

Ninth Senate Bill (SB) 1217 Interagency Group Guidance Document September 25, 2009

In an effort to address questions from technical specialists and provide uniform interpretations to technical specialists regarding the requirements of the animal waste management rules, the 1996 session of the General Assembly created an interagency committee. The SB 1217 Interagency Group consists of two (2) representatives from each of the following agencies: the Division of Soil and Water Conservation (DSWC); the Division of Water Quality (DWQ), the Department of Agriculture (NCDA&CS); and Cooperative Extension Service (NCCES), and the Natural Resources Conservation Service (NRCS), United States Department of Agriculture.

The foundation for this Guidance Document is the previous Guidance Documents developed by the agencies represented on SB 1217 dated June 20, 1995, May 3, 1996, August 9, 1996, January 2, 1997, May 21, 1997, August 18, 1997, the Sixth Guidance Memo, Revision One (January 8, 1998), Revision Two (August 25, 1998), Revision Three (October 29, 1998), Revision Four (April 12, 1998), Revision Five (January 12, 2000), the Seventh Guidance Memo (January 9, 2001), Revision One (March 26, 2003), Revision Two (June 30, 2003), and the Eighth Guidance Memo (April 20, 2007). The committee adopted these documents as the foundation for this and future guidance documents. Outdated items were deleted or brought to current status. While much of the guidance provided was contained in previous Guidance Documents, the new guidance is noted by bold type and underlined.

This guidance is intended to address the common issues involved in implementing the animal waste management rules and statutes. Additional guidance will be provided as necessary to continue to clarify the issues contained in this memorandum as well as new issues that may arise. The nature of the rules will require judgment on the part of technical specialists.

Guidance developed by the SB 1217 Interagency Group represent guidelines to address questions from technical specialists and provides uniform interpretations regarding requirements of animal waste management rules. However, for areas where no standards exist, DWQ acknowledges these guidelines as acceptable criteria to base a Certified Animal Waste Management Plan (CAWMP). Any requested deviations from this guidance must be considered by DWQ on a case-by-case basis to insure that the proposal provides equal or better protection. These guidelines may also be incorporated by DWQ as permit conditions for an operation's individual permit or general permit.

If there is a need for any additional information or clarification, please do not hesitate to contact any of the following members of the Senate Bill 1217 Interagency Group:

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For an electronic version of this document go to:

http://www.enr.state.nc.us/DSWC/pages/guidance_docs.html

For additional information go to: <http://www.soil.ncsu.edu/interagency/>

TABLE OF CONTENTS

1	WASTE UTILIZATION PLANS	1-1
1.1	PARTS OF A WASTE UTILIZATION PLAN (EXCEPT FOR DRY POULTRY LITTER – SEE 5.3).....	1-1
1.2	WUP FORMAT	1-2
1.3	VALIDITY OF WUP APPROVED BEFORE FEBRUARY 1, 1993	1-2
1.4	WASTE UTILIZATION PLAN REVISIONS (MAJOR MODIFICATIONS)	1-2
1.5	WUP AMENDMENTS (MINOR MODIFICATIONS).....	1-4
1.6	WUP CONDITIONAL AMENDMENT	1-5
1.7	WUP CHANGES REQUIRED BY DWQ	1-5
1.8	ADDITION OF FIELDS TO WUP.....	1-5
1.9	MULTIPLE WUPS	1-6
1.10	LAND APPROVED FOR THE APPLICATION OF MANURE	1-6
1.11	WETLAND WASTE APPLICATION	1-6
1.12	GRASSED WATERWAY WASTE APPLICATION	1-6
1.13	VERIFICATION OF EROSION RATES.....	1-6
1.14	SUBSURFACE DRAINAGE.....	1-6
1.15	CROPS GROWN OTHER THAN THOSE SPECIFIED IN THE PLAN	1-7
1.16	NITROGEN LOADING RATES THAT EXCEED PUBLISHED RYES.....	1-7
1.17	USE OF SOIL SAMPLE REPORT’S N RECOMMENDATIONS	1-8
1.18	DOCUMENTATION OF COMMERCIAL FERTILIZER AND OTHER NUTRIENT SOURCES ON LAND APPLICATION SITES.....	1-8
1.19	SOIL TESTING FOR COPPER AND ZINC.....	1-8
1.20	ROLE OF PLANT TISSUE ANALYSIS IN JUSTIFYING ADDITIONAL WASTE APPLICATIONS AND/OR EXTENDING APPLICATION WINDOWS	1-8
1.21	OVERSEEDING HYBRID BERMUDA HARVESTED FOR HAY OR GRAZED	1-9
1.22	BURNING BALED HAY	1-9
1.23	USE OF FARM RECORDS TO DETERMINE PAN	1-9
1.24	N COEFFICIENTS.....	1-10
1.25	N MANAGEMENT FOR NONHARVESTED WINTER ANNUAL COVER.....	1-10
1.26	SLUDGE REMOVAL PLANNING.....	1-10
1.27	RYE SOURCE.....	1-12
1.28	COMBINATION HAYING AND GRAZING	1-12
1.29	RECOMMENDED WUP AMENDMENT AND RECORDKEEPING ADJUSTMENTS FOR COMBINATION APPLICATION SYSTEMS (E.G. HOSE DRAG & TRAVELER).....	1-12
1.30	DETERMINING APPROPRIATE WASTE ANALYSIS FOR WASTE TRANSFERS.....	1-12
1.31	RYE VALUES FOR SUPERIOR LINES OF SEEDED BERMUDAGRASS	1-13
1.32	ANIMAL WASTE APPLICATION ON TURF SODS.....	1-13
1.33	N APPLICATION FOR NONHARVESTED WILDLIFE PLANTINGS.....	1-13
2	REGISTRATION AND PLAN CERTIFICATION.....	2-1
2.1	FUTURE CHANGES TO STANDARDS	2-1
2.2	FARM STATUS CHANGES – CHANGE OF OWNERSHIP AND REACTIVATION PROCESSES	2-1
2.3	CONDITIONAL APPROVALS FOR CERTIFICATION OF NEW OR EXPANDING FACILITIES	2-2
2.4	REQUIRED DOCUMENTATION FOR CERTIFICATIONS AND PLANS	2-2
2.5	CERTIFICATION FORM REQUIREMENTS.....	2-2
2.6	ABANDONMENT.....	2-3
2.7	SEPARATE OWNERSHIP WITH COMMON WASTE FACILITIES	2-4

2.8	IRRIGATION SYSTEMS FOR NEW OR EXPANDING OPERATIONS	2-4
2.9	IRRIGATION CERTIFICATION OF EXISTING SYSTEMS	2-4
2.10	APPLICATION AND HANDLING EQUIPMENT CERTIFICATION	2-4
2.11	MODIFICATIONS TO FACILITIES TO HOUSE THE CERTIFIED NUMBER OF SWINE	2-5
2.12	RETROFIT TO MEET ORIGINAL REGISTRATION NUMBER OF SWINE	2-5
3	LAGOONS AND WASTE STORAGE STRUCTURES.....	3-1
3.1	UNUSED LAGOON/WASTE STRUCTURE MANAGEMENT AND CLOSURE	3-1
3.2	RENOVATION OF EXISTING ANIMAL WASTE MANAGEMENT SYSTEMS WITH NO EXPANSION	3-1
3.3	LAGOONS IN WETLANDS OR FLOODPLAINS.....	3-2
3.4	DESIGN STANDARDS	3-2
3.5	NRCS POLICY ON MODIFICATIONS	3-2
3.6	OVERFLOW PIPES USED FOR EMERGENCY SPILLWAYS	3-2
3.7	LIQUID LEVELS FOR STAGED WASTE STRUCTURES.....	3-2
3.8	PUMPING MARKERS FOR STAGED WASTE STRUCTURES	3-3
3.9	REQUIREMENTS FOR ELEVATION PUMPING MARKERS.....	3-3
3.10	FREEBOARD FOR SOLIDS TRAPS	3-3
3.11	TREES ON EMBANKMENTS.....	3-3
3.12	PROPER USE OF LAGOON (359) STANDARD.....	3-4
3.13	USE OF HEAVY RAINFALL VOLUME IN POST '96 DESIGNED LAGOONS	3-4
3.14	LAGOON LEVEL MANAGEMENT OPTION.....	3-4
4	NONDISCHARGE RULES AND GENERAL STATUTES	4-1
4.1	ZERO DISCHARGE DURING DESIGN STORM	4-1
4.2	EXPANSIONS UNDER 2T .1300 (FORMERLY 2H .0217)	4-1
4.3	INNOVATIVE SYSTEMS.....	4-2
4.4	FENCING OF ANIMALS OUT OF CREEKS.....	4-2
5	GUIDANCE BY ANIMAL AND OPERATION TYPES	5-1
5.1	DAIRIES & BEEF FEEDLOTS	5-1
5.2	SWINE DRY LOTS	5-1
5.3	ANIMAL WASTE MANAGEMENT PLANS (AWMP) FOR DRY LITTER SYSTEMS.....	5-2
5.4	MANURE HAULERS FOR POULTRY LITTER.....	5-2
5.5	DRY LITTER POULTRY OPERATIONS WITH NPDES PERMITS.....	5-2
6	WASTE APPLICATION, WETTABLE AND EFFECTIVE IRRIGATED ACRES.....	6-1
6.1	WETTABLE ACRES IN A CAWMP	6-1
6.2	IRRIGATION RECORD KEEPING METHODS.....	6-2
6.3	MAXIMUM IRRIGATION AMOUNT	6-2
6.4	IRRIGATION DESIGN CRITERIA	6-3
6.5	IRRIGATION DESIGN CHECKLIST	6-3
6.6	CALIBRATION REQUIREMENTS	6-3
7	PERMITS.....	7-1
7.1	ISSUANCE OF PERMITS TO ANIMAL WASTE MANAGEMENT FACILITIES	7-1
7.2	TRUCK WASHES	7-1
7.3	PUBLIC LIVESTOCK MARKETS.....	7-1
7.4	PERMIT FEES.....	7-2
7.5	MANURE HAULERS.....	7-2

8	SWINE FACILITY SITING REQUIREMENTS	8-1
8.1	SETBACK REQUIREMENTS.....	8-1
8.2	PUBLIC NOTICE FOR SWINE FARMS.....	8-1
8.3	SITE EVALUATIONS.....	8-1
8.4	CONVERSION FACTORS FOR DETERMINING SWINE FARROWING NUMBERS.....	8-2
9	BUFFERS AND PERENNIAL STREAMS	9-1
9.1	BUFFER DESIGN AND WASTE STRUCTURE SETBACKS.....	9-1
9.2	HOW ARE DISTANCES MEASURED FROM PERENNIAL STREAMS?.....	9-1
9.3	DEFINING SETBACKS & BUFFERS	9-2
10	TECHNICAL SPECIALIST	10-1
10.1	LIABILITY	10-1
10.2	PROFESSIONAL ENGINEER SEALS	10-1
10.3	DECERTIFICATION OF TECHNICAL SPECIALIST	10-1
10.4	CERTIFICATION PROGRAM OF IRRIGATION ASSOCIATION	10-1
11	OPERATOR CERTIFICATION REQUIREMENTS.....	11-1
11.1	WHEN MUST A FACILITY HAVE A CERTIFIED OPERATOR?	11-1
12	APPENDICES.....	12-1
13	WEBSITE SOURCES OF TECHNICAL, REGULATORY AND POLICY INFORMATION (REVISED JANUARY 26, 2007).....	13-1

1 WASTE UTILIZATION PLANS

1.1 Parts of a Waste Utilization Plan (except for dry poultry litter – see 5.3)

A waste utilization plan (WUP) is one part of a total waste management plan. The WUP should be reported in a format comparable to the current Natural Resources Conservation Service (NRCS) format prior to certification (see NRCS Practice Standard Code 633 - Waste Utilization). As a minimum the plan will include:

- List of all fields receiving waste by tract number, field number, and acres receiving waste. For irrigated spray fields, show wettable or effective acres as appropriate (see NCCES Publications Irrigated Acreage Determination Procedures for Wastewater Application Equipment for Stationary Sprinkler (AG-553-6) or Hard Hose Traveler (AG-553-7))
- Maps of all fields to be used for waste application
- Amount of manure produced and used annually (see NRCS Practice Standard Code 633 – Waste Application)
- Waste application method
- All crops to be grown by field
- Realistic yield expectations (RYE) for intended crops when available and/or applicable (see NRCS Practice Standard Code 590 – Nutrient Management). For current RYE tables see webpage <http://www.soil.ncsu.edu/nmp/ncnmwg/index.html>
- Dominant soil series for each waste application field (see county soil survey)
- N application rate by field; based on RYE, or actual yields or NCDA&CS or NCCES recommendation if RYE data is not available
- Annual N balance which equals pounds of N generated by animals minus pounds of N taken up by crop (N balance must be zero or in a deficit)
- Waste application windows (see NRCS Practice Standard Code 590 – Nutrient Management (Criteria item # 13) and Appendix 1.1 A, 1.21A & 1.21B)
- Irrigation parameters where irrigation is used (see NRCS Practice Standard Code 633, D₁, D₂, & D₃)
- Calibration information (see NC Publication Field Calibration Procedures for Stationary AG-553-1, Traveler AG-553-2, Center Pivots & Linear AG-553-3, and Spreaders/Tankers - Weight Area Method AG-553-4 and Load Area Method AG-553-5).
- Required specification from NRCS Waste Utilization Standard Code 633
- Emergency action plan (Appendix 1.1B)
- Odor checklist (Appendix 1.1C (cattle), 1.1D (swine), or 1.1E (poultry) depending on animal type)
- Insect checklist (Appendix 1.1F)
- Mortality checklist (Appendix 1.1G)
- Waste sampling within 60 days of land application
- Annual soil sampling: 1) lime requirement, 2) measurement of copper accumulation, 3) measurement of zinc accumulation

In addition to the above items, facilities covered by NPDES (National Pollutant Discharge Elimination System) permits must also include a Phosphorus Loss Assessment and demonstrate compliance with State and Federal Phosphorus Loss criteria by July 1, 2007. **Facilities covered by State Non-Discharge Permits that receive notification from DWQ requiring PLAT assessments must also demonstrate compliance with Phosphorus Loss criteria.**

1.2 WUP Format

All waste utilization plans must contain a table documenting tract name(s) or number(s), field number(s) and/or pull etc., soil type(s), crop(s), application months, residual legume N utilized per acre based on RYE, total N utilized in field, and useable/wettable acres in field. All crops receiving waste must be in the table including interseeded and cover crops. All crops in the rotation receiving waste must be included in the table by field. All fields receiving waste, including those not needed to utilize N (and P for NPDES **and other subject facilities as identified by DWQ**) generated by the animal operation must be included. Plans for sludge application will use the above format.

Narrative in the WUP must explain or clarify information contained in the above table. The narrative must provide additional information needed by the operator and/or inspector to understand N (and P for NPDES **and other subject facilities as identified by DWQ**) and water balance for the documented cropping system(s) and the animal operation. Exceptions to specific requirements in the WUP must be included.

This guidance pertains to all new or revised WUPs whether on new, expanding, or existing operations.

Nutrient Management Software developed jointly by NCDA&CS, NCCES, NRCS, and DSWC is available for preparing WUPs. Contact your local NCCES office or the DSWC Technical Services Section at (919) 715-6109 for information.

1.3 Validity of WUP approved before February 1, 1993

Approved WUP that met NRCS standards prior to February 1, 1993 meet the operation and maintenance requirements of rule 2T .1300 (formerly 2H .0217) *only* if the design specifications in the original plan approved by NRCS (formerly the Soil Conservation Service (SCS)) are being followed. This includes maintaining the original steady state live animal weight.

If the WUP is not consistent with the original NRCS approved specifications, a new WUP shall be developed to comply with 2T .1300 (formerly 2H .0217) standards. Farms that have expanded without an approved WUP plan must meet the most current specifications for operation and maintenance for the entire volume of waste produced before they can be certified.

1.4 Waste Utilization Plan Revisions (Major Modifications)

A WUP revision or major modification is a required change to an entire plan to meet current applicable standards, current PAN application rates and acceptable WUP formatting. A WUP must be revised if the operation cannot utilize all PAN (Plant Available Nitrogen) generated by the animal production in accordance with the existing WUP, except for the specific conditions noted in the WUP amendment section (see item 1.5).

For an existing WUP, a change in crops and/or cropping pattern that utilizes more than 25% of the PAN generated by the operation is considered a plan revision. To determine if a change meets the 25% criteria:

1. Multiply the PAN generated by the animals by 25%. For example - a 4896 head feeder to finish operation generates 11,261 lbs PAN/year. Multiply by 25% = 2,815 lbs PAN. Add the amount (2,815 lbs PAN) to the farm's overall PAN deficit to calculate an *adjusted* PAN deficit.
2. If the *adjusted* PAN deficit results in a surplus of PAN, any cropping change will require the entire WUP to be revised. If the *adjusted* PAN balance remains in a deficit, go to the next step.
3. Add the amount of PAN affected by the cropping change to the *adjusted* PAN deficit. For example - if a producer plans to change a 55.2 acre field of Coastal Bermuda on a Goldsboro soil from hay to row crops, the PAN affected is the maximum lbs of PAN utilized by 55.2 acres Coastal Bermuda hay field. For this example, 16,339 lbs PAN for a GoA soil is added to the *adjusted* PAN deficit.
4. If the *re-adjusted* PAN deficit results in a surplus of PAN, the cropping change will require the WUP to be revised. If the adjusted PAN deficit remains in a deficit, the WUP may be amended to reflect the cropping change. See item 1.5 for additional WUP Amendment information.

Change in crops and/or cropping pattern include:

- Change in crop types (e.g. Fescue to Hybrid Bermuda, grass to row systems, etc.)
- Converting from hay to graze systems. It is not considered a cropping change converting from a graze to hay system as long as the operation uses the current PAN rate in the WUP.
- Fields affected by "High" PLAT ratings for NPDES farms **and other subject facilities as identified by DWQ.** For example - the 55.2 acre Coastal Bermuda hay field on GoA soils can use 296 lbs PAN/acre but only 80 lbs P/acre for phosphorus removal. Balancing for phosphorus will result in 73% reduction of animal waste PAN that can be used by the Bermudagrass and equates to a reduction of 11,927 lbs PAN for crop uptake in overall farm PAN balance.
- Removal of fields that were PLAT rated as "Very High" from the WUP for NPDES farms **and other subject facilities as identified by DWQ.**

Any change to an existing WUP, whether an amendment or revision must incorporate the most current approved Animal Waste Application Windows (see Appendix 1.1A), and must be signed and dated by both the owner and a technical specialist for the new WUP to be valid.

A revision of the WUP *only* does not require recertification. Recertification is only required for major changes to the CAWMP (Appendix 2.5A). Major changes include:

1. An increase in the number of animals (or decrease in animal numbers due to lack of available acreage and/or receiving crops, and/or an overall farm PAN balance that results in surplus PAN)
2. Change in type of operation (e.g. converting from a *feeder to finish* operation to *wean to feeder* operation - see item 2.2)
3. Retrofit of an existing animal waste management system (e.g. major repair of dike walls and/or installation of a new component)
4. Installation of a new irrigation system including hardware and hydrants

For systems that have been issued an individual permit or Certificate of Coverage (COC) under a General Permit for Animal Waste, major changes to a facility must first be approved by DWQ. The new CAWMP and the certification shall be submitted with a request that the permit or COC be amended to reflect the changes. The facility may not make the changes until a new or amended permit or COC has been issued.

If changes are made to an existing WUP, the most recent version of a CAWMP (including the WUP) shall be kept on file at the DWQ Regional Office, local SWCD and on the farm.

1.5 WUP Amendments (Minor Modifications)

A WUP amendment or minor modification is a change and/or addition to a part(s) of the plan, and requires that the change and/or addition adhere to current applicable standards.

- In an existing WUP, a change in crops and/or cropping pattern that utilizes 25% or less of the PAN generated is considered a plan amendment. Adding more acreage to facilitate the change in crops and/or cropping pattern is permissible and considered part of the amendment.
- The addition of winter crops and/or interseeded perennial crops are considered amendments to an existing WUP when the operation can meet the waste system's designed storage capacity (e.g. 180 days) and does not require the additional acreage and/or crops for PAN utilization.
- When a WUP cannot meet PAN utilization requirements due to land lost to irrigation inefficiency (useable versus total acres), then the WUP may be amended to increase available acreage and/or change the crop for N utilization. This is the only exception to the 25% N criteria for plan revision and does not apply to NPDES facilities effective July 1, 2007.
- Inclusions of emergency action plans, and insect, odor and mortality checklists are considered WUP amendments.
- Including additional acreage for land application beyond what is required in the existing WUP is considered a plan amendment.
- Any change to an existing WUP must incorporate the most current approved Animal Waste Application Windows (see Appendix 1.1A), and must be signed and dated by both the owner and a technical specialist for the new WUP to be valid.
- Pen and ink changes may be made under the following conditions:
 1. Changes to the WUP fall within the definition of a plan amendment (see above).
 2. For farms operating under State General Permits only. Pen and ink changes are unacceptable for NPDES facilities effective July 1, 2007.
 3. The changes are initialed and dated by the owner and the technical specialist.
 4. The changes are made in the appropriate places in the plan (see Section 1.2).
 5. The nitrogen balance must be brought forward to reflect the change, if applicable.
 6. The changes must be legible and understandable to the technical specialist, the farm's owner/operator and or DWQ/Division of Soil and Water Conservation permitting and field personnel.
 7. An updated copy must be maintained in the DWQ Regional Office, local SWCD office and at the farm.

1.6 WUP Conditional Amendment

The producer may secure a conditional one-year amendment (either in the NRCS table format or as a one-page narrative) attached to the certified plan, which outlines the temporary measures. The conditional amendment must be signed by a technical specialist, kept at the farm, filed with the DWQ Regional Office, the local SWCD, and include the following:

- If temporary crop(s) are needed to replace specified crops, include intended crop(s), related soil type(s), RYE(s) based on current standard, useable acres, N utilized, PLAT rating for NPDES **and other subject facilities as identified by DWQ**, month of application, application rate, tract number, field number, and location;
- Revised PAN balance for conditional time period;
- Third party lease or receiver agreements when applicable;
- Confirmation statement that irrigation equipment is available and capable to apply waste to temporary crop(s)
- Beginning and ending dates when conditional amendment is applicable *not to exceed 12 months*.

Note: DWQ retains the right to address any plan violations that initially led to the cropping change and conditional one-year amendment.

For example, a producer needs to make a temporary change in cropping pattern from that specified in the CAWMP. Acceptable reasons may include making improvements to the spray fields (land leveling, upgrading drainage, etc.), unexpected crop failure and inability to replant within specified planting window due to extreme weather events and/or soil conditions, or establishing a crop like Hybrid Bermuda without small grain overseeding during the first year as specified in the plan. Since all receiving crops shall be specified in the plan, the plan shall be amended for this temporary situation.

1.7 WUP Changes Required by DWQ

DWQ will not routinely require changes to a WUP after it is approved by a technical specialist. Plans shall be sent to the local SWCD to evaluate the soundness of the plans. The local SWCD is responsible for notifying DWQ of deficient plans. If there is a discharge from structures or land application sites, standards and specifications are not being followed, or a plan is found to be deficient, DWQ may require a change to prevent the problem from reoccurring. Current NRCS standards and specifications shall be met when the plans are changed as part of an enforcement action.

1.8 Addition of Fields to WUP

When a field is added to the WUP resulting in a land application system change or addition, the field shall meet current State and NRCS standards, setbacks and buffers. All new irrigation systems or additions to existing systems installed on fields not previously included in the WUP must be certified and must meet current State and NRCS standards, buffers and setbacks. NPDES facilities must also certify compliance with EPA standards, buffer and setbacks effective July 1, 2007.

1.9 Multiple WUPs

Even if several dated and signed WUP exist for a facility, the producer shall implement the newest revised WUP signed by a technical specialist and on file with the DWQ Regional Office, the local SWCD and at the farm.

1.10 Land Approved for the Application of Manure

A facility shall not apply animal waste on land not approved as part of their CAWMP. Although a facility may wish to use additional land, manure shall not be applied on owned or unowned land unless that land has been evaluated and approved as part of the CAWMP.

