

Feedlot Manure Management Plan

Goals:

To store, treat, transport and utilize manure effectively to prevent runoff or leaching that could contaminate surface and ground water with excessive nutrients and pathogens; to reduce odor, dust and fly nuisance; to reduce greenhouse gas emissions.

Instructions: Check of the areas below that describe operational procedures in your feedlot. Fill in the blanks and answer the short questions. Ensure supporting records are available where checked off.

Procedures

Manure and Runoff Storage

- o Personnel responsible _____
- o Feedlot pens, catch basins and compost areas are located according to the required MDS. If not, explain variance

- o There is no short term manure storage (i.e. stored in piles outside of feedlot e.g. stockpiling on land before application, composting)
 - o If there is short term manure storage
 - o It does not occur more than 6 months over a period of 3 years
 - o it is greater than 150 m from the nearest residence not owned or under the control of the feedlot operator
 - o it is located at least 1 m above the water table
 - o there are controls to divert surface run-on and manage runoff so it doesn't enter bodies of water e.g. berms, dikes, ditches (describe) _____
 - o Other (describe)

- o Feedlot runoff system
 - o limits the amount of surface water and run-on and runoff flowing through and from the feedlot
 - o up-slope run-on is diverted around the feedlot by e.g. berms, ditches, dikes (describe) _____
 - o feedlot runoff is collected in a
 - o catch basin
 - o vegetative filter strip
 - o constructed wetlands

Feedlot:
Approved by:

Version 1.0
Date:

- o other (describe)
 - o runoff leaving the back of pens is collected and directed to a settling area by a drainage channel
 - o solids, grass and weeds, snow accumulations are removed from the drainage channels (frequency) _____
 - o solids being carried into runoff are removed in a settling area before runoff enters the catch basin
 - o the run-off system is not located on a fish bearing water body
 - o the run-off system was designed by a professional engineer

- o Feedlot pens and catch basins
 - o Catch basin was designed by a professional engineer
 - o Pens are sloped 2 to 4% from front (feed bunk) to back or pens are sloped _____ %
 - o Located greater than 100 m from a spring or water well
 - o Located greater than 30 m from a common body of water
 - o The 1:25 year maximum flood level is not less than 1 m below any part of the facility where run-on can come into contact with stored manure
 - o Feedlot pens and catch basins are lined (attach or refer to engineer specs)
 - o Other liner (describe)

 - o Catch basin has a storage capacity that can accommodate at least 1 day rainfall that has a one in 30 y probability
 - o Catch basin has a freeboard of not less than 0.5 m when filled to capacity
 - o Catch basin has a marker clearly visible at all times that indicates when the basin is filled to capacity
 - o The catch basin is emptied (frequency) _____ and liquid is used to
 - o Irrigate crops
 - o Other (describe)

 - o Catch basin liquid is analyzed for nutrient levels (frequency) _____ prior to application on land
 - o Catch basins are made more visually acceptable by
 - o Trees
 - o Fences
 - o Buildings
 - o Other (Describe)

Feedlot:
Approved by:

Version 1.0
Date:

- o Manure spilled on roads is cleaned up immediately or _____
- o Manure spills that have the potential to cause an adverse effect are reported to Alberta Environment or the Alberta Environmental Response Centre (1-800-222-6517) and the spill is cleaned up and recorded on the Feedlot EMS Corrective Action Report in EMS-16.
- o During manure spreading, if there is significant dust generation, roads are
 - o watered
 - o oiled
 - o detour around neighboring residences
 - o other (describe)
- o Other (describe)

Land Application of Manure

- o Personnel responsible _____
- o Manure is only applied to arable land
- o Manure is applied to crop land in the
 - o Spring
 - o Fall
 - o Other (describe)
- o Manure is incorporated within 48 h unless
 - o Spread on forage or directed seeded crops
 - o Minimal setback distances in AOPA Schedule 3, Table 2 are followed
 - o Land is frozen or snow covered
 - o Minimal setback distances in AOPA Schedule 3, Table 1 are followed
- o Manure is incorporated by
 - o Harrowing
 - o Knifing
 - o Plowing
 - o Discing
 - o Other (describe)
- o Manure is not applied if heavy rain is predicted
- o Manure is applied on humid and/or cold non-windy days to reduce ammonia losses
- o Manure is not applied in low, wet areas
- o Manure is not applied on statutory holidays, evenings or weekends
- o Neighbors are informed when manure is applied
- o Manure is not applied within 30 m of a common body of water if surface applied and incorporated within 48 h or within 30 m of a water well

Feedlot:
Approved by:

Version 1.0
Date:

- o Manure is not applied if it would increase the soil salinity by more than 1 dS/m as measured by EC in top 15 cm of soil
- o Manure is not applied if the soil salinity is above 4 dS/m as measured by CD in top 15 cm of soil
- o Salt, nitrogen and phosphorus levels in manure are reduced by
 - o Matching animal requirements to feed intake; thereby, reducing excesses
 - o Improving feed efficiency
 - o Implants
 - o Feed additives e.g. ionophores, beta-agonists (describe)
 - o Other (describe)
- o Manure is not applied if the nitrate-nitrogen in the soil after manure is applied would exceed limits set in Schedule 3, Table 3 of AOPA
- o In areas that are particularly vulnerable to phosphorus runoff or leaching (e.g. flood plains, steeply sloped land, land with high water tables or shallow aquifers), manure is applied based on phosphorus rates, not nitrogen rates
- o Manure is not applied until land is soil tested
- o Representative soil samples are taken by _____
(responsible person or company)
 - o Soil sampling method
 - o Representative random composite sampling
 - o Bench mark sampling
 - o Grid sampling
 - o Landscape directed sampling
 - o Other (describe)
 - o Handling/Shipping
 - o lab contacted prior to sampling for any specific sampling and shipping information
 - o other (describe)
- o Soil testing is conducted according to the latest edition of the Manual on Soil Sampling of Soil Science, except for phosphorus, which is done by the Modified Kelowna Method
 - o Soil testing includes
 - o extractable nitrate-nitrogen (N03-N) from a soil depth of 0-60 cm (0-24 in) [AOPA requirement]
 - o soil salinity based on electrical conductivity (EC) from a soil dept of 0-15 cm [AOPA requirement]

- soil texture (one time analysis) from a soil dept of 1-15 cm and 15-30 cm [AOPA requirement]
- extractable PO₄-P from a soil depth of 0-15 cm (0-6 in)
- other (describe)

- soil tests are conducted prior to applying manure or compost if soil tests have not been conducted previously [AOPA requirement]
- soil test information must not be older than 3 y [AOPA requirement]
- Soil test results are stored in _____

- Manure samples are taken by _____ (responsible person or company).
- The nutrient content of manure is determined by:
 - testing
 - sampling method (describe)

 - handling and shipping
 - sealable freezer bags, double bagged
 - bag half-filled and label with name and date and source
 - send immediately to lab (name) _____; else frozen until delivery
 - lab contacted prior to sampling for any specific sampling and shipping information
 - other (describe)

 - Manure is tested for
 - Dry matter
 - Total nitrogen
 - Ammonium nitrogen
 - Total phosphorus
 - Other (Describe)

 - Results provided on a wet (or “as is”) basis
 - manure test results are stored in _____

- Manure values are obtained from AOPA Standard, Schedule 3, Table 5

Feedlot:
Approved by:

Version 1.0
Date:

- o manure application rates are determined by matching crop yield targets and soil test results with manure nutrient content and supplementing with inorganic fertilizer as required
- o crop yield targets are estimated by averaging the yields of the previous _____ harvests for a given field and adding a _____% improvement factor
- o plant tissue nutrient levels are tested
- o manure with the highest nutrient content is applied to crops with the highest nutrient requirements
- o manure with the lowest nutrient content is applied to fields closest to the feedlot and manure with the highest nutrient content is applied to the farthest fields
- o composted manure is applied on land close to neighboring residences
- o catch basin liquid applied to land does not runoff to a common body of water
- o catch basin liquid is not applied on crops grown for human consumption that are eaten uncooked
- o manure spreaders are calibrated according to manufacturer guidelines to ensure proper rate of application (calibration frequency) _____
 - o Describe procedure for calibrating manure spreader

- o Records of calibration of the manure spreader are retained and stored in _____

- o Other (describe)

Manure Treatment

- o Personnel responsible _____
- o Manure is not treated i.e. composted, additives, biogas generation...
- o Manure is composted (estimated total volume) _____ tonnes/year
- o Composting facility is registered and/or has approval by Alberta Environment as required under the Code of Practice for Compost Facilities
- o Manure is composted
 - o In-pen by regularly scraping pen surface, placing in pile, turning periodically, about three times or _____ times, before manure hauled out
 - o Windrows
 - o turned every 2 to 5 days or _____ (frequency), depending on composting mix, weather and windrow size
 - o other (describe)

Feedlot:
Approved by:

Version 1.0
Date:

- static pile
 - vessel
 - other (describe)

- Compost facility has (describe each briefly)
 - Run-on control

 - Leachate and runoff control

 - Odor control

 - Seepage control

 - Groundwater monitoring

 - Other (describe)

- Manure is processed through biogas generation
 - Describe biogas generation process (volume of manure processed annually.....) or refer to location of written procedures and records

- Other (describe)

Manure Records (refer to examples of AOPA Manure Records)

- Personnel responsible _____

Feedlot:
Approved by:

Version 1.0
Date:

- o Manure records are maintained as per AOPA requirements
- o Weight/volume of manure production is determined by
 - o AOPA Standards, Schedule 3, Table 6
 - o Weighed (describe method)

- o Manure management records contain
 - o Weight or volume of manure or compost produced
 - o name and mailing address or legal land description, of a person to whom 500 tonnes or more of manure or compost in a year is transferred, received or removed; date of transfer, removal or received; and weight or volume transferred, removed or received
 - o legal description of land to which manure or compost was applied
 - o area of land to which manure or compost was applied
 - o date manure or compost was received and applied
 - o weight or volume of manure or compost applied
 - o application rates of manure or compost nutrients and fertilizer by field and year
 - o dates of application and incorporation methods used for each field
 - o soil test results by field for nutrients as specified in Schedule 3 AOPA
 - o crops planted and yields by field and by year
 - o other (describe)

- o all manure records are kept for 5 y
- o manure records are stored in _____

- o If the manure management plan is not followed or problems occur e.g. manure spill on public road, _____ (who) is contacted, corrective actions are implemented, necessary personnel are retrained if necessary, plans are updated, and actions are recorded.

Feedlot:
Approved by:

Version 1.0
Date: