

A 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 access 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*.


Bylaw Enacted Codes: Local government may enforce, where proclaimed, various Codes, such as:

- ◆ Canadian Farm Building Code:
 - Section 3.1.4: requires equipment being fuelled and above ground fuel storage tanks be at least 12 m from any other building or property line
 - Section 4.1.4: requires pesticide storage facilities to be (1) ventilated to the outdoors; (2) accessible from the outdoors only; (3) secured against unauthorized entry; (4) have an impervious floor that is curbed to contain spills; (5) identified with a sign at entrance stating “Danger – Chemical Storage – Authorized Person Only” or words to that effect; (6) separated from all food, feed and water supplies; (7) insulated and have heated cabinets for chemicals requiring frost protection; and (8) separate oxidizing and flammable chemicals
- ◆ **BC Building Code** (refer to BC Building Code Regulation):
 - Section 7.6.2: (plumbing) requires measures to ensure backflow prevention

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

Administered by the Provincial Agricultural Land Commission, this Act requires agricultural land within an Agricultural Land Reserve not be used for non-farm use unless permitted by the Act or its regulations. It takes precedence over, but does not replace other provincial legislation and local bylaws that may apply to the land.

- ◆ Section 20(1): restricts the use of land within an agricultural land reserve (ALR) to farm uses unless specified by the Act, the *Agricultural Land Reserve Use, Subdivision and Procedures Regulation* or the Commission
- ◆ Section 20(2): describes the removal of soil or placement of fill as non-farm uses except as designated by regulation
- ◆ Section 20(4): indicates the need for notification to the commission when a prescribed use (i.e. fill pads for greenhouses or barns or the production of turf) involves the removal of soil or placement fill

Some designated farm uses identified are:

- ◆ the application of fertilizers, mulches and soil conditioners
- ◆ the collection, storage and handling of soil amendments in accordance with the *Code* under the *Agricultural Waste Control Regulation*
- ◆ the production of compost in accordance with the *Code* under the *Agricultural Waste Control Regulation*
- ◆ the production or application of compost and biosolids in compliance with the *Organic Matter Recycling Regulation*



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 are scheduled to change on July 1, 2011 and 2012. Farmers are required to pay carbon tax on fuel purchased or used for farming operations.



Drainage, Ditch and Dyke Act

Administered by MOE, 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 MOE, 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 traditionally chairs the committee. Orders may be made respecting the environment or land use that may override other Acts and regulations.



Environmental Management Act (formerly the *Waste Management Act*)

This Act empowers MOE 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 Cabinet. 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”
 - note that the *Agricultural Waste Control Regulation* allows ‘agricultural operations’ exemption of both 6(2) and 6(3): – refer to the Regulation below and Appendix A5, page 270
- ◆ 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: concern contaminated sites

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 MOE.

Agricultural activities are subject to several Regulations under this *Act*:

1. ***Agricultural Waste Control Regulation***. This Regulation (also under the *Public Health Act*) applies to ‘agricultural operations’. Within this Regulation, the *Code of Agricultural Practice for Waste Management* describes agricultural practices for using, storing and managing agricultural waste in a manner that is environmentally sound. The full Regulation and *Code* under the *Agricultural Waste Control Regulation* is found in Appendix A.6.

Producers who operate in compliance with this *Code* do not have to hold an Approval, Permit or Operational Certificate under the *Environmental Management Act* to discharge ‘agricultural wastes’ into the environment (i.e. it offers exemption of Sections 6(2) and 6(3) of the Act). **Compliance with the Code under the Agricultural Waste Control Regulation does not exempt a producer from any other part of the Act.** Handling agricultural wastes in a manner not outlined in the *Code* requires an Approval, Permit or Operational Certificate under the Act.

2. ***Antisapstain Chemical Waste Control Regulation.*** This Regulation prohibits the use of woodwaste 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.*** This Regulation allows for the identification, evaluation of remediation options, including off-site mitigation of contaminated groundwater, and monitoring of the remediation process of contaminated sites. It covers agriculture only when contaminated materials are brought onto the site or contaminants identified under the regulation leave the site or there is a land use change away from agriculture.
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.*** There are specific standards and exemptions under the *Open Burning Smoke Control Regulation* 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:
 - ◆ agricultural burning of leaves, crops, weeds, foliage or stubble
 - ◆ residential (i.e., backyard) burning of leaves, foliage, weeds, crops or stubble
 - ◆ burns that satisfy all the terms and conditions set out in the Open Burning Smoke Control Regulation and the Open Burning Smoke Control Code of Practice
 - ◆ burns conducted to comply with the *Weed Control Act*

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

The *Open Burning Smoke Control Regulation* requires a burn operator to:

- ◆ explore all possible options to reduce, reuse or recycle as much of the material as possible
- ◆ burn only vegetative matter such as tree branches, limbs, roots, shrubs, etc.
- ◆ burn only on the same site from which the material was gathered and not include material from offsite
- ◆ do not burn prohibited materials, or substances that normally emit dense smoke or noxious odours
- ◆ burn the material more than 100 m from a neighbouring residence or business and more than 500 m from a hospital, continuing care facility, or school that is in session
- ◆ ensure that smoke from open burning does not 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 (see the regulation for further information and requirements)

http://www.weatheroffice.gc.ca/forecast/textforecast_e.html?Bulletin=flcn39.cwvr

- ◆ 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 sensitivity zone
- ◆ these restrictions include a smoke release period of either 72 or 96 hours, and restrictions on the number and frequency of burns per year

http://www.env.gov.bc.ca/epd/codes/open_burning/pdf/OBSCR_map.pdf

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 *Agricultural Waste Control Regulation*. Schedule 12 of the *Regulation*, lists suitable organic material for composting under provisions of the *Regulation* and provides some definition of the source and constituents of those organic materials.

Class A 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 1000 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.
 - 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.

- 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 Waste Control Regulation* does for agriculture with the *Code of Agricultural Practice for Waste Management*).



Farm Practices Protection (Right to Farm) Act

Administered by AGRI, 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, in the case of fish farming, has a valid license under the provincial *Fisheries Act*
 - there is no contravention of other listed legislation, such as the *Environmental Management Act*, the *Agricultural Waste Control Regulation* and *Code of Agricultural Practice for Waste 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>



Fish Protection Act

The *Fish Protection Act* enables the protection of fish and fish habitats. The four main objectives of the Act are to ensure sufficient water for fish, enable fish habitat to be protected and restored, improve riparian habitat protection and enhancement, and give local governments greater powers for environmental planning. The *Fish Protection Act* provides legislative authority for water managers to consider impacts on fish and fish habitat before approving new licenses, amendments to licenses or issuing approvals for work in or near streams. Only parts of the FPA have been brought into force, they are:

- ◆ Section 4: prohibits new dam construction on specified major rivers
- ◆ Sections 6 & 7: allow sensitive streams designation and recovery plans
 - such streams will have restrictions requiring the consideration of fish flow requirements placed on new water licenses or approvals, or amendments to existing, until the stream has recovered
- ◆ Section 9: In the case of drought, for the purposes of protecting the fish population, the minister may make temporary orders 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.
- ◆ Section 12: requires municipal bylaws, where directed, regarding the protection and enhancement of riparian areas that may be subject to residential, commercial or industrial development
 - the requirements do not apply to “agriculture” activities, they do apply to new residential, commercial, or industrial development or ancillary activities on land zoned for agricultural purposes. Guidelines for agricultural activities are in the Environmental Farm Plan series publications.

Riparian Areas Regulation. This Regulation, under the Fish Protection Act establishes directives to protect riparian areas from development and to facilitate cooperation between DFO and the Union of BC Municipalities. It applies to the exercise of local government powers under the *Local Government Act*. The Regulation provides required riparian assessment methods by Qualified Environmental Professionals as a condition of approval for new residential, commercial, or industrial activities.

Sensitive Stream Designation and Licensing Regulation. This Regulation (also under the *Fish Protection Act*) applies to licences and approvals on sensitive streams, and lists streams designated – 15 streams to date, on eastern Vancouver Island, lower Coast, and lower Fraser Valley (see the Regulations’ Schedule).



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.



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.



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*.



Forest Practices Code of British Columbia Act

This Act regulates all forest practices (which include grazing on Crown lands). The Act is superseded by the *Forest and Range Practices Act*.



Game Farm Act

Administered by AGRI, 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 Reduction (Cap and Trade) Act

The Act provides the legislative authority to implement a cap-and-trade system for GHGs which includes the establishment of reporting and compliance requirements. It also provides authority for regulations to establish criteria for projects that qualify as GHG offsets in a regulated offset system.

Single sites which emit 10,000 tonnes or more of CO₂ per year have to report their emissions, and those which emit 25,000 tonnes or greater will be regulated. There is currently only one agricultural facility in BC which emits over 25,000 tonnes per year and a few that emit more than 10,000 tonnes which are required to report their emissions.



Greenhouse Gas Reduction Targets Act

The Act commits British Columbia to reductions of GHG emissions (of 2007 levels) by at least 33% by 2020. By 2050 it commits British Columbia to reductions (of 2007 levels) by at least 80%. Although emissions reductions for agriculture are not regulated, if agricultural emissions are not reduced while the rest of society does, the perceived impact of agriculture’s contribution to climate change will increase.

Under the Act, public sector organizations are required to be carbon neutral by 2010. Through the Climate Action Charter (separate from the Act), a large number of Local Governments have agreed to become carbon neutral and can develop municipal Climate Plans to mitigate emissions. Through this process Local Governments may encourage reduction of agricultural GHG emissions in the municipality.

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.



Integrated Pest Management Act (formerly the *Pesticide Control Act*)

Administered by MOE, this Act regulates the sale, containment, transportation, storage, preparation, mixing, application and the disposal of pesticides and their containers.

- ◆ Section 4(1): Except as provided in the regulations, a person must not ... use a pesticide for a prescribed use unless the person holds the licence that is, under the regulations, required for that purpose, and complies with the terms and conditions in or attached to that licence

Integrated Pest Management Regulation

- ◆ Section 5: describes the uses of pesticide which are considered to be prescribed for the purposes of the Act
 - the management of vegetation on not more than 20 ha a year of private land that are used for a facility or right of way for the delivery of water or a pipeline, as defined in the Petroleum and Natural Gas Act, and associated facilities, and managed by a single entity
 - the management of mosquitoes, using a bacterial pesticide, on not more than 1 ha a year of private land that is a body of water, and managed by a single entity
 - the management of forest pests on private land used for timber production, including private roads, roadsides and other areas ancillary to the timber production

- the management of noxious weeds or invasive plants on not more than 50 ha a year of public land managed by a single entity
- ◆ 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
- ◆ 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>

The *Integrated Pest Management Act* and Regulation establish conditions for the sale and use of pesticides in British Columbia through a classification system and regulatory provisions for licences, certification, permits, Pest Management Plans and ministry confirmations of receipt of a pesticide use notice. The Regulation also contains public notification, consultation, reporting, and record keeping provisions – as well as standards for use of Integrated Pest Management and for human health and environmental protection.

Under the *IPM Act*, a person must not “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.” This general prohibition, in concert with requirements for Integrated Pest Management (IPM), underpins the ministry’s approach to regulation of pesticide use in British Columbia.

The *IPM Act* and *Regulation* establish **classes** of pesticides, and requirements for licences, certification, permits and pesticide use notice (PUN) confirmations for each class. The classification system utilizes definitions and labeling for sale and use of pesticides set out in the federal *Pest Control Products Act*.

