 feet from a stream or ditch system
 - 50 feet from tidal wetlands
 - 25 feet from non-tidal wetlands
 - 1 foot above floodplain
5. Explore additional outreach to include the University and certification curriculum. Furthermore, flock supervisors should be educated on many of the BMPs.
6. Drainage pipes within the production areas of a poultry farm should not be removed, but rather serve as a mindful reminder that stormwater leaves the farm and good housekeeping will reduce the nutrients from being a part of the runoff.



Jim Elliott (Commissioner) and members of the Environmental Stewardship selection committee discuss stormwater runoff with Farmer Matt Tull.



Farm ponds that drain the production area are excellent BMPs for nutrient and stormwater management.

Continued Agreement with Poultry Companies

The Nutrient Management Commission continues to implement the nutrient management agreement outlined in the 2001 and 2007 agreements with all three poultry companies. These documents were signed by the chief executives of all poultry companies operating in Delaware as well as by State officials. The document expands on the legal requirements to submit an annual report to the Commission outlining the accomplishments and strategy for nutrient management. Furthermore, it outlines a general strategy for finding a home for excess poultry litter/manure. All poultry companies agreed to either establish an alternative use project or assist in funding the Nutrient Relocation Program. Allen’s Hatchery Inc., Mountaire Farms of Delmarva, Mountaire Farms of Delaware, and Perdue Farms Inc. submit the annual reports.

This cooperative agreement and implementation plan has generated results that benefit the state, the poultry industry, contract growers, and the general public. All companies have modified their grower contract to address the nutrient management requirements, committed to apply the phytase enzyme in all feed, educate growers and company employees by means of nutrient management

certification, fund the environmental stewardship recognition program, distribute nutrient management newsletters and more. Additional company accomplishments follow:

Allen’s Corporate Environmental Manager, M. Thomas Brinson, reported the following:

1. Recorded a 30.1% reduction in phosphorus in the feed as a result of phytase;
2. Continues to host multiple flock supervisor and grow-out meetings to address manure management and water quality;
3. 100% of in-house flock supervisors who service Delaware growers completed state nutrient management certification;
4. Research is being done on in house windrow composting of litter/manure to reduce or eliminate the need to remove cake after each flock.
5. Assisted in funding the Relocation program for contracted growers valued at \$28,654



Mountaire's Corporate Environmental Manager, Beth Sise, reported the following:



1. New farm evaluation process for nutrient management;
2. Existing farm evaluation resulting in bird placement after validation that nutrient management planning and certification are in place;
3. Grower lunches to expand and continue nutrient management education;
4. Continuation of nutrient management certification for all servicemen;
5. Total clean outs are discouraged between December and early March.
6. Assisted in funding the Relocation program for contracted growers valued at \$76,193



Perdue's Regional Environmental Manager, Jeff Smith, reported the following:

1. Continued nutrient management training of all corporate environmental service and flock service employees;
2. Partnered with the Center for Inland Bays to implement the Poultry Integrator Nutrient Effort (PINE) project;
3. Perdue AgriRecycle pellet fertilizer plant that serves as an essential alternative for growers from all three poultry companies;
4. Recorded a 104.7 ton reduction in inorganic phosphorus addition to feed resulting from phytase use;
5. Continue the Clean Bays Environmental Management Initiative, which entails on-farm assessments for manure management..
6. Funded and participated in nutrient management related research projects valued at \$440,300.

Nutrient Management for Horse Farms

The equine industry is one of the fastest growing sectors of Delaware agriculture. The state is home to many commercial and hobby stables as well as several large racing training facilities and three public race tracks.

Facilities that house horses with a cumulative weight of 8,000 lbs. (about 7 horses) or those that apply nutrients to greater than 10 acres need a Nutrient Management Plan. This plan allows the operator to better manage the handling of manure and used bedding. Such manure or used bedding should be stored under cover or in a manner to prevent runoff. Horse facilities also need to handle waste from animal wash down areas in such a way that it doesn't discharge into nearby ditches or other waters.

Horse manure and wash down water should be managed in a way to prevent nutrients from entering public waters.



Complaint Resolution

Complaints related to manure management and general nutrient management practices are handled and resolved by program staff. Actions against any alleged violation of the Nutrient Management Law, regulations or standards are investigated by program staff and recommended for action by the Commission.

