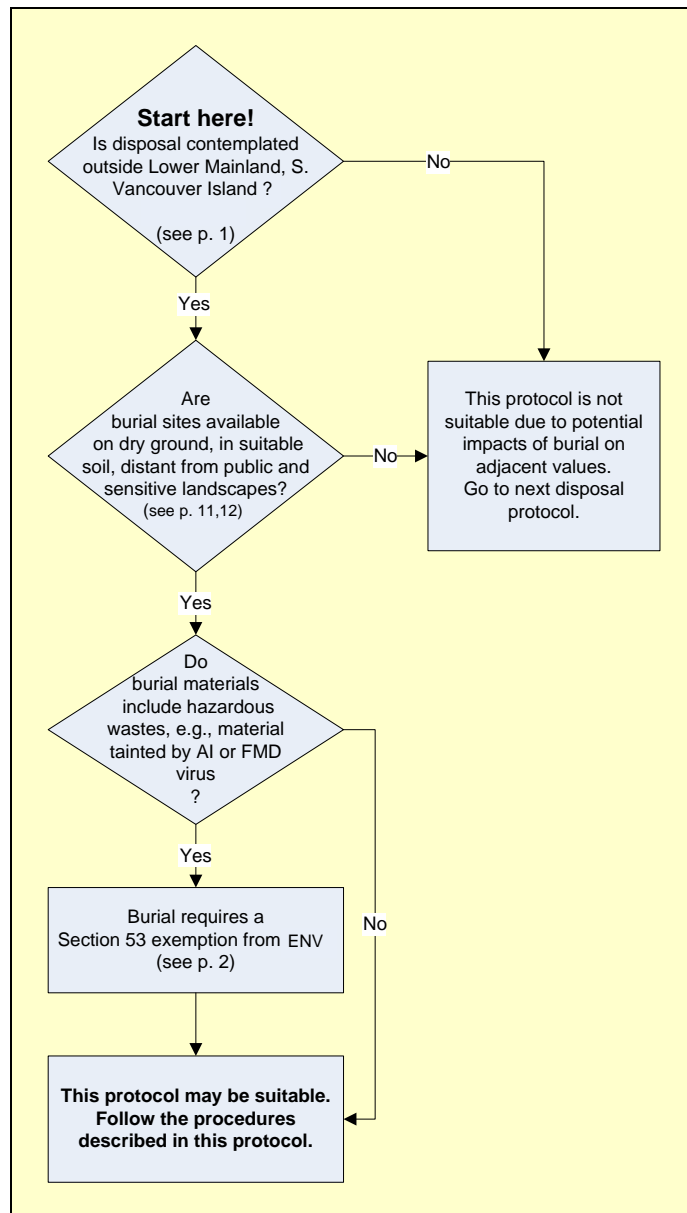


BC Ministries of Agriculture, Health and Environment

Protocol #1

Protocol for On-Farm and Centralized Burial of Infected and Non-Infected Poultry and Livestock



Use this decision flow-chart to determine if this protocol applies to the situation at hand.

September 23, 2015

This document is designed for double-sided printing.

**“Protocol #1 – Protocol for On-Farm and Centralized Burial of Infected
and Non-Infected Poultry and Livestock”
is published by the BC Ministry of Agriculture**

For more information on disposal protocols from the
British Columbia Ministry of Agriculture, contact:

Waste Management Specialist
BC Ministry of Agriculture
Innovation and Adaptation Services Branch
1767 Angus Campbell Road
Abbotsford, BC V3G 2M3 Canada
Telephone: 1-888-221-7141

