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LEGISLATION & ENFORCEMENT

INTRODUCTION

This appendix gives a summary of legislation and enforcement related to environmental issues, including:

- ◆ Local Government Bylaws,
- ◆ Provincial Government Legislation,
- ◆ Federal Government Legislation,
- ◆ Enforcement by Regulatory Agencies,
- ◆ What Should a Landowner Do?
- ◆ *Agricultural Waste Control Regulation Code.*

Farm operations may be affected by environmental legislation from federal, provincial governments or by bylaws of municipal governments, regional districts or the Islands Trust. Each level of government has its own set of rules for environmental concerns. Compliance with the requirements of one level of government does not automatically ensure compliance with other levels.

The following is an alphabetical listing of legislation with the agency(s) that administer each Act listed. Please note that though a significant number of Acts are listed, not all producers are affected by them and most Acts are very specific and not wide ranging. There may also be Acts not listed here that apply to farm operations.

It is recommended that the actual legislation be consulted for the complete, precise wording.

Visit www.bclaws.ca for online versions of the legislation.

This list is not intended to be a legal interpretation of these Acts.

Please refer to a lawyer or legal authority for specific advice.

A.1 Local Government

Under the *Local Government Act*, regional districts, municipalities and other local governments may make bylaws dealing with a number of matters. Farm bylaws and, where a regulation under Section 918 of the *Local Government Act* has initiated the requirement, those rural land use or zoning bylaws applied to the *Agricultural Land Reserve* which prohibit or restrict agriculture, require approval by the Minister of Agriculture. Once a Section 918 regulation is in place for a particular area, it may authorize local government to enact farm bylaws, and/or require review of the rural land use or zoning bylaws. This review is to determine to what extent the bylaws are inconsistent with the standards established by the minister (under Section 916 of the *Local Government Act*).

The *Local Government Act* gives local governments a wide range of opportunities to apply land use policy and regulation through official community plans (OCP) and bylaws. Because there is a necessity for local bylaws, including official community plans, to be consistent with the *Agricultural Land Commission Act*, local governments can apply planning policy and bylaw regulation to land in the Agricultural Land Reserve.

Local governments may use a variety of tools to reduce conflicts between agricultural and residential land uses. These tools include policy documents such as official community plans that establish long-term goals to guide development within the jurisdictional boundaries. The guiding principles are enforced by a variety of different bylaws including noise and nuisance, subdivision control, zoning, rural land use and miscellaneous bylaws. Other tools include the designation of development permit areas in official community plans, water drainage plans, and a variety of other planning and policy documents such as park and recreation plans, transportation plans and neighbourhood plans. Many local governments have conducted agriculture plans that aim to address the needs of the agriculture industry within the local government's jurisdiction.

The number of bylaws affecting agriculture varies with each local government. Bylaws may regulate:

- ◆ Areas within a region or municipality where farming operations are permitted.
- ◆ Setback distances from property lines for buildings and production areas, lot coverage, and minimum lot sizes upon subdivision.
- ◆ Setback distances of buildings from watercourses.
- ◆ Setback distances from watercourses to minimize negative impacts of runoff, to preserve water quality and protect fish and wildlife habitat.
- ◆ Storm water management on agricultural lands.
- ◆ Landscaping requirements, burning, plant removal in development permit areas or tree cutting.
- ◆ Building requirements in flood plains.
- ◆ Nuisances, such as excessive noise from farm operations, including scare devices to control birds (if operated outside normal farm practices).
- ◆ Discharge of firearms.
- ◆ Emissions of air contaminants from machinery or equipment.
- ◆ Well water test requirements, to assess adequacy of water supply and draw-down rates on adjacent properties.
- ◆ Construction materials, height and location of fences.
- ◆ Occurrences of harmful insects and weeds.
- ◆ Temporary farm worker housing.

Existing operations, not in compliance with a zoning or rural land use bylaw, may be considered "legally nonconforming." For instance, despite the fact that the use or siting of a building may not conform to current bylaws, the use may continue as a nonconforming use, provided the use is not discontinued for a continuous 6-month period. Note that for agricultural uses this time does not apply if due to seasonal, market or production cycles, the control of disease or pest or for other reasons in Section 911(2) of the *Local Government Act*.

Farm Bylaws. The Corporation of Delta, City of Abbotsford, Township of Langley, and City of Kelowna have farm bylaws approved by the Minister of Agriculture to regulate farm use within the municipality's ALR. Both the City of Abbotsford and Township of Langley regulate mushroom composting operations, and some other composting operations as well, through Farm Bylaws. These bylaws require farms to have an enclosed building with all air emissions biofiltered. They also require a storm water management plan and a waste water management plan. Composting must occur on the same parcel as mushroom growing barns are located. Up to 80% of the compost can be sold off-farm.

- ◆ The *National Farm Building Code*

The *National Farm Building Code* (1995) is enforced only where proclaimed by local governments and outlines standards for:

- Farm buildings; and
- Pesticide storage.


The BC Building Code. The most recent Code was published in 2012. It can be [purchased online here](#):

Local Air Quality Bylaws. Regional and municipal governments can pass bylaws to control emissions such as backyard and open burning, wood stoves and vehicle idling. These governments can also address air pollution through land-use and transportation planning, regional growth strategies and sustainability plans. Local Governments can put in place bylaws that restrict air emissions from industrial and business operations. Farms are not necessarily exempt from these local bylaws, particularly smoke control bylaws, and operators should check with their local or regional government. Local bylaws can be more restrictive than provincial regulations. For instance, a municipality or regional district can have a 'fire' bylaw that covers open burning. Local governments often have a burn ban at certain times of the year for fire safety reasons. Check with the local government office or the fire department to find out about the rules and restrictions. A permit may be required. A permit for burning diseased material may be given during restricted times in extreme circumstances, check with the local fire department about potential exemptions from the local government.

A.2 Provincial Government

Several government ministries administer Acts that regulate farm practices in BC. The following legislation dealing directly with regulation of some aspect of the agricultural environment is listed alphabetically.

 Producers wishing more information about government policies, programs, etc. can obtain them electronically from the individual Ministry Internet web sites. → see C.2 Web Sites, page C-6

 Provincial Acts and Regulations are on the BC Laws site. → www.bclaws.ca



Agricultural Land Commission Act

The Agricultural Land Commission (ALC) Act S.B.C. 2002, c. 36, and Agricultural Land Reserve (ALR) Regulations are the legislative framework for the establishment, administration, and procedures of BC's agricultural land preservation program. The ALC Act takes precedence over, but does not replace other legislation and bylaws that may apply to the land. Local and regional governments, as well as other provincial agencies, are expected to plan in accordance with the provincial policy of preserving agricultural land.

The ALR General Regulation, B.C. Reg. 171/2002, identifies the procedures for submitting applications and notices of intent.

The ALR Use Regulation, B.C. Reg. 30/2019 specifies land uses permitted in the ALR.

The policies of the Commission provide interpretation and clarification of the regulations; outline guidelines, strategies, rules or positions on various issues and provides clarification and courses of action consistently taken or adopted, formally or informally.

 [ALC Policies and Bylaws](#)




Animal Health Act

This Act provides the authority for the *Game Farm Regulation*, which lists the farming of bison, fallow deer, and reindeer as a regulated activity. Farm operators working with bison and deer therefore require licensing. The Act requires producers to take preventive measures to reduce the risk of introducing and spreading disease; ensure employees are trained to prevent and respond to disease; maintain records of animal origin; abide by inspector's orders and report any incidents of disease or unusual illness.




Building Act

This act was introduced in 2015 and replaced the *BC Building Regulation*. The act oversees residential building and plumbing through codes. The Codes are largely based on the  [National Codes of Canada](#), with a small proportion of variations that are specific to B.C.

The act establishes the Province as the sole authority to set building requirements (that is, technical requirements for the construction, alteration, repair, and demolition of buildings) - the objective is to create more consistent building requirements across B.C., while still providing local governments with flexibility to meet their needs. It establishes qualification requirements for building officials to improve consistency in how the BC Building Code is interpreted, applied, and enforced and supports local governments and other local authorities through the implementation of a provincial review process to evaluate innovative building proposals

It applies in all parts of the Province except the City of Vancouver and federal lands and reserves.

For more information consult the  [BC Building Act Guide](#).



Carbon Tax Act

The *Carbon Tax Act* establishes a carbon tax in BC. Carbon tax is a broad based tax that applies to the purchase or use of fuels, such as gasoline, diesel, natural gas, heating oil, propane and coal, and the use of combustibles, such as peat and tires, when used to produce heat or energy. Carbon tax applies to fuels at different rates depending on their anticipated carbon emissions, and the tax rates. Farmers are required to pay carbon tax on fuel purchased or used for farming operations; however, some exemptions (e.g., coloured fuel purchased by a farmer that is delivered to their farm land) may apply.



Drainage, Ditch and Dyke Act

Administered by ENV, this Act establishes a system for the regulation and authorization of ditches, watercourses, drainages, and dykes in BC.



Drinking Water Protection Act

This Act and Regulations have requirements regarding the protection of drinking water quality and regulate domestic water systems (those serving **more** than one single-family residence).

- ◆ SECTION 6: requires water suppliers to provide potable water to water users
- ◆ SECTION 23(1): subject to subsection (3), a person must not (a) introduce anything or cause or allow anything to be introduced into a domestic water system, a drinking water source, a well recharge zone or an area adjacent to a drinking water source, or (b) do or cause any other thing to be done or to occur if this will result or is likely to result in a drinking water health hazard in relation to a domestic water system

The *Drinking Water Protection Regulation* defines potable water as “water from a domestic water system” as:

Water that meets the standards prescribed by the regulation and that is safe to drink and fit for domestic services without further treatment.

- ◆ No detectable fecal coliform bacteria or *Escherichia coli* per 100 ml
- ◆ No detectable total coliform bacteria per 100 ml for a sample in 30 days
- ◆ at least 90% of samples have no detectable total coliform bacteria per 100 ml and no sample has more than 10 total coliform bacteria per 100 ml for more than one sample in 30 days
- ◆ limits on chemical and physical parameters (such as nitrates and heavy metals)

 [Guidelines for Canadian Drinking Water Quality](#)



Environment and Land Use Act

Administered by ENV, this Act establishes the Environment and Land Use Committee which recommends programs to increase environmental awareness, ensures that the natural environment is considered in land-use and resource development decisions, etc. The Minister of Environment and Climate Change traditionally chairs the committee. Orders may be made respecting the environment or land use that may override other Acts and regulations.



Environmental Management Act

This Act empowers ENV to control pollution within BC. Waste is defined to include “air contaminants, litter, effluent, refuse, biomedical waste, hazardous wastes” and any other substance designated by Lieutenant in Council or Minister of Environment. Pollution is defined in the Act as “the presence in the environment of substances or contaminants that substantially alter or impair the usefulness of the environment.”

SECTION 6 of the Act has statements of particular interest to agricultural producers:

- ◆ SECTION 6(2): states that “...a person must not, introduce or cause or allow **waste to be introduced** into the environment in the course of conducting an industry, trade or business”
- ◆ SECTION 6(3): states that “...a person must not introduce or cause or allow to be introduced into the environment, **waste** produced by a prescribed activity or operation”
- ◆ SECTION 6(4): states that “a person must not introduce waste into the environment in such a manner or quantity as to cause pollution.
 - ‘Agricultural operations’ are **not** exempt from this requirement.
- ◆ SECTION 6(5): states that “nothing in this section or in a regulation...prohibits”
 - (6)(e): The burning of leaves, foliage, weeds, crops or stubble for domestic or agricultural purposes or in compliance with the *Weed Control Act*.
 - (6)(i): Emission **into the air** of soil particles or grit in the course of agriculture or horticulture.
- ◆ SECTIONS 39 TO 64: outline definitions and general principles of responsibilities, procedures, roles and administrative powers for the identification, determination and remediation of contaminated sites and the relocation of contaminated soils. *The Contaminated Site Regulation* is based on those sections of the Environmental Management Act and further specifies protocols, liabilities, fees and soil, sediment and water standards.

On-farm processing, handling and sale of agricultural produce may be defined as “agricultural operations” and, if they generate wastes (such as waste water, cull vegetables etc.), may require a Approval, Permit or Operational Certificate from ENV.

Agricultural activities are subject to several Regulations under this Act:

1. **Code of Practice for Agricultural Environmental Management.** The *Code of Practice for Agricultural Environmental Management (AEM code)* requires persons to use environmentally responsible and sustainable agricultural practices when carrying out agricultural operations, for the purpose of minimizing the introduction of waste into the environment and preventing adverse impacts to the environment and human health. The *AEM Code* includes requirements for building setbacks from water sources and property boundaries in Part 4 of the *AEM Code*.
2. **Antisapstain Chemical Waste Control Regulation.** This Regulation prohibits the use of wood residue contaminated by substances, such as antisapstain chemicals, preservatives etc. from being used as mulch or for burning in residential fireplaces or stoves or for fuel for wood-fired boilers, etc.

3. **Code of Practice for Soil Amendments.** This Code of Practice regulates the use of industrial wastes or by-products such as lime, ash and biosolids as soil amendments. The code provides requirements for maximum concentrations of heavy metals and other contaminants. A land application plan is required if more than 5 m³ of soil amendments, regulated under the Code of Practice, are to be applied to a site in a year. If soil amendments are to be applied to land within the Agricultural Land Reserve, notice must be given to the Provincial Agricultural Land Commission 30 days prior to discharge.
4. **Contaminated Site Regulation.** *The Contaminated Site Regulation (CSR)* outlines the identification, investigation, and remediation of contaminated sites. Contaminated sites are areas where hazardous waste or organic and inorganic substances are in soil or groundwater at levels potentially toxic to humans, animals and the environment. Contaminated sites are typically the result of past industrial and commercial uses. They are unlikely to be found in areas located in the natural environment or where land uses, and the use of adjacent land, has exclusively been farming or forestry.

The CSR may also be relevant when landowners import soil onto their property as they may be liable for the remediation of the land if the soil that has been deposited turns out to be contaminated.
5. **Hazardous Waste Regulation.** This Regulation (renamed from *Special Waste*) applies to the management of waste oil, waste pesticides, waste pesticide containers and contaminated soils. Pesticide containers that are rinsed according to the *Hazardous Waste Regulation* are not considered hazardous wastes. This regulation does not apply to a quantity of hazardous waste which is less than 5 kilograms or 5 litres and which is accumulated or produced in a period of less than 30 days.
6. **Municipal Sewage Regulation.** This Regulation spells out the rules for treating municipal sewage, reusing highly treated sewage effluent and disposing of effluent that cannot be reused. Codes of practice for reclaimed water use in agriculture are outlined.
7. **Mushroom Composting Pollution Prevention Regulation.** This Regulation requires that air contaminants from a mushroom composting facility must not be discharged in a manner that causes pollution. Conditions must be met regarding pollution prevention planning, facility design and operation, and reporting.
8. **Open Burning Smoke Control Regulation and Code of Practice.** This regulation applies to open burning for a domestic or an agricultural purpose as follows:
 - a) If all of the vegetative debris open burned is branches or other pieces of vegetative debris, with or without leaves, each branch or piece of which is less than 10 cm in diameter but of which at least some of the individual branches or pieces are 3 cm or greater, only sections 7, 9, 12, and 30 of this regulation apply to the open burning;
 - b) If all of the vegetative debris is branches or other pieces of vegetative debris, with or without leaves, of which at least some of the individual branches or pieces are 10 cm or greater in diameter, this regulation applies with respect to the open burning.

There are specific standards and exemptions under the OBSCR and Code of Practice for various materials burned on the farm. A waste discharge approval or permit for burns is **not** required under this Act for:

- Burns that satisfy all the terms and conditions set out in the OBSCR and the *Open Burning Smoke Control Code of Practice*.
- Burns conducted to comply with the *Weed Control Act*.

If the burning of agricultural vegetative debris is branches or other pieces of vegetative debris of which the pieces are less than 3 cm in diameter, then this regulation does not apply. However, local bylaws regarding burning and smoke control will continue to apply.

Agricultural vegetative debris diameter (cm) Application of OBSCR

< 3cm Exempt (local bylaws still apply)

> 3cm to < 10cm Burning must stay within 5 km of original location

Prohibited materials must not be included nor used as an accelerant

Must adhere to any prohibitions issued by a Director

> 10cm No exemptions

In addition, specific requirements are set forth for the burning of diseased vegetative debris (see Division 3, sections 24 and 25).

All other burns (e.g., household, industrial) require a waste discharge approval or permit from ENV. **Note: Metro Vancouver is the agency that gives approvals within its boundaries.** Even though permitted, open burning must not pollute the air. SECTION 2, Schedule 1 of the *Waste Discharge Regulation* provides a list of materials that are prohibited from being open burned.

The OBSCR sets forth regulations for open burning based on smoke sensitivity zones, which are categorized as High, Medium, and Low. These zones are listed in Schedule 3 of the regulation.

Regardless of smoke sensitivity zone, the OBSCR requires a burn operator to:

- ◆ Explore all possible options to reduce, reuse or recycle as much of the material as possible (i.e. not to burn).
- ◆ Burn only vegetative matter such as tree branches, limbs, roots, shrubs, etc.
- ◆ Only burn the targeted vegetative debris within 5 km radius of where it originates from.
- ◆ Do not burn prohibited materials, or substances that normally emit dense smoke or noxious odours.
- ◆ Burn the material more than 500 m from a neighbouring residence or business and more than 1000 m from a hospital, continuing care facility, or school unless otherwise exempted under Section 4, or if all conditions are met under section 13(2) in the regulation.
- ◆ Ensure that smoke from open burning must not be initiated if the local air flow will cause the smoke to:
 - Negatively impact a population centre or work camp, or
 - Pose a hazard at airports or highways by significantly reducing visibility.
- ◆ Ensure that the ventilation index is:
 - "Good" on the day the burn is started and forecast to be "good" or "fair" on the following day for burning in high and medium smoke sensitivity zones, and
 - "Good" or "fair" on the day the burn is started and forecast to be "good" or "fair" on the second day for burning in low smoke sensitivity zones (see the regulation for further information and requirements).

 [Environment Canada Weather Forecast for BC](#)

 [Daily Smoke Control Forecast for BC](#)

- ◆ Ensure satisfactory control and feeding of the fire, and make sure adequate equipment and staff are available to ensure the regulatory limits are met.
- ◆ Follow all of the burning restrictions that are relevant to the smoke sensitivity zone.
- ◆ These restrictions include a smoke release period, and restrictions on the number and frequency of burns per year that is no more than:
 - 12 days per calendar year and,
 - 6 days in each month on a small, private land within a high smoke sensitivity area (see the regulation for further information and requirements).
- ◆ Ensure that all reasonable efforts are taken to minimize the amount of smoke emitted by open burning (see SECTION 11 in the regulation for further information).
- ◆ Ensure that proper records are made and kept if open burning is carried out using one or more category 3 open fires or air curtain incinerators.

 [Wildfire Bans and Restrictions in BC](#)

 [Interactive venting index map for BC](#)

9. **Organic Matter Recycling Regulation.** This Regulation (also under the *Public Health Act*) deals with the production of compost and subsequent land application of recyclable organic matter derived from many non-agricultural (municipal) sources (i.e., sewage biosolids, yard waste and food waste). It is intended to encourage composting and beneficial use of selected organic matter. The regulation contains quality criteria for metals, pathogens and vector attraction reduction. It also covers aspects of land application plans for managed organic matter. It does not apply to agricultural waste composting operations that operate in accordance with the *Code of Practice for Agricultural Environmental Management*.

Class A and Class B Compost: Section 12 of the Regulation specifies the requirements for Class A compost. Compost that is produced solely from yard waste or untreated and unprocessed wood residuals must meet pathogen reduction process and vector attraction reduction requirements and quality criteria (trace elements). Compost that contains any of the other permitted organic materials (Schedule 12) must additionally meet pathogen reduction limits and must meet sampling and record keeping requirements as outlined in Schedules 5 and 6 of the OMRR. If the compost meets these requirements, it is considered Class A compost and it can be distributed freely without volume restriction.

To be designated as Class A compost, fecal coliforms must be measured at less than 1,000 MPN per gram of total solids (dry weight basis). If compost is made from yard waste alone, determination of fecal coliform levels is not required. Class A compost must also meet the quality criteria as outlined in Schedule 4, column 1.

10. **Ozone Depleting Substances and Other Halocarbons Regulation.** This Regulation regulates the servicing of refrigeration equipment and disposal of refrigerant gases.

11. **Spill Reporting Regulation.** This Regulation requires reporting of spills:

- ◆ SECTION 2(1): A person who had possession, charge or control of a substance immediately before its spill shall **immediately report** the spill to the Provincial Emergency Program (PEP) by telephoning 1-800-663-3456 as provided in section 12(5) of the Act or, where it is not practical to report to PEP within a reasonable time, to the local police or nearest detachment of the Royal Canadian Mounted Police.
- ◆ SECTION 2(2): Where it appears to a person observing a spill that a report under subsection (1) has not been made, he or she **shall make the report** referred to in this section.
- ◆ SECTION 2(3): A report under this section **shall include**, to the extent practical,
 - (a) The reporting person's name and telephone number,
 - (b) The name and telephone number of the person who caused the spill,
 - (c) The location and time of the spill,
 - (d) The type and quantity of the substance spilled,
 - (e) The cause and effect of the spill,
 - (f) Details of action taken or proposed to comply with Section 3,
 - (g) A description of the spill location and of the area surrounding the spill,
 - (h) The details of further action contemplated or required,
 - (i) The names of agencies on the scene, and
 - (j) The names of other persons or agencies advised concerning the spill.
- ◆ SECTION 3: Where a spill occurs, the person who immediately before the spill had possession, charge or control of the spilled substance shall **take all reasonable and practical action**, having due regard for the safety of the public and of himself or herself, to stop, contain and minimize the effects of the spill.

The Regulation requires reporting any spill of pesticide greater than five kilograms or five litres, fertilizer (including manure) greater than 50 kilograms or 50 litres and petroleum products greater than 100 litres, and any polluting substance greater than 200 kilograms (such as manure or mortalities). Check the regulation for other specific substances and reportable quantities.

12. **Waste Discharge Regulation.** This Regulation regulates various industries and their waste discharges into the environment. It exempts industries who discharge wastes in accordance with applicable codes of practice from Section 6(2) and (3) of the Environmental Management Act (as the *Agricultural Environmental Management Regulation* does for agriculture with the *Code of Practice for Agricultural Environmental Management*).



Farm Practices Protection (Right to Farm) Act

Administered by MAFF, this Act provides that farmers on agricultural land are not liable to legal actions resulting from nuisance complaints regarding farming activities when they meet certain conditions. The Act defines a normal farm practice as an activity “that is conducted by a farm business in a manner consistent with proper and accepted customs and standards as established and followed by similar farm businesses under similar circumstances”:

- ◆ SECTION 2: **protects a farmer from liability** in lawsuits alleging nuisance for odour, noise, dust or other disturbance resulting from a farm operation if:
 - The farmer uses normal farm practices.
 - The operation is conducted in the ALR, land zoned for farm use, or, aquaculture that is defined as a “farm operation” or Crown land designation as a farming area.
 - There is no contravention of other listed legislation, such as the *Environmental Management Act*, the *Agricultural Environmental Regulation* and *Code of Agricultural Environmental Management* and land use regulations (e.g., a zoning bylaw).

In addition, the Act establishes a Farm Industry Review Board to receive complaints regarding odour, noise, dust or other disturbances resulting from farm operations. The Farm Practices Board will hear complaints and determine whether the complaint issue results from a normal farm practice.



<http://www.agf.gov.bc.ca/resmgmt/fppa/refguide/intro.htm>



Food Safety Act

The *Food Safety Act* encompasses the entire spectrum of British Columbia's food industry, from production and processing to retail and food service establishments. The Act is an important part of the legislative framework for food safety in B.C.. It clarifies the legal responsibility of food establishment operators with respect to the safety of their products; grants inspection and enforcement powers to inspectors; and specifies offences and penalties for infractions.

The *Food Safety Act* also gives the Lieutenant Governor in Council the authority to establish regulations governing food production, food sale and the operation of food establishments. However, at present time, the only regulation in place is the *Meat Inspection Regulation*.

- ◆ The definition of “food establishment” is broad. The Ministry of Health administers the *Food Safety Act* except as it relates to food establishments where animals are slaughtered for food purposes, whereby the Ministry of Agriculture, Food and Fisheries administers it.
- ◆ The *Meat Inspection Regulation* is made under the authority of the *Food Safety Act*. This regulation deals with animal slaughter.

Slaughter establishments in B.C. are either federally registered by the Canadian Food Inspection Agency or are provincially licensed. Slaughter establishments that are provincially licensed through Class A, Class B, Class D, or Class E licences are only permitted to sell their product within B.C. Federally registered establishments are permitted to export their product outside the Province.

The *Meat Inspection Regulation* ensures that:

- ◆ Animals are humanely handled and slaughtered,
- ◆ Carcasses are processed in a clean environment, and
- ◆ Meat is packaged and stored in ways that reduce contamination risks.

The *Food Safety Act* also aligns with the following acts and regulations:

- ◆ *Public Health Act*,
- ◆ *Food Premises Regulation*,
- ◆ *Milk Industry Standards Regulation*,
- ◆ *Fish and Seafood Act*.



Fisheries Act

The *Fisheries Act* provides for licensing and regulatory control of activities associated with commercial fisheries and aquaculture operations, this Act deals with licensing of fisheries, processors and safe fish passage:

- ◆ SECTION 28: requires **fish protection devices** for any dam or other hydraulic work
 - This may include fish ways, screens, etc.

These requirements are also provisions of the Federal *Fisheries Act* and the Provincial *Fish Protection Act* and are most likely to be enforced by the agencies responsible for those Acts.



Forest and Range Practices Act

This Act regulates all forest practices (which include grazing on Crown lands). To replace the *Forest Practices Code of British Columbia Act*.



Game Farm Act

Administered by MAFF, this Act licences and regulates game farms.

- ◆ Section 6: states Section 76 of the Wildlife Act does not apply to game that escapes from a farm being operated by a person who holds a valid licence (but the *Game Farm Regulation* limits this by requiring capture within 30 days and other conditions, such as genetic integrity of wildlife)



Greenhouse Gas Industrial Reporting and Control Act

This Act replaced the *Greenhouse Gas Reduction (Cap and Trade) Act* in 2014. The Act enables performance standards to be set for industrial facilities or sectors by listing them within a Schedule to the Act. The Act streamlines several aspects of existing GHG legislation and regulation into a single legislative and regulatory system, including the emission reporting framework established under the *Greenhouse Gas Reduction (Cap and Trade) Act*. The Act provides authority for the *Greenhouse Gas Emission Reporting Regulation*, the *Greenhouse Gas Emission Control Regulation*, and the *Greenhouse Gas Emission Administrative Penalties and Appeals Regulation*.

The *Greenhouse Gas Emission Reporting Regulation* requires that industrial operations that emit over 10,000 carbon dioxide equivalent tonnes per year (tCO₂e) report their GHG pollution each year. Operations emitting over 25,000 tCO₂e are required to have their emission reports independently verified.

The *Greenhouse Gas Emission Control Regulation* establishes the infrastructure and requirements for issuing emission offset units and funded units. These are the foundational elements that enable compliance with the performance standards listed within a Schedule to the Act. The Regulation also establishes the BC Carbon Registry, which enables the electronic issuance, transfer and retirement of compliance units (emission offset units, funded units and earned credits).



Greenhouse Gas Reduction Targets Act

The *Greenhouse Gas Reduction Targets Act* sets aggressive legislated targets for reducing greenhouse gases. Under the *Act*, B.C.'s GHG emissions are to be reduced by at least 40% below 2007 levels by 2030, 60% by 2040 and 80% by 2050. A further emission reduction target of 80% below 2007 levels is set for 2050. The *Act* provided authority for the *Greenhouse Gas Emission Control Regulation* and the *Carbon Neutral Government Regulation* (enacted in December 2008).

Emission Offsets Regulation. The *Regulation* sets out the requirements for greenhouse gas reductions and removals from projects or actions that qualify as emission offsets for the purpose of fulfilling the provincial government's commitments to be carbon neutral by 2010.



Heritage Conservation Act

No permits or approvals, other than *Heritage Conservation Act* permits issued by the Archaeology Branch, are required to carry out the site alterations, heritage inspections or heritage investigations described in permit applications. However, licensees and property owners or developers may also require other approvals such as forestry cutting permits and municipal development permits unrelated to the archaeological work.

There are no fees for obtaining a *Heritage Conservation Act* permit. The only costs to property owners or developers with respect to archaeological work are the fees charged by the consulting archaeologists they have hired.

www2.gov.bc.ca/gov/content/industry/natural-resource-use/archaeology/permits

www.for.gov.bc.ca/ftp/archaeology/external/!publish/web/Property%20Owner%20Brochure.pdf



Integrated Pest Management Act

Administered by BC Ministry of Environment Climate Change Strategy, this *Act* regulates the sale, containment, transportation, storage, preparation, mixing, application and the disposal of pesticides and their containers.

