



Nutrient Management Plan

Prepared For:

**Scheetz Family Farm
&
M & K Pork**

**Upper Place - Swine
220 R.R. Street
Gladstone, IL 61243**

Approved Conservation Planner and Certified CNMP Specialist:

As a Technical Service Provider, registered to develop Comprehensive Nutrient Management Plans,
I certify that I have reviewed this NMP for technical adequacy and that the elements of the NMP are technically
compatible, reasonable and implement able.

Signature _____ Date: _____

Name: Dennis Godar

Title: CPAg / CCA, TSP #03-2005

Upper Place - Swine

Manure & Nutrient Management Plan

Sept. 10, 2010
Scheetz Family Farm
& MK Pork
Gladstone, IL
Henderson County

This nutrient management plan was prepared according to the Illinois Livestock Management and Facility Act regulations for Confined Animal Feeding Operations. The plan includes timing, forms and methods of manure and nutrient applications to farm land. Cropping rotations and applications are subject to change due to weather and economic conditions. This is a 4 year plan and should be reviewed by the operator at least annually to update the record keeping requirements of the plan.

The binder is arranged according to the table of contents, Highlights of the plan are:

- Section 1- Facility Information- ownership, size and capacities.
- Section 2- Permits and Certifications, building permits, Livestock Manager Certificate.
- Section 3- EMERGENCY ACTION PLAN. This should be copied and placed in a prominent location or locations for quick access in case emergency response is necessary due to any type of emergency or accident that possibly could occur. This plan should be updated as needed to add to or change the contact information and procedures as necessary.
- Section 4-Overview Maps of application fields and site sketches for each facility. Aerial photos and topographical maps are included.
- Section 5-Watershed Reports: This section contains general information about the watershed and EPA priorities for pollutants to meet TMDL requirements.
- Section 6- Application Provisions and Best Management Practices: This section contains a discussion of nutrient management practices to reduce environmental risk. **The LMFA and IL-NPDES permit manure application requirements that must be observed are listed on page 6-5.**
- Section 7-INDIVIDUAL FIELD INFORMATION: This section contains information about each field such as crop history, prior yields, soil test information, soil type maps etc. Each field has a tab, to find the information easily. We recommend updating field information and keep copies of future soil test reports in this section.
- Section 8- Annual Manure Tests results and sampling methods. Sample manure annually and adjust manure applications rates as needed.
- Section 9- ManPlan Summary Report lists summary information for plan years 2010-2014. The Nutrient Balance report on page 17 is an estimate of the minimum number of acres required to utilize nutrients contained in the manure. The manure produced annually is sufficient to provide **nitrogen for 411 acres and phosphorus for 438 acres** based on current crop rotations and expected yields, and book values of manure.
- Section 10- RECORD KEEPING FORMS, YEARLY RECORDS. This section contains NMP recommendations of this plan on a year by year basis. It also contains blank manure transfer forms and field record-keeping forms that will satisfy the requirements of the LMFA. The "Fertilizer and Manure Applications and Methods" annual field report shows nutrient recommendations of the plan and can also be used as a record keeping form to document all field applications.

In addition to the nutrient management plan, a “**Certified Livestock Manager**” must be employed or supervise the day to day activities on the farm. A copy of this person’s certificate should be placed in Section 2 of the plan. Since animal capacity will be **greater than 1000** animal units, the form certifying that a Waste Management Plan has been developed will need to be sent in to the Illinois Department of Agriculture. (See Section 2 for copy of the form)

Below is a checklist to help document activities and record keeping for the plan. This NMP provides the elements required by the Illinois Livestock Management and Facilities Act, (LMFA) and also the NPDES general permit requirements as published by Illinois EPA.

<u>Action:</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
Soil testing (Minimum every 3 years)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Manure Analysis (Annually)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Calibration of application equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Document manure applications and rates.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Document Crops, Yields,	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Document Off-Site Transfers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plan Reviews / Update Recommendations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Any questions about this CNMP or updating the plans may be addressed to

ManPlan Inc
8810 Buckhart Road
Rochester, IL 62563
217 498-8817

Prepared by:

Dennis Godar TSP # 03-200



WASTE MANAGEMENT PLAN CERTIFICATION FORM

I, the undersigned, do hereby certify that a Waste Management Plan for the livestock management facility named below has been prepared in accordance with the requirements of the Livestock Management Facilities Act[510 ILCS 77/1 et seq.] and the rules promulgated hereunder.

LIVESTOCK MANAGEMENT FACILITY INFORMATION:

Facility Name: _____

Company: _____

Address: _____

Phone: _____

Total # of Animal Units: _____ Species: _____

OWNER/OPERATOR INFORMATION:

Facility Name: _____

Company: _____

Address: _____

Phone: _____

WASTE MANAGEMENT PLAN LOCATION:

Signature of Owner or Operator

Date

Return to:
Livestock Waste Program
Illinois Department of Agriculture
Bureau of Environmental Programs
PO Box 19281
Springfield, IL 62794-9281

IMPORTANT NOTICE: This state agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under the Environmental Protection Act (413 ILCS 5) and the Livestock Management Facilities Act (510 ILCS 77/1 et seq.). Failure to provide this information shall prevent this form from being processed. This form has been approved by the State Forms Management Center. IL 406-1537 (01-01)

Upper Place - Swine

Section 3

Emergency Response Plan

In Case of an Emergency Storage Facility Spill, Leak, or Failure:

Implement the following first containment steps and where containment material is located:

- a. Stop all other activities to address the spill.
- b. Use skid loader or tractor with blade to contain or divert spill or leak, if possible.
- c. Call for help & excavator if needed.
- d. Locate appropriate containment material, (sand bags, clay soils, etc.)
- e. Complete the clean-up and repair the necessary components.
- f. Assess the extent of the emergency and determine how much help is needed.

In Case of an Emergency Land Application Manure/Waste Discharge

Implement the following first containment steps and where containment material is located:

- a. Stop all other activities to deal with the emergency.
- b. Call for help if needed.
- c. Call sheriffs office if spilled on road for traffic control and clean the spill immediately from the road and roadside if needed.
- d. Contain the spill or runoff from entering the stream or waterway using straw bales, saw dust, or soil material.
- e. If flow is coming from a tile, plug the tile with a tile plug immediately.
- f. Assess the extent of the emergency and determine how much help is needed.

1. Emergency Contacts:

Department / Agency	Phone
Fire 911	Gladstone 309-627-2144
	Stronghurst 309-924-1341
	Carman 309-873-2341
Police	911
	Biggsville 309-867-4291
Ambulance/EMT 911	Stronghurst 309-924-1009
	Henderson County 309-867-4291
Owner's Cell Phone	Joe Scheetz- 217 242-3516-cell
Owner's Office Phone	217 242-4254
Sow Farm-(pig source)	217-755-4459-sow office
Operator's Name	Curt McChesney
Operator's Business Phone	309-627-2374
Operator's Home Phone	309-627-2203
Operator's Cell Phone	319-572-1938
Certified Livestock Manager	Curt McChesney
Certified Livestock Manger Phone	309-627-2374

2. Available equipment/supplies for responding to emergency:

Equipment Types	Contact Person	Phone Number
Equipment on Farm: Loader Tractor Manure Pumps	Curt McChesney Brian	319-572-1938 (cell) 309-627-2374 (office)
Manure Tanker Trucks Manure Tank Wagons	Chris Fredrickson	309-371-4793 (cell) 309734-6709
Backhoe, Earthmoving equip dump trucks	Kistler & Co Monmouth, IL	309 734-7951
Earthmover, Bulldozers	STE Excavating Inc. Terry Stevenson	309 343-7863
Bucket Truck	C & D Electric Monmouth	309 734-7314

3. Directions to Farm:

Legal Description for facilities

Barn 1 SE1/4 NE1/4 NE1/4 Sect 34
Barn 2 SE1/4 NW1/4 NW1/4 Sect 35
Barn 3 SW1/4 NW1/4 NE1/4 Sect 35
Barn 4 SE1/4 NW1/4 NE1/4 Sect 35

From Biggsville traveling west on I94 approx. 3 miles turn south onto 1400E and travel approx. 2 miles to Feed Lot Road then approx 1 ½ miles to private drive at the farm.

4. Contacts to be made by farm's Owner or Operator as Soon As Possible within 24 hours:

Organization	Phone
Henderson County Public Health Department	309-627-2812
Henderson County Sheriff's Office	911 309-867-4291
Illinois Emergency Management Agency (IEMA)	800-782-7860
Illinois EPA	217-782-3397
NRCS	309-924-1167
Illinois Department of Agriculture	217-785-2427

Provide the following information:

- Your Name
- Farm Identification
- Description of emergency
- Estimate of the amounts, area covered, and distance traveled.
- Has manure reached surface waters or major field drains?
- Is there any obvious damage: employee injury, fish kill, or property damage?
- What is currently in progress to contain situation?

5. Containment measures, corrective measures, or property restoration measures.

In case of manure spill or discharge:

A. In case of manure spill in field:

- Plug tile inlets if located in the path of spill as soon as possible to prevent manure drainage to tile systems.
- Shovel dirt over a sheet of plastic or a waterproof tarpaulin to plug tile openings.
- Use a large diameter PVC pipe or a plastic barrel (with end cut out) to place over top of tile to seal off routes to surface water.

B. If manure has reached a surface drainage ditch:

- Use loader tractor from the farm to build up a temporary containment by filling in the ditch at several locations along the drainage ditch ahead spill travel.
- Use manure pump or trash pump to pump out manure from the temporary containment and fill tank wagons as needed to field apply.

SEE FIELD MAPS AND TOPO MAPS FOR DETAILS.

Updates to this Emergency Action Plan:

- ---

- ---

- ---

○ What Should Be Included in an Emergency Response Plan?

• Environmental Protection/Emergency Response Plan Contents
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☐ **Emergency Phone Number List Posted at Each Phone**

An emergency phone notification list, which includes telephone number of the operator, local offices for fire dept, sheriff dept., EMS, Public Health Office, Illinois Emergency Management Agency; Illinois Department of Agriculture, and Illinois Environmental Protection Agency.