During 2009 the Nutrient Management Program investigated and the Commission acted on one formal complaint. This complaint involved the spreading of manure during the winter months.

Thirty-three informal complaints were received and resolved by program staff. These complaints involved manure management, livestock management, odor, fertilizer management and nutrient management certification. The categories of complaints and operation types are as follows:

Complaint Category

Manure management	64%
Mortality Management	6%
Odor	12%
Fertilizer Management	12%
Nutrient Management Certification	6%

Operation Type

Poultry	48%
Horse	9%
Field Crop Only	39%
Swine	0%
Dairy	3%
Beef	0%
Lawn Care	1%

Nutrient Management Mass Balancing

The following report was provided by Dr. Tom Sims, Professor of Soil and Environmental Chemistry and Associate Dean for Academic Programs and Research College of Agriculture and Natural Resources at the University of Delaware. Principal project investigators were Dr. Sims, Dr. Joshua McGrath, University of Maryland, and Dr. Amy Shober, University of Florida. Prepared March 18, 2010. For more detailed information on the Delaware NBI, contact Dr. Sims jtsims@udel.edu.

A Nutrient Balance Index for the State of Delaware

Nutrient mass balances are used worldwide to guide strategic nutrient management planning efforts for farms, watersheds, states, regions, and countries. In brief, a mass balance analysis compares nutrient inputs (fertilizers, manures, etc.) to a defined geographic area with nutrient outputs (crop harvest, manure relocation, etc.).

Nutrient surpluses (inputs > outputs) indicate an increased potential for nutrient losses to air and water or nutrient accumulations in soils above values needed for optimum crop yields. In contrast, nutrient deficits (outputs > inputs) suggest the amount of nutrients needed for economically optimum crop production may not be available and that soil nutrient levels will gradually be depleted. In cooperation with the Delaware Nutrient Management Commission, we have developed a simple method to estimate agricultural nutrient mass balance analyses for Delaware each year for nitrogen (N) and phosphorus (P). Our goal has been to document how efforts to improve agricultural nutrient management, particularly since passage of the 1999 Delaware Nutrient Management Act, have affected statewide and county-level nutrient mass balances. Detailed summaries of the trends in nutrient mass balances are summarized each year in an annual report presented to the Commission.

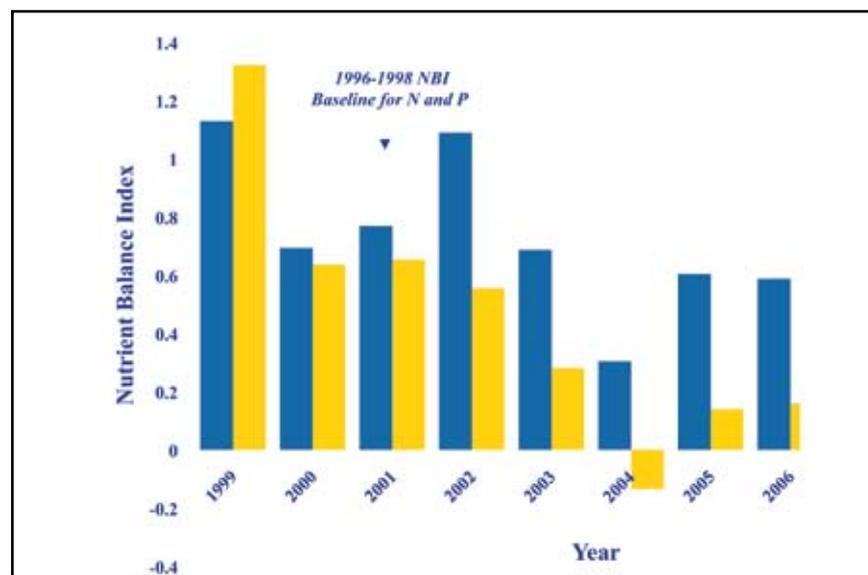
As part of our this project, we developed a Nutrient Balance Index

(NBI) that can quickly and clearly show the impact of changing nutrient management practices and other factors (e.g., climate) on annual statewide N and P surpluses. Our Delaware NBI approach first calculates the average per acre statewide N and P surpluses in 1996-1998 (the 3 years immediately prior to the 1999 Delaware Nutrient Management Act) as the difference between [fertilizer and manure N and P produced or sold and biological N fixation] and [N and P removed in crop uptake and exported from Delaware via manure relocation]. These 1996-1998 NBI values are set as the baseline, pre-existing conditions (NBI = 1.0). Beginning in 1999, an annual NBI has been calculated in the same manner and expressed as the ratio of the statewide per acre N and P surpluses in each year to the 1996-1998 baseline values. Lower NBI values indicate smaller N and P surpluses and measure statewide progress in nutrient management. This article summarizes trends in the Delaware NBI from 1999, when the Delaware Nutrient Management Act was passed, until 2008.