If a facility has more land than is needed for manure application, the owner is strongly encouraged to have all land evaluated and approved as part of the CAWMP. The additional land may be needed due to system failure or extremely wet weather

1.11 Wetland Waste Application

Wetlands are considered as waters of the State, therefore, waste application in wetlands is *not* permitted.

1.12 Grassed Waterway Waste Application

Current NRCS waste utilization standards allow application of animal waste on grassed waterways at agronomic rates and at application rates that do not cause runoff or drift from the site.

1.13 Verification of Erosion Rates

The technical specialist who signs the WUP portion of the certification form shall determine if erosion rates are acceptable (see NRCS Practice Standard Code 633) on all fields where waste is applied. If erosion rates exceed the acceptable level, then the WUP cannot be certified until the farmer has installed necessary erosion control measures before the waste can be applied.

1.14 Subsurface Drainage

Animal waste may be applied to fields with subsurface drainage, provided the quantity of wastewater applied at a given time does not exceed soil water holding capacity in the effective root zone. Owners should be informed of their liability for water quality violations that result from discharge from subsurface drains.

1.15 Crops Grown Other Than Those Specified in the Plan

A permit and/or plan violation occurs if a producer does not have correct crops established (i.e. Hybrid Bermuda) as stipulated in his WUP. The producer shall either establish the correct crops or revise his WUP. In the case of Hybrid Bermuda, if the planting date is passed, the producer may plant other crops until next year's planting date. The conditional amendment shall be included in the CAWMP on file at the DWQ Regional Office, the local SWCD and at the farm. In any case, the producer shall follow a plan that provides for an N balance between waste application and crop utilization.

1.16 Nitrogen loading rates that exceed published RYEs

A certified WUP may contain loading rates higher than RYE; however, the producer shall justify higher N application rates through yield records.

DOCUMENTING ACTUAL YIELDS FOR FORAGE CROPS:

Accurate yields for use in a WUP need to be based on data from the wetted acres of an application site. Data shall be collected for each harvest and added for an annual total. Count the number of bales and obtain weights on 10% of all bales with a minimum of 5 bale weights for each harvest date. These weighed bales are to be sampled individually by drilling a 30-inch hay probe in three locations on the side (not end) of each bale. Each composite forage sample per bale will be dried and used to calculate dry matter production. Dry matter of forages can be determined using a household microwave (North Carolina Agricultural Research Service (NCARS) Bulletin 305, Appendix C, pp.142-143) or by submitting the samples to the NCDA&CS forage testing lab. Once percent dry matter is obtained for each bale, multiply the wet weight by the percent dry matter. This is the dry matter yield for the single harvest. These values will be added to calculate the annual dry matter production, which can be compared to the realistic yield exception database value.

FORAGE MOISTURE TESTING USING A MICROWAVE:

Procedure: Place 100 grams of forage on a plate. Put a paper towel between the forage sample and a plate to minimize "sweat" from forming on the plate. Put a 10-16 ounce covered glass of water in the corner of the oven to capture unabsorbed microwaves as the plant tissue dries. Set oven to HIGH for 5 minutes. After 5 minutes weigh sample & plate and record weight of sample. Change the water and insert sample into oven for 2 more minutes. Weigh and record sample weight. Repeat steps 6 & 7 until sample weight doesn't change more than one gram (this means sample is dry).

% Moisture = $100 \text{ gram} - \text{dry weight gram}$.

% Dry matter = the last dry weight of sample (assuming 100 grams starting wet).

With experience you can adjust the time periods and decide whether or not it is necessary to use the glass of water. Usually, the above method will give moisture content that is about 2% more than true sample moisture content. For hay, this procedure takes 10-20 minutes depending upon initial moisture content of sample. Silage samples take 15-25 minutes because of coarser particle sizes and grain content, which dry slower. Practice this procedure several times before the day you really need it because it takes some practice to get the procedure "fine tuned".

1.17 Use of Soil Sample Report's N Recommendations

For operations with populations that meet the 2T .1300 (formerly 2H. 0217) threshold requirements, it is not permissible to develop a WUP based on the N recommendation for the receiving crop in the soil analysis report. This guidance is not applicable to **deemed permitted** dry poultry litter (Appendix 5.3).

1.18 Documentation of Commercial Fertilizer and Other Nutrient Sources on Land Application Sites

DWQ requires that all N sources including commercial fertilizers, sludges, and dry litter shall be documented in the records for all fields receiving animal waste. **In addition, all NPDES facilities shall document P applications.**

1.19 Soil Testing For Copper and Zinc

Regulations require annual soil analysis for copper (Cu) and zinc (Zn) on fields that receive manure, and require that alternative crop sites be used when these metal levels approach excess levels. When soil Cu or Zn levels reach values in the following table the producer shall contact a qualified specialist to discuss options for future manure applications.

Zinc and Copper Toxicity Levels in Soils

Metal	Soil Test Index	Recommended Action
Zn	300	Limit application on peanuts. Maintain soil pH \geq 6.0.
	500	Cease application on peanut land. Maintain soil pH \geq 6.0.
	2000	Caution: seek alternative site (all crops). Maintain soil pH \geq 6.0.
	3000	Cease application (all crops). Maintain soil pH \geq 6.0.
Cu	2000	Caution: seek alternative site (all crops). Maintain soil pH \geq 6.0.
	3000	Cease application (all crops). Maintain soil pH \geq 6.0.

1.20 Role of Plant Tissue Analysis in Justifying Additional Waste Applications and/or Extending Application Windows

Plant tissue analysis can be used to justify additional waste applications, when crop nutrient deficiencies are suspected. When utilized correctly, tissue testing provides useful information about crop nutrient status and is an accepted tool for proper waste management. To justify additional N and/or extend the application period, the producer shall work with a NCDA&CS regional agronomist, or an agronomist certified by the N.C. Agricultural Consultants Association (NCACA) or Certified Crop Advisor Program (CCA). Other qualified professionals may be identified later. The agronomist will collect a plant tissue sample for nutrient analysis in accordance with NCDA&CS guidelines (Appendix 1.20), evaluate the crop maturity, and determine the N requirement relative to growth stage. Following interpretation of the plant tissue analysis, the agronomist can make recommendations, in accordance with NCDA&CS guidelines (Appendix 1.20), for further applications of N and/or to extend the application period. For the major annual receiving crops - corn, soybeans and small grains - suggested guidelines for

determining supplemental (above-rate) PAN are given in Appendix 1.20. These guidelines supplant the suggested PAN amounts previously given Appendix 1.20 for the aforementioned crops. The suggested PAN supplementation percentages given in Appendix 1.20 may be used for perennial forage grasses and other crops.

The recommendation shall be documented as a Conditional Amendment, signed by a designated technical specialist, and kept on file for three years (five years for NPDES facilities) at the farm, the local SWCD office, and the DWQ regional office.

During the annual operation review or inspection, the evaluation will establish if the grower is improperly applying high N rates early in the season to establish additional need later. Improper waste management is a violation of the CAWMP and subject to an appropriate enforcement action.

1.21 Overseeding Hybrid Bermuda Harvested for Hay or Grazed

The maximum allowable N rate for any small grain overseeded in Hybrid Bermuda is 50 lbs N/acre above the normal application rate for Hybrid Bermuda. No reduction in the 50 lbs N/acre is required if the small grain is grazed.

To prevent damage to the Hybrid Bermuda stand, the CAWMP shall specify that the small grain must be harvested before heading.

If other alternatives established by NCSU (Appendix 1.21A) are used, criteria given in this publication, including waste application windows and seeding and harvest dates, shall be strictly followed.

1.22 Burning Baled Hay

15NCAC 2D.1903 *PERMISSIBLE OPEN BURNING WITHOUT A PERMIT*, paragraph (b)(5) allows for “fires purposely set to agricultural land for disease and pest control and fires set for other agricultural or apicultural practices acceptable to the Department of Agriculture.” The practice of burning baled hay does not meet the intent or definition of this exemption since it does not control disease or destroy pests, and therefore is not permissible as an acceptable disposal method.

1.23 Use of Farm Records to Determine PAN

Where adequate records exist, farm records may be used to determine the amount of PAN produced by the facility using the procedure provided in appendix 1.23. Modification of a waste management plan resulting in a PAN reduction would decrease required acreage for waste application. In cases where liquid waste levels and/or over-application frequently occurs due to shortage of application acres (3 out of 5 years or 2 consecutive years), DWQ may require returning to the standard WUP planning process and securing the needed additional acreage.

1.24 N Coefficients

A value for nitrogen uptake by crop has been selected for each soil type in North Carolina. This value must not be exceeded in situations where new fields are being added to existing waste utilization plans or included in new plans unless justified by a NCDA&CS Regional Agronomist (other qualified professionals identified in item 1.20) based on plant tissue analysis. Where existing plans are being revised or amended (i.e. no new fields being added), using the assigned program value is encouraged, but not mandated.

N coefficients by crop and soil types are included in the new nutrient management software, and are available at the web address <http://www.soil.ncsu.edu/nmp/> or your local NCCES office.

1.25 N Management for Nonharvested Winter Annual Cover

The maximum amount of PAN which may be applied to small grain seeded as a cover crop not for harvest is 30 lbs per acre. N application to the next crop must be reduced by the amount applied to the small grain. This option must be stated in the waste utilization plan.

1.26 Sludge Removal Planning

An annual sludge evaluation is required of all **lagoons that have been in operation for more than five years on all** permitted operations in accordance with the Division of Water Quality's general permit conditions. **The NRCS Waste Treatment Lagoon Standard Code 359 was revised July 2008 with regard to sludge management. According to the revised 359 standard, if sludge accumulation in the lagoon treatment volume exceeds 50% of the planned treatment volume, the sludge should either be removed or the lagoon managed in accordance with an approved sludge management/operation plan as approved by DWQ. The sludge accumulation must be documented using methods described in NCCES sludge survey publication AG-639W (see Appendix 1.26A for sludge survey form and worksheets), or other worksheets as approved by DWQ.**

Considerable planning is needed for sludge removal. Periodic sludge removal does not warrant a full revision to the operation's waste utilization plan. A WUP conditional amendment, approved by a technical specialist, must be developed that outlines the sludge removal and land application procedures to be used based on waste concentrations and volumes. The amendment including calculations, waste application rates, sludge survey measurements, map and other related documents are considered part of the CAWMP; must contain the items noted in section 1.6; and must be based on the following items and/or considerations:

- A good representative sludge analysis and liquid analysis taken prior to sludge removal are required to accurately determine the amount of plant available nitrogen (PAN), phosphorus, copper and zinc contained in the waste. Proper sludge sampling techniques are found in the NCCES publication #AG 604.
- A soil sample report for fields proposed to receive the sludge must be obtained (1) within the twenty-four months prior to sludge application and (2) following the last application of waste prior to the proposed sludge application. This report will serve as the basis for estimating persistent metal (copper and zinc) effects on soil indices.

- An evaluation of the lagoon is needed to determine the volume of sludge to be removed. Approved lagoon evaluation and sludge measuring techniques are those described in the NCCES publication #AG 604 or any other method approved by the DWQ. The method of removal will have a significant impact on the volume of liquid to be removed. For example, agitation and pumping will result in waste slurry meaning removal of sludge and liquid, versus dredging which results in sludge and partial liquid removal. The estimation of volume and methodology of sampling should appropriately reflect the physical nature (solid:liquid constitution) of material that will be applied, which may vary greatly depending on the method of removal.
- It is highly recommended that sludge be applied only to fields that are not used for continual animal waste application to prevent phosphorus and persistent metal build-up that may render sites unsuitable for long-term waste application. If the sludge is to be applied on sprayfields already listed in the CAWMP, the operation's overall PAN balance must include the additional PAN from the sludge and still remain in a PAN deficit for the animal operation.
- It is highly recommended that potential increases in copper and zinc soil levels be estimated during plan development. The DSWC Copper and Zinc Projection Worksheet (Appendix 1.26B) may be used to provide a conservative (maximum potential) estimate for increase in soil index values. [*Note: The equilibrated post-application soil index may be less than the projected maximum value. Practical methodology for more precise estimation is not available.*] Due to the inherent variability of waste and soil sampling, it is recommended that conservative soil target levels be set for copper (e.g. Cu-I < 700-1000) and zinc (e.g. Zn-I < 300 for land where peanuts may be grown; for other cropland Zn-I < 700-1000). See section 1.19 for maximum copper and zinc soil index limits.
- New fields receiving animal waste or sludge for the first time must meet current setbacks, buffers and other requirements as described in sections 1.8 and 8.1.
- For NPDES, **and other subject facilities as identified by DWQ**, a Phosphorus Loss Assessment must be completed and all applicable standards must be met.
- If sludge is applied on conventionally tilled bare soil, the waste shall be incorporated into the soil within two days after application on the land. **As of October 1, 2009, for facilities covered under the State Non-Discharge Permit, waste incorporation must also occur before the next rainfall event.** This permit requirement does not apply to no-till fields, pastures or fields where crops are actively growing.
- Sludge application must be balanced with a current waste analysis (waste sample taken and analyzed within 60 days of application) on the SLUR-1 and SLUR-2 forms, or on other forms approved by DWQ.
- The permittee is responsible for documenting all sludge applications made to both the owned and leased fields listed in the CAWMP/WUP sludge amendment.
- For sludge transfers, the permittee must document the name and address of the recipient, and volume of sludge removed from the farm. The permittee must provide the third party receiver with a current sludge and liquid analyses and information for proper land application management as required by the farm's permit.
- The third party receiver is responsible for obtaining coverage under the appropriate DWQ permit, and for the documentation and proper land application of the sludge on the approved site(s).