☐ **General Farm Information Sheet**

Fill in all general farm information.

☐ **Designated Spokesperson**—if desired

To be prepared in case of an environmental impact, have a plan for contacting the media following an incident. Sooner or later, they will learn of the problem anyway. Assign a spokesperson to meet with the news media when they arrive at the scene. That way, the story that is printed may focus on your organized and effective response rather than on the magnitude of the problem.

☐ **Farm Map**

Include a drawing with written directions to your farm location.

☐ **Facility Map**

Draw facility layout including location of: telephone locations, location of shutoffs for water, electric, natural gas and propane tanks, recycle systems, schematic of waste management system, pumping pits, **areas of no entrance without assisted breathing devices**, hazardous materials, ingress/egress for emergency vehicles, identity of immediately adjacent landowners with emergency phone numbers.

☐ **Topographic Map**

Maps of the facility and surrounding areas including drainage patterns and locations of spoil materials for forming emergency dikes, location of surface waters, waterways, wells, and any other environmentally sensitive areas.

☐ **Effluent Spill Emergency Response Information Sheet**

Information that includes second and third contact people.

☐ **Runoff Retention Plan**

Instructions detailing the **Action Plan** to be taken in an emergency involving effluent spill, discharge, leak, etc.

☐ **Pre-Arranged Sample Land Access Agreement**

List of neighboring landowners and their emergency phone numbers.

☐ **Location of Pre-Arranged Emergency Supply Equipment and Supplies**

List of equipment owners who have agreed to assist in an emergency and inventory of equipment on site that can be used (including location).

AGRICULTURAL CONFINED SPACES CAN KILL YOU

What is a CONFINED SPACE?

- ✦ Any space not intended or designed for continuous worker occupancy.
- ✦ Any space which has a limited or restricted way of entering or leaving.
- ✦ Any space in which there is a chance that normal levels of oxygen may be reduced, or some toxic or explosive gases may be accumulated or released.
- ✦ Any space where there is the presence of mechanical hazards.

All of the following examples meet the conditions for a confined space:

Air Seeder Tank	Empty Water Well	Grain Bin
Holding Tank	Septic Tank	Silo
Tanker Trailer	Culvert	Manure Pit
Welding inside a Combine Body		

Understanding the Hazards of a Confined Space

Physical Conditions

Whether you are going to work in a holding tank, well, or combine body, one thing is clear – it is a tight fit getting in or out. Should an injury occur while inside, the problem of getting out greatly increases.

The hazards are also increased in confined spaces generally due to limited natural light, slippery or uneven surfaces, dust, waste or other materials, obstruction and limited space in which to work and move around.

The possibility of moving parts or materials in the confined space also dramatically increases the risks of working in that space. Machinery may include: shafts, augers, agitators or vibrating pipes and components. Materials which are present in the confined space may also be lodged or blocked and entry into or work done in the space may cause these materials to come loose and strike or engulf the worker.

Atmospheric Conditions

The air present in our normal workplaces contains approximately 78% nitrogen, 21% oxygen, .03% carbon dioxide and traces of other gases, vapors and dust particles. This remains almost constant because of air movement. In confined spaces the proportions may vary dramatically.

Do a Hazard Assessment for a possible Confined Space

1. Which of the following hazards may be present?
 - ☐ Uneven surfaces, wet or sloping sides
 - ☐ Moving machinery, equipment
 - ☐ Material that could fall or suddenly move into or over the area
 - ☐ Limited oxygen (example: a tank which has been closed for a long time and is rusty inside)
 - ☐ Vapors or gases which are toxic or flammable, for example, decomposing (rotting) materials, chemicals, fuels

(Over)

2. Have the people who are going to work in the confined space been trained to do that kind of work and use the necessary equipment?
☐ Yes ☐ No
If YES, who did the training?
3. Is equipment available to test and continuously monitor the atmosphere in the confined space?
☐ Yes ☐ No
4. Can the confined space be ventilated continuously?
☐ Yes ☐ No
5. Is Self-Contained Breathing Apparatus (SCBA) or Supplied Airline Respirator available for workers to use?
☐ Yes ☐ No
6. Is the air supply equipment regularly maintained?
☐ Yes ☐ No
7. Is there a communication system between the watch person and confined worker as well as to emergency response personnel?
☐ Yes ☐ No
8. Is retrieval equipment available and on site?
☐ Yes ☐ No
9. Does a detailed emergency plan, including emergency contacts exist?
☐ Yes ☐ No



Prepare for Confined Space Work

- 1) Identify Confined Spaces - these areas should have signs posted and access restricted.
- 2) Determine the particular hazards for each confined space - this may have to be done each time the given space has to be entered.
- 3) Determine what equipment is required to perform the work safely - this should be done in consultation with confined entry equipment suppliers, safety and health professionals and workers.
- 4) Establish control procedures to enable the work to be done - this is to assure that person(s) who will be working in the confined space, as well as the watchperson outside the confined space, will have all necessary protection operational and in use as required.
- 5) Be familiar with all the relevant standards and regulatory requirements - there are laws under the Workplace Safety and Health Act, and industrially accepted work practices for confined entry activities. Failure to follow these could result in serious injuries and/or penalties.
- 6) Identify and provide training - a person using, supervising or participating in confined entry work must be trained to use and maintain all the equipment involved in that operation. This training can be arranged by contacting safety equipment suppliers (in the yellow pages) and the local fire department.
- 7) Develop and post rescue procedures and phone numbers - in the event that an incident does occur a safe quick response is necessary. All persons involved in the operation must be aware of these procedures and be able to carry them out.



Training and knowledge are the key to safe confined entry work – learn the hazards – follow the rules.

In the time you take one breath of air, unprotected work in a confined space can KILL YOU!

Drawings courtesy of Gempler's Inc.



Beware of Manure Pit Hazards



Howard J. Doss, Howard L. Person and William McLeod
Michigan State University

Since the increased use of manure pits by Michigan livestock producers, there have been several instances where a farmer, family member, or employee has asphyxiated or succumbed to toxic gases from the pit. Cases have been reported where several individuals have died while attempting to rescue a coworker or family member from a pit.

Nationwide data shows that most deaths occur during the summer months, a time when many producers are emptying pits. Regardless of the season, it is always best to presume that the pit contains hazardous gases or lacks oxygen. Producers need to take protective measures to protect themselves and others working in or around the pit.

The four main gases produced from decomposing manure are hydrogen sulfide, methane, ammonia, and carbon dioxide. In high concentrations, each of these gases may pose a health threat to humans and livestock (see Table 1). In swine housing facilities, where the manure pit is often located below the facility floor, these gases are generally detectable in low concentrations throughout the year. When pits are agitated for pumping, some or all of these gases are rapidly released from the manure and may reach toxic levels or displace oxygen, increasing the risk to humans and livestock.

Table 1. Acute Effects of Swine Confinement Air Contaminants on Humans*

Gas	Exposure level	Effect or symptom
Hydrogen Sulfide	5 ppm	RECOMMENDED MAXIMUM FOR HUMAN HEALTH
	10 ppm	Eye irritation
	20 ppm for >20 minutes	Irritation to the eyes, nose and throat
	50 to 100 ppm	Vomiting, nausea, diarrhea
	200 ppm	Dizziness, nervous system depression, increased susceptibility to pneumonia, fluid in the lungs with prolonged exposure
	500 ppm for 30 minutes	Nausea, excitement, unconsciousness
Ammonia	600 ppm and above	Rapid death
	5 ppm	Lowest concentration detectable by smell.
	7 ppm	RECOMMENDED MAXIMUM FOR HUMAN HEALTH
	6 - 20 ppm and above	Eye irritation and respiratory problems
Carbon Monoxide	40 - 200 ppm	Headache, nausea, reduced appetite, irritation to airways, nose and throat
	50 ppm	RECOMMENDED MAXIMUM FOR HUMAN HEALTH
	50 ppm for 8 hours	Fatigue, headaches
	500 ppm for 3 hours	Chronic headaches, nausea and impaired mental ability
	1,000 ppm for 1 hour	Convulsions, coma after prolonged exposure
Methane	4,000 ppm and over	Rapid death
	50,000 to 150,000 ppm	Potentially explosive
	500,000 ppm	Asphyxiation
Carbon Dioxide	1,500 ppm	RECOMMENDED MAXIMUM FOR HUMAN HEALTH
	20,000 ppm	Deep, rapid breathing
	40,000 to 60,000 ppm	Heavy breathing, drowsiness, for 30 minutes and headaches

CARBON DIOXIDE

Carbon dioxide is produced by decomposing manure, animal respiration and heating fuels. An odorless, colorless, non-toxic gas, carbon dioxide is normally present at 300 ppm in the air. Concentrations rise when ventilation systems are inadequate or functioning improperly. This may result in oxygen being displaced in the facility with carbon dioxide. Carbon dioxide, in combination with rising temperatures and humidity, can kill hogs through asphyxiation and heat stress if ventilation failure last for several hours.

PROTECTION DURING PIT ENTRY

Pits are unpredictable, they may have been safe to work around for years, but suddenly, factors such as the stage of manure decomposition, wind conditions, or other components are just right (or in this case, wrong) for the pit to release deadly concentrations of toxic gases. Always treat a pit as if it is a death trap and take necessary precautions to protect yourself and others if entry is necessary.

SCBA

If you must enter a manure pit where gases are suspected, a self-contained breathing apparatus (SCBA) must be worn along with a safety harness and preferable two persons available to assist in a rescue.

A self-contained breathing apparatus supplies the wearer with 15 to 30 minutes of safe air to breath. A SCBA system, similar to those worn by firefighters, has a small air tank and facemask that allows the person to move about freely in an area where toxic gases or insufficient oxygen is suspected.

There are restrictions to wearing a SCBA that should be considered before purchasing the equipment. Training on the use of a SCBA is essential to ensure proper use. The facemask must fit properly or toxic gases may enter the mask. The wearer cannot have a beard because the facemask will not seal properly around the face. Your local fire department is the best source for information and training on its use. The cost of a SCBA is about \$1,700.

