

Poultry Litter Nutrient Management Plan for NPDES Facilities

The plan has been prepared for:

Farm Name: _____
NPDES Facility #: _____
Owner: _____
Address: _____

This plan was developed by:

Name: _____
Address: _____

Phone #: _____

Owner/Grower

I understand and agree to the specifications established in this nutrient management plan.

Signature (owner or manager if different from owner)

Date _____

Print Name

This plan meets the minimum standards and specifications of the US Department of Agriculture – Natural Resources Conservation Service or the standard of practices adopted by the NC Soil and Water Conservation Commission. The plan also meets the requirements established by the Division of Water Quality for poultry litter management for NPDES facilities.

Plan Approved By: _____
Technical Specialist Signature

Date _____

Print Name

NPDES Poultry Litter Nutrient Management Plan for NPDES Facilities

General Information

This plan meets the nutrient management requirements of facilities subject to NPDES permits (>55,000 turkeys, 125,000 broilers or 85,000 layers). All land under the control of the grower that will receive waste used for producing crops or grass must be addressed.

A technical specialist is required to develop the plan components. This includes a litter production estimate, a potential P loss evaluation (PLAT) for each field and data to determine litter rates for selected crops by soil types. The “year 1” plan is based on the first year of operation and serves as an example of a typical waste utilization plan including the timing and rate of litter application and a litter use budget.

Worksheets A and B, completed by the grower, tailors the litter application to specific crops and growing seasons. The litter analysis and data provided by the technical specialist are used by the grower to determine litter application rates. The worksheets may be completed by hand or with available software.

The crop N rates for the plan are normally based on Realistic Yields Expectations (RYEs) compiled by NCSU by county and soil type. The technical specialist can determine if on-farm records are adequate to establish alternative crop yields.

The P aspect of litter application is based on the PLAT rating. PLAT assesses the potential for P to move to surface and groundwaters. A low or medium rating allows the application rate be based only on the crop N requirements. A high rating limits the P application to the P removed by the crop. However, a single application can cover the total P uptake for up to 3 crops or 3 years of grass as long as the N rate is not exceeded for the year the litter is applied. For fields with a very high rating, no litter application is allowed.

Flow Chart

The first step in planning litter application is the grower’s designation of all fields, potential crop types and grasses to be included in the plan, application and soil tillage methods and estimated litter application amounts. It’s important to be comprehensive because the addition of new fields or crops will require a revision of the plan by a technical specialist.

All fields will require a PLAT evaluation by a technical specialist to determine the P loss potential. To run PLAT, the grower must have a current soil sample analysis from the NCDA&CS Agronomic Lab or other certified lab available for each field. Additional soil samples may be required.

Once PLAT is complete, the technical specialist can develop Tables 1, 2 and 3. This provides the technical data specific to the farm necessary to calculate N and P rates and address other aspects of litter application. The technical specialist must approve this portion of the plan and initial each sheet in the tables. This completes the role of the technical specialist.

With the tables and waste analysis reports in-hand, the grower can now determine actual application rates. Worksheet A provides the process to perform the calculations. Worksheet B is a summary of all the information necessary to correctly apply litter. The grower must initial the worksheets.

The final step is record keeping by the grower. DRY-1 records litter amounts removed from the house and the amounts taken off the farm. DRY-2 records the tonnage applied by the grower to the fields that he farms. DRY-3 calculates the nutrient balance for each crop that receives litter.

Poultry Litter Production Estimate*

Bird Type _____

Number of Birds per flock _____

Tons Litter per 1000 birds per flock _____

Number of flocks per year _____

Tons Litter per year _____

Technical Specialist Approval _____ Date _____
(Initials)

Litter Balance Calculations

Production (estimated above) _____ tons/year

Farm Usage (Total from Table 3) _____ tons/year

Off Farm Usage (Production – Farm Usage) _____ tons/year

Calculated by Technical Specialist _____ Date _____
(Initials)

* The NRCS Waste Utilization Standard 633 includes estimates of poultry litter generation.