Phosphorus (P): Marked progress has been made in reducing P surpluses in Delaware and these changes now appear to becoming a permanent part of our agricultural systems. In 1996-1998, statewide P surpluses were estimated to be ~ 40 lbs P₂O₅/acre/year. In 2008, Delaware agriculture was basically in balance with respect to P, a remarkable accomplishment in such a short time (Fig. 1). Major factors contributing to this nutrient management success story include the advent of new feeding strategies by the poultry industry (e.g., phytase-based diets), nutrient management plans that have resulted in more efficient use of P fertilizers, and the DNMC's manure relocation program. Note that the increase in the NBI for P in 2007 was primarily due to drought conditions that seriously reduced crop P uptake. There are still nutrient management concerns with respect to high P soils in Delaware but the reduction in statewide P surpluses is a very positive step in terms of increasing farm profitability and protecting water quality.

Nitrogen (N): Relative to 1996-1998, when the average statewide nitrogen surplus was estimated to be ~80 lbs N/acre/year, there has been a general trend for improved N balance in Delaware although not as striking as with P. Average N surpluses for 2000-2008 decreased from 80 to 52 lbs N/acre/year (excluding 2002 and 2007,

drought years where crop N uptake was markedly lower) and the average NBI was 0.65, indicative of a ~35% improvement in statewide N balance. The situation for N is more complex because N surpluses are heavily influenced by annual weather conditions. For example, the Delaware NBI value for N was 0.9 in 2007, a drought year, compared to 2004, a year with plentiful rainfall (NBI=0.3). Droughts reduce yields and crop N uptake which can result in large amounts of residual fertilizer and manure N remaining in the soil at the end of the growing season. Statewide efforts are now under way to increase the amount of irrigated crop land, improve irrigation efficiency, and develop drought-resistant crops. This should help to minimize situations where farmers apply the correct amount of N but, due to drought-induced crop failures, the N is not taken up by crops and becomes susceptible to loss by leaching during subsequent winter months. Causes for the relatively high NBI value for N in 2008 (0.9) are not clear as this was a reasonable year in terms of weather and crop yields were near or above long-term averages. There was a significant increase in fertilizer tonnage reported by the DDA in 2008, compared to 2003-2007, which would lead to an increased NBI for N. Efforts to manage N efficiently, including decreasing N surpluses, clearly must remain an ongoing and important part of Delaware's nutrient management planning efforts.



Phosphorus Management and Phytase

Managing phosphorus nutrient is required in the Nutrient Management Law by restricting phosphorus applications to the crop removal rate. Phosphorus-limited manure applications can be managed and applied as a three year crop removal rate. Excess poultry litter/manure is managed by alternative use projects such as the Perdue AgriRecycle plant, and the Relocation Program. Phosphorus is also managed in the feed formulations of the poultry companies. Phytase is significantly helping the industry better manage phosphorus in the feed and litter/manure.

Phytase is an enzyme currently added to poultry feed at the mill that helps broilers and other poultry utilize more indigestible (phytic acid) phosphorus. This, in turn, reduces the need to

add supplemental phosphorus to the feed, and also reduces the phosphorus concentration in the litter/manure.

Reports indicate that phytase has decreased phosphorus content in litter/manure by at least 23% (Saylor, 2005). Recent poultry litter/manure analysis has identified an average of 44 lbs. phosphorus (P₂O₅) per ton (Hansen, 2005). Analysis prior to 2001 was commonly seen at 60-70 lbs. P₂O₅ per ton. This 30-40% phosphorus reduction is the result of phytase, litter/manure amendments and the overall litter/manure handling practices implemented. The average nutrient content of poultry litter/manure is 57-44-45 pounds of N-P-K per ton. The use of Phytase is one of several strategies needed to meet the intent of the Delaware Nutrient Management Law.