1.27 RYE Source

The official source for RYEs information is the Interagency Nutrient Management Committee tables found at the website listed in item 1.1. Also, the NRCS Nutrient Management (590) Standard provides a method to establish RYEs using farm records.

1.28 Combination Haying and Grazing

For waste management planning, the rate of N removal for grazing is 25% less than haying. In situations where the forage is removed through both haying and grazing, the NRCS 590 Standard allows for applying the appropriated RYE application rate for each harvest method.

For example: The RYE is 6 tons and one hay cutting would harvest 1.5 tons leaving 4.5 tons for grazing.

The calculation would be: $1.5 \text{ tons} \times 50 \text{ lbs N/ton} + 4.5 \times 50 (.75) \text{ N/ton} = 244 \text{ lbs N per acres.}$

1.29 Recommended WUP Amendment and Recordkeeping Adjustments for Combination Application Systems (e.g. Hose Drag & Traveler)

When combining an irrigation system (e.g. traveler, solid set, linear or pivot system) with a broadcast system (e.g. hose drag or honeywagon) on the same sprayfield, recordkeeping adjustments must be made to properly document and balance the applied nutrients. Generally, broadcast systems are more efficient in coverage and are capable of applying waste to areas not accessible by irrigation systems.

The preferred method of documentation is:

To have the WUP amended so that a field is divided into subsets (effectively irrigated/wettable acres for irrigation and broadcast acres).

To set up the application records (IRR2, SLUR-2, etc.) by subset to accommodate the application method and related acreage.

By dividing a field into subsets, the applicator has the flexibility to apply by either method to part of or the entire field, and still balance the applied nutrients on a pounds per acre basis for each subset. When using a hose drag on an entire field, the volume of waste applied (documented through flow meter) must be pro-rated per subset to adequately balance the nutrients. At no point can waste be applied in required buffers and setbacks (see item 8.1 and section 9).

1.30 Determining Appropriate Waste Analysis for Waste Transfers

Structures operating in series - waste transferred from primary lagoon to secondary pond and irrigating from secondary: use waste analysis from secondary for land application records.

Structures operating in series - waste transferred from several structures to one final structure that serves as source for irrigation: use waste analysis from final structure for land application records.

Structures operating in series - waste transferred from primary lagoon 1 to primary lagoon 2 (both structures receive solids) and irrigates from lagoon 2: use waste analysis from lagoon 2 for land application records.

Structures operating in series - waste not transferred from lagoon 1 to secondary pond (or final stage) due to shortage of water: use waste analysis from structure that serves as source for application events.

Structures not operating in series - waste transferred from structure 1 to structure 2 and irrigated from structure 2: after waste transfer, take waste sample from structure 2 prior to land application and use new waste analysis for land application records. If sample is not taken prior to land application, must use the waste analysis with the highest PAN content of either structure 1 or 2.

1.31 RYE Values for Superior Lines of Seeded Bermudagrass

See Appendix 1.31

1.32 Animal Waste Application on Turf Sods

See Appendix 1.32

1.33 N Application for Nonharvested Wildlife Plantings

The maximum amount of P.A.N., which may be applied to wildlife plantings that are not harvested using traditional methods, is 60 lbs per acre per year.

2 REGISTRATION AND PLAN CERTIFICATION

2.1 Future Changes to Standards

It is encouraged but not required to update a certified plan to reflect standard changes. If a discharge occurs, or there is documentation that surface waters or groundwaters has been impacted, then the facility will be required to update the plan according to the most current technical specifications.

2.2 Farm Status Changes – Change of Ownership and Reactivation Processes

Change of Ownership

For each change in farm ownership, the new owner shall submit a completed Change of Ownership form (Appendix 2.2A) within 60 days of ownership transfer. The Change of Ownership form must be understood, implemented, and placed within the farm records. If the CAWMP is changed, a technical specialist shall certify the new plan to meet current standards and specifications for operation and maintenance, and a new certification shall be submitted to DWQ. Making no changes or only plan amendments (minor modifications) to the waste utilization plan does not require a new certification.

Reactivation Process

Any facilities wishing to repopulate above threshold shall implement a certified animal waste management plan before facility can restock above threshold numbers. The certified animal waste management plan shall comply with all Statutes and Rules in effect at the time of certification. The facility would also be required to apply for and receive coverage under a general or individual permit before restocking.

For facilities that have submitted a deactivation form and have been out of operation for less than four years whether below threshold or no animals on-site shall submit the following to DWQ:

- Permit Application (if not previously permitted)
- Current Animal Waste Management Plan Certification form (Appendix 2.5A)
- Proof of a significant number of animals on site within the past 4 years for a period of 45 days or more.
 - Vet Records
 - Kill Dates
 - Market Sales for this facility
- Operator-In-Charge (OIC) form (Appendix 11.1A)

For facilities that have been out of operation for more than four years whether below threshold or no animals on-site shall submit the following:

- Permit Application (if not previously permitted)
- Current Animal Waste Management Plan Certification form (Appendix 2.5A)
- OIC Form
- The waste management system must be brought up to NRCS Standards

The waste structures will be considered new and will have to meet all current NRCS Standards (this includes liner, sludge storage, and extra 25 year, 24 hour storm event storage.)

If owner exceeds threshold numbers without notifying and receiving all required approvals from DWQ, the owner is subject to enforcement action.

Change of Operation Type

Prior to making a change in operation type, the following items must be submitted to DWQ for approval:

- Permit modification request
- Amended or revised WUP reflecting change in operation type
- Updated Animal Waste Management Plan Certification form (Appendix 2.5A)

Note: Additional components of the CAWMP may be requested by DWQ.

The facility may change its type of operation once it receives its new permit.

2.3 Conditional Approvals for Certification of New or Expanding Facilities

Generally conditional approvals will not be accepted as part of an operation's certification for a general or individual permit application. For extenuating circumstances, contact DWQ for further guidance.

2.4 Required Documentation for Certifications and Plans

The owner is responsible for obtaining a CAWMP that has been approved and certified by technical specialists. The owner shall send the original signed certification form to DWQ. The owner shall retain a copy. The approved plan shall remain at the farm site and on file at the Regional DWQ Office and the local SWCD office.

For the documentation sent to the local SWCD office, the district has 30 days to review the plan for concurrence. If the SWCD concurs with the plan, the plan is kept on file at the SWCD office. If the SWCD does not concur, the SWCD will notify in writing the owner, DWQ and DSWC. DWQ will work with the agricultural agencies to develop an approved plan or require the owner to apply for and receive coverage under a permit.

The SWCD is required to notify the owner, the certifying technical specialist, DWQ, and the DSWC if the SWCD does not concur with the CAWMP. The owner or DWQ may request the SWCD to reconsider. If the SWCD does not concur, the owner may request the Soil and Water Conservation Commission (SWCC) to mediate a dispute over concurrence.

The components for the CAWMP are listed in Appendix 2.4.

2.5 Certification Form Requirements

All certifications shall be on the DWQ Animal Waste Management Plan Certification form (Appendix 2.5A).

Only a technical specialist who has been designated under the SWCC rules can certify items on the form. In order to sign for an item, the technical specialist must have the corresponding category of designation (Appendix 2.5B).

Proper calibration of irrigation equipment shall be documented. The field calibration must show accurate rates of application. For irrigation equipment, application rates must be measured at several locations in the application area. For calibration information see NC Publication Field Calibration Procedures for Stationary AG-553-1, Traveler AG-553-2, and Center Pivots & Linear AG-553-3.

New "non-irrigation" waste application equipment does not require certification by an irrigation (I) technical specialist designation under II D, of the CAWMP Certification form. A WUP may certify manure spreader and honey wagon equipment.

With the requirements of regulations, it is very important to track the dates each part of the certification process was completed. The certification form was modified to document the date the activity was completed. The current date should continue to be the date the form is signed.

2.6 Abandonment

If a facility is abandoned or unused for four years or more, regardless of its certification or permit status, the farm will be considered a "new" facility for permitting purposes and the operation would have to meet all permitting requirements before it could be restocked.

Questions regarding active registration by producers who depopulated usually involve distinction between "existing" and "new" systems. 15A NCAC 2T .1302(3) (formerly 2H. 0203(21)) defines a "new" animal waste management system as follows:

...animal waste management systems which are constructed and operated at a site where no feedlot existed previously or *where a system serving a feedlot has been abandoned or unused for a period of four years or more and is then put back into service.* (For purposes of this referenced rule, "abandoned" and "unused" are interchangeable, meaning ceasing to exist.)

Therefore, an operation will lose its "existing" status and be considered a "new" operation if unused for four or more years. In order to determine the proper categorization as an "existing" or "new" farm, DWQ uses the following operating guideline of 10% of the registered number (capacity) in making this determination, and the rule is being applied as follows:

'Unused' means less than 10% of the registered number of animals or less than 10% of the number of animals at system capacity have been on site. Furthermore, consistent with the EPA definition of an "animal feeding operation", the requisite number of animals must be shown by the operator to have been on site for a total 45 days or more within any 12-month period, or the feedlot will be considered unused for that year.

Any number less than 10% is a *de minimis* attempted use which would not be generally covered by the spirit or intent of the rule; however, a producer is allowed to verify to DWQ that his system had been used in order to retain the operation's "existing" status.

For swine farms located within the 100 year floodplain, those swine farms which applied for the first or second phase of the 100 year floodplain swine farm buyout conducted by the DENR Division of Soil and Water Conservation shall not begin to be considered to be "unused" until the farm has been informed that its applications for buyout were denied, provided the farm maintained the required permits.

If an operator needs to verify the farm's "existing" status or correct his/her registration number in the state database, he or she must submit a written request to DWQ for the correction including justification for the change. The producer must also submit documentation of the existing herd numbers and dates the animals were housed at the facility as found through market or production records and/or verification by a government agency official familiar with the operation.

Questions should be directed to the DWQ Animal Feeding Operations Unit at (919) 733-3221, with correction requests submitted to the Division of Water Quality - Animal Feeding Operations Unit, 1636 Mail Service Center, Raleigh, NC 27699-1636.

2.7 Separate Ownership with Common Waste Facilities

Operations shall not share common spray fields and/or waste management systems (other than land application equipment) unless they are certified and permitted as one operation under the same ownership.

2.8 Irrigation Systems for New or Expanding Operations

Effective September 1, 1996 NRCS standards require irrigation design plans as part of the waste utilization standard for new and expanding systems. Detailed irrigation plans such as size of nozzles, operating pressures, etc, shall be part of the certification process. While this same level of design is not required for existing systems, the waste utilization standard does require the waste to be applied uniformly at approved rates and volumes to prevent runoff. It is the responsibility of the owner to provide a system to meet these conditions and to verify the availability of the equipment, land and vegetation.

2.9 Irrigation Certification of Existing Systems

Even though a technical specialist did not design the irrigation system, a technical specialist shall certify that the existing equipment is capable of applying waste to meet requirements of the CAWMP certification form (Appendix 2.5A - Section II D.), and the equipment is available to use on site (Appendix 2.5A - Section III D.).