The five Pesticide classes under the *IPM Act* are:

- ◆ **Permit-restricted:** these pesticides are listed by name in the regulation; they are the most strictly controlled, requiring a permit for purchase or application
- ◆ **Restricted:** these pesticides have the Restricted product class specified on their label; a pesticide applicator certificate is required for their purchase or use
- ◆ **Commercial:** these pesticides have the Commercial product class specified on their label
- ◆ **Domestic:** these pesticides have the Domestic product class specified on their label; they are intended for use by non-professionals in or around private homes and gardens
- ◆ **Excluded:** these pesticides are listed by name or type of use in the regulation; their use or sale does not require a licence, certificate, permit or confirmation; they are assigned to this class because the Administrator considers that excluding them from requirements for a licence, permit or confirmation will not increase the risk of unreasonable adverse effects



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 Community, Sport and Cultural Development, 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:

- ◆ Section 692: allows regulations for a Provincial building code that applies to all municipalities and regional districts as an enacted bylaw (refer to *BC Building Code Regulation* next page)
- ◆ Sections 875 to 884: 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 903 to 914: relate to zoning bylaws that may be adopted
- ◆ Section 907: 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 915 to 919: outline the use of land for agricultural operations; Section 916: allows for bylaw standards; Section 917: provides for farm bylaws
- ◆ Section 920: provides the authority to issue development permits relating to the protection of the natural environment and the protection of farming

*Note that under Section 918 and 903(5) -zoning bylaws- and Section 917-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)

BC Building Code Regulation. This regulates residential building and plumbing.

- ◆ Section 2: adopts the 1995 National Building Code of Canada as the BC Building Code (note the Plumbing Services section which is part of the Building Code, contains requirements for backflow prevention)



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 Licenced 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 AGRI, 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.



Public Health Act


Administered by the Ministry of Health Services, this Act includes regulations on 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 to 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 14: contains food processing requirements
- Public Health Act Transitional Regulation.** Section 18 regulates to setback distances for wells. Section 18: requires a separation distance from wells to be at least
- 7 m from any dwelling house (grandfathered)
 - 30.5 m from any probable source of contamination (many farm activities and wastes)
 - 122 m from any cemetery or dumping ground unless, owing to the physical conformation, contamination of the well is impossible

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
- ◆ 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



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 Act


Under this Act, using surface water requires a licence, and working in and around streams requires an approval from Front Counter BC. A stream is defined as any natural watercourse or source of supply, whether usually containing water or not. Streams include groundwater and any lake, river, spring, swamp, creek or ravine. Although at the present time a water licence is not required to use groundwater, groundwater legislation may be forthcoming.

The right to take specified quantities of water from a stream for designated purposes and construct and maintain water works on private or Crown Land is given by a water licence. Water licences also document water use and establish priority rights to available supply. Water licences may be cancelled for several reasons, including failure to follow the terms and conditions of the licence, termination of use of the water and negligence in keeping water rental payments in good standing. Some sections of interest:

- ◆ Section 2: vests the property and right to use water with the government except private rights under licences or approvals under the Act
- ◆ Sections 5 & 6: list the rights acquired under a water license
- ◆ Section 7: lists who may acquire a water license (issued by Front Counter BC)
- ◆ Section 8: allows short term approvals (water use less than 12 months)
- ◆ Section 9: allows approvals for changes in and about a stream; these must also meet with DFO approval under the Federal *Fisheries Act* (see also the *Water Regulation*, Part 7, next page)
- ◆ Sections 10 – 50: outline license applications, rights, administrative concerns, rights of appeal, offences, water users' communities
- ◆ Sections 62 – 67: gives the minister the ability to designate an area for the purpose of developing a water management plan to address or prevent:

- ◆ conflicts between water users
- ◆ conflicts between water users and instream flow requirements, or
- ◆ risks to water quality
- ◆ Sections 68 to 82: provide for ground water protection (see also *Ground Water Protection Regulation*, below)

 **Understanding a Water Licence**

 **Water Rights in British Columbia**

 **Water License Holders Rights and Obligations**

 **A Users Guide to Working In and Around Water**

 **Standards and Best Practices for Instream Works**

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 ground water 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”. Requirements came into effect in Nov 2004 and Nov 2005.

Water Regulation. This Regulation deals with water rights acquisition, fees, rentals and charges; regulates power developments, expropriation of land by licensees, water districts and changes in and about a stream. Part 7: - outlines how “changes in and about a stream” may be carried out by Notification to MOE rather than by approval, licence or order under Section 9 of the Act

- ◆ Section 40: authorizes Notification to MOE for certain “changes”
- ◆ Sections 41, 42, 43: requires protection of water quality, habitat and other water users
- ◆ Section 44: lists “changes” authorized (not requiring an approval or licence)



Water Protection Act

Administered by MOE, 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 bulk removal of water to outside BC
- ◆ prohibits large-scale diversion of water between the major watersheds of BC



Weed Control Act

Administered by AGRI, 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, Mines and Lands.

- ◆ 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 MOE, 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



Zero Net Deforestation Act

The *Zero Net Deforestation Act* was enacted in 2010 and commits British Columbia to achieving no net deforestation in the province by 2015. Deforestation, under the Act, is defined as “the permanent loss of the human-induced removal of trees from an area of forest land to such an extent that the area is no longer forest land.” The Act aims to mitigate greenhouse gas emissions associated with deforestation.

A.3 FEDERAL GOVERNMENT

 Federal acts are available on the Internet at www.laws.justice.gc.ca/en/index.html



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.



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 MOE), 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. Provisions for stiff fines and imprisonment are contained in the Act.

Under this authority, the federal *Fisheries Act* plays a significant role in controlling pollution that is deleterious to fish or fish habitat and impacts to habitat. Fish are defined as, shellfish, crustaceans, marine animals; the eggs, sperm, spawn, larvae, spat and juvenile stages of fish, shellfish, crustaceans and marine animals:

- ◆ Sections 20, 21, 22: may require fish passage ways be installed, one-half of the costs may be recovered; sufficient flows for fish passage at obstructions
- ◆ Sections 27 and 29: prohibit obstructions to fish passage of any fish-way; use of net, weir, or other device that obstructs passage of fish
- ◆ Section 30: the need for, and maintenance of, fish screens and fish guards in water intakes, ditches
- ◆ Section 32: prohibits the destruction of fish except by fishing

- ◆ Section 34: has important definitions used in following sections (“deleterious substance”; “deposit”; “fish habitat”)
- ◆ Section 35: prohibits harmful alteration, disruption or destruction (HADD) of fish habitat
 - harmful alteration, disruption or destruction includes any changes in fish habitat that reduces its capacity to support one or more life processes of fish
 - fish habitat includes 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
- ◆ Section 36: prohibits the deposit of deleterious substances into water frequented by fish either directly or indirectly by placing those substances where they can get into such water. Deleterious substances when added to any water degrade or alter or form 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.
 - this section is jointly enforced by Environment Canada and Fisheries and Oceans Canada (DFO)
 - deleterious substances could include many farm products and wastes
- ◆ Section 37: requires approval for work that may impact fish habitat
 - any work in or about a fish-bearing watercourse requires pre-approval from DFO
- ◆ Section 38(4): requires reporting infractions of Section 35 or 36
- ◆  Complying with the Fisheries Act

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.

The 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* 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: http://www.sararegistry.gc.ca/involved/you/privland_e.cfm



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.



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 Agricultural Practice for Waste Management. How does the *Code* under the *Agricultural Waste Control Regulation* apply? Compliance with the *Code* provides producers exemption from requiring a permit to discharge agricultural waste as a fertilizer or soil amendment. Where you do not comply with the *Code*, you are subject to the *Environmental Management Act* and must have a permit. If you do not have a permit, you can be charged for “introducing business wastes into the environment without authorization.” Where a charge indicates “pollution” has occurred, it means “*presence in the environment of substances or contaminants that substantially alter or impair the usefulness of the environment*”

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, “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; MOE 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 filing, wetland draining); dredging; ditch cleaning; construction close to streams or lakes (fill, retaining walls, docks, bridges, diking); 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, Municipalities, 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 “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 (DFO), “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.” AGRI 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. Do your best to schedule and budget improvements to bring your operation into compliance with the *Code* under the *Agricultural Waste Control Regulation* before a complaint is filed. Check with AGRI 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 the 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 MOE 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’re 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 *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**

A.6 AGRICULTURAL WASTE CONTROL REGULATION & CODE OF AGRICULTURAL PRACTICE FOR WASTE MANAGEMENT

The provincial *Environmental Management Act* has an *Agricultural Waste Control Regulation*. This Regulation provides that 'agricultural operations' (which are defined) that are carried out in accordance with the *Code of Agricultural Practice for Waste Management* are exempt from sections 6(2) and (3) of the Act that require a permit to discharge 'agricultural waste' (which is defined) into the environment.

The *Code* **does not** exempt agricultural operations from any other part of the *Environmental Management Act*. Also, note the *Code* deals only with wastes and pollution not with other environmental concerns (such as habitat).

This regulation was originally brought into force in 1992 under the then *Waste Management Act*. That Act has been changed and is now the *Environmental Management Act*. The following copy of the Act is only for reference and is not an official version. Visit www.bclaws.ca for the current version of the regulation.

Agricultural Waste Control Regulation

[includes amendments up to B.C. Reg. 377/2008, December 9, 2008]

Code of Agricultural Practice for Waste Management, April 1, 1992

Interpretation

1 In this regulation:

"**agricultural operation**" means any agricultural operation or activity carried out on a farm including

- (a) an operation or activity devoted to the production or keeping of livestock, poultry, farmed game, fur bearing animals, crops, grain, vegetables, milk, eggs, honey, mushrooms, horticultural products, tree fruits, berries, and
- (b) the operation of machinery and equipment for agricultural waste management or application of fertilizers and soil conditioners;

"**Code**" means the Code of Agricultural Practice for Waste Management April 1, 1992 attached to this regulation.

Exemptions

- 2 (1) Subject to subsections (2) and (3), a person who carries out an agricultural operation in accordance with the Code is, for the purposes of carrying out that agricultural operation, exempt from section 6 (2) and (3) of the *Environmental Management Act*.
- (2) A person who, on the date this subsection came into force, was carrying out an agricultural operation in which a boiler or heater was used is, for the purposes of carrying out that agricultural operation, exempt from section 6 (2) and (3) of the *Environmental Management Act* only if, in addition to complying with the Code, that person registers in accordance with subsection (4) before May 1, 2009.
- (3) A person, other than one referred to in subsection (2), who carries out an agricultural operation in which a boiler or heater is used is, for the purposes of carrying out that agricultural operation, exempt from section 6 (2) and (3) of the *Environmental Management Act* only if, in addition to complying with the Code, that person has registered in accordance with subsection (4) before the boiler or heater is used.
- (4) To register for the purposes of subsection (2) or (3), the person carrying out the agricultural operation must complete the form and comply with the procedures specified by a director.

- (5) A person registered under subsection (4) must notify a director of any change in the information provided in the person's registration.

Code of Agricultural Practice for Waste Management, April 1, 1992

PART 1 — PURPOSE

Purpose

- 1 The purpose of this Code is to describe practices for using, storing and managing agricultural waste that will result in agricultural waste being handled in an environmentally sound manner.