Due to the equipment requirements and inherent risks associated with entering an area where there may be toxic gases or insufficient oxygen, you should consider hiring a professional trained in working in these areas to perform maintenance tasks. If hiring a professional or using a SCBA is not possible, the best advice is to stay out of the pit.

Meters and Ventilation An alternative to wearing a SCBA is to check gas and oxygen levels of a facility or manure pit with a gas and oxygen testing meter before entering (see Table 2 for types of meters and gases that they can detect).

Table 2. Gas Measuring Devices Useful in Confinement Buildings

Gas	Situations*	Detector Tubes	Dosimeter Tubes	Solid state Detectors
Ammonia	routine measurements	satisfactory	preferred	Not reliable
Hydrogen Sulfide	routine measurements	preferred	satisfactory	satisfactory
	emergency situations	satisfactory	too slow	preferred**
Carbon Monoxide	routine measurements	preferred	satisfactory	satisfactory
	emergency situations	preferred	too slow	preferred
Carbon Dioxide	routine measurements	satisfactory	satisfactory	satisfactory
	emergency situations	preferred	too slow	satisfactory
Methane	flammable levels	preferred	not available	satisfactory

* - Routine is defined as typical daily average concentrations. Emergency is defined as any non-routine situations such as pit pump-out, ventilation or electrical failure, observation of abnormal swine behavior, or unusual respiratory symptoms in persons entering buildings which may indicate gas concentrations immediately hazardous to human health.

** - Solid state detectors are preferred here because of the speed or response and because they provide continuous information on hydrogen sulfide concentrations.

Metering can also present problems if not done properly. Toxic gas concentrations may vary throughout the area; higher levels may be detected in dead air spaces where ventilation is inadequate;

Table 3. How to Measure Hydrogen Sulfide*, Carbon Monoxide, and Carbon Dioxide During Emergency Situations**

lower levels are likely in areas near open windows and mechanically ventilated areas. It should also be noted that gas levels can rapidly escalate during agitation and pumping; meter readings that were at safe levels before these activities may reach hazardous levels in a few minutes. Continue to ventilate the area throughout the entire process. Table 3 gives instructions on how to measure some gases in emergency situations.

The three basic types of meters are detector tube, dosimeter tube and solid state detectors. Detector and dosimeter tubes use inexpensive gas sampling devices that give reliable readings for ammonia, hydrogen sulfide, carbon monoxide, carbon dioxide, or other gases found on the farm. Dosimeters are best for measuring average concentrations; detector tubes do the best job of measuring instantaneous concentrations during emergency situations. Solid state detectors give continuous readings and have audible alarm systems, but are more expensive than tube type detectors and must be calibrated frequently.

Additional Equipment Anyone entering a pit should be equipped with an approved harness and a rescue rope attached to a tripod and pulley system. Two people can remove an unconscious individual from a pit in a few seconds with this type of a emergency lift. Remember, you have only six minutes to begin cardiopulmonary resuscitation (CPR) before brain damage/death occurs.

Unsafe Alternatives The cost of a self-contained breathing apparatus, metering, and approved equipment to lift an unconscious individual from a pit may lead you to consider less costly alternatives. Unfortunately, all these alternatives have substantial safety risks.

- Lowering an open flame into a pit to check oxygen levels may result in an explosion from accumulation of methane gas. Also, this only tells you that there is at least 16 percent oxygen in the pit, but research shows that most individuals need 19.5 percent oxygen concentrations to live. Normal air contains about 21 percent oxygen.
- An alternative to an approved harness and safety lift may be to tie a rope around the individual entering the pit. This may work, but there is a substantial risk of breaking a rib and puncturing a lung while making a rescue.

Do not Enter any Confined Manure Pits Without Either:

A self-contained air supply like those fire fighters use. (Dust masks or other cartridge respirators will not filter out the toxic gases nor will they provide the oxygen requirement to work in confined spaces such as manure pits.)

OR

1. Testing the air for hydrogen sulfide, combustible gases or methane, and oxygen with dependable and reliable equipment, AND
2. Constant and adequate ventilation of fresh air, AND
3. An approved harness/lifeline on the person entering the pit with at least two people outside the pit who are capable of pulling the person out of the pit if necessary, AND
4. An approved pulley and tripod or other suitably strong lifting system that will make it possible to remove a limp body from the pit.

Remember, you have only six minutes after a person stops breathing to begin mouth-to-mouth resuscitation before brain damage/death occurs. Being prepared will greatly reduce the risk of panic, ill adverse action, and needless death or injury.

Reducing Hazards from Manure Gases

1. Do not enter the building. Open windows and doors from the outside, turn on ventilators, and use any fans available to blow air into the facility.
2. Use a detector tube with an extension hose to avoid the possibility of breathing highly toxic air. The detector tube must be specific for the gas to be measured (carbon monoxide, carbon dioxide, or hydrogen sulfide). While reaching through a window or other opening, place the detector tube near floor level and use the vacuum pump to draw air into the tube. Remove the detector tube and read the gas concentration.
3. If measurement is low, borderline, or hard to read, take additional measurements in different areas of the building. One measurement may be inadequate to detect high gas concentrations.

* - Note that monitoring hydrogen sulfide concentrations is recommended whenever a deep pit underneath a building is being pumped, even if there are no indications of toxic gases.

** - Emergency is defined as any non-routine situation such as pit pump-out, ventilation or electrical failure, malfunction of fossil fuel-burning heaters, observation of abnormal swine behavior or death, or unusual respiratory symptoms of persons entering the buildings. These symptoms may indicate gas concentrations immediately hazardous to human health.

- Fence around pits to keep children and other nonworkers away from the pit. Keep gates locked to prevent anyone else from entering the area.
- Provide mechanical ventilation in closed buildings to provide as much ventilation as possible during pit agitation. Turn all fans on during agitation and throughout the entire pump-out period. This is the time of greatest danger and when most deaths and injuries occur.
- Keep workers away from the pit and out of the building during and immediately after agitation. Move animals out of the building if possible.
- Post warning signs at common potential entry points of confined spaces where hazardous gas concentrations could occur.
- Warning decals are available from the Michigan Department of Labor-S.E.T. Division, P.O. Box 30015, 7150 Harris Dr., Lansing, MI 48909. (Ask for SET #2054 confined space decal sign.)
- Thoroughly ventilate and continue ventilation while working around a pit. Have a second person standing by before attempting to enter a building to rescue an animal or coworker. If thorough ventilation is not immediately possible, a self-contained breathing apparatus should be worn. Failure to use this equipment could result in death or serious health impairment of the rescuer.
- Consider installing railings on all walkways and permanent ladders on the inside wall of the tank. Construct lids or tops on all ground level pits, or fence around them where possible.
- If possible, remove clogged or damaged pumps from the tank to make repairs instead of entering the pit. Remind children, visitors and any non-essential workers to stay away from manure pits and transfer/holding tanks, especially during agitation and pumping. Do not allow people to enter livestock buildings during agitation and pumping of manure pits under the building floor.

WHEN TO CONSULT A PHYSICIAN

Livestock confinement operators should consult a physician whenever they experience one or more of the following symptoms:

- Persistent cough, especially a cough accompanied by large amounts of phlegm, shortness of breath, or a feeling of chest tightness.
- Wheezing, chest tightness, or shortness of breath which develops while working in a confinement building.
- Episodes of flu-like illness with fever, headache, muscle aches, cough, chest tightness, and shortness of breath that develops several hours after entering the confinement building.
- Excessive and persistent shortness of breath at any time.
- Excessive fatigue or intolerance to exercise.
- Any respiratory symptoms following a known exposure to high concentrations of gas associated with pit agitation.
- Livestock confinement operators should also consider having a yearly physical examination which will enable the physician to examine the patient's respiratory condition and compare any changes in lung function from year to year.

REFERENCES

- *Swine Confinement and Respiratory Health*, University of Iowa, Institute of Agricultural Health and Occupational Medicine, 1989.
- *Hazardous Gases in Manure Tanks in Livestock Operations*, 1989, Michigan State University, Agricultural Engineering Information Series, AEIS #573.

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Michigan State University, Agricultural Engineering Department.

Howard J. Doss, Extension Agricultural Safety Specialist; Howard L. Person, Extension Agricultural Engineer, and William McLeod, Agricultural Engineering, Michigan State University Extension, East Lansing, Michigan 48824. 5/93. Funded by the National Institute of Occupational Safety and Health - #UO5/CC-4506052-02.

