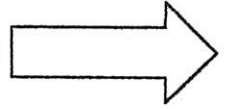
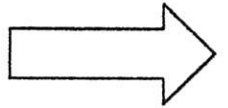


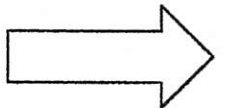
Summary of CAFO Operation



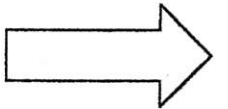
**Specific Descriptions &
Calculations**



**Record Keeping & Reporting
Requirements**



**Large CAFO Additional
Requirements**



RECEIVED

APR 15 2005

NATURAL RESOURCES
DIVISION

Miscellaneous



05045 991761

Contact Name, Address, Phone Number

Facility Address

Type of Operation

Number and size of animals by species

Manure, litter and process waste system- provide a general narrative description of each

Collection- How is manure, litter and process waste removed from housing, confinement lot? How is clean water diverted from storage?

Storage- Types and size of manure, litter and process waste storage tanks, ponds

Transfer- How is manure, litter and process waste moved to storage, application areas?

Use- How is manure, litter and process waste treated (composted, separated, anaerobic digestion or storage, aeration)? How is manure, litter and process waste water used on crops? If export is utilized, describe that process

**ANIMAL WASTE MANAGEMENT PLAN
MINIMUM REQUIRED ELEMENT**

OPERATION AND MAINTANENCE

Producer Livestock Marketing Association

Name of Operation

Mark all that apply to your operation.



Animal Access Lanes or Walkways

Damaged components will be repaired or replaced as needed. Debris and excess manure will be removed from roadway surfaces, road ditch and drainage areas. Maintain drainage area capacities. Maintain good vegetative cover on all slopes and watercourses.



Culverts

Inspect annually or after large rainfall event. All foreign objects restricting water flow will be removed. Damaged sections will be repaired or replaced. Erosion around inlet or outlet will be corrected.



Dry Stack Storage Facility

Solid manure storage facility will be inspected annually. Broken slabs and curbs will be repaired. Repair or replace rusted or damaged areas on roof structure. Broken gutters and/or downspouts will be repaired or replaced. Check for adequacy and function of drain away from downspouts. Check floor, side and back walls for soundness. Manure solids and leachate will not escape through cracks in the facility.



Feedlot Pens

(ODA does not advise long-term manure storage in open feedlot pens, even in low rainfall areas. Research is currently underway to determine environmental impacts of such practices.)

Maintaining a firm, dry feedlot surface is an important factor in good animal health and the environment. Diversion ditches or berms should direct clean water flow away from feedlot pens and holding areas. Storm water runoff from pens will be collected and stored appropriately. Dry manure will be contained within the pen until removed for storage or field application. Manure accumulations created by manure packs or mounding will be managed such that a pollution hazard is not created. Short-term mounding may be used in conjunction with quick clean-ups used to reduce manure pack from around aprons and under fences. Manure will be removed annually from pens. When removing manure from pens, care is taken to maintain the integrity of the compacted protective seal or "hard pan".



Fencing

Fences will be inspected periodically. Broken or decayed posts will be replaced. Sagging wire will be tightened. Broken wire will be spliced or replaced. Broken or missing insulators for electric fencing will be replaced. Vegetation will be controlled under the fences. Electric fencing will be sufficiently charged to detour animals.

☐ Irrigation Water Management

Irrigation water application will be at rates that minimize transport of sediment, nutrients, and chemicals to surface water and ground water. Equipment modifications and/or soil amendments such as polyacrylamides and mulches should be considered to reduce erosion if needed.

☐ Filter Strips

Maintain vigorous growth of vegetative covering. This includes reseeding, fertilization and application of herbicides when necessary. Periodic mowing, harvesting or grazing may also be needed to control height. Remove all foreign debris that hinders system operation. Limit the traffic from filter strip area. Limit livestock usage to vegetative growth periods when the animals will not damage vegetative root system or compact the soil. Eradicate or otherwise remove all rodents or burrowing animals. Immediately repair any damage.

☐ Manure Application Equipment

All manure application equipment (including but not limited to sprinklers, big gun irrigators, spreaders and/or tank wagons) will be operated and maintained according to the manufacturer's manual. Equipment found to be broken or worn will be replaced. Equipment will be calibrated to ensure recommended rates are applied. Liquids will be drained from sprinklers or big guns prior to freezing weather. When system is flushed, rinse water is used following waste, and liquid and sediment is applied agronomically. Nozzles will be checked periodically and if worn, nozzles will be replaced. Minimize exposure to animal and organic wastes and manure gasses. Wear protective clothing when appropriate. When cleaning equipment after nutrient application, remove and save wastes in an appropriate manner. Avoid applying manure near surface water by establishing buffer strips and set backs, and use extreme care to avoid contaminating ground water.

☐ Manure Effluent and Irrigation Transfer Lines.

Manure, effluent and irrigation lines shall be flushed with clean water periodically to prevent particle buildup and plugging. Manure flushed from the lines will be applied agronomically so that surface and groundwater will be protected. Manure, effluent and irrigation lines shall be inspected periodically for leaks or worn out nozzles, and repairs or replacements made as needed. Special inspection shall be done to pressure relief valves, risers and control valves. Shut off valves will be inspected annually. Avoid unnecessary travel over pipelines that will damage their integrity. Equipment found to be broken or worn will be replaced. Water will be drained during cold weather to prevent frozen or broken lines. These lines can explode if not properly maintained and may cause human injury.