**Table 1
LITTER PLAN FIELD DATA SHEET**

Tract	Field¹	Soil Type	Useable Acres²	PLAT Rating³

¹ Field ids must match map

² Application acres exclude buffers and setbacks

³ Attach PLAT runs. Base PLAT runs on worst case scenario (highest erosion rate crop)

Technical Specialist approval _____ Date _____
(Initials)

Sheet ___ of ___

Table 2
RYE Nitrogen Rates¹ and Phosphorus Removal

CROP															
Soil Type	RYE²	N (lbs/ac)	P₂O₅ Removal (lbs/ac)	RYE²	N (lbs/ac)	P₂O₅ Removal (lbs/ac)	RYE²	N (lbs/ac)	P₂O₅ Removal (lbs/ac)	RYE²	N (lbs/ac)	P₂O₅ Removal (lbs/ac)	RYE²	N (lbs/ac)	P₂O₅ Removal (lbs/ac)

¹ If preceding crop was soybeans, deduct 15 to 30 lbs of Nitrogen

² Realistic Yield Estimates (RYEs) and P₂O₅ removal rates can be found at www.soil.ncsu.edu/nmp/ncnmwg/yields/index.php

Technical specialist approval _____ Date _____
 (initials)

Sheet ___ of ___

**Table 3
Year 1 Planned Litter Application Rate**

			(1)	(2)	(3)	(4)	(5)	(6)		
Tract	Field	Crop	Applic. Method	Applic. Window	P Limited (Y/N)*	Litter Rate (tons/ac) (A6) or (B6)	Delay in Future Applic. (mm/yy)	Use. Acres	Total Litter (tons) (4) x (6)	Add'l Fertilizer N (lbs/ac) (A2) or (B11)

Total Tons _____

** Very High Fields should not be included in the plan.*

Technical Specialist _____ Date _____
(Initials)

Sheet __ of __

Litter analysis sample id _____

Sample Date _____

**Worksheet A
N BASED LITTER RATE CALCULATIONS**

			(1)	(2)	(3)	(4)	(5)	(6)
Tract	Field	Crop	RYE N Rate (lbs/ac)	Fertilizer N Rate (lbs/ac)	Litter N Rate lbs/ac (1) - (2)	Applic.¹ method	Litter N Content (lbs/ton)	Litter² tons/ac (3) ÷ (5)

¹ Application methods are either broadcast (B) or soil incorporated (SI), if waste is disked in within 2 days.

² Litter application rate cannot exceed rate used in PLAT

Calculated by Owner/ Manager _____ Date _____
(Initials)

Assisted by _____ Date _____

Sheet ___ of ___

Worksheet B
Rate Calculations for High Rated PLAT Fields

			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Tract	Field	Crop	P₂O₅ removal rate (lbs/ac)	Applic. Method (BR/SI) ¹	Litter P₂O₅ content² (lbs/ton)	(BR/SI) Avail. Coeff.³	Litter Total P₂O₅ (lbs/ton) (3) ÷ (4)	Litter rate (tons/ac) (1) ÷ (5)	Delay in Future Applic. (mm/yy)	Rye N (lbs/ac) (A col 1)	Litter N Content (lbs/ton) (A col 5)	Litter N rate (lbs/ac) (6) x (9)	Add'l N rate (lbs/ac) (10) - (8)

¹Broadcast (BR) or Soil Incorporated (SI) ²Waste Analysis Plant Available P₂O₅ ³Availability Coefficient BR = .70, SI = .75

Calculated by owner/manager _____ Date _____ Assisted by _____ Date _____
 (Initials)

Sheet __ of __

NOTES FOR WORKSHEETS AND TABLES

Table 3 – Year 1 Planned Litter Application Rate

This table provides estimates for litter application rates for the first year of the nutrient management plan. The concentrations of nutrients in the litter are based on state averages or farm historical data. This serves as a planning guide for the litter manager. The specific cropping pattern represented in this table may vary. Actual application rates should be based on current waste sample analysis and calculated using the attached worksheets.

Worksheet A – N Based Litter Rate Calculations

This table provides a format for calculating litter application rates based on the crop nitrogen needs. The RYE N rate is from Table 1. If a commercial fertilizer nitrogen or other source is used, then the N rate (lbs/ac) should be subtracted from the RYE N amount to determine the remaining N amount provided by the litter rate. Column 1 minus column 2 = column 3. The effective N rate supplied by the litter varies according to application method in column 4. The N concentration provided by the litter analysis is entered in column 5. Divide the litter N rate (column 3) by the N content (column 5) to determine the litter application rate (column 6).

Worksheet B – Rate Calculations for High Rated PLAT Fields

For high rated PLAT fields, only the amount of P₂O₅ (lbs/ac) equal to the crop removal rate can be applied. The total P₂O₅ removal amounts for up to 3 consecutive crops or 3 years of hay/pasture can be applied in a single application. Every crop in the 3-year rotation should be listed in column 1. Crop P₂O₅ removal rates are determined using Tables 1 and 2. The total litter P₂O₅ content is calculated by the dividing the plant available P₂O₅ content of the litter (column 3) by the appropriate availability coefficient (column 4). The litter rate (column 6) is calculated by dividing the crop P₂O₅ removal rate (column 1) by the total P₂O₅ litter content (column 5). If the P₂O₅ removal amount is for more than 1 year or 1 crop the corresponding delay for the next litter application should be noted in column 7. An example is a spring 2004 application to soybeans in a soybean, corn and wheat rotation. The next allowable litter application would be after the wheat harvest or 6/06.