PART 2 — INTERPRETATION

Interpretation

- 2 (1) In this Code:

"**agricultural unit**" means a live weight of 455 kg (1 000 lbs) of livestock, poultry or farmed game or any combination of them that equals 455 kg;

"**agricultural waste**" includes manure, used mushroom medium and agricultural vegetation waste;

"**biogas**" means a gas derived from the anaerobic decomposition of organic matter;

"**biomass**" means

(a) agricultural fuel products, including agricultural pellets, manure pellets, corn kernels, corn stalks and seed hulls, or

(b) wood or wood products,

but does not include

(c) any raw manure,

(d) any paper or paper product,

(e) any wood or wood product that has been treated with glue, paint or preservative or that contains a foreign substance harmful to humans, animals or plants when combusted, or

(f) any salt-laden wood or wood product with a chloride content exceeding 0.05% on a dry basis;

"**capacity**", in relation to a boiler or heater, means the maximum rate of energy output from the boiler or heater measured in megawatts of thermal energy;

"**confined livestock area**" means an outdoor, non-grazing area where livestock, poultry or farmed game is confined by fences, other structures or topography including feedlots, paddocks, corrals, exercise yards and holding areas, but not including a seasonal feeding area;

"**farmed game**" means any animal held under the authority of a licence under the *Game Farm Act*;

"**feedlot**" means a fenced area where livestock, poultry or farmed game is confined solely for the purpose of growing or finishing and is sustained by means other than grazing;

"**field storage**" means a temporary stock of agricultural waste ready to be drawn upon for use as a crop fertilizer or soil conditioner;

"**grazing area**" means a pasture or rangeland where livestock, poultry or farmed game is primarily sustained by direct consumption of feed growing on the area;

"**groundwater**" means water below the surface of the ground;

"**heating season**" means a period beginning on October 1 in one year and ending on April 30 in the next year;

"**landfill gas**" means a mixture of gases generated by the decomposition of municipal solid waste;

"**low-sulphur fuel**" means

- (a) No. 2 heating oil, or
- (b) diesel fuel for use in Canada in on-road vehicles;
- "**manufactured wood fuel**" means wood pellets and wood pucks;
- "**mortalities**" means livestock, poultry or farmed game that has died and that is unmarketable;
- "**municipal solid waste**" has the same meaning as in Part 3 of the *Environmental Management Act*;
- "**mushroom medium**" means a mixture that is composted and used as a medium for growing mushrooms;
- "**particulate matter**" means total filterable particulate matter;
- "**pollution**" means the presence in the environment of substances or contaminants that substantially alter or impair the usefulness of the environment;
- "**precipitation**" means precipitation as determined by the Canadian Atmospheric Environmental Service Reports of Environment Canada;
- "**seasonal feeding area**" means an area
 - (a) used for forage or other crop production, and
 - (b) used seasonally for feeding livestock, poultry or farmed game that is primarily sustained by supplemental feed,
 but does not include a confined livestock area or grazing area;
- "**soiless medium**" means a material that is manufactured for the growing of plants and may contain natural soils;
- "**solid agricultural waste**" means agricultural waste that
 - (a) is 20% or more solid matter, and
 - (b) will not flow when piled;
- "**storage facility**" 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;
- "**watercourse**" means a place that perennially or intermittently contains surface water, including a lake, river, creek, canal, spring, ravine, swamp, salt water marsh or bog, and including a drainage ditch leading into any of the foregoing;
- "**wood product**" includes manufactured wood fuel, hog fuel, mill ends, wood chips, bark, shavings, sawdust and firewood;
- "**wood waste**" includes hog fuel, mill ends, wood chips, bark and sawdust, but does not include demolition waste, construction waste, tree stumps, branches, logs or log ends.

PART 3 — GENERAL

General

3 Agricultural wastes, wood waste and mortalities must be collected, stored, handled, used and disposed of in accordance with this Code and in a manner that prevents pollution.

PART 4 — STORAGE AND USE OF AGRICULTURAL WASTE

Allowable storage

4 Agricultural waste may be stored on a farm only if the waste is produced or used on that farm.

Storage methods

5 When agricultural waste is stored, it must be stored

- (a) in a storage facility,
- (b) as field storage, or
- (c) in the case of waste from fur bearing animals, under their outdoor pens.

Storage facility

6 A storage facility must

- (a) be of sufficient capacity to store all the agricultural waste produced or used on the farm for the period of time needed to allow for
 - (i) the application of agricultural waste as a fertilizer or soil conditioner, or
 - (ii) the removal of agricultural waste,
- (b) prevent the escape of any agricultural waste that causes pollution, and
- (c) be maintained in a manner to prevent pollution.

Location of storage facility

7 (1) A storage facility must be located at least 15 m from any watercourse and 30 m from any source of water for domestic purposes.

(2) Subsection (1) does not apply to a storage facility existing prior to April 1, 1992 provided that a report

- (a) demonstrating to the satisfaction of a director that no pollution of any watercourse or domestic water supply is occurring from the storage facility, and
- (b) produced by
 - (i) a person with professional qualifications in the field of environmental assessment and licensed to practice in British Columbia, or
 - (ii) staff of the ministry of the minister charged with the administration of the *Farm Practices Protection (Right to Farm) Act* under a Best Agricultural Waste Management Plan

is made available to the director within 12 months of his or her request.

Field storage

8 (1) Solid agricultural waste may be stored on a field for 2 weeks or less if the agricultural waste is

- (a) used within 2 weeks, and
- (b) stored in a manner that prevents the escape of agricultural waste that causes pollution.

(2) Solid agricultural waste may be stored on a field for more than 2 weeks if the agricultural waste is

- (a) stored for no longer than 9 months,
- (b) located at least 30 m from any watercourse or any source of water used for domestic purposes, and
- (c) stored in a manner that prevents the escape of agricultural waste that causes pollution.

(3) Berms or other works must be constructed around a field storage area if this is necessary to prevent the escape of agricultural waste that causes pollution.

Rainy season field storage

9 In areas of the Province, including the Fraser Valley and Vancouver Island, that receive a total average precipitation greater than 600 mm (24 in) during the months of October to April inclusive, field stored solid agricultural wastes, except agricultural vegetation waste, must be covered from October 1 to April 1 inclusive to prevent the escape of agricultural waste that causes pollution.

Under pen storage

10 (1) Agricultural waste from fur bearing animals may be stored under their outdoor pens for up to 9 months if the storage area under the pens

- (a) prevents the escape of any agricultural wastes that causes pollution, and
- (b) is located at least 15 m from a watercourse and 30 m from any source of water used for domestic purposes.

(2) Subsection (1) (b) does not apply to a pen constructed prior to April 1, 1992 provided that a report

(a) demonstrating to the satisfaction of a director that no pollution of any watercourse or domestic water supply is occurring from the under pen storage facility, and

(b) produced by

- (i) a person with professional qualifications in the field of environmental assessment and licensed to practice in British Columbia, or
- (ii) staff of the ministry of the minister charged with the administration of the *Farm Practices Protection (Right to Farm) Act* under a Best Agricultural Waste Management Plan

is made available to the director within 12 months of his or her request.

PART 5 — APPLICATION AND COMPOSTING OF AGRICULTURAL WASTE

Discharge to water

11 Agricultural waste must not be directly discharged into a watercourse or groundwater.

Allowable application

12 Agricultural waste must be applied to land only as a fertilizer or a soil conditioner.

Prohibited application

13 Agricultural waste must not be applied to the land if, due to meteorological, topographical or soil conditions or the rate of application, runoff or the escape of agricultural waste causes pollution of a watercourse or groundwater.

Conditions unfavorable to application

14 Agricultural wastes must not be applied

- (a) on frozen land,
- (b) in diverting winds,
- (c) on areas having standing water,
- (d) on saturated soils, or
- (e) at rates of application that exceed the amount required for crop growth,

if runoff or escape of agricultural waste causes pollution of a watercourse or groundwater, or goes beyond the farm boundary.

Composting

15 Agricultural waste may be composted on a farm if

- (a) the agricultural waste being composted consists only of agricultural waste
 - (i) produced on that farm, or
 - (ii) produced elsewhere but being composted for use on that farm only,
- (b) the composting site is located at least 15 m from a watercourse and 30 m from any source of water used for domestic purposes, and
- (c) the agricultural waste is composted in a manner that does not cause pollution.

Composting for mushroom medium

16 (1) Composting agricultural waste for the production of mushroom medium on a farm is allowed if

- (a) the mushroom medium produced is used only on that farm,
- (b) the composting site is located at least 15 m from a watercourse and 30 m from any source of water used for domestic purposes, and
- (c) the medium is composted in a manner that does not cause pollution.

(2) Subsection (1) (a) and (b) does not apply to a composting operation and site existing prior to April 1, 1992 provided that a report

- (a) demonstrating to the satisfaction of a director that no pollution of any watercourse or domestic water supply is occurring from the composting operation and site, and
- (b) produced by
 - (i) a person with professional qualifications in the field of environmental assessment and licensed to practice in British Columbia, or
 - (ii) staff of the ministry of the minister charged with the administration of the *Farm Practices Protection (Right to Farm) Act* under a Best Agricultural Waste Management Plan

is completed by April 1, 1993 and is made available to the director at his or her request.

PART 6 — AGRICULTURAL EMISSIONS

Emissions

17 Emissions from forced air ventilation systems used on a farm must not cause pollution.

Restrictions relating to types of boiler and heater fuel

18 Only the following fuels may be used in an agricultural operation as fuel for a boiler or heater:

- (a) biomass;
- (b) natural gas;
- (c) propane;
- (d) low-sulphur fuel;
- (e) biogas;
- (f) landfill gas.

Emission standards for boilers and heaters fuelled by biomass

18.1 (1) This section applies to a boiler or heater that

- (a) is fuelled by biomass, and
- (b) is used in an agricultural operation.

(2) Subject to subsections (3) and (4), emissions from a boiler or heater referred to in subsection (1) that has a capacity specified in any of items 1 to 3 of column 1 of Table 1 must not exceed the following standards:

- (a) effective on the date this section comes into force, the particulate matter limit and the opacity limit specified in column 2 opposite that item;
- (b) effective on May 1, 2009, the particulate matter limit and the opacity limit specified in column 3 opposite that item;
- (c) effective on September 1, 2010, the particulate matter limit and the opacity limit specified in column 4 opposite that item.

(3) For the purpose of subsection (2), particulate matter must be determined under standard conditions of 20° Celsius, 101.3 kPa dry gas and 8% oxygen.

(4) Subsection (2) does not apply to emissions from a boiler or heater during the 60 minutes after it is started.

(5) The person carrying out the agricultural operation must comply with any minimum stack discharge height set under subsection (6).

(6) A director may set a minimum stack discharge height for a boiler or heater referred to in subsection (1).

Table 1 – Emissions from Boilers and Heaters Fuelled by Biomass

	Column 1	Column 2		Column 3		Column 4	
Item	Capacity of Boiler or Heater	Emission Standards (effective on the date section 18.1 came into force)		Emission Standards (effective May 1, 2009)		Emission Standards (effective September 1, 2010)	
		Particulate Matter Limit	Opacity Limit	Particulate Matter Limit	Opacity Limit	Particulate Matter Limit	Opacity Limit
1	Exceeding 3 MW	180 mg/m ³	20%	120 mg/m ³	20%	35 mg/m ³	10%
2	Exceeding 1 MW but not exceeding 3 MW	180 mg/m ³	20%	120 mg/m ³	20%	50 mg/m ³	10%
3	Not exceeding 1 MW	180 mg/m ³	20%	120 mg/m ³	20%	120 mg/m ³	20%

Testing of certain boilers and heaters fuelled by biomass

18.2 (1) This section applies to a boiler or heater that

- (a) is fuelled by biomass,
- (b) is used in an agricultural operation, and
- (c) has a capacity exceeding one megawatt.

(2) For the purpose of ensuring compliance with section 18.1, the person carrying out the agricultural operation must have emissions from a boiler or heater referred to in subsection (1) tested in accordance with this section.

(3) Emissions from the boiler or heater must be tested for particulate matter

- (a) within 6 months
 - (i) after the installation of the boiler or heater, and
 - (ii) after the modification of the boiler or heater to increase its capacity by 25% or more,
- (b) at the intervals specified in subsection (5) or (6), as applicable, and
- (c) at any time required by a director under section 18.3.