☐ Pumps

Pumps will be maintained in accordance with manufacturer's operation and maintenance manual. Effluent will be drained from pumps prior to freezing weather. Pumps will be inspected periodically to identify and remove debris wrapped around impeller or worn parts. Appropriate action will be taken to repair any worn parts. Liquids will be drained from pump prior to freezing weather to prevent breakage. It is recommended to have a spare pump or back up system in case a pump must be removed for an extended time for repair.

☒ Trough or Tank

Watering facility will be inspected periodically. Damaged tank/trough will be repaired or replaced. Float valves will be maintained in good working order. Area immediately surrounding the

trough/tank will be maintained in a stable condition. Watering facilities will not be allowed to overflow if additional liquid will affect waste storage capacities.



Evaporation Waste Storage Pond

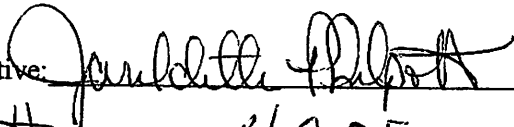
Prior to the storage season, empty the pond to provide storage capacity for the accumulation of wastewater and precipitation during the winter storage period. Sludge and accumulated solids will be removed from the pond periodically when buildup limits storage capacity in the pond. Depth markers are installed to assure maximum volume will be maintained and checked weekly. A 2-foot free board will be maintained to prevent spillage.

Maintain all pumps, pipeline, valves, and electrical and mechanical equipment in good operating condition following the manufacturer's recommendations. Immediately repair any vandalism, vehicular, or livestock damage to any earth fill. Immediately remove any obstructions or blockage of spillways, trash racks or pipe inlets. Settlement or cracks in earthen sections should be investigated to determine cause and immediately repaired. Maintain vigorous growth of vegetative coverings on the dikes to eliminate soil erosion. Eradicate or otherwise remove all rodents or burrowing animals and repair any damage caused by their activity. Fences and/or warning signs should be maintained as necessary to unauthorized human or livestock entry. Operate systems in a manner that minimizes odor and drift.





Signature of Legally Authorized Representative:



Print Name:

Jarelda He Philpott

Date:

4-7-05

Narrative of production area & land application locations

**Aerial photo/topographical map showing numbered fields, production area, clean water diversions, surface water features
Soil maps of all application fields & map unit descriptions**

Manure, Litter and Process Waste Volumes

Manure, litter and process waste output collected & stored in this system. Bedding added & collected. Processed & wash water collected. Silage & feed processing leachate

Contaminated Storm Water

Direct rainfall into storage, slab or lot runoff collected, overflow from gutters or diversions

Nutrient Content of Manure, Litter & Processed Waste

Content & volume of nutrients in manure, litter & process waste generated. Actual test values are required of large CAFOs

Farm Nutrient Balance

Show amount of nutrients (N,P,K) generated, lost in storage, lost in application, or exported off farm annually. Nutrient applications must balance to most limiting nutrients as determined by NRCS Agronomy Tech Note 26 & NRCS Phosphorus Index. Include all acres required to balance nutrients owned or leased by the operator

Application Schedule & Limitations

Show scheduled applications of solids & liquids. Include date, amount & method of application to identified fields, describe calibration of equipment used to apply manure, litter & processed waste. Describe limitations to applications, indicate buffer areas & management to avoid frozen or saturated soils. Justify buffer width & management. Calculate the minimum storage required for liquids & solids. Indicate timing & application rates of irrigation water, irrigation must not allow leaching of soluble nutrients or runoff

Animal Mortality Management

Describe how the farm handles mortalities

SPECIFIC DESCRIPTIONS AND CALCULATIONS

Land Application Areas

Aerial photos showing surface water features and the location of the cattle auction yard facilities are included in this Animal Waste Management Plan. The operation is a waste exporting facility and does not apply any waste to ground under the operator's control.

Manure and Waste Volumes

Calculated volumes of all manure, bedding, wash water, silage leachate, and contaminated storm water have been completed using an excel worksheet based from the NRCS Agricultural Waste Field Handbook. The worksheet is included in this Animal Waste Management Plan.

Nutrient Content of Manure, Little and Process Waste Water

The same excel worksheet was used to estimate volume of manure. On site manure test results will be used to estimate manure nutrient content.

Farm Nutrient Balance

Producer's Livestock Marketing Association is strictly a waste exporting facility and is not balancing for farm nutrients.

Application Schedule and Limitations

The operator does not apply manure to any land under its control. Producers Livestock Marketing Association is strictly a waste exporting facility.

Animal Mortality Management

Deceased animals are removed from the facilities by Darling Delaware, a local contracted company.

VALE



MEMO

To: Debbie Gorham
From: Ron Jones
Subject: AWMP approval for Producers Livestock Marketing Association Sale Yard
Date: July 7, 2005

The AWMP is for an existing livestock auction yard near Vale, Oregon. The owner of the auction yard is Producers Livestock Marketing Association of Salt Lake City, Utah. The local manager is Jack Robertson. The Association is a Cooperative. The plan is for 2500 head of mixed sizes and types of mostly cattle that are confined in earthen pens on sale day and the day prior and after. Sales are held on Wednesdays, usually forty-nine times per year. The maximum numbers are 2500 but the average is closer to 900. All manure generated at this facility is exported off the facility to local farmers and gardeners. All rainwater, snowmelt and liquids from the pens are contained within the pens. There are no ponds on this facility. The cattle average 700 pounds during their time of confinement.

