Swine Farm Waste Management – Odor Control Checklist

Permit No.: _____

Date: _____

Owner Signature: _____

INSTRUCTIONS FOR USE

- ♦ Odor Control Checklist is required by General Statute 143-215.10C(e)(1)
- ♦ Check any/all the BMPs you will implement on this facility. Items checked/selected become a requirement of the CAWMP.
- ♦ Items in bold or pre-selected are required.
- ♦ Add any site-specific details related to the selected BMPs
- ♦ Include any other odor control measures not listed
- ♦ **NOTE:** Not all BMPs may be cost-effective for every facility. Evaluate each BMP prior to selecting for your facility.

Cause/Source	BMP Option to Minimize Odor	Comments	Site Specific Practices
FARMSTEAD			
♦ Swine Production	☐ Maintain vegetative or wooded buffers at or near property boundary	• Traps dust and gases, provides dilution and visual screening • May require third party input/approval	
♦ Improper drainage	☐ Grade and landscape so water drains away from facilities and prevent ponding	• Reduce odors and vectors that occur with stagnant conditions	
	☐ Maintain farm access roads and prevent traffic in waste application area	• Prevents spillage during transport and tracking of waste onto public roads	
	☐ Other BMPs – please describe		
MORTALITY MANAGEMENT			
♦ Carcass Decomposition	☒ **Dispose of mortality using method approved by NCDA&CS State Veterinarian. Manage According to CAWMP (Mortality Management Checklist) and permit(s).**	• **Required by statute and permit** • May require third party input/approval	
	☐ Put carcasses in refrigerated (or freezer) dead boxes within 24 hours for short-term mortality storage.		
♦ Incomplete Incineration	☐ Use incinerators with secondary burners for complete combustion.	• Reduce odors by complete incineration	
	☐ Other BMPs – please describe		

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HOUSE / BARN – WASTE HANDLING			
♦ Flush tanks	☐ Install flush tank covers	• Pit-flush systems	
♦ Odorous Gases	☐ Flush pits at least 4 times per day	• Pit-flush systems	
♦ Partial microbial decomposition	☐ Empty pits at least once every 7 days	• Pit-recharge or "pull-plug" systems	
	☐ Underfloor flush with pit ventilation		
♦ Agitation of wastes	☐ Install/extend fill lines to near bottom of tanks with anti-siphon vents		
	☐ Install covers on outside waste collection or junction box		
	☐ Install sump tank covers for lift stations		
♦ Ammonia	☐ Flush/recharge with treated effluent		
	☐ Treat waste in pits with proven biological or chemical additive	• Monitor for any solids accumulation in pit	
	☐ Other BMPs – please describe		
HOUSE / BARN – FLOOR AND INDOOR SURFACES			
♦ Manure covered floors	☐ Scrape manure from alleys into pens daily	• Will move with other manure via pits	
	☐ Install fully slotted floor system		
	☐ Install waterers over slotted floor area		
	☐ Install feeders at high end of solid floors	• Where applicable	
♦ Odorous Gases	☐ Scrape manure buildup from floors and walls	• Aids in animal cleanliness	
	☐ Keep floors dry	• Aids in animal cleanliness	
	☐ Install underfloor ventilation for drying		
	☐ Replace bedding/scrape at frequency to keep bedding dry	• Solid floor/bedding systems	
	☐ Other BMPs – please describe		

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HOUSE / BARN – VENTILATION			
♦ Dust ♦ Volatile/odorous gases	☐ Clean fans regularly – specify frequency ☐ Efficient air movement ☐ Install temperature and humidity sensors to control ventilation		
	☐ Treat barn exhaust	• Examples: biofilters, wet scrubbing, windbreaks • May reduce ventilation rate depending on method	
	☐ Other BMPs – please describe		
HOUSE / BARN – FEED			
♦ Dust	☐ Install feed covers		
♦ Adsorbed Gases	☒ **Keep outdoor feed storage covered except When necessary to add/remove feed**	• **Required by rule 15A NCAC 02D .1802**	
	☐ Minimize free-fall height of dry feed		
	☐ Install feed delivery downspout extenders to the feed covers		
	☐ Remove spoiled/unusable feed on regular basis		
	☐ Feed pellets instead of dry meal	• May require third party input/approval	
	☐ Use feed additives	• May require third party input/approval	
♦ Ammonia	☐ Use feed-reduced crude protein diet	• May require third party input/approval	
	☐ Other BMPs – please describe		
HOUSE / BARN – GENERAL			
♦ Dust ♦ Odorous Gases	☐ Install temperature and humidity sensors to control ventilation	• Maintain relative humidity at 40 to 65%	
	☐ Use ultraviolet light to treat indoor air		
	☐ Use indoor or outdoor electrostatic space charge system	• Can be used to treat exhaust air	
	☐ Other BMPs – please describe		

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LAGOON / WASTE STORAGE STRUCTURE			
♦ Volatile Gases	☒ **Maintain proper lagoon volume**	• **Sufficient liquid volume/depth is required for proper anaerobic treatment**	
	☐ Minimize free-fall height of waste from discharge pipe to lagoon surface		
	☐ Extend discharge point of pipe to below lagoon liquid level	• Use caution not to scour or damage lagoon liner	
	☐ Maintain proper surface area-to-volume ratio		
	☐ Use correct lagoon start-up procedures		
	☐ Aerate for odor control		
	☒ **Manage sludge levels based on annual sludge survey as required by permit**		
	☐ Keep spilled feed or foreign debris out of lagoon to prevent excess sludge accumulation		
	☐ Install/use solids separation system		
	☐ Use proven biological or chemical additives	• Monitor for any increase in rate of solids accumulation	
	☐ Use permeable lagoon covers (not a digester)		
	☐ Use impermeable lagoon cover or anaerobic digester	• Methane can be flared if not utilized	
	☐ Other BMPs – please describe		
LAND APPLICATION			
♦ Odorous gases	☒ **Perform land application in accordance with CAWMP**		
♦ Wind drift	☒ **Pump intake near lagoon surface**	• **Required by rule 15A NCAC 02D .1802**	
	☐ Pump from second stage lagoon		
	☐ Follow good neighbor policy	• Avoid application on known weekends, special days, or holidays/eves if possible	
	☐ Operate at minimum recommended pressure		
	☐ Increase setbacks beyond those required by statute, rule, or permit		

Cause/Source	BMP Option to Minimize Odor	Comments	Site Specific Practices
LAND APPLICATION (CONTINUED)			
	☐ **Apply during favorable wind conditions,** (especially for traveling guns or impact sprinklers)	• Recommend checking predicted average hourly wind speed within 24 hours prior to anticipated start	
	☐ When practical, apply waste on sunny days rather than cool, overcast days	• Allows for vertical dissipation of odor	
	☐ When possible, apply waste mid-morning to late-afternoon	• Allows for better vertical dissipation of odor	
	☐ For traveling guns, use taper-ring or taper-bore nozzles	• Less odor and drift than ring nozzles	
	☐ For traveling guns, use largest-available nozzle that provides acceptable application uniformity		
	☐ Replace impact sprinklers with low-drift nozzles on center pivots and linear move systems.		
	☐ Use hose-drag system		
	☐ Use injection method for waste application		
	☐ Other BMPs – please describe		
SLUDGE DISPOSAL			
♦ Odorous gases	☐ Transport sludge in covered vehicles or tankers		
	☐ Apply in thin, uniform layers	• Speeds drying and prevents ponding	
	☐ Incorporate land-applied sludge as soon as practical after application, and in accordance with permit.	• **Required within 48 hours or prior to next rain event, whichever is first, for conventionally tilled bare soils**	
	☐ Use injection method for sludge application		
	☐ Dewater sludge prior to application		
	☐ Use alternatives to land application, such as compost, gasification, energy generation, etc.		
	☐ Other BMPs – please describe		

ADDITIONAL INFORMATION	AVAILABLE FROM:
Air Management Practices Assessment Tool (AMPAT)	www.extension.iastate.edu/ampat/
AHG-538-A Certification Training for Animal Waste Management Systems: Type A	NC Division of Water Resources
EBAE 103-83 – Lagoon Design and Management for Livestock Manure Treatment and Storage	www.bae.ncsu.edu
EBAE 128-88 – Swine Production Facility Manure Management: Pit Recharge-Lagoon Treatment	www.bae.ncsu.edu
EBAE 129-88 – Swine Production Facility Manure Management: Underfloor Flush-Lagoon Treatment	www.bae.ncsu.edu
EBAE Fact Sheet – Calibration of Manure and Wastewater Application Equipment	www.bae.ncsu.edu
EBAE Fact Sheet – Swine Production Farm Potential Odor Sources and Remedies	www.bae.ncsu.edu
NC NRCS Standard 359 – Waste Treatment Lagoon	www.nrcs.udsa.gov
NC NRCS Standard 380 – Windbreak/Shelterbelt Establishment	www.nrcs.udsa.gov
NC NRCS Standard 422 – Hedgerow Planting	www.nrcs.udsa.gov
NC NRCS Standard 442 – Sprinkler System	www.nrcs.udsa.gov
Nuisance Concerns in Animal Manure Management: Odors and Flies; PRO107 1995 Conference Proceedings	Florida Cooperative Extension Service
Options for Managing Odor: A Report from the Swine Odor Task Force	NC State University