The Minimum Distance Separation (MDS) Document

Formulae and Guidelines for Livestock Facility and Anaerobic Digester Odour Setbacks

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Disclaimer
This publication is for informational purposes only. It is intended to serve as a guide to the Provincial Policy Statement, 2014, and not as expert advice.

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CONTENTS

1. OVERVIEW

The Minimum Distance Separation (MDS) Document represents the *Minimum Distance Separation Formulae* as defined in the Provincial Policy Statement, 2014 (PPS). It replaces all earlier versions of the MDS Formulae and Implementation Guidelines. The MDS Document is a land use planning tool developed by the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA). The intent of this document is to prevent land use conflicts and minimize nuisance complaints from odour.

The MDS Document is designed to be read in conjunction with the *Planning Act, 1990*, the *Building Code Act, 1992*, the *Nutrient Management Act, 2002*, the policies of the PPS and other applicable laws and provincial plans. In addition, it is intended for individuals who have a basic understanding of *livestock* agriculture or a related discipline. It is not the purpose of this document to provide a basic education in *livestock* agriculture, or to provide the technical expertise for undertaking all the analyses required to satisfy all of the policies contained in the PPS. This MDS Document is aimed for use primarily by municipalities, planning boards and other similar planning authorities; as well as farmers, landowners, developers, land use planners, agrologists, nutrient management consultants, commissions, farm organizations, non-governmental organizations and the general public to ensure consistency with PPS policies related to the MDS Formulae. The intended audience of this MDS Document includes individuals involved in:

- the planning, design, layout, construction and operation of *livestock facilities* and *anaerobic digesters*;
- the development and review of land use planning documents;
- the review and approval of development applications, including but not limited to official plan amendments, zoning by-law amendments, consents to sever, minor variances, development permits and site plan agreements; and,
- matters before provincial boards and tribunals such as the Ontario Municipal Board and the Normal Farm Practices Protection Board.

The MDS Document provides technical guidance for implementing both the MDS Formulae and Implementation Guidelines as required in the PPS and other applicable provincial plans. This document is intended to support and clarify, but not add to or detract from the policies of the PPS or other applicable provincial plans.

In accordance with the PPS, new land uses in *prime agricultural area*s and on *rural land*s shall comply with the *Minimum Distance Separation Formulae*. Consequently, both the formulae and Implementation Guidelines contained in this MDS Document shall be referenced in municipal official plans, and detailed provisions included in municipal comprehensive zoning by-laws such that, as a minimum, MDS setbacks are required in all designations and zones where *livestock facilities* and *anaerobic digesters* are permitted.

Sections 1, 2, 6, 7 and 8 of this document are provided for information and background purposes. They are intended to provide broader context for the MDS Formulae and Implementation Guidelines, and to assist users with implementation, as well as provide information on related land use topics. Sections 1, 2, 6, 7 and 8 are not intended to be incorporated into municipal land use planning documents.

However, the remainder of this MDS Document (Sections 3, 4 and 5) comprise the *Minimum Distance Separation Formulae* as referenced in the PPS and provincial plans, and as such shall form the basis for MDS provisions that are incorporated into local land use planning documents. There are multiple approaches to incorporating this MDS Document into local land use planning documents that may achieve consistency with the PPS and provincial plans. More information on these approaches is found in Section 8. Regardless of the approach selected, it is recommended that a municipality seek its own legal advice regarding amending its planning documents to accommodate MDS provisions.

2. INTRODUCTION AND BACKGROUND

2.1 Preface

Livestock agriculture in Ontario is an important economic driver that contributes many jobs and billions of dollars each year to the provincial economy. But agriculture continues to evolve and change. Farms are increasing in size and complexity, and fewer people living in *rural areas* are farmers. Permitting development which is incompatible with *livestock facilities* and *anaerobic digesters* can have a detrimental impact on the ability of surrounding agricultural operations to expand. New development in the *rural area* introduces potential new sources for nuisance complaints regarding odour from *livestock facilities* and *anaerobic digesters*. Increasingly, farm operators are finding it difficult to expand or establish new *livestock* operations, especially in parts of the province where historically there has been more fragmentation of the agricultural land base through *lot* creation. *Livestock* operations generally prefer to locate on suitable agricultural land and away from potential land use conflicts with surrounding land uses. In recognition of the need to protect agricultural land for *agricultural uses*, the province has a long history of land use policies protecting agricultural land and farm operations.

2.2 History of MDS

Provincial direction for separation siting of Ontario *livestock facilities* originated in 1970, with the introduction of the publication entitled, A *Suggested Code of Practice*. Ontario was experiencing what at the time seemed like a proliferation of new, large *livestock facilities*. 'Large' at that time was 600 feeder hogs, 60 dairy cows or 15,000 chicken broilers. Today, large *livestock facilities* are commonly triple the size of those of the past, accommodating 2,000 feeder hogs, 250 dairy cows, or 50,000 chicken broilers at one time. To address nuisance effects associated with odour, A *Suggested Code of Practice* recommended fixed setbacks between *livestock facilities* and surrounding *dwellings*, residential zones, *lot* lines and roads. A *Suggested Code of Practice* rationalized that the effect of objectionable odours in a neighbourhood could be reduced if these uses were located as far as practically possible from surrounding *dwellings*. A *Suggested Code of Practice* also encouraged farmers to apply for a Certificate of Approval from the government, which outlined the minimum amount of land required, based on the number of animal units on the farm, to avoid the risk to groundwater pollution by nitrogen compounds. This matching of land base to animal units was the first rudimentary reference to a nutrient management plan, which a generation later helped form the basis for the *Nutrient Management Act, 2002*. Revisions were made in a subsequent edition of A *Suggested Code of Practice* in 1973. While it contained a framework for the establishment and expansion of *livestock* enterprises, it provided little protection from encroachment by other land uses.

In 1976, the *Agricultural Code of Practice* was published which incorporated a number of changes and provided a two-way approach to separating *livestock facilities* from non-compatible uses and vice-versa. It introduced the concept of a sliding scale for separation distances, since fixed distances were too restrictive, or too lenient, depending on the size and type of farm. As part of the *Agricultural Code of Practice*, the Minimum Distance Separation I (MDS I) formula was established to determine setbacks between proposed new *development* and existing *livestock facilities*. The Minimum Distance Separation II (MDS II) formula was established under the *Agricultural Code of Practice* to determine setbacks between proposed new, enlarged or renovated *livestock facilities* and other existing or approved development.

Both the MDS I and MDS II Formulae were updated slightly in 1995 in two publications entitled, *Minimum Distance Separation I (MDS I)* and *Minimum Distance Separation II (MDS II)*, but the basic principles of the formulae from the *Agricultural Code of Practice* remained the same.

In 2006, both MDS I and MDS II formulae and guidelines were combined into one document, known as OMAFRA Publication 707, *Minimum Distance Separation (MDS) Formulae: Implementation Guidelines*. Both formulae were revised to use *Nutrient Units*, as defined in the *Nutrient Management Act, 2002*, for quantifying the size of the operation, rather than the former Animal Units and Livestock Units used in earlier versions of

the formulae. During the 2006 update, the methodology for calculating MDS I setbacks was also revised, so that calculated MDS I setback distances were more aligned with those generated by the MDS II formula for *first* and *altered livestock facilities*.

This MDS Document replaces all earlier versions of the MDS Formulae and Implementation Guidelines. Future reviews of this publication will be undertaken by OMAFRA in concert with other provincial regulatory, land use policy or plan reviews (e.g., PPS review), or earlier if OMAFRA deems necessary. The goal is to ensure the MDS Document reflects current land use planning practices and technological innovation within the *livestock* industry, and continues to meet the needs of agriculture and rural communities.

2.3 Policy Basis and Legislative Authority

The PPS is issued under the *Planning Act, 1990*, and provides policy direction on land use planning matters of provincial interest. Policy 2.3.1 of the statement reads:

> "*Prime agricultural area*s shall be protected for long-term use for agriculture.
>
> *Prime agricultural area*s are areas where *prime agricultural land*s predominate. *Specialty crop area*s shall be given the highest priority for protection, followed by Canada Land Inventory Class 1, 2 and 3 lands, and any associated Class 4 through 7 lands within the *prime agricultural area*, in this order of priority."

The PPS sets out policies for *prime agricultural area*s which are intended to protect these areas for long-term use for agriculture. The PPS also supports a diversified rural economy, and promotes protection of agricultural and other resource-related uses on *rural land*s. MDS applies in *rural areas* for both *rural lands* and *prime agricultural area*s, as directed in PPS policies 1.1.5.9 and 2.3.3.3.

> "New land uses, including the creation of *lot*s, and new or expanding *livestock facilitie*s shall comply with the *minimum distance separation formulae*."

PPS policy 1.1.3.8 (d) states that a planning authority may only identify a *settlement area* or allow the expansion of a *settlement area* boundary where it has been demonstrated that:

> "The new or expanding *settlement area* is in compliance with the *Minimum Distance Separation Formulae*."

Likewise, PPS policy 2.3.6.1 (b) states that planning authorities may only permit limited non-residential uses in *prime agricultural area*s provided that, among other things:

> "2. The proposed use complies with the *Minimum Distance Separation Formulae*."

The *Planning Act, 1990*, requires that decisions on land use planning matters shall be consistent with the PPS. This MDS Document represents the *Minimum Distance Separation Formulae* as defined in the PPS. Land use planning matters required to be consistent with the PPS include municipal official plans and zoning by-laws. Official plans and zoning by-laws must be updated to comply with the MDS requirements.

Updating zoning by-laws to require compliance with MDS is also important in relation to the issuance of building permits under the *Building Code Act, 1992*, for the construction of buildings, including new buildings, additions, alterations or change of use, etc. A chief building official must issue a building permit unless there is a contravention of the *Building Code Act, 1992*, building code or 'applicable law'. Municipal zoning by-laws are included in the list of 'applicable law' set out in the building code regulation (O. Reg. 322/12). When MDS provisions are incorporated in a municipal zoning by-law, they become one of the requirements that a chief building official must consider when determining whether to issue a building permit.

While MDS setbacks are an important and effective tool for dealing with nuisance issues related to odour, they will not eliminate all potential odour complaints, nor will they address other nuisance issues such as noise, dust, light, smoke, vibration or flies as listed under the *Farming and Food Production Protection Act, 1998*. The proper application of MDS may incidentally reduce potential conflicts associated with these nuisances. This document is only intended to deal with odour generated from *livestock facilities* and *anaerobic digester*s, and is not intended to address nuisance issues related to odour from the land application of manure or digestate. In addition to applying the appropriate MDS setbacks, municipalities are encouraged to develop provisions in their official plans and zoning by-laws to address PPS policies 2.3.6.2 and 1.1.3.8 (e) and provide for mitigation of impacts from new or expanding *settlement areas* and *non-agricultural uses* on surrounding agricultural operations.

The separation distances calculated by the MDS Formulae will vary according to a number of variables including type of *livestock*, number of *Nutrient Unit*s, the degree of expansion proposed, type of manure system and the form of development present or proposed. History shows that, where there has been sufficient separation distance between differing rural uses, there have been few odour complaints.

2.4 Effective Date

This MDS Document applies to all *Planning Act, 1990*, applications submitted on or after March 1, 2017. References in the PPS to *Minimum Distance Separation Formulae* should be taken as reference to this MDS Document for all *Planning Act, 1990*, applications submitted on or after March 1, 2017. For building permit applications, the effective provision in the zoning by-law applies. Municipalities should update their planning documents to reflect this updated MDS Document.

2.5 How to Use this MDS Document

This MDS Document is more than a set of individual Implementation Guidelines. The document is intended to be read in its entirety and all the relevant Implementation Guidelines are to be applied to each situation as if they are specifically cross-referenced with each other. While specific Implementation Guidelines sometimes refer to other Implementation Guidelines for ease of use, these cross-references do not take away from the need to read this MDS Document as a whole.

This MDS Document uses the same approach for defined terms and meanings as is used in the PPS. Except for references to legislation and other document titles which are italicized, italicized terms in this MDS Document are defined in Section 3 — Definitions. For non-italicized terms, the normal meaning of the word applies. Terms may be italicized only in specific provisions; for these terms, the defined meaning applies where they are italicized and the normal meaning applies where they are not italicized. Defined terms in Section 3 are intended to capture both singular and plural forms of these terms in this MDS Document. References within this document to 'municipalities' should be taken to include planning boards or other approval authorities, where appropriate. In order to correctly apply MDS setbacks, municipalities should keep their official plans and zoning by-laws up-to-date with this MDS Document.

This MDS Document represents the provincial standard with respect to the calculation of MDS setbacks. The only circumstances where municipalities may alter the application of MDS is where options are explicitly stated in specific Implementation Guidelines. In order to exercise these options, the relevant municipal planning documents (e.g., official plan or zoning by-law) must provide clear direction outlining the preferred local approach. In the absence of explicit policies in the appropriate municipal planning documents addressing these specific options, the default approaches identified in this MDS Document apply. The default approaches are outlined in Section 8 of this MDS Document. The following are specific Implementation Guidelines where MDS options are available to municipalities:

- Implementation Guideline #7 — MDS I setbacks for building permits on existing *lot*s
- Implementation Guideline #9 — MDS I setbacks and *lot* creation for a *residence surplus to a farming operation*
- Implementation Guideline #35 — MDS I setbacks for *agriculture-related uses* and *on-farm diversified uses*
- Implementation Guideline #35 — MDS II setbacks for *agriculture-related uses* and *on-farm diversified uses*
- Implementation Guideline #38 — MDS II setbacks for cemeteries

These five options, found in four separate Implementation Guidelines, combined with the potential reduction of MDS setbacks for limited site-specific circumstances in accordance with Implementation Guideline #43, are the only areas where municipalities may exercise flexibility with respect to MDS implementation approaches.

Municipal setbacks for *livestock facilities* and *anaerobic digester*s (i.e., MDS II) shall not exceed those calculated by the MDS II formula, in accordance with provincial standards. For instance, municipal planning documents that require fixed setbacks for *livestock facilities* or *anaerobic digester*s which are greater than those established by this MDS Document may be viewed as inconsistent with PPS policy 2.3.3.2, which states:

> "In *prime agricultural area*s, all types, sizes and intensities of *agricultural uses* and *normal farm practices* shall be promoted and protected in accordance with provincial standards."

Municipalities who may be considering MDS setbacks for *development* (i.e., MDS I) which exceed those established by this MDS Document shall ensure they are consistent with PPS policy 4.9, which states:

> "The policies of this Provincial Policy Statement represent minimum standards. This Provincial Policy Statement does not prevent planning authorities and decision-makers from going beyond the minimum standards established in specific policies, unless doing so would conflict with any policy of this Provincial Policy Statement."

Municipalities shall adopt MDS setback policies and provisions in their official plans and zoning by-laws respectively, so that the MDS setbacks are met through the appropriate implementation of this MDS Document.

2.6 Roles and Responsibilities for Implementing MDS

Municipalities are responsible for implementing MDS. While there are multiple tasks associated with ensuring the correct MDS setbacks are met, depending on the structure of the municipality, the person who is responsible for carrying-out those tasks may vary.

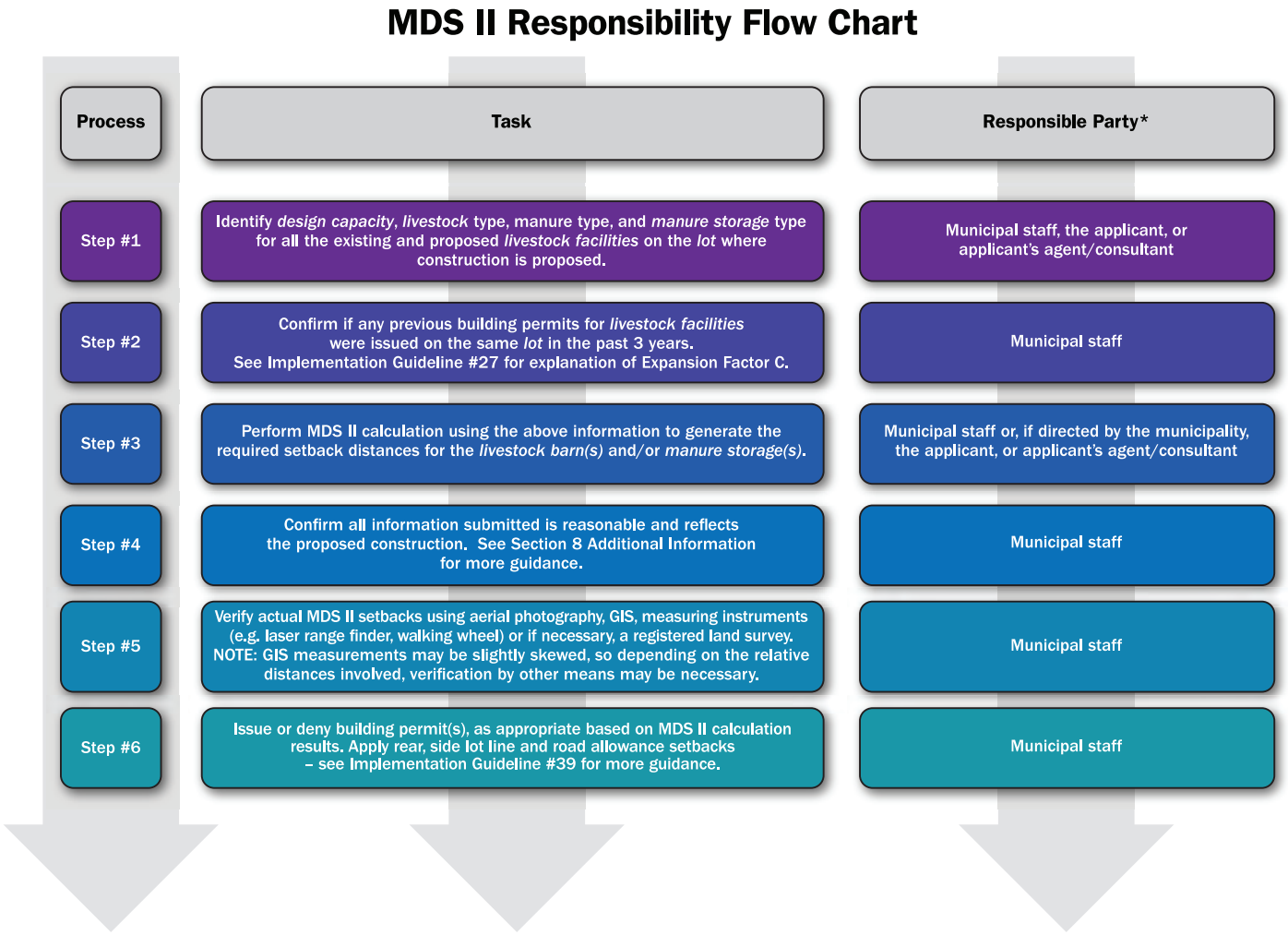
Figures 1 and 2 are designed to help understand who is responsible for each task in determining and applying MDS I or MDS II setbacks.

MDS I Responsibility Flow Chart

Process	Task	Responsible Party*
Step #1	Investigate surrounding area, map and list all applicable *existing livestock facilities* and *anaerobic digesters* in accordance with Implementation Guideline #6.	Municipal staff or, if directed by the municipality, the applicant, or applicant's agent/consultant
Step #2	Determine capacity, *livestock* type, *lot* size, manure type and *manure storage* type for each *existing livestock facility* identified. See Section 8 Additional Information for more guidance	Municipal staff or, if directed by the municipality, the applicant, or applicant's agent/consultant
Step #3	Determine Factor E (encroaching land use factor) for the proposed land use (Type A or Type B) in accordance with Implementation Guidelines #29, #33 and #34.	Municipal staff (ideally at pre-consultation stage)
Step #4	Perform MDS I calculations using the above information to generate the required setback distances for *livestock facilities* on each lot.	Municipal staff or, if directed by the municipality, the applicant, or applicant's agent/consultant
Step #5	Confirm that all information used in the calculation is reasonable and reflects existing conditions for each *lot* with *existing livestock facilities* identified.	Municipal staff
Step #6	Verify actual MDS I setbacks using aerial photography, GIS, measuring instruments (e.g. laser range finder, walking wheel) or if necessary, a registered land survey. NOTE: GIS measurements may be slightly skewed, so depending on the relative distances involved, verification by other means may be necessary.	Municipal staff
Step #7	Issue/approve/defer/deny planning approval or building permit, as appropriate given results of MDS calculation.	Municipal staff/municipal council, land division committee, committee of adjustment or other responsible authority

*The municipality, or other planning authority, is ultimately responsible for making every effort to reasonably ensure the factors used in the MDS I calculation are correct. OMAFRA Rural Planners are available to provide technical guidance interpreting Implementation Guidelines to all parties throughout the process.

Figure 1. MDS I responsibility flow chart.



*The municipality, or other approval authority, is ultimately responsible for making every effort to reasonably ensure the factors used in the MDS II calculation are correct. OMAFRA Environmental Specialists and Engineers are available to provide technical guidance interpreting Implementation Guidelines to all parties throughout the process.

Figure 2. MDS II responsibility flow chart.

Although OMAFRA staff is available to assist municipalities with specific technical MDS questions, it is ultimately the municipality who is responsible for ensuring MDS is properly calculated and for making the final decision on related planning or building permit applications. Municipalities may assume the liability associated with making these decisions. Therefore, it is recommended that municipalities make every effort to determine if the information used to carry-out an MDS calculation is reasonably accurate and reflects the existing conditions or proposed construction.

As a best practice, municipal staffs are strongly encouraged to specify when a building permit is for a *livestock facility* or *anaerobic digester*. The permit can include details regarding the type and number of *livestock* to be housed in the facility to be constructed or altered. This approach is more effective than issuing a permit for a generic agricultural building, which may or may not include the housing of *livestock*, and it could assist with the evaluation of potential building changes in the future.

2.7 Other Required Setbacks

There may be instances where additional setbacks for *livestock facilities* and *anaerobic digesters* are required under other legislation. For example, setbacks may be required for *anaerobic digesters* by O. Reg. 267/03 under the *Nutrient Management Act, 2002*. In instances where other setbacks are required by law, the greater setback would normally apply, except where the relevant statute or regulation provides otherwise.

2.8 The MDS Software

To assist in the calculation of MDS setbacks, OMAFRA has developed a new software program — Ontario Agricultural Planning Tools Suite ("AgriSuite") for use with this MDS Document.

As of March 1, 2017, the 2006 MDS software (Version 1.0.2), or earlier versions, distributed by OMAFRA are no longer considered the current version for purposes of calculating MDS setbacks. Instead, a new version is available through OMAFRA's website (ontario.ca/omafra) and can be used as a web application or downloaded and installed. Any subsequent software updates will automatically be available when the user has online connectivity. It is the sole responsibility of the person using this MDS Document and the AgriSuite software to verify the accuracy and correctness of the data and information used. OMAFRA is not responsible for errors due to inaccurate or incorrect data or information, mistakes in calculation, errors arising out of modification of the software or errors arising out of incorrect inputting of data. Verify all data and calculations before acting on them.

2.9 Additional Information

When a neighbour is bothered by what they perceive as abnormal odours, noise, dust, light, vibration, smoke or flies, they should first try resolving the matter by speaking with the farmer believed to be creating the nuisance. If further mediation is still necessary, neighbours or farmers can contact OMAFRA's Agricultural Information Contact Centre at 1-877-424-1300 or by email at ag.info.omafra@ontario.ca. The Contact Centre will arrange for the appropriate OMAFRA staff person to contact the parties and facilitate a conflict resolution process. For those issues that cannot be resolved through mediation, the Normal Farm Practices Protection Board, established under the *Farming and Food Production Protection Act, 1998*, provides a forum for complaint resolution.

3. DEFINITIONS

Except for references to legislation and other document titles which are traditionally in italics, italicized terms in this MDS Document are defined below. For other terms, the normal meaning of the word applies. Terms may be italicized only in specific Implementation Guidelines; for these terms, the defined meaning applies where they are italicized and the normal meaning applies where they are not italicized. The following defined terms are intended to capture both singular and plural forms of these terms throughout this MDS Document.

Agricultural uses: The growing of crops, including nursery, biomass and horticultural crops; raising of *livestock*; raising of other animals for food, fur or fibre, including poultry and fish; aquaculture; apiaries; agro-forestry; maple syrup production; associated on-farm buildings and structures, including but not limited to *livestock facilities*, *manure storage*s, value-retaining facilities and accommodation for full-time farm labour when the size and nature of the operation requires additional employment.

Agri-tourism uses: Those farm-related tourism uses, including limited accommodation such as a bed and breakfast, that promote the enjoyment, education or activities related to the farm operation.

Agriculture-related uses: Those farm-related commercial and farm-related industrial uses that are directly related to farm operations in the area, support agriculture, benefit from being in close proximity to farm operations and provide direct products and/or services to farm operations as a primary activity.

Altered livestock facility: Any building activity occurring on, or in, an *existing livestock facility* that requires a building permit issued under the *Building Code Act, 1992*, and results in a change in *design capacity*. This also includes the alteration of earthen *manure storage*s.

Anaerobic digester: A permanent structure designed for the decomposition of organic matter by bacteria in an oxygen-limiting environment. For the purposes of this MDS Document, *anaerobic digester*s include, but are not limited to, associated components, which may produce nuisance odours such as: digestion vessels, storages for *anaerobic digestion materials*, storages for *anaerobic digestion output (digestate)*, loading and unloading areas, gas flares and solid/liquid material separators. *Anaerobic digester*s also include the *anaerobic digester* vessels and components that do not currently operate, but have operated in the past and continue to be structurally sound and reasonably capable of operating.

Anaerobic digestion materials: Solid or liquid organic input materials that are intended for treatment in an *anaerobic digester*, whether the materials are generated at the agricultural operation or received at the agricultural operation from an outside source.

Anaerobic digestion output (digestate): Any solid or liquid materials that result from the treatment of *anaerobic digestion materials* in an *anaerobic digester*.

Design capacity: The maximum number of *livestock* that can be reasonably housed in ALL of the *livestock barns* on a *lot*, and/or the maximum volume of manure that can reasonably be stored in ALL of the *manure storage*s on a *lot*. For *livestock barns*, this is measured in number of *livestock*, area of *livestock* housing or *Nutrient Unit*s. For *manure storage*s, this is measured in volume or *Nutrient Unit*s. For the purposes of this MDS Document, this term does not apply to *anaerobic digester*s.

Development: The creation of a new *lot*, or a change in land use to permit a *non-agricultural use* or *residential use* which required or requires approval under the *Planning Act, 1990*. However, this does not include the construction of a *dwelling* accessory to an *agricultural use*.

Dwelling: Any permanent building that is used, or intended to be used, continuously or seasonally, as a domicile by one or more persons and usually containing cooking, eating, living, sleeping and sanitary facilities.

Existing livestock facility: A *livestock facility*, or a portion of a *livestock facility*, which has already been constructed, or for which a building permit has been issued under the *Building Code Act, 1992*.

First livestock facility: Any building activity to construct a new *livestock facility* on a *lot* that requires a building permit issued under the *Building Code Act, 1992*, where there is currently no *existing livestock facility* on that *lot*. This also includes the construction of earthen *manure storage*s.

Infrastructure: Physical structures (facilities and corridors) that form the foundation for development. *Infrastructure* includes: sewage and water systems, septage treatment systems, stormwater management systems, waste management systems, electricity generation facilities, electricity transmission and distribution systems, communications/telecommunications, transit and transportation corridors and facilities, and oil and gas pipelines and associated facilities.

Livestock: Includes beef cattle, birds, dairy cattle, deer and elk, fur-bearing animals, game animals, goats, horses, poultry, ratites, sheep, swine and other animals as identified in Table 1.

Livestock barns: One or more permanent buildings located on a *lot* which are intended for housing *livestock*, and are structurally sound and reasonably capable of housing *livestock*.

Livestock facilities: All *livestock barns* and *manure storage*s on a *lot*, as well as all *unoccupied livestock barns* and *unused manure storage*s on a *lot*.

Livestock occupied portion: Areas of a *livestock barn* where *livestock* spend the majority of their time, allowing substantial amounts of manure to accumulate. This DOES NOT include areas such as: alleys, equipment storages, feed bins, feed storage/preparation areas, field shade shelters, assembly areas, loading chutes, machinery sheds, milking centres, milking parlour holding areas, offices, pastures, riding arenas, silos, tack rooms, utility rooms and washrooms.

Lot: A parcel or tract of land, within a registered plan of subdivision or described in a deed or other legal document, that is capable of being legally conveyed.

Manure storage: A permanent storage which is structurally sound and reasonably capable of storing manure and which typically contains liquid manure (<18% dry matter) or solid manure (≥18% dry matter), and may exist in a variety of:

- locations (under, within, nearby, or remote from barn);
- materials (concrete, earthen, steel, wood);
- coverings (open top, roof, tarp, or other materials);
- configurations (rectangle, circular); and,
- elevations (above, below or partially above-grade).

Minimum Distance Separation Formulae: Formulae and guidelines developed by the province, as amended from time to time, to separate uses so as to reduce incompatibility concerns about odour from livestock facilities.

Non-agricultural uses: Buildings designed or intended for a purpose other than an *agricultural use*; as well as land, vacant or otherwise not yet fully developed, which is zoned or designated such that the principal or long-term use is not intended to be an *agricultural use*, including, but not limited to: commercial, future urban development, industrial, institutional, *open space uses*, *recreational uses*, *settlement area*, urban reserve, etc. However, this does not include *agriculture-related uses*, *on-farm diversified uses* and *residential uses*.

Normal farm practices: A practice, as defined in the *Farming and Food Production Protection Act, 1998*, that is conducted in a manner consistent with proper and acceptable customs and standards as established and followed by similar agricultural operations under similar circumstances; or makes use of innovative technology in a manner consistent with proper advanced farm management practices. *Normal farm practices* shall be consistent with the *Nutrient Management Act, 2002*, and regulations made under that Act.

Nutrient Unit: The amount of nutrients that give a fertilizer replacement value of the lower of 43 kg of nitrogen or 55 kg of phosphate as nutrient (as defined in O. Reg. 267/03 made under the *Nutrient Management Act, 2002*).

On-farm diversified uses: Uses that are secondary to the principal agricultural use of the property and are limited in area. *On-farm diversified uses* include, but are not limited to: home occupations, home industries, *agri-tourism uses* and uses that produce value-added agricultural products.

Open space uses: Environmental areas and parks that have limited public visitation and usually do not require buildings or alter the natural topography, such as conservation areas and parks typically without buildings and infrastructure.

Prime agricultural area: Areas where *prime agricultural land*s predominate. This includes areas of *prime agricultural land*s and associated Canada Land Inventory Class 4 through 7 lands, and additional areas where there is a local concentration of farms which exhibit characteristics of ongoing agriculture. *Prime agricultural area*s may be identified by the Ontario Ministry of Agriculture, Food and Rural Affairs using guidelines developed by the Province as amended from time to time. A *prime agricultural area* may also be identified through an alternative agricultural land evaluation system approved by the Province.

Prime agricultural land: *Specialty crop area*s and/or Canada Land Inventory Class 1, 2, and 3 lands, as amended from time to time, in this order of priority for protection.

Recreational uses: Uses that generate frequent or regular public visitation and usually require buildings or infrastructure, such as campgrounds, golf courses, sports fields and trailer parks.

Residence surplus to a farming operation: An existing habitable farm residence that is rendered surplus as a result of farm consolidation (the acquisition of additional farm parcels to be operated as one farm operation).

Residential uses: Land, vacant or otherwise not yet fully developed, for which the zoning or designation permits *dwelling*s for human habitation as the principal use, including, but not limited to: estate residential, low-density residential, rural residential, etc. However, this does not include *dwelling*s accessory to an *agricultural use*.

Rural areas: A system of lands within municipalities that may include rural *settlement area*s, *rural land*s, *prime agricultural area*s, natural heritage features and areas, and resource areas.

Rural lands: Lands which are located outside *settlement areas* and which are outside *prime agricultural area*s.

Settlement areas: Urban areas and rural *settlement areas* within municipalities (such as cities, towns, villages and hamlets) that are:

a) built-up areas where development is concentrated and which have a mix of land uses; and
b) lands which have been designated in an official plan for development over the long-term planning horizon.

Specialty crop area: Areas designated using guidelines developed by the Province, as amended from time to time. In these areas, specialty crops are predominantly grown such as tender fruits (i.e., peaches, cherries, plums), grapes, other fruit crops, vegetable crops, greenhouse crops and crops from agriculturally-developed organic soil, usually resulting from:

a) soils that have suitability to produce specialty crops, or lands that are subject to special climatic conditions, or a combination of both;
b) farmers skilled in the production of specialty crops; and
c) a long-term investment of capital in areas such as crops, drainage, *infrastructure* and related facilities and services to produce, store or process specialty crops.

Unoccupied livestock barn: A *livestock barn* that does not currently house any *livestock*, but that housed *livestock* in the past and continues to be structurally sound and reasonably capable of housing *livestock*.

Unused manure storage: A *manure storage* that does not currently store any manure, but that stored manure in the past and continues to be structurally sound and reasonably capable of storing manure.

4. IMPLEMENTATION GUIDELINES

The following outlines the specific Implementation Guidelines which shall be executed during the application of the *Minimum Distance Separation (MDS) Formulae* to calculate setbacks.

<table>
<tr><th>MDS I</th><th>MDS II</th></tr>
<tr><td colspan="2">#1. Referencing MDS in Municipal Planning Documents</td></tr>
<tr><td colspan="2">In accordance with the Provincial Policy Statement, 2014, this MDS Document shall apply in prime agricultural areas and on rural lands. Consequently, the appropriate parts of this MDS Document shall be referenced in municipal official plans, and detailed provisions included in municipal comprehensive zoning by-laws such that, at the very least, MDS setbacks are required in all designations and zones where livestock facilities and anaerobic digesters are permitted.

Sections 1, 2, 6, 7 and 8 of this document are primarily provided for information purposes, and are not required for inclusion in municipal planning documents; however, Sections 3, 4 and 5 comprise the Minimum Distance Separation Formulae as referenced in the PPS, and as such shall form the basis for MDS provisions enshrined in local land use planning documents. To exercise the various options available to municipalities under Implementation Guidelines #7, #9, #35 and #38, appropriate references must be included in the appropriate implementing land use planning document (official plan and/or comprehensive zoning by-law depending on the trigger for MDS); otherwise, the default approaches outlined in Implementation Guidelines #7, #9, #35 and #38 shall apply as written in this MDS Document.</td></tr>
<tr><td colspan="2">#2. For What, and When, is an MDS Setback Required?</td></tr>
<tr><td>The MDS I setback distances shall be met prior to the approval of: proposed lot creation in accordance with Implementation Guidelines #8 and #9; rezonings or re-designations in accordance with Implementation Guideline #10; building permits on a lot which exists prior to March 1, 2017 in accordance with Implementation Guideline #7; and as directed by municipalities for local approvals for agriculture-related uses or on-farm diversified uses in accordance with Implementation Guideline #35.

The information used to carry out an MDS I calculation must reflect the circumstances at the time that the municipality deems the planning or building permit application to be complete.</td><td>The MDS II setback distances shall be met prior to the approval of the building permit application for a first or altered livestock facility occupying an area greater than 10 m^2 or any anaerobic digester.

The information used to carry out an MDS II calculation must reflect the circumstances at the time that the municipality deems the building permit application to be complete.</td></tr>
</table>

#3. For What, and When, is an MDS Setback NOT Required?

MDS I

Certain proposed uses are not reasonably expected to be impacted by *existing livestock facilities* or *anaerobic digesters* and as a result, do NOT require an MDS I setback. Such uses may include, but are not limited to:

- extraction of minerals, petroleum resources and mineral aggregate resources;
- *infrastructure;* and
- landfills.

However, if one of the uses exempted from MDS I by this Implementation Guideline is later proposed to be rehabilitated or redeveloped to a use that is not an *agricultural use*, then MDS I setbacks shall be met prior to the approval of any required planning or building permit application.

In addition, MDS I setbacks are NOT required from:

- *livestock barns* occupying an area less than 10 m^2;
- certain *unoccupied livestock barns* in accordance with Implementation Guideline #20;
- certain *unused manure storages* in accordance with Implementation Guideline #21;
- apiaries;
- aquaculture facilities;
- deadstock handling facilities;
- fairground buildings;
- feed storages;
- field shade shelters;
- greenhouses;
- kennels;
- machinery sheds;
- meat plants (including abattoirs and slaughterhouses);
- mushroom facilities;
- pastures;
- poultry hatcheries;
- stockyards;
- temporary field nutrient storage sites (as defined under the *Nutrient Management Act, 2002*);
- veterinary clinics with housing for *livestock;* and
- zoos.

MDS II

Certain things that may or may not be associated with agriculture do NOT require MDS II setbacks. Such things may include, but are not limited to:

- apiaries;
- aquaculture facilities;
- deadstock handling facilities;
- fairground buildings;
- feed storages;
- field shade shelters;
- greenhouses;
- kennels;
- machinery sheds;
- meat plants (including abattoirs and slaughterhouses);
- mushroom facilities;
- pastures;
- poultry hatcheries;
- stockyards;
- temporary field nutrient storage sites (as defined under the *Nutrient Management Act, 2002*);
- veterinary clinics with housing for *livestock;* and
- zoos.

In addition, MDS II setbacks are NOT required from:

- extraction of minerals, petroleum resources and mineral aggregate resources;
- *infrastructure;* and
- landfills.

MDS I	MDS II
#4. MDS Setbacks for Manure Transfer Facilities	
Some *livestock facilities* and *anaerobic digesters* require transfer facilities that store manure for less than 14 days before transfer to a longer-term permanent storage, or transfer to field spreading areas, or transfer off the farm. Transfer facilities include, but are not limited to: areas for settling sand out of liquid manure, small sumps for collection or mixing of liquid manure from several areas of a *livestock barn*, or outside concrete pads where solid manure is temporarily stored awaiting pickup by a custom manure broker. Manure transfer facilities are not considered permanent *manure storages* and instead will receive the same MDS setbacks as the *livestock barn*. In other words, the MDS setback for a transfer facility is the same as Building Base Distance 'F', and shall not generate its own separate Storage Base Distance 'S'.	
#5. MDS Setbacks for Earthen *Manure Storages*	
MDS setbacks are applied to *first* or *altered livestock facilities* (MDS II) and, reciprocally, from *existing livestock facilities* (MDS I), which in both cases includes earthen *manure storages*, despite these storages not being considered 'buildings' and, consequently, not requiring building permits at the time of construction. Simply because earthen *manure storages* do not require building permits does not exclude them from MDS setbacks, as these *livestock facilities* are permanent *manure storages* with defined boundaries and represent an odour source with the highest odour potential according to Table 5.	
#6. Required Investigation Distances for MDS	
A separate MDS I setback shall be required to be measured from all *existing livestock facilities* and *anaerobic digesters* on *lots* in the surrounding area that are reasonably expected by an approval authority to be impacted by the proposed application. As part of municipal consideration of planning or building permit applications, all *existing livestock facilities* or *anaerobic digesters* within a 750 m distance of a proposed Type A land use and within a 1,500 m distance of a proposed Type B land use shall be investigated and MDS I setback calculations undertaken where warranted. In circumstances where large *livestock facilities* (e.g., >1,200 *Nutrient Units*) exist beyond the 750 m or 1,500 m study area, MDS I setbacks from these facilities should also be calculated.	When investigating the surrounding area for applications to permit a *first* or *altered livestock facility* or *anaerobic digester*, MDS II setbacks shall be required to be measured from all existing and approved sensitive receptors reasonably expected by an approval authority to be impacted by the proposed *first* or *altered livestock facility* or *anaerobic digester*, including all existing and approved *development* and all *dwellings* on *lots* in the surrounding area.

MDS I	MDS II
#7. MDS I Setbacks for Building Permits on Existing *Lots*	
MDS I setbacks are not required for *dwelling* additions and renovations proposed on existing *lots*, even where an addition results in the existing *dwelling* being closer to a surrounding *livestock facility* or *anaerobic digester*. However, MDS I setbacks are required for all other building permit applications for *dwellings* on *lots* that existed prior to March 1, 2017, unless otherwise specified in a municipality's zoning by-law or where otherwise not required by this MDS Document. For *lots* created after March 1, 2017, MDS I setbacks shall be required for building permit applications for *dwellings* unless otherwise not required by this MDS Document. Where a setback is required, MDS I measurements shall be taken as the shortest distance between the proposed building to be constructed and either the *manure storages*, or *anaerobic digesters*, or the *livestock occupied portions* of the *livestock barns*. While municipalities have the option to exempt buildings proposed through building permit applications on *lots* which exist prior to March 1, 2017, they are strongly discouraged from exempting these applications. If local exemptions are supported for building permits on existing *lots*, a municipality shall adopt provisions in their comprehensive zoning by-law which clearly state the details for such exemptions. Examples of such provisions may include, but are not limited to, those which only require an MDS I setback for building permit applications: • on existing *lots* that are in a particular land use zone or designation (e.g., rural residential, estate residential); • on existing *lots* that are above or below a certain size threshold (e.g., 4 ha);	Not applicable

MDS I	MDS II
• on existing *lots* which are vacant (e.g., no existing *dwellings* or other buildings); • on existing *lots*, but where the MDS I setback cannot be met, then through a planning application, allow a *dwelling* provided that it be located as far as possible from the *existing livestock facility* from which the setback cannot be met; • on *lots* which exist prior to a specific date (e.g., March 1, 2017 or the date of adoption of comprehensive zoning by-law); or, • for certain types of buildings (e.g., *dwellings*).	
#8. MDS I Setbacks for *Lot* Creation	
Where *lot* creation is proposed, including new *lots* for *agricultural uses*, an MDS I setback is required for both the severed and retained *lot*. However, an MDS I setback is not required: • for a severed or retained *lot* for an *agricultural use* when that *lot* already has an existing *dwelling* on it; • for purposes such as easements, corrections of deeds, quit claims and minor boundary adjustments which do not result in the creation of a new *lot;* • for a severed or retained *lot* for *infrastructure* in accordance with Implementation Guideline #3; • for a severed or retained *lot* for an existing *non-agricultural use;* • for a severed or retained *lot* for *agriculture-related uses*, except where required by a municipality in accordance with Implementation Guideline #35; or • where noted in Implementation Guideline #9. NOTE: The *lot* creation policies contained in the PPS, provincial plans and other local *lot* creation policies continue to apply despite any exemptions from MDS I setbacks.	Not applicable

MDS I	MDS II
#9. MDS I Setbacks and *Lot* Creation for a *Residence Surplus to a Farming Operation*	
For a proposed severance of a *residence surplus to a farming operation*: 1. Where the existing *dwelling* to be severed and the nearby *livestock facility* or *anaerobic digester* are located on separate *lots* prior to the consent, an MDS I setback is not required for the consent application (or associated rezoning) unless otherwise required by a municipal official plan policy. This is because a potential odour conflict may already exist between those surrounding *livestock facilities* or *anaerobic digesters* and the existing *dwelling*. 2. An MDS I setback is always required for a proposed *lot* with an existing *dwelling* when prior to the consent, that *dwelling* is located on the same *lot* as an *existing livestock facility* or *anaerobic digester* and after the consent, the *dwelling* would be on a *lot* separate from that same *existing livestock facility* or *anaerobic digester*. This is because such a proposal could create a potential odour conflict as the *dwelling* and the *livestock facility* or *anaerobic digester* will be on separate conveyable *lots* if the severance is approved. This is the case regardless of how a municipality chooses to treat *existing livestock facility* on *lots* separate from the *dwelling* prior to the consent. 3. Where a new *lot* is proposed with an existing *dwelling* AND an *existing livestock facility* or *anaerobic digester* on it, an MDS I setback is not required for that *livestock facility* or *anaerobic digester* in accordance with Implementation Guideline #14. Refer to Figure 3 in Section 7 of this MDS Document for a drawing illustrating these three scenarios. NOTE: For severances of a *residence surplus to a farming operation*, an MDS I setback shall only be required for the newly created surplus *dwelling lot* and shall not be required for the remnant farm parcel nor for any associated rezonings of the severed or retained parcels.	Not applicable

MDS I	MDS II
#10. MDS I Setbacks for Zoning By-Law Amendments and Official Plan Amendments	
An MDS I setback is required for all proposed amendments to rezone or redesignate land to permit *development* in *prime agricultural areas* and *rural lands* presently zoned or designated for *agricultural use*. This shall include amendments to allow site-specific exceptions which add *non-agricultural uses* or *residential uses* to the list of *agricultural uses* already permitted on a *lot*, but shall exclude applications to rezone a *lot* for a *residence surplus to a farming operation* (e.g., to a rural residential zone) in accordance with Implementation Guideline #9 above. Amendments to rezone or redesignate land already zoned or designated for a *non-agricultural use*, shall only need to meet the MDS I setbacks if the amendment(s) will permit a more sensitive land use than existed before. In other words, if the proposal is to change an existing Type A land use (e.g., industrial use outside of a *settlement area*) to a Type B land use (e.g., commercial) in accordance with Implementation Guidelines #33 and #34, then an MDS I setback shall be required.	Not applicable
#11. MDS Setbacks for Reconstruction	
Where a municipality explicitly requires MDS I setbacks for building permit applications on *lots* which exist prior to March 1, 2017, in accordance with Implementation Guideline #7, an MDS I setback is NOT required for building reconstruction provided ALL of the following conditions are met: • the building which existed before the application was habitable; • the proposed building is for the same or less sensitive land use type (i.e., Type A or Type B in accordance with Implementation Guidelines #33 and #34) than the former building; and	MDS II setbacks are NOT required for *livestock facility* reconstruction provided the resulting *livestock facility* is built no closer to the surrounding existing or approved *development* or *dwelling* than the *livestock facility* which existed before the building permit application. However, MDS II setbacks shall be required if the proposed reconstruction includes an *anaerobic digester* or a *livestock facility* that meets at least ONE of the following conditions: • will house a different *livestock* type(s) which is more odorous than existed before reconstruction (resulting in a greater value for Factor A); or

MDS I	MDS II
• the proposed building is built no closer to the surrounding *livestock facilities* or *anaerobic digesters* than the former building.	• will house a greater number or area of *livestock* or store a greater volume of imported manure than existed before reconstruction (resulting in a greater value for Factor B); or • will change from a solid to a liquid manure system (resulting in a greater value for Factor D); or • will have a new *manure storage* with an increased relative odour potential (based on Table 5) than existed before reconstruction (e.g., going from a 'Very Low' to a 'Low' odour potential).
#12. Existing Uses that Do Not Conform to MDS	
An MDS I setback is required for proposed *development* or *dwellings*, even though there may be existing or approved *development* or dwellings nearby that do not conform to MDS I requirements. However, a reduced MDS I setback may be permitted provided there are four, or more, *non-agricultural uses*, *residential uses* and/or *dwellings* closer to the subject *livestock facility* than the proposed *development* or *dwellings* and those four or more *non-agricultural uses*, *residential uses* and/or *dwellings* are: • located within the intervening area (120° field of view shown in Figure 4 in Section 7 of this MDS Document) between the closest part of the proposed *development* or *dwelling* and the nearest *livestock facility* or *anaerobic digester*; • located on separate *lots*; and • of the same or greater sensitivity (i.e., Type A or Type B in accordance with Implementation Guidelines #33 and #34) as the proposed *development* or *dwelling*.	Even though there may be a portion of the existing *livestock facility* or existing *anaerobic digester* that does not conform to the MDS II setbacks, building permit applications for any *altered livestock facility* or *anaerobic digester* are still required to meet the MDS II setbacks.

MDS I	MDS II
If ALL of the above conditions are met, the MDS I setback for the proposed *development* or *dwelling* may be reduced such that it is located no closer to the *livestock facility* or *anaerobic digester* than the furthest of the four *non-agricultural uses*, *residential uses* and/or *dwellings* as shown in Figure 4.	
#13. Non-Application of MDS to Accessory Structures	
When an MDS I setback is required by a municipality for building permit applications on a *lot* which existed prior to March 1, 2017, in accordance with Implementation Guideline #7, an MDS I setback shall NOT be required for proposed structures accessory to a *dwelling*, including, but not limited to: decks, garages, gazebos, greenhouses, outbuildings, patios, picnic areas and sheds.	MDS II setbacks shall NOT be required from existing structures accessory to a *dwelling*, including, but not limited to: decks, garages, gazebos, greenhouses, outbuildings, patios, picnic areas and sheds.
#14. Uses Located on the Same *Lot*	
An MDS I setback is NOT required to be met for proposed *development*, *dwelling*, *agriculture-related use*, or *on-farm diversified use* from an *existing livestock facility* or *anaerobic digester* located on the same *lot* as the proposal.	MDS II setbacks are NOT required to be met for the *first* or *altered livestock facility* or *anaerobic digester* to any existing or approved *development*, *dwelling*, *agriculture-related use*, or *on-farm diversified use* located on the same *lot*.
#15. Same Ownership	
An MDS I setback is required for proposed *development* or *dwellings* even if the *lot* on which they are proposed is held by the same owner as the *existing livestock facility* or *anaerobic digester* nearby. This recognizes that a *lot* may be sold to a new owner, possibly resulting in a potential future land use conflict.	MDS II setbacks are required for a proposed *first* or *altered livestock facility* or *anaerobic digester* even if the *lot* on which they are proposed is held by the same owner as the existing or approved *development* or *dwellings* nearby. This recognizes that a *lot* may be sold to a new owner, possibly resulting in a potential future land use conflict.

MDS I	MDS II
#16. Obtaining Required Information to Calculate MDS Setbacks	
The preferred method for obtaining information (e.g., *livestock* and manure type as well as *design capacity*) to be used in MDS I calculations for a complete planning application is visiting the site and getting information directly from the farm operator(s) or owner(s) of the property where the *livestock facilities* or *anaerobic digesters* are located. If cooperation is not forthcoming, or there is concern about the accuracy of the information available, it may be helpful to obtain independent information by consulting other sources, including, but not limited to: • aerial photography; • best professional judgement about the past/most recent use of building(s); • current farm owner or operator (if different than the original information source); • existing municipal building permits on record; • Municipal Property Assessment Corporation (MPAC) records; • neighbouring landowners; • qualified consultant(s) knowledgeable about *livestock facilities;* or • OMAFRA staff. NOTE: Even though information may be provided by the applicant or their agent, ultimately, it is the responsibility of the municipality to determine if information used for an MDS I calculation is reasonably accurate and reflects existing conditions.	The only method for obtaining information (e.g., *livestock* and manure type as well as *design capacity*) to be used in MDS II calculations for the *first* or *altered livestock facility* is from the owner(s) or their agent with the application for the proposed construction. In some circumstances where information is missing, or there is a concern about the accuracy of the information available, it may be helpful to obtain independent information by carrying out a site visit or consulting other sources, including, but not limited to: • aerial photography; • best professional judgement about the past/most recent use of building(s); • current farm operator (if different than the owner/agent); • existing municipal building permits on record; • Municipal Property Assessment Corporation (MPAC) records; • neighbouring landowners; • qualified consultant(s) knowledgeable about *livestock facilities;* or • OMAFRA staff. NOTE: Even though information may be provided by the applicant or their agent, ultimately, it is the responsibility of the municipality to determine if information used for an MDS II calculation is reasonably accurate and reflects the proposed construction.

MDS I	MDS II
#17. Fewest Number of *Nutrient Units* Used when Calculating MDS	
The fewest number of *Nutrient Unit*s used in calculating MDS I setbacks is 5 *Nutrient Unit*s, even if the actual *design capacity* is fewer than 5 *Nutrient Unit*s. Accordingly, the MDS software will automatically round-up to the minimum of 5 *Nutrient Unit*s.	MDS II setbacks are required for all *first* or *altered livestock facilities*; however, the fewest number of *Nutrient Unit*s used in calculating MDS II setbacks is 5 *Nutrient Unit*s, even if the actual *design capacity* is fewer than 5 *Nutrient Unit*s. Accordingly, the MDS software will automatically round-up to the minimum of 5 *Nutrient Unit*s.
#18. MDS II for Building Permit Applications to Renovate Existing *Livestock Facilities*	
Not applicable	An MDS II setback is required prior to the approval of a building permit application to renovate *existing livestock facilities* that would result in an *altered livestock facility*. This is true even if the renovation results in the same *design capacity*, or a lower *design capacity* than what existed before. For example, an *existing livestock facility* to be renovated is more than 3 years old and has a *design capacity* of 150 *Nutrient Unit*s for swine feeders on a liquid manure system with an outside, uncovered, straight-walled liquid *manure storage* (M1 storage in Table 5). After the proposed renovation, the *altered livestock facility* will instead have a *design capacity* of 50 *Nutrient Unit*s for chicken broilers on a solid manure system with an outside, uncovered, solid *manure storage* (V3 storage in Table 6). NOTE: This would result in fewer *Nutrient Unit*s than before the renovation. • Factor A = 0.7 for chicken broilers (just for those *livestock* being added) • Factor B = 260 for 50 *Nutrient Unit*s • Factor C = 0.5 for a -66.7% increase (or 66.7% decrease), but Factor C always equals 0.5 for any decrease in *Nutrient Unit*s • Factor D = 0.7 for solid manure (just for those *livestock* being added)

MDS I	MDS II
Not applicable	• Building Base Distance ('F') = 0.7 x 260 x 0.5 x 0.7 = 63.7 m • Storage Base Distance ('S') = 63.7 m (for a V3 storage) Likewise, an MDS II setback is also required prior to the approval of a building permit application to renovate existing *anaerobic digesters* in accordance with Implementation Guideline #22.
#19. Cumulative *Design Capacity* of *Livestock Facilities* on a *Lot*	
MDS calculations shall be based on the combined *design capacity* for all *livestock barns* on a *lot*, even if they are *unoccupied livestock barns* or separated by a substantial distance on the *lot*. Where there are no *livestock barns* on a *lot*, MDS calculations shall be based on the combined *design capacity* for all *manure storages* on a *lot*, even if they are *unused manure storages* or separated by a substantial distance on the *lot*.	
#20. MDS Setbacks for *Unoccupied Livestock Barns*	
Design capacity for an MDS I calculation shall include all *unoccupied livestock barns* on a *lot* in accordance with this Implementation Guideline. First and foremost, the number of *livestock* or the area of *livestock* housing of *unoccupied livestock barns* should be based on information supplied by the farm operator(s) and/or owner(s). Only after concerted, documented effort has been made to obtain information from the farm operator(s) and/or owner(s), but obtaining information was not possible, then the following default Factors apply for *unoccupied livestock barns*: • Factor A = 1.0 • Factor B is based on 1 *Nutrient Unit*/ 20 m^2 of area of *livestock* housing (NOTE: Assume the barn is only one-story high if using aerial photography.) • Factor D = 0.7	*Design capacity* for an MDS II calculation shall include all *unoccupied livestock barns* on a *lot*. However, buildings deemed by a municipal building official, with input from a professional engineer or a consultant knowledgeable about *livestock facilities* where appropriate, as no longer being structurally sound, or reasonably capable of housing *livestock* shall not be included in an MDS II calculation.

MDS I	MDS II
However, an MDS I setback is not required when: • the building has been deemed by a municipal building official, with input from a professional engineer or a consultant knowledgeable about *livestock facilities* where appropriate, as no longer being structurally sound or reasonably capable of housing *livestock*; or • the portion of the *lot* on which the *unoccupied livestock barn* is located is zoned such that the building shall not be used for housing *livestock; or* • the floor area of the *unoccupied livestock barn* is <100 m^2.	
#21. MDS Setbacks for *Unused Manure Storages*	
Design capacity for an MDS I calculation shall include all *manure storage*s on a *lot* in accordance with this Implementation Guideline, even if those storages are unused and not storing manure at the time of the MDS I application. First and foremost, the volume of *unused manure storage*s should be based on information supplied by the farm operator(s) and/or owner(s). *Unused manure storages* for SOLIDS: Only after concerted, documented effort has been made to obtain information from the farm operator(s) and/or owner(s), but obtaining information was not possible, then the following Factors apply for *unused manure storage*s for SOLIDS: • Factor A = 1.0 • Factor B is based on 1 *Nutrient Unit*/19.8 m^3 of volume for storages with two or more walls (NOTE: Assume manure is stored 1 m deep over the area enclosed by the two or more walls if using aerial photography). • Factor D = 0.7	*Design capacity* for an MDS II calculation shall include all *manure storage*s on a *lot*, even if those storages are unused and not storing manure at the time of an MDS II application. However, structures deemed by a municipal building official, with input from a professional engineer or a consultant knowledgeable about *livestock facilities* where appropriate, as no longer being structurally sound, or reasonably capable of storing manure, shall not be included in an MDS II calculation.

MDS I	MDS II
However, an MDS I setback is not required when: • there is only one, or no, walls; or, • the structure has been deemed by a municipal building official, with input from a professional engineer or a consultant knowledgeable about *livestock facilities* where appropriate, as no longer being structurally sound or reasonably capable of storing manure; or, • the portion of the *lot* on which the *unused manure storage* is located is zoned such that the structure shall not be used for storing manure; or, • the floor area of the *unused manure storage* is <100 m^2. *Unused manure storage*s for LIQUIDS: Only after concerted, documented effort has been made to obtain information from the farm operator(s) and/or owner(s), but obtaining information was not possible, then the following Factors apply for *unused manure storage*s for LIQUIDS: • Factor A = 1.0 • Factor B is based on 1 *Nutrient Unit*/19.8 m^3 of *design capacity* (NOTE: Assume manure is stored 2.5 m deep and level over the area enclosed by storage walls if using aerial photography). • Factor D = 0.8 However, an MDS I setback is not required when: • the structure has been deemed by a municipal building official, with input from a professional engineer or a consultant knowledgeable about *livestock facilities* where appropriate, as no longer being structurally sound or reasonably capable of storing manure; or, • the portion of the *lot* on which the *unused manure storage* is located is zoned such the structure shall not be used for storing manure; or, • the floor area of the *unused manure storage* is <40 m^2.	

MDS I	MDS II
#22. MDS Setbacks for *Anaerobic Digesters*	
There is no calculation for an MDS I setback from an *anaerobic digester*. Instead, the required MDS I setbacks are fixed as follows: • 200 m to proposed Type A land uses • 450 m to proposed Type B land uses • 200 m to proposed *dwelling*s Refer to Figure 5 in Section 7 of this MDS Document. Secondary elements related to the *anaerobic digester* such as gas and water pipes and electrical generator buildings or wires are not subject to MDS I setbacks. MDS I setbacks are measured from the closest associated component of the existing *anaerobic digester*.	There is no calculation for an MDS II setback for an *anaerobic digester*. Instead the required MDS II setbacks are fixed as follows: • 200 m from existing Type A land uses • 450 m from existing Type B land uses • 200 m from existing *dwelling*s on a separate *lot* • 20 m from a rear and side *lot* line • 40 m from the edge of a road allowance Refer to Figure 6 in Section 7 of this MDS Document. Secondary elements related to the *anaerobic digester* such as gas and water pipes and electrical generator buildings or wires are not subject to MDS II setbacks. MDS II setbacks are measured to the closest associated component of the proposed *anaerobic digester*. MDS II setbacks for *anaerobic digester*s cannot be reduced through Implementation Guideline #43.
#23. Calculating Building Base Distance ('F')	
The MDS I formula for calculating Building Base Distance ('F') is: 'F' = Factor A x B x D x E. NOTE: Factor C is NOT used in MDS I.	The MDS II formula for calculating Building Base Distance ('F') is: 'F' = Factor A x B x C x D. NOTE: Factor E is NOT used in MDS II.
#24. Determining Storage Base Distance ('S')	
Storage Base Distance ('S') is NOT calculated, but read directly from Table 6. First calculate the Building Base Distance ('F') in accordance with Implementation Guideline #23, then select the *manure storage* type from Table 5 that best matches the *manure storage* type on the *lot* and use this information to determine the corresponding value on Table 6. If there are multiple *manure storage* types on the *lot*, the storage type with the highest relative Storage Odour Potential is selected from Table 5.	

MDS I	MDS II
#25. Factor A: Odour Potential Factor (Table 1)	
Factor A is determined by selecting the value aligned with the applicable *livestock*/manure description on Table 1. Factor A is based on the relative potential for emanating offensive odours. The greater the value of Factor A, the higher the odour potential and the further the resulting MDS setbacks, all other things being equal.	
#26. Factor B: *Nutrient Units* Factor (Table 2)	
Factor B used in MDS I setbacks for *settlement area* expansions shall only be based on the *design capacity* for all *livestock facilities* on a *lot*. In addition, for other MDS I setbacks where the *livestock facilities* are located on *lot*s ≤5 ha, Factor B is also only based on the *design capacity* for all *livestock facilities* on the *lot*. For all other MDS I setbacks where the *livestock facilities* are located on *lot*s >5 ha, Factor B is based on the possible future expansion of the existing *livestock facilities* on the *lot*, known as the 'potential' *design capacity*. More specifically, the potential *design capacity* for MDS I is determined by knowing the *design capacity* for all *livestock facilities* on the *lot*, and the total area of the *lot*. With both of these pieces of information, use the table below to determine the appropriate potential *design capacity.* This value should then be used to find the value of Factor B for the purposes of calculating an MDS I setback where the *livestock facilities* are located on a *lot* >5 ha.	For MDS II, Factor B is based on the *design capacity* for all *livestock facilities* on a *lot*. In accordance with Table 2, the more *Nutrient Unit*s, the greater the value for Factor B and the further the resulting MDS II setbacks, all other things being equal. While using Table 2, it may be necessary to interpolate a value for Factor B. When interpolating, do not include more than two decimal places, rounded accordingly.

MDS I

Design Capacity (NU)	Total *Lot* Size ≤5 ha	Total *Lot* Size >5 ha, but ≤25 ha	Total *Lot* Size >25 ha, but ≤50 ha	Total *Lot* Size >50 ha
≤5 NU	Factor B based on *design capacity* only	Factor B based on *design capacity* only	Factor B based on *design capacity* only	Factor B based on *design capacity* only
>5 NU, but ≤25 NU	Factor B based on *design capacity* only	Factor B based on 2 x *design capacity*	Factor B based on 2 x *design capacity*	Factor B based on 2 x *design capacity*
>25 NU, but ≤125 NU	Factor B based on *design capacity* only	Factor B based on 2 x *design capacity*	Factor B based on 3 x *design capacity*	Factor B based on 3 x *design capacity*
>125 NU	Factor B based on *design capacity* only	Factor B based on 2 x *design capacity*, to max of 300 NU	Factor B based on 3 x *design capacity*, to max of 450 NU	Factor B based on 3 x *design capacity*, to max of 600 NU

NOTE: To determine *design capacity* for *unoccupied livestock barns* or *unused manure storages*, see Implementation Guidelines #20 and #21 respectively.

In accordance with Table 2, the more *Nutrient Unit*s, the greater the value for Factor B and the further the resulting MDS I setbacks, all other things being equal.

While using Table 2, it may be necessary to interpolate a value for Factor B. When interpolating, do not include more than two decimal places, rounded accordingly.

MDS II

MDS I	MDS II
#27. Factor C: Expansion Factor (Table 3)	
Not applicable	Factor C only applies for MDS II, and is based on the percentage increase in the number of *Nutrient Unit*s for the proposed construction of a *first* or *altered livestock facility*, compared to the *Nutrient Unit*s of all *existing livestock facilities* on the *lot*. The greater the percentage increase, the greater the value for Factor C and the further the resulting MDS II setbacks, all things being equal. Expansion of a *livestock* facility is a necessary and typical process for most farm operations, and can reasonably be expected over time. Factor C is 1.14 (Table 3) for the *first livestock facility* on a *lot*, resulting in a building location that will allow for future expansion of most subsequent *livestock facilities* within a reasonable building envelope. Factor C is 0.5 (Table 3) for no increase in *Nutrient Unit*s (0% increase) and for decreases in *Nutrient Unit*s. Where an *existing livestock facility* is to be expanded, the percentage increase shall be calculated using the total additional *Nutrient Unit*s proposed as the numerator and the total existing *Nutrient Unit*s as the denominator, with the result multiplied by 100. For example, if an *existing livestock facility* currently has a *design capacity* of 200 *Nutrient Unit*s and proposes to increase *design capacity* by 100 additional *Nutrient Unit*s, the percentage increase is calculated as 100 *Nutrient Unit*s (numerator) divided by 200 *Nutrient Unit*s (denominator) and multiplied by 100 for a value of 50% (100/200) x 100 = 50%. From Table 3, Factor C = 0.8100. Where a *livestock* facility is to be expanded, and one or more building permits to establish or expand that *livestock* facility were already issued within the previous 3 years, the percentage increase shall be calculated using the total additional *Nutrient Unit*s established or added by building permit(s) issued during the previous 3-year period, plus the proposed expansion, as the numerator, and the total existing

MDS I	MDS II
	*Nutrient Unit*s prior to the previous 3-year period as the denominator. For example, an *existing livestock facility* currently has a *design capacity* of 200 *Nutrient Unit*s and proposes to increase *design capacity* by 100 additional *Nutrient Unit*s. A building permit for this *livestock* facility was issued 2 years ago which increased the size of the operation at that time from 100 *Nutrient Unit*s to 200 *Nutrients Unit*s. In this case, the percentage increase is calculated as 200 *Nutrient Unit*s (numerator) (100 *Nutrient Unit*s for this expansion plus 100 *Nutrient Unit*s for expansion 2 years ago) divided by 100 *Nutrient Unit*s (denominator) (the *design capacity* of the *livestock* facility 3 years ago) and then multiplied by 100 for a value of 200% [(100+100)/100] x 100 = 200%. From Table 3, Factor C = 1.0000. In using Table 3, it may be necessary to interpolate a value for Factor C. When interpolating, do not include more than four decimal places, rounded accordingly.
#28. Factor D: Manure Type (Table 1)	
Factor D is determined by selecting the value aligned with the applicable manure type (liquid manure or solid manure) in Table 1. Factor D is based on the physical state of manure (liquid or solid) on the *lot* and its relative potential for emanating offensive odours. The greater the value for Factor D, the higher the odour potential and the further the resulting MDS setbacks, all other things being equal.	
#29. Factor E: Encroaching Land Use Factor (Table 4)	
Factor E is determined by selecting the encroaching land use factor in Table 4 (Type A Land Use or Type B Land Use) that best matches the descriptions in Implementation Guidelines #33 and #34. Factor E is based on the relative sensitivity of an encroaching land use as it relates to odour from an *existing livestock facility*. The more sensitive the land use (based on an anticipated higher density of human occupancy, habitation or activity), the greater the value (1.1 or 2.2) of the encroaching land use factor and the further the resulting MDS I setbacks, all other things being equal.	Not applicable

MDS I	MDS II
#30. Determining Factor A When More Than One Type of *Livestock* are Housed and/or More Than One Type of Manure are Stored, With Differing Values for Factor A	
In MDS I, Factor A will require a weighted average when there is more than one type of *livestock* housed and/or more than one type of manure stored on a *lot* with differing values for Factor A. For example, if a *livestock* facility on a *lot* has 50 *Nutrient Unit*s of chicken broilers (Factor A = 0.7), as well as 100 *Nutrient Unit*s of swine feeders (Factor A = 1.2), then the weighted average Factor A is: [(50 x 0.7) + (100 x 1.2)] ÷ (50 + 100) = 1.03 When calculating a weighted average, the value of Factor A should not include more than two decimal places, rounded accordingly.	In MDS II, Factor A will require a weighted average when there is more than one type of *livestock* proposed to be added and/or more than one type of manure proposed to be added at the same time with differing values for Factor A. For example, if a farmer proposes to expand a *livestock facility* by adding 50 *Nutrient Unit*s of chicken broilers (Factor A = 0.7), as well as adding 100 *Nutrient Unit*s of swine feeders (Factor A = 1.2) at the same time, then the weighted average Factor A is: [(50 x 0.7) + (100 x 1.2)] ÷ (50 + 100) = 1.03 When calculating a weighted average, the value of Factor A should not include more than two decimal places, rounded accordingly.
#31. Determining Factor D When <u>BOTH</u> Solid and Liquid Manure are Stored on a *Lot*	
In MDS I, Factor D will require a weighted average when <u>BOTH</u> solid and liquid manure are being stored on a *lot*. For example, if a *livestock facility* has 50 *Nutrient Unit*s of chicken broilers with a solid manure system (Factor D = 0.7) <u>AND</u> 100 *Nutrient Unit*s of swine feeders with a liquid manure system (Factor D = 0.8) then the weighted average Factor D is: [(50 x 0.7) + (100 x 0.8)] ÷ (50 +100) = 0.77 When calculating a weighted average, the value of Factor D should not include more than two decimal places, rounded accordingly.	In MDS II, Factor D will require a weighted average when <u>BOTH</u> solid and liquid *manure storage*s are being proposed as part of the same building permit application. For example, if a farmer proposes to add 50 *Nutrient Unit*s of chicken broilers with a solid manure system (Factor D = 0.7) <u>AND</u> 100 *Nutrient Unit*s of swine feeders with a liquid manure system (Factor D = 0.8) then the weighted average Factor D is: [(50 x 0.7) + (100 x 0.8)] ÷ (50 + 100) = 0.77 When calculating a weighted average, the value of Factor D should not include more than two decimal places, rounded accordingly.

MDS I	MDS II
#32. Rounding of MDS Calculations	
All resulting calculated separation distances are rounded UP to the nearest metre. For example, if the final MDS setback is 364.72 m, round up to 365 m.	
#33. Type A Land Uses (Less Sensitive)	
For the purposes of MDS I, proposed Type A land uses are characterized by a lower density of human occupancy, habitation or activity including, but not limited to: • industrial uses outside a *settlement area*; • *open space uses;* • building permit applications on existing *lot*s outside a *settlement area* for *dwelling*s, unless otherwise specified in a municipality's zoning by-law in accordance with Implementation Guideline #7; • the creation of *lot*s for *agricultural uses*, in accordance with Implementation Guideline #8; and • the creation of one or more *lot*s for *development* on land outside of a *settlement area* that would NOT result in four or more *lot*s for *development* in immediate proximity to one another (e.g., sharing a common contiguous boundary, across the road from one another, etc.), regardless of whether any of the *lot*s are vacant.	For the purposes of MDS II, existing Type A land uses are characterized by a lower density of human occupancy, habitation or activity including, but not limited to: • industrial uses outside a *settlement area;* • *open space uses;* and, • *dwelling*s on *lot*s which are located outside of a *settlement area* and are not recognized through an official plan designation for *development*; includes *dwelling*s that are located on *lot*s zoned for *agriculture uses*, *residential uses* or *non-agricultural uses* (such as zones for general agriculture, rural residential, estate residential, etc.), provided the *lot* remains in a *prime agricultural area* or *rural land*s type designation.
#34. Type B Land Uses (More Sensitive)	
For the purposes of MDS I, proposed Type B land uses are characterized by a higher density of human occupancy, habitation or activity including, but not limited to: • new or expanded *settlement area* boundaries;	For the purposes of MDS II, existing Type B land uses are characterized by a higher density of human occupancy, habitation or activity including, but not limited to: • *settlement area* boundaries; and • existing *development* outside of a *settlement area* which is recognized through an official plan designation.

MDS I	MDS II
• an official plan amendment to permit *development*, excluding industrial uses, on land outside a *settlement area;* • a zoning by-law amendment to permit *development*, excluding industrial uses or *dwelling*s, on land outside a *settlement area;* and • the creation of one or more *lot*s for *development* on land outside a *settlement area*, that results in four or more *lot*s for *development*, which are in immediate proximity to one another (e.g., sharing a common contiguous boundary, across the road from one another, etc.), regardless of whether any of the *lot*s are vacant. Because of the increased sensitivity of these uses, a new or expanding Type B land use will generate an MDS I setback that is twice the distance as the MDS I setback for a Type A land use. This is reflected in the value of Factor E which is 2.2 for Type B versus 1.1 for Type A.	Because of the increased sensitivity of these uses, an MDS II setback from existing Type B land uses is twice the distance from existing Type A land uses.
#35. MDS Setbacks for *Agriculture-Related Uses* and *On-Farm Diversified Uses*	
MDS I setbacks from *existing livestock facilities* and *anaerobic digester*s will generally not be needed for land use planning applications which propose *agriculture-related uses* and *on-farm diversified uses*. However, some proposed *agriculture-related uses* and *on-farm diversified uses* may exhibit characteristics that could lead to potential conflicts with surrounding *livestock facilities* or *anaerobic digester*s. Therefore, it may be appropriate for municipalities to require an MDS I setback to permit certain types of these uses. Typically, this subset of uses may be characterized by a higher density of human occupancy or activity or will be uses that may generate significant visitation by the broader public to an agricultural area. Examples include, but are not limited to: food service, accommodation, *agri-tourism uses* and retail operations.	MDS II setbacks to existing *agriculture-related uses* and *on-farm diversified uses* will generally not be needed for building permit applications for *first* or *altered livestock facilities* and *anaerobic digester*s. However, some existing *agriculture-related uses* and *on-farm diversified uses* may exhibit characteristics that could lead to potential conflicts with *first* or *altered livestock facilities* or *anaerobic digester*s. Therefore, it may be appropriate for municipalities to require MDS II setbacks to certain types of these uses. Typically, this subset of uses may be characterized by a higher density of human occupancy or activity, or are uses that generate significant visitation by the broader public to an agricultural area. Examples include, but are not limited to: food service, accommodation, *agri-tourism uses* and retail operations. Surrounding land uses and geographic context can also play a role in determining the

MDS I	MDS II
Surrounding land uses and geographic context can also play a role in determining the suitability of applying MDS I setbacks to proposed *agriculture-related uses*, *on-farm diversified uses* and *agricultural uses*. For these reasons, and in keeping with the intent of this MDS Document, municipalities may choose to require an MDS I setback for proposals, including *lot* creation, to permit certain types of *agriculture-related uses* or *on-farm diversified uses*. In these circumstances, *agriculture-related uses* and *on-farm diversified uses* shall be considered as Type A land uses. Municipalities shall include specific provisions in their comprehensive zoning by-law to clearly indicate the types of *agriculture-related uses* and *on-farm diversified uses* that will be required to meet MDS I setbacks, including provisions related to the measurement of MDS I setbacks from *existing livestock facilities* and *anaerobic digesters*. Otherwise, MDS I setbacks will NOT be required for these types of uses. Municipalities are strongly encouraged to develop policies in their official plans and provisions in their comprehensive zoning by-law to provide consistent direction on this issue.	suitability of applying MDS II setbacks from existing *agriculture-related uses*, *on-farm diversified uses* and *agricultural uses*. For these reasons, and in keeping with the intent of this MDS Document, municipalities may choose to require MDS II setbacks for *new* or *altered livestock facilities* and *anaerobic digesters* to certain types of existing *agriculture-related uses* or *on-farm diversified uses*. In these circumstances, *agriculture-related uses* and *on-farm diversified uses* shall be considered as Type A land uses. Municipalities shall include specific provisions in their comprehensive zoning by-law to clearly indicate the types of *agriculture-related uses* and *on-farm diversified uses* that MDS II setbacks are applied to and how they are measured. Otherwise, MDS II setbacks will NOT be required to these types of uses. Municipalities are strongly encouraged to develop policies in their official plans and provisions in their comprehensive zoning by-law to provide consistent direction on this issue.
#36. Non-Application of MDS Within *Settlement Areas*	
MDS I setbacks are NOT required for proposed land use changes (e.g., consents, rezonings, redesignations, etc.) within approved *settlement areas*, as it is generally understood that the long-term use of the land is intended to be for non-agricultural purposes.	MDS II setbacks are NOT required where municipalities permit *first* or *altered livestock facilities* (e.g., urban agriculture) or *anaerobic digesters* within approved *settlement area* designations, as MDS II was not designed to be used in an urban setting. However, because other issues could be considered when raising *livestock* in *settlement areas*, municipalities may choose to establish local approaches governing urban agriculture.

MDS I	MDS II
#37. MDS Setbacks for Churches, Schools and Cemeteries Used Primarily by a Community Reliant on Horse-Drawn Transportation	
Normally churches, schools and cemeteries are considered Type B land uses as they are institutional uses; however, existing, new and expanding churches, schools and cemeteries intended to primarily serve a community which relies on horse-drawn vehicles as a predominate mode of transportation, shall be considered as Type A land uses for the purposes of both MDS I and MDS II.	
#38. MDS Setbacks for Cemeteries	
Except where noted in Implementation Guideline #37, for the purposes of MDS I, new cemeteries and expansion to existing cemeteries are considered Type B land uses, as they are institutional uses.	For the purposes of MDS II, existing cemeteries are considered Type B land uses, as they are institutional uses. However, certain cemeteries may be treated as Type A land uses at the discretion of the municipality. For example, those cemeteries which are closed, or receive low levels of visitation, or where no place of worship is present, in addition to where noted in Implementation Guideline #37. NOTE: Cemeteries meeting the above criteria shall be clearly identified in the municipality's planning documents on a comprehensive basis in order to be treated as Type A land uses. Otherwise all cemeteries will continue to be treated as Type B land uses, except where noted in Implementation Guideline #37.
#39. MDS II Setbacks for Rear *Lot* Lines, Side *Lot* Lines and Road Allowances	
Not applicable	In addition to setbacks from surrounding Type A and Type B land uses, *first* or *altered livestock facilities* shall also meet the following MDS II setbacks: • Rear and side *lot* line MDS II setbacks are calculated as 0.1 multiplied by the Building Base Distance 'F' and Storage Base Distance 'S' to a maximum of 30 m.

MDS I	MDS II
Not applicable	For example, if an MDS II calculation yields values of 100 m for Building Base Distance 'F' and 123 m for Storage Base Distance 'S', the MDS II setback for the *livestock barn* from the ear and side *lot* lines would be 10 m (100 m x 0.1 = 10 m). The MDS II setback for the *manure storage* from the rear and side *lot* lines would be 12.3 m (123 m x 0.1 = 12.3 m). This value is rounded to the nearest whole number, so in this instance, the setback for the *manure storage* would be 12 m. As another example, if an MDS II calculation yields values of 350 m for Building Base Distance 'F' and 400 m for Storage Base Distance 'S', the MDS II setback for the *livestock barn* from the rear and side *lot* lines would be 30 m (350 m x 0.1 = 35 m, but reduced to the maximum of 30 m). The MDS II setback for the *manure storage* from the rear and side *lot* lines would be 30 m (400 m x 0.1 = 40 m, but reduced to the maximum of 30 m). • Road allowance MDS II setbacks are calculated as 0.2 multiplied by the Building Base Distance 'F' and Storage Base Distance 'S' to a maximum of 60 m. For example, if an MDS II calculation yields values of 100 m for Building Base Distance 'F' and 123 m for Storage Base Distance 'S','the MDS II setback for the *livestock barn* from the edge of the road allowance would be 20 m (100 m x 0.2 = 20 m). The MDS II setback for the *manure storage* from the edge of the road allowance would be 24.6 m (123 m x 0.2 = 24.6 m). This value is rounded to the nearest whole number, so in this instance, the setback for the *manure storage* would be 25 m. As another example, if an MDS II calculation yields values of 350 m for Building Base Distance 'F' and 400 m for Storage Base Distance 'S', the MDS II setback for the *livestock barn* from the edge of the road allowance would be 60 m (350 m x 0.2 = 70 m, but reduced to the maximum of

MDS I	MDS II
	60 m). The MDS II setback for the *manure storage* from the edge of the road allowance would be 60 m (400 m x 0.2 = 80 m, but reduced to the maximum of 60 m). Rear and side *lot* line and road allowance MDS II setbacks for *anaerobic digesters* are found in Implementation Guideline #22. These MDS II setbacks are measured as the shortest distance between the point of new construction for the *manure storages*, or the *anaerobic digester*, or the *livestock occupied portions* of each of the surrounding *livestock barns* and the side and rear *lot* lines, as well as the edge of the road allowance.
#40. Measurement of MDS Setbacks for *Development* and *Dwellings*	
For proposed *development*, MDS I setbacks are measured as the shortest distance between the area proposed to be rezoned or redesignated to permit *development* and either: the surrounding *livestock occupied portions* of *livestock barns*, *manure storages* or *anaerobic digesters*. Refer to Figure 7 in Section 7 of this MDS Document. This shall include areas proposed to be rezoned or redesignated with site-specific exceptions that add *non-agricultural uses* or *residential uses* to the list of *agricultural uses* already permitted on a *lot*. For building permit applications for proposed *dwellings*, where required in accordance with Implementation Guideline #7, MDS I setbacks are measured as the shortest distance between the proposed *dwelling* and either the surrounding *manure storages*, *anaerobic digesters* or the *livestock occupied portions* of the *livestock barns*.	For existing *development*, MDS II setbacks are measured as the shortest distance between the point of new construction for the *livestock occupied portions* of the *livestock barns*, *manure storages*, *anaerobic digesters* and the surrounding area that is zoned or designated to permit *non-agricultural uses* or *residential uses* in a zoning by-law or official plan respectively, even if there are portions of the *existing livestock facility* or existing *anaerobic digester* that do not conform to the MDS II setbacks. For existing *dwellings*, MDS II setbacks are measured as the shortest distance between the point of new construction for the *livestock occupied portions* of the *livestock barns*, *manure storages* or *anaerobic digesters*, and the surrounding *dwellings*, even if there are portions of the *existing livestock facility* or existing *anaerobic digester* that do not conform to the MDS II setbacks. Refer to Figure 8 in Section 7 of this MDS Document. NOTE: Where there are two *dwellings* on the same *lot*, the MDS II setback shall be measured to both.

MDS I	MDS II
#41. Measurement of MDS I Setbacks for the Creation of *Lots*	
Where an MDS I setback is required for the creation of a *lot*, in accordance with Implementation Guideline #8 or #9, measurement of the MDS I setback should be undertaken as follows: 1. For proposed *lot*s with an existing *dwelling* that are ≤1 ha, MDS I setbacks are measured as the shortest distance between the proposed *lot* line and either the surrounding *livestock occupied portion*s of the *livestock barns*, *manure storage*s or *anaerobic digester*s. 2. For proposed *lot*s with an existing *dwelling* that are >1 ha, MDS I setbacks are measured as the shortest distance between the existing *dwelling* and either the surrounding *livestock occupied portion*s of the *livestock barns*, *manure storage*s or *anaerobic digester*s. 3. For proposed *lot*s without an existing *dwelling* that are ≤1 ha, MDS I setbacks are measured as the shortest distance between the proposed *lot* line and either the surrounding *livestock occupied portion*s of the *livestock barns*, *manure storage*s or *anaerobic digester*s. 4. For proposed *lot*s without an existing *dwelling* that are >1 ha, MDS I setbacks are measured as the shortest distance between a 0.5 ha or larger building envelope (for a potential *dwelling*) and either the surrounding *livestock occupied portion*s of the *livestock barns*, *manure storage*s or *anaerobic digester*s. For *lot*s created after March 1, 2017, MDS I setbacks shall be required for all building permit applications for *non-agricultural uses* and *dwelling*s in accordance with Implementation Guideline #7.	Not applicable

<table>
<tr><th>MDS I</th><th>MDS II</th></tr>
<tr><td colspan="2">#42. Non-Effect of Wind Direction, etc. on MDS Setbacks</td></tr>
<tr><td colspan="2">The direction of prevailing wind, surrounding topography, and presence of trees, berms or other screening are not part of, and are not intended to affect, the calculation of MDS setbacks. However, these or other similar elements could be considered in applications to vary or reduce MDS setbacks, where appropriate, and in accordance with Implementation Guideline #43.</td></tr>
<tr><td colspan="2">#43. Reducing MDS Setbacks</td></tr>
<tr><td>MDS I setbacks should not be reduced except in limited site specific circumstances that meet the intent of this MDS Document. Examples include circumstances that mitigate environmental or public health and safety impacts, or avoid natural or human-made hazards.

If deemed appropriate by a municipality, the processes by which a reduction to MDS I may be considered could include a minor variance to the local zoning by-law provisions, a site specific zoning by-law amendment or an official plan amendment introducing a site specific policy area.</td><td>MDS II setbacks should not be reduced except in limited site specific circumstances that meet the intent of this MDS Document. Examples include circumstances that mitigate environmental or public health and safety impacts, or avoid natural or human-made hazards.

If deemed appropriate by a municipality, the process by which a reduction to MDS II may be considered would typically be through a minor variance to the local zoning by-law provisions. To a lesser extent a site specific zoning by-law amendment may also be appropriate.</td></tr>
</table>

5. FACTOR TABLES

Table 1. Factor A (odour potential) and Factor D (manure type)

Livestock/ Manure Type	*Livestock*/Manure Description	Number per *Nutrient Unit*	Factor A	Manure Type and Storage Description	
				Liquid Manure (<18% dry matter) Factor D = 0.8	Solid Manure (≥18% dry matter) Factor D = 0.7
Swine	Sows with litter, dry sows or boars	3.5	1.0	Most systems have liquid manure stored under the barn slats for short or long periods or in storages located outside	Systems with solid manure inside on deep bedded packs or with scraped alleys
	Breeder gilts (entire barn designed specifically for this purpose)	5			
	Weaners (7–27 kg)	20	1.1		
	Feeders (27–136 kg)	5.25	1.2		
Dairy cattle[a] milking-age cows (dry or milking)	Large-framed; 545–658 kg (e.g., Holsteins)	0.7	0.7	Free-stall barns with minimal bedding or sand bedding, or tie-stall barns with minimal bedding and milking centre washwater added	Tie-stall barns with lots of bedding or loose housing with deep bedded pack and with or without outside yard access
	Medium-framed; 455–545 kg (e.g., Guernseys)	0.85			
	Small-framed; 364–455 kg (e.g., Jerseys)	1			
Dairy cattle[a] heifers (5 months to freshening)	Large-framed; 182–545 kg (e.g., Holsteins)	2	0.7		
	Medium-framed; 148–455 kg (e.g., Guernseys)	2.4			
	Small-framed; 125–364 kg (e.g., Jerseys)	2.9			
Dairy cattle[a] calves (0–5 months)	Large-framed; 45–182 kg (e.g., Holsteins)	6	0.7	Free-stall barns with minimal bedding, or sand bedding, or tie-stall barns with minimal bedding and milking centre washwater added	Bedded pens or stalls or heavily bedded calf hutches that are outside
	Medium-framed; 39–148 kg (e.g., Guernseys)	7			
	Small-framed; 30–125 kg (e.g., Jerseys)	8.5			
Beef cattle	Cows, including calves to weaning (all breeds)	1	0.7	Not applicable	Bedded pack barns with or without outside yard access
	Feeders (7–16 months)	3	0.8	Slatted floor systems, or barns with minimal bedding and yard scraped to a liquid storage	
	Backgrounders (7–12.5 months)	3			
	Shortkeepers (12.5–17.5 months)	2			
Veal	Milk-fed	6	1.1	Slatted floor or slatted stall systems	Heavily bedded pack barns
	Grain-fed	6	0.8		
Goats	Does and bucks (for meat; includes unweaned offspring and replacements)	8	0.7	Not applicable	All goat systems
	Does and bucks (for dairy; includes unweaned offspring and replacements)	8			
	Kids (dairy or feeder kids)	32			

Livestock/ Manure Type	*Livestock*/Manure Description	Number per *Nutrient Unit*	Factor A	Manure Type and Storage Description	
				Liquid Manure (<18% dry matter) Factor D = 0.8	Solid Manure (≥18% dry matter) Factor D = 0.7
Sheep	Ewes and rams (for meat; includes unweaned offspring and replacements)	8	0.7	Not applicable	All sheep systems
	Ewes and rams (dairy operation; includes unweaned offspring and replacements)	6			
	Lambs (dairy or feeder lambs)	20			
Horses	Large-framed, mature; >681 kg (e.g., draft or draft cross breeds including unweaned offspring)	0.7	0.7	Not applicable	All horse systems
	Medium-framed, mature; 227–680 kg (e.g., saddle, riding and racing breeds including unweaned offspring)	1			
	Small-framed, mature; <227 kg (e.g., ponies and miniatures including unweaned offspring)	2			
Chickens	Layer hens (for eating eggs; after transfer from pullet barn)	150	1.0	Birds in cages, manure belts, no drying of manure, water added	Birds in cages, manure belts and drying, or floor systems
	Layer pullets (day-olds until transferred into layer barn)	500	0.7		
	Broiler breeder growers (males/females transferred out to layer barn)	300		Not applicable	Bedded floors
	Broiler breeder layers (males/females transferred in from grower barn)	100			Cage or slatted floor systems
	Broilers on any length of cycle	24.8 m^2 (267 ft^2) floor area			Bedded floor systems

Livestock/ Manure Type	*Livestock*/Manure Description	Number per *Nutrient Unit*	Factor A	Manure Type and Storage Description	
				Liquid Manure (<18% dry matter) Factor D = 0.8	Solid Manure (≥18% dry matter) Factor D = 0.7
Turkeys	Turkey poults (day-old until transferred to grow-out turkey barn)	267	0.7	Not applicable	Bedded floor systems
	Turkey breeder layers (males/females transferred in from grower barn)	67			
	Breeder toms	45			
	Broilers (day-olds to 6.2 kg)	133			
	Hens (day-olds up to 6.2–10.8 kg; 7.5 kg is typical)	105			
	Toms (day-olds to over 10.8–20 kg; 14.5 kg is typical)	75			
	Turkeys at any other weights, or if unknown	24.8 m^2 (267 ft^2) floor area			
Quail	All quail	24.8 m^2 (267 ft^2) floor area	0.7	Not applicable	Bedded floor systems
Partridge	All partridge	24.8 m^2 (267 ft^2) floor area			
Pheasants	All pheasants	24.8 m^2 (267 ft^2) floor area			
Squab	All squab	24.8 m^2 (267 ft^2) floor area			

Livestock/ Manure Type	*Livestock*/Manure Description	Number per *Nutrient Unit*	Factor A	Manure Type and Storage Description	
				Liquid Manure (<18% dry matter) Factor D = 0.8	Solid Manure (≥18% dry matter) Factor D = 0.7
Rheas	Adults (includes replacements and market birds)	13	0.7	Not applicable	Bedded floor systems
Emus	Adults (includes replacements and market birds)	12			
Ostriches	Adults (includes replacements and market birds)	4			
Donkeys	Jacks, jennies, mules, hinnies (includes unweaned foals)	2	0.7	Not applicable	All donkey systems
Ducks	Peking	105	0.8	Wire mesh flooring systems	Bedded floor systems
	Muscovy	24.8 m^2 (267 ft^2) floor area			
Geese	All geese	24.8 m^2 (267 ft^2) floor area			
Rabbits	Breeding females (including males, replacements and market animals)	40	0.8	Not applicable	Cage or floor systems
Chinchillas	Breeding females (including males, replacements and market animals)	320			
Fox	Breeding females (including males, replacements and market animals)	25	1.0	Not applicable	Cage system — manure accumulates underneath
Mink	Breeding females (including males, replacements and market animals)	60		Cage system with trough system underneath	
Bison	Adults (includes unweaned calves and replacements)	1.3	0.7	Not applicable	Bedded pack barns with outside access OR outside confinement areas
	Feeders (170–477 kg)	4			
Llama	Adults (includes unweaned young and replacements)	5			
	Feeders (45–86 kg)	16			
Alpaca	Adults (includes unweaned young and replacements)	8			
	Feeders (23–48 kg)	26			

Livestock/ Manure Type	*Livestock*/Manure Description	Number per *Nutrient Unit*	Factor A	Manure Type and Storage Description	
				Liquid Manure (<18% dry matter) Factor D = 0.8	Solid Manure (≥18% dry matter) Factor D = 0.7
Wild boar	Breeding age sows (includes boars, replacements and weaned piglets to 27 kg)	5	0.7	Not applicable	Bedded pack barns with outside access OR outside confinement areas
	Finishing boars (27–86 kg)	7			
White tailed deer	Adults >24 months (including unweaned offspring)	11			
	Feeders	21			
Red deer	Adults >24 months (including unweaned offspring)	7			
	Feeders	14			
Elk	Adults >24 months (including unweaned offspring)	2			
	Feeders	6			
Elk/Deer hybrids	Adults >24 months (including unweaned offspring)	4			
	Feeders	10			
Fallow deer	Adults >24 months (including unweaned offspring)	13	0.7	Not applicable	Bedded pack barns with outside access OR outside confinement areas
	Feeders	23			
Other animals	All other animals	Total live weight of animals divided by 453.6 kg (1,000 lbs)	0.8	All storages with liquid manure	All storages with solid manure
Imported manure	Use the volume of the *manure storage*(s)	19.8 m^3 (700 ft^3)	1.0[b]		
Unoccupied livestock barns	A *livestock barn* that does not currently house any *livestock*, but that housed *livestock* in the past and continues to be structurally sound and reasonably capable of housing *livestock.* NOTE: This should only be used where obtaining information from the farm operator(s) and/or owner(s) was not possible (see Implementation Guideline #20 for more information).	20 m^2 (215 ft^2) of area of *livestock* housing	1.0	Not applicable	All *unoccupied livestock barns*

Livestock/ Manure Type	*Livestock*/Manure Description	Number per *Nutrient Unit*	Factor A	Manure Type and Storage Description	
				Liquid Manure (<18% dry matter) Factor D = 0.8	Solid Manure (≥18% dry matter) Factor D = 0.7
***Unused manures storage* for solids**	A *manure storage* that does not currently store any solid manure, but that stored solid manure in the past and continues to be structurally sound and reasonably capable of storing solid manure NOTE: This should only be used where obtaining information from the farm operator(s) and/or owner(s) was not possible (see Implementation Guideline #20 for more information).	19.8 m^3 (700 ft^3) of volume for storages with two or more walls	1.0	Not applicable	All *unused manure storages* for solids
***Unused manures storage* for liquids**	A *manure storage* that does not currently store any liquid manure, but that stored liquid manure in the past and continues to be structurally sound and reasonably capable of storing liquid manure. NOTE: This should only be used where obtaining information from the farm operator(s) and/or owner(s) was not possible (see Implementation Guideline #20 for more information).	19.8 m^3 (700 ft^3) of volume		All *unused manure storages* for liquids	Not applicable

a. On farms with 100 milking-age cows (dry and milking), there are usually about 20 replacement calves and 80 replacement heifers.
b. Average value for typical types of manures that might be imported to a *lot*, such as poultry, dairy, beef, swine or horse.

Table 2. Factor B (*Nutrient Units* factor)

When using Table 2 to determine Factor B, it may be necessary to determine a value for Factor B, which is not listed in the table. For example, if you determine the total number of *Nutrient Unit*s on a *lot* to be 255 *Nutrient Unit*s, Table 2 only provides a value for Factor B for 250 *Nutrient Unit*s and for 260 *Nutrient Unit*s, but not for 255 *Nutrient Unit*s. The value of Factor B for 250 *Nutrient Unit*s is 435 and the value of Factor B for 260 *Nutrient Unit*s is 441. Therefore, to determine Factor B for 255 *Nutrient Unit*s select a number between the numbers 435 and 441. In this example, the value of Factor B for 255 *Nutrient Unit*s is 438.

NOTE: When selecting a value for Factor B, do not include more than two decimal places. Interpolated values with more than two decimal places are rounded accordingly. For example, if an interpolated value for Factor B is calculated as 499.238, then use a value of 499.24 for Factor B in the MDS calculation.

For operations with fewer than 5 *Nutrient Unit*s, do not interpolate, but use a Factor B of 150. For operations with >5,000 *Nutrient Unit*s, refer to the MDS software (AgriSuite) to determine Factor B.