The AWMP was reviewed according to OAR Chapter 340 Division 51 and department policy documents.

AWMP Minimum Required Elements	Notes
1. Summary of CAFO Operation	
a) Contact name, address, phone number	Included
b) Facility address	Included
c) Type of operation	Included
(i) Number and size of animals by species, expansion?	Included
d) Manure, litter and process waste system – provide a general narrative description of each	
(i) Collection – How is manure, litter and process waste removed from housing, confinement lots? How is clean water diverted from storage?	Included
(ii) Storage – Types and size of manure, litter and process waste storage tanks, ponds.	Included
(iii) Transfer – How is manure, litter and process waste moved to storage, application areas?	Included

(iv) Use – How is manure, litter and process waste treated (composted, separated, anaerobic digestion or storage, aeration)? How is manure, litter and process waste water used on crops? If export is utilized, describe that process.	Exported
2. Specific descriptions and calculations	
a) A description of production area and land application locations	Included, Export
(i) Aerial photo or topographical map showing numbered field locations, production area facilities, clean water diversions, and surface water features.	Included
(ii) Soil maps of all application fields, including those not owned, and map unit descriptions. Indicate areas with application limitations.	Export
b) Manure, litter and process waste volumes	
(i) Manure (feces and urine), litter and process waste output that is collected and stored in this system.	Included
AWMP Minimum Required Elements	Notes
(ii) Bedding added and collected.	N/A
(iii) Process and wash water collected, include footbath use when appropriate.	N/A
(iv) Silage and feed processing leachate.	N/A
c) Contaminated storm water	
(i) Direct rainfall into storage.	N/A
(ii) Slab or lot runoff collected.	Included
(iii) Overflow from gutters or other diversions.	N/A
d) Nutrient content of manure, litter and process waste water	
(i) Content and volume of nutrients in manure, litter and process waste generated – can come from NRCS Animal Waste Field Handbook (chapter 4)), land grant university publications, or analyses of manure, litter and process waste. Actual test values are required of large CAFOs.	Included, Need manure test.
e) Farm nutrient balance	
(i) Show amount of nutrients (N, P, K) generated, lost in storage, lost during application, used by crops, and/or exported off the farm on an annual basis.	Exported
(ii) Nutrient application must balance to most limiting nutrient as determined by NRCS Agronomy Technical Note #26 and the NRCS Phosphorus Index.	Included, P-Index attached, low.
(iii) Include all acres required to balance nutrients owned or leased by the operator.	Exported

f) Application schedule and limitations		
(i)	Show scheduled applications of solids and liquids. Include date, amount and method of application to identified fields. Describe calibration of equipment used to apply manure, litter and process waste water.	Exported
(ii)	Describe limitations to manure, litter and process waste applications. Indicate buffer areas and management to avoid saturated soils. Justify buffer width and management. If application to frozen soil is planned, include field descriptions, specific management/structural practices, monitoring and record keeping.	Exported
(iii)	Using agronomic rates, application limitations, and scheduled applications, calculate the minimum storage required for liquids and solids.	Exported
(iv)	How is irrigation water managed relative to manure, litter and process waste water application? Include general timing and application rates of irrigation water. Irrigation water management must not allow leaching of soluble nutrients or runoff.	Exported
g) Animal mortality management		
(i)	Describe how the farm handles mortalities.	Included
h) Operation and maintenance		
(i)	Include operation and maintenance narrative for structural and mechanical components included in this plan.	Included
AWMP Minimum Required Elements		Notes
3. Record keeping and reporting requirements		
a) Testing – Monitoring		
(i)	Include the protocol for testing manure, litter and process waste.	Included
(ii)	Include the protocol for testing and measuring crop nutrient removals.	Exported
(iii)	Include the protocol for soil testing to evaluate nutrient application and crop uptake.	Exported
b) Record keeping. Include the following:		
(i)	Date and amount of manure, litter and process waste applied by field. Calculate N and P applied.	Exported
(ii)	Manure, litter and process waste volume exported.	Included
c) Reporting to Oregon Department of Agriculture		
(i)	Any discharge within 24 hours.	Included
(ii)	Amount of manure, litter and process waste applied annually.	Exported
(iii)	Amount of manure, litter and process waste exported annually.	Included

4. Additional requirements for Large CAFOs	
a) Inspections	
(i) Check storm water diversions, runoff diversions, waste transport, storage structures, storage structure volume weekly.	Included
(ii) Check water lines daily.	Included
(iii) Check for application equipment leaks periodically.	Included
b) Record keeping	
(i) Results of daily inspections.	Included
(ii) Results of weekly inspections.	Included
(iii) Results of periodic inspections.	Included
(iv) Corrective actions taken, explain those not corrected.	Included
(v) Expected crop yields if not in the plan.	Exported

Recommendations

Based on my working knowledge of Producers Livestock Marketing Association and the information provided, I recommend approval of this AWMP. The plan is complete for this 2500 head Livestock Sale Yard as a Large Federal CAFO.

Animal Waste Management Plan

April 2005

Producers Livestock Marketing Association Saleyard

Operated by:

Jack Robertson
P.O. Box 67
Vale, Oregon 97918
(541) 473-3136

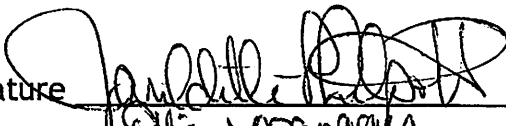
Facility Address:
670 John Day Hwy.
Vale, Oregon

Operation:

Beef Feedlot
Large Federal CAFO

As owner and operator of Producers Livestock Marketing Association Saleyard, I intend to manage in accordance with the practices and operation and maintenance described in this Animal Waste Management Plan.