2.10 Application and Handling Equipment Certification

A producer must own, have access to, lease or otherwise have a written agreement with a custom applicator for waste application equipment to obtain a CAWMP.

2.11 Modifications to Facilities to House the Certified Number of Swine

Contact DWQ for approval prior to construction and/or expansion of swine houses.

2.12 Retrofit to Meet Original Registration Number of Swine

A producer may retrofit his or her current waste management system (i.e./enlarge the current structure, construct a second stage lagoon, etc.) and have the operation recertified to a higher number that is NOT to exceed the original registration number. The operation must first be recertified by a technical specialist, and the recertification and a request for a permit or COC amendment shall be submitted to and approved by the DWQ before stocking animals at the higher recertification number.

3 LAGOONS AND WASTE STORAGE STRUCTURES

3.1 Unused Lagoon/Waste Structure Management and Closure

Lagoons/waste structures that are no longer in use shall be either managed to prevent discharge to surface and groundwaters, or decommissioned through a closure plan. If a discharge does occur from an abandoned animal waste management structure, the farm owner is subject to enforcement action by DWQ. In addition, if a water quality or groundwater problem is identified, DWQ will require proper closure of the structure in addition to enforcement action and possible civil penalty.

For abandoned lagoons and waste structures, proper closure at the earliest possible date is strongly encouraged. An unclosed lagoon is a potential safety and environmental danger as well as a liability to the farmer. The closure plan outlining the closure process shall follow NRCS Practice Standard Code 360. Proper closure includes verification by a technical specialist that the work was done according to standards and specifications, and the completed Animal Waste Storage Pond and Lagoon Closure Report Form (Appendix 3.1) is submitted to DWQ within 15 days following completion of the closure. The regional DWQ staff must be notified at least 24 hours prior to the start of closure. Once the closure is completed and acknowledged by DWQ, the structure is no longer considered part of the waste management system, is deleted off of the state database, and may be used for other purposes such as for irrigation or as a fishpond.

Either a closure plan or the management of an unused lagoon or waste structure must be included in the CAWMP for facilities operating above threshold as specified in 2T .1300 (formerly 2H .0217).

Inactive lagoons or waste structures for non-permitted facilities (operations with no animals or operating below threshold) shall be properly managed to prevent discharge to surface and groundwaters; however, the waste does not have to be land applied by a certified animal waste applicator.

3.2 Renovation of Existing Animal Waste Management Systems With No Expansion

If a facility is not being expanded but modifications to an existing waste system is needed to increase its storage or treatment volume, modifications cannot be made without meeting current standards or without updating the existing the Animal Waste Management Plan Certification form. Only minor repairs can be made to the structure. Examples would be work to repair minor erosion or the addition of more soil to the dike to provide greater stability provided the top of the dike is not raised above the design elevation.

If a new lagoon or waste storage structure is added to an existing treatment system (no increase in SSLW since February 1, 1993) to provide additional treatment or storage and is tied into an existing structure (including connection by pipe or lift station), the existing structure does not need to meet current design standards. While it is encouraged that all-existing structures are upgraded to meet current standards any time there is construction on a site, it is not automatically required. The technical specialist shall make a determination on the need for structural upgrades during the evaluation of the overall system. If a determination is made by the technical specialist that the existing structure is not endangered by the connection to the new structure(s) and that it is structurally sound, no upgrades to meet current standards are required. In determining the stability of the structure, the technical specialist should evaluate and

document signs of previous discharges, pumping frequency (infrequent pumping suggest leaking), slope stability, and seepage or wet areas along the backside of the dikes.

3.3 Lagoons in Wetlands or Floodplains

Lagoons shall not be constructed in wetlands or a 100-year floodplain.

3.4 Design Standards

For a lagoon or waste storage structure constructed after February 1, 1993, the design requirements are contained in the NCAC 2T .1300 (formerly 2H. 0217) rules, state Statutes, and NRCS and SWCC technical standards, in effect on the date of the design completion as documented through NRCS design approval, a professional engineer (PE) seal, or a CAWMP certification form. (Appendix 2.5A.) Only a PE or NRCS employee with job approval authority may certify waste structures constructed after February 1, 1993. New construction and/or modification require certification. Certified designs for lagoons and waste storage structures in which construction has not commenced within one year of a design standard change shall be constructed according to the current design standards regardless of the original design date and require recertification.

The SWCC has rescinded its animal waste management standards adopted May 2, 1996 effective January 1, 2001. Certifications made after January 1, 2001 of farms existing prior to May 2, 1996 must meet current NRCS standards.

3.5 NRCS Policy on Modifications

If NRCS provided technical assistance for the design and/or installation of the original waste structure, technical assistance for the modification may be available from NRCS, as time and resources permit. If NRCS did not provide technical assistance for the original structure, then technical assistance from NRCS will not be available for the modification, due to the extensive workload required to adequately assess the original structure's design and construction.

3.6 Overflow Pipes Used for Emergency Spillways

Overflow pipe(s) in lagoons are acceptable as a lagoon emergency spillway, provided they are properly designed for adequate capacity for the design storm and have a stable inlet and outlet.

3.7 Liquid Levels for Staged Waste Structures

In a staged system where the primary waste structure is gravity fed through a transfer pipe into a secondary structure, the top of the transfer pipe shall be set just below the primary structure's structural freeboard elevation if the primary lagoon's 25-year, 24-hour storm requirement is calculated into the second structure's temporary storage. Pipe size shall be designed to carry the 25-year storm event without encroaching on the structural freeboard.

3.8 Pumping Markers for Staged Waste Structures

Pumping markers are only required in those structures that do not gravity feed through a free flowing (no valve) transfer pipe into a subsequent structure, and in those structures which serve as the primary source for land application. For example, if waste empties from the house into a solids trap, is pumped to lagoon 2, gravity fed to structure 3, and then pumped to a solid set system for land application, both the solids trap and structure 3 are required to have markers.

3.9 Requirements for Elevation Pumping Markers

NRCS standards require start (maximum) and stop (minimum) pumping markers in lagoons. Since producers are required to record freeboard and available storage capacity under an animal waste general permit, it is required that they install elevation markers that will clearly identify minimum and maximum liquid levels, and highly recommended that the gauge enables accurate determination of the distance between the top of dike elevation (often the lowest point) on the embankment and the liquid level.

Waste storage structures are designed to be emptied completely and would not require a minimum elevation marker. Anaerobic lagoons are designed with a permanent treatment volume, and would require a minimum elevation marker so the permanent treatment volume is maintained.

3.10 Freeboard for Solids Traps

Older swine operations had lagoons that were dug pits (no dike walls) and were later converted into solids traps with waste pumped to a newer structure(s) to satisfy retrofit requirements of the waste handling system. These structures are allowed to operate with less than the one foot structural freeboard and 25-year, 24-hour storm event storage requirement if (1) a back-up pump with power source is available in the event of equipment failure to lift waste to a secondary structure, (2) a honey wagon/tanker is available with the capacity to remove waste and lower the structure's waste level back to a compliant level or (3) a secondary containment structure is available to store the waste. For exemption from the one-foot structural freeboard requirement, consideration must be also given to the location of the seasonal high water table, proximity of the solids trap to drainage ways, flushing volumes and frequencies, and other case-by-case circumstances that may affect the system management. Under no circumstances will a solids trap be allowed to operate with a structural freeboard equal to or less than a 25-year, 24-hour storm event. Solids traps are also required to have a minimal dike wall or comparable best management practice (BMP) in place to prevent outside surface water from entering the structure.

3.11 Trees on Embankments

Trees, shrubs, and other woody vegetation shall not be allowed to grow on the lagoon/waste storage pond embankments. All trees shall be removed in accordance with good engineering practices. Lagoon/waste storage pond areas shall be accessible, and vegetation shall be kept mowed. Removal of trees does not automatically constitute a retrofit requiring a complete structural upgrade to current standards.

3.12 Proper Use of Lagoon (359) Standard

Current NRCS standards allow for design treatment volumes (i.e. Table 2. Livestock Anaerobic Lagoon Criteria) that are lower than in previous standards for farrow/wean, farrow/feeder, and boar/stud operations. However if this is done, the current standards for sludge storage, excess water, etc. shall also be used to properly utilize the standard. Attempting to use these new volumes on existing operations that have been designed and approved under an earlier standard in order to increase the number of animals will be considered an expansion and all current criteria for expansion shall be met.

3.13 Use of Heavy Rainfall Volume In Post '96 Designed Lagoons

Lagoons constructed to the NRCS standard revised in 1996, included an additional storage for heavy rainfall. This storage is located immediately above the temporary storage and is designed to store above average rainfall events. Encroachment into this storage volume without above average rainfall would not be consistent with the operating procedures of the CAWMP.

3.14 Lagoon Level Management Option

In preparation for above average rainfall during fall and winter, and to improve crop establishment during fall droughts, some flexibility may be offered in managing lagoon levels according to NRCS standards. (When released can be found at the NRCS web site at www.nc.nrcs.usda.gov). Contact the local SWCD office for current guidance. All other criteria in the CAWMP must be followed.

4 NONDISCHARGE RULES AND GENERAL STATUTES

4.1 Zero Discharge During Design Storm

The animal waste collection, treatment storage, and application systems shall be designed, constructed, and operated as a non-discharge system to prevent the discharge of pollutants to streams and ditches, as a result of a storm event less severe than a 25-year, 24-hour storm.

The intended flexibility in the Environmental Management Commission's (EMC) current rules is contained in the definition of "animal waste management system" in NCGS 143-215.10B (3). The definition of animal waste management system is specific to achieving no discharge of pollutants for any storm event less severe than the 25-year, 24-hour storm. Therefore, DWQ and the agricultural management agencies agree that, for animal operations existing on June 30, 1995, the rules allow the use of management practices that do not require the containment of the entire runoff volume from the 25-year, 24-hour storm event. All new structures, such as waste storage ponds and treatment lagoons, when used as a component of the primary waste management system, shall be designed for the 25-year storm and the chronic rainfall event according to standards and specifications of the NRCS when these new structures are chosen to be part of the waste system.

All liquids from paved areas and milking areas shall be collected in a waste storage facility or in some other way treated to insure *de minimus* discharge of pollutants in a storm event less severe than the 25-year, 24-hour storm event. For any facility wishing to install a system utilizing other than a waste storage facility, DWQ must agree that the alternative system will have no more than a *de minimus* impact. DWQ may request that a committee made up of a representative from NRCS, SWCC, and NCCES assist in this determination.

Agricultural management agencies will utilize and accept waste management practices on existing animal operations that effectively control pollutants to the greatest degree possible. Based on this concurrence, technical specialists should continue to approve and certify plans that meet the intent of controlling the discharge of pollutants using their best professional judgment.

4.2 Expansions Under 2T .1300 (formerly 2H .0217)

An expansion is an increase in the SSLW of animals on a farm after December 31, 1993 above the amount for which the animal waste management system was previously designed and constructed.

If an operation expands and has a certified plan, only the new structures required for the expansion are required to meet current design and construction standards and specifications. However, the entire volume of waste generated shall meet the current NRCS standard for waste utilization. That is, the most current N loading rates based on crop yield will be used for the entire waste volume to be utilized. However, if there are wastewater discharges from a facility or documented surface water or groundwater problems, the facility may be required to update the plan according to current technical specifications

If an existing lagoon or storage structure does not meet current NRCS design and construction specifications and is connected in anyway with a new lagoon or storage structure (including connecting by pipe or lift station), then the old structure shall be retrofitted to meet the current standards because it

is considered to be part of the new system. The existing waste system can be used as part of the waste handling system without being retrofitted as long as it is not used in series with the new structures required for expansion.

An operation may be able to manage a greater waste load by reducing temporary storage period and modifying their WUP to apply waste more often. However, an analysis must show that sufficient temporary volume is available while meeting all remaining NRCS Practice Standard Code 359 volume and depth criteria. Also with an expansion, the heavy rainfall, excess water and sludge volumes must be included.