Foreword

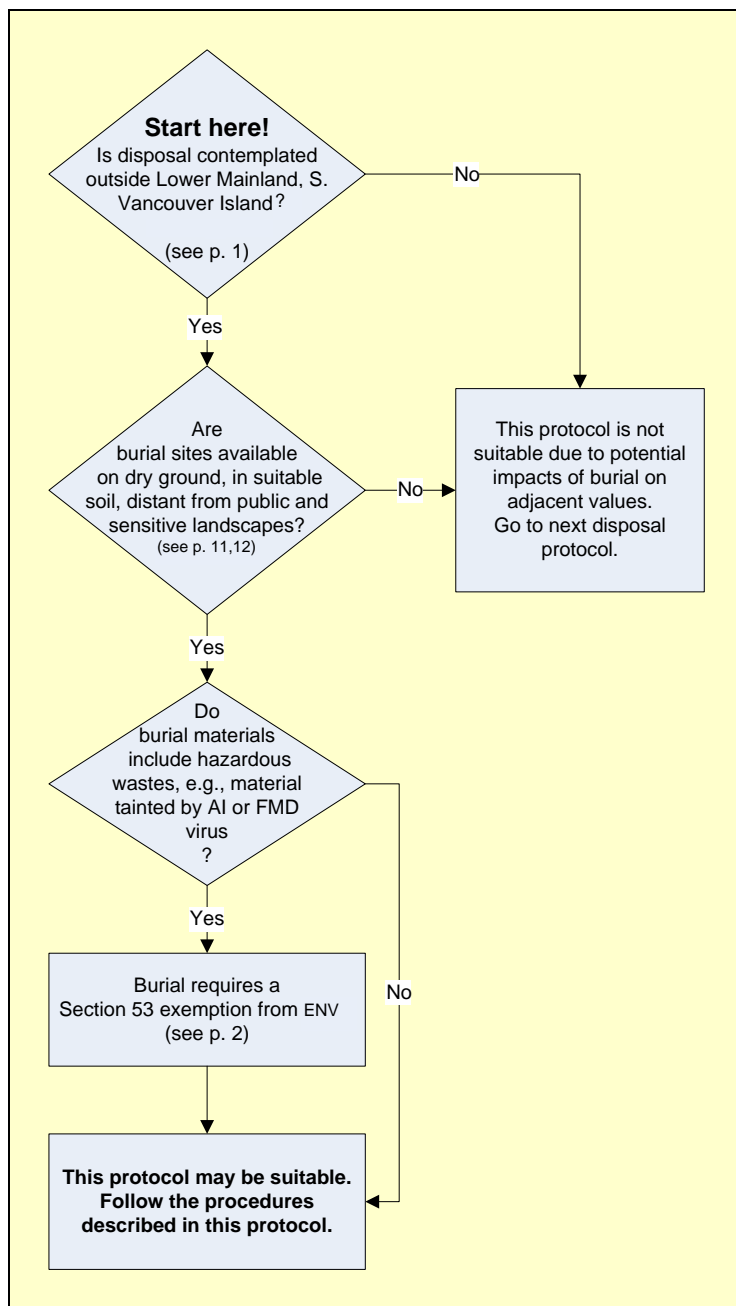
This Protocol addresses burial as a means of disposing of poultry and livestock carcasses that have perished as a result of a disaster (e.g., foreign animal disease event). The procedures, prescriptions and allowances described in this Protocol are not intended for disposal of mortalities as a result of normal agricultural production conditions.

The Protocol provides required site selection criteria, setback distances, burial-pit design and guidance for effective disposal operations, disease containment, and protection of human health and the environment.

In addition, various sections of the Protocol discuss regulatory requirements, ownership of the infected material and associated responsibilities with respect to worker safety, biosecurity and lawful disposal.

The flowchart at right illustrates a decision tree to determine if this Protocol is suitable to the situation at hand.

The term “disposal” is often used throughout this document. For the purpose of the Protocol, the concept of disposal means permanent burial of animal carcasses in suitable soil at safe distances above groundwater and at safe setbacks from sensitive geographical features.



Decision Tree for Use of Protocol 1

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Appendix A - Application for Section 53 Exemption, Hazardous Waste Regulation

Appendix B – Application for a Waste Discharge Authorization, Waste Discharge Regulation

Approvals

Protocol #1 – Protocol for On-Farm and Centralized Burial of Infected and Non-Infected Poultry and Livestock

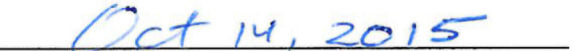
We, the undersigned, adopt this Protocol as a framework for active and cooperative response to ensure coordinated, efficient, and effective mass disposal of livestock and poultry in emergency situations.

The policies and procedures detailed in this Protocol are approved for use in the circumstances specified therein.

Approved by the undersigned:



James Mack
Assistant Deputy Ministry
BC Ministry of Agriculture



Date Signed



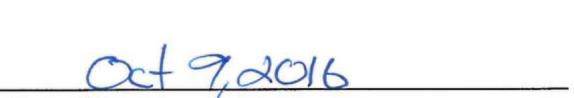
Arlene Paton
Assistant Deputy Ministry
BC Ministry of Health



Date Signed



Mark Zacharias
Assistant Deputy Minister
BC Ministry of Environment



Date Signed

1.0 Overview

1.1 Background

A wide range of emergencies can affect poultry and livestock in British Columbia, and trigger the need to dispose of animal carcasses and associated tissues. Flooding, wildfires, severe weather, and animal disease outbreaks, among other events, may challenge individual agriculture producers, local governments, and provincial and federal government agencies to rapidly develop plans for disposal. Burial may be a viable option in some situations.