Signature


Office manager

Date

4.7.05

GENERAL NARRATIVE DESCRIPTION

Producers Livestock Marketing Association is located at 670 John Day Highway in Vale, Oregon and is a Cooperative based out of Salt Lake City and is locally operated by Jack Robertson. The operation is an exporting cattle auction yard. The cattle auction yard is in full operation year around. The maximum animal numbers confined at one time may reach 2,500 head. The cattle are of mixed breeds. Animals are brought in at various weights and ages, with an approximate average weight being 700 pounds. Cattle are confined strictly for sale purposes and are not held or finished as part of this operation.

Manure Collection Methods

All cattle are confined in earthen pens. The manure is collected in the pens where it dehydrated and used as bedding for the cattle. When the cattle are removed from the facility, the pens are cleaned as necessary and the dry manure is used as a soil amendment. Some manure is left in the pens, mounded and packed for bedding.

A berm is maintained to prevent runoff from the dry stack manure storage area during a major storm event. Due to the layout of the operation's pens, there is no runoff potential from the yard's pens.

Manure Storage Facilities and Transfer

The manure generated at the facility is handled in a dry solid form. Dry manure is scraped and stacked within the pens as well as in a dry stack manure storage area. All manure will be contained within the facilities.

A berm is available to catch contaminated rainwater that falls on the dry stack manure storage area. All liquid that is contained by the berm evaporates

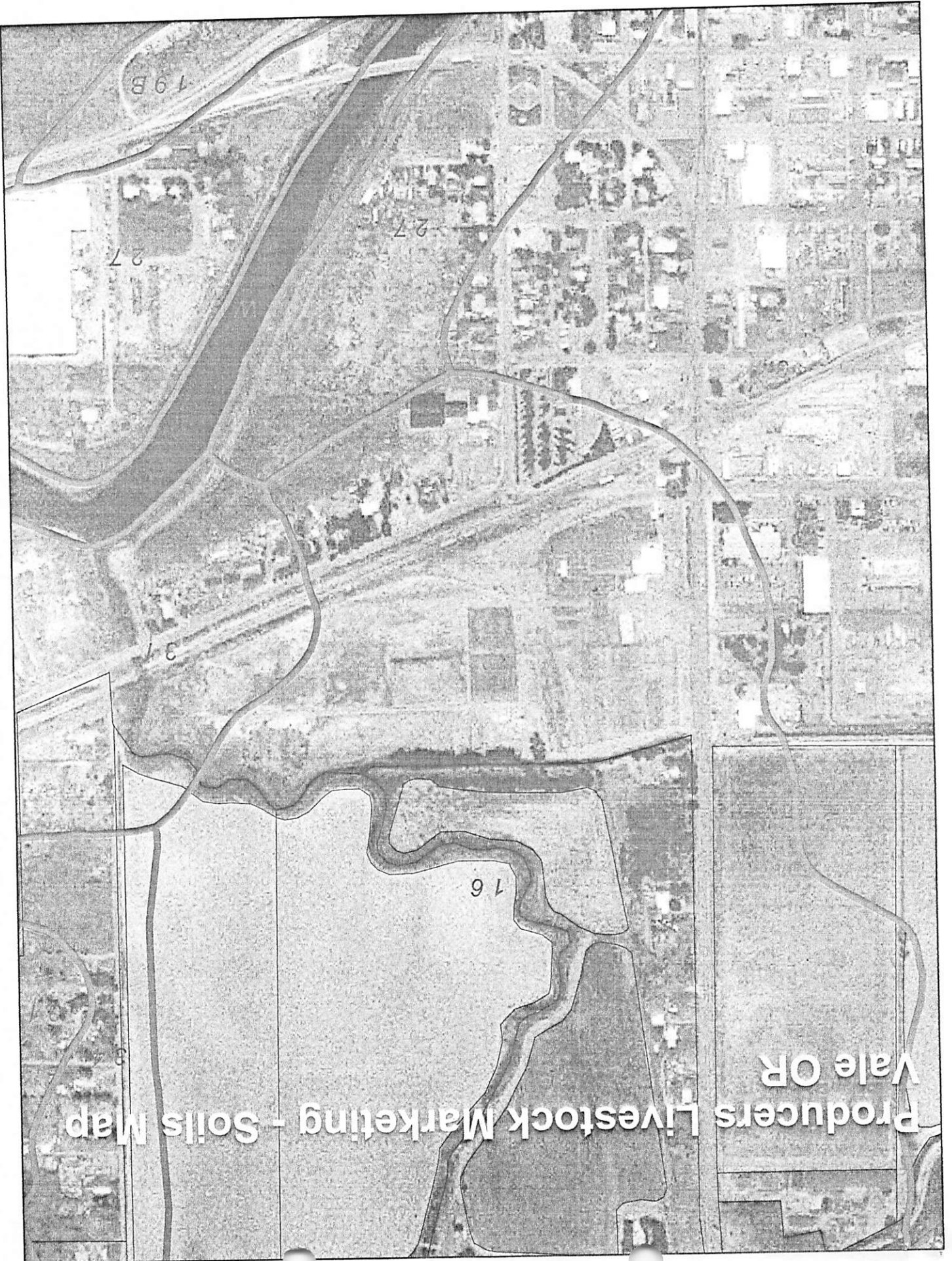
due to the dry climate (9.97" average annual rainfall, 40.23" average annual evaporation).