(4) If the boiler or heater did not have a capacity exceeding one megawatt on the date of installation, emissions from the boiler or heater must be tested for particulate matter

- (a) within 6 months
 - (i) after the modification of the boiler or heater to increase its capacity to exceeding one megawatt, and
 - (ii) after any further modification of the boiler or heater to increase its capacity by 25% or more,
- (b) at the intervals specified in subsection (5) or (6), as applicable, and
- (c) at any time required by a director under section 18.3.

(5) Subject to subsection (6), emissions from the boiler or heater must be tested for particulate matter not less than once during each heating season after September 1, 2009.

(6) If the boiler or heater has a capacity not exceeding 3 megawatts and is fuelled exclusively by manufactured wood fuel, emissions from the boiler or heater must be tested for particulate matter not less than

- (a) once during the heating season beginning on October 1, 2009, and
- (b) once during every second heating season after the heating season referred to in paragraph (a).

(7) Emissions from the boiler or heater must be tested under normal operating conditions and when the boiler or heater is operating at not less than 75% of its capacity and is fuelled only by biomass.

(8) All testing must be carried out using the methodology specified by a director.

(9) If the testing data indicate that emissions from the boiler or heater exceed the applicable particulate matter limit specified in Table 1, the person carrying out the agricultural operation must

- (a) immediately notify the manager for the region in which the agricultural operation is carried out,
- (b) take corrective action within 30 days after notifying that manager, and
- (c) have emissions from the boiler or heater tested for particulate matter
 - (i) within 6 months after corrective action has been taken, and
 - (ii) not less than
 - (A) once in the next heating season, or
 - (B) if the boiler or heater has a capacity not exceeding 3 megawatts and is fuelled exclusively by manufactured wood fuel, once in the next heating season and then once in every second heating season.

Additional testing and monitoring of boilers and heaters

18.3 A director may require the person carrying out an agricultural operation to

- (a) have additional testing or monitoring done in respect of emissions from a boiler or heater to which section 18.2 applies, or
- (b) have any other boiler or heater used in the agricultural operation tested or monitored.

Record keeping requirements for boilers and heaters fuelled by biomass

18.4 (1) This section applies to a boiler or heater fuelled by biomass that is used in an agricultural operation.

(2) The person carrying out the agricultural operation must keep accurate records and supporting documentation in respect of

- (a) all inspections and the maintenance of the boiler or heater,
- (b) the type, source and quantity of fuel burned by the boiler or heater, and
- (c) the results of testing or monitoring required under section 18.2 or 18.3.

Authority to require that other records be kept

18.5 A director may require the person carrying out an agricultural operation to keep any of the following:

- (a) in relation to a boiler or heater that is fuelled otherwise than by biomass and is used in the agricultural operation, accurate records and supporting documentation in respect of
 - (i) all inspections and the maintenance of the boiler or heater,
 - (ii) the type, source and quantity of fuel burned by the boiler or heater, and
 - (iii) the results of testing or monitoring required under section 18.3 (b);
- (b) in relation to any boiler or heater used in the agricultural operation, accurate records and supporting documentation that are additional to those required under paragraph (a) or section 18.4.

Retention and submission of records

18.6 A person required under section 18.4 or 18.5 to keep a record and supporting documentation must

- (a) retain the record and supporting documentation for not less than 3 years after the date on which the record was made, and
- (b) submit the record and supporting documentation to a director or an officer within 5 business days of being requested by the director or officer to do so.

Odours not prohibited

19 Nothing in this Code is intended to prohibit various odours from agricultural operations or activities on a farm, providing such operations or activities are carried out in accordance with this Code.

PART 7 — STORAGE AND USE OF WOOD WASTE

Allowable use

20 Wood waste may only be used for

- (a) plant mulch, soil conditioner, ground cover, on-farm access ways, livestock bedding and areas where livestock, poultry or farmed game are confined or exercised,
- (b) berms for cranberry production, or
- (c) fuel for wood fired boilers.

Storage

21 Wood waste stored and used on a farm must be handled so as to prevent any escape of

- (a) particulate or solid matter from the wood waste into the air, or
- (b) particulate or solid matter or leachate from the wood waste into any watercourse or groundwater

that causes pollution.

Prohibited use

22 Wood waste used on the farm must not be used

- (a) for landfill, and
- (b) on sites within 30 m of any source of water used for domestic purposes with the exception of existing sites under use prior to April 1, 1992, provided that this use is not causing pollution.

PART 8 — ON-FARM DISPOSAL OF MORTALITIES

Burial and incineration

23 (1) Mortalities may be disposed of on-farm by burial or incineration if

- (a) the mortalities are livestock, poultry or farmed game disposed of on the farm where they died,
- (b) the disposal does not cause pollution,
- (c) where disposal is to land, the burial pits are covered, located at least 30 m from any source of water used for domestic purposes and constructed to prevent the escape of any agricultural waste that causes pollution, and
- (d) where disposal is by incineration, the emissions from an incinerator do not exceed 180 mg per cubic metre of particulate matter and 20% opacity, except that
 - (i) for a permanent incinerator installed before April 1, 1992 and not operating under a waste management permit, emissions must not exceed 230 mg per cubic metre of particulate matter and 20% opacity, and
 - (ii) for a permanent incinerator installed before April 1, 1992 and operating under a waste management permit, the emission levels required by that permit apply unless those levels exceed the levels specified in (i).

Composting

24 Mortalities may be composted on-farm if

- (a) the mortalities are composted on the farm where they died,
- (b) the composting site is located at least 15 m from a watercourse and 30 m from any source of water used for domestic purposes, and
- (c) the composting does not cause pollution.

PART 9 — FEEDING AREAS AND ACCESS TO WATER

Grazing areas

25 Livestock, poultry or farmed game feeding within a grazing area may have access to watercourses, provided that the agricultural waste produced by that livestock, poultry or farmed game does not cause pollution.

Seasonal feeding areas

- 26** (1) A seasonal feeding area for livestock, poultry or farmed game must
- (a) be operated in a way that does not cause pollution, and
 - (b) have berms where necessary to prevent agricultural waste runoff from causing pollution.
- (2) Locations for feeding livestock, poultry or farmed game within a seasonal feeding area, including locations for movable feed bunks, must
- (a) be at least 30 m from a high tide watermark, a watercourse or the bank of a watercourse, unless written permission has been obtained from a director for a closer location, and
 - (b) be distributed throughout the area to ensure that manure from the feeding of livestock, poultry or farmed game is spread as a fertilizer or soil conditioner and that no accumulation of manure causes pollution.
- (3) Where permanent feed bunks are used within a seasonal feeding area, written permission for the location of the bunks must be obtained from a director.

Seasonal area access

- 27** Livestock, poultry or farmed game in a seasonal feeding area may have access to watercourses provided that
- (a) the feeding of livestock, poultry or farmed game is in accordance with section 26, and
 - (b) the access is located and maintained as necessary to prevent pollution.

Confined area access

- 28** Livestock, poultry or farmed game in a confined livestock area may not have access to a watercourse, with the exception of a holding area on rangeland where
- (a) livestock is held no longer than 72 hours,
 - (b) the watercourse is not a source of water used for domestic purposes at any location downstream from the confined livestock area, and
 - (c) the access is located and maintained as necessary to prevent pollution.

Confined area operation

- 29** (1) Confined livestock areas must be operated in a way that does not cause pollution.
- (2) If there are more than 10 agricultural units in a confined livestock area or areas within the same drainage basin then the area or areas must be located at least 30 m from a high tide watermark, a watercourse, the bank of a watercourse or any source of water used for domestic purposes.
- (3) Subsection (2) does not apply to a permanent confined livestock area constructed prior to April 1, 1992 provided that a report
- (a) demonstrating to the satisfaction of a director that no pollution of any watercourse or domestic water supply is occurring from the permanent confined livestock area, and
 - (b) produced by
 - (i) a person with professional qualifications in the field of environmental assessment and licensed to practice in British Columbia, or

(ii) staff of the ministry of the minister charged with the administration of the *Farm Practices Protection (Right to Farm) Act* under a Best Agricultural Waste Management Plan is completed by April 1, 1993 and is made available to the director at his or her request.

PART 10 — USE AND STORAGE OF AGRICULTURAL PRODUCTS

Agricultural products

30 Agricultural products such as livestock, poultry, farmed game, fur bearing animals, animal and poultry feeds, forage silage, forage crops, vegetables and chemical fertilizers must be managed, used and stored in a manner that prevents the escape of agricultural waste that causes pollution.

Mushroom or soilless medium

31 Raw materials for making products such as mushroom medium or soilless medium must be used and stored in a manner that prevents the escape of agricultural waste that causes pollution.

B CLIMATIC INFORMATION

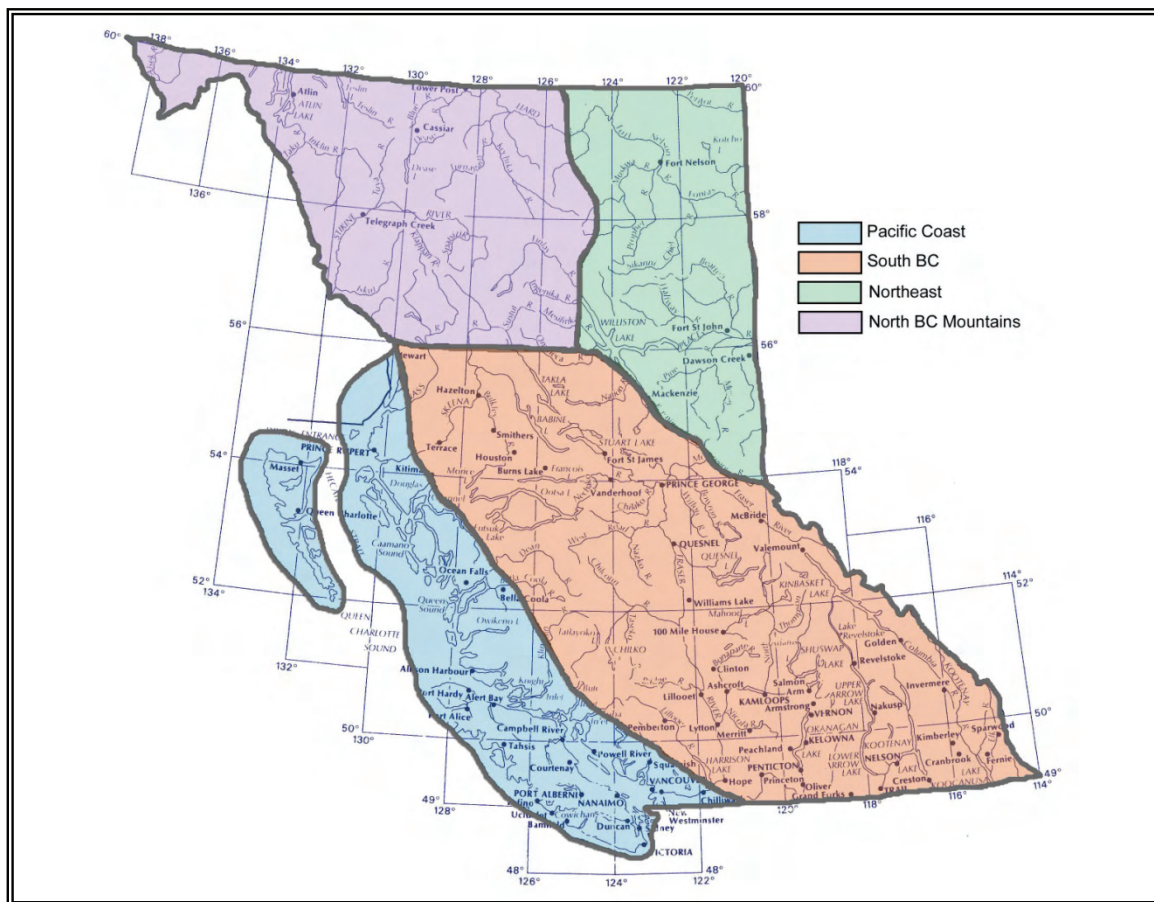
The climate of British Columbia can be divided into 4 broad climatic regions. Within these regions there are a variety of microclimates that also affect farm planning.