Evaluating Excess Poultry Litter/Manure in Delaware

Poultry Litter/Manure Generation

Delaware growers produced 245.8 million broilers/roaster chickens in 2007 according to the Delaware Agricultural Statistics for 2007-2008. An industry adopted litter/manure generation calculation is to multiply 1.25 tons per 1,000 birds. This calculation accounts for the size variation of poultry, namely broilers and roasters, and the bedding material, typically consisting of wood shavings. Poultry litter/manure generation is estimated at 307,250 tons annually.

This annual generation does not necessarily indicate the amount available for disposition. The annual disposition is dependent on cleanout cycles such as three-year total cleanouts, annual cleanouts, center cleanouts and crust-outs. Other variables that influence

disposition include the availability of bedding litter and disease pressure. It should be acknowledged that if disposition for one particular year is below average, there will be another year in which disposition is above average. It will be assumed that the generation is equal to the amount available for disposition.

Nutrient Value

The current nutrient value of poultry litter/manure is 57-44-45 pounds per ton of Total Nitrogen (TN), Phosphate (P₂O₅) and Potash (K₂O). Pounds per ton are illustrated as (TN-P₂O₅-K₂O). The nutrient values of interest are nitrogen and phosphate and are utilized in evaluating the N and P balance for Delaware crop production.

Nitrogen and Phosphorus Mass Balancing

The fundamental tenet of economically and environmentally sound nutrient management is the strategic approach of nutrient mass balancing. Dr. Tom Sims and colleagues published a mass balance report in 2008 titled *Nutrient mass balances for the state of Delaware*. The concept is simple but difficult and expensive to implement. Nutrient inputs to a farm, watershed, county or state should be balanced by nutrient outputs from the area of interest. Preventing a nutrient surplus should prevent the scenario where manure-nutrients are treated as a waste and not a nutrient. Furthermore, preventing a nutrient deficit is important for the economic value of nitrogen and phosphate. Nitrogen and phosphorus fertilizers are significant costs in grain production and should be equally valued when in the form of litter/manure.

Excess poultry litter/manure currently supplies several alternative use markets. Most of the excess poultry litter/manure originates from Sussex County. The primary market drivers for excess poultry litter/manure are:

1. Phosphorus-limited nutrient management regulations;
2. Relocation funds to assist in the transportation cost of moving excess poultry litter/manure to crop farms low in soil-phosphate or alternative use projects;
3. Perdue AgriRecycle demand for litter/manure as a processed organic fertilizer; and
4. Mushroom industry demand for a nitrogen compost source.

Excess Poultry Litter/Manure Evaluations

The assessment of excess poultry litter/manure was conducted using three different methods:

1. Marketplace: The marketplace method was simply evaluating the amount of excess poultry litter/manure moving to alternative markets. These markets include land application on fields that have soil phosphorus levels less than 150 fertility index value within Delaware, relocation for land application outside of Delaware, Perdue AgriRecycle pelletizing plant and the mushroom industry located in southeast Pennsylvania. The three-year average for excess poultry litter/manure entering the marketplace is 96,436 tons.

Delaware Poultry Litter/Manure and Mass Balance Data	
2007 statewide poultry production	245,800,000 birds
2007 litter/manure generation	307,250 tons
Method #1: Marketplace excess poultry litter/manure (07,08,09 average)	96,436 tons
Method #2: Mass balance report for implementing the NM law	118,257 tons
Method #3: Mass balance report for agronomic P demand	239,721 tons
Recommended planning figure for excess poultry litter/manure	107,346 tons

2. Phosphorus crop removal balance as required by the Nutrient Management Law: The Nutrient Management Law limits the application of phosphorus, primarily as animal manure, to a crop uptake level. As long as the expected crop has the capability to take up the phosphorus, it can be applied. This zero balance calculation prevents the over-application of phosphorus and permits application regardless of the phosphorus available in the soil from historical over-applications. According to the mass balance report, the phosphorus input in the form of poultry litter/manure is 66% and applies to excess poultry litter/manure proportionately. The 2006 total phosphorus excess of 590 tons calculates to be 389.4 tons (66%) of phosphorus as poultry litter/manure, or 40,533 actual tons of poultry litter/manure (Sims, 2008). This surplus along with the 2006 relocation projects result in a total gross surplus tonnage of 118,257.
3. Agronomic recommendations for economically optimum yields. This method accounts for the agronomic demand of the plant and accounts for the presence of phosphorus, stored in the soil. This method assumes that adequate phosphorus soil levels will result in no application of phosphorus in the form of poultry litter/manure or commercial fertilizer. This agronomic threshold method calls for application rates that are recommended by the University of Delaware and balanced between crop uptake and nutrient inputs. According to the mass balance report, the agronomic assessment accounts for 66% of the excess phosphorus (3,490 tons), which is 2,303 tons (Sims, 2008). When converted to a poultry litter/manure value, it represents 239,721 tons of litter/manure still surplus, or 78% of all litter/manure generated in one year.