The solid manure is stored within the dry lots and is stacked outside of the lots in a dry stack manure storage area. Solid manure is exported off site annually, and as necessary.

Manure Utilization

100% of the dry manure is exported off the farm by local farmers and gardeners. These manure solids are exported from spring through fall of each year.

Producers Livestock Marketing - Soils Map
Vale OR



WATER, WASTE, AND NUTRIENT COMPUTATIONS

Number of Animals

	Animals	Avg. Weight lb	Total 1000# Animal Units	Confinement Period (Days)
1	2500	700	1750	7
2	1400	700	980	90
Total	3900	1400	2730	

Solid Storage (Feedlot pen size)

Pens 1-60 15 acres

Evaporation Ponds for storm runoff

Pond 1

Pond 2

Total weight and volume of manure produced during confinement

*Estimated values from NRCS Agricultural Waste Management Handbook)

Manure Produced

	lb/day/Animal Unit	Total Weight ton (as excreted)	Total Weight ton (at application)
1	58.2	356	107
2	58.2	2567	770
Total		2923	877

	Cu ft/day/Animal Unit	Total Volume Cu ft
1	0.93	11393
2	0.93	82026
Total		93419

Total Nutrient Production

*Estimated values from NRCS Agricultural Waste Management Handbook

	Nutrients Produced lb/day	Total Nutrients Produced lb
Nitrogen	0.30	30135
Phosphorus	0.10	10045
Potassium	0.20	20090

Nutrient Losses

*Estimate from NRCS ORAWM Program and OSU Extension Publication EC 1094

Loss	Remaining N	Remaining P	Remaining K
Storage	50%	70%	60%
Application	70%	100%	100%
Denitrification	95%	100%	100%

Loss	Remaining N lbs	Remaining P lbs	Remaining K lbs	
Storage	15068	7032	12054	
Application	10547	7032	12054	
Denitrification	10020	7032	12054	Available for crop production

Nutrients Utilized

*Estimate from NRCS ORAWM Program

Crop	Acres	Yield Units per acre	Yield	N Utilized (lbs/acre)	P Utilized (lbs/acre)	K Utilized (lbs/acre)
Alfalfa	0	ton	0	0	0	0
Corn, silage	0	ton	0	0	0	0
Corn, grain	0	ton	0	0	0	0
Wheat, grain	0	bushel	0	0	0	0
Total	0					

Volume and Nutrients Exported

100% of manure is exported to neighboring farmers

Exported tons	N exported lbs	P exported lbs	K exported lbs
877	10020	7032	12054

Nutrients remaining for crop production on farm **after** export

Remaining N lbs	Remaining P lbs	Remaining K lbs
0	0	0

Crop Utilization

Crop	Acres needed	lbs of N applied	lbs of P applied	lbs of K applied
Alfalfa	0	0	0	0
Corn, silage	0	0	0	0
Corn, grain	0	0	0	0
Wheat, grain	0	0	0	0
Total	0	0	0	0

Gross Nutrient Balance	Acres	lbs of N	lbs of P	lbs of K
	0	0	0	0

Climatic and Hydrologic Data

Climatic Station- Malheur Branch Experiment Station

25 year- 24 hour storm rainfall = 1.8 inches

Month	Average Monthly in Inche		% Lot Runoff Factors	
	Precipitation	Evaporation	Concrete*	Unpaved
January	1.26	0.74	100	0
February	0.98	1.09	100	0
March	0.92	2.06	100	0
April	0.70	3.79	100	0
May	0.98	5.12	100	0
June	0.83	6.08	100	0
July	0.19	7.62	100	0
August	0.38	6.51	100	0
September	0.49	4.03	100	0
October	0.71	1.98	100	0
November	1.21	0.50	100	0
December	1.32	0.71	100	0
Annual	9.97	40.23		

*No concrete lot runoff contributing to the manure system.

**ANIMAL WASTE MANAGEMENT PLAN
MINIMUM REQUIRED ELEMENT**

ANIMAL MORTALITY

Management of Animal Mortalities for: Producers Livestock Marketing Asso.
NAME OF OPERATION

Animal mortalities will be disposed of in a manner that will comply with local, state and federal regulations. Please mark and describe the method(s) of animal mortality management used on this operation:

☒ REMOVAL SERVICE: Darling Delaware

☐ COMPOSTED: _____

☐ INCINERATED: _____

☐ BURIED: _____

☐ OTHER: _____

Signature of Legally Authorized Representative: _____

Print Name: _____

Date: _____

Janelle Philpot
Janelle Philpot 4-7-05

Record Keeping and Reporting Requirements

Testing-Monitoring

Include the protocol for testing manure, litter and process waste

Include the protocol for testing and measuring crop nutrient removals

**Include the protocol for soil testing to evaluate nutrient application
and crop uptake**

Record Keeping- Include the following

**Date and amount of manure, litter and process waste applied by field.
Calculate N & P applied.**

Manure, litter and process waste volume exported

Reporting to Oregon Department of Agriculture

Any discharge within 24 hours

Amount of manure, litter and process waste applied annually

Amount of manure, litter and process waste exported annually

Record Keeping and Reporting

As this is an exporting facility, soil samples are not required under this Animal Waste Management Plan. A manure sample will be taken annually. Copies of the results of this sample will be provided to all waste recipients as well as kept on file as part of this plan. Protocol for sampling manure are included in this Animal Waste Management Plan.

