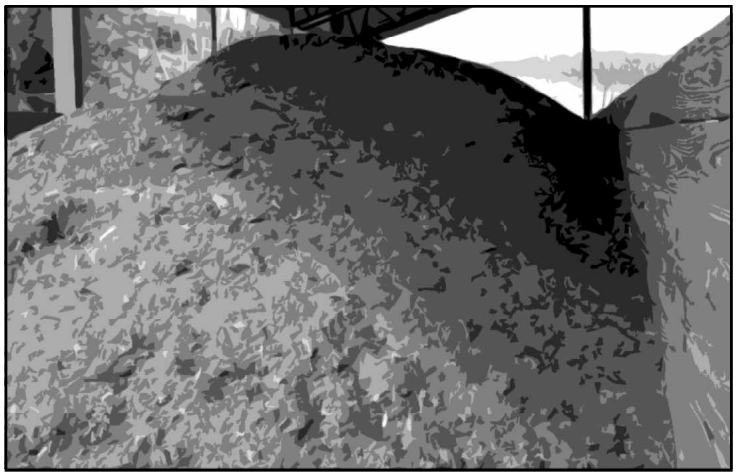
Agricultural Extension Service
The University of Tennessee
PB1644

Guidelines for Developing and Implementing a Poultry Nutrient Management Plan



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Guidelines for Developing and Implementing a Poultry Nutrient Management Plan

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Nutrient Management Plan for the Poultry Industry

Introduction

Poultry litter (manure) is an excellent source of plant nutrients and can be a part of most farm nutrient management programs. The term poultry "litter" applies to all dry forms of poultry manure regardless of the presence or absence of any type of bedding material. Currently there are no poultry liquid manure handling systems (lagoons) in Tennessee.

When using poultry litter as a plant nutrient source, a nutrient management plan should be developed to match crop nutritional requirements with nutrients available in the litter. Also, using best management practices outlined in the nutrient management plan will help prevent any surface water and ground water contamination. In addition, the nutrient management plan will assist poultry farmers in estimating the acres of cropland needed to use litter at appropriate agronomic rates.

The poultry nutrient management plan uses nitrogen as the limiting nutrient. In the plan, you must consider realistic yields of crops you grow, crop nutrient requirements and proper timing of litter application to maximize nutrient uptake. If soil tests indicate the existence of extremely high levels of phosphorous and potassium, you should consider limiting further use of poultry litter as a fertilizer.

The plan is based on typical litter production rates and average litter nutrient contents for a specific type poultry facility. As you begin obtaining litter analysis results, an average litter nutrient content can be developed for your farm operation. Remember, actual litter production and litter nutrient values from your farm may vary over time. Implementation of a plan based on actual litter analysis may be more economical.

The plan takes into account that many poultry farmers may sell litter, give litter away or feed litter to cattle. Be sure to record the tons of litter that leave your farm. People or firms removing litter from a poultry farm can be held responsible for the proper handling, storage and application of the poultry litter. Although not required, you may want the person or firm that removes the litter from your farm to sign an agreement indicating management practices that should be followed to ensure the litter is being used in an environmentally friendly manner.

CAFO Class II General Permit

The state of Tennessee has developed a water quality General Permit for concentrated animal feeding operations (CAFO). The Tennessee Depart-

ment of Environment and Conservation is the state agency in charge of the permit, with review assistance provided by the Tennessee Department of Agriculture. The General Permit became effective May 1, 1999 and will be in effect for five years.

Information can be found in Agricultural Extension Service fact sheet SP544A that will assist in determining if a CAFO II General Permit is required for your farm. If a CAFO II General Permit is required for your poultry farm, you will need to submit several items to the Tennessee Department of Agriculture. Your county Extension agent can provide assistance with the nutrient management plan. A nutrient management plan for your farm that was completed by the Natural Resources Conservation Service (NRCS) can be submitted to obtain your CAFO II permit.

Checklist of items that must be submitted to Tennessee Department of Agriculture to obtain a CAFO II General Permit:

- ❏ Notice of intent
- ❏ Map of the farm showing the location of poultry houses, poultry litter application sites, litter storage site, streams, lakes, ponds, wetlands, sinkholes, wells and buffer areas.
- ❏ Soil tests for litter application areas
- ❏ Form 1 - **Nutrient Management Plans for the Poultry Industry**
- ❏ Form 2 - **Calculating Poultry Litter Production**
- ❏ Form 3 - **Use of Poultry Litter on Your Farm**
- ❏ All crop nutrient requirement worksheets
- ❏ Keep a copy of all items submitted for your records

Handling, Storage and Application of Poultry Litter

Approval of the nutrient management plan by the Tennessee Department of Agriculture is contingent upon the following poultry management practices:

- ❏ Litter storage may not exceed five days of unprotected exposure. This requirement applies to existing, expanding and new operations. Litter can be taken from the poultry house directly to the field or stockpiled and covered with plastic or stored in a building. Any stockpiled litter left exposed to rainfall can be classified as a liquid manure management system, which would mean additional water quality regulations for your farming operation. Litter should not be stockpiled near perennial streams or groundwater wells.
- ❏ Litter used on your farm as a fertilizer should be sampled and submitted for analysis as close to the time of land application as practical. Litter analysis should be conducted at least every two years. The average nitrogen content for litter as shown in Table 1 may be used to calculate application rates for your initial nutrient management plan that you submit for a permit. If you have previous litter analysis results for your farm, those results can be used to calculate litter application rates. Future farm litter analysis results can be used to calculate an average litter nutrient value for your farm. If the litter is removed from the poultry farm by a third party, a litter analysis by the poultry farm owner is not required. Your county Extension office has information about litter sampling and labs that will conduct the appropriate tests.
- ❏ Litter should be applied at rates not to exceed the agronomic nitrogen utilization rate of the receiving crop. Suggested nitrogen application rates and application timing guidelines are shown in Table 2. Examples for determining application rates can be found in Worksheets 1 and 2.

If the total nitrogen in the poultry litter is less than 40 pounds per ton, litter application rates to meet hay-pasture nitrogen requirements can easily exceed on application rate of five tons per acre. This application rate on hay-pasture will eventually lead to very high soil phosphorous levels. A good

Table 1. Average Nutrient Composition of Poultry Litter

Litter Type	Total Nitrogen lbs/ton*	Phosphorous P_2O_5 lbs/ton	Potassium K_2O lbs/ton
Broiler	62	60	40
Broiler Breeders and Breeder Replacements**	31	54	31
Stockpiled Broiler	36	58	34
Table Egg Type Hens and Replacements**	28 38	31 56	20 30
Dead Bird Compost	44	66	48

**Approximately one-half of the total nitrogen is available for plant use.*

***The amount of N, P_2O_5 and K_2O in the litter for hens and replacement birds are very similar.*

Table 2. Suggested Nitrogen Rates and Timing Guidelines for Manure Use: Field and Forage Crops[1,2]

Crop/Yield Level	Nitrogen Application Rate lbs/Acre	Application Time
Field Crops		
Corn/Grain		
100-125 bu.	120	at planting
125-150 bu.	150	"
150-175 bu.	180	"
175-200 bu.	210	"
200-225 bu.	240	"
Corn/Silage		
15-18 tons	120	"
19-25 tons	150	"
above 25 tons	180	"
Small grain for grain		
30-70 bu/acre	60	Feb. 15 - March 15
Grain/Sorghum		
50-100 bu/acre	90	at planting
Canola/Rape	110	early to mid March before bolting
Tobacco	200	at planting
Warm-Season Forages		
Bermuda Establishment		
Common or Hybrids	30	at planting
Bermuda Maintenance		
Common Pasture	60	May 1
1-2 tons/acre	180	May 1
3-6 tons/acre		
Hybrid Pasture	120	May 1
1-4 tons/acre	180	May 1
5-6 tons/acre		
Hybrid Hay	120	May 1
1-6 tons/acre	400	Split total into 3 applications
7-12 tons/acre		May 1, June 1, July 1
Summer Annual Grass		
Seeded before June 20	120	at planting
Seeded after June 20	60	
Cool-Season Forages		
Fescue Pasture		
Establishment	30	at planting
Maintenance		
spring pasture only (1-2 tons/acre)	45	March
spring hay and fall stockpile	105	split total application half in March and half in July
Fescue Hay		
Establishment	30	at planting
Maintenance		
spring hay only (1-3 tons/acre)	105	March
spring hay and fall stockpile	165	split total application 2/3 in March and 1/3 in July
Timothy or Orchard Grass Hay		
1-3 tons/acre	120	March
Small Grain and/or Ryegrass		
Fall grazing	60	at planting
Spring grazing	45	March 1
Spring hay or silage	60	March 1

[1]/Producer must select the correct yield level based on a knowledge of yield potential for field soil type or field yield history from farm records.

[2]/Adapted from: P&SS Information Sheet #185, Lime and Fertilizer Recommendations for the Various Crops of Tennessee

rule to follow is never apply more than three tons of poultry litter to hay-pasture. Should additional nitrogen be needed, use a commercial fertilizer.

- ❏ A standard soil test analysis for litter application sites must be submitted with the nutrient management plan. Future soil tests should occur based on the NRCS soil test frequency recommendations presented in Table 3.
- ❏ Dead animal disposal can be accomplished by composting, incineration, rendering, disposal in a Class 1 permitted landfill or burial on site in a covered pit.