Nutrient Units	Factor B
5 or less	150
6	153
7	157
8	160
9	163
10	167
11	170
12	173
13	177
14	180
15	183
16	187
17	190
18	193
19	197
20	200
21	202
22	204
23	206
24	208
25	210
26	212
27	214
28	216
29	218

Nutrient Units	Factor B
30	220
31	222
32	224
33	226
34	228
35	230
36	232
37	234
38	236
39	238
40	240
41	242
42	244
43	246
44	248
45	250
46	252
47	254
48	256
49	258
50	260
52	264
54	268
56	272
58	276
60	280

Nutrient Units	Factor B
62	282
64	284
66	285
68	287
70	289
72	291
74	293
76	294
78	296
80	298
82	300
84	301
86	303
88	305
90	307
92	309
94	310
96	312
98	314
100	316
102	318
104	320
106	322
108	324
110	326
112	329

Nutrient Units	Factor B
114	331
116	333
118	335
120	337
122	339
124	340
126	342
128	344
130	346
135	351
140	355
145	360
150	364
155	368
160	372
165	376
170	380
175	384
180	388
185	392
190	395
195	399
200	402
205	406
210	409
215	413

Nutrient Units	Factor B
220	416
225	419
230	423
235	426
240	429
245	432
250	435
260	441
270	447
280	453
290	458
300	464
310	469
320	474
330	480
340	485
350	490
360	494
370	499
380	504

Nutrient Units	Factor B
390	508
400	513
410	517
420	522
430	526
440	530
450	535
460	539
470	543
480	547
490	551
500	555
520	562
540	570
560	577
580	584
600	591
620	598
640	605
660	611

Nutrient Units	Factor B
680	618
700	624
750	639
800	654
850	668
900	681
950	694
1,000	707
1,100	731
1,200	753
1,300	775
1,400	795
1,500	815
2,000	870
3,000	980
4,000	1,090
5,000	1,200
>5,000 *Nutrient Units*	Refer to the MDS software (AgriSuite)

Table 3. Factor C (expansion factor)

When using Table 3 to determine Factor C, it may be necessary to determine a value for Factor C, which is not listed in the table. For example, the percentage increase at a *livestock facility* is 155%. Table 3 provides a value for Factor C for a 150% increase and for a 160% increase, but not for a 155% increase. The value of Factor C for a 150% increase is 0.9371 and the value of Factor C for a 160% increase is 0.9497. To determine Factor C for a 155% increase, interpolate between the numbers 0.9371 and 0.9497. In this example, the value of Factor C for a 155% increase is 0.9434.

NOTE: When selecting a value for Factor C, do not include more than four decimal places. Interpolated values with more than four decimal places are rounded accordingly. For example, if an interpolated value for Factor C is calculated as 0.977643, then use a value of 0.9776 for Factor C in the MDS calculation.

For operations with a 0% increase, or a decrease in *Nutrient Unit*s, use a value of 0.5000 for Factor C. Do not interpolate below a value of 0.5000. For operations with a 700% increase or greater, or for a *first livestock facility*, use a value of 1.1400 for Factor C. Do not interpolate above a value of 1.1400.

Percent Increase in *Nutrient Units*	Factor C
0% increase OR decrease	0.5000
1%	0.5062
2%	0.5124
3%	0.5186
4%	0.5248
5%	0.5310
6%	0.5372
7%	0.5434
8%	0.5496
9%	0.5558
10%	0.5620
11%	0.5682
12%	0.5744
13%	0.5806
14%	0.5868
15%	0.5930
16%	0.5992
17%	0.6054
18%	0.6116
19%	0.6178
20%	0.6240
21%	0.6302
22%	0.6364
23%	0.6426

Percent Increase in *Nutrient Units*	Factor C
24%	0.6488
25%	0.6550
26%	0.6612
27%	0.6674
28%	0.6736
29%	0.6798
30%	0.6860
31%	0.6922
32%	0.6984
33%	0.7046
34%	0.7108
35%	0.7170
36%	0.7232
37%	0.7294
38%	0.7356
39%	0.7418
40%	0.7480
41%	0.7542
42%	0.7604
43%	0.7666
44%	0.7728
45%	0.7790
46%	0.7852
47%	0.7914
48%	0.7976

Percent Increase in *Nutrient Units*	Factor C
49%	0.8038
50%	0.8100
55%	0.8167
60%	0.8230
65%	0.8294
70%	0.8357
75%	0.8420
80%	0.8484
85%	0.8547
90%	0.8610
95%	0.8674
100%	0.8737
105%	0.8800
110%	0.8864
115%	0.8927
120%	0.8990
125%	0.9054

Percent Increase in *Nutrient Units*	Factor C
130%	0.9117
135%	0.9180
140%	0.9244
145%	0.9307
150%	0.9371
160%	0.9497
170%	0.9624
180%	0.9751
190%	0.9877
200%	1.0000
300%	1.0280
400%	1.0560
500%	1.0840
600%	1.1120
700% or greater increase or the *first livestock facility* on a *lot*	1.1400

Table 4. Factor E (encroaching land use factor)

Encroaching Land Use	Factor E
Type A land use (less sensitive; see Implementation Guideline #33)	1.1
Type B land use (more sensitive; see Implementation Guideline #34)	2.2

Table 5. *Manure Storage* Types

Solid manure: 18% dry matter, or more
Liquid manure: <18% dry matter

Storage Odour Potential	Manure Type	Inside or Outside *Livestock* Barn	Storage Type (to use in Table 6)	Description of *Manure Storages*
Very low	Solid	Inside	V1	Solid, inside, bedded pack (manure accumulates under *livestock* over time)
		Outside	V2	Solid, outside, covered (cover keeps off precipitation to prevent runoff)
			V3	Solid, outside, no cover, ≥30% dry matter (manure is dry enough that a flowpath option can be used for runoff control (*Nutrient Management Act, 2002*))
			V4	Solid, outside, no cover, 18%–<30% dry matter, with covered liquid runoff storage (manure not dry enough to soak up precipitation, so a liquid runoff storage is needed; storage has a permanent, tight-fitting cover)
	Liquid	Inside	V5	Liquid, inside, underneath slatted floor (manure is stored under the animals in the barn)
		Outside	V6	Liquid, outside, with a permanent, tight-fitting cover (negative pressure tarp, concrete lid, inflatable dome, etc.)
Low	Solid	Outside	L1	Solid, outside, no cover, 18%–<30% dry matter, with uncovered liquid runoff storage (manure not dry enough to soak up precipitation, so a liquid runoff storage needed; it is uncovered, producing more odour than a V4 storage)
	Liquid		L2	Liquid, outside, with a permanent floating cover (tarps, foam panels, plastic hexagon discs, etc.)
Medium	Liquid	Outside	M1	Liquid, outside, no cover, straight-walled storage (usually circular or rectangular concrete or steel storages)
			M2	Liquid, outside, roof, but with open sides (roof keeps off precipitation, but the open sides allow wind to travel over the manure and carry odours)
High	Liquid	Outside	H1	Liquid, outside, no cover, sloped-sided storage (earthen *manure storage*s, but NOT earthen runoff storages associated with a solid *manure storage* which are L1)

Table 6. MDS I and MDS II Setbacks for *Manure Storage(s)*

When using this table to determine a value for Storage Base Distance 'S', it may be necessary to interpolate a value. For example, if you determine the value for Building Base Distance 'F' is 106 m, and from Table 5 the *livestock* facility has a *manure storage* with an odour potential that is considered medium (M1), note that Table 6 provides a value for Storage Base Distance 'S' for an M1 Storage with a Building Base Distance 'F' of 100 m and for an Building Base Distance 'F' of 110 m, but not for a Building Base Distance 'F' of 106 m. The value of Storage Base Distance 'S' for an M1 Storage with a Building Base Distance 'F' of 100 m, is 190 m. The value of Storage Base Distance 'S' for an M1 Storage with a Building Base Distance 'F' of 110 m, is 199 m. Therefore, to determine the value of Storage Base Distance 'S' for an M1 Storage, with an Building Base Distance 'F' of 106 m, interpolate between the numbers 190 and 199. In this example, the value of Storage Base Distance 'S' for an M1 Storage, with a Building Base Distance 'F' of 106 m is 195.4 m. This value is rounded to the nearest whole number — 195 m.

NOTE: When selecting a value for Storage Base Distance 'S' do not include any decimal places. Interpolated values with decimal places are rounded accordingly. For example, if an interpolated value for Storage Base Distance 'S' is calculated as 202.83 m, then use a value of 203 m for Storage Base Distance 'S'.

In all instances, where Building Base Distance 'F' exceeds 1,000 m, then the Storage Base Distance 'S' will be the same value as 'F'.

Building Base Distance 'F' (metres)	Storage Base Distance 'S' (metres)			
	Very Low Odour Storages V1 to V6	Low Odour Storages L1 to L2	Medium Odour Storages M1 to M2	High Odour Storages H1
40	40	64	136	232
50	50	74	145	240
60	60	84	154	248
70	70	93	163	256
80	80	103	172	264
90	90	113	181	272
100	100	123	190	280
110	110	132	199	288
120	120	142	208	296
130	130	152	217	304
140	140	162	226	312
150	150	171	235	320
160	160	181	244	328
170	170	191	253	336
180	180	201	262	344
190	190	210	271	352
200	200	220	280	360
210	210	230	289	368
220	220	240	298	376
230	230	249	307	384

Building Base Distance 'F' (metres)	Storage Base Distance 'S' (metres)			
	Very Low Odour Storages V1 to V6	Low Odour Storages L1 to L2	Medium Odour Storages M1 to M2	High Odour Storages H1
240	240	259	316	392
250	250	269	325	400
260	260	279	334	408
270	270	288	343	416
280	280	298	352	424
290	290	308	361	432
300	300	318	370	440
310	310	327	379	448
320	320	337	388	456
330	330	347	397	464
340	340	357	406	472
350	350	366	415	480
360	360	376	424	488
370	370	386	433	496
380	380	396	442	504
390	390	405	451	512
400	400	415	460	520
420	420	435	478	536
440	440	454	496	552
460	460	474	514	568
480	480	493	532	584
500	500	513	550	600
600	600	610	640	680
800	800	805	820	840
1,000	1,000	1,000	1,000	1,000
>1,000 m	Storage Base Distance 'S' is the same as Building Base Distance 'F'			

6.1 MDS I Calculation Form

Introduction

Implementation Guidelines #2 through #5 and #7 through #15 provide direction on the types of applications and situations which generally trigger the need to complete an MDS I setback calculation(s).

Generally, the preferred method for calculating MDS setbacks is to use the software provided by OMAFRA (AgriSuite). However, on occasions where a 'by hand' calculation is preferred or the software is not available, the following information is intended to assist with the calculation of MDS I setbacks. It is not intended to detract or add to the information found in specific Implementation Guidelines or tables located in Sections 4 and 5 of this MDS Document.

MDS I setbacks are calculated for each *livestock facility* that may be reasonably impacted by the proposed *Planning Act, 1990*, application or building permit application. MDS I setbacks for *anaerobic digesters* do not need to be calculated, but are required in accordance with Implementation Guideline #22. In some circumstances, a proposed *development* or *dwelling* may only trigger one MDS I setback if there is only one *livestock facility* in the vicinity. In circumstances where there are multiple *livestock facilities* in the vicinity, multiple MDS I calculations are necessary.

Implementation Guideline #6 provides direction on conducting MDS I calculations. It states that as part of municipal consideration of planning or building permit applications, *existing livestock facilities* or *anaerobic digesters* within a 750 m distance of Type A applications and within a 1,500 m distance of Type B applications shall be investigated, and MDS I setback calculations undertaken where warranted. In circumstances where large *livestock facilities* (e.g., >1,200 *Nutrient Units*) exist beyond the 750 m or 1,500 m study area, MDS I setbacks from these facilities should also be calculated.

Steps 1 and 2 are completed once for any given application. Steps 3 through 14 are repeated for each *livestock facility* for which an MDS I setback is required.

Step 1: Data Collection — Applicant Contact Information

Fill in the pertinent contact information for the applicant. If all of this information is not available, include sufficient information so that the applicant can be identified and contacted if necessary.

Contact Information — Applicant	
First name	
Last name	
Company/organization (if applicable)	
Agent (if applicable)	
Mailing address	
City/town	
Province	
Postal code	
Telephone number	
Alternative telephone number	
Fax number	
Email	

Step 2: Data Collection — Location and Description of the Proposed Application

Fill in the pertinent information regarding the proposed application. If all of this information is not available, include sufficient information to identify if the proposed application involves a *settlement area* boundary expansion and if the proposal is a Type A or Type B land use.

Location and Description of the Proposed Application	
Upper tier/single tier municipality	
Lower tier municipality (if applicable)	
Lot	
Concession	
911 number	
Roll number	
Application type (e.g., building permit, plan of subdivision, rezoning, official plan amendment, etc.)*	
General description of the proposed application*	

*Indicates information required to complete an MDS I calculation

Step 3: Data Collection — Contact Information for the Surrounding *Livestock* Facility

Fill in the pertinent contact information for the farmer or the owner of the surrounding *livestock facility*. If all of this information is not available, include sufficient information so that the farm owner or operator can be identified and contacted if necessary.

Contact Information — Farm Owner or Operator	
First name	
Last name	
Company/organization (if applicable)	
Agent (if applicable)	
Mailing address	
City/town	
Province	
Postal code	
Telephone number	
Alternative telephone number	
Fax number	
Email	

Step 4: Data Collection — Location of the *Livestock Facility*

Fill in the pertinent information regarding the location of the *livestock facility*. If all of this information is not available, include sufficient information so that the *livestock facility* can be located if required. NOTE: It is important to know the size of the *lot* on which the *livestock facility* is located.

Location of the *Livestock Facility*	
Upper tier/single tier municipality	
Lower tier municipality (if applicable)	
Lot number	
Concession	
911 number	
Roll number	
Size of *lot* where *livestock facility* is located (indicate acres or hectares)*	

*Indicates information required to complete an MDS I calculation

Step 5: Data Collection — Information Regarding the *Livestock Facility*

Gather the pertinent information regarding the *livestock facility* that is required to complete the MDS calculation in the following steps. Often, the operator of the *livestock facility* is the best contact to obtain this information.

A *livestock facility* may have two components:

1. *livestock barn(s)*, with associated *manure storage*(s)
2. imported *manure storage*(s)

An *anaerobic digester* may also be present on the *lot*. The type and amount of information needed will depend on the nature of the specific *livestock facility*, which components are present and whether there is an *anaerobic digester* on the *lot*.

If the *livestock facility* includes a *livestock barn*, gather information on the animal housing including information on all the types of *livestock* housed, the barn's capacity for each type of *livestock* and the manure system used in the barn (see Table 1).

If the barn is presently empty, but the type of *livestock* housed and capacity can be reasonably estimated by one or more of the parties involved, use this approach and note that the barn's capacity is estimated. However, if the barn is empty and its capacity cannot be readily estimated by one or more of the parties involved, then record the information for an *unoccupied livestock barn* as found in Table 1.

Typically, a *livestock facility* with a *livestock barn* will include at least one *manure storage*, but it is possible to have a *livestock barn* without one. If present, identify the type of *manure storage* at the *livestock facility* (see Table 6). If more than one type of *manure storage* is present, identify each different type. If the *manure storage* is unused, but the type of *livestock* and the capacity for the barn was estimated, then indicate the type of *manure storage*. However, if the *manure storage* is unused, and the information for an *unoccupied livestock barn* was used to determine the capacity for the *livestock barn*, then proceed to identify the *manure storage* type. Enter information for a solid or liquid *unused manure storage* as per Table 1.

If the *livestock facility* includes an imported *manure storage*, gather information on the size of the *manure storage* and type of manure stored (i.e., solid or liquid). As well, identify the appropriate *manure storage* type (see Table 6). If more than one type of imported *manure storage* is present, identify each different type.

If there is an *anaerobic digester* on the *lot* simply record this information as no additional detailed information is required.

To assist with this step, Implementation Guideline #16 provides direction on obtaining information to calculate MDS setbacks. A sample MDS I Data Collection Form is provided in Section 6.

Step 6: *Livestock*/Manure Types and Descriptions Housed and/or Stored

On Calculation Form A, identify all *livestock*/manure types that are housed and/or stored as part of the *livestock facility*, based on the information provided by the farm operator in Step 5. Table 1 provides a listing of all types of *livestock*. For each type of *livestock*/manure complete a separate row in Form A. For each row and each *livestock*/manure type, rely on Table 1 for information regarding description, 'number/NU' and manure type.

1. In Cell A2, identify the type of *livestock* (e.g., dairy).

2. In Cell B2, identify the appropriate description for the *livestock* (e.g., milking-age cows (dry or milking) large-framed (e.g., Holsteins)).

3. NOTE: There is no description for imported manure, therefore Cell B2 would remain blank.

4. In Cell C2, record the 'number/NU' from Table 1 (e.g., 0.7).

5. In Cell D2, identify the manure type (e.g., liquid). If Table 1 provides more than one option for manure type (i.e., both liquid and solid are options), indicate which type is present or proposed, based on information supplied by the farm operator.

6. Enter the existing maximum number of *livestock* that can be housed, or maximum area that can be used to house *livestock* or the maximum volume of manure that can be stored in Cell E2 based on information supplied by the farm operator. The value entered should be the maximum capacity of the *livestock barn* or *manure storage* for that type of *livestock* or manure and not the present number or area of *livestock* housed or present volume of manure stored.

7. Repeat this step for each type of *livestock*/manure that exists using rows 3 through 6 as needed. If more than five types of *livestock* (and imported manure) are currently, or will be housed, add additional rows to the table. For some types of *livestock* more than one row will be needed if the operation houses more than one description of *livestock*. For example, a dairy operation that houses milking-age cows, heifers and calves would need three rows, one for each description.

8. For *unoccupied livestock barns*, where the *livestock* type that can be housed is known, or can reasonably be estimated by one or more of the parties involved, enter that *livestock* type and capacity for the empty facility. This information can be obtained from the farm owner. However, where the *livestock* type that can be housed in the *unoccupied livestock barn* is unknown, or reliable information is unavailable, complete Calculation Form A using the *unoccupied livestock barn* option provided in Table 1 and described further in Implementation Guideline #20. Follow a similar process for *unused manure storage*s as described in Implementation Guideline #21.

MDS I — CALCULATION FORM A

	A	B	C	D	E	F	G	H
1	*Livestock*/ Manure Type	*Livestock*/ Manure Description	Number/NU (number of *livestock* or m^2 or m^3)	Manure Type (solid or liquid)	Existing Maximum Number of *Livestock* (or m^2 or m^3)	Existing Maximum Number of *Nutrient Units*	Factor A Value	Factor D Value
2								
3								
4								
5								
6								

MDS I — CALCULATION FORM B

	A	B
1	***Design capacity***	*Nutrient Units*
2	**Final Factor A**	
3	**Final Factor D**	
4	**Land use type**	
5	**Final Factor E**	

Step 7: Convert *Livestock*/Manure Information to *Nutrient Units*

1. For each *livestock*/manure type and description outlined on Calculation Form A, calculate how many *Nutrient Unit*s are associated with the *livestock facility*. Determine this by taking the existing maximum number of *livestock* that can be housed, or maximum area that can be used to house *livestock*, or the maximum volume of manure that can be stored in Cell E2 and divide it by the 'Number/NU' in Cell C2. Record this new value in Cell F2. If necessary, repeat this step for each type of *livestock*/manure identified.

2. Next calculate the *design capacity* of all *livestock facilities* on the *lot*. To determine the *design capacity* as expressed in *Nutrient Unit*s, add values in Cells F2 through F6 on Calculation Form A and record this value in Cell B1 on Calculation Form B.

Step 8: Factor A

1. For each *livestock*/manure type and description outlined on Calculation Form A, determine the value of Factor A. For the *livestock*/manure type described in Cells A2 and B2, enter the value of Factor A from Table 1 in Cell G2 on Calculation Form A. For example, if Cells A2 and B2 describe dairy cattle, milking-age cows, large-framed (e.g., Holsteins), record the value 0.7 in Cell G2. If necessary, repeat this step for each type of *livestock*/manure identified.

2. Review Cells G2 through G6. For cells where there is a recorded value for Factor A, if the value for Factor A is the same in every cell, then enter this value in Cell B2 on Calculation Form B. If there is more than one value for Factor A in Cells G2 through G6 on Calculation Form A, then it is necessary to calculate a weighted average for Factor A. For example, if dairy cattle milking-age cows, heifers and calves are recorded, there is no need to calculate a weighted average for Factor A, as the value of Factor A (i.e., 0.7) is the same for all three types of *livestock*. Similarly, if horses are recorded

(large-framed) and sheep (lambs), there is no need to calculate a weighted average for Factor A, as the value of Factor A (i.e., 0.7) is the same for both types of *livestock*. However, if sheep (lambs) and rabbits are recorded, calculate a weighted average for Factor A, as the value of Factor A is different for these types of *livestock*.

3. To calculate a weighted average for Factor A, see Implementation Guideline #30, and use the values for Factor A recorded in Cells G2 through G6 and the number of *Nutrient Unit*s recorded in Cells F2 through F6. When calculating a weighted average, the value of Factor A should not include more than two decimal places and may need to be rounded accordingly. Record the weighted average for Factor A in Cell B2 on Calculation Form B.

Step 9: Factor D

1. For each *livestock*/manure type and description outlined on Calculation Form A, determine the value of Factor D. For the manure type described in Cell D2 enter the value of Factor D from Table 1 in Cell H2. For example, if Cell D2 says liquid manure, record the value 0.8 in Cell H2. If necessary, repeat this step for each type of *livestock*/manure identified.

2. Review Cells H2 through H6. For cells where a value is recorded for Factor D, if the value for Factor D is the same in every cell, then enter this value on Calculation Form B, Cell B3. If there is more than one value for Factor D in Cells H2 through H6 on Calculation Form A, then it is necessary to calculate a weighted average for Factor D.

   For example, if solid manure for all types of *livestock* is recorded in the Calculation Form, there is no need to calculate a weighted average for Factor D, as the value of Factor D (i.e., 0.7) is the same for all types of *livestock*. However, if there is a record for both solid manure and liquid manure for various types of *livestock* on Calculation Form A, calculate a weighted average for Factor D as the type of manure is different for these types of *livestock*.

3. To calculate a weighted average for Factor D, see Implementation Guideline #31, and use the values for Factor D recorded in Cells H2 through H6 and the number of *Nutrient Unit*s recorded in Cells G2 through G6 on Calculation Form A. When calculating a weighted average, the value of Factor D should not include more than two decimal places and may need to be rounded accordingly. Record the weighted average for Factor D in Cell B3 on Calculation Form B.

Step 10: Factor E

1. Now determine Factor E which is based on the type of land use that is proposed as part of the land use planning or building permit application. Based on the information provided by the applicant in Step 2, as well as on direction found in Implementation Guidelines #33 and #34, determine if the proposed use is a Type A or Type B land use. Implementation Guidelines #35 through #38, and direction in local planning documents, may also help in determining if the proposed land use is a Type A or Type B land use.

2. On Calculation Form B, in Cell B4, record if the proposed land use is a Type A or Type B land use. If the proposed use is a Type A land, use Table 4 to enter a value of 1.1 in Cell B5 on Calculation Form B. If the proposed use is a Type B land, use Table 4 to enter a value of 2.2 in Cell B5 on Calculation Form B.

Step 11: Factor B

1. Next determine Factor B which is based on the *design capacity* for the *livestock facility* expressed in *Nutrient Unit*s, in combination with the size of the *lot* on which the *livestock facility* is located as a consideration for the potential future expansion of the *livestock facility*. If based on Step 2 and Step 10, it is determined that the proposed application is for a *settlement area* expansion (Type B land use), or if the *lot* is ≤5 ha, then take the value of the *design capacity* for the *livestock facility* expressed in *Nutrient Unit*s found on MDS I Calculation Form B, Cell B1. and record this in Cell B6 on MDS I Calculation Form C and skip to #7 below. If the proposed application is not for a *settlement area* expansion, take the value of *design capacity* for the *livestock facility* found on MDS I Calculation Form B, Cell B1, and record this in Cell B1 on MDS I Calculation Form C.

2. Based on the information provided in Step 4 by the farm operator or other reliable source, record in Cell B2 on Calculation Form C the *lot* size (in hectares or acres) of the *lot* on which the *livestock facility* is located. Do not enter the size of the entire farm operation; instead only consider the *lot* on which the *livestock facility* is located. For example, if a farm operation comprised 200 ha in its entirety, but the *livestock facility* is located on a 40 ha conveyable *lot*, record the 40 ha.

3. If the *design capacity* recorded in Cell B1 on MDS I Calculation Form B exceeds 125 *Nutrient Unit*s (NU), then record the applicable cap size in Cell B3 on Calculation Form C. If the *design capacity* does not exceed 125 NU, then indicate "Not Applicable" in Cell B3 on Calculation Form C. If the *design capacity* exceeds 125 NU, then determine the appropriate cap size based on the *lot* size recorded in Cell B2.

4. If the *lot* size recorded in Cell B2 is ≤5 ha, then record the phrase "Not Applicable" in Cell B3. If the *lot* size recorded in Cell B2 is >5 ha, but ≤25 ha, record a value of 300 in Cell B3. If the *lot* size recorded in Cell B2 is >25 ha, but ≤50 ha, record a value of 450 in Cell B3. If the *lot* size recorded in Cell B2 is >50 ha, record a value of 600 in Cell B3.

5. Determine the multiplication factor used to calculate the potential *design capacity* for the *livestock facility* as expressed in *Nutrient Unit*s, described in Implementation Guideline #26. To do this, use MDS I Calculation Form D which is derived from the table found in Implementation Guideline #26. Take the *design capacity* found in Cell B1 on Calculation Form C, cross reference that with the *lot* size found in Cell B2 on Calculation Form C and use these two values to determine the appropriate multiplication factor using Calculation Form D. Enter the value of the multiplication factor in Cell B4.

   For example, if the *design capacity* found in Cell B1 equals 15 NU and the *lot* size found in Cell B2 equals 20 ha, using Calculation Form D, enter a value of 2 in Cell B4 on Calculation Form C. If the *design capacity* found in Cell B1 equals 200 NU and the *lot* size found in Cell B2 equals 40 ha, using Calculation Form D, enter a value of 3 in Cell B4 on Calculation Form C. If the *design capacity* found in Cell B1 equals 5 NU and the *lot* size found in Cell B2 equals 55 ha, using Calculation Form D, enter a value of 1 in Cell B4 on Calculation Form C, etc.

6. Now take the value in Cell B1 on Calculation Form C and multiple it by the value in Cell B4 on Calculation Form C and enter the result in Cell B5 on Calculation Form C. For example, if the value in Cell B1 is 80 NU and the value in Cell B4 is 3, enter 240 NU in Cell B5.

7. Next, determine if the value in Cell B5 on Calculation Form C exceeds the cap size. If Cell B3 on Calculation Form C says "Not Applicable", enter the value from Cell B5 into Cell B6 on Calculation Form C. If Cell B3 on Calculation Form C contains a numeric value (i.e., 300, 450 or 600), compare this to

the value found in Cell B5 on Calculation Form C. If the value in Cell B5 is less than the value in Cell B3, enter the value found in Cell B5 into Cell B6 on Calculation Form C.

For example, if Cell B5 has a value of 240 NU and Cell B3 has a value of 300 NU, then enter a value of 240 NU in Cell B6. If the value in Cell B5 is equal to or greater than the value in Cell B3, enter the value found in Cell B3 into Cell B6 on Calculation Form C. For example, if Cell B5 has a value of 320 NU and Cell B3 has a value of 300 NU, then enter a value of 300 NU in Cell B6.

8. The value in Cell B6 is the potential *design capacity* for the *livestock facility* as expressed in *Nutrient Unit*s and is used to determine Factor B. Use this number to determine Factor B from Table 2 by looking up the value of Factor B in Table 2 based on the potential *design capacity*. In some cases, it is necessary to interpolate Factor B from Table 2, when the exact value is not specifically identified in Table 2. Implementation Guideline #26 provides more specific direction on Factor B, and information on interpolation and rounding can be found in the text accompanying Table 2.

9. Once the value of Factor B is determined, record this number in Cell B7 on Calculation Form C.

MDS I — CALCULATION FORM C

	A	B
1	***Design capacity***	*Nutrient Unit*s
2	***Lot* size**	Hectares
3	**Cap size (if applicable)**	
4	**Multiplication factor (from Implementation Guideline #26 and Calculation Form D)**	
5	**Multiplication factor multiplied by *design capacity***	*Nutrient Unit*s
6	**Potential *design capacity***	*Nutrient Unit*s
7	**Final Factor B**	

MDS I — CALCULATION FORM D

***Design Capacity* of Livestock Facility (NU)**	**Total *Lot* Size ≤5 ha**	**Total *Lot* Size >5 ha, but ≤25**	**Total *Lot* Size >25 ha, but ≤50 ha**	**Total *Lot* Size >50 ha**
≤5 NU	1	1	1	1
>5 NU, but ≤25 NU	1	2	2	2
>25 NU, but ≤125 NU	1	2	3	3
>125 NU	1	2	3	3

Step 12: Calculate Building Base Distance 'F

1. To calculate Building Base Distance 'F', enter the value for:

    - Factor A (found on Calculation Form B, Cell B2) into Cell A2 on Calculation Form E
    - Factor B (found on Calculation Form C, Cell B7) into Cell B2 on Calculation Form E
    - Factor D (found on Calculation Form B, Cell B3) into Cell C2 on Calculation Form E
    - Factor E (found on Calculation Form B, Cell B5) into Cell D2 on Calculation Form E

2. Calculate Building Base Distance 'F' by multiplying Factor A, Factor B, Factor D and Factor E. In other words, multiply the values in Cells A2, B2, C2 and D2 together and enter this result in Cell E2 on Calculation Form E.

MDS I — CALCULATION FORM E

	A	B	C	D	E
1	**Factor A**	**Factor B**	**Factor D**	**Factor E**	**Building Base Distance 'F'**
2					

Step 13: Determine Storage Base Distance 'S'

1. Enter Building Base Distance 'F' as found in Calculation Form E, Cell E2, in Calculation Form F, Cell B1. If the *livestock facility* does not have a *manure storage*, enter a value of 0 in Cell B3, Storage Base Distance, on Calculation Form F. If the *livestock facility* does have a *manure storage*, proceed to determining Storage Base Distance 'S' starting with Table 5. Compare the 11 types of *manure storage*s described in Table 5 (i.e., V1, V2, V3, V4, V5, V6, L1, L2, M1, M2 and H1) with the information provided by the farm operator regarding the *livestock facility* (Step 5). Select the *manure storage* type that best fits the application. The *manure storage* type selected should also reflect the value of Factor D used in the calculation.

    For example, if Factor D in the calculation is based on solid manure (value of 0.7) it is not appropriate to select the V6 *manure storage* type. Enter the *manure storage* type (e.g., V6) in Cell B2 on Calculation Form F. If more than one type of *manure storage* is present, select the *manure storage* type with the highest odour potential. For example, if a *livestock facility* has both a V6 and a H1 *manure storage*, enter H1 in Cell B2 on Calculation Form F.

2. Use the *manure storage* type (Cell B2 on Calculation Form F) and the Building Base Distance 'F' (Cell B1 on Calculation Form F) and determine the value of Storage Base Distance 'S' from Table 6 by looking up the value of the Storage Base Distance 'S' based on these two numbers. In some cases, it will be necessary to interpolate Storage Base Distance 'S' from Table 6 when the actual distance is not specifically identified in Table 6. Information on interpolation and rounding can be found in the text accompanying Table 6.

MDS I — CALCULATION FORM F

	A	B
1	**Building Base Distance 'F'**	
2	**Manure Storage Type (Table 5)**	
3	**Storage Base Distance 'S' (Table 6)**	

Step 14: Final MDS I Setbacks

1. The calculation of MDS I setbacks is now complete. The value in Cell B1 on MDS I Calculation Form F is the required MDS I setback between the proposed *development* or *dwelling* (i.e., planning or building permit application respectively) and the existing *livestock barn*.