A swine operation may change the type of animals (feeder to finish, farrow to wean, etc.) and not be an expansion under 2T .1300 (formerly 2H .0200) provided the design capacity of the existing waste management system (lagoon, storage structure, etc.) is not increased and is adequate to handle the waste from the larger number of animals. An example would be a system designed for 500 sows, farrow to wean and the owner would like to convert the operation to a feeder to finish operation. According to NRCS standards, the steady state live weight of the farrow to wean operation would be 500 x 433 lbs/sow or 216,500 lbs SSLW. The steady state live weight for feeder to finish hogs is 135 lbs/animal and therefore the operation could accommodate 216,500/135 or 1604 finishing hogs as designed. Any increase in the steady state live weight of this operation over 216,500 would be an expansion under 2T .1300 (formerly 2H .0200).

As of January 1, 2009, expanding swine operations that raise 250 or more animals must meet the performance standards pursuant to 15A NCAC 02T .1307.

4.3 Innovative Systems

Innovative systems (e.g., package plants) or systems not covered by standard agricultural specifications are not covered by the general permit and must apply to DWQ for an individual permit. Innovative systems only designed to collect gases from conventional anaerobic lagoons to use for energy or only for solids separation are not required to obtain an individual permit.

4.4 Fencing of Animals Out of Creeks

There is no requirement that animals must be automatically fenced out of creeks. Specific guidance is however given in Appendix 5.1A, 5.1B and 5.2. In cases not covered by these guidelines, fencing is not required unless the animals' accessibility to the stream results in an environmental problem. As technical specialists work with facilities, they should evaluate stream access sites and make appropriate recommendation to protect the facility from future enforcement for water quality violations.

5 GUIDANCE BY ANIMAL AND OPERATION TYPES

5.1 Dairies & Beef Feedlots

All operations with 100 or more cattle sharing a feedlot shall have a CAWMP and must receive coverage under a permit from the DWQ. The number of cattle on a dairy farm is the maximum number of animals that are milked at the site plus any other cattle that are fed and/or contribute waste in the immediate vicinity of the milked cows. An example of a dairy with 100 cattle or more would be designed to milk a maximum of 80 cows with 20 or more other cattle (calves, dry cows, replacement heifers, etc.) that are in the same concentrated area of the dairy as the cows to be milked. An example of a dairy with less than 100 cattle would be designed to milk a maximum of 80 cows but which keeps all other cattle on open pasture with established vegetation separated from the cows that are milked. These cows shall be either fenced on pasture on another part of the same farm on which the milking takes place or on another farm at a different location.

When developing a CAWMP for a dairy or beef feedlot operation, a technical specialist shall develop a complete plan that addresses all water quality issues on the farm, both the confined areas and the pastures. The plan shall address the need for stream crossings, stock trails, fencing, rotation of the lounging and feeding areas, as well as any other problem area identified by the technical specialist (Appendix 5.1A).

Although runoff from silos (silage) is not defined as animal waste unless it is mixed with livestock or poultry excreta, it is a waste and can be a serious environmental problem. Therefore as the technical specialist develops the CAWMP, they should consider silage runoff. As with other sources of waste, every effort shall be made to minimize rainwater that comes into contact with the silage (by the use of gutters, roofs and diversion ditches) and either collect the liquid or in some other way treat it to ensure only a de minimus discharge of pollutants in a storm event less severe than the 25-year, 24-hour storm event.

A cattle operation that has an existing waste storage structure can be certified when the herd is expanded without increasing the size of the waste storage pond. However, the storage structure and WUP shall meet current standards. In some cases, the farmer may reduce waste storage time instead of increasing waste storage volume. This will depend on the type of soil, land availability, crop, flood plain, etc. If the manure can be applied more frequently, the plan could be certified with the existing storage structure.

Guidelines for developing CAWMP for unpaved beef feedlots are provided in Appendix 5.1B.

5.2 Swine Dry Lots

General guidelines for swine on dry lots have been developed (Appendix 5.2).

5.3 Animal Waste Management Plans (AWMP) for Dry Litter Systems

Dry litter poultry systems with 30,000 or more birds were required to develop an AWMP by January 1, 2000. These plans are required to comply with the testing and reporting requirements included in Appendix 5.3. Since the statute did not specify that these plans had to be certified by a technical specialist, any qualified person including but not limited to a technical specialist can develop them. Included with the guidelines is a third party applicator agreement that shall be signed by each third party applicator that receives litter from a facility.

Although poultry systems with less than 30,000 birds are not required to develop a AWMP they are required to prevent waste discharges to surface waters and groundwater. They are also encouraged to meet the same minimum standards and specifications as required for approval of the AWMP. DWQ may on a case by case basis determine that a facility should not be deemed permitted and shall be required to apply for an individual permit.

A 25-foot vegetative buffer is required between the land application area and perennial waters for third party receivers of litter or if a wet waste application system is used.

While not required, it is highly recommended that a 25-foot vegetative buffer is maintained between the perennial waters and the waste generator's (poultry farm) land application area since it is still the responsibility of the applicator to insure that the waste does not reach the surface waters.

In accordance with 2T .1303(2), litter shall not be stockpiled closer than 100 feet from a perennial stream or perennial waterbody, and shall not be stockpiled uncovered for greater than 15 days. In addition, if a manure hauler(s) is used, additional records must be maintained (see item 7.5).

5.4 Manure Haulers for Poultry Litter

Producers still need to develop and implement an AWMP even though a manure hauler is involved. The producer is still responsible for a) contracting with a manure hauler who can properly manage the manure; the producer shall have a written agreement with the manure hauler that establishes the responsibilities for the proper management of the manure, b) keeping a record of the name, address and phone number of the manure hauler, c) keeping a record of the amount of litter removed by each manure hauler, d) providing an appropriate waste analysis to the manure hauler, e) providing a copy of Appendix 5.3 to the manure hauler.

Manure haulers must be deemed permitted by DWQ in accordance with 2T .1400 or have an individual manure hauler permit from DWQ to contract with poultry producers.

For more information about manure haulers and permit requirements, see item 7.5.

5.5 Dry Litter Poultry Operations with NPDES Permits

Dry litter operations with coverage under NPDES permits are subject to additional permit requirements. See Appendix 5.5.

6 WASTE APPLICATION, WETTABLE AND EFFECTIVE IRRIGATED ACRES

6.1 Wettable Acres in a CAWMP

Wettable acres requirements apply to all facilities with irrigation systems. Systems using honey wagons and solid spreaders exclusively will not be affected. Acres which are wetted by an irrigation system with a 50% to 70% of wetted diameter sprinkler spacing or 60% to 90% of wetted diameter traveler lane spacing are considered wettable acres and can be counted in the CAWMP.

Wettable acres for spray fields with irrigation systems having excessive spacing, single pulls or a single row of stationary sprinklers, are limited to that portion of the spray field receiving a more uniform coverage. Wettable acres calculations are based on a width of 90% of wetted diameter for travelers or a single row of stationary sprinklers and 78% of wetted diameter for excessively spaced stationary sprinklers. Any overlap areas must only be counted once.

Wettable acres determination will be required on operations with a) more than 75% of the farm's total acres (on a per field basis) credited in the CAWMP as acres receiving waste and b) operations where this determination cannot be made due to lack of documentation, and c) a farm has a history of over application due to lack of spray field acres and/or the fields have obvious limitations past the 75% rule (i.e. ditches and/or odd shaped areas not irrigatable etc.) will be flagged for evaluation.

Operations will be flagged for evaluation on the inspection form through the Operation Review and Compliance Inspection processes, or through the permit application process. After an operation is flagged, DWQ will notify the producer by certified mail requiring a wettable acre determination with the needed corrective action to be completed within six months.

Operations will not be flagged for evaluation if they have one of the following components included in the CAWMP:

- An irrigation design and field map depicting wettable acres signed by an I or PE.
- D1 and D2 irrigation operating parameter sheets including field maps depicting wettable acres signed by an I or PE.
- D1 irrigation operating parameter sheet including field maps depicting wettable acres signed by a WUP Specialist.

Any producer that cannot meet the 6-month due date may request an administrative agreement with a compliance schedule from DWQ. Facilities that fail to provide adequate justification will be subject to appropriate enforcement actions.

Any facility that may have difficulty meeting the wettable acres criteria should identify a solution as soon as possible. Upon request by the producer/owner, DWQ will work closely with facilities with hardship cases in an attempt to reach an amicable solution for DWQ and the producer/owner.

Wettable acres will be documented on the Wettable Acre Determination Field Data & Computation Worksheets that apply to the irrigation system (see NCCES Publications (Irrigated Acreage Determination Procedures for Wastewater Application Equipment, Stationary Sprinklers AG-553-6, Hard Hose Traveler AG-553-7.)), completed and signed by the producer and a technical specialist (WUP/WA, I/WA, or PE designation). This form, including a wetted acres map becomes part of the waste management plan on file at the SWCD office and farm. Technical Specialists with I or WUP designation attending a full training session on wettable acres may receive WA designation.

If an operation has been pended due to lack of documentation to support a Wettable Acre Determination, DWQ will notify the producer by certified mail requiring them to supply the necessary information to the Compliance Inspector or Operation Reviewer who initially pended the facility. This information is to be completed within three months of receiving the certified letter. If the Inspector or Reviewer does not receive information within three months, the producer has only three additional months to complete the full Wettable Acre Determination and submit the Wettable Acre Determination Certification (Appendix 6.1) to the address listed on the form.

When a pended facility submits their information, the inspector or reviewer will log in the date received in the compliance database. Once the information is reviewed the inspector or reviewer will send a letter letting the producer know the current status. In the event this facility fails to provide adequate information to be exempt from a Wettable Acre Determination the facility will be sent a second letter when the facility has been selected.

Any facility that has been flagged can submit information to the inspector or reviewer who flagged the facility for review in order to be exempt. This is allowed only if the flagged facility has not received a formal letter starting the six-month clock on their wettable acre determination.

All facilities that have been flagged for a wettable acre determination and have submitted the certification form will be reviewed by the inspector or reviewer at their next inspection by the flagging agency that initiated the flag.

6.2 Irrigation Record Keeping Methods

If a producer is keeping adequate records by field, he or she shall be allowed to continue using this record keeping system without penalty. Producers shall be encouraged to keep records by pull or zone. During the annual inspection or operation review, the inspector or reviewer has the responsibility to determine if record keeping is adequate. If the inspector/reviewer determines that a producer is keeping records inadequately by field, he or she must document in the report why the record keeping was inadequate, and then may require the producer to keep irrigation records either by pull/zone and/or to correct existing records. Acreage and irrigation records shall match acreage and irrigation records of CAWMP.

6.3 Maximum Irrigation Amount

The maximum irrigation-loading rate per irrigation event shall be based on a site evaluation. A maximum of no more than one inch per irrigation event (24 hour period) is allowed unless there is evidence, through soil moisture measurements, that the soil is capable of absorbing more effluent in the root zone, and provided no runoff occurs.

6.4 Irrigation Design Criteria

A design crediting *effective irrigated acres* must be used for installing irrigation equipment. The design must meet the recommendation of NCCES, which agrees with the irrigation uniformity coefficient in NRCS Irrigation Standard 442. NCCES recommends a range of 60 to 78% of wetted diameter for lane spacing for travelers and 50 to 65% of wetted diameter for stationary sprinklers NCCES publication (AG-553-6) Stationary Sprinkler Irrigation Systems columns D, E, and G in Table 1 through 4 provide acceptable sprinkler area allowances for effective wetted acres. NCCES publication (AG-553-7), Hard Hose Traveler Irrigation System, tables NE60 through N75+ provides acceptable area allowances for the traveler end areas.

Effective irrigated acres design requirements shall be met for

1. Irrigation equipment installed on a new spray field after February 1, 1999,
2. New irrigation system on an existing spray field after February 1, 1999, and
3. Underground hydrant lines after February 1, 1999.

In an existing system, replacing equipment with similar items does not require meeting effective design requirements. For existing spray fields, wettable acre criteria can be used to determine WUP acres even though effective design requirements shall be met. When an existing irrigation system is replaced, the new system shall be certified. The new system must meet buffer and setback requirements at the time the original system was installed.

Setback requirements are dependent upon the date the spray field is put into use. Therefore, plan revisions do not require setback changes unless a new spray field is added or expanded as described in Section 8.1.

6.5 Irrigation Design Checklist

A comprehensive checklist has been compiled to assist technical specialists with irrigation system design (Appendix 6.5).

6.6 Calibration Requirements

All waste application equipment, including irrigation systems, hose drag systems, honey wagons, and solid spreaders must be field tested and calibrated to verify operating performance and application amount. Field calibration to verify application amount is required once a year for NPDES permitted facilities and once every other year for state permitted operations.

Irrigation Systems - calibration involves field verification of 1) operating pressure, 2) wetted diameter, 3) flow rate, and 4) application uniformity.

The minimum calibration performance requirements for irrigation systems are:

1. Operating pressure at the sprinkler/gun must be verified using a properly functioning pressure gauge and observed to be operating within the range recommended by the manufacturer or specified in the irrigation design documentation for the equipment being calibrated.
2. Wetted diameter of the system being field calibrated must be measured as described in NCCES Irrigated Acreage Determination publications AG-553-6 or AG- 553-7 and observed to be within 15% of the wetted diameter reported in the manufacturer’s chart for the operating pressure observed in (1), AND
3. Flow rate must be determined to be within 10% of the value specified in the irrigation design documentation or as was determined during the wettable/effective irrigated acre determination. Flow rate shall be determined using EITHER -
 - a. Flow rate from manufacturer’s chart for the measured pressure at the sprinkler/gun (item 1) and measured sprinkler/gun orifice diameter, OR
 - b. Flow rate measured with an approved, calibrated flow meter.
4. **Application uniformity is deemed to be acceptable when items 1 – 3 above are within the ranges specified.**

Note: Flow rate to be reported in column 6 of IRR-2 (item 3 above) should not be calculated from “catch can” measurements as described in NCCES field calibration publications AG-553-1, Ag-553-2 or AG- 553-3. The catch can method cannot be used to compute flow rate for IRR-2 because this results in a “double counting” of the evaporative PAN losses during the irrigation process.

Hose Drag Systems - should be field calibrated by measuring ground speed and effective applicator width as outlined in NCCES publication AG-634, and flow rate using a flow meter as described in 3b above. The application rate can be determined from tables presented in AG-634 and should be verified against application rates specified in the WUP.

Solid Spreaders – should be field calibrated using the Weight-Area Method as described in NCCES publication AG-553-4.

Honey Wagons – Liquid and semi-solid application equipment should be field calibrated using the Load Area Method as described in NCCES publication AG-553-5.

7 PERMITS

7.1 Issuance of Permits to Animal Waste Management Facilities

Beginning January 1, 1997, DWQ began issuing COC under general permits and individual permits for facilities with 250 or more swine, 100 or more cattle, 75 or more horses, 1,000 or more sheep or 30,000 or more poultry with a liquid waste management system. In 2003, DWQ began issuing COC under NPDES general permits in accordance with federal rules for some farms. Facilities with fewer animal numbers may continue to be deemed permitted as long as they remain in compliance. DWQ may however require any facility to apply for a permit based on existing or projected environmental impacts.

DWQ will notify each facility by certified mail as to the date by which they shall submit the permit application. Regulations dictate a facility that fails to submit an application to DWQ by the date specified shall not operate the facility after that date. Every day of operation after that date is considered an additional violation subject to appropriate enforcement actions.

Regulations dictate no person shall construct a new or expanding facility without first receiving a permit from DWQ.

Farm owners should contact DWQ prior to construction of a lagoon or holding pond. For storage structure construction on an existing, expanding, or new operation, DWQ requires approval of the design before construction begins.

7.2 Truck Washes

Truck washes located at a farm may be deemed permitted or covered under the general permit process as a part of a farm if the truck transports animals from that farm and returns to that farm to be washed, or the truck brings animals to the farm and is washed at the farm.

The animal waste management system shall be designed to adequately handle the volume of the waste from the truck wash and no chemical is added to the truck wash water that would interfere with the treatment system.

Truck washes serving more than one farm are commercial operations and not animal raising operations. Therefore they shall apply for and receive an individual permit before they can legally operate.

7.3 Public Livestock Markets

As per NCGS 143-215.10B, public livestock markets are considered animal operations and must be permitted. Therefore, any waste management system serving a public livestock market shall be covered by a permit before it can legally operate.

7.4 Permit Fees

Invoices for the annual fees will be mailed annually.

7.5 Manure Haulers

DWQ Rules specifically for manure haulers became effective on September 1, 2006 and are contained in 15A NCAC 2T .1400. Manure haulers are defined as any person who accepts or purchases animal waste and land applies the animal waste on land not covered by the generator's permit.

The Rules cover all manure haulers regardless of how much or how little manure they land apply. All manure haulers are deemed permitted as long as they comply with specific criteria established in the Rules.

Manure haulers that land apply 100 tons or less of animal waste per calendar year are deemed permitted as long as they do not have a discharge of waste to the surface waters, they land apply the waste at no greater than agronomic rates and they do not land apply the waste closer than 25 feet from perennial streams or perennial waterbodies. Agronomic rates based on Realistic Yield Expectations (RYE) can be found at <http://www.soil.ncsu.edu/nmp/yields/>

Manure haulers that land apply more than 100 tons of animal waste per calendar year are deemed permitted as long as they do not have a discharge of waste to the surface waters; they land apply the waste at no greater than agronomic rates; they do not land apply the waste closer than 25 feet from perennial streams or perennial waterbodies; they do not stockpile animal waste uncovered for greater than 15 days; they do not stockpile animal waste within 100 feet of a perennial stream or waterbody; they only apply animal waste on fields that have had a representative Standard Soil Fertility Analysis within the past 3 years; they register with DWQ by no later than September 1, 2007; that they submit an annual report to DWQ by March 1 of each year. The first annual report is due to DWQ for calendar year 2007 on March 1, 2008.

Manure haulers that expect to land apply more than 100 tons of animal waste per calendar year and were not in operation before September 1, 2006 must register with DWQ prior to accepting or purchasing manure.

Manure haulers that land apply more than 100 tons but less than 750 tons of animal waste per calendar year must submit an annual report that includes their name, mailing address and phone number; date, location and amount of animal waste received; and date, location, amount, and acreage of all animal waste land applied.

Manure haulers that land apply 750 tons or more of animal waste per calendar year must submit an annual report that includes their name, mailing address and phone number; date, location and amount of animal waste received; and date, location, application rate, acreage, waste analysis, and receiving crop of all animal waste land applied.

Manure haulers that land apply 100 tons or less of animal waste per calendar year are not required to submit an annual report.

If there are problems with the manure hauler's operation, DWQ may initiate an appropriate enforcement action and/or the Director of DWQ may determine that the manure hauler should no longer be deemed permitted and be required to apply for an individual manure hauler permit from DWQ.

Manure hauler application and reporting forms can be found at http://h2o.enr.state.nc.us/aps/afou/afou_home.htm

8 SWINE FACILITY SITING REQUIREMENTS

8.1 Setback Requirements

The 100-foot setback from lagoons or houses to property boundaries was required for operations sited between October 1, 1995 and October 1, 1996. This setback was increased to 500 feet for operations sited after October 1, 1996

Effective August 27th, 1997, HB 515 requires at least 1,500 feet from a swine house or lagoon to any occupied residence and 2,500 feet of setback from a swine house or a lagoon to any outdoor recreation facility, National Park, State Park, historic property, or child care center. A 500-foot setback is required from a swine house or a lagoon to any well supplying water for human consumption or to a public water supply system. This requirement does not apply to a well located on the same tract of land as the swine house or lagoon and that supplies water only for use on that tract of land or for the use on adjacent tracts of land all of which are under common ownership or control. The setback requirements in HB 515 do not apply if the facility was permitted and construction began before August 27, 1997. All new or expanding facilities permitted after that date or which began construction after that date, regardless of the permitted date, shall meet the new requirements. Land application setbacks are shown in Appendix 8.1.

8.2 Public Notice for Swine Farms

Effective June 21, 1996, any person who intends to construct a new or expanding swine farm with 250 or more animals shall, after completing a site evaluation and before the farm site is modified, attempt to notify all adjoining property owners and all property owners who own property located across a public road, street, or highway from the swine farm of that person's intent to construct the swine farm. This notice shall be sent by certified mail to the address on record at the property tax office in the county in which the land is located. Written notice shall include:

- The name and address of the person intending to construct a swine farm.
- The type of swine farm and the design capacity of the animal waste management system.
- The name and address of the technical specialist preparing the waste management plan.
- The address of the local Soil and Water Conservation District office.
- Written comments may be submitted to: DWQ Animal Feeding Operations Unit, 1636 Mail Service Center, Raleigh, NC 27699-1636.

8.3 Site Evaluations

NCGS 106-802. (4) defines "site evaluation" as an investigation to determine if a site meets all federal and state standards as evidenced by the Waste Management Facility Site Evaluation Report on file with the SWCD office or a comparable report certified by a PE or by a technical specialist approved by the SWCC. The Waste Management Facility Site Evaluation Report is NRCS form NC-CPA-17 (Appendix 8.3). A comparable report would be one that contains all of the information on NC-CPA-17.

NRCS form NC-CPA-17 contains a condition that the site evaluation is only valid for 12 months from the date the form was signed. SB 1217 (NCGS 106-802.(4)) does not specify a time at which a site evaluation will no longer be valid. Therefore, while NRCS may no longer honor the site evaluation, the evaluation will still be valid for meeting site evaluation requirements.

Exemptions to 'Swine Farm Siting Act' include:

- When construction or enlargement increases the swine population to that predicted in the registration filed with DENR prior to October 1, 1995.
- When construction or enlargement for the purpose of increasing the swine population to that which the animal waste management system is designed to accommodate as described in a registration of the swine operation filed with DENR before October 1, 1995, or as described in a CAWMP approved before October 1, 1995.
- When construction or enlargement is for the purpose of complying with animal waste management rules and not for the purpose of increasing the swine population.

8.4 Conversion Factors for Determining Swine Farrowing Numbers

The population of swine on a farm is determined by the number of sows multiplied by 10 for a farrow to finish operation, the number of sows multiplied by 4 for a farrow to feeder operation, and the number of sows multiplied by 2.5 for a farrow to nursery operation. Where boars are unnecessary, they may be replaced by an equivalent number of sows. Any of the sows may be replaced by gilts at a rate of 4 gilts for every 3 sows.

NOTE: The SB 1217 Guidance Committee has not been given the authority to administer provisions of the Swine Farm Siting Act. The interpretations given above (sections 8.3 and 8.4) reflect internal policies for administering the animal waste system program. If there are questions regarding individual rights or responsibilities under the Act, consideration should be given to obtaining appropriate legal counsel.

9 BUFFERS AND PERENNIAL STREAMS

9.1 Buffer Design and Waste Structure Setbacks

Buffers must be established in accordance with NRCS technical standards unless specifically established in regulations. Setbacks for structures must be measured from the toe of the impoundment to the edge of perennial waters. Setbacks from the land application site must be measured from the areas on the fields where waste is applied (wetted area).

The USGS uses blue or purple lines on topographic maps to denote field ditches and canals as well as perennial streams. The 2T .1300 (formerly 2H .0200) buffer requirements only apply to perennial streams and perennial waterbodies, and use USGS maps as some evidence of the location of these streams. USGS maps show ditches and canals as “straight” blue lines. If the lines are not exactly “straight”, the waters have been determined to be a stream rather than a canal or a ditch. The lines can be either a single straight line or a series of straight lines connected at angles. While the angle of connection is normally 90°, they can also be at other angles.

For possible consideration for a buffer exemption, a technical specialist can only evaluate straight lines to determine that a stream shown on an USGS map is perennial water. While generally straight lines denote a canal or ditch that does not require a buffer, the technical specialist still has the responsibility to make an “on site” determination.

Use the following guidance to assist in making an “on site” determination of whether a field ditch or a canal should have a buffer for waste application.

- Typical field ditches that are above a junction with another ditch (first order) would almost always not require a buffer under 2T .1300 (formerly 2H .0200). (A hoe drain is not considered a ditch.). Once the site inspection by the technical specialist verifies that the blue line is a first order field ditch, no other evaluation is necessary. Documentation of the field visit shall be included in the CAWMP.
- In cases where a ditch is below a junction with another ditch (2nd order or greater) then the technical specialist is responsible for a more extensive evaluation. Factors related to perennial stream flow are 1) occurrence of flow during extreme drought (not dry on an annual basis), 2) drainage area greater than 2 square miles in the coastal plain (excluding the Sandhills), and 3) evidence or knowledge of the previous existence of a natural channel.
- A technical specialist shall visit a site and actually evaluate a field ditch or a canal before making the buffer determination. The technical specialist shall use the most recent edition of the USGS map(s) to make the required determination. The edition of the map(s) used must be documented.