The following are recommended best management practices that can be used to further protect water quality:

- ❏ Calibrate spreading equipment and apply litter uniformly.
- ❏ If possible, incorporate the litter into the soil to reduce runoff, volatilization losses and odor problems.
- ❏ Maintain a vegetative buffer strip between the application site and adjacent streams, lakes, ponds, sinkholes and wells.
- ❏ Do not apply litter when the ground is frozen or on steep slopes subject to flooding, erosion or rapid water runoff.
- ❏ Cover vehicles when hauling litter on public roads.
- ❏ Consider applying litter based on phosphorous near sensitive areas such as streams and wetlands or on fields that have a high soil phosphorous level.

Records

The CAFO II General Permit requires the following records must be maintained by the farm owner for a minimum of two years and shall be available to the Tennessee Department of Agriculture and/or the Tennessee Department of Environment and Conservation for review:

- ❏ Soil test and litter analysis results
- ❏ Nutrient management plan that includes crops, application rates, tons of litter produced, dates of litter application to crops, planting and harvesting dates, and tons of litter used on the farm
- ❏ Tons of litter transported off the farm by the farm owner, other individuals or firms
- ❏ Any modification in the plan related to crops planted, application rates and size of poultry farm operation

Map of the Farm

To obtain the permit, an aerial photograph, soils map or hand-drawn map of your farm must be submitted as a part of the nutrient management plan. The aerial photograph or map can be obtained at your county Farm Service Agency office. A hand-drawn farm map showing required information is presented on the next page. The photograph or map must be marked to show the following:

- ❏ Location of poultry production houses, composting facilities and litter storage sites

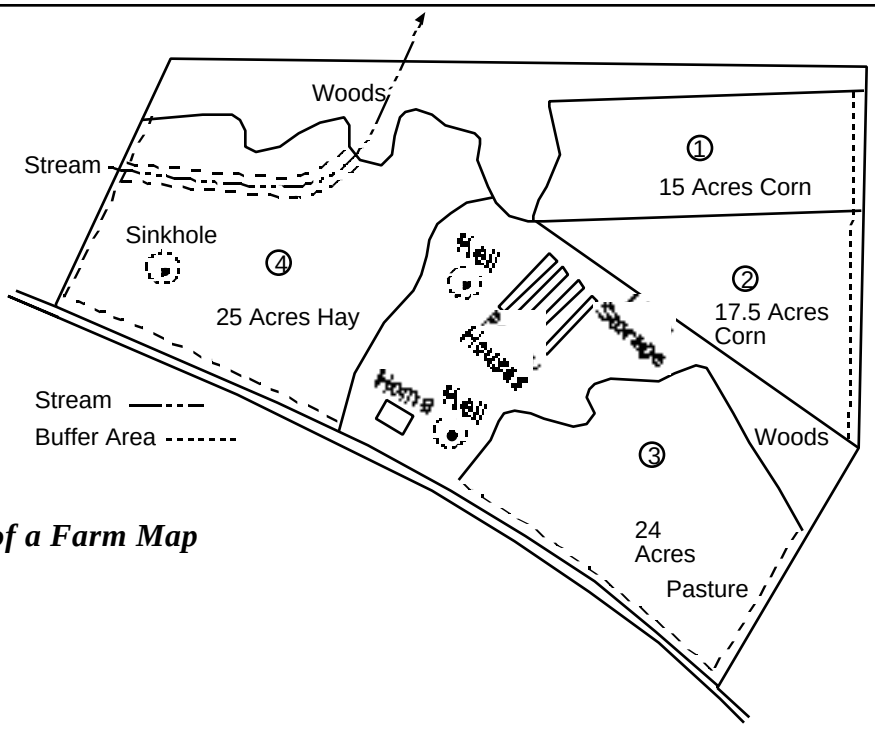

Illustration of a Farm Map

- ❏ Location and size of poultry litter application fields (identify field and associated cropping system)
- ❏ Location of streams, lakes, ponds, sinkholes, wells and wetlands
- ❏ Non-application buffer areas around application sites that are sufficient to protect water quality

Records of Poultry Litter Not Used on Your Farm

The names of any persons and/or firms that remove poultry litter from your farm must be maintained in your records. It is suggested you use Form 4 to record the necessary information.

Also, it is suggested you use Form 5 "Agreement for the Removal of Poultry Litter From a Poultry Farm" and keep this form with your records. The information in this form will make the persons and/or firms that remove poultry litter from your farm aware of the conditions that need to be met to protect water quality. Forms 4,5,6 and 7 are to be completed as necessary and kept on the farm.

Soil Testing

Soil testing is important to ensure the required amount of nutrients are available in proper balance for high crop yields. On farms where poultry litter has been used as a fertilizer for many years, soil tests can make the farmer aware of potential problems that may exist in fields with high soil phosphorous levels.