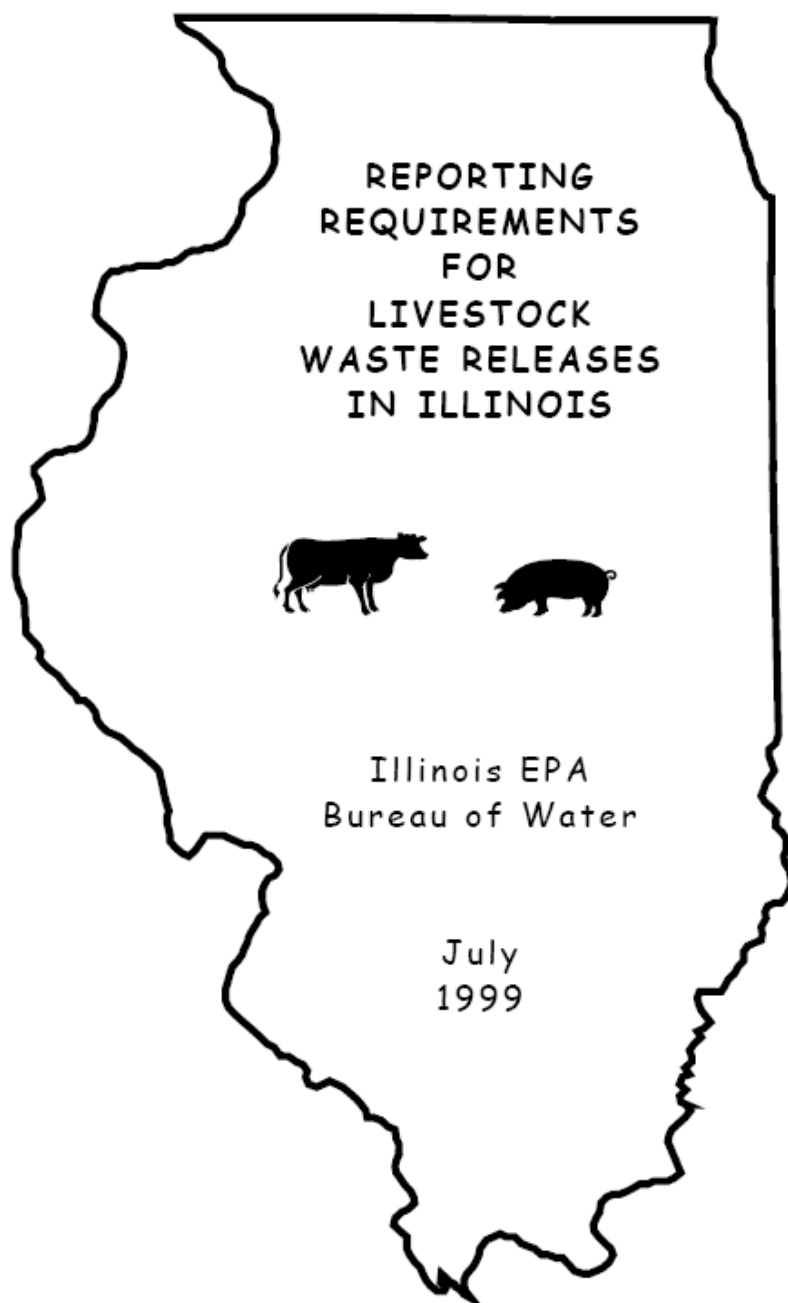
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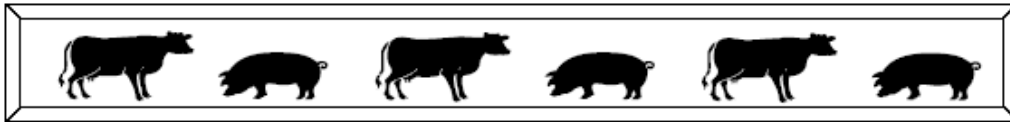


Illinois
Environmental
Protection Agency

Bureau of Water
P.O. Box 19276
Springfield, Illinois 62794-9276

July 1999





The Livestock Management Facilities Act requires an owner or operator of a livestock waste handling facility to report any release of 25 gallons or more of livestock waste within 24 hours after discovery of the release into the environment. This reporting requirement includes releases from livestock waste handling facilities and releases from the transportation of livestock waste.

Initial notification should be made by calling the Illinois Emergency Management Agency (IEMA). The IEMA maintains a 24-hour emergency notification line. Information to be reported includes the location, amount, apparent environmental impacts of the release, and actions taken to contain or mitigate the release.

**In Illinois call (800) 782-7860.
Outside of Illinois call (217) 782-7860.**

A written report to the Illinois EPA confirming the information provided by telephone is required within five days after discovery of the release. See insert for "Required Report Information Form".

Send Written Reports to:

Illinois EPA
Bureau of Water, Compliance Assurance Section
P.O. Box 19276
Springfield, IL 62794-9276
Send Faxes to: (217) 557-1407

Releases of any quantity which enter surface waters, (including releases to sinkholes, drain inlets, broken subsurface drains or other conduits to groundwater or surface water) must be reported immediately, except when immediate notification would impede the owner's or operator's efforts to correct the cause of the release or contain the livestock waste. In such cases, the report must be made as soon as possible but no later than 24 hours after discovery. In addition to the reporting requirement, the owner or operator is responsible for correcting the cause of the release as soon as possible, in order to minimize environmental damage.

The reporting requirement applies to waste storage, handling facilities, piping, pumps, and transportation equipment. Reporting is not required for releases of less than 25 gallons provided no quantity is released to waters of the state or from a controlled and recovered release during field application. A release does not include the normal application of livestock waste to cropland at established agronomic rates.

Failure to report a release could result in fines of up to \$1,000 for the first violation, \$2,500 for a second violation, and up to \$5,000 for a third or subsequent violations. Any environmental damage resulting from the release (such as a fish kill) may subject the owner or operator to additional fines and require him/her to reimburse the state for the value of the damage.

Inquiries concerning the release reporting requirements may be directed to:

Illinois EPA
Bureau of Water
Field Operations Section
(217) 782-3362.

**Illinois Environmental Protection Agency
Livestock Waste Release
Required Report Information Form**

Send written reports to:
Illinois EPA, Bureau of Water, Compliance Assurance Section
P.O. Box 19276, Springfield, Illinois 62794-9276

Report any release of livestock waste in Illinois by phone within 24 hours after discovery of the release. In Illinois call (800) 782-7860, outside of Illinois call (217) 782-7860. A written report (form optional) to the Illinois EPA confirming information provided by telephone is required within 5 days after discovery of the release. Attach additional pages if more space is required to answer questions.

Name of Person Reporting Release: _____ Telephone Number: _____

Release Source: _____ County: _____
(Where Release Occurred)

Date & Time Release Began: _____ Duration of the release: _____

Cause of Release: _____

Give distance and direction of the release from nearest town, village or municipality.
If possible give legal description down to quarter section.

Estimate the quantity that was released and the flow rate if the release is ongoing.

Quantity: _____ Gallons Flow Rate: _____ Gallons/Day

Circle appropriate area(s) into which the release occurred: Field Ditch Stream Other
If other please describe:

Estimated Release Extent: _____ Sq. Ft _____ Sq. Yd _____ Acres

What are the apparent environmental impacts of the release?

Contact Person for Additional Information: Name: _____
Telephone number: _____

Describe any dangers to health or the environment resulting from the release.

Describe all actions taken to respond to, contain and mitigate the release.

Facility Name: _____
Mailing Address: _____
City, State, Zip: _____

Signature: _____ Date: _____

The Illinois EPA is authorized to request this information under the Environmental Protection Act, Illinois Compiled Statutes ("ILCS"), 1999, as amended, Chapter 415 ILCS Sections 5/4(b) and 5/4(h). Use of this reporting format is voluntary, as long as the information required by the Livestock Management Facilities Act, Chapter 510 ILCS Section 77/18 concerning the release is reported in a timely manner.

Section 4

- Overview Maps
- Site Sketches
- Building Design Information

Section 5

- Watershed Reports

Section 6

Best Management Practices

including regulatory provisions of:

Illinois Livestock Management & Facilities Act

and

Illinois-NPDES Permit requirements.

OVERVIEW:

This Nutrient Management Plan conforms to the Illinois Livestock Management and Facilities Act and the Illinois NPDES general permit requirements.

Liquid manure is planned to be applied in the fall after harvest with a tank wagon or umbilical injection system. Manure is planned to be injected with a tool bar knife attachment behind the tank wagon or a drag house system.

A contractor service will be used to apply the manure. Records will be kept of all manure and fertilizer applications. Individual field recommendations and record-keeping forms are located in Section 10 and arranged year by year.

Phosphorous: The soils in this area have relatively high Phosphorus supplying ability. Phosphorus build up is recommended up to 40 lb/acre. At Bray P1 soil tests above 40 lb/acre only maintenance (replacement) rates are recommended. All fields included in this plan have soil test P averaging greater than 40 lbs/acre Phosphorous. Maintenance only rates of Phosphorous are recommended for these fields.

Potassium: The soils in this area have relatively high Cation Exchange Capacity and high natural capacity to supply Potassium. Only maintenance (replacement) rates of K are recommended when K soil tests are above 300 lbs/acre. All fields included in this plan have soil test K averaging greater than 300 lbs/acre Phosphorous. Maintenance rates only of Potassium are recommended.

It is generally not considered economically justifiable to maintain soil test levels higher than 60 lbs/ac P1, and 400 lb/ ac K when buying commercial P and K fertilizers.

For maximum yields and soil fertility, it is recommended to maintain a soil pH of at least 6.0 for corn soybean rotations. If pH is less than 6.0, liming material should be applied at U of I recommended rates based on the CCE (Calcium Carbonate Equivalent) rating and the fineness of the limestone material. If alfalfa or clover is part of the rotation pH should be maintained near 6.5. Average pH values range from 5.8 to 6.9. It is recommended that field MCCF-2 (which has average pH of 5.8) receive 2-3 tons per acre of lime as soon as practical.

Soil Testing Plan

Soil test will be taken every 3 years. Soil tests should be taken in the fall after crops are removed, and before any manure or fertilizer would be applied. **See Section 7.**

The fields currently have a very good fertility levels for P and K as indicated by the soil tests. All fields in this nutrient management plan have current soil test results and can be found under each field tab.

Manure and Wastewater Testing/Analysis Plan

Manure shall be analyzed on an annual basis from each storage structure for:

% Solids, Total N, Organic N, NH_3 , P_2O_5 , K_2O , and pH. **See Section 8.**

Considerations to reduce Odor Problems:

Manure odors, manure and mud on the road, and concerns about manure runoff are leading causes of complaints against farmers. To maintain good farm neighbor relations:

- use manure management practices that minimize odors and protect against runoff.
- maintain open communication with neighbors about manure spreading schedules.
- be willing to modify spreading times and locations to accommodate neighbors.
- use transportation practices that keep public roadways free of mud and manure.
- manure odors worsen as a result of storage time.
- warm temperatures increase odors
- moisture content greater than 80 percent increase odors
- mixing of anaerobically stored manure with air during agitation and spreading increases odors.

The following practices can minimize neighbors' concerns associated with manure odors:

- Reduce or eliminate manure spreading on fields adjacent to residential areas, especially on weekends or holidays.
- Use spreading equipment that keeps the manure low to the ground.
- Incorporate manure during or soon after application.
- Spread manure in the morning when temperatures are cool. As air warms, rising air will help dissipate odors.
- Install tree buffers to absorb odors and prevent them from moving toward neighbors.
- Inform neighbors of manure application practices and schedules and provide information about nutrient management practices.

Considerations for choosing Manure application method.

Incorporation of manure into the soil reduces the risk of nutrient or manure transport to lakes and streams. It also reduces odors associated with manure applications. Surface application of manure without plow-down or disking poses the greatest risk of nutrient loss and contamination of surface waters.

