



Ministry of  
Agriculture

# Technical Brief for Permanent Storage

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A part of the Hullcar Situation Review  
Nutrient Management Practices - Technical Report

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## AGRICULTURAL WASTE CONTROL REGULATION REVIEW

### TECHNICAL BRIEF PERMANENT STORAGE

**Disclaimer:** The information presented in this technical brief has been prepared by Ministry of Agriculture staff and is based on conversations that have occurred during Agriculture Waste Control Regulation consultation sessions with industry and the Ministry of Environment since April 2012. The material is presented as a summary of some of the thoughts expressed at working group meetings with the intention of providing relevant background information. While the brief does offer some suggestions from the Ministry of Agriculture, the information contained herein should not be considered a final product but rather a starting point for further discussion at future meetings.

**Attention:** The comments and questions in this text box were added in November 2015 following the posting of the second intentions paper in July 2015 to add clarification, to provide further context or to flag parts of the original brief which may not have attracted adequate discussion in the first round of consultation. The comments are not intended to suggest a revision to or to provide a reinterpretation of the material presented in the original brief or what was documented in the applicable meeting minutes.

- Page 5 of the second policy intentions paper refers to higher levels of protection in high risk areas or conditions or in situations identified in a farm's environmental risk assessment. What kinds of additional storage-related levels of protection might be implied?
- Section 5 on Storage in the second policy intentions paper refers to storage requirements with the overarching objective of protecting surface water and groundwater by limiting negative impacts from leachate, contaminated runoff and erosion. Will or should the drafting instructions include a specific required storage duration period depending on location in the province? Or will the required duration be tied directly to land spreading restrictions and/or risk assessments? Will a farm or ranch need to demonstrate that adequate storage is in place whether it is on the place of origin or whether alternative off-site storage is available?
- Will or should the drafting instructions include specifications or conditions surrounding the construction of an earthen storage beyond the requirement that a qualified professional must design the structure? Item 5 in this brief under the heading "Potential Regulatory Options" suggests three underlying criteria for lining and monitoring. Are these reasonable? Should such criteria become a regulatory requirement? How would the involvement of a qualified professional be monitored?

**Note:** This brief incorporates suggestions made by the Agricultural Waste Control Regulation review working group as reflected in the notes for the March 10, 2014 meeting.

## **INTRODUCTION**

Permanent storages for manure and other agricultural by-products represent one of the highest cost environmentally-based items on farms to ensure applications of these resources are carried out when crops can utilize the nutrients during the growing season. Adequate storage capacity is a key component of an overall nutrient management plan on livestock or poultry farms generating manure and other nutrient-rich by-products and for farms receiving such resources. Key considerations in planning suitable storages include elements such as setback distances from watercourses, sizing of storages to match livestock manure production and other waste inputs, integrity of storage, and the ability to monitor whether a storage facility has been compromised.

## **SUMMARY OF CURRENT REGULATION**

The *Code of Agricultural Practice for Waste Management* makes an introductory general statement that agricultural wastes must be collected, stored, handled, used and disposed of in accordance with the Code and in a manner that prevents pollution. On the subject of permanent storage, the primary requirements are paraphrased as noted below.

- waste may be stored on a farm only if the waste is produced or used on that farm
- a storage facility must be of sufficient capacity to allow the application of waste as a fertilizer or soil conditioner, must create conditions that allow appropriate removal of the waste for other purposes (for example, use on another farm or for processing into compost), must prevent escape that causes pollution, and must be maintained to prevent pollution
- a storage facility must be located at least 15 metres from any watercourse and 30 metres from any source of water used for domestic purposes
- setback requirements for storages constructed prior to April 1, 1992 are grandfathered provided that pollution does not occur as determined by a qualified professional

## **CHALLENGES IN CURRENT LEGISLATION**

The primary concern which the Ministry of Environment has expressed with respect to wording in present legislation is that prescriptive expectations are not laid out clearly enough. Management of permanent storages in a manner so as to prevent pollution is perceived to be difficult to prove or enforce.

## **POTENTIAL REGULATORY OPTIONS**

Each clause of the existing Code insofar as it applies to permanent storages should be reviewed to determine whether it should remain in its current form or in a revised form in the new regulation.

An overarching goal as agreed upon in industry meetings is that manure and any other agricultural wastes or by-products must be contained to prevent the release of stored materials into surface water or ground water. In addition, runoff and leachate generated on the farm must be collected and contained. Furthermore, violations with respect to storage must be enforceable and measurable. The following suggestions outline regulatory requirements which could apply to permanent storages and represent understandings arising from industry meetings. It should be recognized that future discussion may result in a number of regulatory options becoming non-regulatory options or some non-regulatory options becoming regulatory ones.

1. **Definition of Wastes.** Storage requirements should apply to all inputs and by-products defined as liquid or solid agricultural “wastes” (such as digestates, compost products, leachate, waste water, milk-based wastes, egg-based wastes, vegetative waste, bedding, spoiled feed, silage, and other nutrient-rich materials).
2. **Storage Away From Farm of Origin.** Allowance should be made for storage on other farms with vacant or partially-used facilities if the farm of origin has inadequate storage. A clarification or expansion of Part 4, Section 4 of the current Code is required.
3. **Overflow and Leakage.** All permanent storages, whether pre-existing or new, must not overflow or leak.
4. **Structural Design.** All new permanent storages (concrete, steel, wood, unlined earthen, or lined earthen) must be designed by a qualified professional engineer to ensure long-term structural integrity.
5. **Setbacks.** Storages should be located a minimum of 15 metres from any watercourse and 30 metres from any source of water used for domestic purposes. Setback requirements should not apply to a storage facility existing prior to April 1, 1992, provided that no pollution is occurring due to leakage, overflowing, or direct discharge. These setbacks are identical to the ones in the current Code of Agricultural Practice for Waste Management.
6. **Setbacks from Riparian Areas.** If discrepancies exist with respect to definitions and setbacks in the current Code, these should be updated and expanded in the new regulation to match those specified in the Ministry of Agriculture fact sheet entitled *Agricultural Building Setbacks from Watercourses in Farming Areas*.
7. **Impermeable Surfaces under Pens.** Farms with manure storage systems incorporating pens – as used, for example, in fur and squab farms – constructed after enactment of the new regulation must incorporate impermeable concrete surfaces beneath the pens to prevent groundwater leaching. Leachate generated from pen systems must be collected and stored.
8. **Runoff and Leachate Capture for Pen Systems.** Requirements for manure storage in existing farms using underpen storage should remain as currently specified in the Code. While implied in the Code, language could be changed to more clearly specify that, for operations existing prior to enactment of new legislation, contaminated runoff generated in such settings must be collected and stored separately.
9. **Penalties.** Provisions for accelerated penalties should be built into the regulation.

## POTENTIAL NON-REGULATORY OPTIONS

The following items represent possible non-regulatory options in the form of beneficial or best management practices to accomplish the regulatory options noted above. Further practices are outlined in the fifth edition (November 2010) of the *BC Environmental Farm Plan Reference Guide*.