Producers Livestock Marketing Association records the date and amount of manure exported annually. As a large Federal CAFO, the following inspections will occur and records kept:

<u>INSPECTIONS:</u>	FREQUENCY OF INSPECTIONS	ITEM(S) TO BE INSPECTED
	DAILY	• Water lines
	WEEKLY	• Storm water diversions • Run-off diversions • Waste transport • Storage structures • Storage structure volume
	PERIODIC	 • Application equipment leaks

Record results of:

- 1) Daily inspections.
- 2) Weekly inspections.
- 3) Periodic inspections.
- 4) Corrective actions taken, explain those not corrected.
- 5) Expected crop yields (if not in the plan).
- 6) Weather conditions at the time of manure, litter or process water application and 24 hours before and after application.
- 7) Total amount of manure or wastewater transferred to other persons, including date and amount of each transfer and the name and address of each recipient. Nutrient content data will be given to the recipient.

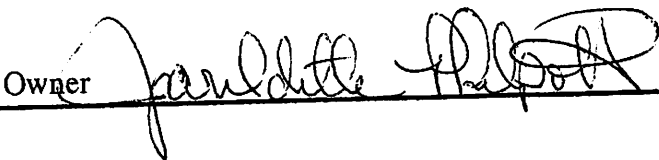
Producers Livestock Marketing Association will report any discharge within 24 hours to the Oregon Department of Agriculture. Annual reports including amount of manure and wastewater exported will be submitted each year.

Nutrient Exportation Verification Document

Name of Facility: Producers Livestock Marketing Association
Owner: Jack Robertson, Manager
Street: P.O. Box 67
City-State-Zip: Vale, Oregon 97918
Phone: (541) 473-3136

By signing this document/contract the owner of the Producers Livestock Marketing Association verifies that the entire solid & liquid portion produced by this ~~dairy~~ ^{operation} is exported off site. By definition, 100% exportation verifies that the ~~dairy~~ ^{operation} does not apply any solid or liquid portion produced by this facility onto its available acreage. The owner fully accepts the responsibility that if this document/contract is breached the AWMP (Nutrient Management Plan) will be invalid. The current AWMP is calculated by the use of the USDA Natural Resources Conservation Service (NRCS) ORAWM v. 1.5, or an excel worksheet based from the NRCS Agriculture Waste Field Handbook, which has taken into account that all solids & liquids are exported off facility and are not figured into the plan. Any further questions regarding ORAWM calculations can be addressed to the local field office of NRCS.

Owner



Date

4-7-05

Manure export record sheet

[illegible]

APPENDIX E - ANIMAL WASTE SAMPLING

Animal waste analysis is a key component of nutrient management. Complete analyses provide critical information about the animal waste composition, including pH and nutrient content. Actual nutrient content of animal waste varies with the type of animal, feed, storage system, and method of animal waste application. You should sample animal waste stored on site each time it is to be removed (for land application on or off site). Sample daily spread operations (if you land-apply daily) several times throughout the year to obtain a good estimate of nutrient content.

Description

Animal waste sampling is relatively simple, but must be done properly for reliable results. The sampling method differs based on the type of animal waste you generate at your farm (e.g., liquid, semi-solid, solid). Animal waste sampling generally consists of two to seven steps, depending on the type of animal waste. Although the number of steps varies based on the physical state of the animal waste, all of the methods rely on collecting a representative animal waste sample for analysis. Where bedding is collected with the animal waste, include both bedding and animal waste in the sample. Also, conduct sampling as close to the time of land application as possible. Specific techniques for gathering poultry litter, liquid animal waste, semi-solid animal waste, and solid animal waste samples are described below; you can use these to help develop sampling procedures at your farm. Remember that you should sample and analyze all animal waste at your farm. Work with your state and local agricultural Cooperative Extension Offices to ensure that you develop the proper procedures for your conditions and animal waste management methods.

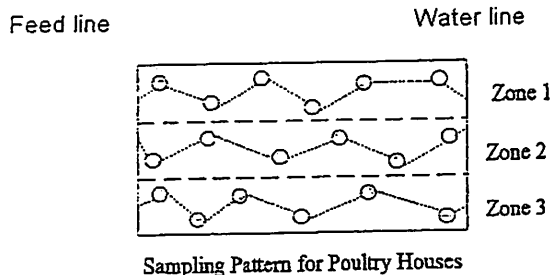
Before sampling, know where the samples are to be shipped, how to pack and ship the sample, and what to use as sample containers. Many laboratories will furnish the proper sample containers for a small charge. Samples should never be collected and shipped in glass bottles, and they should be shipped on wet ice unless otherwise instructed by the laboratory. Contact your state or local agricultural Cooperative Extension Office for a list of laboratories that can perform your analyses. You should also wear gloves at all times, to protect yourself and the sample from contamination.

The test should analyze for such parameters as percentage of dry matter, ammonium-nitrogen, total-nitrogen, phosphorus (P or P_2O_5), and potassium (K or K_2O). Request results in the same units as your calibrated animal waste application system (see Appendix J for more information about calibrating animal waste spreaders and irrigators). For example, if your animal waste application is measured in tons per acre, request that your analysis be reported as pounds of nutrient per ton of animal waste.