Soil tests measure the amount of available nutrients in the soil. In collecting a soil sample, make sure the sample is representative of the area being sampled. Poor soil sampling techniques can lead to misleading test results and recommendations. The recommended frequency for soil testing a field is presented in Table 3. The County Extension agent has more information on soil testing.

Recommended Non-application Buffer Areas

It is recommended that non-application buffer areas be established where poultry litter might be spread on fields near environmentally high-risk areas. This would be fields that are adjacent to streams, ponds, lakes, wells, public roads, dwellings or public areas. Some of the buffer areas listed will help to minimize odor problems when spreading litter on a field. The suggested buffer widths are shown in Table 4 (page 8).

Table 3. Soil Test Frequency Recommendations

Use	Frequency (Years)
Continuous no-till soybeans (only)	3-5
Continuous no-till corn, cotton	2
Hay systems	2
Pasture	3-5
High-value cash crops (tobacco, vegetables)	annually
Lawns and gardens	3-5
Anytime a nutrient or soil acidity problem is suspected	immediately
At the beginning of a different cropping rotation	immediately
**Source - NRCS Field Office Technical Guide 590-1*	

Nutrient Content of Poultry Litter

The nutrient content of poultry litter varies with the type of bird, feed formulation, proportion of litter to manure, number of grow-outs on the litter and litter management practices. Not knowing the actual nutrient content of the litter to be used on your farm can result in errors in the application rate. Applying too much litter will waste valuable nutrients and increase the potential for ground and surface water contamination. Not applying enough litter will not allow the crops to reach intended yields.

Shown previously in Table 1 (page 4) is the average nutrient content for various types of poultry litter taken from university reports in five southern states. Until you get a litter analysis report for your farm, these values can be used in calculating litter application rates in your farm nutrient management plan.

Table 4. Recommended Non-Application Buffer Widths When Spreading Litter [1/]

Object, Site	Situation	Buffer Width (ft.) from Object, Site
Well	Located up-slope of application site	150
Well	Located down-slope of application site provided Conditions warrant application	300
Waterbody or Stream[2/]	Predominate slope < 5% with good vegetation[3/]	30
Waterbody or Stream[2/]	Predominate slope 5-8% with good vegetation[3/]	50
Waterbody or Stream[2/]	Poor vegetative cover or predominate slope > 8%[3/]	100
Waterbody or Stream[2/]	Cultivated land, low erosion	30
Public Road	Irrigated wastewater	50
Public Road	Solids applied with spreader truck	50
Dwelling	Other than producer	300
Public Use Area	All	300
Property Line	Located downslope of application site	30

[1/] Source - NRCS Field Office Technical Guide 590-1

[2/] Waterbody includes pond, lake, wetland or sinkhole. "Open" sinkholes should be protected the same as a well. Where sinkholes are not "open", a buffer width should be established in the flat area around the rim of the basin before the change in slope up out of the basin begins. Stream includes both perennial and intermittent streams.

[3/] Good vegetation refers to a well-managed, dense stand of grass which is not overgrazed.

Poultry Litter Production

The amount of poultry litter removed from a poultry house will vary depending upon litter moisture content, type and size of the chickens and length of time the chickens are kept in the poultry house. The approximate amount of litter produced by various kinds of chickens is shown in Table 5. This information can be used to complete the litter production calculations in Form 2. For instance, a 4-pound broiler will produce approximately 2.1 pounds of litter in a 42-day grow-out period, as compared to a 6.5-pound broiler that will produce approximately 2.4 pounds of litter in a 53-day grow-out period. To calculate the total amount of litter that will accumulate in the poultry house, consideration must be given to the number of grow-outs in the house each year. As indicated in Table 5, broiler breeders and table egg-type-hens will produce approximately the same amount of litter per bird per year. Although the broiler breeder is a much larger bird, it must be remembered that a broiler breeder is only in the poultry house for 10 months as compared to 12 months or more for table egg-type-hens.

Table 5. Typical Values of Poultry Litter Production*

Type of Poultry	Market or Mature Weight (pounds)	Litter Produced per Bird for each Grow-out or Egg Production Period (lbs.)
Broilers	3.8 - 4.9	2.1
	5 - 5.9	2.2
	6 - 7+	2.4
Broiler breeder replacements	5 - 6	5.5
Broiler breeders	8 - 12	35
Table egg replacements	2.5 - 3.5	4.5
Table egg hens	4 - 5	35

**Values are approximate and can be adjusted based on farm records.*

Form 1

Nutrient Management Plan for the Poultry Industry

General Information

Name of farm _____County _____

Farm owner's name_____Telephone no. _____

Mailing address_____

_____ Zip_____

Type of Poultry Farm Operation (check all that apply)

Farm situation	**Type of poultry**
❑ Existing	❑ Broilers
❑ New	❑ Broiler breeder replacements
❑ Expanding	❑ Broiler breeders
	❑ Table egg type hens
	❑ Table egg type replacements