In conclusion, methods #1 and #2 appear to be the realistic methods for determining excess poultry litter/manure. The average between method #1 and method #2 is 107,346 tons and should be used for planning purposes.

Bill Rohrer, September 29, 2009

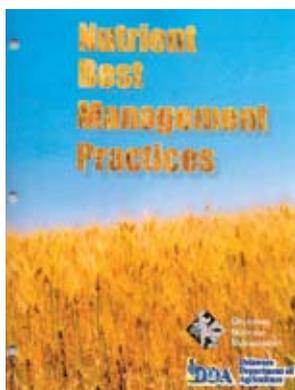
Best Management Practices

The Delaware Nutrient Management Program has published three Best Management Practices (BMPs) booklets, available free of charge to anyone requesting them. These BMPs are endorsed by the Commission and are designed to reduce nutrient runoff. These

booklets are valuable training tools for nutrient handlers and are often found as a component of the nutrient management plan. See page 16 for information about how to contact the Nutrient Management Program to obtain a copy of these informative booklets.

Agriculture Animal and Row Crop

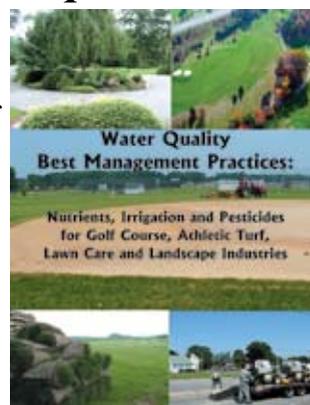
The Commission recommends BMPs for farmers and the agricultural community. Fifty-six practices are included, covering items such as Feed R e l a t e d Amendments;



Manure Storage; Animal Mortality Handling; Analysis and Testing; Tilled Soil Management; Conservation Buffers; Drainage Ditch Management; Irrigation Systems and more.

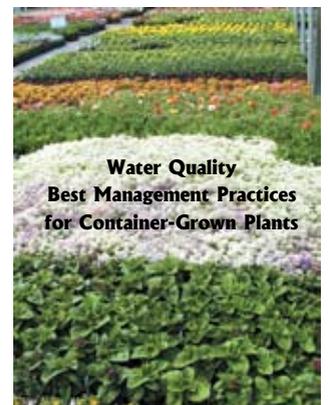
Golf Courses, Athletic Turf, Lawn Care and Landscape Industries

The Commission recommends BMPs for non-agricultural businesses such as golf courses and lawn care companies. The BMP booklet consists of 6 chapters which include: Introduction; Nutrient Management Certification; Nutrient Management BMPs; Fertilizer; Irrigation & Fertigation Management; and Pesticide Handling. This booklet is an invaluable resource which outlines who must be certified, how to become certified, and how to follow Best Management Practices in daily non-agricultural applications.



Container and Nursery Industries

The Commission recommends this BMP booklet for the greenhouse and nursery industries. The booklet contains 4 chapters which include: Nutrient Management Certification; Nursery Site Selection for optimum BMP usage, Irrigation and Water Conservation Strategies; Collection Basins; Stormwater Management; Fertilizer Application; Pesticide Application and more.



Field Staging of Poultry Litter/Manure Standards

The following standards reference field staging of poultry litter/manure for all poultry operations and anyone handling poultry litter/manure.