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 the areas of the province which receive a total average precipitation greater than 600 mm during the months of October 1st to April 30th inclusive (high precipitation). It also suggests manure storage capacity for different areas.

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.

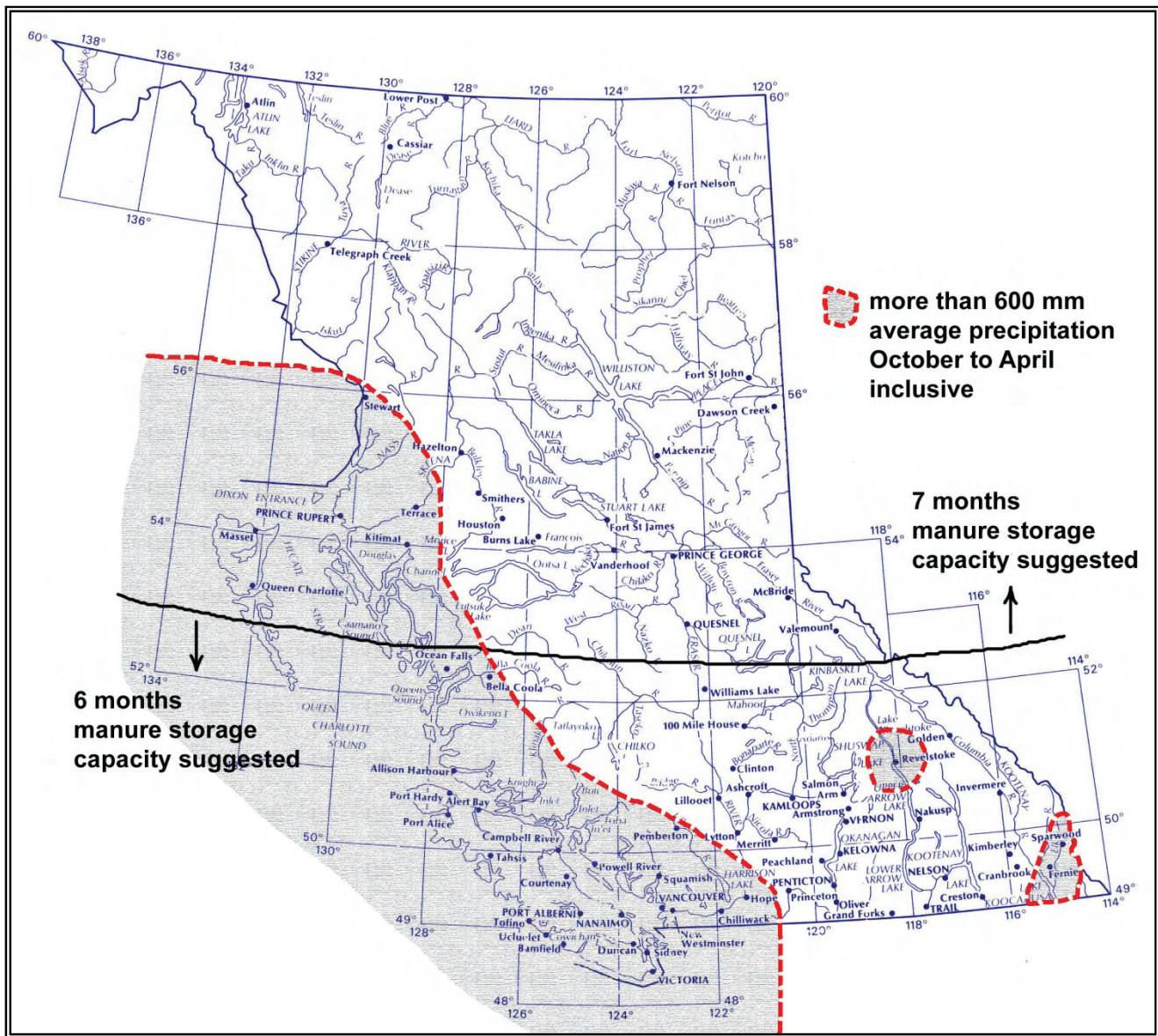


Figure B.1 October to April Precipitation & Suggested Manure Storage Capacity Worksheet 1

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 ³ (m)	Location ¹	Storage Period ² (days)	Precipitation ³ (m)
100 Mile	180	0.290	Kelowna A.	180	0.250
Abbotsford	180	1.540	Keremeos	180	0.286
Agassiz CDA	180	1.699	Langley	180	1.464
Aldergrove	180	1.477	Lillooet	180	0.305
Alert Bay	180	1.630	Lytton (20) 4	180	0.508
Armstrong	180	0.406	Merritt STP	180	0.280
Ashcroft	180	0.196	Mission	180	1.605
Barriere	180	0.347	Nanaimo A.	180	1.420
Burns Lake (20) 4	210	0.381	Oliver	180	0.255
Campbell River	180	1.822	Osoyoos	180	0.350
Castlegar A.	180	0.640	Pemberton A. (5) 4	180	1.002
Chilliwack	180	1.957	Penticton A.	180	0.228
Comox	180	1.366	Pitt Polder	180	2.198
Cranbrook A.	180	0.321	Port Alberni A. (24) 4	180	2.206
Creston	180	0.647	Prince George A.	210	0.400
Dawson Creek A.	210	0.269	Princeton A.	180	0.355
Delta Pebble Hill	180	0.885	Quesnel A.	210	0.394
Duncan Forestry	180	1.182	Revelstoke A.	180	0.627
Enderby	180	0.456	Saanichton CDA	180	1.206
Fernie	180	1.217	Salmon Arm A.	180	0.554
Fort St James	210	0.427	Smithers A.	210	0.490
Fort St. John A.	210	0.282	Surrey Mun. Hall	180	1.347
Grand Forks	180	0.417	Terrace A.	210	1.624
Hatzic Lake	180	1.932	Vanderhoof	210	0.321
Hazelton	180	0.581	Vavenby	180	0.311
Tamlahan (24) 4			Vernon Coldstream	180	0.343
Hope A.	180	2.450	White Rock STP	180	1.019
Kamloops A.	180	0.213	Williams Lake A.	180	0.299

¹ Locations: A = Airport CDA = Agricultural -Agri Food Canada STP = Sewage Treatment Plant

² 6 months (180 days) are October to March inclusive, 7 months (210 days) are October to April inclusive.

³ Highest total precipitation over the past 25 years of records for the storage period indicated. To convert metres to millimeters, multiply the precipitation number by 1,000.

⁴ For sites with less than 25 years of weather data the number in () indicates the years of records.

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.

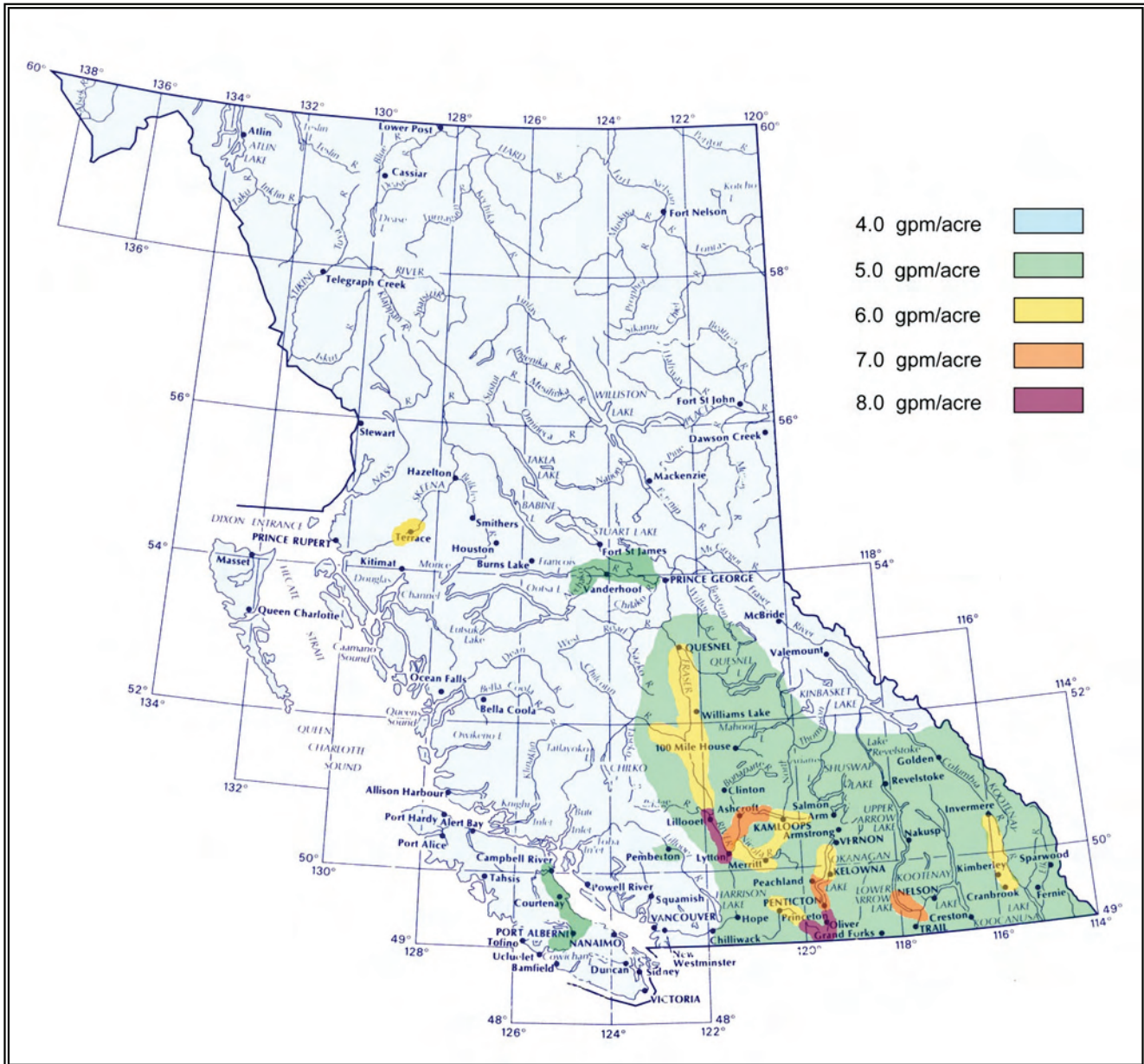


Figure B.2 Estimated Peak Irrigation Flow Requirements in BC
US gallons per minute per acre (gpm/acre)

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.