- The urea in the liquid portion is rapidly converted to ammonium, which may be lost through volatilization.
- Parasitic pathogens and soluble forms of nitrogen and phosphorus may be transported to surface water bodies through water runoff.

Incorporation of manure can pose risks to groundwater contamination on:

- sandy soils.
- soils that have fractured bedrock.
- soils that have preferential flow pathways such as root channels and wormholes.
- wet or cracked soils that are tile drained.

Ammoniacal nitrogen in manure, which is converted to nitrate, is available for plant uptake but may be leached into the subsoil or groundwater. Parasitic pathogens in

manure, such as *Cryptosporidium* and *Giardia*, can be transported to ground or surface water through preferential flow pathways in the soil.

Considerations for Timing of Manure applications in relation to plant growth.

Manure applications will be most effective as nutrients if made close to the time of plant growth. Potential for nutrient losses is greater for fall and winter applications because nutrients are not being used for plant growth and frozen ground restricts infiltration. If daily spreading practices require manure applications in the fall and winter, apply manure to fields that will be planted to winter grains or cover crops or fields containing vegetation or crop residues. Apply manure only to fields that have a low potential for flooding, saturation, or runoff.

Hydrological conditions of the field and rainfall following manure application.

Saturated field conditions increase the risk that nutrients and parasitic pathogens in manure will be transported through runoff or subsurface flows to lakes and rivers. Intense or high-accumulation rainfall following manure applications increases the risk of runoff and transport of manure to surface waters. Heavy rainfall can also increase risks of nutrient or pathogen leaching or transport through the soil into groundwater.

Recommended Management Practices to Reduce Phosphorus Losses

1. Perform soil test regularly (minimum of every four years) and follow University of Illinois' recommendations for application rates.
2. Do not maintain excessively high phosphorus soil test levels, especially in areas prone to phosphorus transport.
3. Use variable rate applications to increase the precision of phosphorus applications and to maintain rates needed for optimal crop production.
4. In areas where phosphorus losses occur primarily from surface runoff, incorporate or inject phosphorus beneath the soil surface.
5. Control soil erosion to 'T' or less.
6. Utilize agronomic practices that optimize crop production to maximize phosphorus utilization.
7. Use filter strips or riparian forest buffers to reduce offsite transport or particulate phosphorus.
8. Avoid applying nutrients when soils are frozen or covered with ice or snow.
9. Fall applications of phosphorus that are not incorporated into the soil should not be applied on slopes greater than 5% unless runoff control measures such as heavy residue cover, contour mulch tillage, contour strip cropping, or terraces have been applied.
10. Minimize surface runoff of water by reducing compaction, maintaining high crop residue levels, installing runoff control structures such as terraces, etc.
11. Avoid stratification on soils that are susceptible to runoff and erosion.

Recommended Management Practices to Reduce Nitrogen Losses:

1. Set realistic yield goals and follow University of Illinois' nitrogen recommendations.
2. Take credit for nitrogen from **all** sources: previous legume crop, incidental nitrogen contained in di-ammonium phosphate (DAP) and other fertilizers, manure applications, etc.
3. Determine nitrate loss potential using the table above. Use this as a guideline to determine application timing for fields with various soil textures. (More detailed information on total nitrogen loss potential is available in the University of Illinois Agricultural Experiment Station Bulletin 784, Nitrogen-Loss Potential Ratings for Illinois Soils.)
4. In fields where spring applications are not usually troublesome, apply the majority of the nitrogen shortly before or after planting.
5. For fall applications, use a nitrification inhibitor or wait until the soil had cooled down to 50°F. Even when applying a nitrification inhibitor, do not apply nitrogen until soil has cooled to 60°F. Probable dates when these soil temperatures are expected are contained in the Illinois Agronomy Handbook. In most cases, fall nitrogen and manure applications should not begin prior to the third week in October.
6. Use adequate levels of phosphorus, potassium, and other nutrients to ensure optimum yields and nitrogen use efficiency.
7. Conduct a post-harvest evaluation of the nitrogen program:
 - Compare actual yields vs. yield goal;
 - Evaluate factors affecting yields and nitrogen use efficiency;
 - Consider using plant tissue analyses and an end-of-season corn stalk nitrate test to evaluate plant nitrogen sufficiency;
 - Refine nitrogen rates for future years.
8. Review each nutrient management plan annually to determine if changes in the nutrient budget are needed.
9. Calibrate application equipment annually, at minimum, to ensure uniform distribution of material at planned rates.
10. Consider use of filter strips and riparian forest buffers to intercept nutrients transported surface runoff to the stream. (Note: These practices will have minimal effect in areas with extensive subsurface drainage.)
11. Avoid applying nitrogen around environmentally sensitive areas such as sinkholes, wells, gullies, ditches, surface inlets, or rapidly permeable areas.
12. Use cover crops, such as rye, to capture residual nitrogen after harvest and prevent nitrogen from being lost between harvest and planting of the next crop.
13. Utilize water table management to reduce artificial drainage when it is not needed for crop growth or field operations.
14. Outlet tiles into constructed wetlands to remove a portion of the nitrogen before tile effluent discharges into lakes or streams.

Livestock Management Facilities Act Waste Application Provisions

The following provisions will be observed:

O) *Livestock waste applied within ¼ mile of any residence not part of the facility shall be injected or incorporated on the day of application. However, livestock management facilities and livestock waste handling facilities that have irrigation systems in operation prior to May 21, 1996, or existing facilities applying waste on frozen ground, are not subject to the provisions of this subsection.*

P) *Livestock waste may not be applied within 200 feet of surface water unless the water is upgrade or there is adequate diking and waste will not be applied within 150 feet of potable water supply wells*

Q) *Livestock waste may not be applied in a 10-year flood plain unless the injection or incorporation method of application is used.*

R) *Livestock waste may not be applied in waterways.* For the purposes of this Part, a grassed area serving as a waterway may receive livestock waste through an irrigation system if there is no runoff, the distance from applied livestock waste to surface water is greater than 200 feet, the distance from applied livestock waste to potable water supply wells is greater than 150 feet; the distance from applied livestock waste to a non-potable well, an abandoned or plugged well, a drainage well, or an injection well is greater than 100 feet; and precipitation is not expected within 24 hours;

S) *If waste is spread on frozen or snow-covered land, the application will be limited to land areas on which:*

- 1) *land slopes are 5% or less; or*
- 2) *adequate erosion control practices exist [510 ILCS 77/20(f) (9)];*

T) The owner, operator, or certified livestock manager shall inspect all bermtops, exterior berm sides, and non-submerged interior berm sides of earthen lagoon or earthen waste storage structures for evidence of erosion, burrowing animal activity, and other indications of berm degradation on a frequency of not less than once every two weeks.

U) Livestock waste will not be applied during a rainfall or to saturated soil and that conservative waste loading rates will be used in the case of a high water table or shallow earth cover to fractured bedrock. Caution should be exercised in applying livestock wastes, particularly on porous soils, so as not to cause nitrate or bacteria contamination of groundwaters.

IL- NPDES General Permit Provisions

Storm Water Management Plan

Surface Water drainage from the production site is controlled to prevent contact with manure, feed or other materials associated with production.

1. All manure is stored in under barn covered pits.
2. Methods of application may include the following:
 - A. Umbilical injection system.
 - B. Tank wagons.
3. Roof water runoff drains from the buildings through waterways and is not allowed to stand near the buildings where it might enter the manure storage pits.
(See farmstead map, attached, that indicates storm water drainage plan).
4. Pit pump-outs are covered and secured at all times except when manure is being removed or transferred to the earthen basin.
5. Surface ditches are graded to prevent ponding and have established fescue grass to prevent erosion.
6. All feed is stored in metal bins and augured into the buildings as needed.
7. Load out chutes are cleaned immediately after use to remove manure and bedding from exposed areas to prevent storm water runoff of manure and soiled bedding.
8. Roads into the facilities for delivery of feed and for transporting livestock are graveled 'all-weather' roads. The roads are graded to prevent ponding and side slopes and waterways have established grasses to prevent erosion.
9. Storage and maintenance of manure handling equipment is provided by contracted manure handling service and/or housed in a machine shed that is located off-site.

Operation and Maintenance Procedures:

The following activities are performed routinely to keep the storm water management plan functioning as designed.

1. Weekly inspections shall be conducted of the roofs, gutters, tile drains, surface ditches, waterways that drain surface water from the production site, mortality storage area and roofs over the load out areas.
2. Any deficiencies found shall be corrected as soon as possible and records shall be kept of the inspections and any corrective actions performed.
3. See attached Operation & Maintenance Records forms that will be maintained on site to record weekly inspections and corrective actions that are taken.

Additional Stated Intentions:

The facility operator intends to manage this site according to a Nutrient Management Plan, Storm Water Plan, and Spill Control Plan that will meet the requirements of the general NPDES permit IL00A01 or, alternatively, an individual permit if issued by IL-EPA.

These permit provisions include discharge limitations, field application of livestock waste, monitoring and reporting requirements, and release provisions as contained in the NPDES permit that will be issued to this facility.

ODOR AND PATHOGEN MANAGEMENT

It may not be practical or feasible to eliminate all odor emissions from the operation, but it is possible to manage or mitigate the odor. Some variables that effect odor are:

* Type of operation	* Building design
* Ventilation method	* Animal numbers
* Animal diets	* Manure treatment systems
* Season	* Topography
* Management skill or effort	*

1. **Animal Cleanliness**
 - a. Clean, dry, and healthy animals are less odorous. Dirty, manure-covered animals promote accelerated bacterial growth and the production of odorous gases.
 - b. Animal stress can also be correlated to an increase in odor production. Ventilation and environmental controls for the buildings must be properly designed and maintained to keep the animals healthy.
2. **Minimize Dust**
 - a. It has been established that there is a correlation between dust and odor emission. Dust particles absorb and concentrate odorous compounds. As the dust particles are carried by the wind, so is the odor.
 - b. Therefore, minimizing dust will reduce odor. Most farm dust comes from feed, fecal matter and, in the case of poultry, from feathers and litter. Dust also comes from animal skin, insects, and other sources.
 - c. Buildings should be cleaned of all dust between batches of animals (including fans, shutters, and screens.)
3. **Waste Storage Facility** – to reduce emissions of greenhouse gases, ammonia, volatile organic compounds, and odor:

Consider alternatives and additional practices including covered anaerobic digesters (365), and composting facilities (317).