Fields with litter application rates limited by high PLAT ratings will require additional fertilizer to supply the RYE N need. This worksheet also calculates the additional N required by the crop. From Tables 1 and 2 find the appropriate RYE N rate and enter in column 8. Transfer the litter N content from Worksheet A, column 5 to column 9. Multiply the litter rate (column 6) by the litter N content (column 9) to determine the litter N rate (column 10). Subtract the litter N rate (column 10) from the RYE N rate (column 8) to determine the additional N rate needed (column 11).

Worksheet C – Planned Litter Application Rate

This worksheet shows the target application rates and summarizes other application factors. Enter the appropriate application method and windows in column 1 and 2. The application dates for most crops is included in attachment 1. Column 3 should be marked with a “Y” for fields with application rates limited by phosphorous (PLAT highs) _or otherwise left blank. Enter the litter application rate in column 4. For low and medium PLAT rated fields, use the N based litter rate from Worksheet A, column 6. To determine litter rates (tons/ac) for high rated PLAT fields, use the lower of N based (Worksheet A – col 6) or P based rates (Worksheet B – col 6). Very high PLAT rated fields cannot receive litter. In column 5, time restrictions should be brought forward from Worksheet B as appropriate. Multiply litter rate (tons/ac) in column 4 by field area (ac) in column 6 to determine total litter amount applied to each field (tons) in column 7. Add column 7 to determine total farm litter use. The last column represents the additional fertilizer N from Worksheet A, column 2 or Worksheet B, column 11.

Poultry Litter Specifications for NPDES Plans

1. The litter plan will include a map showing the location of the application fields.
2. Dry litter will be sampled as close to the time of application as practical but at least within 60 days of land application for waste analysis.
3. Soils from fields receiving poultry litter applications will be sampled annually for a standard soil fertility analysis.
4. Lime will be applied in accordance with the standard soil test report to assure suitable conditions for crop growth.
5. Seek alternative fields for litter application should the soil Zn or Cu concentrations reach a level that is potentially harmful for the receiving crop. The NCDA&CS Mehlich-3 soil test indices for Zn are 300 for peanuts and 2000 for other crops and for Cu is 2000 for all crops. When the soil test index for Zn reaches 500 for peanuts or 3000 for other crops and the Cu index reaches 3000 for all crops, cease application.
6. Litter will be applied at rates determined based on:
 - a. The agronomic N rate of the receiving crop based on realistic yields expectations (RYEs) or documented actual yields based on the average of the highest three yields from the past five consecutive crops. If no yield data exist, a rate recommended by NCSU may be used. In the absence of this recommendation, the nutrient management planner may infer a realistic yield from a similar crop on a similar soil.
 - b. Phosphorus application will not exceed the crop removal rate for fields rated high by PLAT.
 - c. Phosphorus will not be applied to fields with a very high PLAT rating except for a starter application.
7. Record keeping for land application:
 - a. Records shall be kept for 5 years of soil test and litter analysis results.
 - b. Records shall be kept for 5 years indicating the location of fields and rates at which litter is land applied.
8. If litter leaves the farm, the owner/manager of the poultry operation will:
 - a. Keep a record of the name, address and phone number of the applicator
 - b. Keep a record of the amount of litter removed
 - c. Provide an appropriate waste analysis to the applicator
 - d. Provide a copy of the "Required Specifications" for Poultry Dry Litter Management dated March 17, 1997 contained in the SB 1217 Guidance Document to the third party applicator.

NOTE: Record keeping for the distribution of litter up to four (4) cubic yards per visit to individuals for personal use is not required.
9. Litter may not be applied within 100 foot of any down-gradient surface waters, open tile line intake structures, or other conduits to surface waters unless one of the following is observed:
 - a. As a compliance alternative, a 35-foot wide vegetated buffer may be substituted for the 100-foot setback
 - b. As a compliance alternative, the implementation of alternative conservation practices or field specific conditions that will provide pollution reductions equivalent to or better than what would be achieved by the 100-foot setback. Alternative conservation practices must be approved by DWQ.
10. Litter shall not be applied closer than 100 feet to wells.
11. Litter will not be stockpiled within 100 feet of perennial streams or wells.
12. Litter shall not be applied within 200 feet of dwellings other than those owned by the landowner.
13. Litter shall not be applied to saturated soils, during rainfall events or when the surface is frozen
14. Litter shall not be applied more than 30 days prior to planting of the crop or forages breaking dormancy.