The most efficient method of handling and storing poultry litter/manure results from handling the poultry litter/manure as few times as possible. Ideally, total cleanouts and crust outs are immediately land-applied, transported to an alternative use facility, or moved to

a storage structure. However, timing considerations may require temporary, outdoor staging of the total cleanout of litter/manure before use and must be conducted according to the Commission standards. In situations where temporary field staging is needed, litter/manure may be stored temporarily to preserve litter/manure quality and prevent application at the wrong time of the year. Temporary field staging is the least preferred storage practice but may be conducted according to the following standards:

<i>Field Staging</i>	
Production Area	Application Area
<p>Definition</p> <p>“Production Area” means that part of an Animal Feeding Operation that includes the animal confinement area, the manure storage area, the raw materials storage area and the waste containment areas, also includes egg washing or processing facility and any area used in the storage, handling, treatment or disposal of mortalities. The Production Area should be defined in the operation’s Nutrient Management Plan.</p>	<p>Definition</p> <p>“Application Area” or cropping area means land where the manure is to be applied and where crops will be grown. Any area where crops will not be grown may be considered the Production Area.</p>
<p>Performance Standards</p> <p>Temporary staging within the “Production Area” (as defined above) should be avoided but is limited to the following performance standards:</p> <ol style="list-style-type: none"> 1. Any outdoor staging is limited to 48 hours without an extension or the use of an impervious cover; and 2. The staging site must be separated from any channeled runoff, standing water and other drainage systems such as roof runoff and down spouts; and 3. The site must be located at least 100 feet from a public road, 100 hundred feet from any surface water and 200 feet from any residence not located on the property; and 4. The staging site must meet Natural Resources Conservation Service (NRCS) standard or other containment area lining (standards) approved by the Commission. 	<p>Performance Standards</p> <p>Temporary staging within the application area or cropping area is limited to the following performance standards:</p> <ol style="list-style-type: none"> 1. Any outdoor staging is limited to 90 days without an extension or the use of an impervious cover; and 2. The litter/manure must be at least 6 feet high and in a conical cross section shape; and 3. Litter/manure shall not consist of more than 5% crust out material; and 4. The selection of the staging site must consider the highest, most practical site possible and shall not use the same site more than once every two years without a staging site that meets NRCS standards or other containment lining standards approved by the Commission; and 5. The staging sites must be identified in the nutrient management plan; and 6. The site must be located at least 100 feet from a public road, 100 hundred feet from any surface water and 200 feet from any residence not located on the property; and 7. The site must be at least 200 feet from a domestic well and 300 feet from a public water supply well; and 8. Post litter removal treatment must include the removal of all litter/manure and the top 1-2 inches of topsoil if the topsoil is co-mingled with the litter/manure to prevent nutrient loads; and 9. A production crop or cover must be established and maintained at the site as soon as practical following post removal treatment. 10. For stockpile sites on soils classified as located within 1.5 feet of the depth to the seasonal high water table, any <u>one</u> of the following practices must be implemented: <ol style="list-style-type: none"> a. The establishment of a staging site that meets NRCS standards or other containment lining standards approved by the Commission; or b. The use of high carbon (content) material (straw, wood shavings, fodder) as the base of the pile at least 8 inches thick to serve as a barrier and easy post storage removal; or c. The use of powdered bentonite or similar material that will seal the area under the stockpile

Winter Application of Fertilizer and Manure

Winter application regulations continue and limit the application of commercial and manure-based fertilizer during the time of the year that is most vulnerable for nutrient runoff. The purpose of the regulation is to limit the application of Nitrogen (N) and Phosphorus (P) fertilizer and manure applications as follows, unless specified in the nutrient management plan that the application is necessary:

- The application may not occur between December 7 and February 15;
- The application may not occur on snow-covered or frozen ground;
- The application may not occur on impervious surfaces such as sidewalks, road and other paved areas and the misdirected fertilizer must be removed on the same day of application.

Failure to comply with these and other regulations of the Commission may result in a compliance and enforcement hearing of the Commission.

Handling Catastrophic Mortality

Every animal operation's nutrient management plan is designed to address daily and catastrophic mortalities. Most daily mortalities are handled in environmental friendly manners such as composting. Most farms are not designed to handle large scale mortality events such as what Delaware experienced during the winter of '09/'10. Many farmers faced the challenge of handling large amounts of mortalities from roof collapses caused by snow accumulation. The following recommendations were provided to the poultry industries and growers as they dealt with catastrophic mortalities:

1. Compost all mortalities onsite in a covered structure such as a manure shed. It is important that the proper amount of carbon is used in order to rapidly heat the pile and promote the breakdown of the birds. In general the mortality to carbon ratio is one to one. Acceptable carbon sources are straw, woodchips or shavings.
2. Relocate the mortalities to a commercial composting site.
3. Relocate the mortalities to a landfill. This option requires coordination and approval with the landfill.