Farm owner signature _____Date:_____

Name of the person if the farm is leased and/or operated by someone other than the farm owner:

_____

Signature _____ Date_____

Assistance in completing this nutrient management plan was provided by: (check all that apply)

❑ University of Tennessee Agricultural Extension Service

❑ Natural Resources Conservation Service

❑ Private consultant

❑ Other _____
(name)

A copy of this page must be submitted to the Tennessee Department of Agriculture to obtain a CAFO II General Permit

Form 2

Calculating Poultry Litter Production

The total tons of poultry litter produced on your farm can be estimated by using one or more of the following methods:

Broilers	**Example**		**Your farm**
a. Total number of birds on farm per flock	50,000	birds	_____
b. Number of flocks per year	6	flocks	_____
c. Total farm bird capacity (a x b)	300,000	birds	_____
d. Pounds of litter produced per bird (see Table 5)	2.1	pounds	_____
e. Pounds of litter produced per year (c x d)	630,000	pounds	_____
f. Tons of litter per year (e ÷2000)	315	tons	_____

Pullets (Broiler Breeder or Table-egg-type)	**Example**		**Your farm**
a. Total number of birds on farm per flock	22,000	birds	_____
b. Number of flocks per year	2	flocks	_____
c. Total farm bird capacity (a x b)	44,000	birds	_____
d. Pounds of litter produced per bird (see Table 5)	5	pounds	_____
e. Pounds of litter produced per year (c x d)	220,000	pounds	_____
f. Tons of litter per year (e ÷2000)	110	tons	_____

Hens (Broiler Breeder or Table-egg-type)	**Example**		**Your farm**
a. Total number of birds on farm per flock	20,000	birds	_____
b. Number of flocks per year	1	flocks	_____
c. Total farm bird capacity (a x b)	20,000	birds	_____
d. Pounds of litter produced per bird (see Table 5)	35	pounds	_____
e. Pounds of litter produced per year (c x d)	700,000	pounds	_____
f. Tons of litter per year (e ÷2000)	350	tons	_____

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Form 3

Use Of Poultry Litter On Your Farm

Crop*	Acres	Application Rate (tons/acre)	Litter Utilized (tons)

**Information for this chart will come from the worksheet for each crop.*

Total tons needed to meet crop nitrogen requirements _____

Total tons produced on your farm _____

Poultry Litter Use

Tons of litter used in owners farming operation

-Fertilizer _____
-Feed _____
-Other _____

Tons of litter removed from poultry farm by owner _____

Tons of litter removed from poultry farm by others _____

Total tons of litter used in farming operation and removed from farm _____

Manure-Handling Methods
(check all that apply or will apply)

❑ Litter taken directly to fields on the farm
❑ Litter stockpiled and covered with plastic
❑ Litter stockpiled in a building
❑ Litter used in a composter
❑ Litter sold or given away
❑ Litter used as cattle feed
❑ Litter removed from the farm by the poultry farmer
❑ Litter removed from the farm by a third party
❑ Litter used as a fuel in a heating system
❑ Other _____
specify

Dead Bird Disposal Method

❑ Composting
❑ Incineration
❑ Covered in ground pit burial
❑ Permitted landfill
❑ Rendering
❑ Other _____
specify

A copy of this page must be submitted to the Tennessee Department of Agriculture to obtain a CAFO II General Permit

Worksheet 1: Nitrogen on Corn

Worksheet: Crop Nutrient Requirement Worksheet

Use one worksheet per crop or field

	Example	Your Farm
1. Crop to be grown	Corn	
2. Crop realistic yield expectation based on your farm records.	110 bu/acre	
3. Crop nitrogen requirement (See Table 2)	120 lb N/acre	
4. Commercial fertilizer nitrogen (if applied)	25 lb N/acre	
5. Crop nitrogen need from poultry dry litter (3 minus 4)	95 lb N/acre	
6. Poultry dry litter plant-available nitrogen		
a). Total nitrogen in the litter as indicated by the as received nitrogen value from a laboratory analysis or use the average nitrogen value for litter shown in Table 1.	36 lb N/ton	
b). Nitrogen availability coefficient if litter is broadcast use 0.5 if litter is incorporated into the soil within two days use 0.6	0.6	
c). Plant available nitrogen (a x b)	21.6 lb N/ton	
7. Poultry dry litter application rate (5 divided by 6c)	4.4 ton/acre	
8. Acres of crop to be grown	95 acres	
9. Total litter required to meet the agronomic N requirement for this crop or field (7 x 8)	418 tons	

A copy of all crop nutrient worksheets must be submitted to the Tennessee Department of Agriculture to obtain a CAFO II General Permit