SECTION 3(1): Without limiting any other provision of this *Act*, a person must not (a) use a pesticide that causes or is likely to cause, or use, handle, release, transport, store, dispose of or sell a pesticide in a manner that causes or is likely to cause, an unreasonable adverse effect.

It is important for producers to ensure that their pesticide application practices adhere to Section 3(1), as described above, because it may be applied when a drift incident is being investigated in order to determine if the use of the pesticide resulted in an unreasonable adverse effect, or if the action was likely to cause the unreasonable adverse effect.

Administered by BC Ministry of Environment Climate Change Strategy, this *Act* regulates the sale, containment, transportation, storage, preparation, mixing, application and the disposal of pesticides and their containers.

Integrated Pest Management Regulation.

- ◆ SECTION 18(1): Permit-restricted pesticides are considered to be prescribed for the purpose of the Act
- ◆ SECTION 18(2): Except as provided in subsection (4), the following uses of a pesticide are prescribed for the purpose of the Act
 - Aerial application of a pesticide.
 - Use of a pesticide, other than an excluded pesticide, in or on a body of water, unless a licence is required for the use or a confirmation is required for the use.
 - Aerial applications to private land used primarily for agriculture do not require a Pesticide Use Permit.
- ◆ SECTION 18(4): A use described in subsection (2) is not prescribed if
 - The use is aerial application to private land used primarily for agricultural production, the use is aerial application of a Scheduled Pesticide, in accordance with a licence or a confirmation, and to land that is neither in an urban area nor used for residential purposes.
- ◆ SECTION 33(1): A person who stores a pesticide must store it in a manner that
 - Minimizes hazards to human health and the environment, and
 - Is in accordance with the standards prescribed in Sections 65 [pesticide container and labeling standards], 66 [pesticide storage] and 67 [pesticide storage — licensee], as applicable.
- ◆ SECTION 33(2): A person who transports or causes or allows the transport of a pesticide must ensure that the pesticide is secured and transported in accordance with the applicable standards prescribed in Division 7 [Standards for Use, Containment, Transport, Storage or Sale of Pesticide] of Part 2 and in a manner that prevents
 - The escape, discharge or unauthorized removal of the pesticide from the transport vehicle, and
 - The contamination of food or drink intended for animal or human consumption, bedding or similar items that are transported with the pesticide.
- ◆ SECTION 33(3): A person who uses a pesticide must use it in a manner that
 - Minimizes hazards to human health and the environment, and
 - Is in accordance with the applicable standards prescribed in Division 7 [Standards for Use, Containment, Transport, Storage or Sale of Pesticide] of Part 2 in relation to the handling, mixing, applying or disposing of pesticides, and the handling and disposal of containers used for pesticide.
- ◆ SECTION 65(1): Pesticide must be kept, handled, stored or transported
 - In the container in which it was originally packaged and with the label originally affixed by the manufacturer, or
 - In a container designed for containing the pesticide and labeled in accordance with subsection (2).
- ◆ SECTION 65(2): For the purposes of subsection (1)(b), a label must display
 - The trade name of the pesticide,
 - The name and the concentration of the active ingredient in the pesticide, and
 - The pesticide's registration number under the federal Act.
- ◆ SECTION 65(3): Subsections (1) and (2) do not apply to tanks being used for mixing pesticides for or holding pesticides during use
- ◆ SECTION 66(1): Pesticide, other than excluded pesticides and domestic pesticides, must be stored
 - Separately from food intended for human or animal consumption, and
 - In a storage facility that is ventilated so that pesticide vapours are vented to the outside, not used for the storage of food intended for human or animal consumption, locked when unattended, and accessible only to persons authorized by the person storing the pesticide.

- ◆ SECTION 66(2): Each door providing access to a facility described in subsection (1) must bear a sign that
 - Has the words “warning: chemical storage — authorized persons only” written in block letters, and
 - Is clearly visible to a person approaching the door.
- ◆ SECTION 66(3): Fumigants and other pesticides that
 - Release vapours, and
 - Bear a “poison” symbol on the label and must be stored in a storage facility that is not attached to or within a building used for living accommodation.
- ◆ SECTION 70(1): A container used to prepare, mix or apply a pesticide must not be washed or submerged in a body of water.
- ◆ SECTION 70(2): If equipment is used to draw water from a body of water or an irrigation system into a container used to contain, prepare, mix or apply a pesticide, a gap must be maintained between the pesticide and the equipment so that pesticide is prevented from entering the body of water or irrigation system.

A summary of the *Integrated Pest Management Act and Regulation* can be found at

 <http://www.env.gov.bc.ca/epd/ipmp/regs/index.htm>



Land Act

This Act administers and regulates Crown land disposition, grants and trespass.

- ◆ SECTION 67(1) states a person must not throw, deposit, dump or in any way cause to be **placed on Crown land** any glass, metal, garbage, soil or other substance without the authority of the minister.




Local Government Act

Administered by the Ministry of Municipal Affairs, this Act provides the legislative framework for the establishment, function and operation of local governments. It provides for the authority for local government to establish rules and regulations and for the provision of services to the local community. Several SECTIONS may apply to the environment:

- ◆ SECTIONS 471 TO 478: relate to official community plans - these may restrict the use of land that is environmentally sensitive to development and provide for the designation of development permit areas in plans (see also section 920) for various purposes including the protection of the natural environment and the protection of farming.
- ◆ SECTIONS 479 TO 483: relate to zoning bylaws that may be adopted.
- ◆ SECTION 523: allows bylaws to control runoff related to the construction of a roofed area or paved area and to establish the maximum percentage of the area of land that can be covered by impermeable material.
- ◆ SECTIONS 551 TO 555: outline the use of land for agricultural operations; Section 551: allows for bylaw standards; Section 552: provides for farm bylaws.
- ◆ SECTION 488: provides the authority to issue development permits relating to the protection of the natural environment and the protection of farming.

*Note that under SECTION 553 AND 481(2) zoning bylaws and SECTION 552 farm bylaws do not apply until the Lieutenant Governor in Council, by regulation, declares that they apply. These provisions require that, for land in an Agricultural Land Reserve (ALR), a rural land use bylaw or zoning bylaw which prohibits or restricts the use of land for a farm business, or a farm bylaw, must be approved by the Minister of Agriculture and Lands

 [Stewardship Options for Private Landowners in BC](#)

 [Guide for Bylaw Development in Farming Areas \(this provides information on the Minister’s standards, the review of zoning and rural land use bylaws and the development of farm bylaws\)](#)



Motor Vehicle Act

Administered by Ministry of Transportation and Infrastructure, this Act makes deposition or dumping of “noisome, nauseous or offensive matter” (e.g., the carcass of a dead animal, offal, ashes, refuse) on a highway or right-of-way an offence.

As of October 1, 2010, in accordance with the *Motor Vehicle Act*, heavy diesel vehicle emission control devices must be installed on all BC registered commercial diesel vehicles of model years 1989-1993 with a Licensed Gross Vehicle Weight (LGVW) of more than 8,200 kg. Farm vehicles with a LGVW under 17,300 kg are exempt from these retrofit requirements.



Plant Protection Act

Administered by MAFF, this Act is the provincial counterpart to the federal *Plant Protection Act* that focuses on plant protection issues affecting Canada. It provides for the prevention of the spread of pests destructive to plants in BC. Inspectors have powers to enforce the provisions of the Act, including the authority to establish quarantine areas. To assist in the enforcement of the Act, the BC Plant Protection Advisory Council advises and co-ordinates the actions of provincial and federal officials to deal with potential hazards to BC agriculture and forestry from insects, plant diseases, weeds or other biotic agents. The Council's power comes from the mandates of the agencies whose members sit on committees struck to deal with plant protection issues in specific commodity sectors.

The purpose of this Act is to prevent the deleterious spreading of insects, pests, or diseases that are destructive to plants. Under this Act, inspectors may enter premises at any reasonable time for an inspection of the premises, plans, root mediums, or containers. They can order the treatment, confiscation, or destruction of plants. Regulations under this Act include:

- ◆ *Bacterial Ring Rot Regulation,*
- ◆ *Balsam Woolly Adelgid Regulation,*
- ◆ *Blueberry Maggot Control Regulation,*
- ◆ *Domestic Bacterial Ring Rot Regulation,*
- ◆ *Golden Nematode Regulation,*
- ◆ *Little Cherry Control Regulation,*
- ◆ *Northern American Gypsy Moth Eradication.*



Private Managed Forest Land Act

This Act allows the Private Managed Forest Land Council to be responsible for private managed forest land other than land that is in a tree farm licence area, a woodlot licence area or a community forest agreement area with respect to inclusion, exclusion, subdivision and non-forestry uses. In addition, the Council is responsible for ensuring that forest management practices, including agroforestry, on private land within the FLR complies with prescribed environmental standards of forest practice for the protection of fish habitat, water quality, soil conservation and critical wildlife habitat.



Public Health Act

Administered by the Ministry of Health, this Act includes regulations of farm practices that may result in a health hazard. A health hazard may occur when nutrients, contaminants or pathogens are discharged to land, water or air which pose a public health problem. Spills of potentially harmful substances must be reported to the Local Health Authority. Under this Act, the Local Health Authority must investigate any health hazard and has authority to order the hazard to be eliminated.

Food Premises Regulation. This Regulation applies to any place where food intended for public consumption is sold, offered for sale, handled, prepared, packaged, processed, stored, etc. Food premises must be connected


to a source of potable water and be connected to a waste disposal system, among other requirements.

- ◆ SECTION 4: contains food premises requirements.
- ◆ SECTION 7: every operator of food premises must immediately notify a health officer of any circumstance that exists in the food premises that may cause a health hazard.
- ◆ SECTION 14: contains food processing requirements.
- ◆ SECTIONS 23 AND 24: contain food safety management requirements.

Health Hazards Regulation. This regulates health hazards and the distance of wells from possible sources of contamination

- SECTION 8 (1) A person who installs a well, or who controls a well installed on or after July 20, 1917, must ensure that the well is located at least:
- (a) 30 m from any probable source of contamination,
 - (b) 6 m from any private dwelling, and
 - (c) Unless contamination of the well would be impossible because of the physical conformation, 120 m from any cemetery or dumping ground.
- (2) A person who controls a well installed before July 20, 1917, must
- (a) Remove any source of contamination within the distances set out in subsection (1), or
 - (b) Subject to subsection (3), close the well in accordance with the *Groundwater Protection Regulation*, B.C. Reg. 39/2016.
- (3) Subsection (2) (b) does not apply to a well located within 6 m of a private dwelling unless it can be shown that the well should be abandoned for a reason other than proximity to a private dwelling.
- (4) A well that does not meet the requirements of this section is prescribed as a health hazard.

Sewerage System Regulation. This Regulation applies to domestic sewage disposal systems.

- ◆ SECTION 2: states Regulation applies to a holding tank, single family residence or duplex, with a daily flow of less than 22,700 litres.
- ◆ SECTION 3: requires domestic sewage be discharged into a public sewer, a holding tank or a sewerage system so as not to cause, or contribute to, a health hazard.
- ◆ SECTION 3.1 requires separations distances from wells (as outlined in the  [Sewerage System Standard Practice Manual](#)) to be at least:
 - 15 m from a holding tank.
 - 30 m from a sewerage system.
 - This distance can be varied before construction if a professional competent in the area of hydrogeology provides written advice that it would not likely cause a health hazard.
- ◆ SECTIONS 4 AND 5: regulate holding tanks.
- ◆ SECTIONS 6 TO 10: regulate sewerage systems.
 - Only an **authorized person** can construct and maintain systems (having taken training).
 - Applies to **new systems**, or **existing ones** under going significant alteration or repair.
 - The **owner is responsible** to have maintenance done and to keep records.
 - The installation of a septic system must be conducted by a Registered Onsite Waterwater Practitioner with the Applied Science Technologists and Technicians of BC or a Professional Engineer with Engineers and Geoscientists BC.



Riparian Areas Protection Act

The *Riparian Areas Protection Act* creates the authority for government to enact Provincial directives to protect areas that border streams, lakes, and wetlands. The *Riparian Areas Regulation* (RAR) calls on local governments to protect riparian areas during residential, commercial, and industrial development by ensuring that a Qualified Environmental Professional (QEP) conducts a science-based assessment of proposed residential, commercial, and industrial activities in riparian areas.

With this Act, and through the *Riparian Areas Regulation*, local governments in certain regions of the Province are able to protect riparian areas during residential, commercial, and industrial development by ensuring that a Qualified Environmental Professional (QEP) conducts a science-based assessment of proposed activities. This includes residential buildings on land zoned for agricultural purposes. Section 12 provides Provincial directives on streamside protection.

The RAR only applies to the residential portion of the farm and only in the southern half of BC. The RAR does not apply to farm practices as defined in the *Farm Practices Protection Act*. In some cases, this can lead to the misunderstanding that the RAR does not apply to lands zoned for agriculture, or in the Agricultural Land Reserve (ALR). The RAR does apply to these lands for activities that are not *farm practices*, for example residential construction. It is important to note that local governments have the ability to establish bylaws that apply to agricultural lands, and some have implemented setbacks for agricultural buildings that complement the setbacks designated under RAR.



Transportation of Dangerous Goods Act

Administered by Ministry of Attorney General, this Act establishes requirements to provide for the safe transport of goods deemed to be dangerous. Regulations specify substances and establish classes of dangerous goods.



Water Sustainability Act

Water Sustainability Act (WSA) is the principal law for managing the diversion and use of water in British Columbia. The WSA establishes that all water in *streams* and *groundwater* in British Columbia is owned by the Crown on behalf of the residents of the Province.

A stream is very broadly defined as being any above ground natural water body or watercourse, including springs, glaciers, lakes, ponds, rivers, creeks, and wetlands. Groundwater is defined as any water that is found naturally beneath the surface of the earth.

Under the WSA no person may divert water from a stream or from groundwater unless the person holds an authorization or the diversion and use of water is allowed by the Act or under a regulation. An authorization can take the form of a "use approval", which allows for short term use of water for up to 24 months, or a water licence which establishes a long term water right. Authorization holders have some responsibilities including the need to pay water fees and rentals and make beneficial use of the water they are authorized to divert, store and use.

In most cases any person who diverts water for use or storage must apply to the province for the right to use the water and pay an annual rental fee for that use. The requirement for groundwater licensing for non-domestic (e.g., farm or business use) came into force on February 29, 2016 and applies to new groundwater users as well as those who began using groundwater prior to February 29, 2016.

The requirement to obtain a licence for diversion and use of water from streams or groundwater applies regardless of whether the water source is on private or Crown land. However, the WSA and the regulations allow diversion and use of water without an authorization for certain uses:

- ◆ Diversion of groundwater or unrecorded stream water for a domestic purpose;
- ◆ Diversion of water to extinguish a fire;
- ◆ Diversion of water by a well driller to drill a well;
- ◆ Diversion and use of water for small scale placer mining and mineral exploration; and
- ◆ Diversion of water for a flow test or to test water quality or quantity.

Other key aspects of the WSA include:

- ◆ **Managing water during scarcity**, which involves the regulation of diversion of water use to manage periods when there is insufficient water to meet licensed demand or if a fish population is threatened. Regulation can take the form of a Temporary Protection Order, or a Fish Population Protection Order. The difference between these is that a Fish Population Protection Order can override the WSA First in Time, First in Right (FITFIR) system.
- ◆ **Changes in and about streams:** There are two processes that allow a change to be made in and about a stream. A "Change Approval" is a written authorization to make changes in and about a stream and normally involve a more significant or larger change. A "Notification" is for low risk changes that have minimal impact on the environment or third parties

The following sections of the WSA may be useful to agricultural operators in particular:

- ◆ SECTION 6: Prohibits diverting water without a licence except in limited circumstances for fire suppression, domestic use and mineral prospecting.
- ◆ SECTION 11: Requires approvals for making changes in and about streams.
- ◆ SECTIONS 16 AND 17: May require mitigation measures on (sensitive) streams where a water diversion or use is authorized.
- ◆ SECTION 45: No new dams on protected rivers.
- ◆ SECTION 88: In the case of low or impending low water, for the purposes of protecting the fish population, the minister may make an order regulating the diversion, rate of diversion, time of diversion, storage, time of storage and use of water from the stream by holders of licences or approvals in relation to the stream or aquifer connected hydraulically to the stream.
- ◆ SECTION 128: Regulations respecting sensitive streams.

The following is a summary of WSA regulations:

Water Sustainability Regulation. There are a number of purposes for this regulation, which include:

- ◆ Establishing application requirements for WSA authorizations, including licences and use approvals for stream water and groundwater;
- ◆ Defining processes for making changes in and about streams, and in particular delineating changes that can be made by notification to government and those that must be made after making application for and being granted a Change Approval;
- ◆ Defines "sensitive streams" in British Columbia;
- ◆ Establishes procedures for licence holders to expropriate land reasonably required for the construction, maintenance, improvement or operation of works authorized or necessarily required under the licence; and
- ◆ Defines certain water uses that may occur under the regulation rather than under a licence or use approval, such as short term use of water for well drilling purposes and use of deep saline groundwater in north east BC.






British Columbia Dam Safety Regulation. The objective of this Regulation is to mitigate loss of life and damage to property and the environment from a dam breach by requiring dam owners to: inspect their dams, undertake proper maintenance, report incidents and take remedial action and ensure that the dams meet current engineering standards.

Ground Water Protection Regulation. This Regulation applies to all well pump installers and well drillers in BC. It regulates their registration and qualification and provides for groundwater protection regarding well sealing, identification, deactivation, capping, flood proofing of wells with the "*Code of Practice for Construction, Testing, Maintenance, Alteration and Closure of Wells in BC*".

Water Sustainability Fees, Rentals and Charges Tariff Regulation. This regulation specifies the water-related fees for all water uses, including water power.

The right to divert and use surface water or groundwater is authorized by a licence or approval. Licences and approvals are granted in accordance with the statutory requirements of the *Water Sustainability Act*. If you use surface water or groundwater for any non-domestic purpose, you require a water licence under the *Water Sustainability Act*.

Apply for a water licence at FrontCounter BC. Approval is also required for any work in or about a stream. Links provided for the following documents:

-  [Understanding a Water Licence](#)
-  [Water Rights in British Columbia](#)
-  [Water Licence Holders Rights and Obligations](#)
-  [A Users Guide to Working In and Around Water \(Changes in and About Streams\)](#)
-  [Standards and Best Practices for Instream Works \(Changes in and About Streams\)](#)

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Water Protection Act

Administered by ENV, this Act will not affect most producers. It:

- ◆ Confirms the ownership of surface water and groundwater in the Province.
- ◆ Maintains existing bulk water removal rights.
- ◆ Prohibits large-scale diversion of water between the major watersheds of BC.



Weed Control Act

Administered by MAFF, this Act places the responsibility for the control of noxious weeds on the occupiers of the land. It provides for the appointment of inspectors to ensure compliance and, failing that, for a method by which they can control weeds and recover the costs from the occupier. Weed Control Committees may be established by municipal councils to administer the Act within a municipality. Committees report to the municipal council and the Minister.



Wildfire Act

As of March 31, 2005, this Act regulates **open fires within 1 km of forest land or grass land**. It is administered by the Ministry of Forests, Lands, Natural Resource Operations and Rural Development.

- ◆ SECTION 2: requires reporting a forest land or grass land fire.
- ◆ SECTION 3: prohibits dropping, releasing or mishandling a burning substance, or any other thing that the person reasonably ought to know is likely to cause a fire.
- ◆ SECTION 4: states Section 5 & 6 do not apply to the City of Vancouver or a municipality or a local government having an open fire bylaw.
- ◆ SECTION 5 & 6: regulates non-industrial and industrial open fires.

Wildfire Regulation. This Regulation applies to all **open fires within 1 km of forest land or grass land.**

- ◆ SECTIONS 4 – 12: outline fire prevention requirements.
- ◆ SECTIONS 13 – 17: outline fire control requirements.
- ◆ SECTIONS 18 – 24: outline permissible open fires (category 1, 2, 3 and resource management fires).
- ◆ A burn registration number is required for category 3 fires – call toll free **1-888-797-1717**.
- ◆ SCHEDULE 1: outlines three Danger Regions of BC.
- ◆ SCHEDULE 2: defines five different Fire Danger Classes using a matrix of Buildup Index and Fire Weather Index.
- ◆ SCHEDULE 3: provides restrictions on High Risk Activities as required in Section 6(3).

Category 1 Open Fire. Camp fires and piles under 1 m in height and diameter

Category 2 Open Fire. For open fires that are:

- ◆ No more than 2 piles that are less than 2 m in height and 3 m in width.
- ◆ Or burns of stubble or grass over an area not exceeding 0.2 ha.

Category 3 Fires. For open fires that are:

- ◆ Burning material in 3 or more piles not exceeding 2 m in height and 3 m in width.
- ◆ Or for 1 or more piles exceeding 2 m in height and 3 m in width.
- ◆ Or for one or more windrows, or for burning stubble over an area exceeding 0.2 ha.

 www.bcwildfire.ca for fire information including the Fire Danger Class information for areas of BC



Wildlife Act

Administered by ENV, this Act protects wildlife designated under the Act from direct harm, except as allowed by regulation (e.g., hunting or trapping), or under permit. Legal designation as Endangered or Threatened under the Act increases the penalties for harming a species. The Act also enables the protection of habitat in a Critical Wildlife Management Area.

- ◆ SECTION 4: allows designation of **wildlife management areas**.
- ◆ SECTION 7: makes it an offence to alter, destroy or damage **wildlife habitat** within a wildlife management area.
- ◆ SECTION 9: makes it an **offence to disturb**, molest or destroy a muskrat or beaver house, den or dam unless you are a licensed trapper or have lawful authority to protect property or maintain irrigation or drainage facilities.
- ◆ SECTION 33.1: makes it an **offence to feed** dangerous wildlife (bear, cougar, coyote or wolf) unless as approved hunting or trapping.
- ◆ SECTION 34: makes it an **offence to possess**, take injure, molest or destroy the nest of an eagle, peregrine falcon, osprey, heron or burrowing owl or the **nest of any bird** not mentioned above when the nest is occupied by the bird or its egg.
- ◆ SECTION 39: makes it an offence to **hunt or trap on cultivated land** or on a Crown land grazing lease while occupied by livestock without the lessee or owners consent.
- ◆ SECTION 89: gives an officer **powers of entry** on proof of identification

This Act has been amended by the *Fish Protection Act* to have wildlife include aquatic plants. Aquatic invertebrates or plants can be considered as endangered or threatened..



Workers Compensation Act

This Act has conditions under the *Occupational Health and Safety Regulation* that pertain to pesticide management:

- ◆ SECTION 6.77(1): requires that a worker who mixes, loads, cleans equipment, or applies moderately or very toxic pesticides hold a valid applicators certificate.
- ◆ SECTION 6.93(1): requires that an employer take all reasonable precautions to prevent the drift or spread of a pesticide.
- ◆ SECTION 6.101: requires that a number of factors be considered when designing pesticide storage; pesticide compatibility, quantity, and containment of spills.

A.3 Federal Government



Federal acts are available on the Internet at laws-lois.justice.gc.ca



Canada Agricultural Products Act

This Act has conditions under the *Fresh Fruit and Vegetable Regulation* requiring that no stagnant or polluted water is used in the washing or fluming of the produce, and only potable water is used in the final rinsing of the produce to remove any surface contaminant before packing



Canadian Environmental Assessment Act

Administered by the Canadian Environmental Assessment Agency (an independent agency reporting to the Minister of Environment), this Act applies only to federal lands, works (such as federally-funded projects) and undertakings, lands subject to the Indian Act, as well as lands in respect of which Indians have interests.

Many emission sources that lie beyond provincial authority are subject to federal regulation, standards and guidelines. These include motor vehicles and fuels, marine vessels, railways and off-road engines applicable to agricultural vehicles.

The *Off-Road Compression-Ignition Engine Emission Regulation* introduces emission standards for diesel engines used in off-road applications such as those typically found in construction, mining, farming and forestry. Emissions from engines used in agriculture that are newer than 2006 are subject to the regulation.



Canadian Environmental Protection Act

Administered by Environment Canada with Health Canada, this Act applies to all lands in Canada and concerns toxic substances, hazardous materials, new substances, export and import of substances, fuels, international air pollution, ocean disposal, etc.



Feeds Act

Administered by Agriculture and Agri-Food Canada, this Act controls and regulates the sale of animal feeds. The manufacture, sale or importation into Canada of any feed must be registered, packaged and labeled to prescribed standards.



Fertilizers Act

Administered by Agriculture and Agri-Food Canada, this Act covers agricultural fertilizers. Fertilizers or supplements may only be sold in or imported into Canada if they have been registered, packaged and labeled to prescribed standards.

Fisheries Act

Administered by both Fisheries and Oceans Canada and Environment Canada (also can be administered provincially by ENV), this Act is established to conserve and protect Canada's fisheries resources, including fish habitat. It applies to all Canadian fisheries waters, including ditches, channelized streams, creeks, rivers, marshes, lakes, estuaries, coastal waters and marine offshore areas. It also applies to seasonally wetted fish habitat such as shorelines, stream banks, floodplains, intermittent tributaries and privately owned land.

The Act includes provisions for stiff fines and imprisonment to ensure compliance.

The purpose of this Act is to provide a framework for (a) the proper management and control of fisheries; and (b) the conservation and protection of fish and fish habitat, including by preventing pollution.

This Act was updated in 2019 and now empowers the Minister to make regulations for the purposes of the conservation and protection of biodiversity.

The definition of *fish habitat* is:

"water frequented by fish and any other areas on which fish depend directly or indirectly to carry out their life processes, including spawning grounds and nursery, rearing, food supply and migration areas." The quantity, timing and quality of the water flow that are necessary to sustain fish habitat are also deemed to be a fish habitat. Furthermore, serious harm to fish includes the death of fish or any permanent alteration to, or destruction of, fish habitat.

Provisions of the *Fisheries Act* relevant to agricultural operations include:

- ◆ Protection for all fish and fish habitats;
- ◆ Prohibition against the death of fish or the 'harmful alteration, disruption or destruction of fish habitat';
- ◆ A permitting framework and codes of practice to improve management of large and small projects impacting fish and fish habitat ;
- ◆ Protection of fish and/or fish habitats that are sensitive, highly productive, rare or unique; and
- ◆ Consideration for the cumulative effects of development activities on fish and fish habitat.

Food and Drugs Act

The Food Directorate of the Health Products & Food Branch, Health Canada, decides the type and form of food products that can be sold in Canada. It is also responsible for determining the safety of potential residues of agricultural chemicals in food and assessing dietary exposure of the public to agricultural chemicals.

Under the authority of the Act, regulations set maximum residue limits of agricultural chemical residues permissible in both domestic and imported food when it first enters commerce. Food with levels of agricultural chemicals exceeding established maximum residue limits is considered adulterated and the crop may be seized and removed from sale.

Health of Animals Act

The Health of Animals Act enables regulatory control over Specified Risk Material (SRM), so that it does not enter the animal feed system. Regulations under this Act (enhanced feed ban) require that producers do not feed any animal products containing SRM to livestock and that abattoirs properly identify SRM to ensure that it is removed from the feed system. A permit from the Canadian Food Inspection Agency (CFIA) is required to handle, transport or dispose of cattle carcasses and certain cattle tissues. Composting processes do not destroy SRM, therefore composted mortalities must be handled in accordance with CFIA regulations as the compost is still considered to contain SRM.

Migratory Birds Convention Act, 1994

Under this Act, the federal government is responsible for implementing a Convention between Canada and the U.S. for the protection of migratory birds and nests. The Canadian Wildlife Service of Environment Canada administers the regulations.

- ◆ SECTION 5: of the Act states that , no person shall, without lawful excuse,
 - Be in possession of a migratory bird or nest; or
 - Buy, sell, exchange or give a migratory bird or nest or make it the subject of a commercial transaction.
 - **Except** as authorized by the regulations.

Under the Regulations:

- ◆ SECTION 6: no person shall: disturb, destroy or take a nest, egg, nest shelter, eider duck shelter or duck box of a migratory bird without permit.
- ◆ SECTION 24(1): any person may, without a permit, use equipment, other than an aircraft or firearms, to scare migratory birds that are causing, or are likely to cause damage to crops or other property (other control measures require a permit).
- ◆ SECTION 33: no person shall introduce into Canada for the purpose of sport, acclimatization or release from captivity a species of migratory bird not indigenous to Canada except with the consent in writing of the Director.
- ◆ SECTION 35(1): prohibits the deposit of oil, oil wastes or any other substance harmful to migratory birds in any area frequented by migratory birds.