Burial

The term "burial," in this context, refers to the permanent containment of animal tissue to support the objectives of emergency response. Burial on farms or at one or more central burial sites can represent an effective way of enhancing public safety, protecting the environment, and promoting agricultural recovery.

Where disease outbreaks occur, specific pathogens may pose an infectious risk to other animals or humans. Preventing the spread of infectious animal diseases, through prompt treatment and burial of contaminated material, reduces the threat to susceptible animals.

This Protocol's procedures, prescriptions and allowances are **not** intended for routine disposal of mortalities related to normal agricultural production.

Burial May Not Be Possible

Emergency burial may not be a suitable option in all locations in B.C. Burial requires specific site conditions to ensure adequate environmental and human health (e.g., drinking water) protection and biosecure containment of disease agents. Emergency burial of significant carcass volumes, as described in this Protocol, is not an appropriate emergency disposal option for the Lower Mainland, the flood plains of Southern Vancouver Island, or some areas of the Okanagan due to various combinations of high water table, high rainfall, unsuitable soils, and dense human populations. For other areas, the suitability of burial as a disposal option will depend on specific conditions determined in a site assessment.

1.2 Purpose

This Protocol guides field activities where the burial of poultry and livestock carcasses is required to ensure public safety, animal health and environmental protection in an emergency. This Protocol should be used

*If Protocol is Applied,
Procedures Must be
Followed*

to develop a detailed disposal plan that directs the proper and safe management of disposal activities by agricultural producers and incident management teams (if active). The Protocol also facilitates the processing of authorizations and exemptions that may be required.

This Protocol addresses the use of emergency burial in British Columbia and the occupational health and safety requirements, as well as environmental considerations associated with the process. A number of environmental and public health concerns relate to the activities described in this Protocol.

1.3 Allowable Waste to be Buried

Animal waste that can be buried according to this Protocol includes poultry and livestock carcasses, poultry and livestock products, eggs, feed, manure and bedding.

The Protocol does not allow the burial of material that contains infectious spore forming organisms (e.g., organisms that cause anthrax) or plastics, metals, or any inorganic materials that do not readily degrade through biological action unless they are part of necessary packaging and containment to ensure biosecurity during transport and handling of infectious material.

1.4 Regulatory Requirements

*Infectious Waste -
Hazardous Waste
Regulation (HWR)*

Authorization to discharge waste into the environment from agricultural operations and to bury animal carcasses is required under the provincial *Environmental Management Act*¹ and its regulations.

Wastes that contain or may contain infectious disease agents defined as Class 6.2 dangerous goods under the federal *Transportation of Dangerous Goods Act*² are subject to the Hazardous Waste Regulation under the provincial *Environmental Management Act*.

Section 53 of the Hazardous Waste Regulation³ allows for an exemption to be granted for hazardous wastes that do not pose a threat to human health or the environment when handled in accordance with methods/protocols approved by the Director.

¹ Available at: http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/03053_00

² Available at: <http://laws-lois.justice.gc.ca/eng/acts/T-19.01/>

³ Available at: http://www.bclaws.ca/Recon/document/ID/freeside/63_88_00

*Process for
Exemption under
Section 53*

A site-specific and protocol-specific exemption from the requirements of the Hazardous Waste Regulation issued by the BC Ministry of Environment must be acquired prior to implementation of the activities prescribed in this Protocol for infectious waste. The exemption takes the form of a letter to the property owner, which specifically refers to following the Protocol. In stating specific disposal requirements, the Protocol is the discharge authorization.

The process for applying for an exemption under Section 53 in times of emergency may be summarized as follows:

1. Disposal Group Supervisor of the incident management team or owner of animals (or carcasses) identifies the legal property to be considered for disposal by burial and names the property owner.
2. Disposal Group Supervisor of the incident management team or owner of animals (or carcasses) prepares the application for a Section 53 Exemption form (attached to this Protocol as Appendix A), and submits the completed form via e-mail or facsimile to the BC Ministry of Environment Regional office.
3. When, and if satisfied with the information provided in the submitted form, the Ministry of Environment issues a separate exemption letter to each property owner.

*Non-Infectious Waste -
Waste Discharge
Regulation (WDR)*

When the waste does not contain Class 6.2 infectious agents, such as when animals have been destroyed by fire or flood events, a Section 53 exemption is not required for burial on farms or at a centralized location; however, under the Waste Discharge Regulation, a site specific authorization for the discharge issued by a Director is required for each burial site.