9.2 How are Distances Measured from Perennial Streams?

Distances from perennial streams should be measured from the top of the stream bank in a horizontal line.

9.3 Defining Setbacks & Buffers

New and expanded animal waste storage and treatment facilities sited after February 1, 1993, such as but not limited to lagoons and waste storage ponds, must be located at least 100 feet from perennial waters unless it can be documented that no practicable alternative exists and that equivalent controls are used as approved by the SWCC.

When wet waste is applied, an application setback to perennial waters is required as part of the waste application system and nutrient management plan. Perennial waters are indicated on the most recent published version of USGS 7.5 minute topographic maps (see item 9.1). See Appendix 8.1 for specifics on application setback widths to perennial waters.

North Carolina regulations require that the first 25 feet of the land application setback area adjacent to perennial waters be established as a buffer. 15A NCAC 02B .0202 (12) defines a "buffer" as *a natural or vegetative area through which stormwater runoff flows in a diffuse manner so that the runoff does not become channelized and which provides for infiltration of the runoff and filtering of the pollutants. The buffer shall be measured landward from the normal pool elevation of impounded structures and from the bank of each side of streams or rivers.* This definition is consistent with the Filter Strip definition in NRCS Standard Code 393. The Filter Strip standard requires vegetation that is primarily permanent grass, legumes, or forbs, a combination of these and shrubs and/or trees are also acceptable as the required permanent vegetative "buffer" in the first 25 feet. The additional width of the setback, where required, does not have to be in permanent vegetation, and may be in crop production, although the specified waste application setback must be observed.

Filter strip requirements apply to animal waste applied *adjacent* to perennial waters. Although there is no specific definition for *adjacent* in the NRCS Standards, if a producer maintains at least 100 feet setback from perennial waters, the wetted land application area can be considered as not *adjacent*. If the site has a considerable slope, the distance may need to be increased.

Effective July 1, 2007, facilities operating under NPDES permits, must implement additional setbacks and/or approved setback/buffer combinations from surface waters and conduits to surface waters (perennial and non-perennial) for waste application activities. See Appendix 8.1 for setback and setback/vegetative buffer options and related width requirements.

Vegetative buffers adjacent to non-perennial waters are recommended but not required for facilities operating under State Non-Discharge Permits. However, the waste application system must be designed and implemented in a manner that will not allow waste to enter any intermittent stream, canal, or drainage ditch. A suitable distance must be maintained from these water features to prevent wind drift or runoff of waste materials from entering these waters. Other federal, state or local regulatory authority may supercede the above conditions on non-perennial waters.

10 TECHNICAL SPECIALIST

10.1 Liability

Technical specialists can only certify systems and plans that meet the appropriate minimum criteria. If for some reason a producer cannot obtain a certification by a technical specialist, then the producer shall modify the system so that it can be certified.

Technical specialists are subject to lawsuits. The State Attorney General's office can only defend state employees.

Technical specialist designation categories are shown in Appendix 2.5B.

10.2 Professional Engineer Seals

In accordance with guidance received for the North Carolina State Board of Examiners for Engineers and Surveyors, the PE is required to seal any part of the certification which they sign and any part of the plan that they design.

10.3 Decertification of Technical Specialist

The responsibility for technical specialist designation lies with the SWCC. Written complaints shall be directed to the Director of the DSWC and will be handled through a process established by the SWCC.

10.4 Certification Program of Irrigation Association

The SWCC adopted policy is to consider an individual appropriately certified under the *Certified Irrigation Designer* (CID) program of the Irrigation Association as having the technical qualifications to receive the "I" technical specialist's designation.

11 OPERATOR CERTIFICATION REQUIREMENTS

11.1 When Must a Facility Have a Certified Operator?

All facilities with 250 or more swine, 100 or more confined cattle, 75 or more horses, 1,000 or more sheep or 30,000 or more poultry with a liquid waste management system shall have a certified Operator in Charge (OIC). The operator is for the entire system so a certified operator is required on that date even if land application will not occur until some later date. A facility shall notify DWQ within 30 days after a new Operator in Charge is designated (see Appendix 11.1 A).

The Attorney General's Office advises that "animal operations not producing liquid residuals ... are not required to designate a certified operator..." and "...systems utilizing only nonstructural practices (for the management of animal waste) are exempt from the requirement to have a certified operator" (Appendix 11.1 B).

12 APPENDICES

- 1.1A Waste Application Windows for Common Crops Which Receive Animal Waste, 9/19/06
- 1.1B Emergency Action Plan, 12/18/96
- 1.1C Cattle Farm Waste Management Odor Control Checklist, 4/18/06
- 1.1D Swine Farm Waste Management Odor Control Checklist, 11/11/96
- 1.1E Poultry Layer Farm Waste Management Odor Control Checklist, 11/11/96
- 1.1F Insect Control Checklist for Animal Operations, 11/11/96
- 1.1G Mortality Management Methods, 12/18/96

- 1.20 Guidelines for Plant Tissue Analysis to Justify Additional Waste Applications and/or Extending Application Windows, 8/14/06

- 1.21A Crop Management Practices for Select Forages Used in Waste Management, Dr. Jim Green, 7/13/98

- 1.23 Use of On-Farm Records for Modifying a Certified Animal Waste Management Plan, AG-439-42, 9/2000

- 1.26A **NCCES Sludge Survey Form and Worksheets**
- 1.26B DSWC Copper and Zinc projection worksheet – EXAMPLE, 6/5/03

- 1.31 RYE Values for Superior Lines of Seeded Bermudagrass (INMC 8/17/06)

- 1.32 **Animal Waste Application on Turf Sods**

- 2.2A Notification of Change of Ownership Form, 11/1/04
- 2.2C Request for Reactivation, RR 7/00

- 2.4 Components of an Animal Waste Management Plan, 12/6/96

- 2.5A Animal Waste Management Plan Certification Form, AWC 9/18/06
- 2.5B SWCC Criteria for Technical Specialists Designation, 3/23/04

- 3.1 Animal Waste Storage Pond and Lagoon Closure Form, PLC-1 3/18/02

- 5.1A General Guidelines for Dairies & Paved Beef Feedlots, 9/18/06
- 5.1B General Guidelines for Unpaved Beef Feedlots, 7/23/97

- 5.2 General Guidelines for Swine on Dry Lots, 7/23/97

- 5.3A Poultry Dry Litter Management Plan, DPLMP 3/17/97
- 5.3B Poultry Dry Litter Forms 1-3 3/17/97

- 5.5A Poultry Litter Nutrient Management Plan for NPDES Facilities 1/4/05
- 5.5B NPDES DRY-1 (10/27/04)

- 5.5C NPDES DRY-2 (10/27/04)
- 5.5D NPDES DRY-3 (10/27/04)

- 6.1 Wettable Acre Determination Certification, WADC 2/06

- 6.5 Animal Wastewater Land Application System Plans Design Checklist, 7/23/97

- 7.5 Registration Form for Manure Hauler Operations (REG-MHO 12/06)
Manure Hauler Operation Annual Reporting Form 2/21/07
 - Manure Received HAUL-1 (2/21/07)
 - Manure Land Application - Medium Operations (100-750 tons/yr) (2/21/07)
 - Manure Land Application - Large Operations (750 or more tons/yr) (2/21/07)

- 8.1 Animal Waste Land Application Setbacks, 9/20/06

- 8.3 Waste Management Facility Site Evaluation (NRCS NC-CPA-17, 12/00)

- 11.1A Operator in Charge Designation Form
- 11.1B Classification of Animal Waste Management Systems (WPCSOCC 7/21/98)

13 Website Sources of Technical, Regulatory and Policy Information (revised January 26, 2007)

SOURCE	COMMENTS	ADDRESS
NC Department of Agriculture & Consumer Services	NCDA&CS Homepage	http://www.ncagr.com/index.htm
• Agronomic Division	Homepage	http://www.ncagr.com/agronomi/index.htm
	Soils & Waste Analysis	http://agronomy.agr.state.nc.us/
NC Department of Environment & Natural Resources	DENR Homepage	http://www.enr.state.nc.us/
	DENR Regional Office Listing	http://www.enr.state.nc.us/html/regionaloffices.html
• Division of Air Quality	Homepage	http://daq.state.nc.us/
• Division of Soil & Water Conservation	Homepage	http://www.enr.state.nc.us/DSWC/
	1217 Guidance Document	http://www.enr.state.nc.us/DSWC/pages/guidance_docs.html
	Designated Technical Specialists List	http://www.enr.state.nc.us/DSWC/pages/TechSpec_List.pdf
	Soil & Water Conservation District Directory	http://www.enr.state.nc.us/DSWC/pages/district_offices.html
• Division of Water Quality	Homepage	http://h2o.enr.state.nc.us/
• DWQ - Animal Feeding Operations Unit	Homepage	http://h2o.enr.state.nc.us/aps/afou/afou_home.htm
	Reporting Forms	http://h2o.enr.state.nc.us/aps/afou/afou_home.htm
	Permits	http://h2o.enr.state.nc.us/aps/afou/applications.htm
• DWQ - Laboratory Section	Laboratories Certified for Animal Waste Nutrient Mgt. Analyses	http://h2o.enr.state.nc.us/lab/animalwaste.htm
	NC Wastewater Certified Laboratories	http://h2o.enr.state.nc.us/lab/nccert.htm

• DWQ - Technical Assist. & Cert. Unit (certified waste operators)	Homepage	http://h2o.enr.state.nc.us/tacu/index.html
	Training opportunities and announcements for animal waste operators	http://h2o.enr.state.nc.us/tacu/TrainingOpportunities2.html
NC General Assembly	Homepage	http://www.ncga.state.nc.us/
	Bill Information	http://www.ncga.state.nc.us/Legislation/Legislation.html
	NC Statutes	http://www.ncga.state.nc.us/gascripts/Statutes/Statutes.asp
	NC Session Laws	http://www.ncga.state.nc.us/gascripts/EnactedLegislation/ELTOC.pl?sType=Law
NC State University	Homepage	http://www.ncsu.edu/
• College of Agriculture & Life Sciences	Smithfield Agreement and Development of Environmentally Superior Technologies	http://www.cals.ncsu.edu:8050/waste_mgt/smithfield_projects/smithfieldsite.htm
• Cooperative Extension Service	Homepage	http://www.ces.ncsu.edu/
	County Offices	http://www.ces.ncsu.edu/index.php?page=countycenters
	Online Publications	http://apps.ces.ncsu.edu/pubs/
• CES - Crop Science	Homepage	http://www.cropsci.ncsu.edu/
• CES - Biological & Agricultural Engineering	Animal Waste Management	http://www.bae.ncsu.edu/programs/extension/manure/awm/index.htm
	Calibration Procedures	http://www.bae.ncsu.edu/programs/extension/manure/calibration
	Sludge Management & Closure Procedures for Anaerobic Lagoons	http://www.bae.ncsu.edu/programs/extension/manure/ag604.pdf
	Sludge Survey Methods for Anaerobic Lagoons	http://www.bae.ncsu.edu/programs/extension/manure/sludge-survey/sludge_survey.pdf
• CES - Soil Science	Homepage	http://www.soil.ncsu.edu/
	Realistic Yield Expectations Database	http://www.soil.ncsu.edu/nmp/yields/
	Nutrient Management &	http://www.soil.ncsu.edu/nmp/ncnmwg/

	PLAT software downloads	
	Waste Management Publications	http://www.soil.ncsu.edu/programs/wasteman/
	Animal Waste Operators Certification Training	http://www.soil.ncsu.edu/certification/index.htm
• CES - Soil Science	Land Application Training & Demonstration Center	http://www.soil.ncsu.edu/swetc/latdc/index.html
USDA Natural Resources & Conservation Services	National Homepage	http://www.nrcs.usda.gov/
	National Field Office Technical Guide	http://www.nrcs.usda.gov/technical/efotg/
	Animal Waste Management	http://www.wcc.nrcs.usda.gov/awm/
North Carolina NRCS	N.C. Homepage	http://www.nc.nrcs.usda.gov/
	Electronic Field Office Technical Guide	http://www.nrcs.usda.gov/technical/efotg/index.html