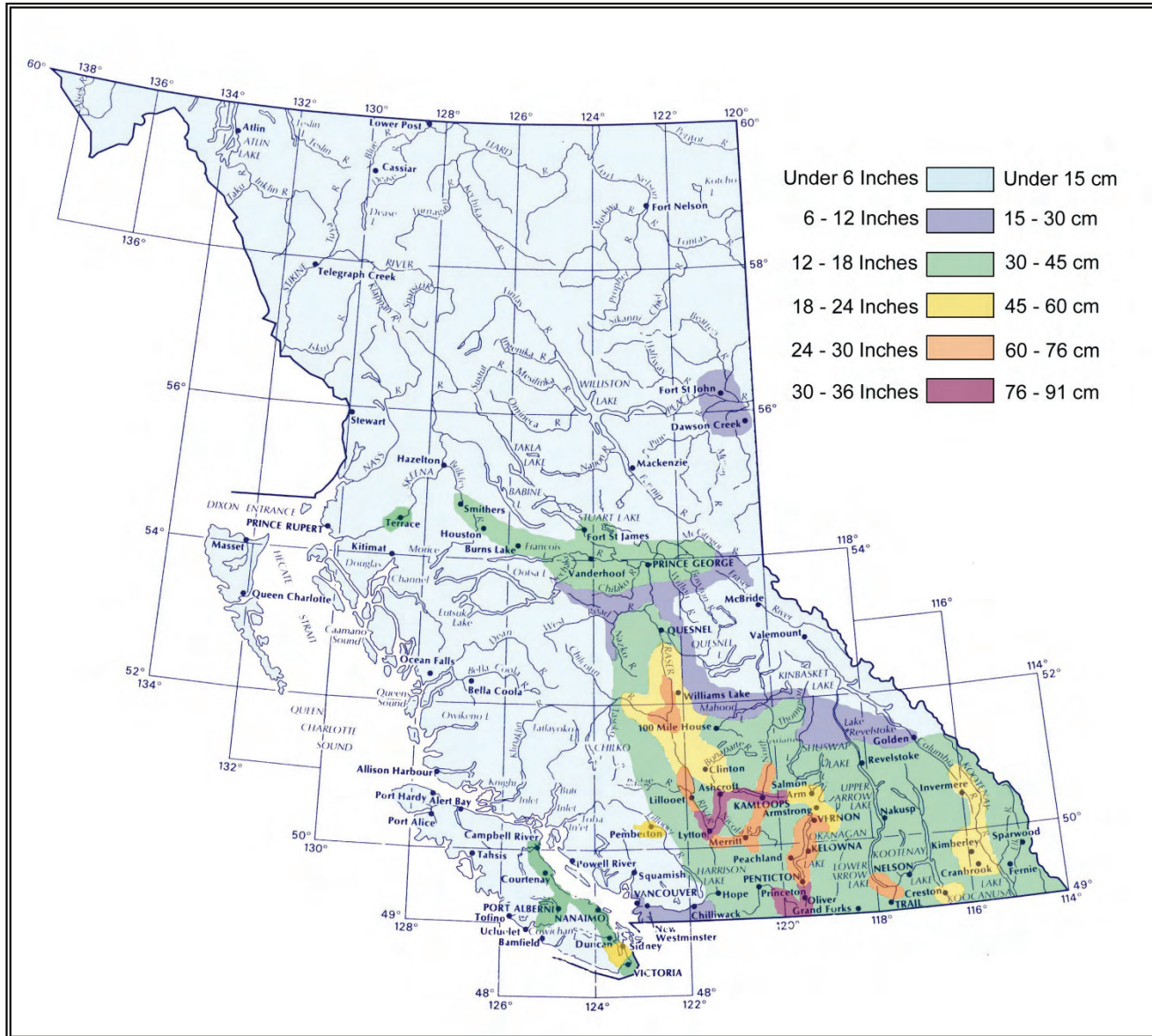


Figure B.3 Estimated Annual Crop Water Requirements in BC

**Table B.3 Estimated Annual Crop Water Requirements
for Various BC Locations¹**

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

C PUBLICATIONS & WEBSITES

C.1 PUBLICATIONS

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

SAM # is the publication number of the Sustainable Agriculture Management Branch, AGRI publications.

 SAM publications are available on the web at: www.agf.gov.bc.ca/resmgmt/publist/Publ_List_Home.htm.

Title	Date	By	SAM #
A Guide to Agroforestry in BC	2001	Small Woodlands Program Forest Renewal BC	
A Guide to Weeds in British Columbia	2002	AGRI	
A Users Guide to Working In and Around Water	2009	MOE	
Acidifying Soils	1991	AGRI	638.100-1
Advanced Forage Management	1999	Pacific Field Corn Assoc	
Advanced Silage Corn Management	2004	Pacific Field Corn Assoc	
Agency Contact Requirements For Constructed Ditch Maintenance	2005	AGRI / DFO	543.100-1
Agency Contact Requirements For Channelized and Natural Stream Maintenance	2005	AGRI/ DFO	543.000-1
Agricultural Building Setbacks from Watercourses in Farming Areas	2010	AGRI	823.400-1
Agricultural Drainage Criteria	2002	AGRI	535.100-2
Agricultural Watercourse Classification	2005	AGRI / DFO	533.500-1
Agriculture GIS - Watercourse Classification	2001	AGRI	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	
An Overview of On-Farm Biogas Production	2008	AGRI	382.600-1
B.C. Agricultural Composting Handbook (series of Factsheets)	1998	AGRI	382.500-0
B.C. Agricultural Fencing Handbook (series of Factsheets)	2003	AGRI	307.000-1
B.C. Agriculture Drainage Manual	1997	AGRI	525.100-1
B.C. Grasslands Stewardship Guide	1997	NRO / MOE / DFO	
B.C. Greenhouse Gas Inventory Report 2007	2009	MOE	

Title	Date	By	SAM #
B.C. Landscape Standard	2008	BC Landscape and Nursery Association	
B.C. Livestock Watering Handbook (series of Factsheets)	2006	AGRI	590.300-1
B.C. Irrigation Management Guide	2005	Irrigation Industry Association of BC	
B.C. Sprinkler Irrigation Manual	1998	Irrigation Industry Association of BC	552.000-1
B.C. Trickle Irrigation Manual	1999	Irrigation Industry Association of BC	565.000-1
Beaver Damage Control in Agricultural Areas of B.C.		MOE	
Berry Production Guide			
Best Practices Guide for Grapes for British Columbia Growers			
Biodiversity and Riparian Areas - life in the green zone		Cows and Fish Program, Alberta www.cowsandfish.org	
Bird Predation Management Plan - Blueberries	2009	AGRI	670.300-1
Blue-Green Algal Blooms in Lakes	1994	MOE	
Bridge Construction (constructed ditches)	2005	AGRI / DFO	373.020-1
British Columbia Approved Water Quality Guidelines	2006	MOE	
British Columbia Game Farm Manual	1997	AGRI	
Building an Environmentally Sound Outdoor Riding Ring	2005	AGRI	386.000-7
Calibration Worksheet - Boom Sprayer	1998	AGRI	234.005-2
Canadian Farm Buildings Handbook	1988	AAFC	
Canadian Water Quality Guidelines for the Protection of Agriculture Water Uses	2005	Environment Canada	
Caring For The Greenzone: Riparian Areas and Grazing Management (3 rd edition)	2003	Cows and Fish Program, Alberta www.cowsandfish.org	
Cattle Wintering Sites: Managing for Good Stewardship	2001	Alberta Agriculture	
Chemigation Guidelines for British Columbia	1993	AGRI	578.100-1
Choosing and Calibrating Manure Application Equipment	2005	AGRI	631.500-6
Climate Change Impacts and Adaptation: A Canadian Perspective	2004	Natural Resources Canada http://adaptation.nrcan.gc.ca/perspective/index_e.php	
Complying with the Fisheries Act	2001	DFO http://www-heb.pac.dfo-mpo.gc.ca/habitat_policy/hab_law_article/hablaw_e.htm	
Conservation Buffers: Design Guidelines for Buffers, Corridors and Greenways	2008	USDA / Forest Service Southern Research Station	
Contingency Plan - Template for On-Farm Planning	2007	AGRI	390.100-0
Control of Beaver Damage	2001	Alberta Agriculture http://www1.agric.gov.ab.ca/\$department/deptdocs.nsf/all/aqdex3469	
Control of Insect and Related Pests of Livestock and Poultry in BC	2002	AGRI http://www.agf.gov.bc.ca/cropprot/livestck.htm	

Title	Date	By	SAM #
Control of Rats and Mice on Poultry Farms	1996	AGRI	384.200-6
Controlled Drainage/Subirrigation	1998	AGRI	564.000-1
Crop Production Guides		http://www.agf.gov.bc.ca/cropprot/prodguide.htm	
<i>Cryptosporidium</i> Infection		Ministry of Health Services http://www.healthlinkbc.ca/healthfiles/hfile48.stm	
Culvert Installation in Constructed Ditches	2005	AGRI / DFO	542.140-1
Dealing with Drought: A Handbook for Water Suppliers in British Columbia	2009	MOE	
Designing Tree Plantings for Wildlife	2007	PFRA	
Drainage Management Guide	2005	AGRI / BCAC	
Estimating Crop Residue Cover For Soil Erosion Control	2000	AGRI	641.220-1
Energy Free Water Fountains	2006	AGRI	590.307-4
Enhancing Livestock Water Quality	2006	AGRI	590.301-4
Farm Nuisance - Dust	2004	AGRI	870.218-62
Farm Nuisance - Odour	2002	AGRI	870.218-64
Farm Practices - Manure Storage and Use	2004	AGRI	870.218-44
Farm Storage and Handling of Petroleum Products	2005	AGRI	210.510-1
Farm Water Storage	2003	AGRI	510.100-1
Farms and Streams: Farmers Guide to Stream Stewardship	1996	AAFC / AGRI	
Farmstead Planning		AAFC #1674E	
Feasibility Study - Anaerobic Digester and Gas Processing Facility in the Fraser Valley, British Columbia	2007	www.bccic.ca	
Feasibility Study - Biogas upgrading and grid injection in the Fraser Valley, British Columbia	2008	www.bccic.ca	
Field Crop Production Guide		AGRI	
Field Guide to Invasive Alien Plant Pests and Diseases that Threaten BC Agriculture		AGRI	
Field Guide to Harmful and Beneficial Insects and Mites of Tree Fruits		www.agf.gov.bc.ca/cropprot/fieldguide/main.htm	
Field Guide to Noxious and other Selected Weeds of BC		AGRI www.agf.gov.bc.ca/cropprot/weedguid/weedguid.htm	
Field Shelterbelts for Soil Conservation	2007	Alberta Agriculture	
Fine Particulates - What They Are and How They Affect Us	1995	MOE	

Title	Date	By	SAM #
Fishery Timing Windows For Maintenance Work in Constructed Ditches	2005	AGRI / DFO	543.000-2
Flood Construction Levels and Setbacks for Farm Building Situations	2008	AGRI	820.400-3
Floriculture Production Guide		AGRI	
Forage Production on Poorly Drained Soils in the Southern Interior of British Columbia	1992	AGRI	536.100-1
Fresh Market Grape Production - Best Practices Guide in British Columbia			
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 Services http://www.healthlinkbc.ca/healthfiles/hfile10.stm	
Ginseng Production Guide for Commercial Growers			
Grassland Monitoring Manual for British Columbia		Grasslands Conservation Council of BC http://www.bcgrasslands.org/monitoringmanual.htm	
Grassed Waterways	1994	OMAFRA	
Grazing Management Guide	2005	AGRI / BCAC	
Growing Greenhouse Peppers in British Columbia			
Guide for Bylaw Development in Farming Areas	1998	AGRI	840.000-1
Guidelines for Canadian Drinking Water Quality	2008	Health Canada	
Guidelines for Farm Practices Involving Fill	2006	AGRI	820.200-1
Guidelines for Minimum Standards in Water Well Construction	1982	MOE	
Guidelines for Off-Farm Inputs for Anaerobic Digestion Facilities	2010	www.bcfarmbiogas.ca	
Guidelines on Storage, Use & Disposal of Wood Residue for the Protection of Fish & Fish Habitat in British Columbia	1985	Environment Canada	
How to Disinfect Drinking Water		Ministry of Health Services http://www.healthlinkbc.ca/healthfiles/hfile49b.stm	
Improved Livestock Access to Water Using GeoGrids	2006	AGRI	590.302-2
Integrated Fruit Production Guide for Commercial Tree Fruit Growers			
Integrated Weed Management		AGRI www.agf.gov.bc.ca/cropprot/weedmanagement.htm	
Invasive Plant Alert: Prevent the Escape of Aggressive Plants		http://www.agf.gov.bc.ca/cropprot/invasiveplant.htm	