Instructions for Collecting Poultry Litter Samples

Poultry litter is a mixture of poultry animal waste and the bedding (e.g., sawdust or rice hull) from houses used to raise broilers, turkeys, and other birds. You will need a clean 5-gallon bucket, a narrow, square-ended spade (or a soil spade), and a 1-quart plastic freezer bag to collect and store your sample. The five steps to collecting a representative poultry litter sample are described below.

Step 1: Mentally divide the poultry house into three zones of equal size. Within each zone, you'll take six cores (i.e., samples) as shown in the diagram below.



Step 2: Take the first core within 1 foot of the feed line using your spade. Clear a small trench the width of the spade to the depth of the litter and remove a 1-inch slice, making sure to get equal amounts of litter from all depths. Empty the sample into your bucket.

Step 3: Repeat the process, gathering six cores from each zone, taking your last core within each zone within 1 foot of the water line. Walk the length of the building in each zone in a zigzag pattern taking cores with the spade at random points along your path (as shown in the diagram above). Take a representative number of cores under feeders and waterers. If the bucket becomes full before all 18 samples are taken, dump the contents onto a plastic sheet and continue sampling.

Step 4: After collecting samples from all three zones, crumble and thoroughly mix all of the litter in the bucket. It may be easier to pour the material onto a piece of plastic, or plywood, or into a wheelbarrow to facilitate mixing. Thorough mixing is critical to ensure that the analyzed sample is representative of the entire house.

Step 5: After the litter is well mixed, fill your plastic freezer bag with a subsample (i.e., a small sample) from your composite. Fill the bag only two-thirds full and squeeze the air out before sealing. Keep the sample cool (on ice if possible) until it is shipped.

Instructions for Collecting Liquid Animal Waste Samples

Liquid animal waste is typically stored in tanks, lagoons, or ponds. For tanks, collect only one sample, but collect several subsamples of liquid animal waste to get a representative sample from lagoons and ponds. You will need a clean 5-gallon bucket, a plastic cup, wire, and a long pole to collect liquid animal waste samples from lagoons and ponds. Sample containers are required to collect liquid animal waste samples from all sources. The two steps to collect a representative liquid animal waste sample are described below.

Step 1: For lagoons and ponds, collect several samples from around the shore of the lagoon or pond and mix them together in a clean 5-gallon bucket. You can collect the samples by wiring a plastic cup to the end of a long pole. When taking the sample, turn the cup upside down and push it a few feet below the surface. Then turn the cup right side up and pull out the sample.

If you store your liquid waste in tanks, your tanks must be well agitated before sampling. Often the only practical time to do this is as you are pumping the animal waste into your spreader.

Step 2: Fill a sample container with your sample, making sure to leave 2 inches of air space. Tightly seal the container and keep cool (on ice if possible) until it is shipped.

Instructions for Collecting Semi-Solid Animal Waste Samples

Collecting a representative sample of semi-solid animal waste is best done using a simple sampling device. You will need a 2-inch PVC pipe, nylon rope, a rubber ball, a dowel, a clean 5-gallon bucket, and sample containers. The seven steps to collecting a representative semi-solid animal waste sample are described below.

Step 1: Get a length of 2-inch PVC pipe long enough to reach well into your animal waste storage facility. Cut a notch 2 inches long and 1/4 inch wide at one end of the pipe. Cut a length of nylon rope 2 feet longer than the PVC pipe and tie a knot at one end. Drill a hole through a 2.5 inch rubber ball. Thread the rope through the ball until it is snug against the end knot. Tie a second knot to hold the ball at the end of the rope. Thread the rope through the PVC pipe and pull it until the ball plugs the end of the pipe. Slip your end of the rope into the notch and tie a knot; this will create a "latch" to keep the pipe sealed after you collect the sample. Tie a short dowel to the free end of the rope to serve as a hand grip. Cut a length of 1-inch PVC pipe and seal one end. Use this pipe to push samples out of the tube.

Step 2: With the ball sealing the end of the pipe, push the pipe through the top layer of animal waste to form a sample hole.

Step 3: Release the rope from the notch so that the ball dangles freely from the end of the pipe. Push the pipe into the sample hole in the animal waste crust. Make sure the ball does not block the pipe opening.

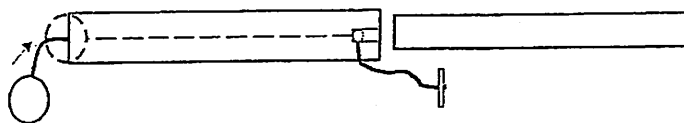
Step 4: Ease the pipe back slightly and pull the rope until the ball seals the end of the pipe. Slip the rope in the notch to anchor the ball in place and withdraw the pipe.

Step 5: Pour the sample into a clean 5-gallon bucket. You may need the 1-inch PVC pipe to force the sample from the pipe. Two people will need to operate a long pipe. To avoid backwash, keep the bottom of the pipe lower than your end.

Step 6: Repeat this process at several locations around the pit.

Step 7: Mix samples thoroughly in the bucket, then fill your sample container with the mix, leaving 2 inches of air space. Tightly seal the container and keep the sample cool (on ice if possible) until it is shipped.

A diagram of the sampling apparatus is shown below.



Sample Apparatus for Semi-Solid Animal Waste

Instructions for Collecting Solid Animal waste

Collecting a representative sample of solid animal waste is best done using a simple sampling device. You will need thin-walled metal tubing (1-inch diameter), a drill, a dowel or short metal rod, a clean 5-gallon bucket, and sample containers. The four steps to collecting a representative solid animal waste sample are described below.