Migratory waterfowl populations create demands on the use of adjacent agricultural lands. Under the Act, it is an offence to harm the habitat of any migratory bird while the bird is resident at the site or to release any substance (including pesticides) harmful to migratory birds into areas frequented by them.

Native birds not protected by this Act (grouse, quail, pheasants, ptarmigan, hawks, owls, eagles, falcons, cormorants, pelicans, crows, jays and kingfishers) are protected by the Provincial *Wildlife Act*. Introduced species are not protected (European starling, house sparrow and crested myna).

Pest Control Products Act

Under this Act and its regulations, Health Canada have the authority to regulate pest control products used in agriculture, forestry, industry, public health and domestic situations.

This Act is intended to ensure that no person shall store, display, distribute or use a pest control product under conditions that are unsafe to human or animal health or that will adversely affect the environment.

Pest control products include herbicides, fungicides, insecticides, rodenticides, biological controls such as bacteria and viruses and antimicrobial agents such as those used in wood preservation, water purification systems and material preservatives. The intent of the legislation is to ensure the safety, merit and value of pesticides used in Canada.

Pest control products must be registered in Canada for specific uses and modes of application. This requires health and environmental assessments of impact. Provisions exist in the Act to approve the use of pest control products not registered in Canada for uses registered in the U.S., if no acceptable alternative control is available. The expanded use of registered products for uses not registered on the label may also be granted under specific circumstances.

Pest control products must have Canadian registration to be used legally in Canada. Registered products bear a *Pest Control Products Act (PCP)* registration number on the label. It is an offence under the Act and its regulations to use an unregistered pesticide or to use a product in a way that is inconsistent with the directions or limitations as shown on the product label.

Plant Protection Act

Administered by Agriculture and Agri-Food Canada, this Act is to protect plant life and the agriculture and forestry industries by preventing the importation, exportation, and spread of injurious pests.

Species at Risk Act

The purpose of this Act is to prevent native species in Canada from becoming extirpated or extinct, to provide for the recovery of endangered or threatened species and to manage species of special concern to prevent them from becoming endangered or threatened. Once a species is legally listed, the Act requires that recovery strategies be developed for extirpated, endangered and threatened species, and that action plans be developed where recovery is feasible.

- ◆ Schedule 1 of the Act sets out the legal list of species at risk (extirpated, endangered, threatened and special concern) in Canada.

Where the Act applies, it makes it illegal to kill, harm, harass, capture or take a species at risk, or to possess, collect, buy, sell or trade any individual or parts of an individual that is at risk. The Act also prohibits the damage or destruction of either the residence (for example, the nest or den) or the critical habitat of any species at risk. Critical habitat is legally identified in a posted recovery strategy or action plan.


While the Act applies to all land and waters in Canada, these prohibitions only apply to areas of federal jurisdiction including migratory birds, all waters (sea and fresh) in Canada, as well as to all federal lands, including Indian reserves and national parks, and the airspace above them.

On private land, the (SARA) prohibitions apply only to:

- ◆ Aquatic species at risk; and
- ◆ Migratory birds listed in the *Migratory Birds Convention Act, 1994* and also listed as endangered, threatened or extirpated in Schedule 1 of the Act.

The provisions of the *Species at Risk Act* (known as the 'safety net') could be invoked on BC crown and private lands using a federal order under the Act if provincial action is not sufficient to protect listed species.

Note that SARA prohibitions do not apply to species of special concern, and that species at risk in Canada may also be protected by provincial or territorial laws.

More information about how the Act applies on private land can be found on the *Species at Risk Act* public registry at:  www.sararegistry.gc.ca

Transportation of Dangerous Goods Act, 1992

Under this Act, Transport Canada is responsible for regulating the handling and transportation of poisonous substances, flammable and combustible liquids and other products hazardous to the environment. The Act has been adopted as provincial legislation and is administered by the BC Ministry of Transportation and Infrastructure.

Certain dangerous goods cannot be transported unless requirements are met about shipping documents, special product labels, vehicle placards and safety procedures. Training in special safety procedures and certification of individuals may also be required.

Dangerous goods may include pesticides. Transportation of large quantities (more than 500 kg) of pesticides requires shipping documents, special product labels and vehicle placards.

This Act and *Transportation of Dangerous Goods Regulations* provide requirements for the handling and transportation of "poisonous substances" which includes pesticides. Farmers transporting more than 1,500 kg of pesticides in a licensed farm vehicle more than 100 km must comply with special requirements. Farmers moving a sprayer containing more than 6,000 litres of spray mixture for more than 100 km on a public road must comply with special requirements.

Wildlife Act

Administered by the Canadian Wildlife Service, this Act makes provision for Environment Canada to work by itself or in cooperation with others to acquire lands for the research, conservation and interpretation of migratory birds. Wildlife areas established under this Act are called National Wildlife Areas.

A.4 Enforcement By Regulatory Agencies

Municipal Enforcement of Local Bylaws

Enforcement varies with each local government. Under the Local Government Act, local government has the ability to enforce bylaws through a fine, imprisonment, or both.

Local government can authorize officers, employees and agents of a municipality to enter on a property to ascertain whether a requirement is being met or regulations are being observed. They may also authorize the use of ticketing by a bylaw enforcement officer.

Provincial Enforcement of the *Environmental Management Act*

Note that Provincial Acts and Regulations make no provisions for “nonconforming status”, as does local government legislation.

Code of Practice for Agricultural Environmental Management (AEM Code). The *AEM Code* applies to manure, agricultural by-products, and wastes used and stored at agricultural operations. The *AEM Code* is enforced by provincial Environmental Protection Officers. An officer may come on site to verify compliance with the *Code* as part of a scheduled inspection of agriculture sites or in response to a complaint. To prepare for a site visit, ensure your agricultural operation is meeting the requirements of the *Code* and keep relevant records for at least 5 years.

The province’s response to non-compliance is based on the level of environmental, human health or safety impacts (actual or potential) and the likelihood of compliance. Responses are also based on history, willingness and capacity to comply. A risk-based non-compliance decision matrix is used to determine which tools to apply to restore compliance quickly and to encourage future compliance.

For further information:

Requirements of the *AEM Code*: www2.gov.bc.ca/gov/content/environment/waste-management/industrial-waste/agriculture/regulation-requirements

How compliance under *EMA* is assessed: gov.bc.ca/environmentalcompliance

Non-compliance decision matrix: www2.gov.bc.ca/gov/content/environment/natural-resource-stewardship/natural-resource-law-enforcement/environmental-compliance/how-compliance-is-assessed

 [Environmental Compliance](#)

Work “In and About a Stream” under the Provincial *Water Act*

Any work ‘in and about a stream’ requires approval from provincial and federal agencies. A detailed publication from the Ministry of Environment and Climate Change Strategy, “Standards and Best Practices for Instream Works”, is available at the following web site:

 <http://www.env.gov.bc.ca/wld/documents/bmp/iswstdsbpsmarch2004.pdf>

Federal Enforcement of the *Fisheries Act*

This is federal legislation specifically designed to protect fish and fish habitat. Fish habitat includes spawning grounds and nursery, rearing, food supply and migration areas on which the fish depend **directly** or **indirectly**. Fish do not need to actually physically use an area or be in the area to have the area defined as habitat. Similarly, if they only use it for a small part of the year, it is habitat. Habitat includes the riparian vegetation. In other words, if it influences the life of fish it is protected.

Fish habitat may be created on a farm when a farm project is completed; for instance, when a drainage ditch is dug that empties into a stream and is accessible or used by fish. The ditch is considered an extension of the stream and the *Fisheries Act* provisions will apply.

Primary sections of this *Act* that producers need to be aware of are:

- ◆ Harmful alteration, disruption and destruction of fish habitat.
- ◆ Introduction of a deleterious substance affecting either fish or fish habitat:
 - This could also be pollution and fall under the provincial *Environmental Management Act* - in such cases where pollution impacts fish or fish habitat, charges may be pursued under both acts; ENV and Fisheries and Oceans Canada may jointly or independently investigate.
- ◆ Proper screening of water intakes.
- ◆ Destruction of fish by means other than fishing.
- ◆ Allowing safe passage of fish.
- ◆ Minimum stream flows for fish.

Fisheries and Oceans Canada Authorizations. When planning work “in and about a stream” (any water body) it is the landowner’s responsibility to ensure that the work or activity does not cause a harmful alteration, disruption or destruction of fish habitat, except where authorized by the Minister or his designate. It is also the landowner’s responsibility to ensure that there is no deposit of any deleterious substance of any type in water frequented by fish or in any place under any conditions where the deleterious substance may enter such waters.

The types of activities that typically require Fisheries and Oceans Canada authorization include; rip rap; riparian alteration (such as removing streamside vegetation); channel alteration (straightening, redirecting, side channel filling, wetland draining); dredging; ditch cleaning; construction close to streams or lakes (fill, retaining walls, docks, bridges, diking); and driving through streams (fording).

Authorization can be obtained by contacting Fisheries and Oceans Canada (DFO) directly. Arrangements and procedures are in place with some provincial agencies, local government, or in some cases, producer groups, to assist in identifying situations requiring authorization.

Where a charge indicates “introduction of a deleterious substance” has occurred it means:

- ◆ A substance when added to any water degrades or alters or forms part of a process of degradation or alteration of the quality of that water so that it is rendered or is likely to be rendered deleterious to fish or fish habitat or to the use by man of fish that frequent that water.

Unlike provincial legislation that refers to “wastes”, “contamination”, or “pollution”, the federal *Fisheries Act* refers to depositing and placing a deleterious substance, not only the resulting impact that may occur to the environment.

A publication from the Fisheries and Oceans Canada, “Complying with the *Fisheries Act*” (containing extracts from the *Fisheries Act* relating to the habitat protection and pollution prevention provisions), is available at the following web site

 www-heb.pac.dfo-mpo.gc.ca/publications/pdf/fishhablaw.pdf

A.5 Information For Landowners

It is important to get a basic understanding of the “rules”, such as the main Acts, as well as your “rights and responsibilities.” MAFF publications, your producer associations, and the enforcement web sites above can be a start.

Use beneficial management practices and review operations on your farm to identify potential sources of pollution. This may be achieved by completing an Environmental Farm Plan. Check with MAFF to see if programs might be available to help reduce costs or provide expertise to help resolve concerns. In this manner, improvements are made on your terms, as your time and resources are available.

If an enforcement officer informs you of an issue, be polite and find out what the issue or problem is. Try to keep an open mind in order to get to the root of the issue. Try to identify and accept the problem then try to think of changes in management or practices would alleviate the concern. In many cases, relatively minor changes can improve or eliminate the problem.

Take notes, keep track of what occurs when talking to an enforcement officer and focus your attention on a solution. Consider first cooperating fully to get the problem under control, and then, if necessary, dealing with the issue of blame, or who caused the problem. While it is reasonable for you to cooperate, you do not have to incriminate yourself. At some point if you are uncomfortable or do not understand the situation in entirety, you may want to seek advice from your industry association or a lawyer.

Influencing Factors in a Prosecution. Five main factors can influence the prosecution of a case. You have some control over the first four of these:

1. **Your Due Diligence** - the need to foresee and prevent a problem before it occurs as well as your reaction to a problem:
 - ◆ Diligence is defined in the dictionary as “constant and earnest effort”.
 - ◆ Due diligence is the action that would be expected, and ordinarily exercised by, a reasonable and prudent professional or expert in the field under the circumstances; *it may not be just the knowledge and skill of an ordinary person*; put another way, an accused must take all reasonable steps to prevent an infraction, however, this does not mean the accused must take all conceivable steps.
 - ◆ Due diligence is not something measured by an absolute standard but depends on the facts of each case.
 - ◆ You may want to seek assistance or advice to ensure you are in fact exercising ‘due diligence.’

The standard of due diligence will be applied to your actions, or lack of actions, prior to, during and after a problem. Should an *Order* be issued, your due diligence may prevent a *Charge* from occurring, depending on the circumstances. As mentioned previously, something as simple as good communication with ENV will help.

A prosecution is likely to occur in circumstances where the problem occurred as a result of carelessness. On the other hand, if the investigation determined that you did everything that could be reasonably expected under the circumstances (i.e., you exercised all due diligence) and the problem still occurred, then this may be considered by officers and the Court should your case proceed to court.

The only defense against an infraction is to demonstrate you have followed due diligence. It is important to note that the Crown doesn’t have to prove the lack of due diligence; the onus is on you to prove you exercised due diligence.

2. **Mitigative, Corrective, or Restorative Actions You’ve Taken to Minimize the Impact** – this is related to due diligence:
 - ◆ How you deal with a problem that has been pointed out to you may be recognized in any judgment.
3. **Your Compliance History** – how you’ve handled any similar past situations may have a bearing on whether an agency places any trust in you to handle current concerns.
4. **Severity of the Impact** – this concerns the problem itself:
 - ◆ The more severe the problem the more likely prosecution may proceed.
 - ◆ You may have control of the problem through management practices.
 - ◆ Prior due diligence may not only reduce the severity of any potential problem but may also serve you well in the face of legal action.

5. **Sensitivity of the Receiving Environment** – this is beyond your control:

- ◆ While the *AEM Code* under the *Agricultural Waste Control Regulation* and other legislation is in place for all of BC, enforcement may be 'heightened' in the more sensitive environments.
- ◆ If you are located near such environments you will need to be diligent.

The Role of an Environmental Farm Plan

Having an Environmental Farm Plan can be a very good step in demonstrating due diligence:

- ◆ Use the Environmental Farm Plan Workbook.
- ◆ Implement the resulting Action Plan using appropriate Beneficial Management Practices.

 [BC Environmental Farm Plan: Reference Guide](#)

 [BC Environmental Farm Plan: Planning Workbook](#)

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CLIMATIC INFORMATION

The climate of British Columbia can be divided into 4 broad climatic regions. Within these regions there are a variety of microclimates that also affect farm planning.

The Pacific Coast (Lower Mainland and Vancouver Island) experience warm summers and wet winters. In this area climate affects the spreading and storage requirements for manure. Drainage and stormwater are also important issues for farms.

The Southern BC climate encompasses the Cariboo, Kootenays and Okanagan. Summers are warm and dry with frequent hot days, while winters are cold – precipitation is variable over this area. The temperature and precipitation vary from the north to south of the region and from the lower to higher elevations within the valleys. This area contains some of the driest areas in BC. The climate mainly affects irrigation and other water use.

The north east part of the Province (Peace River area) has a prairie climate. The region is under the influence of cold dry arctic air. The area has short cool summers while winters are typically long with persistent snow cover although precipitation is light. In this area the climate mainly affects manure spreading and storage. Water availability and efficient use of resources is also an issue.

The North BC Mountains is mainly alpine and sub-alpine with long cold winters and short cool summers. Agriculture is limited in this area.



B.1 Precipitation

The map in **Figure B.1** shows agricultural areas of the Province that receive greater than 600 mm of total average precipitation during the period of October 1st through April 30th (based on 1981-2010 monthly average precipitation data). It also suggests manure storage capacity for different areas of the Province.

Table B-1 shows the highest total 25-year precipitation that should be designed for when sizing manure storage facilities and predicting runoff volumes. Operation not near one of the locations listed can estimate the highest total 25-year precipitation by multiplying the average precipitation (over the appropriate storage period) by 1.5.

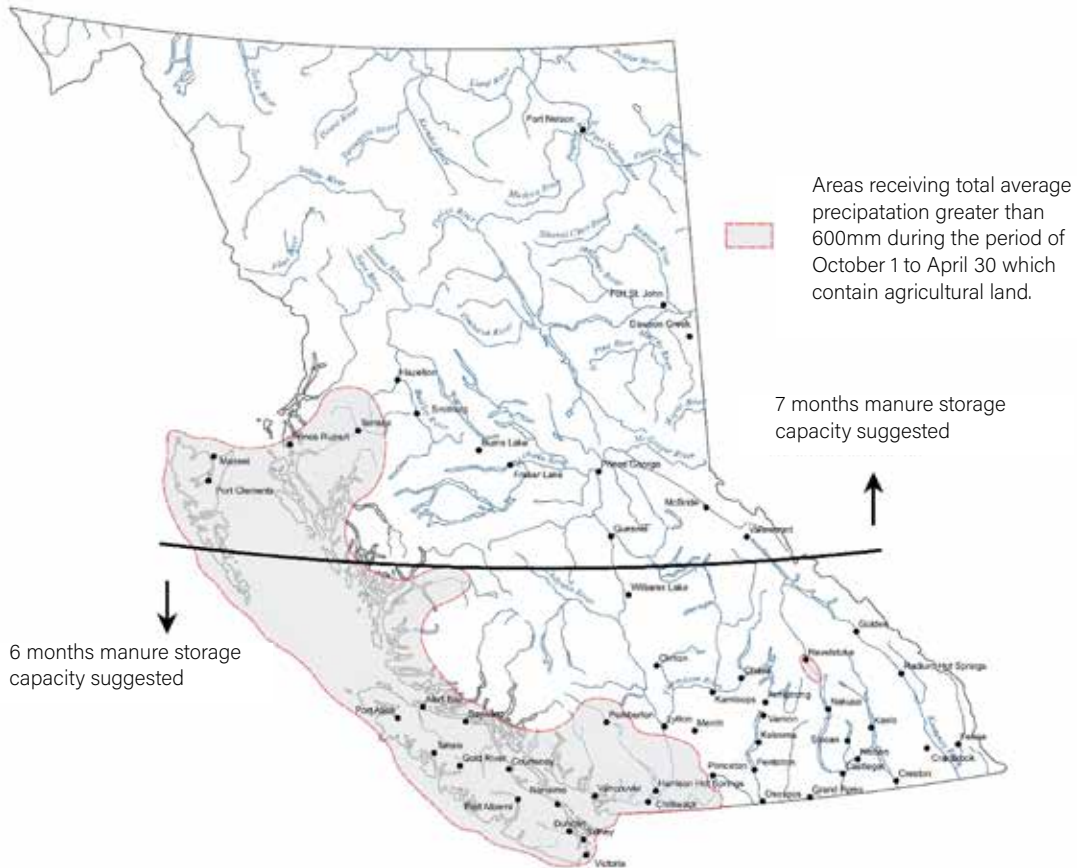


FIGURE B.1 October to April Precipitation & Suggested Manure Storage Capacity for use with Worksheet 1

Table B-1 October to March or April Precipitation That May Need to be Stored for Various BC Locations				Worksheets 1, 2	
Location ¹	Storage Period ² (days)	Precipitation ² (m)	Location ¹	Storage Period ² (days)	Precipitation ² (m)
100 Mile*	180	0.208	Kelowna	180	0.215
Abbotsford	180	1.262	Keremeos	180	0.152
Agassiz	180	1.223	Langley*	180	1.043
Aldergrove*	180	1.127	Lillooet*	180	0.219
Alert Bay*	180	1.261	Lytton*	180	0.304
Armstrong*	180	0.231	Merritt	180	0.177
Ashcroft*	180	0.123	Mission	180	1.262
Barriere*	180	0.217	Nanaimo	180	0.620
Burns Lake*	210	0.304	Oliver*	180	0.150
Campbell River	180	1.197	Osoyoos*	180	0.161
Castlegar	180	0.427	Pemberton*	180	0.783
Chilliwack	180	1.230	Penticton	180	0.146
Comox	180	0.917	Pitt Polder*	180	1.217
Cranbrook	180	0.161	Port Alberni*	180	1.790
Creston	180	0.357	Prince George	210	0.292
Dawson Creek	210	0.178	Princeton	180	0.196
Delta Pebble Hill	180	0.655	Quesnel	210	0.275
Duncan Forestry*	180	0.955	Revelstoke	180	0.567
Enderby*	180	0.253	Saanichton	180	0.707
Fernie	180	0.741	Salmon Arm	180	0.364
Fort St James	210	0.272	Smithers	210	0.288
Fort St. John	210	0.169	Surrey Mun. Hall	180	0.957
Grand Forks	180	0.250	Terrace	210	0.868
Hatzic Lake	180	1.249	Vanderhoof	210	0.270
Hazelton Tamlahan*	180	0.362	Vavenby	180	0.221
			Vernon Coldstream	180	0.222
Hope	180	1.473	White Rock*	180	0.928
Kamloops	180	0.118	Williams Lake	180	0.194

¹ 6 months (180 days) are October to March inclusive, 7 months (210 days) are October to April inclusive.
² Average total precipitation over the past 25 years of records to 2016 for the storage period indicated. Precipitation data taken from The Weather Network, unless otherwise stated. To convert metres to millimeters, multiply the precipitation number by 1,000.
* Alternate data source from UBC: http://www.climatewna.com/ClimateBC_Map.aspx

For locations not listed, use an approximation of 1.5 x the average precipitation.
Equation 19, page 208, uses these precipitations to calculate the runoff to be stored from various surfaces.

B.2 Peak Irrigation Flow Requirements

The map in Figure B.2 gives a general overview of flow rates in BC. If you are near one of the locations listed in Table B-2 use the flow rate from the table in your calculation, or use the flow rate given on the farm's irrigation water licence. Water provided by a water purveyor may already have a preset flowrate.

The flow rates provided here are for general guidance. The elevation of the farm also affects flow rate requirements. Farms at valley bottoms have higher flow rates than farms in the same area at a higher elevation.

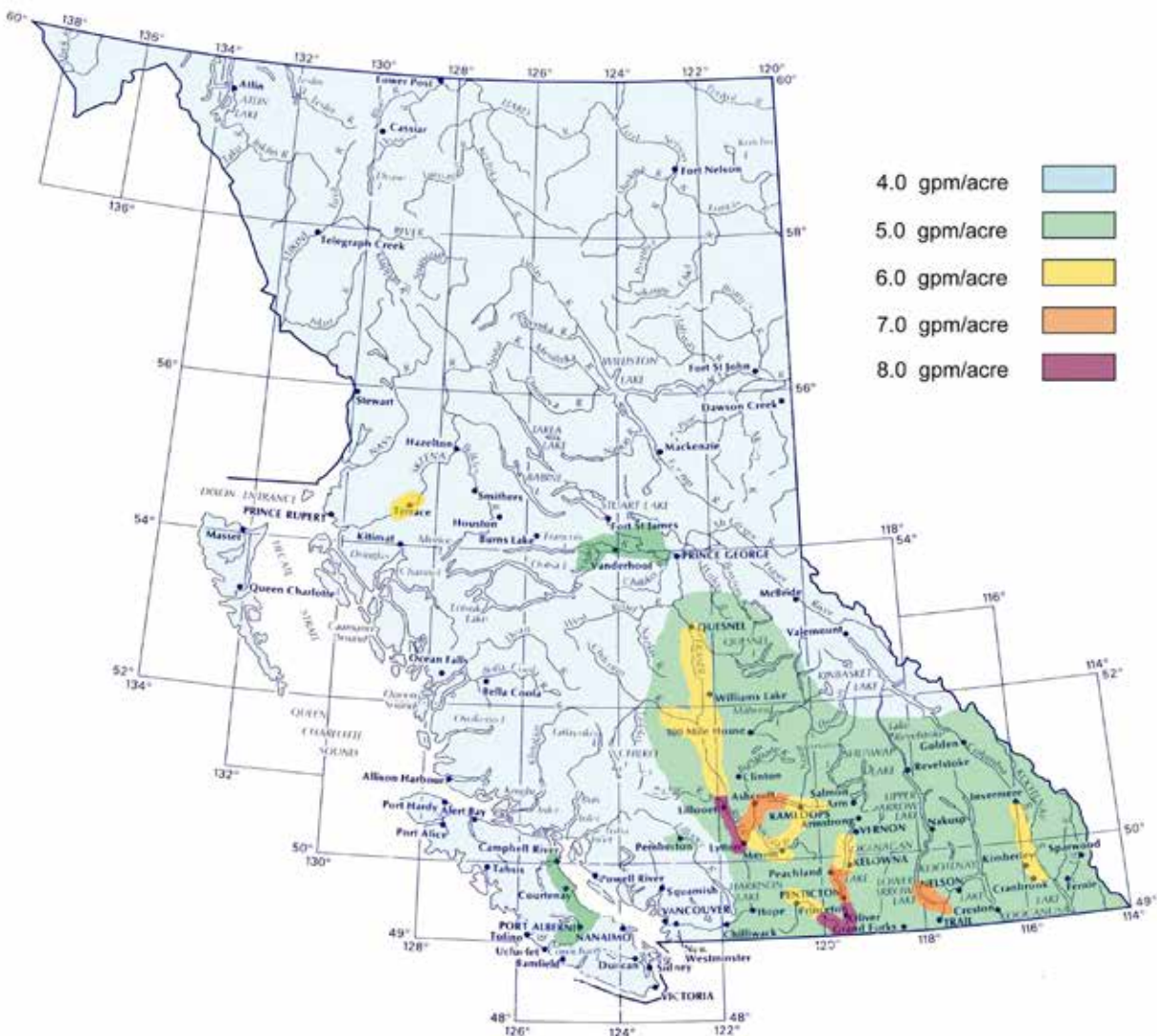


FIGURE B.2 Estimated Peak Irrigation Flow Requirements in BC
US gallons per minute per acre (gpm/acre)

Table B-2 **Estimated Peak Irrigation Flow Rate Requirements for Various BC Locations^{1,2}** **Worksheets 7, 8**

Location	Flow Rates USgpm/acre ³	Location	Flow Rates USgpm/acre ³
Abbotsford	4.0	Kettle Valley	7.0
Agassiz	4.0	Kimberly	7.0
Alexis Creek	4.0	Ladner	4.0
Armstrong	5.0	Langley	4.0
Ashcroft	8.0	Lillooet	7.5
Aspen Grove	5.0	Lister	5.0
Barriere	5.0	Lumby	5.5
Baynes Lake	6.5	Lytton	8.0
Campbell River	5.0	Malakwa	5.0
Canal Flats	6.0	Merritt	6.5
Castlegar	8.0	Nanaimo	5.0
Cawston	8.0	Natal	4.5
Chase	5.0	Notch Hill	5.0
Cherryville	5.0	Oliver	6.5
Chilliwack	4.5	100 Mile House	5.5
Clinton	6.0	Osoyoos	7.5
Cloverdale	4.0	Oyster River	4.0
Comox	5.0	Parksville	4.0
Creston	4.5	Pitt Meadows	4.0
Dawson Creek	4.0	Port Alberni	5.0
Douglas Lake	5.0	Prince George	4.0
Duncan	4.0	Princeton	6.0
Ellison	6.0	Quesnel	6.0
Fort Fraser	5.0	Radium	5.0
Fort Steele	5.5	Riske Creek	7.0
Fort St. John	4.0	Saanichton	4.0
Golden	4.0	Salmon Arm	4.5
Grand Forks	5.0	Smithers	4.0
Grandview Flats	5.5	Spallumcheen	5.0
Grasmere	5.5	Sumas	4.5
Grinrod	4.0	Summerland	6.5
Hazelton	5.0	Terrace	5.5
Hixon	4.0	Vancouver	4.5
Hope	5.0	Vanderhoof	5.0
Invermere	6.0	Vernon	5.0
Kamloops	6.5	Walhachin	6.5
Kelowna	6.0	Westwold	6.5
Keremeos	7.5	Williams Lake	6.0

¹ Values based on a 10% risk (may be short of water 1 in 10 years)

² Based on evapotranspiration values and on average deep-rooted crop in a medium textured soil

³ Multiply the values in US gpm /acre by 0.156 to convert to L/s /ha

B.3 Annual crop water Requirements

The map in **Figure B.3** gives a general overview of annual crop water requirements in BC. If you are near one of the locations listed in **Table B-3** use the annual water requirement from the table in your calculation.

An area with a high peak flow rate will not necessarily mean a high annual irrigation requirement. High summer temperatures mean a high peak flow rate. However, if the irrigation season is short the annual water requirement will be lower than an area with a longer irrigation season. For example: Terrace and Kelowna have the same peak flow rate, but Kelowna has a much longer growing season and therefore a larger annual crop water requirement.