Adjusting pH below 7 may reduce ammonia emissions from the waste storage facility but may increase odor when waste is surface applied.

Consideration should be also given to the separation of the solids from the waste mixture. This will dilute the liquid waste product being treated in the lagoon and cause less odor. The solid separated material can be composted and sold or land applied.
4. **Animal diets** can also be manipulated to produce less manure production and odors from the manure. Much of the odors from manure are from nitrogen, sulfur, and carbohydrate containing volatile compounds. Balancing the diet with proper amounts and forms of protein and reducing excess protein in the diet will reduce nitrogen excretion and odor emissions from the manure.
5. **Proper Disposal of Mortality** – Normal mortality for the animal feeding operation *must* be properly handled for both odor control and biological security of the operation. Composting, incineration, and rendering are acceptable methods for mortality disposal.
6. **Good Fly and Rodent Control Programs** – These programs must be a continuous process on the farm. When feed and waste products are properly handled, these problems are minimized.

7. **Utilize Trees** – While trees should not grow directly adjacent to facilities, wind breaks of trees correctly positioned near the facility not only create a visual barrier but can also provide a large filtration surface for dust and odorous compound removal. Trees can absorb odorous compounds and create turbulence that enhances odor dispersion and dilution. Trees also can create a cooler microclimate around the facility, which can reduce odors.
8. **Land Application**
 - a. Note wind direction and avoid spreading when the wind is blowing toward populated areas.
 - b. Avoid spreading on weekend/holidays when people are likely to be engaged in nearby outdoor and recreational activities.
 - c. Spread in the morning when air begins to warm and is rising, rather than in the afternoon.
 - d. Use available weather information to best advantage. Turbulent breezes will dissipate and dilute odors. Hot and humid weather tends to concentrate and intensify odors, particularly in the absence of breezes. Rain will remove the odor from the atmosphere.
 - e. Use natural vegetation barriers, such as woodlots or windbreaks, to help dissipate and filter odors.
 - f. Establish vegetated air filters in the field border area by planting conifers and shrubs as windbreaks and visual screens between cropland and residential developments.

Pathogen Management

Many of the same conservation practices used to prevent nutrient movement from this animal feeding operation, such as runoff and erosion control are likely to minimize the movement of pathogens. Pathogenic organisms occur naturally in animal wastes. Exposure to some pathogens can cause illness to humans and animals, especially for immune-deficient populations.

Normal Mortality Management

To decrease non-point source pollution of surface and ground water resources, reduce the impact of odors that result from improperly handled animal mortality, and decrease the likelihood of the spread of disease or other pathogens, proper and approved handling and utilization methods shall be implemented in the handling of normal mortality losses.

Discharge to waters of the State of pollutants from dead livestock or dead animals disposal facilities will be avoided by proper management of mortalities on this operation. Mortalities shall not be disposed of in the liquid livestock waste storage pits or any other manure that causes pollution of surface waters or ground waters.

Plan for Proper Management of Dead Animals

The following paragraph describes normal animal mortality management for this operation in a manner that protects surface and ground water quality.

- Currently mortalities are managed by rendering. A steel container is provided by the rendering service and placed beside the driveway between the farmstead and Barn 1.
- All dead pigs are removed within 24 hours of discovery and placed in the mortality container. The rendering service makes regular pickups several times per week or if called will pickup on non-scheduled days.
- In the future, a new composter barn may be built as an alternative to rendering.
- Burial can be used as an alternative mortality management method if needed. Burial site selection should be at least 200 feet from surface waters or streams. Bottom of the burial pit should be at least 2 feet above groundwater and dead animals must have at least 6" of cover above the uppermost carcass in the pit or trench.
- Follow the Illinois Dead Animal Disposal Act regulations (included at end of section).

Catastrophic Mortality Management

Plan for Catastrophic Animal Mortality Handling

The following table describes how catastrophic loss of animals is planned to be managed in a manner that protects surface and ground water quality. All national, state and local laws, regulations will be followed and guidelines used that protect soil, water, air, plants, animals and human health.

A Rendering Service will be called as first choice to manage large quantities of mortalities. All mortalities should be removed from buildings within 24 hours of discovery the mortality event.

If a rendering Service is not available to haul sufficient numbers of mortalities in a timely manner, then composting or burial may be used as alternative methods.

Temporary composting may be allowed under direction of the State Veterinarian's office. A site must be chosen with impermeable surface to prevent leaching into groundwater. Sides of the compost bins may be temporarily made of round bales of hay or stalks. Sufficient composting material must be used. Finished compost must be spread at agronomic rates. Up to 50% of the compost may be mixed back into the composter to be reused as carbon source. Follow the Illinois Dead Animal Disposal Act regulations (included at end of section).

Burial: Burial in pits or trenches maybe used as a possible management option. Sites must be available for state inspection and are burials are limited to 1 lb per square foot and 3000 lbs per site. This may not be practical for catastrophic losses that might occur. Contact the Illinois State Veterinarian's office for more information specific to the locations where burial is proposed. Soils that do not have high water tables within 2 feet of the bottom of the trench or pit and are not with 200 feet of streams or pond or wells may be considered. At least 6 inches of cover of compacted soil must be placed over the uppermost carcass. Follow the Illinois Dead Animal Disposal Act regulations (included at end of section).

Important! In the event of catastrophic animal mortality, contact the following authority before beginning carcass disposal:

Authority name: Illinois State Veterinarian

Contact name: Mark J. Ernst, DVM
State Veterinarian
Division of Food Safety and Animal Protection
Bureau of Animal Health and Welfare
Illinois Department of Agriculture

Phone number: (217) 782-4944

Fuel & Chemical Handling

Detergents and disinfectants are stored in the swine barn offices and used for power washing and cleanup in between groups of pigs.

Rodenticides may be stored in the barn offices periodically prior to placement in the bait stations around the perimeter of the barns.

No gasoline or diesel fuel is stored on this site. Transfer tanks on trucks or small containers of fuel may be used to deliver fuel periodically to for mowing equipment, generators or power washing equipment.

No herbicides or insecticides are stored on this site.

No other hazardous chemicals are stored at this location.

Fuel handling:

Small spills during fuel transfer should be avoided. Petroleum fuel evaporates rapidly at the land surface; however fuel readily seeps into the soil. Local geology and soil type determines how quickly fuel may reach groundwater supplies. Once in the groundwater environment, fuel is relatively stable, making it difficult to clean up. Even small spills or leaks in the same place over time are a potential threat to water resources.

To reduce potential leaks and spills during fuel transfer:

- Always supervise fuel transfer from storage to equipment to prevent spillover.
- Use a can to catch any drops that may follow after shutting off the fuel nozzle.
- Replace a leaking or defective nozzle promptly.
- Enforce a "no smoking" rule at the fuel handling and storage facility.
- Keep fuel pumps and nozzles secure from children or vandalism.
- Label each pump or nozzle as to the type of fuel dispensed.

ASTs

Above-ground Storage Tanks (ASTs) may be used on this operation in the future observing the following guidelines.

Tanks will be protected from impact by farm equipment and personal vehicles. Proper placement of a new tank will greatly reduce any risks associated with an AST.

The following checklist will followed for ASTs:

- Comply with state-local rules for electrical safety and fire prevention. Keep a fire extinguisher in close proximity (e.g. within 75 feet) of ASTs.
- AST's should be located at least 50 feet from any building or combustible storage.
- Properly label tank contents, describe the health and physical hazards of the product.
- Secure against vandalism and tampering.
- If top-opening only, place on a stable base of timbers, blocks, concrete, etc. ASTs should not be in contact with bare soil.
- Display a "No Smoking" sign.
- Guard tank against impact. Choose a site where farm vehicles can easily maneuver for fueling.
- Enclose wiring in a conduit.
- Locate ASTs where soil strength is adequate to hold the weight of a full storage tank (or tanks).

CHEMICALS: *If other hazardous chemicals are stored on this site in the future, the following guidelines should be implemented.*

	Measure
X	<i>All chemicals should be stored in proper containers. Expired chemicals and empty containers are properly disposed of in accordance with state and federal regulations. Pesticides and associated refuse should be disposed of in accordance with the FIFRA label.</i>
X	<i>Material Safety Data Sheets (MSDS) on hazardous materials should be obtained and maintained in a location known to and accessible by everyone that could come into contact with the chemicals. These MSDS sheets provide guidance on proper handling and safety warnings in case of spills or releases, and should be part of the Emergency Action Plan for the operation.</i>
X	<i>Emergency procedures should be implemented and equipment in place to contain and clean up chemical spills.</i>
X	<i>Chemical handling and equipment wash areas should be designed and constructed to prevent contamination of surface waters and waste water and storm water storage and treatment systems. <u>Furthermore, No chemicals should be disposed of in, the manure pits, wastewater, or waste management systems.</u></i>
X	<i>Equipment wash areas should be designed and constructed to prevent contamination of surface waters and waste water and storm water storage and treatment systems.</i>

TITLE 8: AGRICULTURE AND ANIMALS
CHAPTER I: DEPARTMENT OF AGRICULTURE
SUBCHAPTER b: ANIMALS AND ANIMAL PRODUCTS (EXCEPT MEAT
AND POULTRY INSPECTION ACT REGULATIONS)
PART 90

ILLINOIS DEAD ANIMAL DISPOSAL ACT

Note: this document only includes on-farm disposal regulations. Contact the Department for text of the complete regulation.