2. The value in Cell B3 on MDS I Calculation Form F is the required MDS I setback between the proposed *development* or *dwelling* and the existing *manure storage*. If in Step 5 there was an *anaerobic digester* present on the *lot*, the MDS I setback between the proposed *development* or *dwelling* and all components of the *anaerobic digester* is 200 m for a Type A land use, and 450 m for a Type B land use (see Implementation Guideline #22).

3. Now apply these MDS I setbacks to the proposed *development* or *dwelling* as appropriate. Implementation Guidelines #39 through #41 provide information on the measurement of MDS setbacks. Implementation Guidelines #42 and #43 provide information on reducing and varying MDS setbacks. Repeat Steps 3 through 14 if MDS I setbacks are required for other *livestock facilities*.

6.2 MDS I Sample Data Collection Form

Information Regarding the Existing Facilities		
Facility Type	**Present on the *Lot*? (yes or no)**	**Chart Sections to Complete**
Livestock barn* and/or *manure storage		If yes, complete Section A
Imported *manure storage*		If yes, complete Section B
Anaerobic digester		No additional information required

Section A

Livestock

1. Enter *livestock* information below.
2. If the barn is empty, but *livestock* type and capacity can be reasonably estimated by one or more of the parties involved enter information below, and indicate that the capacity was estimated.
3. If the barn is empty, and capacity cannot be reasonably estimated by one or more of the parties involved, then proceed to the bottom of the *livestock* type list, and enter information for an *unoccupied livestock barn*.

***Livestock* Type**	***Livestock* Description**	**Number of *Livestock* or Area**	**Unit**	**Manure System (indicate solid or liquid if no default provided)**	**Estimate for an Empty Barn? (yes or no)**
Alpacas	Adults (includes unweaned young and replacements)		Number of *livestock*	Solid	
	Feeders (23–48 kg)		Number of *livestock*	Solid	
Beef	Cows, including calves to weaning (all breeds)		Number of *livestock*	Solid	
	Feeders (7–16 months)		Number of *livestock*		
	Backgrounders (7–12.5 months)		Number of *livestock*		
	Shortkeepers (12.5–17.5 months)		Number of *livestock*		
Bison	Adults (includes unweaned calves and replacements)		Number of *livestock*	Solid	
	Feeders (170–477 kg)		Number of *livestock*	Solid	

Livestock Type	*Livestock* Description	Number of *Livestock* or Area	Unit	Manure System (indicate solid or liquid if no default provided)	Estimate for an Empty Barn? (yes or no)
Chicken	Layer hens (for eating eggs; after transfer from pullet barn)		Number of *livestock*		
	Layer pullets (day-olds until transferred into layer barn)		Number of *livestock*		
	Broiler breeder growers (males/females transferred out to layer barn)		Number of *livestock*	Solid	
	Broiler breeder layers (males/females transferred in from grower barn)		Number of *livestock*	Solid	
	Broilers on any length of cycle use the floor area of the *livestock barn*		m^2 or ft^2	Solid	
Chinchillas	Breeding females (including males, replacements and market animals)		Number of *livestock*	Solid	
Dairy	Milking-age cows (dry or milking); large-framed; 545–658 kg (e.g., Holsteins)		Number of *livestock*		
	Milking-age cows (dry or milking); medium-framed; 455–545 kg (e.g., Guernseys)		Number of *livestock*		
	Milking-age cows (dry or milking); small-framed; 364–455 kg (e.g., Jerseys)		Number of *livestock*		
	Heifers (5 months to freshening); large-framed; 182–545 kg (e.g., Holsteins)		Number of *livestock*		
Dairy	Heifers (5 months to freshening); medium-framed; 148–455 kg (e.g., Guernseys)		Number of *livestock*		
	Heifers (5 months to freshening); small-framed; 125–364 kg (e.g., Jerseys)		Number of *livestock*		
	Calves (0–5 months); large-framed; 45–182 kg (e.g., Holsteins)		Number of *livestock*		
	Calves (0–5 months); medium-framed; 39–148 kg (e.g., Guernseys)		Number of *livestock*		
	Calves (0–5 months); small-framed; 30–125 kg (e.g., Jerseys)		Number of *livestock*		

Livestock Type	*Livestock* Description	Number of *Livestock* or Area	Unit	Manure System (indicate solid or liquid if no default provided)	Estimate for an Empty Barn? (yes or no)
White tailed deer	Adults >24 months (including unweaned offspring)		Number of *livestock*	Solid	
	Feeders		Number of *livestock*	Solid	
Red deer	Adults >24 months (including unweaned offspring)		Number of *livestock*	Solid	
	Feeders		Number of *livestock*	Solid	
Elk	Adults >24 months (including unweaned offspring)		Number of *livestock*	Solid	
	Feeders		Number of *livestock*	Solid	
Elk/deer hybrids	Adults >24 months (including unweaned offspring)		Number of *livestock*	Solid	
	Feeders		Number of *livestock*	Solid	
Fallow deer	Adults >24 months (including unweaned offspring)		Number of *livestock*	Solid	
	Feeders		Number of *livestock*	Solid	
Donkey	Jacks, jennies, mules, hinnies (includes unweaned foals)		Number of *livestock*	Solid	
Ducks	Muscovy (use the floor area of the *livestock barn*)		m^2 or ft^2		
	Peking		Number of *livestock*		
Emu	Adults (includes replacements and market birds)		Number of *livestock*	Solid	
Fox	Breeding females (including males, replacements and market animals)		Number of *livestock*	Solid	
Geese	Use the floor area of the *livestock barn*		m^2 or ft^2		
Goats	Does and bucks (for meat; includes unweaned offspring and replacements)		Number of *livestock*	Solid	
	Does and bucks (for dairy; includes unweaned offspring and replacements)		Number of *livestock*	Solid	
	Kids (dairy or feeder kids)		Number of *livestock*	Solid	

Livestock Type	*Livestock* Description	Number of *Livestock* or Area	Unit	Manure System (indicate solid or liquid if no default provided)	Estimate for an Empty Barn? (yes or no)
Horses	Large-framed, mature; >681 kg (e.g., draft or draft cross breeds including unweaned offspring)		Number of *livestock*	Solid	
	Medium-framed, mature; 227–680 kg (e.g., saddle, riding and racing breeds including unweaned offspring)		Number of *livestock*	Solid	
	Small-framed, mature; <227 kg (e.g., ponies and miniatures including unweaned offspring)		Number of *livestock*	Solid	
Llama	Adults (includes unweaned young and replacements)		Number of *livestock*	Solid	
	Feeders (45–86 kg)		Number of *livestock*	Solid	
Mink	Breeding females (including males, replacements and market animals)		Number of *livestock*		
Ostriches	Adults (includes replacements and market birds)		Number of *livestock*	Solid	
Partridge	Use floor area of the *livestock barn*		m^2 or ft^2	Solid	
Pheasants	Use floor area of the *livestock barn*		m^2 or ft^2	Solid	
Quail	Use floor area of the *livestock barn*		m^2 or ft^2	Solid	
Rabbits	Breeding females (including males, replacements and market animals)		Number of *livestock*	Solid	
Rheas	Adults (includes replacements and market birds)		Number of *livestock*	Solid	
Sheep	Ewes and rams (for meat; includes unweaned offspring and replacements)		Number of *livestock*	Solid	
	Ewes and rams (dairy operation; includes unweaned offspring and replacements)		Number of *livestock*	Solid	
	Lambs (dairy or feeder lambs)		Number of *livestock*	Solid	
Squab (pigeon)	Use the floor area of the *livestock barn*		m^2 or ft^2	Solid	

Livestock Type	*Livestock* Description	Number of *Livestock* or Area	Unit	Manure System (indicate solid or liquid if no default provided)	Estimate for an Empty Barn? (yes or no)
Swine	Sows with litter, dry sows or boars		Number of *livestock*		
	Breeder gilts (entire barn designed specifically for this purpose)		Number of *livestock*		
	Weaners (7–27 kg)		Number of *livestock*		
	Feeders (27–136 kg)		Number of *livestock*		
Turkey	Turkey poults (day-old until transferred to grow-out turkey barn)		Number of *livestock*	Solid	
	Turkey breeder layers (males/females transferred in from grower barn)		Number of *livestock*	Solid	
	Breeder toms		Number of *livestock*	Solid	
	Broilers (day-olds to 6.2 kg)		Number of *livestock*	Solid	
	Hens (day-olds up to 6.2–10.8 kg; 7.5 kg is typical)		Number of *livestock*	Solid	
	Toms (day-olds to over 10.8–20 kg; 14.5 kg is typical)		Number of *livestock*	Solid	
	Turkeys at any other weights, or if unknown use the floor area of the *livestock barn*		m^2 or ft^2	Solid	
Veal	Milk-fed		Number of *livestock*		
	Grain-fed		Number of *livestock*		
Wild boar	Breeding age sows (includes boars, replacements and weaned piglets up to 27 kg)		Number of *livestock*	Solid	
	Finishing boars (27–86 kg)		Number of *livestock*	Solid	
Other	Other animals not listed in this table		Enter total weight of *livestock*		

Livestock Type	*Livestock* Description	Number of *Livestock* or Area	Unit	Manure System (indicate solid or liquid if no default provided)	Estimate for an Empty Barn? (yes or no)
Unoccupied livestock barns	A *livestock barn* that does not currently house any *livestock*, but that housed *livestock* in the past and continues to be structurally sound and reasonably capable of housing *livestock*		m^2 or ft^2; where obtaining information from the farm operator(s) and/or owner(s) was not possible (see *implementation* Guideline #20 for more information)		

Manure Storages

1. Identify the appropriate *manure storage* type from the list below; if more than one type of *manure storage* is present identify all types that are applicable. The types of *manure storage*s selected should reflect the types of manure systems associated with each *livestock* type identified above (e.g., if dairy housing based on liquid manure was identified above, then select a liquid *manure storage* from below).

2. If the *manure storage* is unused, but the *livestock* type and capacity for the barn were estimated in the previous section, then indicate the type of *manure storage*.

3. If the *manure storage* is unused, and in the section above, *unoccupied livestock barn* was used to determine capacity, then proceed to identify the *manure storage* type. Enter the information for a solid or liquid *unused manure storage*.

Manure Storage Type	*Manure Storage* Description	Present on the *Lot*? (yes or no)
V1	Solid, inside, bedded pack (manure accumulates under *livestock* over time)	
V2	Solid, outside, covered (cover keeps off precipitation to prevent runoff)	
V3	Solid, outside, no cover, ≥30% dry matter (manure is dry enough that a flowpath option can be used for runoff control (*Nutrient Management Act, 2002*)	
V4	Solid, outside, no cover, 18%–<30% dry matter, with covered liquid runoff storage (manure not dry enough to soak up precipitation, so a liquid runoff storage needed, but it has a permanent, tight-fitting cover)	
V5	Liquid, inside, underneath slatted floor (manure is stored under the animals in the barn)	

Manure Storage Type	*Manure Storage* Description	Present on the *Lot*? (yes or no)
V6	Liquid, outside, with a permanent, tight-fitting cover (negative pressure tarp, concrete lid, inflatable dome, etc.)	
L1	Solid, outside, no cover, 18%–<30% dry matter, with uncovered liquid runoff storage (manure not dry enough to soak up precipitation, so a liquid runoff storage needed, but it is uncovered, producing more odour than in V4)	
L2	Liquid, outside, with a permanent floating cover (tarps, foam panels, etc.)	
M1	Liquid, outside, no cover, straight-walled storage (usually circular or rectangular concrete or steel storages)	
M2	Liquid, outside, roof, but with open sides (roof keeps off precipitation, but the open sides allow wind to travel over the manure and carry odours)	
H1	Liquid, outside, no cover, sloped-sided storage (earthen *manure storage*s, but NOT earthen runoff storages associated with a solid *manure storage* which are L1)	

Unused Manure Storage Type	*Manure Storage* Description	Total Volume	Units
Solid *unused manure storage*	A *manure storage* that does not currently store any solid manure, but that stored solid manure in the past and continues to be structurally sound and reasonably capable of storing solid manure		m^3 or ft^3
Liquid *unused manure storage*	A *manure storage* that does not currently store any liquid manure, but that stored liquid manure in the past and continues to be structurally sound and reasonably capable of storing liquid manure		m^3 or ft^3

Section B

Imported Manure

1. Indicate the volume of the *manure storage* in cubic metres or cubic feet.
2. Indicate the type of manure stored (solid or liquid).
3. Identify the appropriate *manure storage* type from the list below; if more than one type of *manure storage* is present identify all types that are applicable.

***Manure storage* volume (m^3 or ft^3)**	
Type of manure stored (solid or liquid)	

***Manure Storage* Type**	***Manure Storage* Description**	**Present on the *Lot*? (yes or no)**
V1	Solid, inside, bedded pack (manure accumulates under *livestock* over time)	
V2	Solid, outside, covered (cover keeps off precipitation to prevent runoff)	
V3	Solid, outside, no cover, ≥30% dry matter (manure is dry enough that a flowpath option can be used for runoff control (*Nutrient Management Act, 2002*))	
V4	Solid, outside, no cover, 18%–<30% dry matter, with covered liquid runoff storage (manure not dry enough to soak up precipitation, so a liquid runoff storage needed, but it has a permanent, tight-fitting cover)	
V5	Liquid, inside, underneath slatted floor (manure is stored under the animals in the barn)	
V6	Liquid, outside, with a permanent, tight-fitting cover (negative pressure tarp, concrete lid, inflatable dome, etc.)	
L1	Solid, outside, no cover, 18%–<30% dry matter, with uncovered liquid runoff storage (manure not dry enough to soak up precipitation, so a liquid runoff storage needed, but it is uncovered, producing more odour than in V4)	
L2	Liquid, outside, with a permanent floating cover (tarps, foam panels, etc.)	
M1	Liquid, outside, no cover, straight-walled storage (usually circular or rectangular concrete or steel storages)	
M2	Liquid, outside, roof, but with open sides (roof keeps off precipitation, but the open sides allow wind to travel over the manure and carry odours)	
H1	Liquid, outside, no cover, sloped-sided storage (earthen *manure storage*s, but NOT earthen runoff storages associated with a solid *manure storage* which are L1)	

6.3 MDS II Calculation Form

Introduction

Implementation Guidelines #2 through #5 and #11 through #15 provide direction on the types of applications and situations that trigger the need to complete an MDS II setback calculation.

Generally, the preferred method for calculating MDS setbacks is to use the software provided by OMAFRA (AgriSuite). However, on occasions where a 'by hand' calculation is preferred or the software is not available, this information is intended to assist with the calculation of MDS II setbacks. It is not intended to detract or add to the information found in specific Implementation Guidelines or tables located in Sections 4 and 5 of this MDS Document.

MDS II setbacks are calculated for both a *first* or *altered livestock facility* and yield setbacks between various parts of the *livestock facility*, depending on the type of construction proposed, (i.e., *livestock barn* or *manure storage*), Type A and Type B land uses, road allowances, and rear and side *lot* lines. MDS II setbacks for *anaerobic digesters* do not need to be calculated, but are required in accordance with Implementation Guideline #22. MDS II setbacks are applied based on actual surrounding land uses and circumstances.

Step 1: Contact Information for Applicant

Fill in the pertinent contact information for the applicant who is proposing to construct a *first* or *altered livestock facility*. If all of this information is not available, include sufficient information so that the applicant can be identified and contacted if necessary.

Contact Information — Applicant	
First name	
Last name	
Company/organization (if applicable)	
Agent (if applicable)	
Mailing address	
City/town	
Province	
Postal code	
Primary telephone number	
Alternative telephone number	
Fax number	
Email	

Step 2: Location and Description of the Proposed Application

Fill in the pertinent information for the *lot* where the proposed application is to be located. If all of this information is not available, include sufficient information to identify the proposed application location.

Location and Description of the Proposed Application	
Location and description of the proposed application	
Upper tier/single tier municipality	
Lower tier municipality (if applicable)	
Lot	
Concession	
911 Number and road name	
Property roll number	
Application type (e.g., building permit)	
File number	
General description of the proposed application	

Step 3: *Livestock*/Manure Types and Descriptions Housed and/or Stored

1. On Calculation Form A, identify all the types of *livestock*/manure that are currently, or could potentially be, housed and/or stored as part of the *livestock facility*, based on the information provided by the applicant. Table 1 provides a listing of *livestock*/manure. For each type of *livestock*/manure complete a separate row in Form A. For each row, and each *livestock*/manure type, use Table 1 for information regarding description, number/NU and manure type.

2. In Cell A2, identify the type of *livestock*/manure (e.g., dairy).

3. In Cell B2, identify the appropriate description for the *livestock* (e.g., milking-age cows (dry or milking) large-framed (e.g., Holsteins)).

4. NOTE: There is no description for imported manure, therefore Cell B2 remains blank.

5. In Cell C2 record the number/NU from Table 1 (e.g., 0.7).

6. In Cell D2 identify the manure type (e.g., liquid). If Table 1 provides more than one option for manure type (i.e., both liquid and solid are options), indicate which type is present or proposed, based on information supplied by the applicant.

7. Enter the existing maximum number of *livestock* that can be housed, or maximum area that can be used to house *livestock*, or the maximum volume of manure that can be stored in Cell E2 and the proposed capacity to be added in Cell G2 based on information supplied by the applicant. If the operation is a *first livestock facility*, enter a value of 0 for the existing capacity in Cell E2 on Calculation Form A.

8. Repeat this step for each applicable type of *livestock*/manure, using rows 3 through 6 as needed. If more than five types of *livestock* (or imported manure) are currently, or will be housed (or stored), add additional rows to the table. For some types of *livestock* more than one row is needed if the operation houses more than one description of *livestock*. For example, a dairy operation that houses milking-age cows, heifers, and calves would need three rows, one for each description.

MDS II — CALCULATION FORM A

	A	B	C	D	E	F	G	H	I	J
1	*Livestock*/ Manure Type	*Livestock*/ Manure Description	Number/NU (number of *livestock* or m^2 or m^3)	Manure Type (solid or liquid)	Existing Maximum Number of *Livestock* or m^2 or m^3	Existing Maximum Number of *Nutrient Units*	Proposed Added Number of *Livestock* or m^2 or m^3	Proposed Added Number of *Nutrient Units*	Factor A Value	Factor D Value
2										
3										
4										
5										
6										

MDS II — CALCULATION FORM B

	A	B
1	**Existing *design capacity***	*Nutrient Unit*s
2	**Proposed total number of *Nutrient Units* to be added**	*Nutrient Unit*s
3	***Design capacity* after alteration**	*Nutrient Unit*s
4	**Final Factor A**	
5	**Final Factor D**	
6	**Final Factor B**	

Step 4: Convert *Livestock* Information to *Nutrient Units*

1. For each *livestock*/manure type and description outlined on Calculation Form A, determine the existing maximum number of *Nutrient Unit*s and the proposed number of *Nutrient Unit*s to be added. Calculate existing maximum number of *Nutrient Unit*s by taking the existing maximum number of *livestock* that can be housed, or maximum area that can be used to house *livestock*, or the maximum volume of manure that can be stored in Cell E2 and dividing it by the number/NU in Cell C2. Record this new value in Cell F2.

2. Calculate the proposed number of *Nutrient Unit*s to be added by taking the proposed number of *livestock* to be added, or the area to be used to house *livestock*, or the volume of manure to be stored in Cell G2 and dividing it by the number/NU in Cell C2. Record this new value in Cell H2. If necessary, repeat this step for each type of *livestock*/manure identified.

3. Now calculate the existing *design capacity*, the proposed total number of *Nutrient Unit*s to be added and the *design capacity* after alteration, all three of which are expressed in *Nutrient Unit*s. To determine existing *design capacity*, add values in Cells F2 through F6 on Calculation Form A and record this value in Cell B1 on Calculation Form B.

4. To determine the proposed total number of *Nutrient Unit*s to be added, add values in Cells H2 through H6 and record this value in Cell B2 on Calculation Form B.

5. To determine the *design capacity* for the *livestock facility* after alteration, add values in Cells B1 and B2 on Calculation Form B and record this value in Cell B3 on Calculation Form B.

Step 5: Factor A

1. For each *livestock*/manure type and description outlined on Calculation Form A, where *livestock*/manure are being added, determine the value of Factor A. For the *livestock*/manure type described in Cells A2 and B2, and where indicated in Cell G2 that this type of *livestock*/manure is being added to the operation, enter the value of Factor A from Table 1 in Cell I2. For example, if Cell A2 and B2 describe dairy cattle, milking-age cows, large-framed (e.g., Holsteins), and Cell G2 indicates that 100 *livestock* are being added, record the value 0.7 in Cell I2.

2. Repeat this step for each type of *livestock*/manure (i.e., repeat this for rows 3 through 6 if *livestock*/manure types are identified for these rows) where *livestock*/manure are proposed to be added to the facility.

3. Review Cells I2 through I6. For cells that have recorded a value for Factor A, if the value for Factor A is the same in every cell, then enter this value in Cell B4 on Calculation Form B. If there is more than one value for Factor A in Cells I2 through I6 on Calculation Form A, then calculate a weighted average for Factor A.

   For example, if dairy cattle milking-age cows, heifers and calves are recorded there is no need to calculate a weighted average for Factor A, as the value of Factor A (i.e., 0.7) is the same for all three types of *livestock*. Similarly, if horses (large-framed and sheep (lambs) were recorded there is no need to calculate a weighted average for Factor A, as the value of Factor A (i.e., 0.7) is the same for both types of *livestock*. However, if sheep (lambs) and rabbits were recorded then calculate a weighted average for Factor A, as the value of Factor A is different for these types of *livestock*.

4. To calculate a weighted average for Factor A (see Implementation Guideline #30), use the values for Factor A recorded in Cells I2 through I6 and the proposed total number of *Nutrient Unit*s to be added (numbers recorded in Cells H2 through H6). When calculating a weighted average, the value of Factor A should NOT include more than two decimal places and may be rounded accordingly. Record the weighted average for Factor A in Cell B4 on Calculation Form B.

Step 6: Factor D

1. For each *livestock*/manure type and description outlined on Calculation Form A, where *livestock*/manure is proposed to be added, determine the value of Factor D. For the manure type described in Cell D2 and where indicated in Cell G2 that this type of *livestock*/manure is being added to the operation, enter the value of Factor D in Cell J2 from Table 1. For example, if Cell D2 says liquid manure, record the value 0.8 in Cell J2. Repeat this step for each type of *livestock*/manure identified.

2. Review Cells J2 through J6. For cells where a value for Factor D is recorded, if the value for Factor D is the same in every cell, then enter this value on Calculation Form B, Cell B5. If there is more than one value for Factor D in Cells J2 through J6 on Calculation Form A, then it is necessary to calculate a weighted average for Factor D.

For example, if solid manure for all types of *livestock* is recorded in Calculation Form, there is no need to calculate a weighted average for Factor D, as the value of Factor D (i.e., 0.7) is the same for all types of *livestock*. However, if solid manure and liquid manure is recorded for various types of *livestock* in the Calculation Form, calculate a weighted average for Factor D as the type of manure is different for these types of *livestock*.

3. To calculate a weighted average for Factor D (see Implementation Guideline #31) use the values for Factor D recorded in Cells J2 through J6 and the proposed number of *Nutrient Unit*s to be added (which are recorded in Cells H2 through H6 on Calculation Form A). When calculating a weighted average, the value of Factor D should not include more than two decimal places and may be rounded accordingly. Record the weighted average for Factor D in Cell B5 on Calculation Form B.

Step 7: Factor B

1. Now determine Factor B which is based on the *design capacity* after the proposed construction (alteration) is completed. The *design capacity* after alteration is found in Cell B3 on Calculation Form B. Use this number as the 'Final *Nutrient Unit*s' to determine Factor B from Table 2, by looking up the value of Factor B based on the final *Nutrient Unit*s. In some cases, it will be necessary to interpolate Factor B from Table 2, when the exact value of the final *Nutrient Unit*s is not specifically identified in Table 2. Implementation Guideline #26 provides more specific direction on Factor B, and information on interpolation and rounding can be found in the text accompanying Table 2. Once the value of Factor B is determined, record this number in Cell B6 on Calculation Form B.

Step 8: Determining Percentage Increase

1. Determine Factor C to complete the MDS II calculation by defining the percentage increase for the *livestock facility*. There are four approaches for calculating percentage increase. Use the approach that most appropriately fits the situation:

    - if the operation is a *first livestock facility*, then use Approach (i)
    - if the operation is an *existing livestock facility* that is being altered, and the proposed building permit will result in an increase in *design capacity*, and no other building permits have been issued on this *lot* in the past 3 years that increased the *design capacity* of the *livestock facility*, then use Approach (ii)
    - if the operation is an *existing livestock facility* that is being altered, and the proposed building permit will result in an increase in *design capacity*, and a building permit has been issued on this *lot* within the past 3 years that increased the *design capacity* of the *livestock facility*, then use Approach (iii)
    - if the operation is an *existing livestock facility* and the proposed building permit will result in no change in *design capacity*, or a decrease in *design capacity* for the *livestock facility*, then use Approach (iv)

Approach (i)

For a *first livestock facility* the percentage increase is assumed to be 700%. Enter a value of 700% in Cell B5 on Calculation Form C.

Approach (ii)

Take the value of the proposed total number of *Nutrient Unit*s to be added (found in Cell B2 on Calculation Form B) and enter it in Cell D3 on Calculation Form C. Take the value of existing *design capacity* (found in Cell B1 on Calculation Form B) and enter it in Cell D4 on Calculation Form C. Calculate percentage increase by dividing the value in Cell D3 by the value in Cell D4. Multiply the result by 100. This is the percentage increase. Enter this value in Cell D5 on Calculation Form C.

Approach (iii)

Determine the number of *Nutrient Unit*s that were added to the *livestock* facility by building permit(s) issued within the past 3 years. Ask the applicant for this information; consult existing municipal files or records. If the building permit(s) issued within the past 3 years for this operation was (were) for a *first livestock facility* (i.e., there were no *livestock* housed and no manure stored on this *lot* 3 years ago), then use Approach (i) for this operation. Take the value of the proposed total number of *Nutrient Unit*s to be added (found in Cell B2 on Calculation Form B), add to it any additional *Nutrient Unit*s added by building permits issued within the past 3 years and enter this new value in Cell F3 on Calculation Form C. Take the value of the existing *design capacity* (NU) (found in Cell B1 on Calculation Form B), subtract from it any additional *Nutrient Unit*s added by building permits issued within the past 3 years and enter this new value in Cell F4 on Calculation Form C. Calculate percentage increase by dividing the value in Cell F3 by the value in Cell F4. Multiply the result by 100. This is the percentage increase. Enter this value in Cell F5 on Calculation Form C.

Approach (iv)

For an *existing livestock facility* where the proposed building permit will result in no change in *design capacity*, or a decrease in *design capacity* for the *livestock facility*, percentage increase is assumed to be 0%. Enter a value of 0% in Cell H5 on Calculation Form C.

Step 9: Factor C

1. Calculate Factor C, which is based on the percentage increase. Take the percentage increase found in Cell B5, D5, F5 or H5 (depending on the approach used in Step 8) found on Calculation Form C. Use this value to determine Factor C from Table 3, by looking up the value of Factor C based on the percentage increase in *Nutrient Unit*s. In some cases, it is necessary to interpolate Factor C from Table 3, when the actual percentage increase in *Nutrient Unit*s is not specifically identified in Table 3. Implementation Guideline #27 provides more specific direction on Factor C, and information on interpolation and rounding is found in the text accompanying Table 3.

2. Once the value of Factor C is determined, record this number in Cell B6 on Calculation Form C.

MDS II — CALCULATION FORM C

	A	B	C	D	E	F	G	H
1	**Approach (i)**		**Approach (ii)**		**Approach (iii)**		**Approach (iv)**	
2	*First livestock facility*		Existing *design capacity* is to increase; no previous building permits which added capacity were issued in the last 3 years		Existing *design capacity* is to increase; a building permit had been issued which added capacity to the *livestock* facility within the last 3 years		Existing *design capacity* is staying the same or decreasing	
3			Proposed total number of *Nutrient Unit*s to be added		Proposed total number of *Nutrient Unit*s to be added plus additional *Nutrient Unit*s added by building permit(s) within the past 3 years			
4			Existing *design capacity*		Existing *design capacity* — additional *Nutrient Unit*s added by building permit(s) within the past 3 years			
5	Percentage increase		Percentage increase [(D3/D4)*100]		Percentage increase [(F3/F4)*100]		Percentage increase	
6	Factor C							

Step 10: Calculate Building Base Distance 'F'

1. To calculate Building Base Distance 'F', enter the value for:

    - Factor A (found on Calculation Form B, Cell B4) into Cell A2 on Calculation Form D
    - Factor B (found on Calculation Form B, Cell B6) into Cell B2 on Calculation Form D
    - Factor C (found on Calculation Form C, Cell B6) into Cell C2 on Calculation Form D
    - Factor D (found on Calculation Form B, Cell B5) into Cell D2 on Calculation Form D

2. Calculate Building Base Distance by multiplying Factor A, Factor B, Factor C and Factor D (multiply the values in Cells A2, B2, C2 and D2 together) and enter this result in Cell E2 on Calculation Form D.

MDS II — CALCULATION FORM D

	A	B	C	D	E
1	**Factor A**	**Factor B**	**Factor C**	**Factor D**	**Building Base Distance 'F'**
2					

Step 11: Determine Storage Base Distance 'S'

1. Enter Building Base Distance 'F' (found in Calculation Form D, Cell E2) in Calculation Form E, Cell B1. If the proposed building permit does not result in the construction or expansion of a *manure storage*, enter a value of 0 in Cell B3, Storage Base Distance 'S', on Calculation Form E.

2. If the proposed building permit does result in the construction or expansion of a *manure storage*, proceed to establish Storage Base Distance 'S' starting with Table 5.

    - Compare the 11 types of *manure storage*s in Table 5 (i.e., V1, V2, V3, V4, V5, V6, L1, L2, M1, M2 and H1) with the proposed project to be constructed by the applicant as part of the building permit application.
    - Select the *manure storage* type that best fits the application. The *manure storage* type selected should reflect the value of Factor D used in the calculation. For example, if Factor D is based on solid manure (value of 0.7) it is not appropriate to select the V6 *manure storage* type. Enter the *manure storage* type (e.g., V6) in Cell B2 on Calculation Form E. If more than one type of *manure storage* is proposed to be constructed as part of the building permit application, select the *manure storage* type with the highest odour potential. For example, if a building permit proposes to construct both a V6 and a H1 *manure storage*, enter H1 in Cell B2 on Calculation Form E.

3. Use the *manure storage* type (Cell B2 on Calculation Form E) and the Building Base Distance 'F', (Cell B1 on Calculation Form E) and determine the value of Storage Base Distance 'S' from Table 6, by looking up the value of the Storage Base Distance 'S' based on these two numbers. In some cases, it is necessary to interpolate Storage Base Distance 'S' from Table 6 when the actual distance is not specifically identified in Table 6. Information on interpolation and rounding is found in the text accompanying Table 6.

MDS II — CALCULATION FORM E

	A	B
1	**Building Base Distance 'F'**	
2	***Manure Storage* Type (Table 5)**	
3	**Storage Base Distance 'S' (Table 6)**	

Step 12: Calculate Minimum Distance Separation II Setbacks

1. Now that the Building Base Distance 'F' and the Storage Base Distance 'S' have been calculated, determine setbacks from the nearest neighbour's *dwelling*, Type A land uses, Type B land uses, road allowances and *lot* lines.