1. **Mortality Storage.** Conditions for livestock mortality storage and mortality composting such as general specifications for covers for solid manure/compost piles, bins, and refrigeration should be addressed in the regulation.
2. **Demonstration of Adequate Storage.** The farm of origin should, upon request, be able to demonstrate that adequate storage is available (whether on site or at other designated locations). Storage calculations should take into account additional capacity needed if residual manure is typically left in storage subsequent to emptying and prior to the winter storage period. Storage calculations should be based on manure (and other waste) generation rates published in the *BC Environmental Farm Plan Reference Guide* or other recognized publication.
3. **Soil and Water Table Conditions.** Soils and water table conditions in and around storage facilities must be assessed by a qualified professional to ensure that a chosen storage type is appropriate for the conditions at hand.
4. **Soil Assessment for Earthen Storages.** In the case of earthen storages, soil test pits or drill holes should be dug at a minimum of 20-metre intervals to a depth of at least one metre below the finished depth of the proposed storage to ascertain whether underlying soils are impermeable enough to allow the soil to be used as suitable containment.
5. **Soil Conditions, Geotextile Requirements and Monitoring for Earthen Storages.** The following stipulations are suggested for permanent unlined or lined earthen storages:
  - (i) For permanent unlined earthen storages, the underlying soils must have a permeability of less than  $10^{-9}$  metres per second to a minimum depth of one metre below the finished depth of storage.
  - (ii) For permanent unlined earthen storages having an impermeable soil thickness of between 0.5 metres and one metre directly below finished storage depth, a monitoring station must be incorporated into the design and construction. Monitoring specifics could be referenced in the *BC Environmental Farm Plan Reference Guide* or to a fact sheet or publication to be prepared on the subject.
  - (iii) For permanent earthen storages having an impermeable soil thickness of less than 0.5 metres directly below finished storage depth, a monitoring station and geotextile liner (or other impermeable barrier deemed suitable by a qualified professional) must be incorporated into the design and construction. Monitoring specifics should be referenced in the *BC Environmental Farm Plan Reference Guide* or to a fact sheet or publication to be prepared on the subject.
6. **Duration of Storage.** Manure storage capacity must allow for a minimum of six months storage in the Fraser Valley and on Vancouver Island and a minimum of seven months in other areas of the province.
7. **Determination of Storage Capacity.** Storage capacity should be designed and constructed to contain manure, other associated wastes (including contaminated runoff and wash water), and

precipitation based on one-in-25 year six-month averages for the Fraser Valley and Vancouver Island and one-in-25 year seven-month averages for areas outside the Fraser Valley and Vancouver Island.

8. **Storage Capacity Contingency.** A 10% contingency should be incorporated into storage facility capacity to account for years when weather does not allow early growing season application or late fall application.
9. **Runoff Collection from Farm Yards.** Contaminated runoff or leachate must not be diverted toward yard/exercise inlets and piping systems unless it is collected at the downstream end for the purposes of incorporating into permanent storage.
10. **Duration of Manure Storage under Pens.** Manure stored under pens (as is common in fur farming, for example) could remain subject to the same requirements as for solid manure storage piles. The current regulation states that storage of manure under pens is permitted for up to nine (9) months. It is questionable whether – except for reasons associated with good general farming practice – there is particular benefit in specifying a maximum duration of storage if the minimum requirement in the new regulation is that no contaminated runoff and leachate can occur. Minimum storage duration should ultimately be dictated (as is the case for permanent storage facilities in general) by appropriate times when manure can be spread.

## RELATED ADDITIONAL CONSIDERATIONS OR UNRESOLVED ISSUES

The following additional considerations or unresolved issues may not have been covered under the potential options section as noted above, may have been brought up as a related parking lot item in previous meetings with industry, or may have been discussed in other contexts.

- The suitability of locations for feedlots and the attendant ability to contain waste needs further discussion insofar as the potential for groundwater contamination exists. Feedlots should not be viewed as permanent storages but incident precipitation (if not absorbed by bedding materials and surrounding soils) should be collected and stored.
- The possibility of non-agricultural “wastes” or inputs (such as fats, oils and greases) may need to be addressed in, for example, on-farm anaerobic digestion scenarios.
- The regulation should ensure that the use of collected rain water as a dilution agent for manure remains an option and is not prohibited.

## REFERENCES

The following references may support potential options identified in the potential options as noted above or may help to identify solutions or resolve issues needing further deliberation.

BC Environmental Farm Plan Reference Guide (5th edition, November 2010)  
Agricultural Building Setbacks from Watercourses in Farming Areas