Section	
90.5	Definitions
90.105	Owner Transportation to Landfill
90.110	On-The-Farm Disposal

AUTHORITY: Implementing and authorized by the Illinois Dead Animal Disposal Act [225 ILCS 610].
SOURCE: Regulations Relating to the Disposal of Dead Animals, filed January 17, 1972, effective January 27, 1972; filed December 6, 1972, effective December 16, 1972; codified at 5 Ill. Reg. 10458; amended at 7 Ill. Reg. 852, effective January 10, 1983; amended at 8 Ill. Reg. 5937, effective April 23, 1984; amended at 13 Ill. Reg. 3681, effective March 13, 1989; amended at 16 Ill. Reg. 11773, effective July 8, 1992; amended at 18 Ill. Reg. 14917, effective September 26, 1994; amended at 20 Ill. Reg. 294, effective January 1, 1996; amended at 28 Ill. Reg. 13415, effective October 1, 2004.

NOTE: In this Part, superscript numbers or letters are denoted by parentheses; subscripts are denoted by brackets.

Section 90.5 Definitions

For the purposes of this Part, the following definitions shall apply:

“Compost” means the humus-like product of the process of composting waste, which may be used as a soil conditioner.

“Composting” means the biological treatment process by which microorganisms decompose the organic fraction of waste, producing compost.

“Fish” means the bodies and parts of bodies of all animal aquatic life and the parts or waste thereof.

“Poultry” means chickens, turkeys, domestic game birds, and domestic water fowl.

“Poultry litter” means a nitrogen source such as manure or cake (i.e., the wet, compact crust that forms around feeders and waterers or litter such as found in layer operations and slatted-floor breeders).

“Straw” or “bulking agent” means straw or any alternative carbon source including, but not limited to, corn stover, soybean pods and trash, hay, sawdust, grass clippings, rice and peanut hulls, tomatoes, peat moss, pomace of grapes, wood chips, bark, shredded brush, and leaves.
(Source: Added at 16 Ill. Reg. 11773, effective July 8, 1992)

Section 90.105 Owner Transportation to Landfill

When an owner or person employed by the owner is transporting a dead animal to a landfill that is open and willing to accept animals, the following guidelines shall be followed:

- a) The most direct route shall be utilized.
- b) The bed of the vehicle transporting the animal shall have covering to prevent leakage to the road surface (e.g., plastic covering or barrels).
- c) The animal shall be covered during transport.

(Source: Added at 20 Ill. Reg. 294, effective January 1, 1996)

Section 90.110 On-The-Farm Disposal

Persons disposing of animals, poultry, fish, or parts of bodies thereof, other than to a licensed renderer, shall comply with the following:

- a) Disposal by Burning
 - 1) No open burning will be permitted.
 - 2) Any disposal by burning must be performed with an incinerator that is in compliance with the Illinois Environmental Protection Act [415 ILCS 5].

- b) Disposal by Burying
 - 1) Burial shall be on the premises owned or operated by the owner of the dead animal.
 - A) Location shall be in an area where runoff will not contaminate water supplies or allow leachate to discharge into streams, ponds or lakes.
 - i) Dead animals shall not be buried less than 200 feet from a stream, private potable water supply well, or any other potable water supply source, except in accordance with Section 14.2(b) of the Illinois Environmental Protection Act.
 - ii) Dead Animals shall not be buried within the applicable 200 or 400 foot minimum setback zone of an existing community water supply well as established pursuant to Section 14.2 of the Illinois Environmental Protection Act.
 - B) Dead animals shall not be buried less than 200 feet from any existing residence not owned or occupied by the owner of the animal.
 - C) No more than a ratio of one pound of dead animals per one square foot of surface area shall be buried on an annual basis. No more than 3,000 pounds of dead animals shall be buried in each site location, and the same site shall not be used more frequently than once every two years for burial purposes. There shall be no more than three site locations within a radius of 120 feet.
 - 2) Burial depth shall be sufficient to provide at least a six-inch compacted soil cover over the uppermost part of the carcass. Precautions shall be taken to minimize soil erosion.
 - 3) The abdominal cavity of large carcasses shall be punctured to allow escape of putrefactive gasses.
 - 4) Lime or other chemical agent shall not be used to prevent decomposition.
 - 5) Precautions shall be taken at the site of burial necessary to prevent any disturbance by animal or mechanical means.
 - 6) Disease and nuisance vectors are to be minimized and controlled.
 - 7) Final cover or settling shall be limited to a 5% or less slope differential from the normal gradient of its general surroundings.
 - 8) Burial site locations shall be available for inspection by Department personnel during normal working hours.
- c) Disposal of poultry by composting. Persons disposing of poultry by means of composting shall comply with the following requirements:
 - 1) The composter shall meet the following criteria:
 - A) A roof shall cover the entire composting area.
 - B) An impervious, weight-bearing foundation such as concrete shall be used.
 - C) Rot-resistant building materials such as preservative-treated lumber shall be used.
 - D) The composter shall consist of primary and secondary bins.
 - E) The size of the composter shall be based on the farm's projected mortality rate of poultry, in which one pound of dead poultry per cubic foot of primary compost space per day is provided.
 - 2) Composting shall comply with the following guidelines:
 - A) A mixture of one part dead poultry (by weight), one and one-half part poultry litter, and one-tenth part of straw shall be used. For example: 400 pounds of dead poultry will require 600 pounds of poultry litter and 40 pounds of straw.
 - B) Layering shall be done in the following order, starting from the floor: (First layer) Straw, poultry litter, straw, birds, and poultry litter. Second and subsequent layers: straw, birds, and poultry litter.

- C) A 36-inch probe-type thermometer shall be inserted daily into the pile to check the temperature. Within two to four days, the temperature should peak between 135° F. and 150° F.
 - D) Once the temperature begins to fall from the peak (normally 7 to 10 days), the material shall be removed to the secondary treatment bin.
 - E) After 7 to 10 days in the secondary bin, the compost may be agronomically distributed over land under cultivation or reused in the composting process. For the purpose of this subsection (c)(2)(E), the agronomic rate is the annual application rate of poultry compost, either alone or in combination with other nutrient supplying materials, that is necessary to achieve a reasonable crop yield without exceeding crop nutrient requirements.
 - 3) The composted material may be substituted for up to one-half of the poultry litter and one-half of the straw.
- d) Disposal of fish by composting. Persons disposing of fish by means of composting shall comply with the following requirements:
 - 1) The composter shall meet the following criteria:
 - A) A roof shall cover the entire composting area.
 - B) An impervious, weight-bearing foundation such as concrete shall be used.
 - C) Rot-resistant building materials such as preservative-treated lumber shall be used.
 - 2) The base layer shall meet the following criteria:
 - A) Use 6 to 12 inches thick of a bulking agent.
 - B) Be no more than 6 to 8 feet wide, but as long as necessary to accommodate the day's supply of compost material.
 - 3) Composting shall meet the following guidelines:
 - A) Composting layer shall consist of a mixture of one part fish, three parts bulking agent and one part recycled compost (if available) or bulking agent and shall be mixed prior to use in the composting layer. The mixing of the materials for the composting layer shall be done in a manner to prevent leakage (e.g., stock tank, bucket, mixing drum).
 - B) The cover layer shall consist of two parts bulking agent and two parts recycled compost (if available) or two parts bulking agent and should reach a thickness of 6 to 12 inches.
 - C) Layering shall be done in the following order starting from the concrete: base layer, composting layer (fish, bulking agent and recycled compost), and cover layer. The composting and cover layers are piled on top of the base layer to form a trapezoid no higher than 4 feet.
 - D) Additions to the compost pile are done by adding new material to the end of the pile.
 - E) A probe-type thermometer shall be inserted daily into the pile to check the temperature. The temperature should peak between 140° F. and 165° F. The material can be recycled after it has composted for at least 2 to 3 weeks, and its temperature has dropped to air temperature.
 - F) After the temperature has dropped to air temperature (normally 2 to 3 weeks), the composted material may be used in the composting layer, or after one month, the composted material may be agronomically distributed over land under cultivation or reused in the cover layer. For the purpose of this subsection, the agronomic rate is the annual application rate of fish compost, either alone or in combination with other nutrient supplying materials that is necessary to achieve a reasonable crop yield without exceeding crop nutrient requirements.
- e) Disposal of swine by composting. Persons disposing of swine by means of composting shall comply with the following requirements:
 - 1) The composter shall be located entirely over impervious foundation materials.

- A) One of two foundations shall be used:
 - i) impervious soil (permeability equal to or less than 1×10^{-7} cm/sec. as defined in Section 651.0703 "Geotechnical considerations in waste facility siting", Agricultural Waste Management Field Handbook, Soil Conservation Service, U.S. Department of Agriculture, 1992). A 4 to 6 inch base of ungraded (varying particle size) field lime over the soil foundation is suggested as a runoff control measure.
 - ii) an impervious, weight-bearing foundation such as concrete or asphalt.
- 2) Surface water shall be diverted away from the composter.
- 3) Location shall be in an area where runoff will not contaminate water supplies or allow leachate to discharge into streams, ponds or lakes.
 - A) Composter shall not be constructed less than 200 feet from a stream, private potable water supply well, or any other potable water supply source, except in accordance with Section 14.2(b) of the Illinois Environmental Protection Act.
 - B) Composter shall not be constructed within the applicable 200 or 400 foot minimum setback zone of an existing community water supply well as established pursuant to Section 14.2 of the Illinois Environmental Protection Act.
- 4) The composter shall consist of primary and secondary bins. The size of the composter shall be based on the farm's projected mortality rate of swine during any three-month period. The primary and secondary bins shall each contain a minimum of 10 square feet of composting area for each 1000 pounds of carcass to be composted.
- 5) The composter shall be constructed of permanent rot-resistant wall materials, such as preservative-treated wood, concrete, or precast concrete such as highway lane dividers. Each composter bin shall be three sides of a rectangle or square. One side of the bin shall be left open for loading, unloading and mixing the compost. In emergency situations, hay bales of 48 inches or greater in diameter may be used on a temporary basis in the above configuration of side walls.
- 6) Composting shall comply with the following guidelines:
 - A) Coarse sawmill sawdust, shredded cornstalks, chopped straw, coarse-ground corn cobs, and other materials possessing like properties and having similar particle size are recommended for the carbon source.
 - B) It is expected that the carbon source will be required in the ratio of approximately one cubic foot of sawdust per ten pounds of carcass (3.7 cubic yards of carbon source per 1000 pounds of carcass). A supply of carbon source shall be stockpiled and maintained on the premises at all times when the composter is in operation.
 - C) Each compost bin shall have a layer of carbon source a minimum of 10 inches deep placed on the floor before the first carcass is placed in the bin. There shall be a minimum of 10 inches of carbon source between the carcass and each of the vertical walls of the bin. The carcass shall be covered with a minimum of 10 inches of carbon source. The carbon source shall be added to the pile as composting begins, daily or as frequently as needed to sustain a 10 inch cover of carbon source over all carcasses in the bin's uppermost layer.
 - D) A compost thermometer with a probe at least 36" long shall be obtained and used daily to measure the temperature of the compost in the middle of each bin. The compost temperature should reach 135 to 160° F. (57° to 71° C.) and be recorded daily. Compost temperature indicates microbial activity and stage of composting process. The composting process shall be managed in such a way that the heating and decomposition can proceed to completion. If aerobic composting does

not begin with 7 days, i.e., if temperatures do not rise above 135° F., the compost pile shall be turned and moisture content of the carbon source adjusted to allow the process to proceed. Temperature records shall be available for examination until the compost is disposed of as in subsection (e) (6) (G).