Budget

The Nutrient Management Commission's accomplishments were made possible by funding provided by the Legislature. The Nutrient Management Program continues to implement nutrient planning, relocation and mandated activities as required by the Nutrient Management Law.

The following budgets are represented as fiscal years.

	FY 2008 Budget	FY 2009 Budget	FY 2010 Budget
Program Operating Costs:			
Personnel	257,000	251,600	242,200
Federal Funds Section 319 (Clean Water Act)*	30,000	30,000	30,000
Travel	5,500	5,500	5,500
Contractual	17,000	17,000	17,000
Supplies	4,000	4,000	4,000
Information/Education/Certification	221,000	221,000	172,500
Nutrient Relocation Program	246,000	246,000	246,000
Federal Funds section 319 (Clean Water Act)*	200,000	200,000	200,000
Federal Funds NRCS*	90,000	0	50,000
Federal Funds Ches. Bay Program*	110,000	110,000	150,000
Poultry Companies*	53,863	125,499	200,000
Nutrient Management Planning	451,800	0	0
Nutrient Management Planning from Pesticide Revenues	0	451,800	451,800
Demonstration and Research	1,505	0	0
Penalties Collected	1,050	1,906	0
TOTAL	1,689,418	1,664,305	1,769,000

* All bold text represent funds that are not appropriated by the State of Delaware.

Background and Contacts

What is the Delaware Nutrient Management Commission?

The Nutrient Management Law established a 19-member Commission that is charged to develop, review, approve and enforce regulations governing the certification of individuals engaged in

the business of land application of nutrients and the development of nutrient management plans. The members of this Commission come from many different backgrounds and professions.

What are the Commission's Responsibilities?

The Delaware Nutrient Management Commission will:

1. Consider establishing critical areas for voluntary and regulatory programs.
2. Establish Best Management Practices to reduce nutrients in the environment.
3. Develop educational and awareness programs.
4. Consider incentive programs to redistribute excess nutrients.
5. Establish the elements and general direction of the State Nutrient Management Program.
6. Develop nutrient management regulations.

Members of the Nutrient Management Commission

William Vanderwende, Commission Chairman, was appointed to the Commission by the Senate, and was named Chairman by the Governor. He is a full-time Sussex County dairy producer who represents the state's dairy industry. He operates a farm with 200 head of dairy, and 3,000 crop acres. He can be reached at (302) 349-4423.



Mark Adkins was appointed by the Governor to represent swine farmers. He operates a 900-acre family grain farm and 1,000-head swine farm and is a director for the Delaware Pork Producers. He can be reached at (302) 732-3007.



David Baker, Commission Vice Chairman and Chairman of the Planning and Rules & Regulations Subcommittees, was appointed by the Senate as a representative of the New Castle County grain industry. He is a full-time grain farmer of 3,000 acres. He can be reached at (302) 378-3750.



Robert Baldwin, Director of the Department of Natural Resources and Environmental Control Division of Soil & Water Conservation, is appointed by the Nutrient Management Law. He can be reached at (302) 739-9921.



F. Kenneth Blessing, Jr. was appointed by the Senate to represent Kent County vegetable farmers. He is part of a diversified family farming operation consisting of approximately 3,500 crop acres including vegetables, grain and beef cattle. He can be reached at (302) 422-5746.

I. Nyle Callaway was appointed by the Governor as a Kent County public citizen representative. A waste water treatment employee for Kent County, he represents equine farming operations and can be reached at (302) 422-4094.



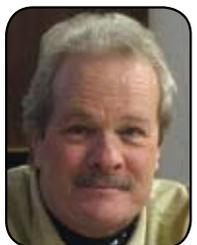
Jim Elliott was appointed by the House of Representatives as an Environmental Advocacy Group representative. Former Mayor of Fenwick Island, he is no stranger to public service. He can be reached at (302) 337-3653.

Laura Hill was appointed by the House of Representatives to represent Sussex County poultry farmers. She is part of a family farm that operates a 117,000-capacity broiler operation and farms 2,500 acres of grain and vegetable crops. She can be reached at (302) 945-0725.