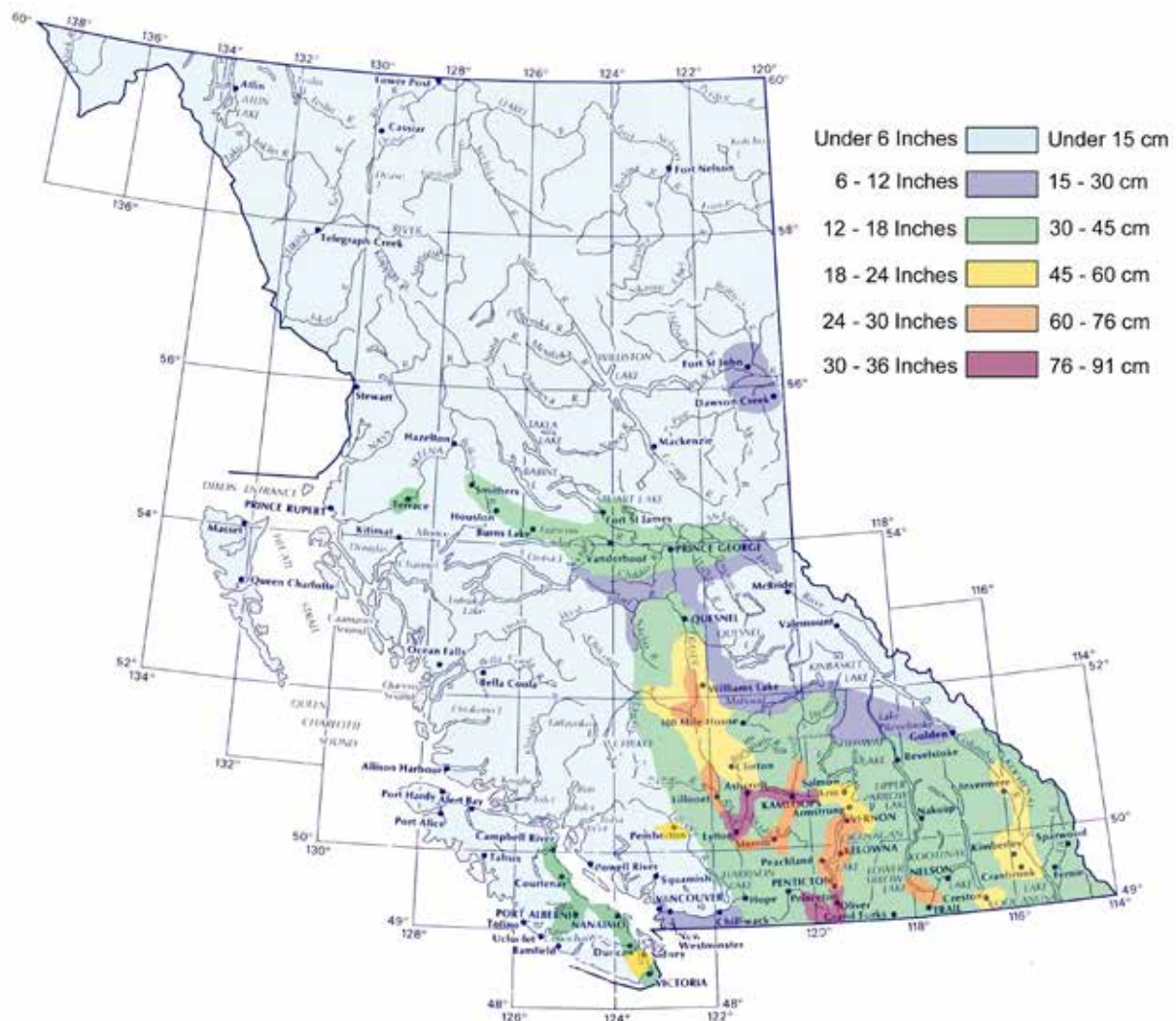


FIGURE B.3 Estimated Annual Crop Water Requirements in BC

Table B-3 Estimated Annual Crop Water Requirements for Various BC Locations

**Worksheets
9, 10**

Location	Depth per Area		Location	Depth per Area	
	inches	mm		inches	mm
Abbotsford	9	220	Kettle Valley	18	457
Agassiz	4	109	Kimberly	17	439
Alexis Creek	11	274	Ladner	8	201
Armstrong	12	311	Langley	6	165
Ashcroft	25	640	Lillooet	19	494
Aspen Grove	13	329	Lister	16	402
Barriere	13	329	Lumby	15	384
Campbell River	10	256	Lytton	25	640
Canal Flats	14	366	Malakwa	9	220
Castlegar	21	531	Merritt	21	531
Cawston	25	640	Nanaimo	10	256
Chase	15	384	Natal	10	256
Cherryville	14	348	Notch Hill	14	366
Chilliwack	5	128	Oliver	24	622
Clinton	17	439	100 Mile House	17	439
Cloverdale	7	183	Osoyoos	25	640
Comox	12	292	Oyster River	6	165
Creston	16	402	Parksville	10	256
Dawson Creek	7	183	Pitt Meadows	6	146
Douglas Lake	16	402	Port Alberni	12	292
Duncan	9	220	Prince George	10	256
Ellison	17	420	Princeton	18	457
Fort Fraser	8	201	Quesnel	9	238
Fort Steele	10	256	Radium	12	311
Fort St. John	7	183	Riske Creek	16	402
Golden	11	274	Saanichton	10	256
Grand Forks	11	274	Salmon Arm	13	329
Grandview Flats	18	457	Smithers	9	220
Grasmere	13	329	Spallumcheen	14	348
Grinrod	7	183	Sumas	6	165
Hazelton	2	55	Summerland	19	494
Hixon	6	165	Terrace	9	220
Hope	9	238	Vancouver	11	274
Invermere	17	439	Vanderhoof	8	201
Kamloops	23	585	Vernon	16	402
Kelowna	19	475	Walachin	20	512
Keremeos	23	585	Westwold	20	512
Kersley	9	238	Williams Lake	13	329

¹ Based on evapotranspiration values and on average deep-rooted crop in a medium textured soil

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PUBLICATIONS & WEBSITES

C.1 Publications and On-line pdfs

 The follow publications are referenced in this Guide for further details on environmentally related subjects.

IAS # is the publication number of the Innovation and Adaptation Services Branch, AFF publications.

  IAS publications are available on the web at:

Title	Date	By	IAS#
A Guide to Agroforestry in BC	2001	Small Woodlands Program Forest Renewal BC	
A Guide to Weeds in British Columbia	2002	AFF www2.gov.bc.ca/assets/gov/environment/plants-animals-and-ecosystems/invasive-species/guidance-resources/guidetoweeds.pdf	
A Users Guide to Working In and Around Water	2009	ENV	
Acidifying Soils	1991	AFF www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/agricultural-land-and-environment/soil-nutrients/600-series/638100-1_acidifying_soils.pdf	638.100-1
Advanced Forage Management	1999	Pacific Field Corn Assoc farmwest.com/resources/books/advanced-forage-management-1999/	
Advanced Silage Corn Management	2004	Pacific Field Corn Assoc farmwest.com/resources/books/advanced-silage-corn-management-2004/	
Agency Contact Requirements For Constructed Ditch Maintenance	2005	AFF / DFO www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/agricultural-land-and-environment/water/drainage-management-guide/543100-1_agency_contact_requirements-drainage_guide_factsheet_no3.pdf	543.100-1

Title	Date	By	IAS#
Agency Contact Requirements For Channelized and Natural Stream Maintenance	2005	AFF / DFO www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/agricultural-land-and-environment/water/drainage-management-guide/543000-1_agency_contact_reqts_channel-natural_stream-drainage_guide_factsheet_no20.pdf	543.000-1
Agricultural Building Setbacks from Watercourses in Farming Areas	2010	AFF www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/agricultural-land-and-environment/strengthening-farming/local-government-bylaw-standards/riparian-setbacks/823400-1_agricultural_building_setbacks.pdf	823.400-1
Agricultural Drainage Criteria	2002	AFF www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/agricultural-land-and-environment/water/drainage/535100-2_agric_drainage_criteria.pdf	535.100-2
Agricultural Watercourse Classification	2005	AFF / DFO www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/agricultural-land-and-environment/water/drainage-management-guide/533500-1_agric_watercourse_classification-drainage_guide_factsheet_no2.pdf	533.500-1
Agriculture GIS – Watercourse Classification	2001	AFF www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/agricultural-land-and-environment/water/drainage-management-guide/533500-1_agric_watercourse_classification-drainage_guide_factsheet_no2.pdf	810.200-1
Agriculture Drip Irrigation Scheduling Calculator Users Guide	2009	Irrigation Industry Association of BC http://www.irrigationbc.com/	
Agriculture Sprinkler Irrigation Scheduling Calculator Users Guide	2009	Irrigation Industry Association of BC http://www.irrigationbc.com/	
An Introduction to Water Erosion Control	2001	Alberta Agriculture http://www1.agric.gov.ab.ca/\$department/deptdocs.nsf/all/agdex2074	

Title	Date	By	IAS#
On-Farm Biogas Development Handbook: For Farmers in British Columbia	2019	AFF www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/agricultural-land-and-environment/waste-management/manure-management/an_overview_of_onfarm_biogas_production.pdf	
B.C. Agricultural Composting Handbook	2019	AFF www2.gov.bc.ca/gov/content/environment/waste-management/industrial-waste/agriculture/regulation-requirements/agricultural-composting	
B.C. Agricultural Fencing Handbook (series of Factsheets)	2003	AFF www2.gov.bc.ca/gov/content/industry/agriculture-seafood/business-market-development/structures-mechanization/agricultural-structures-fencing	
B.C. Agriculture Drainage Manual	1997	AFF www2.gov.bc.ca/gov/content/industry/agriculture-seafood/agricultural-land-and-environment/water/drainage/agricultural-drainage-manual	
B.C. Grasslands Stewardship Guide	1997	NRO / ENV / DFO stewardshipcentrebc.ca/PDF_docs/StewardshipSeries/grasslands.pdf	
B.C. Greenhouse Gas Inventory Report 2012	2012	ENV www2.gov.bc.ca/assets/gov/environment/climate-change/data/provincial-inventory/2012/pir-2012-full-report.pdf	
B.C. Landscape Standard		BC Landscape and Nursery Association www.bcsla.org/sites/default/files/PREVIEW%20Pages%20from%20Landscape_Standard_2012_Updated%20October%2015%2C%202013.pdf	
B.C. Livestock Watering Handbook (series of Factsheets)	2006	AFF www2.gov.bc.ca/gov/content/industry/agriculture-seafood/agricultural-land-and-environment/water/water-supply-conservation/livestock-watering-handbook	
B.C. Irrigation Management Guide	2005	Irrigation Industry Association of BC www2.gov.bc.ca/gov/content/industry/agriculture-seafood/agricultural-land-and-environment/water/irrigation/irrigation-management-guide#:~:text=The%20B.C.%20Irrigation%20Management%20Guide,uses%20of%20the%20water%20resource.	

Title	Date	By	IAS#
B.C. Sprinkler Irrigation Manual	1998	Irrigation Industry Association of BC www2.gov.bc.ca/gov/content/industry/agriculture-seafood/agricultural-land-and-environment/water/irrigation/sprinkler-irrigation-manual	
B.C. Trickle Irrigation Manual	1999	Irrigation Industry Association of BC waterbucket.ca/aw/2006/06/05/b-c-trickle-irrigation-manual-2/	
Beaver Damage Control in Agricultural Areas of B.C.	2001	ENV www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/best-management-practices/beaver-guide.pdf	
Berry Production Guide		AFF www2.gov.bc.ca/gov/content/industry/agriservice-bc/production-guides	
Best Practices Guide for Grapes for British Columbia Growers		B.C. Wine Grape Growers www.bcwgcc.org/best-practices-guide	
Biodiversity and Riparian Areas – life in the green zone		Cows and Fish Program, Alberta www.cowsandfish.org	
Bird Predation Management Plan – Blueberries	2009	AFF www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/agricultural-land-and-environment/strengthening-farming/670300-1_bird_predation_mgmt_for_blueberries.pdf?bcgovtm=CSMLS	670.300-1
Bridge Construction (constructed ditches)	2005	AFF / DFO www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/farm-management/structures-and-mechanization/300-series/373020-1_bridge_construction_drainage_guide_factsheet_no14.pdf	373.020-1
British Columbia Approved Water Quality Guidelines	2006	ENV www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-quality/water-quality-guidelines/approved-water-quality-guidelines	
Game Farm	2014	AFF www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/agricultural-land-and-environment/strengthening-farming/farm-practices/870218-12_game_farms.pdf	870.218-12

Title	Date	By	IAS#
Calibration Worksheet – Boom Sprayer	2015	AFF www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/farm-management/structures-and-mechanization/200-series/234005-2_calibration_worksheet_-_boom_sprayer.pdf	234.005-2
Canadian Farm Buildings Handbook	1988	AAFC openlibrary.org/books/OL15100357M/Canadian_farm_buildings_handbook .	
Canadian Water Quality Guidelines for the Protection of Agriculture Water Uses	1999	Environment Canada ceqg-rcqe.ccme.ca/download/en/313	
Caring For The Greenzone: Riparian Areas and Grazing Management (3rd edition)	2003	Cows and Fish Program, Alberta www.cowsandfish.org	
Cattle Wintering Sites: Managing for Good Stewardship	2001	Alberta Agriculture open.alberta.ca/publications/2448125	
Chemigation Guidelines for British Columbia	1993	AFF www2.gov.bc.ca/gov/content/industry/agriculture-seafood/agricultural-land-and-environment/water/irrigation/chemigation-guidelines	
Choosing and Calibrating Manure Application Equipment	2005	AFF www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/agricultural-land-and-environment/soil-nutrients/600-series/631500-6_calibrating_and_choosing equip_factsheetno8_sep2010.pdf	631.500-6
Climate Change Impacts and Adaptation: A Canadian Perspective	2004	Natural Resources Canada cfs.nrcan.gc.ca/publications?id=27428	
Complying with the Fisheries Act	2020	DFO www.canada.ca/en/environment-climate-change/services/environmental-enforcement/publications/compliance-enforcement-policy-fisheries-act.html	
Conservation Buffers: Design Guidelines for Buffers, Corridors and Greenways	2008	USDA / Forest Service Southern Research Station www.fs.usda.gov/nac/buffers/index.html	
Control of Beaver Damages	2001	Alberta Agriculture www.alberta.ca/beavers.aspx	
Control of Insect and Related Pests of Livestock and Poultry in BC	2014	AFF www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/agricultural-land-and-environment/strengthening-farming/farm-practices/870218-49_pest_management.pdf	870.218-49
Control of Rats and Mice on Poultry Farms	2015	AFF	384.200-6

Title	Date	By	IAS#
Crop Production Guides		www2.gov.bc.ca/gov/content/industry/agriculture-seafood/animals-and-crops/crop-production/crop-production-guides	
Cryptosporidium Infection		Ministry of Health Services http://www.healthlinkbc.ca/healthfiles/hfile48.stm	
Culvert Installation in Constructed Ditches	2005	AFF / DFO www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/agricultural-land-and-environment/water/drainage-management-guide/542140-1_culvert_installation-drainage_guide_factsheet_no15.pdf?bcgovtm=buffer	542.140-1
Dealing with Drought: A Handbook for Water Suppliers in British Columbia	2016	ENV www.canada.ca/en/environment-climate-change/services/environmental-enforcement/publications/compliance-enforcement-policy-fisheries-act.html	
How to Plan Trees and Shrubs for Wildlife	2020	Canadian Wildlife Federation	
Estimating Crop Residue Cover For Soil Erosion Control	2000	AFF www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/agricultural-land-and-environment/soil-nutrients/600-series/641220-1_estimating_crop_residue_cover.pdf	641.220-1
Energy Free Water Fountains	2006	PAMI www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/agricultural-land-and-environment/water/livestock-watering/590307-4_energy_free_water_fountains_pami_706.pdf	
Enhancing Livestock Water Quality	1996	AFF www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/agricultural-land-and-environment/water/livestock-watering/590301-4_enhancing_livestock_water_quality.pdf	590.301-4
Manure Management	2014	AFF www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/agricultural-land-and-environment/strengthening-farming/farm-practices/870218-44_manure_storage_and_use.pdf	870.218-44

Title	Date	By	IAS#
Farm Storage and Handling of Petroleum Products	2005	AFF docshare04.docshare.tips/files/19036/190368273.pdf	210.510-1
Farm Water Storage	2003	AFF www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/agricultural-land-and-environment/water/water-supply-conservation/510100-1_farm_water_storage.pdf	510.100-1
Watershed Stewardship: A guide for Agriculture	1996	AAFC / AFF www.bclss.org/cms/wp-content/uploads/2017/05/WatershedStewardship-Guide4Agriculture.pdf	
Field Crop Production Guide		AFF www2.gov.bc.ca/gov/content/industry/agriservice-bc/production-guides	
Field Guide to Invasive Alien Plant Pests and Diseases that Threaten BC Agriculture		AFF books.google.ca/books/about/Invasive_Alien_Plant_Pests_and_Diseases.html?id=z2VKPQAACAAJ&redir_esc=y	
Field Guide to Harmful and Beneficial Insects and Mites of Tree Fruits	2008	agris.fao.org/agris-search/search.do?recordID=US201300301793	
Field Guide to Noxious and other Selected Weeds of BC		AFF bcinvasives.ca/resources/publications/field-guide-to-noxious-weeds-and-other-selected-invasive-plants-of-BC	
Field Shelterbelts for Soil Conservation	2007	Alberta Agriculture www1.agric.gov.ab.ca/\$department/deptdocs.nsf/all/agdex2073/\$file/277_20-3.pdf?OpenElement	
Fine Particulates – What They Are and How They Affect Us	1995	ENV	
Fishery Timing Windows For Maintenance Work in Constructed Ditches	2005	AFF / DFO	543.000-2
Flood Construction Levels and Setbacks for Farm Building Situations	2008	AFF	820.400-3
Floriculture Production Guide		AFF	
Forage Production on Poorly Drained Soils in the Southern Interior of British Columbia	1992	AFF	536.100-1
Freshwater Intake End-of-Pipe Fish Screen Guideline	1995	DFO	512.100-1
Fringe Benefits: A Landowner's Guide to the Value and Stewardship of Riparian Habitat	1996	Fraser River Action Plan	
Giardiasis ("Beaver Fever")		Ministry of Health http://www.healthlinkbc.ca/healthfiles/hfile10.stm	

Title	Date	By	IAS#
Grassland Monitoring Manual for British Columbia		Grasslands Conservation Council of BC bcgrasslands.org/wp-content/uploads/2018/01/bc_grassland_monitoring_manual_for_bc.pdf	
Grassed Waterways	1994	OMAFRA	
Grazing Management Guide	2005	AFF / BCAC	
Growing Greenhouse Peppers in British Columbia		www2.gov.bc.ca/gov/content/industry/agriservice-bc/production-guides/vegetables/peppers	
Guide for Bylaw Development in Farming Areas	1998	AFF	840.000-1
Guidelines for Canadian Drinking Water Quality	2008	Health Canada	
Guidelines for Farm Practices Involving Fill	2006	AFF	820.200-1
Guidelines for Minimum Standards in Water Well Construction	1982	ENV	
Guidelines for Off-Farm Inputs for Anaerobic Digestion Facilities	2010	www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/agricultural-land-and-environment/waste-management/manure-management/an_overview_of_onfarm_biogas_production.pdf	
Guidelines on Storage, Use & Disposal of Wood Residue for the Protection of Fish & Fish Habitat in British Columbia	1985	Environment Canada www.for.gov.bc.ca/hfd/library/FFIP/Liu_S1996.pdf	
How to Disinfect Drinking Water		Ministry of Health http://www.healthlinkbc.ca/healthfiles/hfile49b.stm	
Improved Livestock Access to Water Using GeoGrids	2006	AFF	590.302-2
Integrated Fruit Production Guide for Commercial Tree Fruit Growers		www.bctfpg.ca	
Integrated Weed Management: Making It Work On Your Farm, Manitoba Agriculture		AFF www.gov.mb.ca/agriculture/crops/weeds/integrated-weed-management.html	
Invasive Plant Council of BC		www.invasiveplantcouncilbc.ca/	
IPM for Turfgrass Managers		ag.umass.edu/turf/fact-sheets/integrated-pest-management-for-turf	
Irrigation Scheduling Techniques	2011	AFF	577.100-1
Irrigation Scheduling with Tensiometers	2006	AFF	577.100-2
Irrigation System Assessment Guide	2005	AFF / BCAC	
Irrigation System Cross Connection Control	1985	AFF	578.130-1
Irrigation System Maintenance	1994	AFF	577.200-1
Irrigation Tips to Conserve Water on the Farm	2004	AFF	500.310-1
Key Drought Management Tips	2005	AFF	665.000-2


Title	Date	By	IAS#
Lakes and Wetlands (a Caring For The Greenzone publication)		Cows and Fish Program, Alberta www.cowsandfish.org	
Land Management Guide for Horse Owners and Small-Lot Farmers	2008	Langley Environmental Partners Society	
Landscaped Buffer Specifications	1993	Agricultural Land Commission	
Large Animal Disposal: On-Farm Burial Option	2006	AFF	384.300-3
Liming Acid Soils in Central B.C.	1991	AFF	637.000-1
Livestock Watering Requirements – Quantity and Quality	2006	AFF	590.301-1
Maintenance and Checking of Performance of Subsurface Drainage Systems	1985	AFF	543.200-1
Management Guide for Grapes		www.bcwgc.org/best-practices-guide	
Management of Dust in Broiler Operations	1999	AFF	
Management of Flies in Layer Barns	2008	AFF	305.104-1
Manure Treatment Options vs. Available Land Base	1994	AFF	382.910-1
<i>Metro Vancouver Agricultural Boilers Emission Regulation</i>		http://www.metrovancouver.org/boards/Bylaws1/GVRD_Bylaw_1098.pdf	
Mitigating Cattle Losses Caused by Wild Predators in British Columbia		www.cattlemen.bc.ca/docs/mitigating_cattle_losses_a_field_guide_for_ranchers_smaller_file.pdf	
Mushroom Production Guide – Guide to Best Management Practices in British Columbia	2008	www2.gov.bc.ca/gov/content/industry/agriculture-seafood/animals-and-crops/crop-production/mushrooms	
National Farm Building Code of Canada	1995	National Research Council	
Nursery and Landscape Pest Management & Production Guide	2017	AFF www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/animal-and-crops/crop-production/nursery-production-guide.pdf	
On-Farm Anaerobic Digestion Waste Discharge Authorization Guideline	2010	ENV	
On-Farm Hydroelectric Generation	2006	AFF	430.200-1
On Farm Pesticide Storage and Handling Facility	1994	AFF	373.130-2
On-Site Testing of Growing Media and Irrigation Water		AFF	
Planning for Biodiversity: A Guide for BC Farmers and Ranchers	2008	AFF / BCAC	
Plug and Bedding Plant – Water, Media and Nutrition	1998	AFF	
Preparing a Complete Nutrient Solution		AFF	
Protecting Your Shorelands for Better Farming and Ranching, and Healthier Fish Habitat		DFO	
Pumping Livestock Water – It's All About the Energy Choices!	2005	AFF	590.305-1
Rangeland Handbook for BC	1998	BC Cattlemen's Assoc.	

Title	Date	By	IAS#
Reducing Nitrogen and Phosphorus in Manure Through Ration Changes	1993	AFF	382.910-2
Riparian Area Management: A User Guide to Assessing Proper Functioning Condition and the Supporting Science for Lotic Areas	1998	USDA	
Riparian Areas – A Users Guide to Health	2003	Cows and Fish Program, Alberta www.cowsandfish.org	
Riparian Health Assessment for Streams and Small Rivers – Field Workbook (a Caring For The Greenzone publication)	2008	Cows and Fish Program, Alberta www.cowsandfish.org	
Riparian Management Field Workbook	2005	AFF / BCAC	
Rotten Luck: The Role of Downed Wood in Ecosystems.	1995	Fraser River Action Plan	
Septic System Maintenance Pure & Simple		Fraser River Action Plan	
Seven Steps to Managing Your Weeds: A Manual for Integrated Weed Management in British Columbia		www2.gov.bc.ca/assets/gov/environment/plants-animals-and-ecosystems/invasive-species/guidance-resources/7stepstomanaginyourweeds.pdf	
Sewerage System Standard Practice Manual	2006	Ministry of Health	
Siting and Management of Dairy Barns	2010	AFF	305.104-2
Siting and Management of Poultry Barns	2008	AFF	305.104-1
Sizing Dairy Manure Storage Facilities	1990	AFF	383.100-2
Soil Compaction – A Review of its Origin and Characteristics	1990	AFF	613.100-1
Soil Liming – Understanding Your Soil Test Recommendation	1993	AFF	637.200-1
Soil Management Handbook for the Lower Fraser Valley	1991	AFF	610.000-1
Soil Management Handbook for the Okanagan and Similkameen Valleys	1994	AFF	610.000-6
Soil pH	2001	AFF	637.100-1
Soil Sampling for Nutrient Management	2005	AFF	
Soil Sampling in Fertilizer Banded Fields	1991	AFF	611.100-2
Species at Risk Act application to private land		www.sccp.ca/sites/default/files/species-habitat/documents/Species_at_Risk_on_Private_Land_in_BC.PDF	
Sprinkler Irrigation Scheduling using a Water Budget Method	2004	AFF	577.100-3
Soil Water Storage Capacity and Available Soil Moisture	2002	AFF	619.000-1
Standards and Best Practices for Instream Works (lower mainland)	2004	ENV www.env.gov.bc.ca/wld/documents/bmp/iswstsbpsmarch2004.pdf	
Starlings and Livestock Farms	2000	AFF	384.200-7
Stewardship Options for Private Landowners in B.C.	1996	Environment Canada / ENV	
Suggestions For Field Sprayer Operation And Maintenance	1986	AFF	234.005-1

Title	Date	By	IAS#
The Health Of Our Air	1999	AAFC publiccentrale-ext.agr.gc.ca/pub_view-pub_affichage-eng.cfm?publication_id=1981E	
The Health of Our Soils	1995	AAFC sis.agr.gc.ca/cansis/publications/manuals/1995-health/The_Health_of_Our_Soils.pdf	
The Health Of Our Water	2000	AAFC www.pfra.ca/doc/Water%20Status/TheHealthofOurWater.pdf	
The RUSLEFAC – Revised Universal Soil Loss Equation for Application in Canada	2002	AAFC	
Treatment of Greenhouse Recirculation Water: Bio-Sand Filtration	1999	AFF	512.000-2
Treating Irrigation and Crop Wash Water for Pathogens	2003	AFF	5121.000-3
Treatment of Greenhouse Recirculation Water – Biosand Filtration	1999	AFF	512.000-2
Trees and Shrubs for Prairie Shelterbelts		AAFC www4.agr.gc.ca/AAFC-AAC/display-afficher.do?id=1192201777018&lang=eng	
Trickle Irrigation Scheduling using Evapotranspiration Data	2004	AFF	577.100-4
Understanding Different Soil Test Methods	2010	AFF	631.500-9
Understanding a Water Licence	2006	AFF	502.100-4
Understanding Wetlands: A Wetland Handbook for British Columbia's Interior	1998	Ducks Unlimited	
Use Caution When Bringing Non-Agricultural Waste or Products onto Your Farm	2000	AFF	654.000-1
Vegetable Production Guide – Beneficial Management Practices for Commercial Growers in British Columbia		AFF www2.gov.bc.ca/gov/content/industry/agriservice-bc/production-guides	
Ventilation Handbook	1985	AFF	306.400-4
Water-Borne Diseases in BC		Ministry of Health www.healthlinkbc.ca/healthfiles/hfile49a.stm	
Water Licence Holders Rights and Obligations	2006	ENV	
Water Quality Evaluation of Agricultural Runoff in the Lower Fraser Valley	1994	AFF	511.300-1
Water Rights in British Columbia	2006	ENV	
Water Wells that last for generations	2001	Alberta Agriculture	
Watering Livestock Directly from Watercourses	2006	AFF	590.302-1
Watershed Stewardship: A Guide for Agriculture	2006	DFO / ENV / AFF	648.000-3

Title	Date	By	IAS#
Wetlands of British Columbia: A Guide to Identification	2004	Ministry of Forests, Natural Resource Operations and Rural Development	
Wetland Ways: Interim Guidelines for Wetland Protection and Conservation in British Columbia	2009	Wetland Stewardship Partnership www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/best-management-practices/wetland_ways_ch_2_general.pdf	
Wildlife damage control guidelines		www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/agricultural-land-and-environment/strengthening-farming/farm-practices/870218-59_wildlife_damage_south_bc.pdf	
Wildlife Damage Control – Interior BC	2003	AFF	870.218-60
Wildlife Damage Control – South Coastal BC	2009	AFF	870.218-59
Wind and Snow Fences	1997	AFF	307.230-1
Woodwaste Use – Precautions To Horse Owners	2005	AFF	655.000-2
Woodwaste Use in Agriculture	1992	AFF	655.000-1

C.2 Websites

 The follow web sites are referenced in this Guide for further details on environmentally-related subjects.