MDS II — CALCULATION FORM F

	A	B	C
1		***Livestock Barn***	***Manure Storage***
2	**Building Base Distance 'F'**		
3	**Nearest neighbours *dwelling* and Type A land use (1 x 'F')**		
4	**Type B land use (2 x 'F')**		
5	**Road allowance setback (0.2 x 'F' to a maximum of 60 m)**		
6	**Rear and side *lot* line setback (0.1 x 'F' to a maximum of 30 m)**		

2. Take the Building Base Distance 'F' (Cell B1 Calculation Form E) and enter this value in Cell B2 on Calculation Form F. Take the Storage Base Distance 'S' (Cell B3 Calculation Form E) and enter this value in Cell C2 on Calculation Form F. To determine various MDS II setbacks for the *livestock barn* and the *manure storage*, multiply these base distances by various factors.

3. To determine the MDS II setback for the *livestock barn* from the nearest neighbour's *dwelling* and Type A land uses, multiple the value in Cell B2 by 1.0 and enter this value in Cell B3.

4. To determine the MDS II setback for the *manure storage* from the nearest neighbour's *dwelling* and Type A land uses, multiple the value in Cell C2 by 1.0 and enter this value in Cell C3.

5. To determine the MDS II setback for the *livestock barn* from Type B land uses, multiple the value in Cell B2 by 2.0 and enter this value in Cell B4.

6. To determine the MDS II setback for the *manure storage* from Type B land uses, multiple the value in Cell C2 by 2.0 and enter this value in Cell C4.

7. To determine the MDS II setback for the *livestock barn* from a road allowance, multiple the value in Cell B2 by 0.2 and enter this value in Cell B5. If this value exceeds 60, enter a value of 60 in Cell B5.

8. To determine the MDS II setback for the *manure storage* from a road allowance, multiple the value in Cell C2 by 0.2 and enter this value in Cell C5. If this value exceeds 60, enter a value of 60 in Cell C5.

9. To determine the MDS II setback for the *livestock barn* from a rear or side *lot* line, multiple the value in Cell B2 by 0.1 and enter this value in Cell B6. If this value exceeds 30, enter a value of 30 in Cell B6.

10. To determine the MDS II setback for the *manure storage* from a rear or side *lot* line, multiple the value in Cell C2 by 0.1 and enter this value in Cell C6. If this value exceeds 30, enter a value of 30 in Cell C6.

The calculation of MDS II setbacks is now complete. Apply these MDS II setbacks to the building permit application as appropriate. Implementation Guidelines #39 through #41 provide information for the measurement of MDS setbacks. Implementation Guidelines #42 and #43 provide information on reducing and varying MDS setbacks.

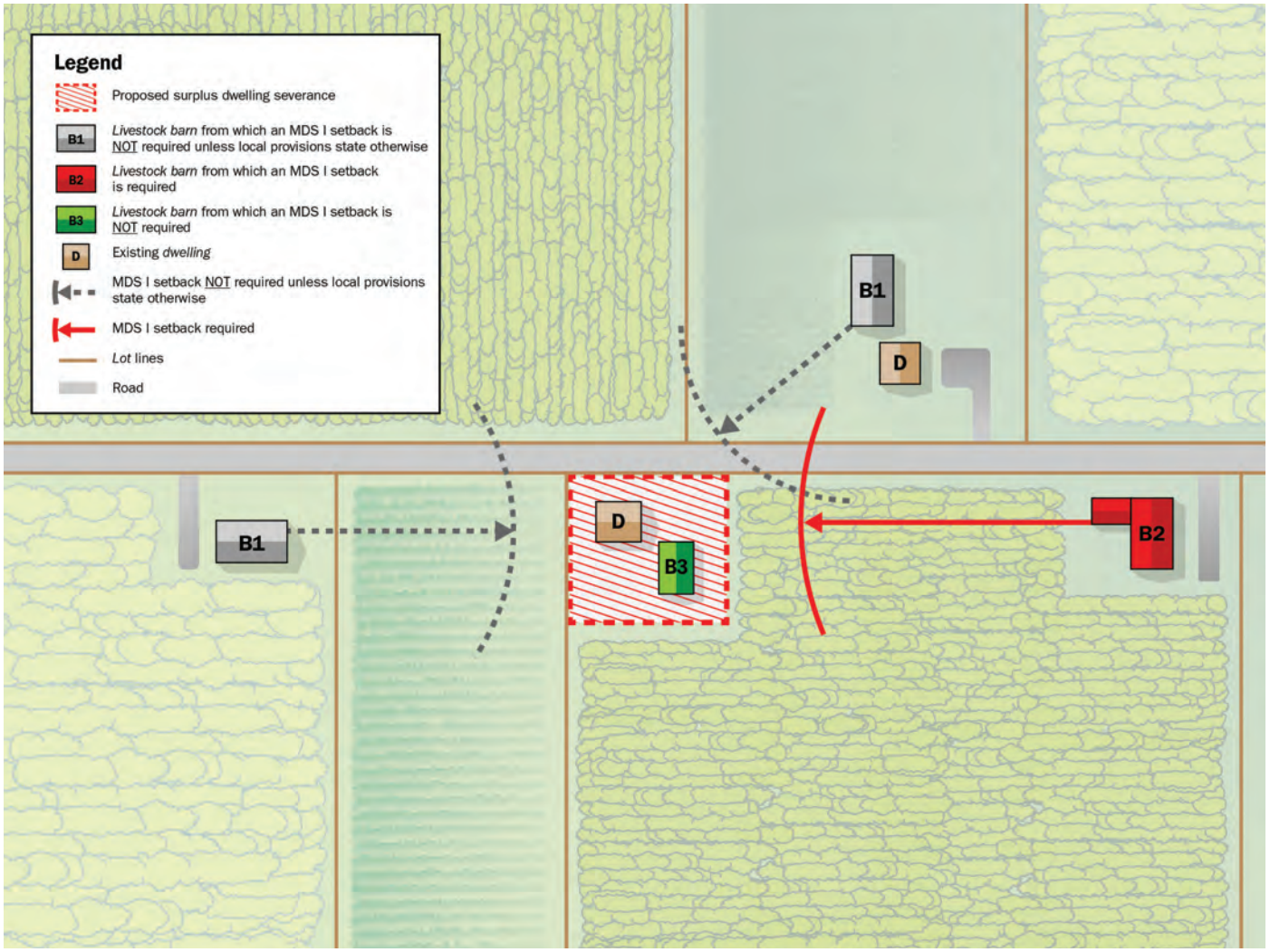


Figure 3. Implementation Guideline #9 — MDS I setbacks and *lot* creation for a *residence surplus to a farming operation*.

An MDS I setback is required from the red *livestock barn* (B2) for the proposed surplus *dwelling* severance, but not from either of the two grey *livestock barns* (B1), unless local provisions state otherwise. This is because those two grey *livestock barns* (B1) are already on separate *lot*s from the subject *dwelling* proposed to be severed and therefore a potential odour conflict already exists. The creation of the surplus *dwelling lot* only results in a new potential odour conflict with the red *livestock barn* (B2) as it is on the same *lot* as the subject *dwelling* PRIOR to the consent being approved and will be on a separate *lot* AFTER the consent is approved. In accordance with Implementation Guideline #14, there is no MDS I setback required from the green *livestock barn* (B3), as it will remain on the same *lot* as the subject *dwelling* proposed to be severed.

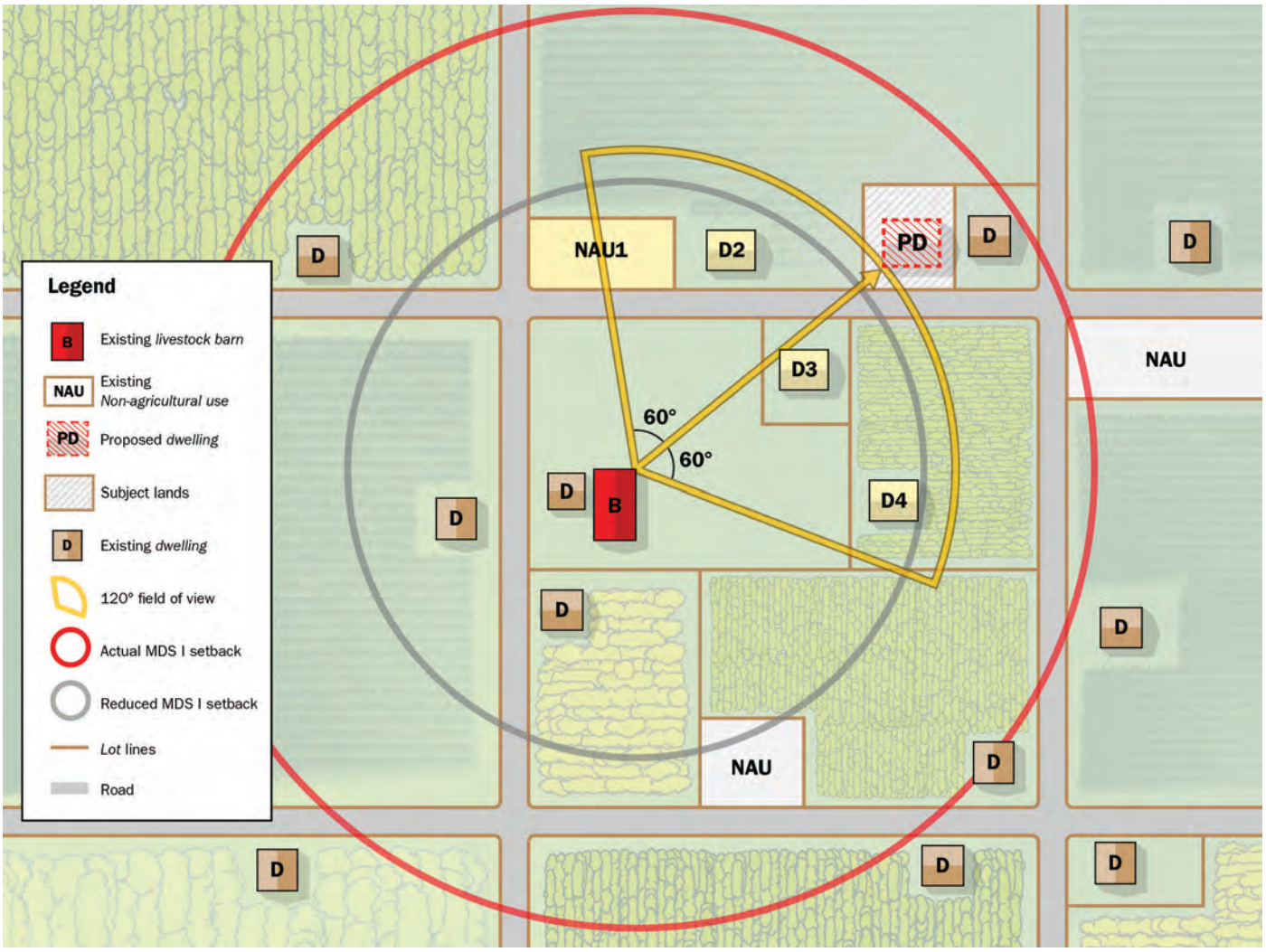


Figure 4. Implementation Guideline #12 — existing uses that do not conform to MDS.

Step 1: Draw a line (orange arrow) connecting the *livestock occupied portion* of the existing *livestock barn* and the nearest edge of the proposed *dwelling*'s building envelope (or the proposed *development* — not this example).
Step 2: At the base of the arrow, looking in the direction the arrow is pointing and using a protractor, plot 60° to the right of the arrow and another 60° to the left of the arrow, effectively creating a 120° 'field of view' from the base of the arrow.
Step 3: Draw an arc using the length of the arrow from Step 1 as the radius and connect the two edges of the 120° field of view, forming a wedge shape. This wedge comprises the 'intervening area' referenced in Implementation Guideline #12.
Step 4: Count the number of existing or approved *dwelling*s or *development* partially or entirely captured within the intervening area.
Step 5: If there are 4, or more, *non-agricultural uses* (NAUs), *residential uses*, and/or *dwelling*s that fall within the intervening area, the actual MDS I setback may be reduced to become the distance of the furthest of the qualifying *non-agricultural uses*, *residential uses* and/or *dwelling*s. In this example, there is one qualifying NAU and three qualifying *dwelling*s totalling four. So a reduced MDS I may be permitted and the proposed *dwelling* can be constructed despite it not meeting the actual MDS I setback generated by the subject *livestock barn*. This process may need to be repeated for *manure storage*s and/or *anaerobic digester*s that may also be located in the investigation distance area established in Implementation Guideline #6.

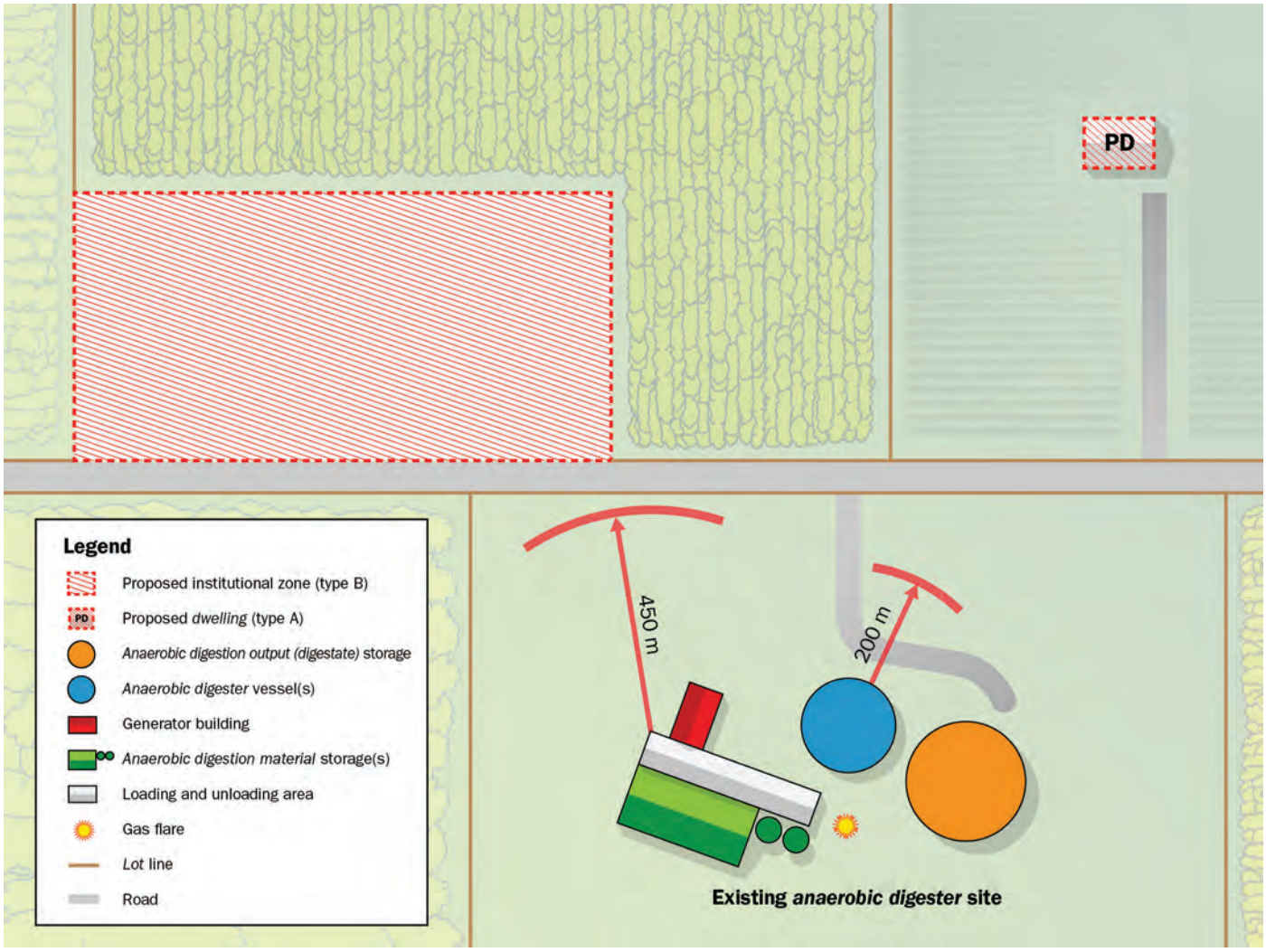


Figure 5. Implementation Guideline #22 — MDS I setbacks for *anaerobic digesters*.

This figure shows where to measure the fixed MDS I setbacks from existing *anaerobic digesters*.

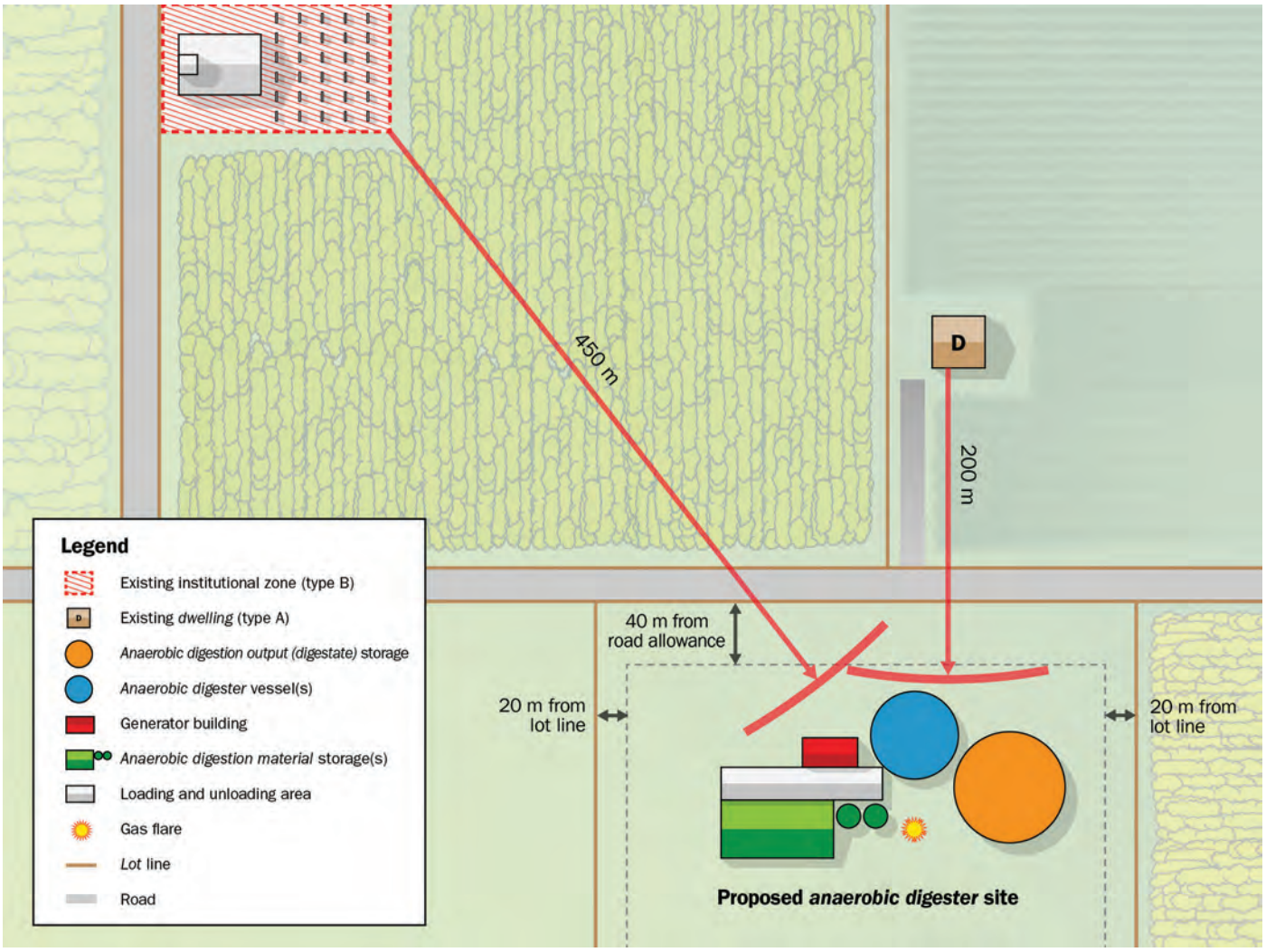


Figure 6. Implementation Guideline #22 — MDS II setbacks for *anaerobic digesters*.

This figure shows where to measure the fixed MDS II setbacks from existing *non-agricultural uses* and *dwellings*.

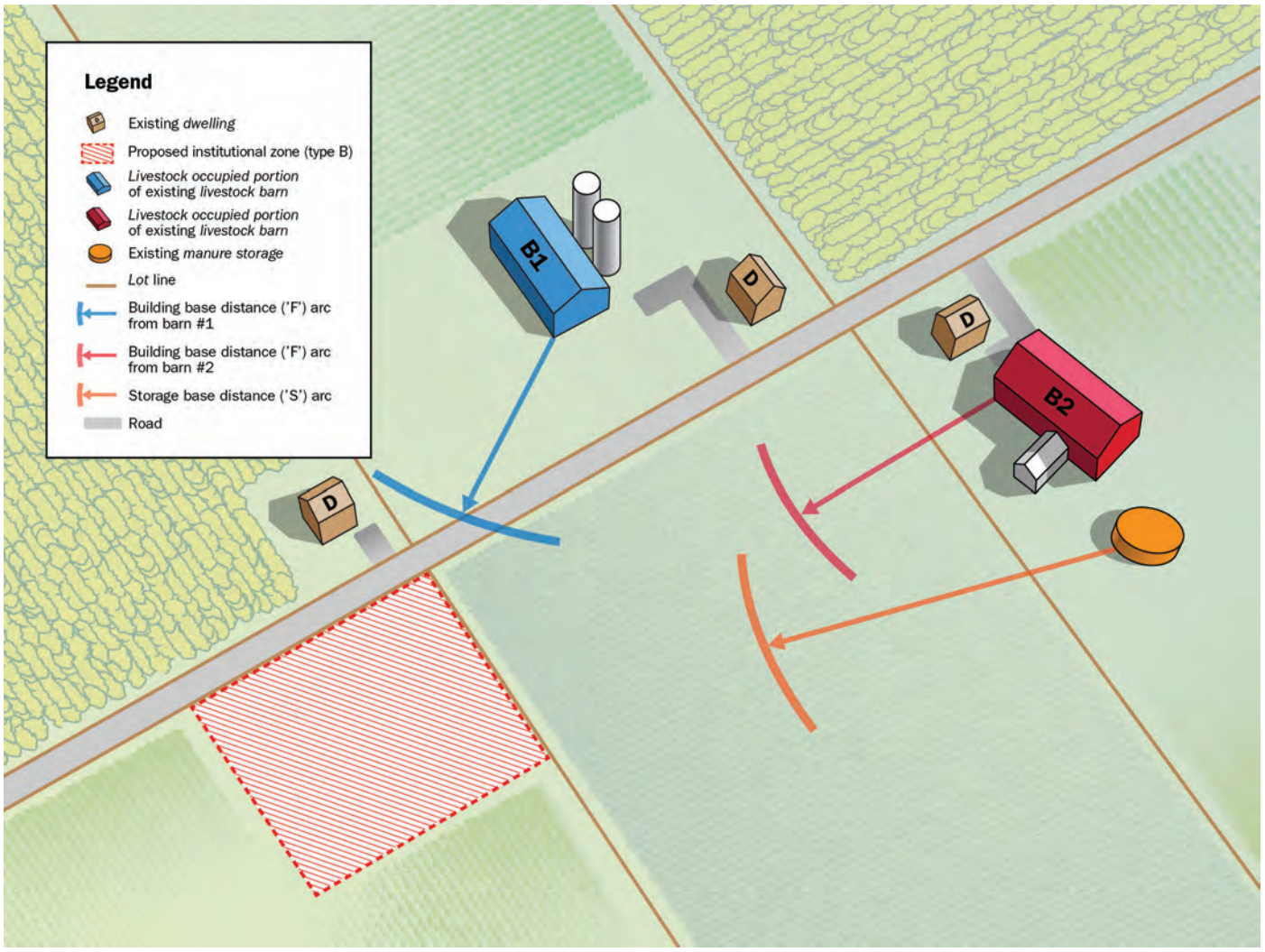


Figure 7. Implementation Guideline #40 — measurement of MDS I setbacks for *development* and *dwelling*s.

This figure shows MDS I setbacks for *livestock facilities* near a proposed *non-agricultural use* (i.e., institutional zone). NOTE: The MDS I setbacks are measured from the shortest distance between the area proposed to be rezoned to permit the *non-agricultural uses* and the surrounding *livestock occupied portion*s of the *livestock barns* and *manure storage*s.

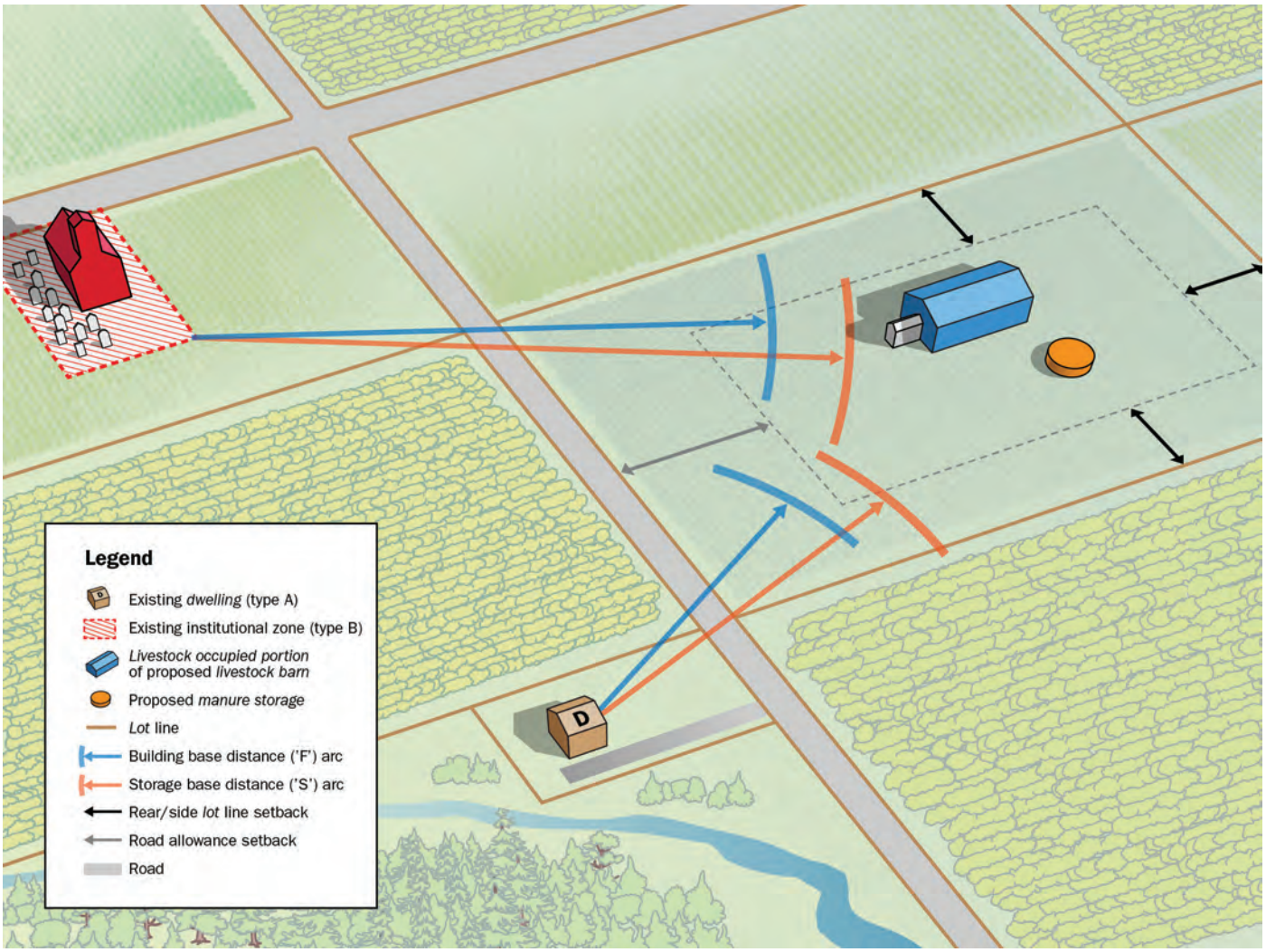


Figure 8. Implementation Guideline #40 — measurement of MDS II setbacks for *development* and *dwelling*s.

This figure shows MDS II setbacks for a *first livestock facility* near an existing *non-agricultural use* (i.e., institutional zone) and *dwelling*. NOTE: The MDS II setbacks are measured from the shortest distance between the points of new construction for the *livestock occupied portion* of the *livestock barn* and *manure storage*, and the existing *non-agricultural use* and *dwelling*.

8. ADDITIONAL INFORMATION

This section provides guidance and direction on a number of common issues and questions that have been raised by previous users of MDS and covers the following topics:

- incorporation of this MDS Document into local land use planning documents, including transition and implementation issues between previous versions of this MDS Document, as well as optional applications of MDS for municipalities to address
- considerations when reducing or varying MDS setbacks
- determining types of *livestock barns* and *manure storages*
- determining *design capacity* for *livestock facilities*
- assessing if a *livestock facility* is structurally sound or reasonably capable of housing *livestock*

8.1 Incorporating this MDS Document into Local Land Use Planning Documents

Introduction

The following is intended to assist municipalities when incorporating the appropriate portions of this MDS Document into their land use planning documents. It includes a review of the various options available to municipalities that must be enshrined in policy or provisions to take effect locally.

In preparing this information to help municipalities and users of this MDS Document, OMAFRA recognizes that municipalities are responsible for making local decisions, including compliance with any applicable statutes or regulations. As this portion of the Document deals in a summary fashion with complex matters and reflects legislation, policies and practices that are subject to change, the material herein should not be relied upon as a substitute for specialized legal or professional advice in connection with any particular matter. OMAFRA strongly recommends that municipalities seek their own legal advice to determine if their planning documents adequately address the provisions contained in this MDS Document as required by the PPS and enabled by the *Planning Act, 1990*.

The *Planning Act, 1990*, requires that decisions affecting planning matters "shall be consistent with" policy statements issued under the Act. As it pertains to MDS, the aforementioned policy statements include policies 1.1.5.9 and 2.3.3.3 contained in the PPS, which respectively state that on *rural lands* and in *prime agricultural areas*, "new land uses, including the creation of *lots*, and new or expanding *livestock facilities* shall comply with the *Minimum Distance Separation Formulae*".

On March 1, 2017, this revised version of the *Minimum Distance Separation Formulae* (known as the MDS Document) came into effect. Therefore, in order to be consistent with the PPS, all planning decisions made on or after March 1, 2017, for new land uses, including the creation of *lots*, need to comply with this MDS Document. The way that municipalities ensure consistency with these PPS policies at the local level is through the inclusion of the MDS Implementation Guidelines, definitions and Factor tables in their municipal official plan and/or their comprehensive zoning by-law. Deciding which of these two local documents the various aforementioned MDS components should be enshrined will depend on the nature of the application being considered (e.g., official plan amendment, zoning by-law amendment, land division consent, building permit, etc.) and whether the application may require an MDS I or an MDS II setback.

All planning decisions made on or after March 1, 2017, for new land uses, including the creation of lots, need to comply with this MDS Document.

Many MDS I setbacks are applied to new or expanding land uses rather than new or expanding buildings, as is always the case for MDS II setbacks. To elaborate, with the exception of MDS I setbacks required for proposed construction on a *lot* which existed prior to March 1, 2017, most MDS I setbacks are implemented when land use planning applications are made under the *Planning Act, 1990*; whereas, MDS II setbacks are applied to *first* or *altered livestock facilities* or *anaerobic digesters* and are primarily implemented when complete building permit applications are submitted under the *Building Code Act, 1992*.