Step 1: Cut a 3-foot length of thin-walled metal tubing and sharpen the bottom edge. Near one end, drill

through the tubing and slide in a dowel or short metal rod to make a handle. Cut a 4-foot length of broomstick to force samples from the tube.

Step 2: Push and twist the tubing all of the way into the animal waste pile. Use the broomstick to push the animal waste into a clean 5-gallon bucket.

Step 3: Repeat Step 2 at several random locations around the pile. It is recommended that the more samples the better, so try to get at least 20 samples.

Step 4: Mix samples in the 5-gallon bucket, and fill the sample container with the mix, leaving 2 inches of air space. Tightly seal the container and keep the sample cool (on ice if possible) until it is shipped.

Animal Waste Sample Analyses

Contact your state or local agricultural Cooperative Extension Office for a list of available laboratories that can analyze your animal waste samples. Some Cooperative Extension Offices may even provide free analysis (e.g., in Maryland).

Label, package, and ship your samples to your contracted laboratory. The laboratory should be able to provide their proper protocol for packaging and shipping samples.

Your animal waste sample is typically analyzed for the following constituents:

- Nitrogen;
- Phosphorus;
- Potassium;
- pH;
- Moisture content;
- Calcium;
- Manganese;
- Magnesium;
- Sulfur;
- Zinc; and
- Copper.

The first step in interpreting analytical results of an animal waste test is to check the units used to report the results. They may be reported as percent nutrient (%) or parts per million (ppm), or, on rare occasions, on a dry-weight basis. (Most animal waste is measured on a wet-weight [i.e., as-is] basis.) The phosphorus and potassium may be reported on an elemental basis (P and K) rather than the phosphate (P_2O_5) and potash (K_2O) basis, which is typical of fertilizers. You will need to convert your animal waste test results into the proper fertilizer units for calculating your animal waste application rate.

Animal waste is an excellent fertilizer if it is spread uniformly on a field and at the proper rate. A pound of animal waste phosphate or potash has a nutrient value equivalent to that of commercial fertilizer. Although it has a value as a fertilizer, typically 50 to 80% of the total nitrogen applied is available to crops.

Additional Requirements for Large CAFO's

Inspections

Storm water diversions, runoff diversions, waste transport, storage structures, storage volume weekly

Water lines daily

Application equipment leaks periodically

Record Keeping

Results of daily inspections

Results of weekly inspections

Results of periodic inspections

Corrective actions taken, explain those not corrected

Expected crop yields if not in plan

Weather conditions 24 hours before, during, and after application

ANIMAL WASTE MANAGEMENT PLAN MINIMUM REQUIRED ELEMENT

ADDITIONAL REQUIREMENTS FOR LARGE FEDERAL CAFOs

Producers Livestock Marketing Association

NAME OF OPERATION

<u>A) INSPECTIONS:</u>	FREQUENCY OF INSPECTIONS	ITEM(S) TO BE INSPECTED
	DAILY	• Water lines
	WEEKLY	• Storm water diversions • Run-off diversions • Waste transport • Storage structures • Storage structure volume
	PERIODIC	• Application equipment leaks

B) RECORD KEEPING:

Record results of:

- 1) Daily inspections.
- 2) Weekly inspections.
- 3) Periodic inspections.
- 4) Corrective actions taken, explain those not corrected.
- 5) Expected crop yields (if not in the plan).
- 6) Weather conditions at the time of manure, litter or process water application and 24 hours before and after application.
- 7) Total amount of manure or wastewater transferred to other persons, including date and amount of each transfer and the name and address of each recipient.

C) OPERATION REQUIREMENTS:

- 1) Must have depth markers in all surface liquid impoundments (i.e. lagoons, ponds, tanks). Markers must indicate:
 - a. Maximum design volume.
 - b. Minimum capacity necessary to contain 25-year, 24 hours rainfall event.
 - c. Depth of manure and process wastewater.
- 2) Maintain setback area within 100 feet of any down gradient surface water, open tile line intake structure, sinkholes, agricultural wellheads, or other conduits to surface waters where manure, litter, and other process wastewaters are prohibited. As a compliance alternative, and if demonstrated to the satisfaction of ODA, the permittee may:

- a. Establish a 35 ft vegetated buffer where manure, litter and other process waste waters are prohibited: or
- b. Demonstrate that a setback or vegetated butter is not necessary or may be reduced.

D) MONITORING:

- 1) Collect and analyze manure, litter and other process wastewaters annually for nutrient content, including nitrogen and phosphorus.
- ~~2)~~ At least once, during the term of the permit, collect and analyze representative soil samples for phosphorus and nitrogen content from all fields where manure, litter and other process waste waters are applied

-n/a
Export ONLY!

Signature of Legally Authorized Representative: _____

Print Name: _____

Date: _____

Jared He Philpott
Jared He Philpott *2-7-05*

Inspection record sheet

A Check mark indicates a daily inspection was performed. A Plus sign indicates a weekly inspection was performed. Astrix indicates that a problem was found, see

comments section for that date

<u>Daily inspections</u>	<u>Weekly Inspections</u>	<u>Periodical inspections</u>
Water lines	Storm water Diversions Runoff Diversions waste transport system Storage Structures Storage structure content level	Application Equipment

Month _____

Date and Inspections performed

Problems and solutions

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2		
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The plan copy for the operator could include identified sections to store soil and manure, litter and process waste test reports, field application records, crop yield records, and other records related to the plan