Web Address	Content
BC Government www.gov.bc.ca	
http://www.alc.gov.bc.ca	Provincial Agricultural Land Commission
www2.gov.bc.ca/gov/content/governments/organizational-structure/ministries-organizations/boards-commissions-tribunals/bc-farm-industry-review-board	Farm Industry Review Board
http://www.frontcounterbc.gov.bc.ca/	Front Counter BC
www.bclaws.ca	Provincial listing of Acts and Regulations
https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/drought-flooding-dikes-dams/dam-safety	Dam Maintenance and Safety
Ministry of Agriculture, Food and Fisheries www.gov.bc.ca/al/	
www2.gov.bc.ca/gov/content/industry/agriculture-seafood/agricultural-land-and-environment/strengthening-farming/publications	Strengthening Farming / Farm Practices
www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/invasive-species	Invasive plants
www2.gov.bc.ca/gov/content/industry/agriculture-seafood/animals-and-crops/crop-production/crop-production-guides	Crop Production Guides
www2.gov.bc.ca/gov/content/industry/agriculture-seafood/programs/environmental-farm-plan	Publications & plans
www2.gov.bc.ca/gov/content/industry/agriculture-seafood/animals-and-crops/plant-health/pesticides-agriculture/pesticide-labels	Pesticide Label Information
bcinvasives.ca/resources/invasive-species-training/pesticide-applicator-course	Pesticide Applicator Course
www2.gov.bc.ca/gov/content/industry/agriculture-seafood/animals-and-crops/plant-health/weeds	Weeds

Web Address	Content
Ministry of Environment and Climate Change Strategy http://www.gov.bc.ca/env/	
www2.gov.bc.ca/gov/content/environment/climate-change	Climate Change
www2.gov.bc.ca/gov/content/governments/organizational-structure/ministries-organizations/ministries/environment-climate-change	Climate Change Impacts
www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/conservation-data-centre	BC Conservation Data Centre – provincial species at risk listing
www2.gov.bc.ca/gov/content/environment/pesticides-pest-management	Pesticide and Pest Management
www2.gov.bc.ca/gov/content/environment/pesticides-pest-management/certification-training	Pesticide Certification Information
www2.gov.bc.ca/gov/content/environment/waste-management/industrial-waste/agriculture/regulation-requirements/agricultural-boilers-heaters	Agricultural Boiler and Heaters
www2.gov.bc.ca/gov/content/environment/waste-management/industrial-waste/fuel-tanks	Managing Fuel Tanks
www2.gov.bc.ca/gov/content/environment/air-land-water/air/air-pollution/smoke-burning/regulations/openburningregulation/smoke-sensitivity-zone-maps	<i>Open Burning Smoke Control Regulation</i> and Smoke Sensitivity Zone Maps
http://www.env.gov.bc.ca/atrisk/toolintro.html	BC Species and Ecosystem Explorer
www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-quality	Water Quality
www2.gov.bc.ca/gov/content/environment/air-land-water/water/drought-flooding-dikes-dams/drought-information	Drought Information
Ministry of Forests, Lands, Natural Resources Operations and Rural Development www.gov.bc.ca/for	
www2.gov.bc.ca/gov/content/environment/natural-resource-stewardship/laws-policies-standards-guidance/legislation-regulation/forest-range-practices-act	<i>Forest and Range Practices Act (FRPA)</i>
www2.gov.bc.ca/gov/content/industry/rangelands/forage/health	Pasture and Range Health
www2.gov.bc.ca/gov/content/safety/wildfire-status/wildfire-situation	Current Wildfire Activity
Ministry of Health www.gov.bc.ca/hls/	
http://www.healthlinkbc.ca/healthfiles/httoc.stm	Health Files - Factsheets
Federal Government	
http://www4.agr.gc.ca/AAFC-AAC/display-afficher.do?id=1186590611493&lang=eng#ben	Agriculture and Agri-Food Canada
www.dfo-mpo.gc.ca/species-especes/sara-lep/index-eng.html	Aquatic Species at Risk
www.inspection.gc.ca	Canadian Food Inspection Agency
laws-lois.justice.gc.ca/eng/acts/	Federal listing of Acts and Regulations
www.nrcan.gc.ca/energy-efficiency-regulations/6845	<i>Energy Efficiency Regulations</i>

Web Address	Content
www.dfo-mpo.gc.ca/index-eng.htm	Fisheries and Oceans Canada (DFO)
www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html	Species at Risk Act Registry
www.sccp.ca/sites/default/files/species-habitat/documents/Species_at_Risk_on_Private_Land_in_BC.PDF	Species at Risk Act application to private land
firesmoke.ca/forecasts/current/	Smoke Control Forecast
Local Government and Other Websites	
http://www.ardcorp.ca	BC Agricultural Research & Development Corporation
www.bcagclimateaction.ca	Climate Change Mitigation and Adaptation
http://www.bcgwa.org/	BC Ground Water Association
www.bcac.bc.ca	BC Agriculture Council
www.arb.ca.gov/diesel/verdev/vt/cvt.htm	California Air Resource Board
www.cleanfarms.ca	Clean Farms – pesticide container disposal locations
www.deltafarmland.ca	Delta Farmland and Wildlife Trust
www.productcare.org	Paint Disposal Centers
www.cowsandfish.org	Riparian
www.farmwest.com	T-sum calculator - current Evapotranspiration - current
www.hctf.ca	Habitat conservation
www.irrigationbc.com	Irrigation Industry Association
http://www.epa.gov/otaq/retrofit/verif-list.htm	US Environmental Protection Agency
www.waterbucket.ca	Integrated Water Management in BC
www.omafra.gov.on.ca/english/crops/facts/weedman.htm	Weed Management

GLOSSARY OF TERMS

APPENDIX D

The following are terms used in this Reference Guide, as well as other closely related terms.

100 year flood: a flood of such a magnitude that the chance of it being equaled or exceeded in any given year is at least one in one hundred

100 year floodplain: land where the chance of a flood occurring in any given year is at least one in one hundred

100 year peak flow: a watercourse flow where the chance of a peak flow occurring in any given year is at least one in one hundred

A

abattoir: facility for butchering animals; may include cutting, wrapping, freezing and processing facilities

absorption: the incorporation of a substance into the body of another (also see **adsorption**)

acre-foot: the amount of water that will cover one acre to a depth of one foot; equal to 1,233.84 m³, [1,233,840 L], or 43,560 ft³ [325,829 US gal]

adaptation: adjustment of agri-food practices to maintain competitive production advantages during comparatively rapid changes in the regional climate

adsorption: the attachment or adhesion of a substance generally onto the surface of another solid material (also see **absorption**)

aeration: providing optimum availability of air in a material, such as into soil for crop growth

aerator with dribble bar: a system to apply manure in bands onto soil behind a soil aerator

aerobic: the presence of sufficient oxygen in a biological decomposition process (e.g., composting) to allow oxygen consuming microbes to flourish (also see **anaerobic**)

afforestation: [from Environment Canada] The direct human-induced conversion of land that has not been forested since December 31, 1989 to forested land through planting, seeding and/or the human-induced promotion of natural seed sources

aggregates: grouping of soil particles cohering so as to behave mechanically as a unit; the way in which aggregates are grouped together is called soil structure (also see **soil**)

Agriculture Land Reserve: a provincial-wide land classification under the *Agricultural Land Commission Act*

agricultural by-product: materials that are produced due to the agricultural operations but are incidental or secondary to the primary product produced such as: manure; soiled animal bedding; dropped or spoiled feed; vegetative debris; compost products; used mushroom-growing substrate; and soilless media. It does not include: mortalities; waste from hatcheries or dairy processing; digestates from anaerobic digestion; or materials produced or used in accordance with the Organic Matter Recycling Regulation

agroforestry: a land management approach that deliberately combines the production of trees with other crops and/or livestock

air: [from the *Environmental Management Act*] the atmosphere but does not include the atmosphere inside a human made enclosure that is not open to the weather (also see **atmosphere**)

air contaminant: means a substance that is introduced into the air and that

(a) injures or is capable of injuring the health or safety of a person, (b) injures or is capable of injuring property or any life form, (c) interferes with or is capable of interfering with visibility, (d) interferes with or is capable of interfering with the normal conduct of business, (e) causes or is capable of causing material physical discomfort to a person, or (f) damages or is capable of damaging the environment; (also see **contaminant**)

air gap: an open air space (at least 30 cm, suggested) between a hose or tap from a potable water source and the water level of non-potable water; maintained so as to prevent backflow contamination of the potable water source, such as when filling pesticide sprayers (also see **backflow**)

air shed: a geographic region that shares an air mass that has similar characteristics and is separated from other air masses by weather patterns or topography

algae: aquatic plants that lack true stems, roots or leaves and are often green, blue-green or brown in colour

algae bloom: rapid growth of algae in water due to high nutrient levels

anaerobic: the absence of oxygen in a biological decomposition process. (e.g., bio-gas or methane production); may occur in soil or water (also see **aerobic**)

anhydrous ammonia: is a chemical fertilizer (NH₃) whose properties make it one of the most potentially dangerous chemicals on a farm; *anhydrous* means without water; consequently, when anhydrous ammonia and moisture come into contact, they rapidly combine; when it is injected into the soil, the liquid ammonia expands into a gas and is readily absorbed in the soil moisture; usually provided to a farm by a contracted applicator

annual: a plant that lives for one year or season

anti-siphon device: see **fuel storage**

antispainstain chemical:

(a) treatment chemical applied to processed wood which make the wood residue unsuitable for use on farms; (b) [from the *Antispainstain Chemical Waste Control Regulation*] chlorophenol, 2-(thiocyanomethylthio) benzothiazole (TCMTB), copper-8-quinolinolate (Cu-8), 3-iodo-2-propynyl butyl carbamate (IPBC) and didecyldimethyl ammonium chloride (DDAC)

approval: [from the *Water Sustainability Act*] approval under section 8 (short-term use of water) or approval under section 9 (changes in and about a stream)

aquatic life: plant and animal life growing or living in or near water (also see **species**)

aquifer: a geologic formation, group of formations, or part of a formation capable of storing, receiving and transmitting water; the formation is capable of yielding enough water to support a well or spring

artesian aquifer: contains water under pressure as a result of hydrostatic head; also called a confined aquifer (also see **well – artesian well**)

confined aquifer: an aquifer overlain by a confining layer of impermeable soil or rock material; the water table is separated from the atmosphere by the impermeable layer; this type of aquifer is sometimes called an artesian aquifer

unconfined aquifer: an aquifer without an upper confining layer of impermeable soil or rock material; the water surface is exposed to the atmosphere through a series of interconnected openings in the overlying permeable soil and/or rock layers and is in equilibrium with atmosphere pressure; particularly susceptible to entry of surface contaminants; the water surface is called the water table (also see **water table**)

artesian: see **aquifer** and see **well**

atmosphere: the layer of gases surrounding the earth, composed primarily of nitrogen, hydrogen and oxygen

authorization: as required under the federal *Fisheries Act* Section 35(2) regarding any works that may harm fish habitat

avoid: to employ, practice or implement risk treatment measures to prevent (eliminate) or reduce (mitigate) the occurrence of pollution, damage and/or the deposit of deleterious substance into the environment. The natural characteristics of a site such as soil properties, topographic conditions, depth to groundwater or annual precipitation may help to mitigate environmental risk.

B

backflow: the reverse flow of a liquid from the distribution system back to the water source, such as from a sudden pressure drop in a supply line creating a siphon-back condition; the source may become contaminated

backflow prevention: piping arrangements to protect a water source, such as vacuum breakers or automatic valves, whereby the supply water is prevented from reverse flow (also see **air gap**); backflow can be prevented if the supply pipe is kept away from any contaminated liquids, such as keeping pesticide sprayer filling water lines above and separate from the sprayer tank)

bacteria: a large group of single-celled microscopic organisms lacking an organized nucleus; some can cause disease, such as Salmonella or Cholera

coliform bacteria: bacteria found in faeces, soil, and vegetation, which is used to indicate the bacteriological quality of water; given as "*total coliforms*" in a water test

E.coli: bacteria sometimes found in under-cooked meat, such as ground beef; causes "hamburger disease"

fecal coliform: bacteria present in virtually all warm-blooded animals; commonly used as an indicator organism in water contamination testing due to low testing cost; given as “*fecal coliforms*” in a water test (also see **fecal**)

banding: see **fertilizer: side dressing**

baseflow: the amount of water in a stream that results from normal conditions (groundwater discharge) rather than from storm conditions or releases from storages such as reservoirs

bathymetric: the measurement of water depth at various location in a body of water, as is done to establish the volume of a reservoir

bed-level: see **stream crossing**

beneficial management practice: see **BMP**

berm: a constructed strip or ridge of soil to divert or retain runoff, such as an embankment, but not a dyke (also see **dyke**)

bioaccumulate: the process by which certain chemicals are consumed and retained by organisms, either from the environment directly or by eating food containing the chemicals

biodegradable: capable of being broken down by living organisms into inorganic compounds

biodiversity: [from the *Canadian Environmental Protection Act*] the variability among living organisms from all sources, including, without limiting the generality of the foregoing, terrestrial and marine and other aquatic ecosystems and the ecological complexes of which they form a part and includes the diversity within and between species and of ecosystems (also see **species** and **ecosystem**)

biofilter: an air filtration system that exhausts air up through a bed of fibrous organic material, as may be used for a mushroom composting facility to extract odours and other compounds from the exhaust air

BOD or **biological oxygen demand:** see **oxygen demand**

biomass: plant or plant-based materials that have no more than 20% moisture content, are or come from agricultural vegetative debris, seeds or clean wood, and have been processed for use in producing energy. Does not include materials containing coal or petroleum products, pharmaceutical, medicinal or medical biological materials, manure, or paper or paper

biosolids: [from the *Organic Matter Recycling Regulation*] stabilized municipal sewage sludge resulting from a municipal waste water treatment process or septage treatment process which has been sufficiently treated to reduce pathogen densities and vector attraction to allow the sludge to be beneficially recycled in accordance with the requirements of this regulation

boiler: a vessel used for generating hot water or steam, typically fuelled by natural gas, oil, or solid fuels such as wood or coal

emission standards: are set by Local Government and by the *Code of Practice for Agricultural Environmental Management*

BMP or beneficial management practice: a structural, non-structural, or managerial technique recognized to be an effective and practical means to reduce or remove the risk of pollution occurring while still allowing the productive use of resources

blind inlet: also know as a french drain; allows surface water to percolate to subsurface drainage systems; used when the quantity of surface water is small or the sediment load is heavy (refer to page 190 of *BC Agricultural Drainage Manual*)

browse: (noun) woody forage, such as leaves and shoots of plants, eaten by animals; (verb) to search for or consume browse

browsing: consumption of woody forage from trees and shrubs (also see **grazing**)

buffer: a specially managed area that is used to separate farm activities from sensitive areas, such as riparian areas, or from neighbouring farm or non-farm activities. Buffers may include a strip of vegetation, often grass, shrubs, or trees; some can act as a “treatment system” to remove contaminants before they reach sensitive areas.

permanent vegetated buffer: a strip of permanent vegetation which separates an environmentally-sensitive area from farm areas

pesticide drift buffer: setbacks from areas where pesticide application occurs, generally intended for watercourses or for non-target terrestrial areas

filter strip: may contain grasses, trees, or other dryland plants to help filter soil particles out of runoff

visual buffer: a vegetated buffer that is used primarily to alter aesthetic impact

building: farm structures to store farm supplies or equipment or to house livestock

building code: safety measures legally required for farm buildings contained in the National Farm Building Code of Canada; only enforced where proclaimed by local government

perimeter drain: see [perimeter drain](#)

building setback: see [setback](#)

burning: see [open fires](#) and see [outdoor burning](#)

C

C:N or carbon-nitrogen ratio: the ratio of the weight of organic carbon to that of total nitrogen in an organic material; important ratio when composting organic material such as wood residue, where it should only be applied to soils having a C:N ratio of 30:1 or lower

calibration: see [pesticide](#) and [nutrient](#)

carbon dioxide (CO₂): a greenhouse gas produced by the combustion of fossil fuels and biomass and from deforestation or clearing of agricultural land. It is a major contributor to the greenhouse effect and is therefore associated with climate change

carbon monoxide (CO): an air contaminant that originates mainly from the combustion of fuels used to heat buildings and greenhouses, and to power farm equipment; at high concentrations the gas can cause asphyxiation, and at lower levels it produces symptoms of impaired perception and reflexes

carbon offsets: reduction and sequestration projects can generate carbon offsets. It is possible to market carbon offsets as a product if it can be proven that the activity or change in activity results in a real and permanent reduction in GHG's in the atmosphere.

carbon sequestration: plants and soil organic matter play an important role in removing carbon dioxide from the air and storing (sequestering) it. Carbon is the main component in plant material and soil organic matter. Any uptake of carbon dioxide from the air by plant material or soil reduces the effects of climate change

casing: see [well casing](#)

catch basin: any excavated, dyked, or walled structure, or combination of structures, designed to intercept and temporary store runoff contaminated by farm waste

catch crop: a crop planted with the specific goal of catching available soil nutrients which would otherwise be lost by leaching

calving pen: see [confined livestock area](#)

changes in and about a stream: [from the *Water Sustainability Act*]

(a) any modification to the nature of a stream including the land, vegetation, natural environment or flow of water within a stream, or (b) any activity or construction within the stream channel that has or may have an impact on a stream, refer to [page 9-8](#)

channelized stream: permanent or relocated streams that have been dyked, diverted or straightened and carry drainage flows from headwaters or significant sources of groundwater. Reaches of channelized streams may be confined by roads and fences and in many cases can also meander through fields.

Man made channels that divert irrigation water from a stream but return overflow water back to a stream in a manner that allows fish access are classified as channelized streams.

chemical fertilizer: see [fertilizer](#)

chemigation: application of a chemical (such as a fertilizer or pesticide) to a crop through an irrigation system by mixing them with the irrigation water

backflow: see [backflow](#)

chemigation guidelines: a series of recommended practices outlined in the publication *Chemigation Guidelines for BC*

spent nutrient solution: the water and nutrient solution that is left over after fertilizing via chemigation

cistern: a non-pressurized tank for storing water

Class A Compost: as defined by the *Organic Matter Recycling Regulation* – see [page A-6](#)

clean water: see [water quality](#)

climate change: [from the United Nations Framework Convention on Climate Change (UNFCCC), Article 1] a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods

coliform: see [bacteria](#)

compaction: see [soil](#)

compost: [from the *Organic Matter Recycling Regulation*] a product which is

(a) a stabilized earthy matter having the properties and structure of humus, (b) beneficial to plant growth when used as a soil amendment, (c) produced by composting, and (d) only derived from organic matter

composting: [from the *Organic Matter Recycling Regulation*] the controlled biological oxidation and decomposition of organic matter in accordance with the time and temperature requirements specified in Schedule 1 of the *Regulation*

compost bulking agent: an ingredient in a mixture of composting raw materials included to improve the structure and porosity of the mix, e.g., sawdust

compost leachate: water passing through uncovered compost piles will produce various compounds which can pollute water and must be contained; in high rainfall areas, piles should not be on uncovered areas on bare ground but should be covered and on a surface such as concrete

composting site: the location of the organic material being composted, including buildings, clean water diversion, runoff collection and visual screening where used, as shown in **Figure 2.3, page 2-29**

curing area: [from the *Organic Matter Recycling Regulation*] an area where organic matter which has undergone the rapid initial stage of composting is further matured into a humus-like material

concentrated flow: see **overland flow**

concern: (a) something of interest or importance, a responsibility; (b) worry, anxiety

concrete: a mixture of Portland cement, water, air, and aggregates (sand and gravel)

fly ash additive: replaces a part of the cement in the mix, to indirectly reduce air pollution by virtue of reduced fuel use in what is a high energy use process

confined livestock area: (from the *AEM Code*) means an outdoor area, other than a grazing area, seasonal feeding area or temporary holding area, where livestock are confined by structures or topography.

calving pen: a confined livestock area used to birth cattle

feedlot: a confined livestock area for the finish-feeding of livestock

horse riding arena: a confined livestock area used for riding horses

permanent vegetated buffer: see **buffer**

soil-based: see **soil-based yard**

conifer: a cone-bearing tree

conservation: the continuing protection and management of natural resources in accordance with principles that assure their optimum long-term economic and social benefits

productive conservation: a practice designed and managed simultaneously to protect the environment and to provide economic returns, such as riparian management that protects both the water resource and biodiversity while providing livestock grazing or a harvestable crop such as berries or floral products

conservation tillage: see **tillage**

constructed channels: man made drainage channels that carry drainage water from more than one property but do not carry water from headwaters or significant sources of groundwater; flows in agricultural constructed channels may be year round and are not regulated; constructed channels may also deliver water for irrigation purposes

constructed ditches: man made drainage channels that carry drainage water from one property but do not carry water from headwaters or significant sources of groundwater; flows in agricultural constructed ditches may be year round and are not regulated; may also deliver water for irrigation purposes

contaminant: anything added to a substance that makes the substance impure or unfit for its intended use (see **deleterious substance** and **pollutant**)

air contaminant: [from the *Environmental Management Act*] a substance that is emitted into the air and that

(a) injures or is capable of injuring the health or safety of a person, (b) injures or is capable of injuring property or any life form, (c) interferes or is capable of interfering with visibility, (d) interferes or is capable of interfering with the normal conduct of business, (e) causes or is capable of causing material physical discomfort to a person, or (f) damages or is capable of damaging the environment

potential contaminant: any material handled, stored or used on a farm that if allowed to enter the environment (other than when normally used) would cause pollution, such as petroleum or pesticide losses from storage; to be considered when locating farm storages, dispensing sites, etc.

secure containment of potential contaminants: structures and practices that take into account the appropriate environmental risks associated with handling, storing and using various farm materials

contamination: (a) introducing a substance into the environment that will render it unfit for its intended use; (b) [from the *Environmental Management Act*] the presence in soil, sediment, water or groundwater of (i) a hazardous waste, or (ii) another prescribed substance (also see **deleterious substance** and **pollution**)

contaminated site: [from the *Environmental Management Act*] an area of the land in which the soil or any groundwater lying beneath it, or the water or the underlying sediment, contains (i) a hazardous waste, or (ii) another prescribed substance

contaminated surface water: surface water that contains dissolved or suspended chemicals or particulates such that, if released, it would cause pollution of the receiving environment

probable source of contamination: see well

contingency plan: a written document which describes how a farm (owner, manager, employees, etc.) will react to prevent the release of materials into the environment under unusual circumstances, such as due to the effects of fire, vandalism, floods, storage failure, etc. The plan describe actions which should be taken to prevent or actions which should be taken in the event of an escape of potential contaminants which are transported, stored, dispensed and applied on a farm. It should include emergency contacts.

fertilizer contingency: chemical fertilizer storage

manure contingency: solid, semisolid, or liquid storages

mass mortality: for mass mortalities

pesticide contingency: for all stored pesticides

petroleum contingency: fuel and oil storage

visible place for plan: as contingency plans may be needed quickly during emergencies, they need to be readily available, such as posted on an office wall near a telephone, posted at or near storage sites or mounted in an emergency tube in the farm yard

corral: a small enclosure for handling livestock

cover crop: plants grown alone or in mixtures for protection of the soil against erosion, amelioration of soil structure, enhancement of soil fertility, suppression of pests and alteration of micro-climate; not generally grown for harvest or forage, but rather to fill gaps in either time or space when cash crops leave the soil bare; also known as: green manure, living or dead mulches, plow down, companion, relay, double or catch crops

relay crop: a method of cover cropping where a cover is seeded before the main crop is harvested to reduce weed growth during the growing season and ensure cover establishment

critical habitat: see habitat

crops: includes all agricultural crops

outdoor crop: crops grown without cover of buildings, such as field crops

stewardship crops: crop and non-crop plantings for land and/or stewardship purposes, such as lure or sacrifice crops grown to draw wildlife away from cash crops (also see **stewardship**)

crop drying: the process of removing moisture from a crop to prevent spoilage and allow storage

aeration drying: the process by which natural air is blown through a crop for drying, usually without auxiliary heat

automatic controls: crop drying equipment operated with feedback from air and crop conditions of temperature and humidity, such that energy use is optimized

crop production: farming where plants are grown for various purposes, such as livestock or human feed

crop rotation: a succession of different crops planted on the same land, as opposed to growing the same crop time after time; to improve yields and soil health, and improve pest control

crop residue: (a) the portion of a plant or crop left in the field after harvest, usually having soil benefits; (b) crop prunings, waste plants and other organic matter that may be used as a soil conditioner (also see **soil**)

intensively-managed: continuous crop production with fertilizer and irrigation, as required to maximize output during the crop growing season

crop storage: area where harvested crops are stored, with water contamination prevention measures in place, such as silos with silage effluent collection

covered crop storage: storage constructed to protect the crop from deterioration from the weather, such as roofed hay storage

cross connection: a situation where piping carrying contaminated liquid is connected to piping containing clean liquid, such as water; usually connected mistakenly

Crown land: land, whether or not it is covered by water, or an interest in land, vested in the Crown

Cryptosporidium parvum: "crypto"; a microscopic coccidian pathogen of most mammals; is transmitted by water and can infect humans; transmission occurs by way of oocysts which are highly resistant to destruction (very young beef and dairy calves may carry the organism for a short time)

culvert: a transverse drain, such as to flow water under a road; must be sized for both expected water flow and, where present, for fish passage (also see **free passage of water and fish**)

open channel culvert: is one that does not flow full (termed a pipe if full)

inlet structure: where required, allows proper flow and protects for the surrounding structure; may include debris catcher

outlet structure: where required, decreases erosion potential and allows fish entry

D

dam: a structure of earth, rock, concrete, or other material designed to retain water, creating a pond, lake, or reservoir; typically requires a water licence to store water (also see **water licence**)

dangerous wildlife: see **wildlife**

deforestation: [from Environment Canada] permanent, human-induced land use change from forest to non-forest land cover. Forest harvesting, including clearcutting, is not considered deforestation, as the land use does not change and the land cover is expected to revert to forest.

zero net deforestation: is achieved when the area of afforestation is equal to or greater than the area of deforestation.

deleterious substance: [condensed from the federal *Fisheries Act*] any substance that, if added to any water, would degrade or alter the quality of that water so that it is likely to be deleterious (harmful) to fish or fish habitat or to the use by man of fish that frequent that water (also see **contamination and pollution**)

detention pond: see **stormwater**

direct farm sales: see **on-farm**

discharge: total amount of a solid, liquid or gaseous material introduced into the environment from works

disposal: the introduction of waste into the environment through any discharge, deposit, emission or release to any land, water or air by means of facilities designed, constructed and operated so as to minimize the effect on the environment

dirty water: see **water quality**

dissolved oxygen: the amount of oxygen dissolved in a given quantity of water at a given temperature and pressure; usually expressed as a concentration in parts per million, or as a percentage of saturation

ditch: a waterway constructed to intercept surface runoff and to act as an outlet for subsurface drainage (also see "**constructed ditch**")

interceptor ditch: used to divert or redirect runoff around and away from a farm area to prevent contamination of the runoff, such as around an outdoor livestock area

diversion: a channel or dam constructed across a slope to intercept surface water flow and transfer it to a safe or convenient discharge point, such as placed for a water system intake, or used above a area to be protected from surface water flow

point of diversion: [from the *Water Sustainability Regulation*] in relation to a stream, the location on the stream channel where water is diverted from the stream in relation to an aquifer, the location of a well from which water is diverted from the aquifer.

domestic purpose: (a) [from the *Drinking Water Protection Act*] the use of water for (a) human consumption, food preparation or sanitation, (b) household purposes not covered by paragraph (a), or (c) other prescribed purposes; (b) [from the *Water User's Communities Act*] the use of water for household requirements, sanitation and fire prevention, the watering of domestic animals and poultry and the irrigation of a garden not exceeding 1,012 m² adjoining and occupied with a dwelling house

domestic water sources: surface water or groundwater that is used or intended to be used for domestic purposes

domestic water system: [from the *Drinking Water Protection Act*] a system by which water is provided or offered for domestic purposes, including

(a) works used to obtain intake water, (b) equipment, works and facilities used for treatment, diversion, storage, pumping, transmission and distribution, (c) any other equipment, works or facilities prescribed by regulation as being included, (d) a tank truck, vehicle water tank or other prescribed means of transporting drinking water, whether or not there are any related works or facilities, and (e) the intake water and the water in the system, but excluding equipment, works or facilities prescribed by regulation as being excluded

drinking water: [from the *Drinking Water Protection Act*] water used or intended to be used for domestic purposes

drinking water health hazard: [from the *Drinking Water Protection Act*] (a) a condition or thing in relation to drinking water that does or is likely to (i) endanger the public health, or (ii) prevent or hinder the prevention or suppression of disease; (b) a prescribed condition or thing; or, (c) a prescribed condition or thing that fails to meet a prescribed standard

drinking water source: [from the *Drinking Water Protection Act*] a stream, reservoir, well or aquifer from which drinking water is taken

drainage: the removal of excess water from the land surface and/or from the soil profile

drainage maintenance: work required to ensure the operation of a drainage system; must be conducted (methods and timing) to minimize impacts to riparian areas and water quality

drainage water quality: see water quality

surface drainage system: designed system using natural or constructed channels and ditches open to the land surface being drained; may include water control structures to allow controlled back flooding crop land

subsurface drainage system: a system using drain tiles or perforated pipes buried under the land surface being drained, including the collection of drains, structures and pumps, having three modes as follows:

1. **conventional subsurface system;** designed solely for the removal and disposal of excess water
2. **controlled drainage system:** a system where the outflow is controlled to maintain an effective drainage depth; used to conserve water; a type of subirrigation where no additional water is added; may have the capacity to isolate and allow management of contaminated runoff
3. **subirrigation drainage:** a controlled drainage system where additional water can be added to back flow into the soil to raise the water table as required for irrigation of a crop; must be designed for both drainage and irrigation needs

drawdown: see wells

drift: see off target

drop structure: used to remove erosive energy from water moving down a grassed waterway or ditch

drought: (a) a prolonged chronic shortage of water, as compared to the norm, often associated with high temperatures and winds during spring, summer and fall; (b) a period without precipitation during which the soil water content is reduced to such an extent that plants suffer from lack of water

dry matter content: percent of total product weight which is not water; equals 100 minus moisture content

due diligence: a principle whereby an accused can avoid liability only by providing that they took all reasonable care to avoid a situation; demonstrating your actions represent a reasonable approach to a problem is due diligence, ignoring it and hoping it will go away is not

dump and grade: a system to apply manure on the soil surface by dumping truck loads on the ground and then spreading the manure by using a grader type of equipment

dugout: a constructed depression that collects and stores water and differs from a reservoir in that a dam is not relied upon to impound water; may or may not be water licenced

dust: see particulates

dwelling, private: [from the *Drinking Water Protection and Public Health Acts*] (a) a structure that is occupied as a private residence, or (b) if only part of a structure is occupied as a private residence, that part of the structure

dyke: an artificial embankment constructed to prevent flooding

E

ecosystem: the complex set of interactions between living organisms and their environment; ecosystems include plants, insects, fish, birds, animals, water and soil

E.coli: see bacteria

efficient: the use equipment or methods such that energy needs or use are minimized, such as the use of low energy lighting or high efficiency motors

effluent: (1) [from the *Environmental Management Act*] a substance that is discharged into water or onto land and that (a) injures or is capable of injuring the health or safety of a person, (b) injures or is capable of injuring property or any life form, (c) interferes or is capable of interfering with visibility, (d) interferes or is capable of interfering with the normal conduct of business, (e) causes or is capable of causing material physical discomfort to a person, or (f) damages or is capable of damaging the environment; (2) [from the *Sewerage System Regulation*] domestic sewage that has been treated by a treatment method and discharged into a discharge area

EC or electrical conductivity: a measure of the ability of water to conduct electricity; used to estimate the amount of soluble salts in water and soil water

emergency contacts and emergency plan: see contingency plan

emission: total amount of a solid, liquid or gaseous material emitted into the atmosphere from works

energy efficiency: the greatest possible reduction of the total amount of energy needed

enteric fermentation: a process that takes place in ruminant livestock which converts carbon in feed to methane; contributes to a net increase in atmospheric methane concentrations

ENV: Ministry of Environment and Climate Change Strategy

ENV-approved/permitted landfill: a disposal site, whether on or off farm, that has been approved and or permitted by the ENV for use as disposal of defined wastes

environment: [from the *Environmental Management Act*] the air, land, water and all other external conditions or influences under which humans, animals and plants live or are developed

environmental assessment: the critical appraisal of the likely effects of a proposed or existing project, activity, or policy on the environment, both positive and negative

environmental impact: a measurable change to the environment from an activity or action; may be negative or positive

environmentally sensitive area: may be a sensitive water body, habitat area or wildlife population on a non-production area on a farm that is sensitive to farm activities, such as contaminated runoff of pesticide drift

ephemeral: see stream

Environmental Farm Plan (EFP): an on farm or ranch assessment conducted by a planning advisor to identify potential environmental risks which results in a work plan that lists beneficial management practices that could be implemented.

erosion: the detachment and movement of soil and rock particles by gravity, wind, water, freezing and thawing, and/or other natural phenomena and may be intensified by human land use practices; erosion is a source of sediments, suspended solids, total dissolved solids and particulate matter turbidity in natural waters

incisement: vertical erosion (downcutting) of a stream channel; a stream is considered "incised" when the normal two-year high water flow cannot reach the floodplain

lateral cutting: erosion of a stream bank as the water channel moves sideways

rill erosion: small channels that form in the soil as a result of surface water flow; they are easily removed when the soil is worked with farm equipment

sheet erosion: the loss of a uniform layer of soil by wind or water, evidenced by exposure of once hidden roots or stones

scour: erosion that occurs along stream banks and in stream beds through water action

eutrophication: the natural process by which lakes or ponds become enriched with dissolved nutrients resulting in increased algae and plant growth; may be natural or accelerated by human activities

evaporation: the process of liquid water becoming water vapour from water surfaces, land surfaces and snow

ET or evapotranspiration: the combined loss of water to the atmosphere from a given area by evaporation from the land and transpiration from plants; used in determining crop irrigation needs (also see **evaporation** and **transpiration**)

exotic pest: see pest

F

farmstead: the main area of a farm or ranch; it is usually where the home site is located, where machinery, fertilizers, chemicals, etc. are stored, and where the major livestock buildings are located

fecal: waste matter, feces, from the gut or gastrointestinal tract of animals

fecal coliform: see bacteria

feed bunk: a structure, either portable or permanent, in which feed can be placed for convenient access by livestock

portable feed bunk: a movable-location structure which is moved so as to distribute manure over the feeding area, usually crop land (when used on non-crop land or when not moved, the manure should be managed as for a permanent feed bunk)

permanent feed bunk: a fixed-location structure which requires manure to be scrapped and removed for spreading onto crop land

feedlot: see confined livestock area

fertilizer: any natural or manufactured material, either organic or inorganic, that is added to soil to supply one or more plant nutrients, but not managed as a soil conditioner (also see soil – soil conditioner)

chemical fertilizer: a manufactured or processed fertilizer with a known chemical content

organic fertilizer: manure or compost

fertilizer versus soil conditioner: materials that have properties that allow them to be used as both a fertilizer and a soil conditioner should be managed as a fertilizer; see Tables 6.4 and 6.5, pages 6-6 and 6-7

side dress: fertilizer applied as a band between rows of a growing crop

fertigation: the application of nutrients through an irrigation or nutrient circulation system (also see **chemigation**)

field capacity: the amount of water remaining in a soil when the downward water flow due to gravity becomes negligible

filter strip: see **buffer**

fish: [from the federal *Fisheries Act*] includes fish or parts of fish, shellfish, crustaceans, marine animals and any parts of shellfish, crustaceans or marine animals, and the eggs, sperm, spawn, larvae, spat and juvenile stages of fish, shellfish, crustaceans and marine animals

fish bearing stream: a stream that has, or is likely to have, fish at anytime

fish habitat: see **habitat**

fish passage: [from the *Water User's Communities Act*] fish in a stream are able to pass by or through in both upstream and downstream directions

fish screening: see **intake**

wildlife, fish: see **wildlife**

flail broadcast: a system to apply manure on the soil surface that uses a flail to throw and spread the manure

flood: the temporary inundation of normally dry land areas resulting from the overflowing of the natural or artificial confines of a watercourse

floodplain: relatively flat, low lying areas next to watercourses that are periodically flooded

active floodplain: the area of land that is flooded every 2 to 3 years

flotation: ability of tractor or implement tires to stay on top of soil surface; usually related to soil conditions, equipment weight, and contact area between tires and soil surface

flow: the rate of water discharged from a source, expressed in a volume over a time period, such as cubic metres per second (m³/s)

fly ash: fine, solid, non-combustible particles removed from combustion exhaust gasses used as an additive in concrete to reduce cement requirements, indirectly reducing energy costs and air pollution

food: [from the *Food Premises Regulation*] any raw or processed substance intended for human consumption

food premises: [from the *Food Premises Regulation*] any place where food intended for public consumption is sold, offered for sale, supplied, handled, prepared, packaged, displayed, served, processed, stored, transported or dispensed

forage: plants that are grown for animal feed

forb: any broad-leafed, flowering plant with non-woody stem that is not a grass or grass-like plant

foreign matter: [from the *Code of Practice of Agricultural Environmental Management*] a contaminant that does not readily decompose during an agricultural composting process, and does not include silt, sand, rocks or stones, gravel less than 2.5 cm in diameter, or other mineral materials naturally found in soil.

forest: [from Environment Canada] a minimum area of one hectare, at least 20 metres wide, with tree crown cover (or equivalent stocking level) of more than 25% with trees having the potential to reach a minimum height of 5 metres at maturity. A forest may consist of closed forest formations (where trees of various storeys and undergrowth cover a high proportion of the ground) or open forest. Young natural stands and all plantations which have yet to reach a crown density of 25% or tree height of 5 metres are considered to be forest. As well, forest includes areas normally forming part of the forest area that are temporarily unstocked as a result of human intervention (such as harvesting) or natural causes, but which are expected to revert to forest.

fossil fuel: fuel (e.g. oil, gasoline, diesel, propane and natural gas) that is produced from carbon chains that have been stored underground for millions of years. When combusted, these fuels release carbon dioxide into the atmosphere.

freeboard: the distance between the full storage level and the upper edge of the storage structure; provided to prevent overtopping due to unforeseen conditions (i.e., for water in a ditch it is the distance from the surface of the water to the top of the ditch bank)

free passage of water and fish: in-stream structures constructed so as not to restrict "normal" passage of water and fish (i.e., culverts that can pass the flood flow and allow fish to move through freely)

french drain: see **blind drain**

freshet: a sudden rise or overflow of a watercourse as a result of heavy rains or rapidly melting snow

fuel storage: containment of gasoline or diesel fuels in stationary storages

mobile storage: any containers that will be transported containing fuel, such as jerry cans, truck-box tanks

stationary storage: any containers, whether above or below ground, permanently located

above ground storage: fuel tanks spaced above the earth surface on a non-combustible stand, requiring spill containment, drip prevention, mechanical protection from vehicles, etc., as shown in Figure 2.2, page 2-19

below ground storage: fuel tanks buried in the earth, requiring secondary containment, such as a double walled tank, leak detection, etc

anti-siphon device: installed in the tank discharge line if a self closing nozzle is not used

gas emissions: vapour release from fuel storage into the atmosphere due to heating of the fuel, such as from exposure to the sun

pressure relief valve vent cap: a device to reduce gas emission release to the atmosphere by allowing a slight pressure increase in the fuel tank prior to venting; best incorporated with tanks that are painted a light colour and/or roofed to reduce tank heat and therefore pressure buildup

secondary containment of fuel: see secondary containment, and leak detection

self closing nozzle: installed in the tank discharge line to prevent accidental release of fuel, such as a spring-return handle valve

fur farm: farm production of fur-bearing animals

G

game farm: [from the *Game Farm Regulation*] the land on which game is kept with the intention of using the game for commercial purposes.

game: [from the *Game Farm Regulation*] fallow deer, bison and reindeer

gas emissions: see fuel storage

gear up – throttle down: a tractor driving technique to reduce fuel use whereby the driver reduces engine speed and shifts up a gear to maintain the same ground speed

geosynthetic: man-made materials used to improve soil conditions

geotextile: a man made plastics fabric used to increase the bearing capacity of soil by acting as a blanket to add reinforcement and separation; placed on the soil or subsoil to form a mat between the underlying soil and products that are placed on them, such as used under gravel at a livestock watercourse access point

global warming potential (GWP): GWP is a relative unit measured against the baseline of carbon dioxide that is a measure of the ability of a greenhouse gas to trap heat and its viable time in the atmosphere.

grassed waterway: a natural or constructed watercourse or outlet that is shaped or graded and planted with suitable vegetation for the purpose of dispersing surface water flow without causing erosion

grasslands: important wildlife habitat and forage lands for grazing livestock; cover 1.5% of BC's land area

grazing area: [from the *AEM Code*] a pasture or rangeland where livestock, poultry feed primarily sustained by direct consumption of plants growing on the pasture or rangeland.

grazing: the consumption of standing forage (herbaceous plants) by livestock or wildlife, such as on a pasture or rangeland (also see **browse**)

intensively-managed grazing: subdivision of a grazing area into small units, with grazing periods typically less than five days; may involve an increase in stocking rates, forage utilization, labour, resources, and/or capital; results in increased production per unit area or per animal (also see **livestock production**)

greenhouse effect: the warming of the earth's atmosphere caused by a build-up of carbon dioxide or other gases; it is believed this build-up allows sunlight to heat the earth but prevents a counterbalancing loss of heat

GHGs/greenhouse gases/global warming gases: carbon dioxide, methane, nitrous oxide, that contribute to the greenhouse effect

green manure crop: a cover crop, often a forage species such as barley or oats, that is plowed down into the soil late in the fall or early in the spring for to provide nutrients and organic matter to the soil

ground level ozone: see ozone

groundwater: [Code of Practice for Agricultural Environmental Management] water that naturally occurs below the surface of the ground. [From the *Municipal Sewage Regulation*] subsurface water at or below a water table in fully saturated geologic materials and formations

groundwater contamination potential: the potential for contaminants to move through the soil into groundwater; influenced by risk of spills from storage or mixing areas, the absence of secondary contaminant or impermeable floors, soil characteristics and the level of the water table

groundwater mining: removal of groundwater exceeding recharge

groundwater recharge: the inflow of water to an aquifer

recharge area: land area over which water infiltrates to replenish an aquifer; for unconfined aquifers the area is essentially the entire land surface overlaying the aquifer; for confined aquifers the recharge area may be part of or unrelated to the overlying area (see **aquifer**)

seepage area: see **seepage**

groundwater table: see **water table**

gully: a furrow, channel, or miniature valley, usually with steep sides through which water commonly flows during and immediately after rains or snow melt; too large for farm equipment to cross

H

habitat: the air, soil, water, food and cover components of the environment on which a plant or animal depend directly or indirectly in order to carry out their life processes such as eating, staying safe from predators, and reproducing

connectivity: availability of habitat for species depends on the species' ability to move between habitat patches; keeping habitat patches connected in a corridor increases the value of habitat patches

critical habitat: [from the *Species at Risk Act*] the habitat that is necessary for the survival or recovery of a listed wildlife species and that is identified as the species' critical habitat in the recovery strategy or in an action plan for the species

fish habitat: [from the federal *Fisheries Act*] spawning grounds and nursery, rearing, food supply and migration areas on which fish depend directly or indirectly in order to carry out their life processes

wildlife habitat: [from the *Wildlife Act*] the air, soil, water, food and cover components of the environment on which wildlife or species at risk depend directly or indirectly in order to carry out their life processes

hard-surfacing: impervious layer installed on outdoor areas subject to concentrated impacts, especially in high precipitation areas, such as concrete livestock yards (also see **high precipitation**)

hay and haylage: see **livestock feed**

hazardous waste: [from the *Hazardous Waste Regulation*] dangerous goods that are no longer used for their original purpose, as listed in the Regulation

health hazard: [from the *Public Health Act*](a) a condition, a thing or an activity that (i) endangers, or is likely to endanger, public health, or (ii) interferes, or is likely to interfere, with the suppression of infectious agents or hazardous agents, or (b) a prescribed condition, thing or activity, including a prescribed condition, thing or activity that (i) is associated with injury or illness, or (ii) fails to meet a prescribed standard in relation to health, injury or illness;

heating system: heat supply and control for a building (also see **natural heating**)

interlocked heating and ventilation system: the controls for both heating and ventilation are combined so as to minimize energy use

high efficiency (energy use): lighting, heating or ventilating systems that, by their design or operation, require less energy than other similar systems (efficiency usually is the combination of all system components, including the structure, climatic conditions, controls, etc)

high efficiency lighting: (1) lights – the use of fluorescent, sodium, and metal halide lighting that is more efficient than incandescent lighting; (2) controls – the use of timers and motion sensors to reduce the energy needs of any lighting system

high precipitation: see **precipitation**

high-risk area: [from the Code of Practice for Agricultural Environmental Management] means any of the following:

- (a) a high-precipitation area;
- (b) a vulnerable aquifer recharge area;
- (c) a phosphorus-affected area;
- (d) an area identified by a director as having permanent or usual geographic, topographic, weather-related or other features that present a high risk for adverse impacts on the environment or human health

holding tank: see **septic tank**

hummocking: small-scale relief or ground disturbance characterized by raised mounds of soil; may result from trampling by large animals (also see **pugging**)

humus: well decomposed organic matter which gives soil its dark colour and earthy smell; holds nutrients and binds mineral particles in soil

hydraulic conductivity: a measure of the rate at which water will move through a permeable soil or rock layer; for a particular soil or rock it may not be the same in the horizontal direction as in the vertical direction

hydrologic cycle: the constant circulation of water from the sea, through the atmosphere, to the land, and back to the sea by over-land, underground, and atmospheric routes

hydrology: the science of waters of the earth, including its properties, circulation, principles, and distribution



impermeable: see **permeability** and **impervious**

impervious: see **protective base**. (1) a material that does not allow liquid to move through it, such as sealed concrete, roofs and hard surfaced roads (2) a soil having a permeability not greater than 1×10^{-7} cm per second when subjected to a head of 0.305 m of water; impervious surfaces decrease (or eliminate) infiltration and increase (or maximize) runoff

incorporation: mixing of fertilizers into the soil so plant roots can absorb nutrients more easily; done by tillage or by equipment placing the fertilizer in a band below the soil surface

indoor: enclosed and protected from precipitation and wind, such as in a building, but not a shipping container used for passive storage

inert: a material that does not show a chemical or biological action

infiltration: the downward entry of water into the Earth's surface (usually into soil or rock); the movement of water or any liquid through the top surface layer (less than 1 cm) of the soil; the terms hydraulic conductivity, percolation, and permeability usually refer to water movement within a soil or rock layer

injector: a system to apply manure in bands under the soil surface rather than on top of the soil

inorganic: see **organic**

instream crossing: see **stream crossing**

insulation: material used to resist the flow of heat into or out of a structure, considerably more resistant than structural materials; usually in conjunction with moisture control (vapour barrier); required levels are set by building codes

intake: a structure or mechanism to divert water into a domestic or irrigation system

fish screening: a specific design to both prevent fish from being drawn into a water system (with screen openings that do not exceed 2.54 mm) and to prevent fish being forcefully drawn against the screen (by ensuring low intake water velocity), as outlined in **Water Intakes**, on page 9-13

Integrated Pest Management: (a) a management method requiring pests to be monitored in order to target pesticide applications, with the expectation that pesticide use will be reduced; (b) [*Integrated Pest Management Act*] decision making process that uses a combination of techniques to suppress pests and that must include but is not limited to the following elements: (i) planning and managing ecosystems to prevent organisms from becoming pests; (ii) identifying potential pest problems; (iii) monitoring populations of pests and beneficial organisms, pest damage and environmental conditions; (iv) using injury thresholds in making treatment decisions; (v) reducing pest populations to acceptable levels using strategies that may include a combination of biological, physical, cultural, mechanical, behavioural and chemical controls; (vi) evaluating the effectiveness of treatments

intensively-managed livestock:
see **livestock production**

interlocked heating and ventilation system: see **heating system**

introduce into the environment: [from the *Environmental Management Act*] in relation to waste includes discharge, emit, dump, abandon, spill, release and allow to escape into the environment

invasive pest: see **pest**

inversion: an atmospheric condition of a stable air mass where air temperature increases with an increase in altitude above the earth and stagnant air remains near the surface (also see **open burning** - ventilation index)

irrigation: the controlled withdrawal of water from an assured supply and its application as crop water to the soil to replenish water removed by evaporation, by growing plants, and by drainage below the root zone; as needed by climatic conditions

annual water use: the water used for irrigation during one season; given as inches of water over the crop area, or, as on a water licence, as acre-feet of water (also see **acre-foot**)

centre pivot irrigation: automated systems where a wheel line pivots in circle around a field

flood irrigation: water is turned into a field without any flow control such as furrows, borders or corrugations. This is the least efficient, least uniform and least effective method of irrigation.

irrigation efficiency: the ratio of the average depth of water that is beneficially used to the average depth applied, expressed as a percentage

irrigation gun: water is sprayed or sprinkled in high volumes through the air to the ground surface; may be used to apply liquid manure onto soil

irrigation interval: the average time interval between the commencement of successive irrigation on a field

irrigation set: the area of a field irrigated at one time

irrigation system uniformity: the ability of a system to apply water evenly over the crop; desirable to minimize water use and particularly important when chemigating; will vary with system design, maintenance, etc.

irrigation water quality: see **water quality**

peak flow: the water flow rate necessary to meet the expected maximum water demand of an irrigation system

sprinkler irrigation: water is sprayed or sprinkled through the air to the ground surface

subirrigation: application of irrigation water below the ground surface by raising the water table to within or near the root zone

trickle irrigation: a method of microirrigation where frequent, low pressure of water is applied to the soil surface as drops or small streams through emitters at the plant location; includes tape, drip emitter or spray emitter systems

L

land: [from the *Environmental Management Act*] the solid part of the earth's surface including the foreshore and land covered by water

leachate: (a) a product from water moving through a material, such as wood residue, manure or soil, creating a contaminated liquid, or (b) [from the *Mushroom Composting Facilities Regulation*] liquid effluent originating from organic materials being received, processed, composted, cured or stored at a mushroom compost facility, or any water, precipitation or runoff that has come into contact with, or mixed with, the liquid effluent.; refer to **Figure 9.6, page 9-63**

silage leachate: see **livestock feed**

wood residue leachate: see **wood residue**

leaching: the natural process by which salts and other soluble materials are removed from soil or other materials by percolating water; they may then move into and through the soil (also see **percolation**)

leak detection: a method or system whereby a storage facility is monitored for escape of stored material, such as manure in semi-solid or liquid pits, or petroleum fuel from under ground tank storage

lighting: the introduction of light into a farm structure to maintain adequate conditions for livestock, plants or other reasons using natural or artificial means

natural lighting: the use of natural site, environmental and structural conditions to supply light, such as structure orientation in a southerly direction, the use of overhead panels, etc.

lignosulfonates: material used for dust suppression on roads

lime: calcium carbonate, or agricultural limestone; a soil amendment used on acidic soils (pH less than 7)

livestock: domestic animals raised for breeding or food purposes, including all farm animals and birds

livestock bedding: (a) material upon which livestock may recline; often supplied material is wood-based, such as sawdust or shavings, which should be applied to soil of known C:N ratio (see **C:N**); (b) area where livestock may recline; needs to be selected considering potential impacts to water, fish, and habitat

livestock housing: a structure, usually roofed, that contains livestock, whether temporary or continuously

livestock management: application of technical principles and business methods to livestock production

livestock access: see **livestock watering**

livestock feed: crop grown and harvested for livestock

hay: dried grass or legumes harvested and stored for livestock feed; typically less than 20 percent moisture content

haylage: low-moisture silage; usually 40 to 50 percent moisture content

silage: green forage converted to animal feed through fermentation; usually 65 to 70 percent moisture content

silage leachate: normally generated from stored silage; is a high oxygen-demanding material which is toxic to aquatic life and must be contained

livestock feed storage: structures design to store feed protected from the effects of weather, especially water; incorporate methods to control roof stormwater, and to manage material leachate where appropriate

silo: structure for storing silage or haylage; may be a vertical cylinder, or a horizontal trench or bunker

livestock production:
the business of producing livestock

extensive grazing livestock: providing a pasture or grazing area large enough to supply all the animals nutrient requirements

intensive grazing livestock: providing supplemental feed to animals in addition to the feed on a pasture or grazing area as the area does not supply all the animals nutrient requirements

intensively-managed livestock: where significant management is required for both livestock production and environmental protection

livestock watering: either in-stream or off-stream systems to supply livestock water

livestock water development: a new or improved source of water, such as a well, spring, or pond, together with a storage and delivery system

in-stream watering: a system where livestock access a watercourse directly, sometime with restricted or managed access locations

off-stream watering: a system where livestock are provided water, usually by pipe and water trough located back from the watercourse, that reduces impacts to the watercourse

managed access: the duration, timing and intensity of livestock access to a watercourse is controlled to minimize the impact on water quality and riparian area health

low precipitation: see **soil-based yards**

low livestock density: see **soil-based yards**

lure crops: crops such as cereal grains or vegetables which are planted on lands surrounding a specific area where wildlife or waterfowl tend to congregate; grown as a sacrifice crop to try to distract the wildlife away from cash crop area

M

macropore: the large pores responsible for rapid water movement in soil; usually greater than 0.1 mm diameter

MAFF: Ministry of Agriculture, Food and Fisheries

manage: (a) to have under effective control; (b) to use to the best advantage

managed access: see **livestock watering**

manure: animal feces and urine, plus materials such as bedding and waste water

manure, liquid: [*Code of Practice for Agricultural Environmental Management*]: raw or untreated liquid excreta from livestock or poultry, whether or not it is mixed with wastewater, or animal bedding, feed or other solids

manure, solid: [*Code of Practice for Agricultural Environmental Management*]: raw or untreated solid excreta from livestock or poultry, whether or not mixed with animal bedding, feed or other solids

manure spreading: application of manure onto crop land according to its nutrient content; should be part of a Nutrient Management Plan (also see **Nutrient Management Plan**)

manure handling: the agitation, movement or transport of manure within the farm site or between storage or treatment locations

manure testing: laboratory analysis of a sample of manure for dry matter, nitrogen, phosphorous, potash, and other nutrients; a part of a Nutrient Management Plan (also see **Nutrient Management Plan**)

manure used as a fertilizer: application of manure according to its fertilizer value (also see **fertilizer**)

manure storage: [from the *AEM Code under the Agricultural Waste Control Regulation*, item 4] on-farm agriculture waste must be produced or used on that farm

manure storage facility: [from the *AEM Code* under the *Agricultural Waste Control Regulation*] includes a structure, reservoir, lagoon, cistern, gutter, tank or bermed area for containing agricultural waste prior to its use or disposal, but does not include a vehicle or any mobile equipment used for transportation or disposal of agricultural waste

earthen storage: a structure constructed primarily of natural geological materials, usually for liquid manure storage

field storage: field storage - "temporary": [*Code of Practice for Agricultural Environmental Management*] the storage of solid agricultural by-products or wood residue outside in a field, but not in a structure, before their use or disposal

secondary containment: a facility that prevents manure loss into the environment in the case that the primary containment facility fails

structurally sound: manure storage built to specifications that prevent manure loss or structural failure

sufficient capacity: capacity to store waste produced or used on a farm for the period of time needed to allow for either the application as a fertilizer or soil conditioner or its removal

marine plant: [from the federal *Fisheries Act*] includes all benthic and detached algae, marine flowering plants, brown algae, red algae, green algae and phytoplankton

meanders: where a stream flows from side-to-side creating loops, bends and curves (also see **sinuosity**)

metals: chemical elements which are usually found in small amounts in soil, some of which are required in trace amounts to plants (micronutrients), but can become toxic to plants, animals and soil biology; examples are arsenic, cadmium and lead

methane (CH₄): a greenhouse gas that is produced during anaerobic decomposition of organic wastes such as manure.

micronutrients: chemical elements that are necessary in only trace amounts (usually less than 1 ug/mL in plants) for the growth of plants; examples are boron, copper, iron, zinc

milkhouse waste: waste from the milking process, including manure, spilled milk, udder washings, and equipment wash water containing detergents, acids and chlorine

minimum tillage: see **tillage**

mitigation: projects, actions and management practices that result in a reduction of greenhouse gas emissions from farms and agri-food activities

monitoring: the process of checking, observing, or keeping track of something for a specified period of time, or at specified intervals

mortality: [From the *Code of Practice for Agricultural Environmental Management*] livestock or poultry that have died from causes other than slaughter and are not fit for human consumption

mass mortality: livestock losses exceeding normal death loss, usually due to uncontrollable circumstances such as disease, vandalism, loss of electrical power, etc; requires a response contingency plan (also see **contingency plan**)

mortality record: a record of the location, amount and type of material in on-farm mortality pits

mortality disposal: methods to properly dispose of livestock based on the cause of death, as outlined in **Table 3.4, page 3-32**

burial: [From the *Code of Practice for Agricultural Environmental Management*] mortalities that are buried must be done in pits that are not closer than 60 m to one another (unless each pit has been unused for 10 years), must contain no more than 2.5 tonnes, must not be placed in or over soil that has a saturated hydraulic conductivity of more than 10-3 cm/s (coarse-textured soil), in or in the vicinity of, unstable soils, in any area where there is standing water or water-saturated soil, or in fields prone to flooding or within a 200-year flood plain. There must be 1.5 m of clearance from the bottom of the pit to either bedrock or seasonal high water table, and the buried materials must be covered with at least 0.6 m of soil.

mortality composting: [From the *Code of Practice for Agricultural Environmental Management*] mortalities may be composted as long as the pile is not located in any area in which there is standing water or water-saturated soil or in any areas prone to flooding. The pile must not remain for a period of more than 15 months and no other pile may be placed in the same location for at least 3 years.

mortality incinerator: designed such that emissions of particulate matter from the incinerator, determined under standard conditions of an O₂ reference level of 11%, at 25°C and 101.3 kPa, do not exceed the following limits:

- (i) for an existing incinerator, 180 mg/m³;
- (ii) for a new incinerator that has a chamber capacity of
 - (A) less than 181 kg, 175 mg/m³, or
 - (B) 181 kg or more, 155 mg/m³.

natural disposal: wildlife consumption of mortalities; normally the least preferred method; used only in appropriate areas of BC and those remote from neighbours

secondary users: rendering plants

mulch: a protective covering spread or left on the ground to reduce evaporation, maintain even soil temperature, prevent erosion, control weeds or enrich the soil; such as leaves or wood residue

mushroom compost: [from the *Mushroom Compost Facilities Regulation*] a growing medium for mushrooms produced through the biological decomposition of organic materials under controlled circumstances

mushroom media: the growing material for mushrooms, produced from composting

fresh media: ready-to-use media from composting

spent media: the growing material after a mushroom crop has been harvested, having no further production potential; is subsequently applied to land as a soil conditioner

Mycorrhizae fungi: a beneficial soil fungus well known to facilitate access to water and phosphorus absorption in corn and many other crops

N

native species: [from the *BC Wildlife Act*] a species that is (a) indigenous to BC, or (b) has extended its range into BC from another part of North America, unless the species was introduced by human intervention or activities, or any part of the extension of its range within North America was aided by human intervention or activities. Native species refer to species that naturally occur in an area, such as antelope sage brush in the Okanagan. Native species include plants and animals

natural flow: see stream

natural stream: watercourses that have not been significantly altered by human activity and are predominantly in their natural state.

natural heating: heat derived from natural sources, such as earth heat or solar heat, including equipment, controls, etc; for a building, water trough, etc

nitrate test: [From the *Code of Practice for Agricultural Environmental Management*] a test for residual levels of nitrates in soil conducted in accordance with section 54 of the AEM

nitrogen: a primary plant nutrient; taken up by plants primarily as nitrate (NO₃⁻) or ammonium (NH₄⁺)

inorganic nitrogen - ammonium (NH₄⁺): common form used by plants; is soluble and found in the liquid fraction of soil

inorganic nitrogen - ammonia (NH₃): a gaseous compound of nitrogen and hydrogen dominant at pH > 7, soluble in water and easily volatilized

inorganic nitrogen - nitrate (NO₃⁻) and nitrite (NO₂⁻): nitrite is an unstable transitional form of nitrate; nitrate does not generally bind to soil particles and is therefore prone to leaching; both can be toxic to fish

organic nitrogen: most of nitrogen in soil (98%) is tied up in organic matter and unavailable to plants

denitrification: a microbiological process where nitrate is reduced resulting in gaseous nitrogen compounds. depending on the environmental conditions and bacterial populations, the process may result in nitrogen or other forms of nitrogen including nitrous oxide and nitrogen oxides; nitrate nitrogen (NO₃⁻) is changed to nitrite (NO₂⁻) and then to gases, nitrous oxide (N₂O), nitric oxide (NO), and nitrogen (N₂); occurs under anaerobic conditions caused by excessive moisture and/or soil compaction; nitrogen may be lost from the soil to the atmosphere

nitrification: the oxidation (process of combining with oxygen) of ammonium (NH₄⁺) to nitrite (NO₂⁻) and then to nitrate nitrogen (NO₃⁻) in soil by soil bacteria; occurs readily under conditions of warm temperatures, adequate oxygen and moisture, and optimum pH; a vital process in providing nitrogen for plant growth

nitrogen cycle: the continuous recycling of nitrogen in the environment, as shown in Figure 8.2, page 8-4

nitrogen fixation: the process of nitrogen combining with oxygen and hydrogen; a major source of nitrogen for terrestrial ecosystems; may be fixed by various soil organisms; the fertilizer industry fixes nitrogen in manufacturing nitrogen fertilizers

nitrogen oxides (NO_x): air contaminants that contribute to the production of ground level ozone which results in adverse health effects, negatively impacts crop growth and can contribute to acid rain production

nitrous oxide (N₂O): a greenhouse gas produced in the soil from the biochemical reduction of nitrate nitrogen to gaseous nitrogen compounds

non-agricultural waste: waste generated by a non-agricultural operation

Normal Farm Practice: [from *Farm Practices Protection (Right to Farm) Act*] means a practice that is conducted by a farm business in a manner consistent with (a) proper and accepted customs and standards as established and followed by similar farm businesses under similar circumstances, and (b) any standards prescribed by the Lieutenant Governor in Council, and includes a practice that makes use of innovative technology in a manner consistent with proper advanced farm management practices and with any standards prescribed under paragraph (b).

noxious weed: [from *Weed Control Act*] a weed designated by regulation to be a noxious weed, and includes the seeds of the noxious weed; specified in *Weed Control Regulation, Schedule A*

nuisance: a source of annoyance, such as noise, odour or dust

nursery: production of young plants for transplanting

container nursery: nursery plants grown in containers

nutrient: (a) a chemical element that is essential for growth, development or reproduction of living organisms (i.e., plants, animals); (b) as a pollutant, any element or compound that fuels abnormally high organic growth in aquatic ecosystems, such as nitrogen or phosphorous causing eutrophication of a lake (also see plant nutrients)

Nutrient Management Plan: a technical process that optimizes the relationship between land-based application of nutrients, farm management techniques, crop requirements and land use to maximize on site nutrient use and minimize environmental impact; the process attempts to balance nutrients on an individual crop or field basis as well as on a whole farm basis; refer to [page 6-11](#)

nutrient applicator calibration: a detailed method of ensuring nutrient application is uniform and in appropriate amount

nutrient cycle: the movement of nutrients from plants to animals and back, such as the growth of forage which is grazed by livestock whose manure is spread onto the forage land for crop growth



odour: the term used to describe the effect of various substances on the human olfactory system. Odours are generally characterized using the four basic parameters of detection threshold, intensity, persistency, hedonic tone (subjective experience). While "odour" is listed as a possible air contaminant within the *Environmental Management Act*, the *Code of Practice for Agricultural Environmental Management* clarifies that an odour does not interfere with the normal conduct of business if it is produced in carrying out an agricultural operation in accordance with normal agricultural practices, and ammonia, sulphur and other harmful compounds associated with the odour do not settle out of the air into a watercourse or across a property boundary

at a level that would cause injury, interference, discomfort or damage

off-farm: any activity, construction or practice that occurs on land other than a farm

on-farm: any activity, construction or practice that occurs on land of a farm, either at a farmstead site or at farm fields

direct farm sales: sale of farm products directly to the consumer on-farm

on-farm processing: processing of farm products, such as washing, grading, packaging, or processing to increase product value, such as making wine or ice cream

opacity: the degree to which a discharge of an air contaminant reduces the passage of light or obscures the view of a background object; expressed as zero percent (transparent) to 100 percent (opaque)

open fires: as regulated by the *Wildfire Act*; within 1 km of forest land or grass land (as outlined in [Appendix A, page A-15](#)) (see also [outdoor burning](#))

Danger Region: three provincial regions (*Wildfire Regulation, Schedule 1*)

Fire Danger Class: five classes depending on the **Buildup Index** and the **Fire Weather Index** (*Wildfire Regulation, Schedule 2*)

Buildup Index: [from *Wildfire Regulation*] five levels the same as in the Canadian Forest Fire Weather Index System (Canadian Forest Service)

Fire Weather Index: [from *Wildfire Regulation*] three provincial regions as defined in the Canadian Forest Fire Weather Index System (Canadian Forest Service)

Restrictions on High Risk Activities: requirements regarding the top three Fire Danger Classes (*Wildfire Regulation*, Schedule 3)

organic: (a) referring to, or derived from, living organisms; (b) in chemistry, any compound containing carbon

inorganic: matter other than plant or animal, and not containing a combination of carbon/hydrogen/oxygen as in living things

organic matter: (1) [from *Organic Matter Recycling Regulation*] those materials, other than agricultural wastes, set out in Schedule 12 that are suitable for composting (also see **soil organic matter**). This includes: animal bedding, biosolids, brewery waste, winery waste, domestic septic tank sludge, fish waste, food waste, hatchery waste, manure, milk processing waste, plant matter derived from processing plants, poultry carcasses, red-meat waste, untreated and unprocessed wood residuals, whey, and yard waste.

organic soil subsidence: a gradual lowering of the surface elevation of an organic muck soil, or a reduction in the thickness of organic matter. The organic matter is lost or broken down in a number of ways: wind erosion, water erosion, biological oxidation (drainage and tillage add air to the soil, speeding the degradation of organic materials by aerobic bacteria.)

organism: a living thing

outdoor burning: the combustion of material with or without control of the combustion air and without a stack or chimney to vent the emitted products of combustion to the atmosphere (see also open fires)

open burning: [from *Open Burning Smoke Control Regulation*] the combustion of vegetative debris using an open fire, other than for a domestic or an agricultural purpose, if all of the vegetative debris is branches or other pieces of vegetative debris, with or without leaves, each branch or piece of which is less than 3 cm in diameter, or a campfire.

open fire: the combustion of material without using a stack or chimney to vent the emitted products of combustion to the atmosphere.

smoke: the gases, particulate matter and products of combustion emitted into the atmosphere when debris is open burned

ventilation index: a measure of the ability of the atmosphere to vent or disperse smoke or other particulates: 0-33 is poor; 34-54 is fair; 55-100 is good (see **inversion**)

outdoor livestock area: see **confined livestock area**, **seasonal feeding area**, and **grazing area**

overland flow: water that moves over the land surface (see also **runoff**)

concentrated flow: surface water flow that accumulates or converges into well-defined channels; influenced by soil and soil cover; depending on the grade (water velocity) may lead to soil erosion

sheet flow: surface water flow that is spread out like a sheet on the land

overwintering: see **seasonal feeding area**

oxygen demand: the need for oxygen to meet the needs of biological and chemical processes in water

BOD or biological oxygen demand: a measure of dissolved oxygen required by micro-organisms in the biochemical oxidation of organic matter, such as wastes in water (also see **dissolved oxygen**)

ozone: a form of oxygen with a sharp smell

ground level ozone: formed in the presence of sunlight by reactions between nitrogen oxides and volatile organic compounds (VOCs); ground level ozone is a pollutant that along with other substances forms smog and can be harmful to plant, animal and human health

ozone depleting substance: a substance listed in Class I or Class II of Schedule A of the *Ozone Depleting Substances and Other Halocarbons Regulation*

ozonosphere: also known as 'the ozone layer'; the atmospheric region about 40 km above Earth characterized by a high ozone content; is affected by ozone depleting substances

P

paddock: an outdoor livestock area; may be either a confined livestock area (horse paddock) or a grazing area (pasture)

pasture: (a) a grazing area enclosed and separated from other areas by fencing or other barriers; (b) the management unit for grazing land

intensively-managed pasture: forage production is maximized with fertilizer and irrigation, as required, for continuous livestock grazing during the crop growing season

particulates: solid particles in the atmosphere either formed in the air by reactions among gasses or injected into the air by processes on the ground. (for particulates in water see **suspended solids**)

parts per million: the number of “parts” by weight of a substance per million parts of water (written as ppm); used to represent pollutant concentrations

pathogen: an organism capable of causing disease in humans, animals or plants

peak flow: see **irrigation** and **stormwater management**

percent slope: the rise in land (vertical distance from the horizontal) divided by the *run* (horizontal distance) expressed as a percentage; e.g., a 5% slope would be a 5 m rise over 100 m length

percolation: the downward movement of water through layers of soil, rock or other material

perennial: a plant that lives for more than two years

perimeter drain: a piping system to carry clean roof water and soil moisture away from a building foundation, for structural-integrity purposes

Tracing dye: such as a water soluble disodium salt of fluorescein, used to test if water flow is connected between “clean” drains and “dirty” drains

permanent storage structure: [Code of Practice for Agricultural Environmental Management]: a structure designed and built for storing, before their use or disposal, agricultural by-products or agricultural products, wood residue, or natural or synthetic materials used for the purposes of an agricultural operation, whether or not produced by the agricultural operation, and does not include equipment used to transport these items or dispose of them, or to apply them to land

permeability: a measure of the relative ease with which water will move through soil or rock

impermeable: see **impervious**

Pest Management Plan: [from the *Pesticide Control Act*] a plan that describes (a) a program, for managing pest populations or reducing damage caused by pests, based on integrated pest management, and (b) the methods of handling, preparing, mixing, applying and otherwise using pesticides within the program

pest: [from the *Integrated Pest Management Act*] an injurious, noxious or troublesome living organism, but does not include a virus, bacteria, fungus or internal parasite that exists on humans or animals (also see **weed**)

exotic pest: non-native species of pests

invasive organism: species that were absent in undisturbed portions of the original landscape, such as invasive plants that will invade or increase following disturbance or continuous heavy grazing of the native plants

pest record: a record of pest monitoring and of the control methods used on-farm

pesticide: [from the *Integrated Pest Management Act*] is a micro-organism or material that is represented, sold, used or intended to be used to prevent, destroy, repel or mitigate a pest, and includes (a) a plant growth regulator, plant defoliator or plant desiccant, (b) a control product as defined in the *Pest Control Products Act* (Canada), and (c) a substance that is classified as a pesticide by regulation, but does not include micro-organisms, materials, substances or control products excluded from this definition by regulation

pesticide application equipment calibration: a four step process of ensuring that pesticide application is uniform and at the appropriate rate; the steps are setting up the equipment, measuring the delivery rate, adjusting delivery rate, and for sprayers, calculating how much pesticide to add to the tank; refer to **Equipment Calibration**, **page 5-16**

pesticide applicator certificate: (a) [from the *Integrated Pest Management Act*] a certificate issued to a person who has passed an examination, set by the administrator, in the appropriate applicator category; (b) required for purchase and use of certain pesticides, as listed in *Crop Production Guides*, as shown on page 5-6

pesticide application record: a record of all pesticide applications including the site, date, pesticide and amount used, crop stage, harvest date, application method, spray volume, weather observations, and precautions followed (eg. Buffer zones)

pesticide groupings: pesticides are grouped in four ways; according to (1) the pest they control (fungicides, herbicides, insecticides, miticides, nematicides, rodenticides, molluscicides), (2) the way they enter or affect the target pest (contact or systemic), (3) their chemical structure grouping, (4) resistance management

pesticide resistance: a build-up of immunity to a pesticide, usually due to overuse or appropriate use over an extended period

Pesticide Use Permit: permit required under the *Pesticide Control Act* for application of pesticide

rinsing pesticide containers: see **rinsing method**

pH: the numeric value that describes the intensity of the acid or alkaline condition of a substance; a scale range of 0 to 14, where 7 is neutral, less than 7 is acidic, more than 7 is alkaline

phosphorus: a primary plant nutrient; its availability depends, among other factors, on the soil pH. Phosphorus-affected areas are listed in Schedule A of the AEM however there is no concentration threshold associated with these areas. Surface water, or land that is next to or hydraulically connected to surface water, that (a) is located within the boundaries of an area shown on a map listed in the Code of Practice for Agricultural Environmental Management Schedule A [Phosphorus-affected Areas], and (b) has been, or may be, adversely affected by high phosphorus loading due to the sensitivity of the receiving environment

photosynthesis: the manufacture by plants of carbohydrates and oxygen from carbon dioxide and water in the presence of chlorophyll, using sunlight as an energy source

pitless adaptor: see well casing

plant age mix: see range health

plant nutrients: chemical elements required for plant growth; carbon/hydrogen/oxygen, taken primarily from the air or water, plus others divided into three groups (primary and secondary macronutrients and micronutrients), normally absorbed from the soil by plant roots

carbon/hydrogen/oxygen: basic plant life building blocks

primary plant nutrients: nitrogen, phosphorous, potassium

secondary plant nutrients: calcium, magnesium, sulphur

micronutrients: iron, manganese, boron, chlorine, zinc, copper, molybdenum, and chlorine

plough pan: a compacted layer, restricting root and water movement, which may form in some soils just below the tilled area after several years of primary tillage to the same depth (also see tillage)

point bar: collection of deposited silt, soil, and gravel found on the inside of meanders in a stream

point of diversion: see diversion

pollutant: material which causes harm to organisms directly or to their environment

pollution: [from the *Environmental Management Act*] the presence in the environment of substances of contaminants that substantially alter or impair the usefulness of the environment (also see **contamination** and **deleterious substance**)

non-point source: pollution discharged over a wide land area with no well-defined source, such as erosion from disturbed soil; may be difficult to identify and control

point source: pollution discharged from a well-defined location, such as a pipe

porosity: the percentage of the volume of a material that is occupied by pore spaces; is an indication of the capacity of the material to hold water

potassium: a primary plant nutrient

potable water quality: see water quality

potential contaminant: see contaminant

precipitation: (1) [from the *Organic Matter Recycling Regulation*] as determined by the Canadian Atmospheric Environmental Service Reports of Environment Canada; (2) the process by which water vapour condenses in the atmosphere or onto a land surface in the form of rain, hail, sleet or snow

high precipitation: from [*Code of Practice for Agricultural Environmental Management*]: an area that has, on average, precipitation of 600 mm or more in total during the period that begins on October 1 and that ends on April 30 of the next year

low precipitation: less than 600 mm precipitation October 1st to April 30th inclusive

pressure relief valve vent cap: see fuel storage

probable source of contamination: see well

problem wildlife: see wildlife

processing waste: [from the *Code of Practice for Agricultural Environmental Management*] is solid waste, semi-solid waste and wastewater, as those terms are defined in the Code of Practice for the Slaughter and Poultry Processing Industries

productive conservation: see conservation

protective base: a layer of soil that is at least 30 cm thick, and has a saturated hydraulic conductivity that is less than or equal to 10⁻⁷ cm/s, or any material that does not allow leaks or liquids to soak through, such as: concrete or asphalt pad; a tarp; synthetic liner; or engineered compacted soil

pugging: tracks of large animals left in soft soil; wet clayey or silty soil has the consistency to hold pug marks; upon drying, pugged areas have a honeycombed appearance and a hard, dry, irregular surface difficult to walk across (also see **hummocking**)

puddled soil: dense, massive soil artificially compacted when wet and having no aggregated structure. The condition commonly results from the tillage of a fine-textured or clayey soil when it is wet

R

range or rangeland: land supporting vegetation that is grazed or that has the potential to be grazed, and is managed as a natural ecosystem

forested range: woodlands having understory vegetation suitable for grazing

grassland range: lands on which the vegetation is dominated by grasses, grass-like plants, or forbs

range health: on a site, the combination of the plant community, the layers of plants present, the moisture retention, soil erosion and invasive plants present

plant age mix: the type, amount and age of plants at a site; a range health indicator

rangeland: land on which the native vegetation is predominately grasses, grass-like plants, forbs, or shrubs

reach: length of a stream with similar characteristics, selected for study or observation

receiving waters: watercourses that receive stormwater, runoff, or wastewater discharges

recharge: see groundwater

reclaimed water: [from the *Municipal Sewage Regulation*] effluent from a sewage facility that is suitable for a direct designated water use or a controlled use

refuse: [from the *Environmental Management Act*] discarded or abandoned materials, substances or objects

refuse disposal site: a site selected, planned and managed in such a way to receive farm refuse in an environmentally sound manner

refuse records: a record of the location, amount and type of material in on-farm refuse sites

renewable resource: natural resource which can be re-established mainly because of its ability to reproduce, such as trees or animals, or water, due to the water cycle

reservoir: a water impoundment requiring a constructed dam, such an artificial lake, pond or basin used for the storage, regulation and control of water, silt, debris and other liquid or liquid-carried material (also see **dugout**)

residue: see crop production

return period: the frequency of occurrence of a hydrologic event whose intensity and duration can be expected to be equalled or exceeded; usually expressed in years, such as "the reservoir will fill four years in five"

reuse and recycle:

reuse of farm waste: the first step in using waste, this is a process where a waste is used again for its original purpose or for a purpose similar to the original, such as silage bags reused as tarps to cover hay

recycle of farm waste: the second step in using wastes, this is a process where a waste can no longer be used for its original or similar purpose but is reprocessed into a new product, such as metal equipment parts being recycled as scrap iron

recyclable material: [from the *Environmental Management Act*] a product or substance that has been diverted from disposal, has no reuse value in its present form and satisfies at least one of the following criteria: (a) is organic material that has been diverted from residential, commercial or institutional sources and is capable of being composted, or is being composted, at a site; (b) is managed as a marketable commodity with an established market by the owner or operator of a site; (c) is being used in the manufacture of a new product that has an established market or is being processed as an intermediate stage of an existing manufacturing process; (d) has been identified as a recyclable material in a plan

revetment: installation of materials such as trees, boards, etc., that dissipate or deflect a stream's energy protecting stream banks from erosion

right of way: includes (a) an easement, (b) a statutory right of way, and (c) a limited interest in the land or a licence or a permit that grants the right to construct, operate or maintain works of a lineal nature on, over or under land

rill: see erosion

rinsing method: a requirement of the *Hazardous Waste Regulation* for empty pesticide containers as outlined in **Table 5.2, page 5-12**

pressure rinse: [from the *Hazardous Waste Regulation*] to clean by means of pressurized spraying of an appropriate solvent into an empty container for at least 30 seconds so that all interior surfaces of the container are rinsed

rinse: [from the *Hazardous Waste Regulation*] to introduce an appropriate solvent into an empty container in an amount not less than 20% of its volume, to close and shake the container so that the solvent makes contact with all interior surfaces, and to open and empty the container

triple rinse: a prescribed rinse method for glass pesticide containers

riparian, area or zone: (a) transition area between watercourses and the surrounding, usually drier, upland areas, (b) the area of land that is adjacent to a stream, river, lake or wetland, and contains vegetation that, due to the presence of water, is distinctly different from the vegetation of adjacent upland; in dry locations, is easily identified by the green vegetation in contrast to the browns and yellows of the drier uplands

riparian continuity: where riparian vegetation is uninterrupted by gaps, breaks, or areas of bare ground

riparian vegetation: plant communities dependent upon the presence of free water near the ground surface (high water table)

riparian condition: an assessment of condition leads to an evaluation of riparian health; three levels of functioning condition are:

proper functioning condition: healthy riparian areas with the most stable, non-eroding lands and the best fish habitat

functional at risk: areas that are lacking in some healthy features, and will experience some stream bank erosion and lowering of the water table and fish habitat at risk

non-functional: areas that have few if any healthy features, and which are most likely to have highly eroding banks, and which over time will experience channel deepening and subsequent lowering of the water table and poor fish habitat

river: a stream of water of substantial volume (also see **stream**)

roads: farm access used for normal farm operation

critical slope: except for short lengths, road grade or slope should not exceed 10 percent (1 m fall in 10 m length) to reduce soil erosion

natural contours: where possible to construct, a road using the existing land contour (along a slope) is preferred over one crossing contours (up or down a slope) to reduce soil erosion, etc.

rockwool: an inert, non-polluting, non-degradable spun-rock fiber manufactured from lava rock; used as a soilless rooting media in hydroponic greenhouse systems and nursery crops

root zone: depth of soil that plant roots readily penetrate and in which the predominant root activity occurs

runoff: [from the *Code of Practice for Agricultural Environmental Management*] any of the following, if flowing along the surface of the ground:

- (a) water from equipment, washing or other sources;
- (b) precipitation;
- (c) meltwater from snow, hail or ice.

Also called overland flow; it is the portion of rainfall precipitation (stormwater), snow melt, or irrigation water that moves across the land as surface water flow; occurs when the stormwater amount, snow melt, or irrigation application rate, exceeds the soil infiltration rate, or from the surfacing of subsurface flows before they reach a receiving watercourse or a defined drainage channel

runoff filtration: standing crops and crop residues decrease water velocities resulting in fewer suspended solids and dissolved chemicals being carried by runoff water

runoff storage: containment of runoff (to prevent its entry into groundwater or watercourses) until proper disposal can be done; usually contains little solid material

stormwater: one source of runoff (see *stormwater*)

yard runoff: runoff from livestock yards, possibly containing manure or other contaminants

S

seasonal feeding area: [from the *Code of Practice for Agricultural Environmental Management*] an area, other than a confined livestock area, confined poultry area, grazing area or temporary holding area, (a) used for forage or other crop production, and (b) used seasonally for feeding livestock or poultry that are sustained primarily by supplemental feed

seasonal feeding location: the site within a seasonal feeding area where feeding is actually occurring, usually during the non-crop growing season, often in winter; these sites must be moved through the entire area to ensure manure is properly distributed for the following years' crop needs (note that manure spreading in winter is otherwise not recommended)

free range: an outdoor seasonal feeding area used by poultry

overwintering: a seasonal feeding area used during the non-growing season to feed livestock

perennial versus annual crop: considerations that must be made when managing a seasonal feeding area; some such areas on annual crop land may be characterized as confined livestock areas and must be managed as such

seasonal high water table: [from the *Code of Practice for Agricultural Environmental Management*] the 10-year average highest level to which, at any time during a year, the water table below the surface of the ground rises

secondary containment: a system whereby leakage from, or failure of, a storage facility, piping system, etc., is prevented from escape into the environment; may be a requirement or a beneficial practice for materials that are potential contaminants

liquid manure secondary containment: (a) a method of capturing leaks while in storage; (b) when piped near a watercourse, a second, larger diameter pipe enclosing the manure pipe to collect and direct leaks away from the watercourse

petroleum secondary containment: double-walled tank used for an above- or below-ground storage, or impervious curb and floor under above-ground tanks

seepage: the infiltration and percolation of surface water from overland flow, ditches, channels, or other watercourses

seepage area: a surface area that frequently emits groundwater; it is usually found at the upper contact between a lower impermeable layer and an upper permeable layer

sediment: matter settled to the bottom of a watercourse

sediment load: the amount of sediment carried by running water or wind

self closing nozzle: see **fuel storage**

self-sealing layer: a layer of soil, or mixed soil and manure, that forms between the manure pack and the underlying soil in a confined livestock area, creating a barrier that does not allow leaks or for liquids to soak through

sensitive area: an area on or near a farm that may need to be protected from an unreasonable adverse affect caused by a farm activity; the sensitive area may be an area identified as wildlife habitat, habitat of a specific species recognized for its biodiversity value, human dwellings and activity areas, non target crops in the case of pesticides and nutrient application, or aquatic and riparian areas

septic field: the part of a sewage system that receives the septic tank discharge and disposes of it (also see **sewerage system**)

septic tank: [from the *Sewerage System Regulation*] a water tight container for receiving, treating and settling domestic sewage (also see **sewerage system**)

holding tank: [from the *Sewerage System Regulation*] a water tight container for holding domestic sewage until the domestic sewage is removed for treatment

septic tank maintenance: the periodic removal (usually every 3 to 5 years) of accumulated solids from a septic tank to prevent their moving to the septic adsorption field, thus maintaining the effectiveness and extending the life of the field

set-a-side: an area of cultivated land which has been seeded to a mixed stand of perennial grass and legume forage species; the land is left unharvested for a period of 1 to 5 years specifically for the benefits of soil conservation and wildlife habitat

setback: [from the *Code of Practice of Agricultural Environmental Management*] the distance between a structure or place where an activity is performed for the purposes of an agricultural operation, and a drinking water source, a watercourse or a property boundary

building setback: a distance set as a guideline to reduce risks to a watercourse from a farm building, usually chosen based upon the type of watercourse

sewerage system: [from the *Sewerage System Regulation*] a system for treating domestic sewage that uses one or more treatment methods and a discharge area, but does not include a holding tank or privy (also see **septic tank** and **septic field**)

sheet flow: see **overland flow**

shelterbelt: windbreak of living trees and shrubs established and maintained for protection of farm lands or buildings

shrub: woody plants that are usually multi-stemmed

silage: see **livestock feed**

siltation: the accumulation of sediments on the bottom of watercourses

sinuosity: the amount of curvature in a stream channel (also see **meanders**)

sleighfoot: a system to apply manure in bands on the soil surface underneath a grass canopy

slope: a slant or incline of the land surface, measured in degrees from the horizontal, or in percent (change in elevation per 100 of the same units of horizontal distance)

soil: a mixture of living organisms (such as bacteria, fungi, plant roots), mineral particles, water, air, and dead organic matter; includes the entire mantle of unconsolidated material above bedrock; provides nutrients, moisture, and anchorage for land plants

soil aggregates: a group of soil particles held by cohesion, in such a way that they behave as a unit

soil amendments: includes all materials managed to provide nutrients for crops (fertilizers) and/or all materials managed for their beneficial impact on the biological, physical or chemical nature of the soil (soil conditioners)

soil buffering capacity: the ability of soil to resist a change in its pH

soil cultivation: tillage to prepare land for seeding or transplanting and later to control weeds and loosen the soil

soil compaction: the loss of pore structure and aggregate stability with soil, caused by traffic and tillage, particularly in wet soil; reduces the movement of water, air, nutrients and soil microbes in soil

soil conditioner: (1) [from the *Organic Matter Recycling Regulation*] (a) managed organic matter that measurably improves specific chemical or physical characteristics of soil or chemical or physical processes for a given use, or (b) a plant growth medium; (2) materials that contain limited amounts of nutrient, but are managed for their beneficial impact on the biological, physical or chemical nature of the soil, but not managed as fertilizer (also see **fertilizer**)

soil conditioner versus fertilizer: materials that have properties that allow them to be used as both a fertilizer and a soil conditioner should be managed as a fertilizer; see **Tables 6.4 and 6.5, pages 6-6 and 6-7**

soil moisture: see **soil water**

soilless medium: a material that is manufactured for the growing of plants

soil organic matter: organic matter that has become part of the humus portion of the soil (not crop residue or organic matter on the soil surface)

soil quality: a measure of soil health, having adequate pore space and nutrients, high level of organic matter, good drainage, and an active soil life (such as earthworms, fungi, bacteria)

soil salinity: the relative amount of soluble salts present in the soil expressed in terms of percentage, parts per million, or dS/m; salt in excess can have negative impacts on soil quality and crop production; see **electrical conductivity**

soil structure: the way groups of soil particles (aggregates) are grouped together; a soil that has lots of small aggregates, lots of pore space, and does not crust, has good soil structure

soil texture: the relative portions of clay, sand or silt (the mineral particles) in a soil; described as "sandy loam", "silty clay", etc.