Before construction can begin on a *livestock facility* or *anaerobic digester* (MDS II) or a *dwelling/non-agricultural use* (MDS I), a building permit is required subject to the *Building Code Act, 1992*. Municipal chief building officials are required to issue building permits under the *Building Code Act, 1992*, unless the proposed construction will contravene the *Building Code Act, 1992*, the building code(s) or any other "applicable law". Applicable law is a list of statutes, regulations and by-laws set out in the building code(s). As it relates to MDS, the list of applicable law in the building code includes "by-laws made under section 34 or 38 of the *Planning Act, 1990*". As a result, construction which requires a building permit is subject to the provisions of local municipal comprehensive zoning by-laws. Therefore, by incorporating the appropriate provisions in the comprehensive zoning by-law, that construction will be required to meet the MDS I or MDS II setbacks before a building permit is issued. When MDS I and MDS II setbacks for building construction (e.g., *livestock facilities*, *anaerobic digesters*, *dwellings*, etc.) are incorporated in a municipal zoning by-law, they become one of the requirements that a chief building official must consider when determining whether to issue a building permit. It is important that municipalities craft their comprehensive zoning by-law provisions for MDS thoughtfully. In addition, because applications for building permits must meet whatever requirements are currently in place in the local comprehensive zoning by-law, municipalities are strongly encouraged to review and potentially update their comprehensive zoning by-laws to ensure that this MDS Document is implemented appropriately, in accordance with the requirements of the PPS. Regular updates help avoid potentially unequal situations where a municipality may be carrying out their MDS I calculations under the March 1, 2017, MDS Document, whereas their MDS II calculations are still being done under a previous (1976, 1995 or 2007) version of MDS.

Municipalities are strongly encouraged to review and potentially update their comprehensive zoning by-law and official plan to ensure that the MDS Document is implemented appropriately, in accordance with the requirements of the PPS.

Municipalities may develop MDS provisions in their planning documents to reflect local circumstances and the layout and format of their existing official plan and comprehensive zoning by-law, however, the following key components with respect to the implementation of this MDS Document shall be included.

Minimum Sections to Incorporate from this MDS Document

In accordance with the PPS, this MDS Document shall apply in *prime agricultural areas* or *rural lands*. Where either *prime agricultural areas* or *rural lands* are present, both the MDS Formulae and Implementation Guidelines contained in this MDS Document shall be referenced in municipal official plans, and detailed provisions included in comprehensive zoning by-laws such that, as a minimum, the appropriate MDS setbacks are required in all designations and zones where *livestock facilities* or *anaerobic digesters* are a permitted use.

Sections 1, 2, 6, 7 and 8 of this MDS Document are provided for information and background purposes. Because these sections are primarily intended to provide broader context for the more specific MDS Formulae and Implementation Guidelines, as well as information on related land use topics, they are not required to be incorporated into municipal land use planning documents.

However, the remainder of this MDS Document, Sections 3, 4 and 5, form the basis for incorporating MDS into local land use planning documents, including the Definitions, Implementation Guidelines and the Factor tables. Implementation Guidelines #7, #9, #35 and #38 address areas where municipalities have options when implementing MDS locally, and shall be clearly addressed by a municipality in the appropriate implementing land use planning document (e.g., official plan or comprehensive zoning by-law).

Sections 3, 4 and 5 of this MDS Document form the basis for incorporating MDS into local land use planning documents, including relevant definitions, Implementation Guidelines and the Factor tables.

The nature of the policies developed for adoption in municipal planning documents depends on the type of application anticipated to be processed. For example, a land use change may require an amendment to either the official plan, the comprehensive zoning by-law or an application to create a *lot*. Requiring compliance with the MDS setbacks in the official plan will result in a consideration of either an official plan amendment, zoning by-law amendment or an application to create a *lot*, in relation to the application. This MDS Document applies to all planning act applications submitted on or after March 1, 2017. References in the PPS to *Minimum Distance Separation Formulae* should be taken as reference to this MDS Document for all applications submitted on or after March 1, 2017. For building permit applications, the effective provision in the zoning by-law applies. Municipalities should update their zoning by-laws to reflect this updated MDS Document.

There are multiple approaches to effectively incorporate this MDS Document into local land use planning documents that may achieve consistency with the PPS. Common approaches used by municipalities in the past include: adopting the entire MDS Document as a schedule or appendix; adopting only the definitions (Section 3), Implementation Guidelines (Section 4) and Factor tables (Section 5) in a schedule or appendix; or including a text reference to this MDS Document in official plan policies or zoning by-law provisions. Many municipalities also include a provision that refers to MDS, “as amended by the Province from time to time”.

OMAFRA does not specify a preferred approach for incorporating this MDS Document into local land use planning documents. OMAFRA’s primary concern is to ensure that consistency with the PPS is achieved; that Sections 3, 4 and 5 of this MDS Document are effectively implemented; and that municipalities address areas where they have options related to implementation. OMAFRA encourages municipalities to seek their own legal advice and direction on approaches for incorporating this MDS Document into their local land use planning documents in a manner that achieves consistency with the PPS, while considering the approach, format and layout used in their local land use planning documents.

For example, official plans shall, as a minimum, contain policies which require compliance with MDS I setbacks when seeking a change in the land use from a *prime agricultural area* or *rural lands* type designation to *development*. The comprehensive zoning by-law shall, as a minimum, contain provisions which make it a requirement to meet both MDS I and MDS II setbacks when seeking a rezoning to change the land use from an “agriculture or rural” type zone to another land use.

Finally, if not already defined in the municipal official plan or comprehensive zoning by-law, OMAFRA recommends that the appropriate definitions found in Section 3 of this MDS Document be included in the ‘definitions’ or ‘glossary of terms’ portion of the relevant local planning document.

Regardless of the approach selected, it is recommended that a municipality seek its own legal advice regarding amending its planning documents to accommodate MDS provisions.

Why Choosing the Correct Planning Document is Important

Aside from updating local planning documents to reflect the most recent version of MDS, deciding whether a specific MDS option should be enshrined in the official plan and/or comprehensive zoning by-law is also an important consideration.

For example, in the case of a *settlement area* boundary expansion, MDS I setbacks shall be addressed at the time of an official plan amendment application to change the land use from a *prime agricultural area* or *rural land*s type designation to a *settlement area* type designation. Thus the ideal planning document to address MDS for this type of land use change is the municipal official plan, rather than the comprehensive zoning by-law. This approach ensures consistency with policy 1.1.3.8 (d) of the PPS which states that planning authorities may only allow the expansion of a *settlement area* boundary where it has been demonstrated that "the new or expanding settlement area is in compliance with the *Minimum Distance Separation Formulae*". It also ensures that setbacks from surrounding *livestock facilities* and *anaerobic digester*s are established early in this process, rather than potentially introducing incompatible land uses by waiting for the zoning by-law amendment or the plan of subdivision/condominium stage to implement the required MDS I setbacks.

Conversely, in the case of constructing a *first* or *altered livestock facility* or *anaerobic digester*, address the MDS II setbacks at the time the building permit application is made for the proposed building. The corresponding provision for this type of application should be reflected in the municipal comprehensive zoning by-law, rather than the official plan.

Selecting the appropriate planning document for the various MDS Implementation Guidelines depends on the nature of the application being sought.

Municipal Options for Implementing MDS

Within the various Implementation Guidelines contained in Section 4 of the MDS Document, there are five options available to municipalities that should be incorporated into the appropriate local planning document — either the comprehensive zoning by-law or the official plan. In order to achieve a transparent and consistent approach to processing files, municipalities are urged to address these options on a proactive and comprehensive basis. If the relevant planning document does not expressly address the options, then the default approaches outlined in the corresponding Implementation Guidelines shall apply.

At the time of a comprehensive review of either an official plan or comprehensive zoning by-law, or through a housekeeping amendment related to either planning document, municipal staff should evaluate the various options available, and after conducting an analysis, adopt provisions which outline the municipality's preferred approach to these options.

To elaborate, under this MDS Document, municipalities have the option to alter the application of MDS I with respect to three issues (OPTIONS A to C):

OPTION A: Implementation Guideline #7 — MDS I setbacks for building permit applications on existing *lot*s (locate local provisions in zoning by-law)

MDS I setbacks are required for all building permit applications on *lot*s which are created after March 1, 2017. There is no municipal option to exempt MDS I setbacks from building permits on these new *lot*s.

MDS I setbacks are also required for all building permit applications proposed on *lot*s which exist prior to March 1, 2017, unless otherwise specified in a municipality's zoning by-law. While municipalities maintain

the option to choose whether MDS I setbacks for building permit applications on existing *lot*s are required, they are strongly encouraged to apply the setbacks. It is important to note that only where a municipality has specifically exempted certain building permit applications from an MDS I setback in their comprehensive zoning by-law shall an MDS I setback not be required. MDS I setbacks shall be required for all types of building permit applications on all *lot*s in municipalities where the comprehensive zoning by-law is silent or does not contain any direction on this issue. However, note that MDS I setbacks are not required for *dwelling* additions and renovations on *lot*s which exist prior to March 1, 2017, even where an addition results in the existing *dwelling* being closer to a surrounding *livestock facility* or *anaerobic digester*.

If a local exemption from MDS I setbacks for building permit applications on *lot*s which exist prior to March 1, 2017 is chosen, there are numerous measures and variations that a municipality can use recognizing the exemption does not need to apply to all building permit applications on all *lot*s which exist prior to March 1, 2017. For example, the municipality could only require MDS I setbacks:

- on existing *lot*s that are in a particular land use zone or designation (e.g., rural residential, estate residential), or
- on existing *lot*s that are above or below a certain size threshold (e.g., 4 ha), or
- on existing *lot*s which are vacant (e.g., no existing *dwelling*s or buildings), or
- on existing *lot*s, but where the MDS I setback cannot be met, then through a planning application permit a *dwelling* provided that it be located as far as possible from the *existing livestock facility* or *anaerobic digester* from which the setback cannot be met, or
- on *lot*s which exist prior to a date which is later than the required March 1, 2017 (e.g., date of adoption of former official plan), or
- for certain types of buildings and not others (e.g., *dwelling*s).

Regardless of the approach selected, if an exemption is chosen, the local municipality shall include provisions in their comprehensive zoning by-law which clearly state the details of the exemption, because the trigger for the application of MDS I setbacks on *lot*s which exist prior to March 1, 2017 will be construction for which a building permit is required under the *Building Code Act, 1992*. Consequently, the document for implementing this option is the municipal comprehensive zoning by-law in order for it to become applicable law under the *Building Code Act, 1992*.

It is important to remember that municipalities with a previous version of MDS (1976, 1995, 2007) referenced in their comprehensive zoning by-law, and who apply MDS I to proposed building permit applications on existing *lot*s, will be required to continue to issue building permits if the proposed construction complies with the older version of MDS, including the older software which reflects the actual criteria and formulae incorporated in the by-law. Municipalities are urged to update their comprehensive zoning by-laws to reflect the latest version of this MDS Document. Updating the comprehensive zoning by-law ensures that it reflects the latest version of the new software program — Ontario Agricultural Planning Tools Suite ("AgriSuite") for use with this MDS Document.

OPTION B: Implementation Guideline #9 — MDS I setbacks from surrounding *livestock facilities* on different *lot*s than the *residence surplus to a farming operation* proposed to be severed (locate local provisions in official plan)

Where a new *lot* is proposed with an existing *dwelling*, and that *dwelling* is already located on a different *lot* from the surrounding *livestock facilities* or *anaerobic digester*s, MDS I is not applied as a potential odour conflict is already present between the surrounding *livestock facilities* or *anaerobic digester*s and the existing *dwelling* because they have the ability for separate ownership. However, municipalities may choose to apply MDS I from the surrounding *livestock facilities* or *anaerobic digester*s that are already on different *lot*s than the

surplus *dwelling* proposed to be severed. Direction to apply MDS I in these circumstances should be clearly indicated in the consent policies of the municipality's official plan.

OPTION C: Implementation Guideline #35 — MDS I setbacks for *agriculture-related uses* and *on-farm diversified uses*
(locate local provisions in official plan and zoning by-law)

Municipalities have to decide whether or not they wish to require an MDS I setback for new or expanding *agriculture-related uses* and *on-farm diversified uses*. These uses are compatible with, and complement *agricultural uses*. Planning applications to permit these uses may not need to meet MDS I setbacks from existing *livestock facilities* or *anaerobic digester*s. However, some proposed *agriculture-related uses* and *on-farm diversified uses* may exhibit characteristics that could lead to potential conflicts with surrounding *livestock facilities* or *anaerobic digester*s. Therefore, it may be appropriate to require an MDS I setback to permit this subset of uses. Usually these more sensitive uses are characterized by a higher density of human occupancy or activity, or uses that generate significant visitation by the broader public to an agricultural area. For example, food service, accommodation, *agri-tourism uses* and retail operations such as a winery with an outdoor patio for light meals, an on-farm tea room, or a bed and breakfast with a farm-themed cooking school might be types of uses that a municipality could focus on ensuring meet the required MDS I setbacks. Conversely, industrial type *on-farm diversified uses*, such as an accessory welding fabrication shop or *agriculture-related uses*, such as a grain-handling facility may not be as sensitive of odour receptors, and therefore may be the types of uses that a municipality would continue to exempt from MDS I setbacks.

Based on a careful review of existing uses, municipalities may choose to require an MDS I setback for proposals, including *lot* creation, to permit certain types of *agriculture-related uses* or *on-farm diversified uses*. In situations where it is determined that MDS I shall apply, *agriculture-related uses* and *on-farm diversified uses* shall be considered as Type A land uses and the local planning documents which mandate an MDS I setback shall reflect that. If a municipality wishes to require MDS I setbacks for certain *agriculture-related uses* and *on-farm diversified uses*, they shall include specific provisions in the appropriate planning document to outline the desired approach. The language adopted in the local planning documents shall clearly indicate the specific types of uses that are required to meet MDS I setbacks. Otherwise, the provision in Implementation Guideline #35 shall apply and MDS I setbacks will not be required for either of these two categories of land uses.

In addition to the three MDS I options outlined above, municipalities also have the option to alter the application of MDS II with respect to two issues (OPTIONS D to E):

OPTION D: Implementation Guideline #35 — MDS II setbacks for *agriculture-related uses* and *on-farm diversified uses*
(locate local provisions in zoning by-law)

Much like Option C for MDS I, Option D is the reciprocal. Under this MDS Document, *first* or *altered livestock facilities* and *anaerobic digester*s do not need to meet MDS II setbacks for existing *agriculture-related uses* and *on-farm diversified uses*. However, some existing *agriculture-related uses* and *on-farm diversified uses* may exhibit characteristics that could lead to potential conflicts with *first* or *altered livestock facilities* and *anaerobic digester*s. Therefore, it may be appropriate to require MDS II setbacks from these types of uses. Typically, these uses are characterized by a higher density of human occupancy or activity, or are uses that generate significant visitation by the broader public to an agricultural area. Similar to MDS I, examples of these uses which may warrant the application of MDS II setbacks include, but are not limited to: food service, accommodation, *agri-tourism uses* and retail operations. Surrounding land uses and geographic context can also play a role in determining the compatibility of *agriculture-related uses* and *on-farm diversified uses* with first or altered *livestock facilities* and *anaerobic digester*s.

Based on a careful review of the state of the local agricultural industry, municipalities may choose to require MDS II setbacks between *first* or *altered livestock facilities* or *anaerobic digesters* and certain types of existing *agriculture-related uses* or *on-farm diversified uses*. Similar to MDS I, in those situations where a municipality chooses to require an MDS II setback, *agriculture-related uses* and *on-farm diversified uses* shall be considered Type A land uses. If MDS II setbacks are applied, municipalities shall include provisions in their comprehensive zoning by-law to clearly indicate the specific types of *agriculture-related uses* and *on-farm diversified uses* that MDS II setbacks will be measured to. Otherwise MDS II setbacks will not be required between *first* or *altered livestock facilities* or *anaerobic digesters* and these two categories of uses. In all instances, municipalities are strongly encouraged to develop provisions in their comprehensive zoning by-law that provide consistent direction on this issue.

OPTION E: Implementation Guideline #38 — MDS II setbacks from cemeteries (locate local provisions in zoning by-law)

The final MDS option relates to MDS II setbacks between *first* or *altered livestock facilities* or *anaerobic digesters* and existing cemeteries. Except for cemeteries which are intended to primarily serve a community which relies on horse-drawn vehicles as a predominate mode of transportation, this MDS Document generally treats cemeteries as a Type B land uses (see Implementation Guideline #37). However, in some instances, where a cemetery is closed and receives low levels of visitation, a municipality may choose to treat it as a Type A land use for the purposes of MDS II.

It is strongly recommended that municipalities conduct a comprehensive evaluation of existing cemeteries across their entire jurisdiction and clearly identify the specific cemeteries affected in their zoning by-law. This exercise should result in a transparent list, map and/or appendix of cemeteries that will accompany a zoning by-law.

This option is limited to treating specified cemeteries as Type A land uses, rather than the typical Type B land uses. The option does not permit a municipality to fully exempt the *first* or *altered livestock facility* or *anaerobic digester* from an MDS II setback from a cemetery altogether.

With respect to MDS I, except for cemeteries which are intended to primarily serve a community which relies on horse-drawn vehicles as a predominate mode of transportation, new or expanding cemeteries are always treated as a Type B land uses because they are obviously not closed, and typically receive higher levels of visitation.

Summary of MDS Options

Aside from reducing MDS setbacks for specific applications in accordance with Implementation Guideline #43, these five options (contained in four separate Implementation Guidelines) are the only areas where municipalities have options with respect to MDS implementation approaches. Municipal setbacks for *livestock facilities* and *anaerobic digesters* (i.e., MDS II) shall not exceed those calculated by the MDS II formulae, in accordance with provincial standards. For instance, municipal policies which require fixed setbacks for *livestock facilities* or *anaerobic digesters* larger than those established by this MDS Document may be viewed as contrary to section 2.3.3.2 of the PPS, which states:

> "In *prime agricultural areas*, all types, sizes and intensities of *agricultural uses* and *normal farm practices* shall be promoted and protected in accordance with provincial standards."

Municipalities considering MDS setbacks for *development* or *dwellings* (i.e., MDS I) that exceed those established by this MDS Document shall ensure they are consistent with policy 4.9 of the PPS.

In addition to establishing specific policies or provisions on the five municipal MDS options, municipalities should be aware that there are two other MDS options which are no longer available to them in the current MDS Document. Those municipalities which have adopted local policies to address these former options should remove them from their planning documents. In order to assist in this process, the following illustrates how those former options have been modified:

Application of MDS after a Catastrophe			
2006 MDS I	**2017 MDS I**	**2006 MDS II**	**2017 MDS II**
Where municipalities required MDS I setbacks for buildings on existing *lots*, they were also able to choose whether or not MDS I setbacks were required for those buildings which were destroyed by a catastrophe, provided they weren't built any closer to *livestock facilities* than before the catastrophe.	MDS I setbacks are not required for building reconstruction, provided the reconstructed building is no closer to surrounding *livestock facilities* or *anaerobic digesters* than before the reconstruction.	Municipalities were able to choose whether or not MDS II setbacks were required for those *livestock facilities* which were destroyed by a catastrophe, provided all Factor values remain the same.	MDS II setbacks are not required for *livestock facility* reconstruction, provided all Factor values remain the same.
Application of MDS within *Settlement Areas*			
2006 MDS I	**2017 MDS I**	**2006 MDS II**	**2017 MDS II**
Municipalities were able to choose whether or not MDS I setbacks were required for *development* in a *settlement area.*	MDS I setbacks are not required in a *settlement area*.	In rare circumstances where *livestock facilities* were permitted in a *settlement area*, municipalities were able to choose whether or not MDS II setbacks were required in a *settlement area*.	Where municipalities permit first or altered *livestock facilities* or *anaerobic digesters* in a settlement area, MDS II setbacks shall not be required.

Municipalities should update their existing official plan and comprehensive zoning by-law to recognize these options are no longer available. If a local planning document is not updated to address these changes, municipalities may be faced with implementation challenges. In the absence of municipal policy direction, the default approaches to each of the above options are:

A) MDS I setbacks are required for ALL building permits applications on ALL *lots* which exist prior to March 1, 2017.
B) MDS I setbacks are NOT required for surplus farm *dwelling* severances from *livestock facilities* or *anaerobic digesters* on separate *lots* surrounding the proposed consent application.
C) MDS I setbacks do NOT apply to any new or expanding *agriculture-related* or *on-farm diversified uses.*
D) MDS II setbacks do NOT apply from any existing *agriculture-related* or *on-farm diversified uses.*
E) MDS II setbacks apply to ALL existing cemeteries as Type B land uses, except for those noted in Implementation Guideline #37.

Conclusion

Municipalities shall include policies and provisions in their official plans and zoning by-laws so that the MDS setbacks are met through the appropriate implementation of this MDS Document.

This MDS Document represents the standard with respect to the calculation of MDS setbacks, and the only circumstances that municipalities may alter application of MDS is where options are explicitly made available in specific Implementation Guidelines. Even then, written policies must be adopted in the relevant municipal planning documents to clearly state the intention to exercise these options.

The above are general guidelines; seek legal counsel regarding the specific details of implementing the latest version of this MDS Document into the context and structure of a municipality's official plan and comprehensive zoning by-law. There are different approaches for updating by-laws depending on the current structure of the relevant municipal planning document. OMAFRA staff may be available to provide assistance.

8.2 Reducing MDS Setbacks

Introduction

MDS setbacks are used to reduce odour conflicts by separating incompatible uses. There are various circumstances where a *Planning Act, 1990*, application or construction requiring a building permit may meet the intent of this MDS Document, if not the precise setbacks required by MDS I or MDS II. In some circumstances, it may be appropriate for a municipality or other approval authority to consider the merits of allowing for a reduced MDS setback through a minor variance or other type of *Planning Act, 1990*, application.

Generally, OMAFRA does not support or encourage reductions to MDS setbacks. Allowing for reductions to MDS setbacks can increase the potential for land use conflicts and undermine the intent of this MDS Document. Approach the issue of reducing MDS setbacks with caution. While a MDS setback does not specifically need to be considered in the context of a minor variance application, it is appropriate to consider the tests for a minor variance as a mechanism to assess specific situations and potential reductions to MDS setbacks.

The four considerations for a minor variance are:

1. Does the reduction in the MDS setback keep with the intent of the official plan?
2. Does the reduction in the MDS setback keep with the intent of the zoning by-law?
3. Is the reduction in the MDS setback desirable and appropriate for the area?
4. Is the reduction in the MDS setback minor in nature?

The intent of municipal official plans and zoning by-laws in *prime agricultural area*s will generally be consistent with the goals of complying with the *Minimum Distance Separation Formulae*, and promoting and protecting agriculture in *prime agricultural area*s (various policies in section 2.3 of the PPS). Therefore, any proposal to reduce MDS setbacks should be considered in light of this same general intent. For *rural lands*, municipal official plans and zoning by-laws may have a broader and more diverse set of goals and objectives, but should still reflect the general requirement to comply with the *Minimum Distance Separation Formulae* and should promote and protect *agricultural uses* (various policies in section 1.1.5 of the PPS).

Deciding if a minor reduction to an MDS setback is desirable and appropriate for an area should involve consideration of several specific aspects, such as:

- Is the MDS setback reduction really necessary or should another suitable alternative location (relocating the proposed *lot*/designation/building) be considered?
- Is the reduced setback going to impact the type, size or intensity of *agricultural use*s in the surrounding area?
- Is the reduced setback going to impact flexibility for existing or future agricultural operations, including their ability to expand if desired? If this reduced setback is allowed, will it set precedent for others in the local community?

Determining if a proposed reduction in MDS setbacks is minor depends on the context in which the reduction is being proposed. Minor means different things to different people. OMAFRA does not endorse a specific % decrease (e.g., 5% or 10%) for MDS setbacks. In some circumstances, a very small reduction in an MDS setback may not be considered minor given the surrounding land uses and potential odour conflicts. In other instances, a significant reduction in an MDS setback may be considered minor. The perception of what is 'small' or 'minor' in nature will vary depending on local and site specific circumstances.

Determining if a reduction to MDS setbacks is appropriate in a given circumstance is the responsibility of the local municipality.

It is important to note that granting one reduction in MDS setbacks will lead to future applications to reduce or vary MDS setbacks. For example, granting a minor variance to a new *livestock facility* or *anaerobic digester* may lead to future applications to vary distances for the same operation in the future, if it expands. Applications to reduce MDS setbacks for new *development* or *dwelling*s may lead to applications to reduce MDS setbacks for surrounding *livestock facilities* or *anaerobic digester*s if they look to expand in the future. While applications to reduce MDS setbacks should be considered on their own merits, it is important to consider the broader context and the potential for cumulative impacts over the long term.

The following provides some general comments regarding reductions in MDS setbacks from the perspective of OMAFRA.

Reducing MDS I Setbacks

Implementation Guideline #43 from this MDS Document provides specific direction on reducing required MDS I setbacks; it states:

> "MDS I setbacks should not be reduced except in limited site specific circumstances that meet the intent of this MDS Document. Examples may include circumstances that mitigate environmental or public health and safety impacts, or avoid natural or human-made hazards.
>
> If deemed appropriate by a municipality, the processes by which a reduction to MDS I may occur could include a minor variance to the local zoning by-law, a site specific zoning by-law amendment or an official plan amendment introducing a site specific policy area."

OMAFRA does not generally support or encourage reductions to MDS I distances, especially for new *development*. The intent of MDS I is to minimize nuisance complaints associated with *livestock facilities* and *anaerobic digester*s due to odour and thereby reduce potential land use conflicts. It may be possible to find opportunities to site new *development* and *dwelling*s where MDS setbacks can be met. The requirement to meet MDS I is something that should be assessed at the time when considering finding alternative sites to locate *development* or *dwelling*s.

It may be appropriate to consider reductions to MDS I distances in situations where MDS I is being applied in the context of expanding an existing or approved *development*. It is only appropriate to consider reductions to MDS I setbacks when reasonable alternative locations are limited, and where there is an attempt to reduce potential odour conflicts while balancing or mitigating against other potential concerns, such as environmental impacts, public health and safety or natural and human-made hazards.

The following is a list of questions a municipality or a committee of adjustment may ask when considering a reduction to an MDS I setback. Think through these questions as per Implementation Guideline #43. The list of questions does not represent an exhaustive list, as other site specific circumstance might be relevant. Consider the questions (and other relevant issues) with any one or more of them not necessarily being determinative. In some cases, a surrounding land use, environmental, safety or practicality issue may warrant a reduced MDS I setback if the intent of this MDS Document can still be met.

Surrounding Land Uses

- Is the proposed *development* similar to others on surrounding lands in the vicinity?
- Is the proposed location further away from the surrounding *livestock facility* or *anaerobic digester* than other existing *development* or *dwelling*s in the area?
- Is there a history of complaints in the area related to nuisance issues?

Environmental Concerns

- Would meeting the MDS setback mean that the proposed *development* or building would affect surface water features (e.g., streams, ditches, municipal drinking water intake protection zones, drains, ponds, lakes, open catch-basins, etc.)?
- Would meeting the MDS setback mean that the proposed *development* or building would affect groundwater features (e.g., municipal wells, bedrock, aquifers, municipal drinking water wellhead protection areas, surrounding wells, etc.)?
- Are there other natural or environmental features on the *lot* that should be considered (e.g., wetlands, woodlots, etc.)?
- Would meeting the MDS setback mean that the proposed *development* or building would require a stream crossing or create more potential for environmental risk?

Safety

- Is there a safety issue related to the poor state of repair of an existing building that should be replaced?
- Would siting the new building or *development* in a location that met MDS I setbacks result in a public safety concern, (e.g., building would be located within a 'sight triangle' of an intersection, accessed from a busy road when another safer entrance is available, located in proximity to an active gas well or some other human-made hazard or located within a flood plain or some other natural hazard?)

Practicality

- Would the proposed *development* or building improve the existing situation (e.g., the new building is further away from the surrounding *livestock facility* or *anaerobic digester* than an existing building on site it is replacing, but still doesn't meet the required setback)?
- Does the proposed reduction to the MDS I setback permit the new *development* or building to meet some other regulatory setback requirement?
- Is the proposed *development* or building a logical extension of an existing *development* or building which may have been successfully sited in accordance with a previous version of the MDS Formulae and Guidelines?

- Can site plan design assist in reducing the potential for nuisance complaints? For example, a golf course is zoned to a *lot* line, but lands within an MDS setback are designated as 'out of play' and are not part of the golf course; or a settlement area boundary is extended to a *lot* line, but lands within an MDS I setback may only be used for *infrastructure*, such as a storm water management pond.

Reducing MDS II Setbacks

Implementation Guideline #43 from the MDS Formulae provides specific direction on minor variances and reducing required MDS II setbacks; it states:

> "MDS II setbacks should not be reduced except in limited site specific circumstances that meet the intent of this MDS Document. Examples may include circumstances that mitigate environmental or public health and safety impacts, or avoid natural or human-made hazards.
>
> If deemed appropriate by a municipality, the process by which a reduction to MDS II may occur is typically a minor variance to the local zoning by-law or to a lesser extent a site specific zoning by-law amendment."

NOTE: The MDS II setbacks for *anaerobic digester*s referenced in Implementation Guideline #22 cannot be reduced through Implementation Guideline #43. The following only speaks to reductions to MDS II setbacks for *livestock facilities*.

OMAFRA does not generally support or encourage reductions to MDS II distances. The intent of MDS II is to minimize nuisance complaints associated with *livestock facilities* and *anaerobic digester*s due to odour, thereby reduce potential land use conflicts. It may often be possible to find opportunities to site *first* or *altered livestock facilities* where MDS setbacks can be met. Assess the requirement to meet MDS II at the time when considering new on-farm construction projects for *first* or *altered livestock facilities*.

This Implementation Guideline provides two main points to consider regarding minor variances for reducing MDS II setbacks. First, this document recognizes that reductions to MDS II setbacks can be considered and may be appropriate in some circumstances, especially to address issues related to expansions of existing operations. Second, the types of setback reductions that could be considered and may be appropriate are those that attempt to reduce potential odour conflicts while balancing or mitigating against other potential concerns, such as environmental impacts, public health and safety, or natural and human-made hazards.

There are many reasons why a *livestock facility* cannot meet MDS II setbacks, especially for existing operations that are looking to expand. Due to their age, there are many *existing livestock facilities* that simply were not sited in accordance with MDS II setbacks, and yet have existed adjacent to surrounding *development* or *dwelling*s for many years with no nuisance complaints related to odour. Farm operations were traditionally sited near roads and water courses; however, these types of locations, especially for existing operations which are expanding, impose other types of constraints rather than odour that may be more important to address. In some circumstances, it may be more important to address environmental concerns, public safety issues or potential hazards rather than meet an MDS II setback. Considering appropriate reductions to MDS II setbacks provides an opportunity for these types of issues to be considered at the local level.

The following is a list of questions a municipality or a committee of adjustment may ask when considering a reduction to an MDS II setback. Think through these questions as per Implementation Guideline #43. The list of questions does not represent an exhaustive list, as other site specific circumstance might be relevant. Consider the questions (and other relevant issues) with any one or more of them not necessarily being determinative. In some cases, a surrounding land use, environmental, safety or practicality issue may warrant a reduced MDS II setback if the intent of this MDS Document can still be met.

Surrounding Land Uses

- Is the proposed *livestock facility* similar to others on surrounding lands?
- Is there much existing *development* or many *dwelling*s surrounding the subject lands?
- Is the proposed location of the *first* or *altered livestock facility* farther away from surrounding *development* or *dwelling*s than any previous or *existing livestock facilitie*s on the *lot*?

Environmental Concerns

- Is there a history of environmental issues or nuisance complaints related to the farm operation which can be addressed through the proposal?
- How does the proposed *livestock facility* affect surface water features (e.g., streams, ditches, municipal drinking water intake protection zones, drains, ponds, lakes, open catch-basins, etc.)?
- How does the proposed *livestock facility* affect groundwater features (e.g., municipal wells, bedrock, aquifers, municipal drinking water wellhead protection areas, surrounding wells, etc.)?
- Are there other natural features or environmental features on the *lot* that should be considered (e.g., wetlands, woodlots, etc.)?
- Would a location that met MDS reduce or increase the need to move equipment over a stream and create more potential for environmental risk?
- Would permitting a larger *manure storage* that does not meet the MDS II setback reduce manure spreading events, especially during winter months, or improve nutrient management practices?