Title	Date	By	SAM #
IPM for Turfgrass Managers			
Irrigation Scheduling Techniques	2006	AGRI	577.100-1
Irrigation Scheduling with Tensiometers	2006	AGRI	577.100-2
Irrigation System Assessment Guide	2005	AGRI / BCAC	
Irrigation System Cross Connection Control	1985	AGRI	578.130-1
Irrigation System Maintenance	1994	AGRI	577.200-1
Irrigation Tips to Conserve Water on the Farm	2004	AGRI	500.310-1
Key Drought Management Tips	2005	AGRI	665.000-2
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	AGRI	384.300-3
Liming Acid Soils in Central B.C.	1991	AGRI	637.000-1
Livestock Watering Requirements - Quantity and Quality	2006	AGRI	590.301-1
Maintenance and Checking of Performance of Subsurface Drainage Systems	1985	AGRI	543.200-1
Management Guide for Grapes			
Management of Dust in Broiler Operations	1999	AGRI	
Management of Flies in Layer Barns	2008	AGRI	305.104-1
Manure Treatment Options vs. Available Land Base	1994	AGRI	382.910-1
Mitigating Cattle Losses Caused by Wild Predators in British Columbia			
Mushroom Production Guide - Guide to Best Management Practices in British Columbia	2008		
National Farm Building Code of Canada	1995	National Research Council	
Nursery and Landscape Pest Management & Production Guide			
Nutrient Management Reference Guide	2005	AGRI / BCAC	
On-Farm Anaerobic Digestion Waste Discharge Authorization Guideline	2010	MOE	
On-Farm Hydroelectric Generation	2006	AGRI	430.200-1
On Farm Pesticide Storage and Handling Facility	1994	AGRI	373.130-2
On-Site Testing of Growing Media and Irrigation Water		AGRI	
Planning for Biodiversity: A Guide for BC Farmers and Ranchers	2008	AGRI / BCAC	
Plug and Bedding Plant - Water, Media and Nutrition	1998	AGRI	
Preparing a Complete Nutrient Solution		AGRI	
Protecting Your Shorelands for Better Farming and Ranching, and Healthier Fish Habitat		DFO	

Title	Date	By	SAM #
Pumping Livestock Water - It's All About the Energy Choices!	2005	AGRI	590.305-1
Rangeland Handbook for BC	1998	BC Cattlemen's Assoc.	
Reducing Nitrogen and Phosphorus in Manure Through Ration Changes	1993	AGRI	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	AGRI/ 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		www.weedsbc.ca/pdf/prod_form.pdf	
Sewerage System Standard Practice Manual	2006	Ministry of Health Services	
Siting and Management of Dairy Barns	2010	AGRI	305.104-2
Siting and Management of Poultry Barns	2008	AGRI	305.104-1
Sizing Dairy Manure Storage Facilities	1990	AGRI	383.100-2
Soil Compaction - A Review of its Origin and Characteristics	1990	AGRI	613.100-1
Soil Liming - Understanding Your Soil Test Recommendation	1993	AGRI	637.200-1
Soil Management Handbook for the Lower Fraser Valley	1991	AGRI	610.000-1
Soil Management Handbook for the Okanagan and Similkameen Valleys	1994	AGRI	610.000-6
Soil pH	2001	AGRI	637.100-1
Soil Sampling for Nutrient Management	2005	AGRI	
Soil Sampling in Fertilizer Banded Fields	1991	AGRI	611.100-2
Sprinkler Irrigation Scheduling using a Water Budget Method	2004	AGRI	577.100-3
Soil Water Storage Capacity and Available Soil Moisture	2002	AGRI	619.000-1
Standards and Best Practices for Instream Works (lower mainland)	2004	MOE http://www.env.gov.bc.ca/wld/documents/bmp/iswstdsbpsmarch2004.pdf	
Starlings and Livestock Farms	2000	AGRI	384.200-7
Stewardship Options for Private Landowners in B.C.	1996	Environment Canada / MOE	
Suggestions For Field Sprayer Operation And Maintenance	1986	AGRI	234.005-1

Title	Date	By	SAM #
The Health Of Our Air	1999	AAFC	
The Health of Our Soils	1995	AAFC	
The Health Of Our Water	2000	AAFC	
The RUSLEFAC - Revised Universal Soil Loss Equation for Application in Canada	2002	AAFC	
Treatment of Greenhouse Recirculation Water: Bio-Sand Filtration	1999	AGRI	512.000-2
Treating Irrigation and Crop Wash Water for Pathogens	2003	AGRI	5121.000-3
Treatment of Greenhouse Recirculation Water - Biosand Filtration	1999	AGRI	512.000-2
Trees and Shrubs for Prairie Shelterbelts		AAFC http://www4.agr.gc.ca/AAFC-AAC/display-afficher.do?id=1192201777018&lang=eng	
Trickle Irrigation Scheduling using Evapotranspiration Data	2004	AGRI	577.100-4
Understanding Different Soil Test Methods	2010	AGRI	631.500-9
Understanding a Water Licence	2006	AGRI	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	AGRI	654.000-1
Vegetable Production Guide - Beneficial Management Practices for Commercial Growers in British Columbia			
Ventilation Handbook	1985	AGRI	306.400-4
Water-Borne Diseases in BC		Ministry of Health Services http://www.healthlinkbc.ca/healthfiles/hfile49a.stm	
Water License Holders Rights and Obligations	2006	MOE	
Water Quality Evaluation of Agricultural Runoff in the Lower Fraser Valley	1994	AGRI	511.300-1
Water Rights in British Columbia	2006	MOE	
Water Wells that last for generations	2001	Alberta Agriculture	
Watering Livestock Directly from Watercourses	2006	AGRI	590.302-1
Watershed Stewardship: A Guide for Agriculture	2006	DFO /MOE /AGRI	648.000-3
Wetlands of British Columbia: A Guide to Identification	2004	Ministry of Forests, Mines and Lands	
Wetland Ways: Interim Guidelines for Wetland Protection and Conservation in British Columbia	2009	Wetland Stewardship Partnership http://www.env.gov.bc.ca/wld/documents/bmp/wetlandways2009/wetlandways_doc_intro.html	
Wildlife Damage Control - Interior BC	2003	AGRI	870.218-60

Title	Date	By	SAM #
Wildlife Damage Control - South Coastal BC	2009	AGRI	870.218-59
Wind and Snow Fences	1997	AGRI	307.230-1
Woodwaste Use - Precautions To Horse Owners	2005	AGRI	655.000-2
Woodwaste Use in Agriculture	1992	AGRI	655.000-1

C.2 WEBSITES

The following 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
www.firb.gov.bc.ca	Farm Industry Review Board
http://www.frontcounterbc.gov.bc.ca/	Front Counter BC
www.bclaws.ca	Provincial listing of Acts and Regulations
http://www.gov.bc.ca/fortherecord/safety/	Dam Maintenance and Safety
Ministry of Agriculture http://www.gov.bc.ca/al/	
http://www.agf.gov.bc.ca/resmgmt/sf/farmpp/bird_devices.htm	Wildlife damage control guidelines
http://www.agf.gov.bc.ca/resmgmt/sf/Publications.htm	Strengthening Farming / Farm Practices
www.agf.gov.bc.ca/cropprot/nonnativepests.htm	Invasive plants
http://www.agf.gov.bc.ca/cropprot/prodguide.htm	Crop Production Guides
www.agf.gov.bc.ca/resmgmt/publist/Publ_List_Home.htm	Publications & plans
www.agf.gov.bc.ca/pesticides/	Pesticide Label Information
www.agf.gov.bc.ca/pesticides/h_1.htm	Pesticide Applicator Course
www.agf.gov.bc.ca/resmgmt/ditchpol/index.htm	Ditch maintenance policy & guide
www.al.gov.bc.ca/cropprot/weeds.htm	Weed Management
www.weedsbc.ca	Weeds BC
Ministry of Environment http://www.gov.bc.ca/env/	
http://www.env.gov.bc.ca/epd/industrial/agriculture/digestion.htm	Anaerobic Digestion
http://www.env.gov.bc.ca/epd/climate/index.htm	Climate Change
http://www.env.gov.bc.ca/cas/impacts/bc.html	Climate Change Impacts
http://www.env.gov.bc.ca/cdc/	BC Conservation Data Centre – provincial species at risk listing
http://www.env.gov.bc.ca/epd/ipmp/regs/index.htm	Integrated Pest Management Act and Legislation
http://www.env.gov.bc.ca/epd/ipmp/pest_certification/certif_main.htm	Pesticide Certification Information
http://www.env.gov.bc.ca/epd/industrial/regs/ag_waste_control/index.htm#3	Online Boiler Registry
http://www.env.gov.bc.ca/epd/industrial/oil_gas/pdf/fuel_handle_guide.pdf	Petroleum fuel information
http://www.env.gov.bc.ca/epd/codes/open_burning/pdf/OBSCR_map.pdf	Open Burning Smoke Control Regulation Map
http://www.env.gov.bc.ca/atrisk/toolintro.html	BC Species and Ecosystem Explorer
http://www.env.gov.bc.ca/wat/wq/	Water Quality
http://www.env.gov.bc.ca/wsd/public_safety/drought_info/index.html	Drought Information
Ministry of Forests, Mines and Lands www.gov.bc.ca/for	
www.for.gov.bc.ca/tasb/legsregs/comptoc.htm	Forests Acts and Regulations
http://www.for.gov.bc.ca/hra/Practices/index.htm	Rangeland Health Information
www.bcwildfire.ca	Protection Branch – detailed fire information current fire condition information

Ministry of Health Services http://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	Shelterbelts
http://www.dfo-mpo.gc.ca/species-especies/home_e.asp	Aquatic Species at Risk
www.inspection.gc.ca	Canadian Food Inspection Agency
www.laws.justice.gc.ca/en/index.html	Federal listing of Acts and Regulations
http://oee.nrcan.gc.ca/regulations/product/electric_motors.cfm?attr=0	Energy Efficiency Regulations
www.pac.dfo-mpo.gc.ca/	Fisheries and Oceans Canada (DFO)
www.speciesatrisk.gc.ca	Species at risk - interactive
http://www.sararegistry.gc.ca	Species at Risk Act Registry
http://www.sararegistry.gc.ca/involved/you/privland_e.cfm	Species at Risk Act application to private land
http://www.weatheroffice.gc.ca/forecast/textforecast_e.html?Bulletin=flcn39_cwv	Smoke Control Forecast
Local Government and Other Websites	
http://www.ardcorp.ca	BC Agricultural Research & Development Corporation
www.bcfarmbiogas.ca	Anaerobic Digestion Initiative Advisory Committee of BC
www.bcagclimateaction.ca	Climate Change Mitigation and Adaptation
www.kmwpp.ca/	BC Agrifood Knowledge Platform (a collection of commodity specific documents)
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.c-ciarn.uoguelph.ca	Climate Change Adaptation
www.deltafarmland.ca	Delta Farmland and Wildlife Trust
www.farm-energy.ca	Factsheets on alternative energy for farms
www.invasiveplantcouncilbc.ca/	Invasive Plant Council of BC
www.metrovancouver.org/boards/bylaws/Bylaws/GVRD_Bylaw_1098.pdf	Metro Vancouver Agricultural Boilers Emission Regulation
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
www.trenchsociety.com	East Kootenay Trench Agriculture Wildlife Committee
http://www.epa.gov/otaq/retrofit/verif-list.htm	US Environmental Protection Agency Diesel Retrofit standards
www.waterbucket.ca	Integrated Water Management in BC