Tony Keen, Chairman of the Technology Subcommittee, was appointed by the Senate as a nutrient consultant. He has owned and operated a private crop consulting firm since 1980. He can be reached at (302) 684-5270 (w) or (302) 684-3196 (h).

Larry Lee was appointed by the House of Representatives to represent commercial nutrient applicators in Delaware. He is employed with Growmark FS in Milford, DE. He can be reached at (302) 424-2835.



Bud O'Neill was appointed by the Governor as a representative of the golf course/lawn care industry. He owns an agronomic service firm that plans and manages turfgrass for golf courses, athletic complexes and lawns. He is past chairman of the Delaware State Golf Association greens section and can be reached at (302) 653-8618.

Carl Solberg, Chairman of the Program & Education Subcommittee, was appointed by the Senate. He represents the Environmental Advocacy Group, and is a volunteer for the Delaware Chapter of the Sierra Club. He can be reached at (302) 492-1225.



Richard Sterling was appointed by the Governor as a representative of the commercial nursery industry. He operates a 75-acre nursery specializing in evergreens. He can be reached at (302) 653-7060.

Scott Webb was appointed by the House of Representatives to represent Kent County poultry producers. He is part of a family farm that operates a 119,000-capacity broiler operation and farms 1,000 acres of grain crops. He can be reached at (302) 381-0402.



Edwin Kee, Secretary of the Delaware Department of Agriculture, is an ex-officio member of the Commission. He can be reached at (302) 698-4500.

Dr. Gerald Llewellyn serves for the Secretary of the Department of Health and Social Services. He is currently Chief of the Environmental Health Evaluation and Toxicology Branch. His position is ex-officio and he can be reached at (302) 744-4824.



David Small serves for the Secretary of the Delaware Department of Natural Resources and Environmental Control and is current Deputy Secretary. His position is ex-officio. He can be reached at (302) 739-9000.

Delaware Nutrient Management Program Staff

William Rohrer, Jr. is the Program Administrator of the Delaware Nutrient Management Program and an ex-officio member of the Commission. He can be reached at (302) 698-4500 or william.rohrer@state.de.us.



Bob Coleman is the CAFO/Nutrient Management Coordinator for the Delaware Nutrient Management Program. He can be reached at (302) 698-4556 or robert.coleman@state.de.us.

Judy Baines is the Administrative Assistant for the Delaware Nutrient Management Program. She can be reached at (302) 698-4558 or judy.baines@state.de.us.



University of Delaware Staff

Several specialists from the University of Delaware provide certification training for the Nutrient Management Program. They also assist the program by providing technical recommendations and by conducting research and demonstration projects on nutrient management practices. They are:

Dr. Greg Binford is an Associate Professor of Soil and Water Quality. He is responsible for educating the public about nutrient management and the impact that nutrient management can have on water. He can be reached at (302) 831-2146.



Dr. David Hansen is an Associate Professor of Soil and Environmental Quality, Extension Nutrient Management Specialist and Agricultural Leader. His extension activities include developing and conducting nutrient management training courses in support of the Delaware Nutrient Management Program. He can be reached at (302) 856-7303.



Sydney Young Riggi, Nutrient Management Extension Associate. She can be reached by calling (302) 856-2585, Ext. 571.



Shawn Tingle is a Nutrient Management Extension Associate. He can be reached by calling (302) 856-2585, Ext. 572.

Several other University employees assist in the training, research and demonstration projects. They are:

Warren Willey is a Nutrient Management Extension Associate. He can be reached at (302) 856-2585, Ext. 574.

Roseann Ferri, Secretary, (302) 856-2585, Ext. 550.

Vacant, Kent County Extension Ag Agent, (302) 730-4000.

Anna Stoops, New Castle County Extension Ag Agent, (302) 831-8860.

Corey Whaley, Sussex County Extension Ag Agent, (302) 856-2585, Ext. 594.

How to Contact Your Conservation District

The Conservation Districts provide technical agricultural professionals who can assist in nutrient management strategies and recommendations. All nutrient consultants are certified and in most cases, are Certified Crop Advisors.

New Castle County: (302) 832-3100

Kent County: (302) 741-2600

Sussex County: (302) 856-3990

How to Contact the Nutrient Management Program

Information about the Nutrient Management Program can be found on the Internet at www.state.de.us/deptagri/nutrients/index.shtml, or call (302) 698-4500; fax (302) 697-4768.