Worksheet 2: Nitrogen on fescue pasture

Worksheet: Crop Nutrient Requirement Worksheet

Use one worksheet per crop or field

	Example	Your Farm
1. Crop to be grown	Fescue	
2. Crop realistic yield expectation based on your farm records.	Pasture (Hay)	
3. Crop nitrogen requirement (See Table 2)	105 lb N/acre	
4. Commercial fertilizer nitrogen (if applied)	0 lb N/acre	
5. Crop nitrogen need from poultry dry litter (3 minus 4)	105 lb N/acre	
6. Poultry dry litter plant-available nitrogen		
a). Total nitrogen in the litter as indicated by the as received nitrogen value from a laboratory analysis or use the average nitrogen value for litter shown in Table 1.	62 lb N/ton	
b). Nitrogen available coefficient if litter is broadcast use 0.5 if litter is incorporated into the soil within two days use 0.6	0.5	
c). Plant-available nitrogen (a x b)	31 lb N/ton	
7. Poultry dry litter application rate (5 divided by 6.c)	3.4 tons/acre	
8. Acres of crop to be grown	70 acres	
9. Total litter required to meet the agronomic N requirement for this crop or field (7 x 8)	238 tons	

A copy of all crop nutrient worksheets must be submitted to the Tennessee Department of Agriculture to obtain a CAFO II General Permit

Form 4

Names of Persons and/or Firms That Remove Poultry Litter from Your Farm

_____*

name of farm

Name: _____ Name: _____

Address: _____ Address: _____

_____ _____

Phone number: _____ Phone number: _____

Estimated tons of litter removed: _____ Estimated tons of litter removed: _____

Date: _____ Date: _____

Name: _____ Name: _____

Address: _____ Address: _____

_____ _____

Phone number: _____ Phone number: _____

Estimated tons of litter removed: _____ Estimated tons of litter removed:_____

Date: _____ Date: _____

Name: _____ Name:_____

Address: _____ Address:_____

_____ _____

Phone Number: _____ Phone Number:_____

Estimated tons of litter removed: _____ Estimated tons of litter removed:_____

Date: _____ Date: _____

***It is not necessary to keep records of small quantities of litter (pick-up truck load or less) that leave the farm.*

Form 5

Agreement for the Removal of Poultry Litter from a Poultry Farm

The conditions listed below help to protect water quality. These conditions apply to litter removed from poultry operations. The poultry litter covered by this agreement was removed on

_____ from the poultry farm owned by _____
(date) (name)

located at _____.
(address)

A. The litter must be managed to ensure there is no discharge of the litter to surface or ground water.

B. When removed from the farm, the litter should be applied directly to the field or stockpiled and covered with plastic or stored in a building.

C. Litter will not be stockpiled near streams, sinkholes, wetlands or wells.

D. Fields receiving litter should be soil tested at least every two or three years.

E. A litter nutrient analysis should be used to determine application rates for various crops.

F. Calibrate spreading equipment and apply litter uniformly.

G. Apply no more nitrogen than can be used by the crop.

H. A buffer zone is recommended between the application sites and adjacent streams, lakes, ponds, sinkholes and wells.

I. Do not apply litter when the ground is frozen or on steep slopes subject to flooding, erosion or rapid runoff.

J. Cover vehicles hauling litter on public roads.

K. Keep records of locations where poultry litter will be used as a fertilizer.

I _____ am the person removing litter from the poultry farm and
(name)
do understand the conditions listed above.

_____ _____
(signature) (date)

_____ _____
(address) (phone)

_____

Form 6

Poultry Litter Records

Farm owner _____ Year _____

Uses of Litter							
Date mm/dd/yy	**Amount removed from poultry house (tons)**	**Temporary storage (tons)**	**Spread on farm (tons)**	**Removed from farm by owner (tons)**	**Removed from farm by third party (tons)**	**Cattle feed (tons)**	**Other* (tons)**
Totals							

*Used for composting poultry carcasses, composted organic fertilizer or soil amendment, fuel, etc.

Form 7

Field Application Record for Poultry Litter

Farm owner _____ Year _____

Field #	Date (mm/dd/yr)	Crop Type	Application Method*	Field Size (acres)	Application Rate (tons/acre)	Spread on Field (tons)

*SI = soil incorporated (disked); BR - broadcast (surface applied)

Additional Forms and Worksheets

Form 1

Nutrient Management Plan for the Poultry Industry

General Information

Name of farm _____County _____

Farm owner's name_____Telephone no. _____

Mailing address_____

_____ Zip_____

Type of Poultry Farm Operation (check all that apply)

Farm situation	**Type of poultry**
❑ Existing	❑ Broilers
❑ New	❑ Broiler breeder replacements
❑ Expanding	❑ Broiler breeders
	❑ Table egg type hens
	❑ Table egg type replacements