D GLOSSARY OF TERMS

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 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](#))

AGRI: British Columbia Ministry of Agriculture

agricultural exemptions of approvals/permits: see [waste discharge](#)

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

agricultural waste: [from the *Code* under the *Agricultural Waste Control Regulation*] includes manure, spent mushroom medium, and agricultural vegetation waste, such as crop residue, unmarketable produce, and spoiled feed

agricultural waste composting: see [compost](#)

agricultural waste used as a fertilizer: application of agricultural waste according to its fertilizer value (also see [fertilizer](#))

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: 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

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

approval: [from the *Water 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

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* under the *Agricultural Waste Control Regulation*

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 a strip of crop vegetation, often grass or trees; some can act as a “treatment system” to remove contaminants before they reach the sensitive area

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 woodwaste, 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 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

Code: the *Code of Agricultural Practice for Waste Management*, April 1, 1992 attached to the *Agricultural Waste Control Regulation* of both the *Environmental Management Act* and *Public Health Act*

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

agricultural waste composting: [from the *Organic Matter Recycling Regulation*] the composting of agricultural waste in accordance with Part 5 of the *Code* under the *Agricultural Waste Control Regulation*

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 *Code* under the *Agricultural Waste Control Regulation*] an outdoor, non-grazing area where livestock, poultry or farmed game is confined by fences, other structures or topography including feedlots, paddocks, corrals, exercise yards and holding areas, but not including a seasonal feeding area

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, plough 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

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)

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

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”)

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 Regulation*] the place on the natural channel of a stream where an applicant proposes, or a licensee is authorized, to divert water from the stream

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 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

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

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 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-leaved, flowering plant with non-woody stem that is not a grass or grass-like plant

forest: [from Environment Canada] a minimum area of one hectare, at least 20 meters 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 Act*] the land in respect of which the licensee holds a licence under the Act

game: [from the *Game Farm Act*] 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 *Code* under the *Agricultural Waste Control Regulation*] a pasture or rangeland where livestock, poultry or farmed game is primarily sustained by direct consumption of feed growing on the area

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

greenhouse 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 ploughed 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: (a) water below the level of the water table; (b) water in an aquifer (see aquifer); (c) [from the *Water Act* and the *Code* under the *Agricultural Waste Control Regulation*] water below the surface of the ground (editorial note: this would include soil water as well as water in the water table; see soil – soil water and water table); (d) [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: done on outdoor areas subject to concentrated impacts, especially in high precipitation areas, such as concrete livestock yards (also see high precipitation)

hay and **havlage:** 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](#)

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: (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](#)

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

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 woodwaste, manure or soil, creating a contaminated liquid, or (b) [from the *Mushroom Composting Pollution Prevention Regulation*] liquid effluent including any water, precipitation or runoff

that has come in contact with materials being received, processed, composted or stored, or which mixes with contaminated water generated from the composting process or liquid which originates from agricultural waste or the composting process; refer to Figure 9.5, page 9-49

silage leachate: see livestock feed

woodwaste leachate: see woodwaste

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 acid 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

MOE: Ministry of Environment

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

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

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: has very low solid content and flows freely (cannot be piled)

manure, semi-solid: has a solid content of less than 20% but does not flow freely as liquid manure

manure, solid: has a solid content of 20% or more and retains its shape when piled

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 *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 *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

covered storage: [from the *Code* under the *Agricultural Waste Control Regulation*] field storage must be covered (from Oct 1st to April 1st) in areas that receive more than 600 mm precipitation from October to April inclusive

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

escape of waste: [from the *Code* under the *Agricultural Waste Control Regulation* – item 6] requires a storage facility containing agricultural waste must prevent the escape of waste that causes pollution (also see leak detection)

field storage: [from the *Code* under the *Agricultural Waste Control Regulation*] a temporary stock of agricultural waste (solid manure) ready to be drawn upon for use as a crop fertilizer or soil conditioner

field storage – “short term”: [from the *Code* under the *Agricultural Waste Control Regulation* – item 8] solid manure may be stored on a field for 2 weeks or less, if used within 2 weeks and stored to prevent pollution

field storage – “long term”: [from the *Code* under the *Agricultural Waste Control Regulation* item 8] solid manure may be stored on a field for up to 9 months (with conditions)

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 as specified period of time, or at specified intervals

mortality: livestock loss due to death

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

burying: burial in pits used on small and large animals; considered the least preferred method for disposal

mortality composting: used on small animals; may be also used on large animals

mortality incinerator: used on small animals; [from the *Code* under the *Agricultural Waste Control Regulation*] emissions not to exceed 180 mg per cubic metre of particulate matter and

20% opacity, with exceptions; refer to page 274 (also see [opacity](#))

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 woodwaste

mushroom compost: [from the *Mushroom Composting Pollution Prevention 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 phosphorus absorption in corn and many other crops

N

native species: [from the *BC Wildlife Amendment Act 2004*] 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

nitrogen: a primary plant nutrient; taken up by plants primarily as nitrate (NO_3^-) or ammonium (NH_4^+)

inorganic nitrogen – ammonium (NH_4^+): common form used by plants; is soluble and found in the liquid fraction of soil

inorganic nitrogen – ammonia (NH_3): a transitional form of ammonium, easily volatilized into the air

inorganic nitrogen – nitrate (NO_3^-) and nitrite (NO_2^-): 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: the removal of oxygen by soil bacteria that converts nitrogen to a gas; nitrate nitrogen (NO_3^-) is changed to nitrite (NO_2^-) and then to gases, nitrous oxide (N_2O), nitric oxide (NO), and nitrogen (N_2); 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 (NH_4^+) to nitrite (NO_2^-) and then to nitrate nitrogen (NO_3^-) 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 8.1, page 8-4

nitrogen fixation: the process of nitrogen combining with oxygen and hydrogen; is necessary in order for plants to utilize nitrogen; 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 (N_2O): 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 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: (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 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 detectability, quality, intensity, and acceptability

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; (2) plant residues, humus (stable organic matter), and soil life (also see soil organic matter)

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: [from *Open Burning Smoke Control Regulation*] 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)

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) - for more information go to http://www.weatheroffice.pyr.ec.gc.ca/wxhealth/smoke/default_e.html

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; 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

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

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 controlling pests or reducing pest damage using 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: (a) any material used to kill, control or manage pests, including products to manage the growth of plants; (b) [from the *Integrated Pest Management Act*] 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 (i) a plant growth regulator, plant defoliator or plant desiccant, (ii) a control product under the *Pest Control Products Act* (Canada), other than a device that is a control product, and (iii) a substance that is classified as a pesticide 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, nematocides, 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 to public lands, private land used for forestry, transportation or public utilities

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; is absorbed by plants depending upon soil pH

phosphorous sensitive area: where surface water flows to a lake or pond; suggested farms with soils greater than 80ug/mL have a Nutrient Management Plan (also see Nutrient Management Plan)

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, secondary, 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

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 or 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: greater than 600 mm precipitation October 1st to April 30th inclusive

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

productive conservation: see conservation

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

rangeland holding area: [from the *Code* under the *Agricultural Waste Control Regulation*, Section 28] confined livestock areas where livestock are moved to prior to being released onto a grazing area, that when held there for no longer than 72 hours, are allowed access to a watercourse (with conditions)

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: 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* under the *Agricultural Waste Control Regulation*] an area (a) used for forage or other crop production, and (b) used seasonally for feeding livestock, poultry or farmed game that is primarily sustained by supplemental feed, but does not include a confined livestock area or grazing area

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

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: undissolved soil particles, sand and minerals washed from the land into watercourses as a result of natural and human activities; will give water a cloudy appearance

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

self closing nozzle: see [fuel storage](#)

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: a practice whereby a farm structure is located or a farm practice is done allowing for a

separation distance from a sensitive area appropriate to the environmental risk involved

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: [from the *Code* under the *Agricultural Waste Control Regulation*] a material that is manufactured for the growing of plants and may contain natural soils

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

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 Amendment Act 2004*] means a species designated by regulation under section 6(1) as an extirpated species

native species: [from the *Wildlife Amendment Act 2004*] 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 Amendment Act 2004*] 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: (a) [from the *Forest Practices of BC Code Act*] a watercourse, having an alluvial sediment bed, formed when water flows, on a perennial or intermittent basis, between continuous definable banks; (b) [from the *Water Act*] includes a natural watercourse or source of water supply, whether usually containing water or not, ground water, and a lake, river, creek, spring, ravine, swamp and gulch; (c) 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 stream”: see [Agricultural Watercourse Maintenance Guide](#)

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: [from the *Water Act*] see [stream channel](#)

stream channel: (a) [from the *Water Act*] the bed of a stream and the banks of a stream, whether above or below the natural boundary and whether usually containing water or not, including all side channels, (b) [from the *Forest Land Reserve Regulation*] the area between the outermost opposing streambanks measured at the point where rooted terrestrial vegetation begins

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 an 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 (SO_x): 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 pest 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

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

conservation tillage: a method which reduces the amount of crop residue incorporated 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 <http://www.farmwest.com/climate/tsum/index.cfm>

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

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) air contaminants released from manure, some pesticides and petroleum products; contribute to the production of ground level ozone and the formation of fine particulate matter

volatilize: the process of chemicals moving from the liquid phase to the gaseous phase

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

agricultural exemptions of approvals/permits: [from the *Agricultural Waste Control Regulation*] a person who carries out an agricultural operation in accordance with the *Code* is, for the purposes of carrying out that agricultural operation, exempt from Section 3 (2) and (3) of the *Environmental Management Act* (the sections prohibiting introducing wastes into the environment except with a waste discharge approval or permit

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

water: [from the *Environmental Management Act*] includes groundwater (as defined in the *Water 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 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 the right to the use of which is not held under a licence or under a special or private Act

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 www.env.gov.bc.ca/wat/wq/reference/glossary.html

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 *Code* under the *Agricultural Waste Control Regulation*] a place that perennially or intermittently contains surface water, including a lake, river, creek, canal, spring, ravine, swamp, salt water marsh or bog, and including a drainage ditch leading into the foregoing (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 [Agricultural Watercourse Maintenance 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: (a) a pit, hole or shaft sunk into the earth to tap groundwater; (b) [from the *Water Act*] an artificial opening in the ground made for the purpose (among others) of extracting and using ground water

abandoned well: a well no longer used that has been permanently closed or plugged

artesian well – flowing: [from the *Ground Water 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, Public Health Act Transitional Regulation*; (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, woodwaste, 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 *Ground Water Protection Regulation*] a secure, vermin-proof cover, lid or structure that prevents direct and unintended or unauthorized access to the interior of the production casing, and includes a sanitary well seal

well test: determination of the well yield versus drawdown relationship with time

well casing: [from the *Ground Water 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 *Ground Water 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 *Ground Water 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 *Ground Water 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)

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; (b) [from *Forest Practices Code of BC Act*] swamp, marsh, bog or other similar area that supports natural vegetation that is distinct from adjacent upland areas

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

woodwaste: [from the *Code* under the *Agricultural Waste Control Regulation*] includes hog fuel, mill ends, wood chips, bark and sawdust, but does not include demolition waste, construction waste, tree stumps, branches, logs or log ends

woodwaste leachate: the liquid generated from water moving through woodwaste; 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: (1) [from the *Water Act*] (a) anything capable of or used for (i) diverting, storing, measuring, conserving, conveying, retarding, confining or using water, (ii) producing, measuring, transmitting or using electricity, or (iii) collecting, conveying or disposing of sewage or garbage or 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; and (d) changes in and about a stream, and includes access roads to any of them

(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

E 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	(°C)	1.8, then add 32	degrees Fahrenheit	(°F)
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)