Safety

- Is there a safety issue related to the poor state of repair of an *existing livestock facility* (e.g., existing *manure storage* is aged, in disrepair and should be replaced)?
- Would a location that met MDS place a *livestock facility* near an active gas well?
- Would a location that met MDS place a *livestock facility* in a flood plain?
- Would a location that met MDS place a *livestock facility* in a 'sight triangle' of an intersection or result in a location that will create a driveway that may be unsafe for accessing the road?

Practicality

- Is the proposed *livestock facility* consistent with the intent of local zoning?
- Is there likely to be any noticeable increase in odour produced from the proposed *livestock facility*?
- Does the proposed *livestock facility* improve odour conditions compared to existing buildings on the *lot* (e.g., an uncovered storage is being replaced with a covered storage)?
- Is a reduced setback needed from the edge of a road allowance or *lot* line in order to meet an MDS II setback from a *dwelling*?
- Is a reduced MDS II setback needed from an unopened road allowance?

When considering reductions to an MDS II setback, municipalities may wish to consult with OMAFRA staff for input regarding technical questions or issues. OMAFRA staff will not provide recommendations regarding specific applications to reduce or vary MDS II setbacks, as the decision to grant a minor variance rests with the municipality's committee of adjustment.

8.3 Livestock Barn Identification

Introduction

Livestock barns are agricultural buildings with many uses, such as housing *livestock*, storing grain and farm equipment, workshops and garages. MDS setbacks are only applied to agricultural buildings that are structurally sound and reasonably capable of housing *livestock* — at which point they qualify as *livestock barns*. To calculate the MDS setback distance, the type and number of *livestock* that can be housed in the *livestock* barn must be known.

If the *livestock barn* is empty, an estimate of the number of *livestock* that can be reasonably housed is required. The farm operator is a reliable source for the majority of this information including the number, type and description of *livestock* housed, and the area that could reasonably be used to house *livestock*. In some instances, there may be a need to obtain independent verification of the information provided by the owner of the *livestock facility*. In these circumstances, *livestock barn* identification can be an important skill for land use planners and building officials.

The barn layout will convey the type of *livestock* housed within; however, relying on structural characteristics alone can be misleading, especially with older *livestock barns* such as bank barns. Various structural features may help in determining the type of *livestock* housed in the barn. Indicators of maintenance and the relative size of buildings are also important in determining the type of *livestock* housed in the barn.

The following provides some information that may assist in the identification of various *livestock barns*.

Dairy Barns: Tie Stall Barn

Identifier	Comments
Typical number of animals housed	Smaller herds between 30 to 60 cows
Number of stories	One-story in newer barns, two-story in older barns
Things to look for	Calf hutches, milking equipment room, vertical silos, solid manure pile, stable cleaner
Typical *manure storage* types	Solid manure, but liquid manure systems are becoming popular

Figure 9. Exterior of a tie stall dairy barn.

Figure 10. Interior of a tie stall dairy barn.

Dairy Barns: Free Stall Barn

Identifier	Comments
Typical number of animals housed	Herds from 40 to 500 cows or more
Number of stories	One-story
Things to look for	Calf hutches, attached milking parlors, vertical silos, large horizontal bunker silos, open side wall curtains, modular natural ventilation chimneys along roofline for ventilation, drive-through feed alleys (large end doors)
Typical *manure storage* types	Liquid manure in earthen, concrete or steel storages; possibly an anaerobic digestion system

Figure 11. Exterior of a free stall dairy barn.

Figure 12. Interior of a free stall dairy barn.*

*Source: Farm and Food Care Ontario

Swine Barns: Sow Barn

Identifier	Comments
Typical number of animals housed	100 to 3,000 sows or more
Number of stories	One-story
Things to look for	Concrete sandwich wall construction (concrete walls, ventilation fans on side walls or through the roof, few, if any, windows, loading chute
Typical *manure storage* types	External earthen, concrete or steel liquid *manure storage*s, or under-barn storage with external pump outs visible

Figure 13. Exterior of a one-story sow barn.*

*Source: Farm and Food Care Ontario

Swine Barns: Weaner Barn

Identifier	Comments
Typical number of animals housed	1,000 to 4,000 weaners or more
Number of stories	One-story
Things to look for	Concrete sandwich wall construction, ventilation fans on side walls or through the roof, no windows, loading chutes, feed bins one end
Typical *manure storage* types	Liquid manure is stored in external earthen, concrete or steel storages, or under barn storage with external pump outs visible

Swine Barns: Feeder Pigs (Farrow and Finish)

Identifier	Comments
Typical number of animals housed	1,000 to 2,000 pigs per barn
Number of stories	One-story
Things to look for	Ventilation fans on side walls or through the roof, or wide open curtain walls for natural ventilation, loading chutes, feed bins on end
Typical *manure storage* types	Liquid manure under barn

Figure 14. Exterior of a finishing swine barn with liquid *manure storage* under the barn.

Figure 15. Interior of a finishing swine barn with liquid *manure storage* tanks under the barn.*

*Source: Farm and Food Care Ontario

Chicken Barns: Broiler Barns

Identifier	Comments
Typical number of animals housed	Housing 10,000 to 30,000 broilers
Number of stories	Historically these were two-story, but the trend in recent years has been to one-story
Things to look for	Wood frame/metal clad construction, large ventilation fans often on one end with smaller side ventilation fans, feed bins on one end, big cleanout doors on one end, concrete area at that end for cleanout, small man doors located approximately every 15 m down one side of the building for loading birds
Typical *manure storage* types	Solid manure that is cleaned out between each crop (4–6 crops/yr) and stored in open or covered bunker type storage OR removed from farm entirely

Figure 16. Exterior of a chicken broiler barn.*

Figure 17. Interior of a chicken broiler barn.*

*Source: Farm and Food Care Ontario

Chicken Barns: Laying Hen Barns

Identifier	Comments
Typical number of animals housed	Housing several thousand layers in tiered cages
Number of stories	One-story, but could be two-story
Things to look for	Wood frame/metal clad construction, ventilation fans on side walls, high sidewalls 3–6 m, egg packing room at front of barn with truck loading door
Typical *manure storage* types	Newer barns have solid *manure storage* off to side or at end filled by attached augers or conveyors from barn, older ones may have manure stored on ground floor or in liquid storage

Figure 18. Exterior of a chicken layer barn.*

Figure 19. Interior of a chicken layer barn.*

*Source: Farm and Food Care Ontario

Horse Barns

Identifier	Comments
Typical number of animals housed	Usually 1 to 50 horses
Number of stories	Typically two-story, as horse farms often store hay above the stable, but some newer barns are one-story with hay stored at one end; hip roof barns are common
Things to look for	*Lot*s of windows (with metal bars), often a large riding arena attached to one end, side ventilation fans, wood fences
Typical *manure storage* types	Solid manure that is cleaned out daily and is often stored on site for long periods and taken directly off farm in many cases

Figure 20. Exterior of a horse barn.**

Figure 21. Interior of a horse barn.**

**Source: Shutterstock

Sheep Barns

Identifier	Comments
Typical number of animals housed	10 to 1,000 ewes, usually for meat purposes (seeing an increase in dairy ewe operations)
Number of stories	Two-story, although some larger facilities are one-story
Things to look for	Many hobby size operations, usually older bank barn facilities; newer construction may have curtain side wall/ roofline chimneys; drive-through feed alley
Typical *manure storage* types	Solid manure pack under the sheep that is only cleaned out periodically

Figure 22. Exterior of a sheep barn and yard.

Figure 23. Interior of a sheep barn.

Beef Barns: Barn with External Yard

Identifier	Comments
Typical number of animals housed	10 to 200 cattle (although there are larger cattle operations)
Number of stories	One-story in newer barns, two-story in older barns
Things to look for	Cattle outside of the barn in the yard area or pasture, windbreak fences along yard, hay feeders in yard or fenceline feedbunk, round bales or baleage stored near barns
Typical *manure storage* types	Solid manure pack in barn that is cleaned out periodically

Figure 24. Exterior of an open front beef barn with yard.

Beef Barns: Confined Feedlot Arrangement

Identifier	Comments
Typical number of animals housed	50 to 2,000 cattle
Number of stories	Usually one-story but may include parts of older bank barn
Things to look for	Barn similar to dairy barns — curtain sidewall/panels with ventilation chimneys along roofline, drive-through feed alley, large bunker silos and loading chutes near front of barn
Typical *manure storage* types	Solid manure pack inside barn or fully slatted floor with liquid manure storage underneath

Figure 25. Interior of a beef barn.

Turkey Barn: Hens or Toms

Identifier	Comments
Typical number of animals housed	Usually 500 to 4,000 turkeys
Number of stories	One or two-story
Things to look for	Wood frame construction with metal cladding, mechanically ventilated look similar to broiler chicken barns, naturally ventilated side walls with 'turkey' curtains, big cleanout doors on one end, concreted area at that end for cleanout
Typical *manure storage* types	Solid manure that is cleaned out between each crop

Figure 26. Exterior of a turkey barn.

Figure 27. Interior of a turkey barn.

Field Shade Shelters

Field shade shelters are NOT *livestock barns*, and as such do not require an MDS setback in accordance with the definition of *livestock barn* and Implementation Guideline #3 (Figure 28). These buildings are often located in a pasture and generally have a floor area <10 m^2, although some may be marginally larger than this. Usually these buildings do not have poured concrete foundations and are not entirely enclosed on all sides. Field shade shelters are intended to provide TEMPORARY shelter from the elements (e.g., sun, wind and precipitation) for grazing *livestock*, and are not intended, nor designed to house *livestock* for extended periods of time.

Figure 28. Field shade shelter.

8.4 Manure Storage Identification

Introduction

Manure is a valuable resource for plant growth; however, it requires careful management to protect neighbors and the environment. There are several choices for storing manure and options continue to improve, expand and evolve. The *Nutrient Management Act, 2002*, establishes standards for the construction, siting and sizing of new *manure storage*s. Information on constructing *manure storage*s is available at ontario.ca/omafra.

Solid manure usually has bedding material added (e.g., straw or wood shavings) so that it can be easily stacked in a pile. Adding bedding material also helps keep the manure as dry as possible, therefore reducing odour. Under both this MDS Document and the *Nutrient Management Act, 2002*, solid manure is considered to have a dry matter content of at least 18%. Manure with at least 30% dry matter content is easier to pile and produces few odours; ease of storage diminishes and odour increases when there is <30% dry matter content.

Liquid manure has a dry matter content of <18% and is stored under the barn or in in-ground storage tanks. Liquid *manure storage* tanks are sometimes left uncovered; odour can be significantly reduced with the use of a variety of different types of permanent covers.

Storages with Very Low Odour Potential

V1 Storage Type (See Tables 5 and 6)

Identifier	Comments
Inside barn/outside barn	Inside
Covered/not covered	Covered
Solid/liquid	Solid
Typical associated *livestock*	Swine, dairy, poultry, beef, sheep, goats
Additional features	Bedded pack, usually with layers of straw or shavings

Figure 29. Interior of a swine barn with bedded pack manure system (V1).

Figure 30. Interior of a sheep barn with bedded pack manure system (V1).*

*Source: Jillian Craig

V2 Storage Type (See Tables 5 and 6)

Identifier	Comments
Inside barn/outside barn	Outside
Covered/not covered	Covered — roof-like structure that may take various forms
Solid/liquid	Solid
Typical associated *livestock*	Chickens (layers or broilers), dairy
Additional features	Cover keeps off precipitation to prevent runoff, storage is usually located right beside the barn and is filled by augers, conveyor belts or the manure is manually pushed into them

Figure 31. Covered solid *manure storage* (V2) with slatted walls.

Figure 32. Covered solid *manure storage* (V2) with slatted walls.

V3 Storage Type (See Tables 5 and 6)

Identifier	Comments
Inside barn/outside barn	Outside
Covered/not covered	No cover
Solid/liquid	Solid ≥30% dry matter (manure is dry enough that a flow path option is used for runoff control, as per the *Nutrient Management Act, 2002*); a flow path control is a permanently vegetated area (PVA) that separates the storage from sensitive environmental features
Typical associated *livestock*	Horses, chickens (broilers), turkey
Additional features	Requires a lot of bedding to make it dry enough

Figure 33. An outdoor, uncovered solid *manure storage* (V3).

V4 Storage Type (See Tables 5 and 6)

Identifier	Comments
Inside barn/outside barn	Outside
Covered/not covered	Covered
Solid/liquid	Solid 18–<30% dry matter, with a covered liquid runoff storage (manure not dry enough to soak up precipitation, so a liquid runoff storage is needed but has a permanent tight-fitting cover)
Typical associated *livestock*	Dairy, beef
Additional features	Milk house washwater generally is placed into the runoff storage as well — this type is not commonly built

Figure 34. An uncovered solid *manure storage* with covered liquid runoff storage (V4).

V5 Storage Type (See Tables 5 and 6)

Identifier	Comments
Inside barn/outside barn	Inside
Covered/not covered	Covered (under barn)
Solid/liquid	Liquid
Typical associated *livestock*	Swine, dairy, beef
Additional features	Underneath slatted floor (i.e., manure is stored under animals in the barn or in tanks found on one side of the barn)

Figure 35. Slatted floor of barn for liquid *manure storage* under the barn (V5).

V6 Storage Type (See Tables 5 and 6)

Identifier	Comments
Inside barn/outside barn	Outside
Covered/not covered	Covered, permanent tight-fitting lid (negative pressure tarp, concrete lid, inflatable dome cover, etc.)
Solid/liquid	Liquid
Typical associated *livestock*	Swine, dairy, chicken (layers), mink
Additional features	A permanent cover that remains in place over time is the key feature for this storage type

Figure 36. Tight-fitting negative pressure tarp for liquid earthen *manure storage* (V6).

Figure 37. Raised base of liquid storage with tightly-sealed inflatable dome cover visible (V6).

Storages with Low Odour Potential

L1 Storage Type (See Tables 5 and 6)

Identifier	Comments
Inside barn/outside barn	Outside
Covered/not covered	Not covered
Solid/liquid	Solid (18–<30% dry matter with uncovered liquid runoff storage)
Typical associated *livestock*	Dairy, beef
Additional features	Manure is not dry enough to soak up precipitation, so liquid runoff storage is needed; it is uncovered producing more odour than with V4 storage; milk house washwater can be put in the runoff storage as well

Figure 38. Uncovered liquid runoff storage (L1).

Figure 39. A solid, uncovered outdoor storage with uncovered liquid runoff storage (L1).

L2 Storage Type (See Tables 5 and 6)

Identifier	Comments
Inside barn/outside barn	Outside
Covered/not covered	Permanent floating cover (e.g., tarps, foam panels, plastic hexagon discs, etc.)
Solid/liquid	Liquid
Typical associated *livestock*	Swine, chicken (layers), mink
Additional features	A permanent floating cover that remains in place over time is the key feature

Figure 40. Round liquid *manure storage* with floating permanent cover comprised of plastic hexagon discs (L2).

Storages with Medium Odour Potential

M1 Storage Type (See Tables 5 and 6)

Identifier	Comments
Inside barn/outside barn	Outside
Covered/not covered	Not covered
Solid/liquid	Liquid
Typical associated *livestock*	Swine, dairy, beef, mink
Additional features	Straight or vertical walls reduce the catchment area for precipitation on the storage, unlike the sloped sides of the H1 earthen *manure storage* — these storages are common

Figure 41. In-ground, uncovered, vertical wall liquid *manure storage* (M1).

Figure 42. An above-grade, uncovered, vertical wall liquid *manure storage* and clean-out access ramp (M1).

M2 Storage Type (See Tables 5 and 6)

Identifier	Comments
Inside barn/outside barn	Outside
Covered/not covered	Covered (roof)
Solid/liquid	Liquid
Typical associated *livestock*	Dairy, chicken (layers)
Additional features	Roof keeps out precipitation, but open sides allow wind to travel over manure and carry away odours these are not common *manure storage*s

Figure 43. Front view of a roofed liquid storage facility (M2).

Storages with High Odour Potential

H1 Storage Type (See Tables 5 and 6)

Identifier	Comments
Inside barn/outside barn	Outside
Covered/not covered	Not covered
Solid/liquid	Liquid
Typical associated *livestock*	Swine, dairy, beef, mink
Additional features	Earthen *manure storage*s are NOT earthen runoff storages associated with solid *manure storage*s listed as L1; earthen storages have sloped sides which have a greater catchment area for precipitation than the M1 type; they are a common storage, catch a lot of precipitation and have a larger surface area which increases odour production

Figure 44. An earthen *manure storage*; note the sloped sides and no cover (H1).

The following is a summary of the *manure storage* types and the most common or likely *livestock* types that may be associated with them. Use this table as a reference when little detail is known about the farm operation for which an MDS calculation is being prepared. It is helpful to approximate the most likely *manure storage* type; however, never use it as a substitute for proper field research and outreach to the landowner or farm operator.

***Manure Storage* Type**	***Livestock* Commonly Associated**
V1	• beef cow/calf, dairy heifer/dry cow and swine operations with solid manure systems, as well as goat and sheep • litter based poultry operations (e.g., broiler chickens, broiler breeders, turkeys, ducks, pheasants, guinea fowl, etc.)
V2	• litter based poultry operations (e.g., broiler chicken, broiler breeder, turkey, ducks, pheasants, guinea fowl, layer hens, etc.) • mink operations with solid manure systems as well as horse and rabbit operations
V3	• litter based poultry operations (e.g., broiler chicken, turkey, ducks, pheasants, guinea fowl, etc.) • horse, donkey, sheep or goat operations
V4	• dairy, beef and swine operations with solid manure systems
V5	• dairy, beef and swine operations with liquid manure systems • veal or duck operations with liquid manure systems
V6	• mink, layer hen and swine operations with liquid manure systems
L1	• dairy and beef operations with solid manure systems
L2	• dairy, beef and swine operations with solid manure systems that utilize uncovered liquid runoff tanks as part of the *manure storage*
M1	• mink, layer hen and swine operations with liquid manure systems
M2	• dairy, beef and layer hen operations with liquid manure systems that use *manure storage*s which have a roof but open sides
H1	• dairy, beef and swine operations with liquid manure systems that use earthen *manure storage*s

8.5 Structural Capability of Housing *Livestock* or Storing Manure

Introduction

This MDS Document requires that MDS I and MDS II are applied to *livestock facilities* that are structurally sound and reasonably capable of housing *livestock* or storing manure. Barns (or storages) that are NOT structurally sound or reasonably capable of housing *livestock* or storing manure should NOT be considered in MDS, because of safety, environmental and functionality reasons.

When evaluating whether barns and storages are structurally sound and reasonably capable of housing *livestock* or storing manure, evaluators should assume the barn (or storage) passes both these tests, until it is demonstrated otherwise. Only professional engineers or consultants knowledgeable about *livestock facilities* should provide input on these decisions, with the municipal building official ultimately making the final determination using any valid internal or external input. There is no all-inclusive prescriptive checklist to make these determinations.

The following questions may be helpful for municipal building officials, professional engineers and/or consultants, knowledgeable about *livestock facilities*, to consider. The more questions answered 'Yes', means a barn (or storage) is less likely considered viable. Questions are not equally weighted, because if a barn (or storage) is not structurally sound the remainder of the questions do not matter.

Structural Considerations for *Livestock Barns*

Foundation

The foundation of a barn provides structural support for the entire building.

- Is it crumbling, missing mortar and in disrepair?
- Is there a dirt floor in part, or throughout the entire barn?
- Is there evidence of water damage either inside or outside the barn walls?
- Has the main barn structure shifted away from a bank bridge (if present)?
- Is there major concrete work needed inside?
- Would reasonable people avoid spending money to repair the foundation properly?

Walls

The walls of a barn provide support for the roof and additional stories, shelter from the elements, natural lighting and ventilation through windows, amongst other functions.

- Are any walls no longer vertical and leaning in one or more directions?
- Do the windows need replacement?
- Is there missing insulation, or was there never any insulation at all?
- Is there a modern ventilation system with exhaust fans, controlled air inlet systems or thermostatic controls?
- Have load-bearing walls been removed without replacing them with comparable support?
- Would reasonable people avoid spending money to repair the walls properly?

Roof

The roof can be costly to replace, upgrade or repair. It can also be a potential hazard if it has gone without inspection and upgrades for some time. Leakage and structural concerns can pose a safety risk, especially when expensive *livestock*, equipment, etc. are stored within.

- Does the roof show evidence of leaking?
- Are there structural issues such as sagging, cracked rafters or missing components?
- Do truss gusset plates show any rust?
- Does the roof system look outdated?
- Does the roof system appear to be out of compliance with current building code standards?
- Would reasonable people avoid spending money to repair the roof properly?

Internal Structure

Alterations over time to the inside of the barn may have unintentionally removed required posts, structural beams, joists, studs or other important components, reducing the safety of the building. Additional wear and tear on these components may have weakened the structure. The cost to repair these features may outweigh the usefulness of the barn.

- Is there evidence of posts, structural beams or joists having been cut out or removed?
- Are there damaged posts or sagging beams that appear in poor shape?
- Is there evidence of rotten wood so that you can push a jackknife right into them?
- Is there evidence of damage from vermin?
- Does the barn have a musty odour, suggesting water damage?
- Does the floor need to be entirely replaced?
- Would reasonable people avoid spending money to repair the internal structure properly?

"Reasonably Capable" Considerations for *Livestock Barns*

Barn Location

Barn location can influence the overall desirability of using the barn for *livestock*. Its location may increase the appeal to use it as a garage, workshop or other non-*livestock* housing use.

- Is the barn close to a road, stream, residential area or features that might prevent someone from wanting to use the building for *livestock*?
- Is the barn close enough to an owner's house that they'd likely not use it for *livestock*?
- Is expansion of this barn going to be difficult given the location of surrounding uses?
- Is the barn located in a zone that doesn't permit *agricultural uses* (e.g., *settlement area*)?
- Would reasonable people avoid spending money to repair the barn given its location?

Size and Shape of the Barn

The size and shape of a barn can influence its potential use. Small barns that are not easily expanded may be desirable for small hobby operations, but perhaps not suitable for someone with the intent to pursue a commercial operation. Low ceiling heights might preclude horses or other tall *livestock*.

- Is the barn quite small for the type of *livestock* typically housed in that type of barn?
- Is the barn one-story without any spot for hay or straw storage, if required for the type of *livestock* likely to be housed?

- Is the barn narrow (<8 m wide)?
- Is the ceiling height low (<2 m high)?
- Would reasonable people avoid spending money to renovate given the barn size and shape?

Historical Use of Barn for *Livestock*

The history of a barn may influence decisions about whether it can still house *livestock*. Stalls, water and feed troughs, electrical upgrades, manure systems, etc. may help in figuring out how long it has been since the barn last housed *livestock*. It may also provide evidence regarding what else the barn may have been used for in the past.

- Was the building originally constructed for purposes other than housing *livestock*, such as fruit packing, tobacco packing, machinery shed, etc.?
- Are elements from these previous uses still present inside the barn?
- Would reasonable people avoid spending money to renovate given the original use of barn?

Era of the Barn

The barn age may provide clues as to the types of damage that should be looked for in the foundation, walls and roof. It may also influence the size and shape of the barn. When the barn was built may affect its ability to be converted for other types of *livestock*, besides what it was originally constructed for.

- If the barn was originally constructed to house a specific type of *livestock*, has the industry standard for that *livestock* changed significantly?
- Was the barn constructed more than a generation ago?
- Would reasonable people avoid spending money to repair the barn given its construction era?

Current Use of the Barn

Current uses of the barn, or parts of it, may have altered the barn from its original layout and function. This may include removing stalls, feeding and watering troughs, stable cleaner, etc. These features might have to be replaced to use the barn for housing *livestock*.

- Is the barn used now as storage for machinery, boats, feed, lumber, etc.?
- Is the barn used as a workshop or for any other purposes?
- Have interior features of the barn been removed (e.g., stalls) and must now be replaced?
- Could these features be replaced without requiring a building permit?
- Is the facility, or could the facility be, insured?
- Would reasonable people avoid spending money to put the barn back to its original use?

Other *Livestock Facilities* and Related Buildings

The presence and condition of related *infrastructure* or other buildings on site in addition to the barn in question may influence the type of activities or type of *livestock* that the barn could still house. The costs associated with replacing or upgrading these features, and whether they are still required for the type of *livestock* most likely to be housed on site, may influence the usability of the barn for housing *livestock*.

- Is this the only *livestock barn* on the site that has any opportunity of being used?
- Is this the only *livestock barn* in the surrounding area?

- Is there missing 'supporting *infrastructure*' on site that would normally be associated with a *livestock* building such as electrical power, water wells, water lines, silos, feed bins, hay storage, feed bunks, *manure storage* and other equipment?
- Would reasonable people avoid spending money to replace or upgrade *infrastructure* on site?

STRUCTURAL CONSIDERATIONS FOR *Manure Storages*

Foundation/Walls/Roof/Internal Structure

*Manure storage*s, especially liquid *manure storage*s, have improved over the past generation. The first liquid *manure storage*s (concrete, steel, earthen) appeared in the 1960s. The first concrete liquid *manure storage*s were <10 m in diameter and about 2 m deep.

- Is there evidence the foundation has been undermined by damage?
- Is there evidence the storage has leaked manure with staining on the outside?
- Are any walls no longer vertical and leaning in one or more directions?
- Is there evidence of rusted reinforcing bars in the concrete?
- Would reasonable people avoid spending money to repair the *manure storage* properly?

"Reasonably Capable" Considerations for *Manure Storages*

Storage Location, Size and Shape, Historical Use, Era, Current Use, Other Facilities

- Is the *manure storage* close to a road, stream, residential area or features that might prevent someone from wanting to use the structure for storing manure?
- Is the *manure storage* so close to an owner's house that they likely would not use it?
- Is the *manure storage* small by today's standards on other farms?
- Is adding additional storage capacity going to be difficult given the location of surrounding uses?
- Was the structure used as *manure storage* before the *Nutrient Management Act, 2002*, came into effect?
- Is there missing 'supporting infrastructure' on site that would normally be associated with a *manure storage*, such as pumps, loaders, manure spreader, tractor, etc.?
- Would reasonable people avoid using the storage because it is functionally outdated?

8.6 *Design Capacity* of *Livestock Facilities*

Introduction

MDS calculations cannot be completed without knowing the number of *livestock*, area of *livestock* housing, or *Nutrient Unit*s for *livestock barn*s, and the volume, or *Nutrient Unit*s for *manure storage*s. The best information comes from the owner/operator who knows the type and number of *livestock* on the farm, and the type and size of *manure storage*s. However, it may be necessary to estimate this information because it is not available from the owner/operator, or the *livestock barn* is unoccupied or the *manure storage* is unused.

There are two methods available for MDS users to consider for guidance since there are so many factors that affect *design capacity* such as owner/operator preference, buyer requirements with respect to animal welfare space, animal age, type of housing system, age and available space of a barn, wider feed alleys to accommodate new feeding technologies, site specific circumstances, etc. It is reasonable to accept some variation between the *design capacity* estimated by the MDS software (AgriSuite) versus that provided by an owner/operator. If the variation is reasonable, it is recommended that the information provided by

an owner/operator be used. Ontario has a diverse agricultural community, with a wide variety of *livestock facilities* that have been constructed over a long period of time, with different local, cultural and management considerations. It is not unreasonable to state no two *livestock barns* are alike.

1. Estimating Number of Animals Using the Database in the MDS Software (AgriSuite)

   The MDS software (AgriSuite) includes many different floor area/animal (m^2/animal) averages based on typical animal types, sizes and housing methods used on Ontario farms. Unfortunately, it is impossible to include every possible system in use because there can be significant variation between *livestock barns*. The MDS software is helpful to give first approximations about how much floor area makes sense for a typical *livestock barn*:

   a) Open the MDS software (AgriSuite) and proceed as if to complete an MDS calculation.
   b) In the Livestock/Manure Information area, click on the Add Livestock/Manure button. This opens Livestock/Manure screen. Enter information for three drop-down menus on *livestock* type, description and system. For example, choose Swine…. Feeders (27–129.5 kg)…. Full Slats.
   c) Click on the button marked with a calculator logo to show two things:
      i. first, a box to enter the total floor area of the *livestock* barn (m^2 or ft^2)
      ii. second, the estimated floor area per animal based on earlier inputs
   d) Type in the total floor area and hit Tab or click OK. The MDS software then calculates an estimate of the maximum number of *livestock* that can be housed in the *livestock barn*.

2. Estimating Number of *Livestock*, Area of *Livestock* Housing and/or Volume for *Unoccupied Livestock Barns* or *Unused Manure Storages*

   When *livestock barns* or *manure storages* have not been used for some time, or there is a new owner, they may not know how many, or what type of *livestock* could be housed within the building. Apply MDS if the *livestock barns* are structurally sound and reasonably capable of housing *livestock*. Also consider the potential for *manure storage*. Base MDS on the most probable values for Factors A, B and D given site specific circumstances.

a. *Unoccupied Livestock Barns*

The best information comes from the owner/operator who knows, or knew, the type and number of *livestock* housed. If unable to obtain more specific information as outlined in Implementation Guideline #16, the following Factors may apply for *unoccupied livestock barns*:

- Factor A = 1.0
- Factor B, based on 1 *Nutrient Unit*/20 m^2 of floor area (use one floor only)
- Factor D = 0.7 (based on most probable barn use; solid manure)

However, an MDS I setback is not required for any *unoccupied livestock barns* when:

- the building has been deemed by a municipal building official, with input from a professional engineer or a consultant knowledgeable about *livestock facilities* where appropriate, as being not structurally sound nor reasonably capable of housing *livestock;* or
- the portion of the *lot* on which the *unoccupied livestock barn* is located is zoned such that *livestock facilities* are not permitted; or
- the floor area of the *unoccupied livestock barn* is <100 m^2 .

b. *Unused Manure Storages* for Solids

It is not often that one needs to know the volume of *manure storage*s in order to calculate an MDS setback. It only occurs when there are no *livestock* on a *lot*. The best information comes from the owner/operator who knows, or knew, the type and volume of the *manure storage*. If unable to obtain more specific information as outlined in Implementation Guideline #16, apply the following Factors for *unused manure storage*s for solids:

- Factor A = 1.0
- Factor B, based on 1 *Nutrient Unit*/19.8 m^3 of volume for storages with two or more walls (NOTE: Assume manure is stored 1 m deep over the area enclosed by the two or more walls if using aerial photography.)
- Factor D = 0.7 (based on solid manure)

However, an MDS I setback is not required for any *unused manure storage*s for solids when:

- there are only one, or no, walls; or
- the storages have been deemed by a municipal building official, with input from a professional engineer or a consultant knowledgeable about *livestock facilities* where appropriate, as being not structurally sound nor reasonably capable of storing manure; or
- the portion of the *lot* on which the *unused manure storage* is located is zoned such that *livestock facilities* are not permitted; or
- the floor area of the *unused manure storage* is <100 m^2 .

c. *Unused Manure Storages* for Liquids

The best information comes from the owner/operator who knows, or knew, the type and volume of *manure storage*. If unable to obtain more specific information as outlined in Implementation Guideline #16, apply the following Factors for *unused manure storage*s for liquids:

- Factor A = 1.0
- Factor B, based on 1 *Nutrient Unit*/19.8 m^3 of volume (NOTE: assume manure is stored 2.5 m deep and level over the area enclosed by storage walls if using aerial photography.)
- Factor D = 0.8 (based on liquid manure)

However, an MDS I setback is not required for any *unused manure storage*s for liquids when:

- the storages have been deemed by a municipal building official, with input from a professional engineer or a consultant knowledgeable about *livestock facilities* where appropriate, as being not structurally sound nor reasonably capable of storing manure; or
- the portion of the *lot* on which the *unused manure storage* is located is zoned such that *livestock facilities* are not permitted; or
- the floor area of the *unused manure storage* is <40 m^2 .

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