Farm owner signature _____Date:_____

Name of the person if the farm is leased and/or operated by someone other than the farm owner:

_____

Signature _____ Date_____

Assistance in completing this nutrient management plan was provided by: (check all that apply)

❑ University of Tennessee Agricultural Extension Service

❑ Natural Resources Conservation Service

❑ Private consultant

❑ Other _____
(name)

This page must be submitted to the Tennessee Department of Agriculture to obtain a CAFO II General Permit

Form 2

Calculating Poultry Litter Production

The total tons of poultry litter produced on your farm can be estimated by using one or more of the following methods:

Broilers	**Example**		**Your farm**
a. Total number of birds on farm per flock	50,000	birds	
b. Number of flocks per year	6	flocks	
c. Total farm bird capacity (a x b)	300,000	birds	
d. Pounds of litter produced per bird (see Table 5)	2.1	pounds	
e. Pounds of litter produced per year (c x d)	630,000	pounds	
f. Tons of litter per year (e ÷2000)	315	tons	

Pullets (Broiler Breeder or Table egg type)	**Example**		**Your farm**
a. Total number of birds on farm per flock	22,000	birds	
b. Number of flocks per year	2	flocks	
c. Total farm bird capacity (a x b)	44,000	birds	
d. Pounds of litter produced per bird (see Table 5)	5	pounds	
e. Pounds of litter produced per year (c x d)	220,000	pounds	
f. Tons of litter per year (e ÷2000)	110	tons	

Hens (Broiler Breeder or Table-egg-type)	**Example**		**Your farm**
a. Total number of birds on farm per flock	20,000	birds	
b. Number of flocks per year	1	flocks	
c. Total farm bird capacity (a x b)	20,000	birds	
d. Pounds of litter produced per bird (see Table 5)	35	pounds	
e. Pounds of litter produced per year (c x d)	700,000	pounds	
f. Tons of litter per year (e ÷2000)	350	tons	

This page must be submitted to the Tennessee Department of Agriculture to obtain a CAFO II General Permit

Form 3

Use Of Poultry Litter On Your Farm

Crop*	Acres	Application Rate (tons/acre)	Litter Utilized (tons)

**Information for this chart will come from the worksheet for each crop.*

Total tons needed to meet crop nitrogen requirements _____

Total tons produced on your farm _____

Poultry Litter Use

Tons of litter used in owners farming operation

-Fertilizer _____
-Feed _____
-Other _____

Tons of litter removed from poultry farm by owner _____

Tons of litter removed from poultry farm by others _____

Total tons of litter used in farming operation and removed from farm _____

Manure-Handling Methods
(check all that apply or will apply)

❑ Litter taken directly to fields on the farm
❑ Litter stockpiled and covered with plastic
❑ Litter stockpiled in a building
❑ Litter used in a composter
❑ Litter sold or given away
❑ Litter used as cattle feed
❑ Litter removed from the farm by the poultry farmer
❑ Litter removed from the farm by a third party
❑ Litter used as a fuel in a heating system
❑ Other _____
specify

Dead Bird Disposal Method

❑ Composting
❑ Incineration
❑ Covered in ground pit burial
❑ Permitted landfill
❑ Rendering
❑ Other _____
specify

This page must be submitted to the Tennessee Department of Agriculture to obtain a CAFO II General Permit

Worksheet 1: Nitrogen on Corn

Worksheet: Crop Nutrient Requirement Worksheet

Use one worksheet per crop or field

	Example	Your Farm
1. Crop to be grown	Corn	
2. Crop realistic yield expectation based on your farm records.	110 bu/acre	
3. Crop nitrogen requirement (See Table 2)	120 lb N/acre	
4. Commercial fertilizer nitrogen (if applied)	25 lb N/acre	
5. Crop nitrogen need from poultry dry litter (3 minus 4)	95 lb N/acre	
6. Poultry dry litter plant-available nitrogen		
a). Total nitrogen in the litter as indicated by the as received nitrogen value from a laboratory analysis or use the average nitrogen value for litter shown in Table 1.	36 lb N/ton	
b). Nitrogen availability coefficient if litter is broadcast use 0.5 if litter is incorporated into the soil within two days use 0.6	0.6	
c). Plant available nitrogen (a x b)	21.6 lb N/ton	
7. Poultry dry litter application rate (5 divided by 6c)	4.4 ton/acre	
8. Acres of crop to be grown	95 acres	
9. Total litter required to meet the agronomic N requirement for this crop or field (7 x 8)	418 tons	

A copy of all crop nutrient worksheets must be submitted to the Tennessee Department of Agriculture to obtain a CAFO II General Permit

Worksheet 2: Nitrogen on fescue pasture

Worksheet: Crop Nutrient Requirement Worksheet

Use one worksheet per crop or field

	Example	Your Farm
1. Crop to be grown	Fescue	
2. Crop realistic yield expectation based on your farm records.	Pasture (Hay)	
3. Crop nitrogen requirement (See Table 2)	105 lb N/acre	
4. Commercial fertilizer nitrogen (if applied)	0 lb N/acre	
5. Crop nitrogen need from poultry dry litter (3 minus 4)	105 lb N/acre	
6. Poultry dry litter plant-available nitrogen		
a). Total nitrogen in the litter as indicated by the as received nitrogen value from a laboratory analysis or use the average nitrogen value for litter shown in Table 1.	62 lb N/ton	
b). Nitrogen available coefficient if litter is broadcast use 0.5 if litter is incorporated into the soil within two days use 0.6	0.5	
c). Plant-available nitrogen (a x b)	31 lb N/ton	
7. Poultry dry litter application rate (5 divided by 6.c)	3.4 tons/acre	
8. Acres of crop to be grown	70 acres	
9. Total litter required to meet the agronomic N requirement for this crop or field (7 x 8)	238 tons	

A copy of all crop nutrient worksheets must be submitted to the Tennessee Department of Agriculture to obtain a CAFO II General Permit

Form 4

Names of Persons and/or Firms that Remove Poultry Litter from Your Farm

_____*

name of farm

Name: _____ Name: _____

Address: _____ Address: _____

_____ _____

Phone number: _____ Phone number: _____

Estimated tons of litter removed: _____ Estimated tons of litter removed: _____

Date: _____ Date: _____

Name: _____ Name: _____

Address: _____ Address: _____

_____ _____

Phone number: _____ Phone number: _____

Estimated tons of litter removed: _____ Estimated tons of litter removed:_____

Date: _____ Date: _____

Name: _____ Name:_____

Address: _____ Address:_____

_____ _____

Phone Number: _____ Phone Number:_____

Estimated tons of litter removed: _____ Estimated tons of litter removed:_____

Date: _____ Date: _____

***It is not necessary to keep records of small quantities of litter (pick-up truck load or less) that leave the farm.*

Form 5

Agreement for the Removal of Poultry Litter from a Poultry Farm

The conditions listed below help to protect water quality. These conditions apply to litter removed from poultry operations. The poultry litter covered by this agreement was removed on

_____ from the poultry farm owned by _____
(date) (name)

located at _____.
(address)

A. The litter must be managed to ensure there is no discharge of the litter to surface or ground water.

B. When removed from the farm, the litter should be applied directly to the field or stockpiled and covered with plastic or stored in a building.

C. Litter will not be stockpiled near streams, sinkholes, wetlands or wells.

D. Fields receiving litter should be soil tested at least every two or three years.

E. A litter nutrient analysis should be used to determine application rates for various crops.

F. Calibrate spreading equipment and apply litter uniformly.

G. Apply no more nitrogen than can be used by the crop.

H. A buffer zone is recommended between the application sites and adjacent streams, lakes, ponds, sinkholes and wells.

I. Do not apply litter when the ground is frozen or on steep slopes subject to flooding, erosion or rapid runoff.

J. Cover vehicles hauling litter on public roads.

K. Keep records of locations where poultry litter will be used as a fertilizer.

I _____ am the person removing litter from the poultry farm and
(name)
do understand the conditions listed above.

_____ _____
(signature) (date)

_____ _____
(address) (phone)

_____

Form 6

Poultry Litter Records

Farm owner _____ Year _____

Uses of Litter							
Date mm/dd/yy	**Amount removed from poultry house (tons)**	**Temporary storage (tons)**	**Spread on farm (tons)**	**Removed from farm by owner (tons)**	**Removed from farm by third party (tons)**	**Cattle feed (tons)**	**Other* (tons)**
Totals							

*Used for composting poultry carcasses, composted organic fertilizer or soil amendment, fuel, etc.

Form 7

Field Application Record for Poultry Litter

Farm owner _____ Year _____

Field #	Date (mm/dd/yr)	Crop Type	Application Method*	Field Size (acres)	Application Rate (tons/acre)	Spread on Field (tons)

*SI = soil incorporated (disked); BR - broadcast (surface applied)

Available Information

The following publications are available at your county University of Tennessee Agricultural Extension Service office:

PB 1421	Poultry Manure: Proper Handling and Application to Protect Our Water Resources
PB 1445	Dead Poultry Composting
PB 1457	Well Water Protection on Poultry Farms
PB 1476	Storage Facilities for Broiler Litter
SP 414	Calibrating Spreaders for the Application of Poultry Manure
SP 484L	Assessing Your Poultry Litter Management and Carcass Disposal
SP 544A	Tennessee CAFO II General Permit Requirements for Poultry Farmers
SP 563	Poultry Litter Sampling and Testing

Visit the Agricultural Extension Service Web site at:
http://www.utextension.utk.edu/

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