- E) The carbon source and carcasses may be placed in the bin until the bin is full.
 - F) All compost from the primary bin shall be allowed to undergo a second composting phase as follows:
 - i) When the temperature surrounding the last carcass placed in the composter drops below 130° F. (typically up to three months after the last carcass addition), the compost in that bin shall be transferred to a second bin and allowed to reheat, through a second composting cycle. Moisture shall be added to the compost as needed to promote further composting activity.
 - ii) Compost shall remain in the second bin for the duration of the secondary composting cycle (typically three months). Temperature of the compost shall be measured using the compost thermometer to monitor the composting process.
 - G) Finished compost shall be agronomically distributed over land under cultivation or reused in the composting process. Finished compost may be returned to the primary composting bin in the ratio of up to 50 percent finished compost to fresh carbon source. For the purpose of this subsection, the agronomic rate is the annual application rate of swine compost, either alone or in combination with other nutrient supplying materials that is necessary to achieve a reasonable crop yield without exceeding crop nutrient requirements.
- f) Disposal of cattle, sheep or goats by composting. Persons disposing of cattle, sheep or goats by means of composting shall comply with the following requirements:
- 1) Carcasses of those animals dying of suspect neurological causes shall not be composted.
 - 2) The composter shall be located entirely over impervious foundation materials. One of two foundations shall be used:
 - A) Impervious soil (permeability equal to less than 1×10^{-7} cm/sec., as defined in Section 651.0703 (Geotechnical considerations in waste facility siting) of the Agricultural Waste Management Field Handbook, Soil Conservation Service, U.S. Department of Agriculture, 1992). A 4 to 6 inch base of ungraded (varying particle size) field lime over the soil foundation is suggested as a runoff control measure.
 - B) An impervious, weight-bearing foundation such as concrete or asphalt.
 - 3) Surface water shall be diverted away from the composter.
 - 4) Location shall be in an area where runoff will not contaminate water supplies or allow leachate to discharge into streams, ponds or lakes.
 - A) The composter shall not be constructed less than 200 feet from a stream, private potable water supply well, or any other potable water supply source, except in accordance with Section 14.2(b) of the Illinois Environmental Protection Act.
 - B) The composter shall not be constructed within the applicable 200- or 400-foot minimum setback zone of an existing community water supply well as established pursuant to Section 14.2 of the Illinois Environmental Protection Act.
 - C) A composting site shall be located at least 1/4 mile from the nearest occupied residence (other than a residence located on the same property as the facility).
 - 5) The composter shall consist of at least two bins, allowing operation as primary and secondary composting sequences.

- 6) The composter shall be constructed of permanent rot-resistant materials, such as preservative-treated wood or concrete.
- 7) The size of the composter shall be based on the facility's greatest projected mortality rate of animals during any three-month period of the year.
- 8) The composter bin minimum width dimension shall be large enough to allow placement of the largest carcass with at least one foot of space all around the carcass for carbon source material, or at least one foot greater than the width of the loader bucket used for turning the compost, whichever is larger.
- 9) A composting thermometer with a minimum probe length of 36" shall be kept available at the facility for monitoring progress of the compost process.
- 10) Records of carcass additions, composter operation and land application of finished compost shall be maintained on the premises.
- 11) Composting shall comply with the following guidelines:
 - A) Coarse sawmill sawdust, shredded corn stalks, chopped straw, coarse-ground corn cobs, and other materials possessing like properties and having similar particle size are recommended as the carbon source.
 - B) A supply of carbon source materials shall be stockpiled and maintained on the premises at all times when the composter is in operation.
 - C) Finished compost from the carcass composting process (secondary bins) may be re-used in an amount appropriate to maintaining proper composting operation (up to 50% volume of re-used finished compost suggested).
 - D) Each carcass placed on the floor of a primary bin shall be underlain with at least 12 inches of absorbent carbon source material.
 - E) Carcasses weighing more than 300 lb. shall be processed prior to covering with carbon source material. Processing may consist of, but is not limited to:
 - i) opening the abdominal cavity to facilitate contact of carbon source material and reduce distention of carcass with gases; and
 - ii) incising the large limb muscles to facilitate contact of carbon source material and thereby hasten composting.
 - F) Each carcass placed in the primary composter bin shall be immediately covered with a layer of carbon source material to a depth of at least 12" on top and all sides. Carbon source material shall be added to the composter daily or as frequently as needed to sustain a cover of carbon source material over all parts of carcasses in the bin's uppermost layer.
 - G) Carcasses and carbon source material may be added to the primary bin until the bin is full.
 - H) The composting process shall be monitored and managed in such a way that heating and decomposition can proceed to completion (typically three months in the primary bin from the time the last carcass is placed in the bin and another three months in the secondary bin from the time the compost is moved into the secondary bin from the primary bin). Water shall be added as necessary to adjust the moisture content of the compost and promote further composting activity.
 - I) Finished compost shall be agronomically distributed over land under cultivation or reused in the composting process. Finished compost may be returned to the primary composting bin in a ratio of up to 50% finished compost to fresh carbon source material. For the purpose of this subsection (f)(11)(I), the agronomic rate is the annual application rate of the compost, either alone or in combination with other nutrient supplying materials, which is necessary to achieve a reasonable crop yield without exceeding crop nutrient requirements.
- g) Disposal of sheep and goat offal by composting. Persons disposing of sheep or goat offal by means of composting shall comply with the following requirements:

- 1) Offal of those animals dying of suspect neurological causes shall not be composted.
- 2) The composter shall be located entirely over impervious foundation materials. One of two foundations shall be used:
 - A) Impervious soil (permeability equal to less than 1×10^{-7} cm/sec., as defined in Section 651.0703 (Geotechnical considerations in waste facility siting) of the Agricultural Waste Management Field Handbook, Soil Conservation Service, U.S. Department of Agriculture, 1992). A 4 to 6 inch base of ungraded (varying particle size) field lime over the soil foundation is suggested as a runoff control measure.
 - B) An impervious, weight-bearing foundation such as concrete or asphalt.
- 3) Surface water shall be diverted away from the composter.
- 4) Location shall be in an area where runoff will not contaminate water supplies or allow leachate to discharge into streams, ponds or lakes.
- 5) The composter shall not be constructed less than 200 feet from a stream, private potable water supply well, or any other potable water supply source, except in accordance with Section 14.2(b) of the Illinois Environmental Protection Act.
- 6) The composter shall not be constructed within the applicable 200- or 400-foot minimum setback zone of an existing community water supply well as established pursuant to Section 14.2 of the Illinois Environmental Protection Act.
- 7) A composting site shall be located at least 1/4 mile from the nearest occupied residence (other than a residence located on the same property as the facility).
- 8) The composter shall consist of at least two bins, allowing operation as primary and secondary composting sequences.
- 9) The composter shall be constructed of permanent rot-resistant materials, such as preservative-treated wood or concrete.
- 10) The size of the composter shall be based on the greatest projected offal rate from animals during any three-month period of the year.
- 11) The composter bin minimum width dimension shall be at least one foot greater than the width of the loader bucket used for turning the compost.
- 12) A composting thermometer with a minimum probe length of 36" shall be kept available at the facility for monitoring progress of the compost process.
- 13) Records of offal additions, composter operation and land application of finished compost shall be maintained on the premises.
- 14) Composting shall comply with the following guidelines:
 - A) Coarse sawmill sawdust, shredded corn stalks, chopped straw, coarse-ground corn cobs, and other materials possessing like properties and having similar particle size are recommended as the carbon source.
 - B) A supply of carbon source materials shall be stockpiled and maintained on the premises at all times when the composter is in operation.
 - C) Finished compost from the offal composting process (secondary bins) may be re-used in an amount appropriate to maintaining proper composting operation (up to 50% volume of re-used finished compost suggested).
 - D) Offal placed on the floor of a primary bin shall be mixed in a 50/50 ratio to carbon source material and underlain with at least 12" of absorbent carbon source material.
 - E) Any offal placed in the primary composter bin shall be immediately covered with a layer of carbon source material to a depth of at least 12" on top and all sides. Carbon source material shall be added to the composter daily or as frequently as needed to sustain a cover of carbon source material over all parts of carcasses in the bin's uppermost layer.
 - F) Offal and carbon source material may be added to the primary bin until the bin is full.
 - G) The composting process shall be monitored and managed in such a way that heating and decomposition can proceed to completion (typically

three months in the primary bin from the time the last carcass is placed in the bin and another three months in the secondary bin from the time the compost is moved into the secondary bin from the primary bin). Water shall be added as necessary to adjust the moisture content of the compost and promote further composting activity.

- H) Finished compost shall be agronomically distributed over land under cultivation or reused in the composting process. Finished compost may be returned to the primary composting bin in a ratio of up to 50% finished compost to fresh carbon source material. For the purpose of this subsection (g)(14)(H), the agronomic rate is the annual application rate of the compost, either alone or in combination with other nutrient supplying materials, which is necessary to achieve a reasonable crop yield without exceeding crop nutrient requirements.

(Source: Amended at 28 Ill. Reg. 13415, effective October 1, 20