soil water: water in the soil above the water table (also see **water table**)

soil fumigation: pesticide application to the soil to control soil borne pests such as nematodes

soil-based yard: a confined livestock area where livestock use and climatic conditions do not require hard-surfaced yards; is best suited to sites that have both of the following (refer to **Worksheet #1, page 44**) (also see **confined livestock area**):

low precipitation: see **precipitation**

low livestock density: areas of 2 m² or greater per 100 kg of livestock for day use, or 6 m² or greater per 100 kg of livestock for continuous use

solid: [from the *Code of Practice of Agricultural Environmental Management*] a material that contains more than 18% solid matter by mass, and will not flow when piled

special management areas: areas along agricultural land boundaries with residential or other areas that have restricted farming practices so as to reduce neighbour conflicts

special waste: see hazardous waste

species: [from the *Wildlife Amendment Act 2004*] a species, sub-species, variety or genetically or geographically distinct population of (a) animals, (b) fish, (c) plants, or (d) other organisms, except bacteria and viruses

aquatic species: [from the *Species at Risk Act*] a wildlife species that is a fish or a marine plant, as defined in the federal *Fisheries Act* (see fish, and see marine plant)

endangered species: [from the *Species at Risk Act*] means a wildlife species that is facing imminent extirpation or extinction [from the *Wildlife Amendment Act 2004*] means a species designated by regulation under section 6(2) or (4) as an endangered species

extirpated species: [from the *Species at Risk Act*] a wildlife species that no longer exists in the wild in Canada, but exists elsewhere in the wild [from the *Wildlife Act*] means a species designated by regulation under section 6(1) as an extirpated species

native species: [from the *Wildlife Act*] a species that (a) is indigenous to BC, (b) has extended its range into BC from another part of North America, unless (i) the species was introduced to North America by human intervention or activities, or (ii) any part of the extension of its range within North America was aided by human intervention or activities

species at risk: [from the *Species at Risk Act*] an extirpated, endangered or threatened species or a species of special concern; listed in the Act

species of special concern: [from the *Species at Risk Act*] a wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats

threatened species: [from the *Species at Risk Act*] a wildlife species that is likely to become an endangered species if nothing is done to reverse the factors leading to its extirpation or extinction [from the *Wildlife Act*] means a species designated by regulation under section 6(2) or (4) as an endangered species

wildlife species: [from the *Species at Risk Act*] a species, subspecies, variety or geographically or genetically distinct population of animal, plant or other organism, other than a bacterium or virus, that is wild by nature and (a) is native to Canada; or (b) has extended its range into Canada without human intervention and has been present in Canada for at least 50 years

specified risk material (SRM): the tissues of ruminant animals that are of highest risk of transmitting bovine spongiform encephalopathy (BSE)

spent mushroom media: see mushroom media

spill: (a) [from the *Environmental Management Act*] the introduction of a substance into the environment, whether intentional or unintentional, otherwise than as authorized under this Act; (b) [from the *Spill Reporting Regulation*] release or discharge, except as authorized or allowed, into the environment of a substance in an amount equal to or greater than the amount listed in column 2 of the Schedule of this *Regulation* for that substance

fertilizer spill: [from the *Spill Reporting Regulation*] amounts exceeding 50 kg or 50 litres must be reported

manure spill: [from the *Spill Reporting Regulation*] any polluting substance in amounts exceeding 200 kg or 200 litres must be reported

pesticide spill: [from the *Spill Reporting Regulation*] amounts exceeding 5 kg or 5 litres must be reported

petroleum spill: [from the *Spill Reporting Regulation*] amounts exceeding 100 litres must be reported

spinning discs: a system to apply manure onto soil that uses spinning discs to throw and spread the manure

splash plate: a system to apply manure on the soil surface by having pumped manure hit an inclined plate causing the manure to spread out in a fan shape

spoil bank: excavated soil piled along a canal or ditch; may act as a berm (see berm)

spray drift: see off target

spring: groundwater flows that become surface water flows upon exiting from the ground (also see watercourse)

sustainable: land management practices that provide a flow of goods and services from an ecosystem over long periods of time without degradation of the site or decline in yields

stewardship: the conducting, supervising or managing of something, especially the careful and responsible management of something entrusted to one's care; for example, stewardship of biodiversity on agricultural land

stewardship crops: see crops

stockpiled feed: forage grown throughout the summer that is saved expressly for grazing during the dormant season (fall, winter, spring)

stormwater: the portion of runoff that originates as rainfall precipitation; is one source of runoff (also see **runoff**)

detention pond: a pond constructed to collect peak stormwater flow and then release the water at a reduced rate, no greater than historic flow rates

peak flow: when stormwater is flowing at a maximum rate; if the peak flow is increased above historic levels it may cause erosion, habitat loss, etc.

stormwater management: ensuring peak flow rates from a farm during storm events are not increased from those prior to a farm development, such as by the use of detention ponds

stream: [from the *Water Sustainability Act*] a natural watercourse, including a natural glacier course, or a natural body of water, whether or not the stream channel of the stream has been modified, or a natural source of water supply, including, without limitation, a lake, pond, river, creek, spring, ravine, gulch, wetland or glacier, whether or not usually containing water, including ice, but does not include an aquifer. Any body of running water moving under gravity through a clearly defined natural channel to progressively lower levels (also see **watercourse**)

ephemeral stream: a channel (usually vegetated) where water flows only during and immediately after rainfall or snowmelt, normally for less than 30 consecutive days

intermittent stream: a stream (usually unvegetated) with distinct channel development in which water flows during storms or the wet season but dries up during the dry season or drought, usually flows continuously for a month or more; may be either spring-fed or surface fed

permanent stream: a well-defined channel where water usually flows all year

natural flow: the flow as it would be if unaltered by upstream diversion, storage, import, export, or change in upstream use caused by development

stream bed: see **stream channel**

stream channel: (a) [from the *Water Sustainability Act*] the bed of the stream and the banks of the stream, both above and below the natural boundary and whether or not the channel has been modified, and includes side channels of the stream

stream crossing: a means, natural or constructed, whereby livestock and/or machinery may cross a watercourse

in-stream or bed-level: a crossing constructed at the bottom of a stream with a erosion-resistant

surface; water flows over the structure and users must cross through the water

over-stream or mid-level: a crossing constructed above the normal water level; water flows under or through the structure and users cross above the water

stream scour: see **erosion**

strip cropping: the alternation of crop rows and/or forages across the slope of the land to slow water runoff and reduce erosion

structurally sound: see **manure storage facility**

subsoilers: soil-working tool operated below normal tillage depth to break up impervious soil layers and improve root and water penetration

sufficient capacity: see **manure storage facility**

sulphur oxides (SOX): air contaminants resulting from the combustion of fossil fuels or biomass to fuel heating appliances or boilers that contribute to acid rain

surface water: water flowing or stored on the earth's surface (also see **groundwater**)

surface water contamination potential: the potential for contaminants to be transported by water (runoff) into watercourses; influenced by the risk of contaminants to leave storage areas, the distance between contaminants and watercourses, and the pathways from contaminants to watercourses (such as slope of the land, etc.)

surface water flow: see **runoff**

suspended solids: solids that are not in true solution and that can be removed by filtration

swirl chamber: see **windbreak**

T

target & non-target: target pests are those which a pesticide is specifically designed to kill; anything else affected by the pesticide is non-target

off target: when applying pesticides, indicates unwanted movement of pesticide to environmentally sensitive areas; typically by:

1. **direct transport:** movement of soil, vegetation, and other materials that contain pesticide residue
2. **drift:** movement of spray droplets or vapour in the air
3. **leaching:** movement in the water through soil
4. **runoff:** in water or by pesticide bound to eroding soil

temporary holding area: [from the *Code of Practice for Agricultural Environmental Management*] an outdoor holding area on rangeland where livestock are confined by structures while being collected from a grazing area

temporary field storage: [from the *Code of Practice for Agricultural Environmental Management*] the storage of solid agricultural by-products or wood residue outside in a field, but not in a structure, before their use or disposal

thalweg: the deepest part of a stream channel (from *Thal* = valley, and *weg* = path)

tillage: mechanical soil-stirring action for nurturing crops by providing suitable soil environment for seed germination, root growth, and weed and moisture control. The removal of crop residues from the surface can have negative impacts to soil and water conservation. Several alternatives exist, including conservation tillage

conservation tillage: a method which reduces the amount of crop residue incorporated or removed into the soil, but leaves 30% or more of the soil surface covered with crop residue after planting; objectives are soil moisture retention, reduced compaction, and saving of fuel, time, and labour

minimum tillage: a system of farming, primarily used in annual crops, that uses the least number of tillage operations to prepare seedbeds, plant crops, control weeds and harvest the crop; can be as few as one tillage pass which involves the application of fertilizer and the planting of the crop; herbicides are often used to suppress weeds; objectives are to save fuel, time, labour, and moisture, and reduce soil compaction

primary tillage: first operation in preparing cropland, reaching full depth of intended root zone, unless subsoilers are used (also see **plough pan** and **subsoilers**)

secondary tillage: follows primary tillage to prepare soil for planting or to control weeds; usually not as deep as primary tillage

timing window: indicate when it is appropriate to proceed with the proposed development in water bodies or watercourses. These timing constraints typically coincide with critical periods in the life cycle of fish (reproduction, incubation and nursery activities)

topography: description of a landscapes' features such as hills, valleys, rivers, etc.

toxin: a poison produced by a living organism

transpiration: the process by which water absorbed by plants, usually through the roots, is evaporated into the atmosphere from the plant surface, principally from the leaves

treated wood: wood with chemicals added to slow decay

water-based preservatives: preservatives which do not present a significant leaching problem, such as chromated copper arsenic

oil-based preservatives: preservatives which leach from wood, such as creosote

triple rinse: see **rinsing method**

T-sum: the accumulated mean daily temperatures (in °C) above zero, starting on January 1 (below-zero temperatures are ignored); used as a method to determine when to make the first application of nitrogen fertilizer in the spring; refer to web site

<https://farmwest.com/climate/tsum>

U

ungulate: a mammal having hooves

upland: the area away from the riparian area that shows no effects of the riparian moisture; in dry locations, is easily identified by the brown and yellow vegetation in contrast to the green of the wetter riparian area; farm activities in the upland can impact riparian areas and watercourses

used oil: see **waste oil**

V

vector: [from the *Code of Practice of Agricultural Environmental Management*] an organism that is capable of transmitting a pathogen from one animal, place or thing to another

ventilation: the movement of air through a farm structure to maintain adequate conditions for livestock or plants; removes moisture, excess heat odours and gases, air-borne dust, and provides fresh air

natural ventilation: the use of fixed and adjustable openings in a building, along with natural site and environmental conditions, to achieve air movement

ventilation index: see **open burning**

volatile organic compounds (VOC) organic chemicals released from manure, some crops, some pesticides and petroleum products; may contribute to the production of ground level ozone and the formation of fine particulate matter in the presence of other compounds

volatilize: the process of chemicals moving from the liquid phase to the gaseous phase

vulnerable aquifer recharge area: [from the *Code of Practice of Agricultural Environmental Management*] is land that is located within the boundaries of an area shown on a map listed in Schedule B, and from which surface water may infiltrate the ground to reach an aquifer that is, due to the nature of the overlying soil layers, highly or moderately vulnerable to pollution or contamination from the land surface, or is, or is at risk of being, adversely affected by nitrates

W

waste: [from the *Environmental Management Act*] includes air contaminants, litter, effluent, refuse, biomedical waste, hazardous wastes, and any other substance designated by the Lieutenant Governor in Council

waste discharge: the introduction of a waste into the environment

waste discharge approval: [from the *Environmental Management Act*] a director may approve the introduction of waste into the environment for a period of up to 15 months without issuing a permit

waste discharge permit: [from the *Environmental Management Act*] a director may issue a permit authorizing the introduction of waste into the environment subject to requirements for the protection of the environment that the manager considers advisable

waste oil: [from the *Hazardous Waste Regulation*] automotive lubricating oil, cutting oil, fuel oil, gear oil, hydraulic oil or any other refined petroleum based oil or synthetic oil where the oils are in the waste in a total concentration greater than 3% by weight and the oils through use, storage or handling have become unsuitable for their original purpose due to the presence of impurities or loss of original properties; under the *Hazardous Waste Regulation* cannot be applied to roads for dust suppression

wastewater: [from the *Code of Practice for Agricultural Environmental Management*] includes the following: (a) wastewater from flush barns and mushroom growing barns and pads; (b) wastewater from washing, grading or packaging agricultural products; (c) milk house wastewater and milk-based waste; (d) used or recycled water from irrigation or fertigation

water: [from the *Environmental Management Act*] includes groundwater (as defined in the *Water Sustainability Act*) and ice

water bar: an obstruction to divert water from the surface of a road or trail onto an adjacent vegetated area

water cycle: see hydrologic cycle

water intake: structure for diverting surface water into an open ditch, subsurface drain or pipeline; is sized for the expected flow and is fish-protected as required

intake maintenance: work required to ensure the operation of an intake; must be conducted (methods and timing) to minimize impacts to riparian areas and water quality

water licence: a legal document issued under the *Water Sustainability Act* which specifies the terms and conditions under which a right to use (surface) water is granted

appurtenant: a water licence belongs, or is appurtenant, to the land of the licensee; on the sale of the land the licence is transferred to the new landowner

conditional licence: a licence that authorizes the construction of works or the diversion and use of water before the issue of a final licence; has all the rights of a final licence

final licence: a licence that authorizes the diversion and use of water, and does not authorize the construction of additional works or an extension of the use of water

priority date: a seniority system of water rights; usually the licence issuance date; when more than one licence has been issued for a stream, the licence with the earliest priority date has first right to the water

purpose: the water use allowed under the licence

storage: the conditions of water storage

unrecorded water: water in a stream or aquifer that is not licensed or reserved for other purposes under a regulation or act, e.g., *Water Sustainability Act* (WSA)

water quality: a term used to describe the chemical, physical, and biological characteristics of water with respect to its suitability for a particular use; for an extensive glossary of water quality terms go to www2.gov.bc.ca/assets/gov/environment/air-land-water/water/waterquality/water-quality-reference-documents/glossary_of_water_quality_terms.pdf

clean water: a relative term from a specific farms point of view; water flowing by or on a farm, regardless of its original water quality, that **has not had** contamination added by that farms activities; the farm **is not responsible** for this water quality

dirty water: a relative term from a specific farms point of view; water flowing by or on a farm, regardless of its original water quality, that **has had** contamination added by that farms activities; the farm **is responsible** for this change in water quality

drainage water quality: outlet water quality that does not cause pollution

irrigation water quality: water used for irrigation that meets the guidelines given in **Table 9.2, page 181**, such that soils are protected from salt accumulation and crops are safe to eat

polluted water: water containing a natural or man-made impurity

potable water quality: [from the *Drinking Water Protection Act*] water provided by a domestic water system that meets the standards prescribed (in Schedule A of the regulation) and is safe to drink and fit for domestic purposes without further treatment

reclaimed water quality: water that has been treated at a municipal waste treatment facility and is of an acceptable quality to be reused

water quality guidelines: specific levels of water quality which, if reached, are expected to render a body of water suitable for a designated purpose

water quality objective: a provincial guideline adapted to protect the most sensitive designated water use at a specific location taking local circumstances into account

water rights: see **water licence**

water supply system: [from the *Drinking Water Protection Act*] a domestic water system that serves more than one single-family residence

water table: (a) the upper surface of a saturated zone beneath the soil surface (i.e., where all the soil pore spaces are completely filled with water) where the water is at atmospheric pressure; (b) the upper surface of an unconfined aquifer (see **aquifer, unconfined**; and see **soil water**); a water table may fluctuate throughout the year

perched water table: a water table separated by unsaturated material from an underlying body of groundwater

watercourse: [from the *AEM Code* under the *Environmental Management Act*] includes a0 an area of land that perennially or intermittently contains surface water (other than puddles; groundwater and dugout ponds for livestock watering; furrow, grassed waterways and other temporary ponded areas that are normally farms or drainage ditches that lead to the above. (also see **stream**)

watercourse access: a livestock watering method where livestock directly water from a watercourse

managed access: the duration, timing, and intensity of livestock access to a watercourse is controlled to minimize impact on water quality and health of the riparian area; access location(s) may be improved with added footing, erosion protection, etc such as gravel, or geotextile and gravel

unrestricted access: livestock have full access to a watercourse

watercourse classification: see *Riparian Management Field Workbook* or *Drainage Management Guide*

watershed: an area of land that collects and discharges water into a single creek or river through a series of small tributaries

weed: unwanted plant; classified on the basis of longevity

annual weed: complete their life cycle in less than 12 months, either summer or winter annuals

aquatic weed: undesirable plant that grows in water, such as Eurasian Watermilfoil

biennial weed: require between 12 and 24 months to complete their life cycle

perennial weed: survive for several years, either creeping or non-creeping types

biological control: weed control of introduced plants by exposing them to their natural enemies

noxious weed: a weed designated and listed by the *Weed Control Regulation* to be a noxious weed, and includes the seeds of the noxious weed; lists province-wide and regional weeds

weir: (a) a structure across a watercourse to control or divert the flow; (b) a device for measuring the flow of water

well: [from the *Water Sustainability Act*] an artificial opening in the ground made for the purpose of

- (a) exploring for or diverting groundwater,
- (b) testing or measuring groundwater,
- (c) recharging or dewatering an aquifer,
- (d) groundwater remediation,
- (e) use as a monitoring well,
- (f) use as a closed-loop geoexchange well, or
- (g) use as a geotechnical well,

but does not include

- (h) an artificial opening, other than a water source well, to which the *Geothermal Resources Act* or the *Oil and Gas Activities Act* applies, or
- (i) an artificial opening of a prescribed class, made for a prescribed purpose or in prescribed circumstances

abandoned well: a well no longer used that has been permanently closed or plugged

artesian well – flowing: [from the *Groundwater Protection Regulation*] a well in which water (a) naturally rises above the ground surface or the top of any casing, and (b) is observed to flow naturally, either intermittently or continuously (also see **aquifer**)

artesian well – non-flowing: a well where the water level raises above the water level in the aquifer due to underground hydrostatic pressure (also see **aquifer**)

drawdown: (a) the lowering of the water surface or water table from the withdrawal of water; (b) the difference between the static water level and the level when pumping at a given discharge

horizontal well: a water source developed by horizontally drilling into a perched water table or underground water source

probable source of contamination: a term used in *Public Health Act*, (a) [from the regulations] wells to be separated from probable sources of contamination, such as a privy vault, cesspool, manure heap, stable or pigsty; (b) interpreted in this *Reference Guide* to include farm sources, such as storages of petroleum, pesticides, compost, wood residue, etc.

safe well yield: amount of groundwater that can be withdrawn from an aquifer without degrading quality or reducing pumping level (also see **recharge**)

sand point well: constructed by driving assembled lengths of pipe into the ground composed of loose soils such as sand; usually small diameter (5 cm) and shallow (less than 15 m deep)

well cap: [from the *Water Sustainability Act*] a secure cap or lid that prevents vermin, contaminants, debris or other foreign objects or substances from entering the interior of the production casing, and includes a sanitary well seal

well cover: [from the *Water Sustainability Act*] a secure cover, lid or structure that prevents vermin, contaminants, debris or other foreign objects or substances from entering the well

well test: determination of the well yield versus drawdown relationship with time

well casing: [from the *Groundwater Protection Regulation*] pipe, tubing or other material installed in a well to support its sides

casing above ground: the extension of a well casing above the ground level (0.3 m suggested) to prevent the entrance of surface water into the inside of the casing and contaminating groundwater

sealant: [from the *Groundwater Protection Regulation*] (a) a non-toxic, commercially available material or mixture of materials, including (i) bentonite clay, (ii) bentonite clay and water mixture, (iii) bentonite clay and sand and water mixture, (iv) neat cement grout, (v) sand cement grout, and (vi) concrete grout, or (b) a non-toxic material or mixture of materials that has a lower permeability than the surrounding geologic formation to be sealed

surface seal: [from the *Groundwater Protection Regulation*] a sealant placed in the annular space around the outside of the outermost well casing and between multiple well casings and extending to or just below the ground surface (see sealant, above)

pitless adaptor: [from the *Groundwater Protection Regulation*] a mechanical device attached to a well casing, usually below the frost-level, for underground conveyance of water to or from the well (note – used to eliminate the water quality concerns of a dug pit around a below-ground surface well casing)

wellhead: [from the *Water Sustainability Act*] means
(a) the physical structure, facility, well cover, adapter or device
(i) that is at the top of, or at the side and near the top of, a well, and
(ii) from or through which groundwater flows or is pumped from the well, and
(b) any casing, well cap, valve, grout, liner, seal, vent or drain relating to the well, but does not include a well pump or a pump house

well pump: [from the *Water Sustainability Act*] a pump that
(a) is at or in a well, and
(b) is used or intended to be used for the purposes of
(i) diverting groundwater from a well,
(ii) adding water to a well to recharge the well or an aquifer, or
(iii) dewatering an aquifer

wetland: (a) area of wet soil that is inundated or saturated long enough to promote wetland or aquatic processes as indicated by the presence of poorly drained soils, hydrophytic (water loving) plants, and various kinds of biological activity adapted to a wet environment; [from the *Water Sustainability Act*] a swamp, marsh, fen or prescribed feature

wet meadow: a meadow where the surface remains wet or moist throughout the growing season, usually characterized by plants such as water-tolerant grasses, sedges and rushes

wildlife: [from the *Wildlife Act*] raptors, threatened species, endangered species, game or other species of vertebrates prescribed as wildlife and includes fish, but does not include species at risk

amphibian: [from the *Wildlife Act*] a vertebrate of the class Amphibia and includes the eggs and other developmental life stages

big game: [from the *Wildlife Act*] (a) any member of the family Cervidae, (b) mountain sheep, mountain goat, bison or pronghorn antelope, (c) bear, cougar or wolf, or (d) a mammal prescribed as big game

bird: [from the *Wildlife Act*] an animal of the class Aves, and its eggs

dangerous wildlife: [from the *Wildlife Act*] bear, cougar, coyote or wolf, or a species of wildlife that is prescribed as dangerous wildlife; it is unlawful to feed dangerous wildlife

fish: [from the *Wildlife Act*] any (a) vertebrate of the order Petromyzontiformes (lampreys) or class Osteichthyes (bony fishes), or (b) invertebrate of the class Crustacea (crustaceans) or class phylum Mollusca (mollusks) from or in non-tidal waters of British Columbia, and includes their eggs and juvenile stages

game: [from the *Wildlife Act*] big game, small game, game birds and fur bearing animals, and other species prescribed as game

problem wildlife: wildlife that conflict with agricultural production, such as grazing farm tame pastures, or damaging fruit or vegetable crops

raptor: [from the *Wildlife Act*] a bird of the order Falconiformes known as vultures, eagles, falcons and hawks or the order Strigiformes known as owls, and includes its eggs

wildlife habitat: see **habitat**

wildlife pond: a pond managed primarily to provide wildlife habitat

wildlife species: see **species**

wildlife tree: trees and shrubs that provide food, shelter, or both, such as standing dead trees with cavities for birds

windbreak: a screen, natural, man-made or of vegetation, that reduces wind velocity so as to protect land, structures or livestock; will cause deposit of snow where it is carried with the wind

swirl chamber: the downwind reaction when wind-carried snow encounters a windbreak; constructed windbreaks must be carefully setup around buildings, etc. to account for where snow will accumulate

winter precipitation: total precipitation during the period of October 1st to April 30th inclusive

wood-fired boiler: see **boiler**

woodlands: farm woodlots that may be operated on privately owned or Crown land

wood residue: [from the *AEM Code*] wood or wood products that are chipped or ground that come from wood processing or clearing of land, if greenery is removed and soil is not present; has no treatment or coating with chemical preservatives; glues; paints; varnishes; oils or other finishes; and does not contain foreign substances that are harmful to humans, animal or plants when combusted; not exposed to salt water or removed from construction or demolition

wood residue leachate: the liquid generated from water moving through wood residue; characterized by a dark colour, "oily" sheen and a foul odour

woody debris: wood from trees and shrubs that is scattered on the ground or in the water; returns essential nutrients into the soil or water as it decays; may provide critical habitat for fish and wildlife

works: [from the Water Sustainability Act]

- (a) anything that can be or is used for
 - (i) diverting, storing, measuring, conserving, conveying, retarding the flow of, confining or using water,
 - (ii) producing, measuring, transmitting or using electricity,
 - (iii) collecting, conveying or disposing of sewage or garbage, or
 - (iv) preventing or extinguishing fires,
- (b) booms and piles placed in a stream,
- (c) obstructions placed in or removed from streams or the banks or beds of streams,
- (d) changes in and about a stream,
- (e) access roads to any of the works referred to in paragraphs (a) to (d) or (f) (i), and
- (f) wells and works related to wells, including
 - (i) wellheads,
 - (ii) anything that can be or is used for injecting or otherwise adding water or any other substance to a well,
 - (iii) anything that can be or is used for constructing, deactivating or decommissioning a well,
 - (iv) anything that can be or is used for exploring for, testing, diverting or monitoring groundwater,
 - (v) anything that can be or is used for disinfecting a well,
 - (vi) an injection system attached to a work that is used for conveying, from a well, groundwater that will be used for applying fertilizers or pesticides, and
 - (vii) anything that can be or is used in relation to a monitoring well or a well made for the purpose of groundwater remediation.

(2) [from the *Environmental Management Act*]

- (a) a drain, ditch, sewer,
- (b) a waste disposal system including a sewage treatment plant, pumping station and outfall,
- (c) a device, equipment, land and a structure that
 - (i) measures, handles, transports, stores, treats or destroys waste or a substance that is capable of causing pollution, or
 - (ii) introduces into the environment waste or a substance that is capable of causing pollution,
- (d) an installation, plant, machinery, equipment, land or a process that causes or may cause pollution or is designed or used to measure or control the introduction of waste into the environment or to measure or control a substance that is capable of causing pollution, or
- (e) an installation, plant, machinery, equipment, land or a process that monitors or cleans up pollution or waste

METRIC CONVERSION

Table E.1		Metric to Imperial Conversions	
Multiply Metric		By	To Obtain Imperial or US
Area	square metres (m ²)	10.76	square feet (ft ²)
	hectares (ha)	2.47	acres (ac)
Concentration	microgram/gram (µg/g)	1	parts/million (ppm)
Flow	metres/second (m/sec)	3.28	feet/second (ft/sec)
	litres/minute (L/min)	0.26	Liquid gallons/minute (g/m)
Length	millimetres (mm)	0.039	inches (in)
	centimetres (cm)	0.39	inches (in)
	metres (m)	3.28	feet (ft)
	kilometres (km)	0.62	miles (mi)
Pressure	megapascals (MPa)	145	pounds/square in (psi)
Temperature	degrees Celsius (0C)	1.8, then add 32	degrees Fahrenheit (0F)
Volume	litres (L)	0.26	Liquid gallons (gal)
	litres (L)	0.035	cubic feet (ft ³)
	cubic metres (m ³)	1.31	cubic yards (yd ³)
Volume/Area	cubic metres/hectare (m ³ /ha)	14.29	cubic feet/acre (ft ³ /ac)
Weight	kilograms (kg)	2.2	pounds (lb)
	metric tonnes (t)	1.1	tons (t)
Weight/Area	kilograms/hectare (kg/ha)	0.89	pounds/acre (lb/ac)
	tonnes/hectare (t/ha)	0.45	ton/acre (t/ac)
Weight/Volume	milligram/litre (mg/L)	1	parts/million (ppm)