*Process for
Non-infectious waste
discharge authorization*

To obtain the site-specific and protocol-specific authorization for non-infectious waste, the Disposal Group Supervisor of the incident management team or owner of animals (or carcasses) must submit an application for a waste discharge authorization form to the Director describing the site, mass of carcasses to be buried, type of animals, and that all the protocol requirements, including site criteria, have and will be met and followed. This authorization may take the form of an order, or an Approval.

The process for applying for a waste discharge authorization under the Waste Discharge Regulation in times of emergency may be summarized as follows:

1. Disposal Group Supervisor of the incident management team or owner of animals (or carcasses) identifies the legal property to be considered for disposal by burial and names the property owner.
2. Disposal Group Supervisor of the incident management team or owner of animals (or carcasses) prepares the Application for a Waste Discharge Authorization form (attached to this Protocol as Appendix B), and submits the completed form via e-mail or facsimile to the BC Ministry of Environment Regional office.
3. When, and if satisfied with the information provided in the submitted form, the Ministry of Environment issues an authorization for the discharge to each property owner.

*Protocol Must
be Followed*

Ministry of Environment's participation in developing this Protocol ensures that the protocol meets the requirements of the Hazardous Waste Regulation and the Waste Discharge Regulation under the *Environmental Management Act*. The issuance of Section 53 exemption or a waste discharge authorization makes it legally binding to follow the Protocol on which the specific exemption or authorization is based. A template exemption application form (for infectious waste) is provided in Appendix A and a template authorization application form (for non-infectious waste) is provided in Appendix B.

*Federal Health of
Animals Act*

The *Federal Health of Animals Act*⁴ applies for Federally Reportable Diseases events and provides the Federal Minister with the authority to order the destruction and disposal and infected animals or materials. The Act enables the Minister to dispose of or require owner of animals to dispose of carcasses using specific methods or procedures, if deemed to eliminate the disease agents or prevent its spread.

*Federal Health of
Animals Regulation*

The *Health of Animals Regulation*⁵ applies to specified risk material (SRM). SRM is defined as:

- the skull, brain, trigeminal ganglia (nerves attached to the brain), eyes, tonsils, spinal cord and dorsal root ganglia (nerves attached to the spinal cord) of cattle aged 30 months or older; and
- the distal ileum (portion of the small intestine) of cattle of all ages

⁴ Available at: <http://laws-lois.justice.gc.ca/eng/acts/h-3.3/>

⁵ Available at: http://laws-lois.justice.gc.ca/eng/regulations/C.R.C.,_c._296/

	<p><u>The <i>Health of Animals Regulation</i> requires permits from CFIA if specified risk material (SRM) is transported and disposed of off the farm of origin⁶. For additional information on the movement and disposal of SRM consult with a specialist at a local CFIA office.</u></p>
<p><i>BC Health of Animal Act</i></p>	<p>The BC Health of Animals Act⁷ applies for notifiable and reportable diseases (specified in the BC Reportable and Notifiable Disease Regulation⁸) and enables the Chief Veterinarian of BC and inspectors to require the disposal of infected animals or any by-products using specific procedures if materials are suspected to contain reportable or notifiable disease agents.</p>
<p>1.5 Consultation</p>	<p>This Protocol was developed in consultation with and accepted by the following provincial agencies:</p> <ul style="list-style-type: none">• BC Ministry of Agriculture (AGRI)• BC Ministry of Environment (ENV)• BC Ministry of Health (HLTH)
<p>1.6 Concept of Operations</p>	<p>The scope of this Protocol addresses emergency events in British Columbia. Emergencies throughout the province are typically managed using the Incident Command System (ICS) and the British Columbia Emergency Response Management System (BCERMS). This Protocol assumes that waste disposal activities will likely be under the command and control of a formal incident management team in the event of an emergency with authority under the provincial and/or federal legislation appropriate to the type of event at hand. BCERMS ensures the important links are in place among cooperating agencies in an emergency, such as an integrated public information strategy where partner organizations develop common messages.</p>
<p><i>Responsibility for Disposal</i></p>	<p>When the Incident Command System is active, the person with ultimate authority and responsibility for coordinating disposal operations is likely the Incident Commander but it may be the farm owner or operator and/or owner of carcasses in some circumstances. Under appropriate regulations, the Incident Command may order agricultural producers to follow specific disposal methods.</p>

⁶ Available at: <http://www.inspection.gc.ca/english/anima/disemala/bseesb/enhren/perme.shtml>

⁷ Available at: https://www.leg.bc.ca/39th4th/1st_read/gov37-1.htm

⁸ Available at: http://www.bclaws.ca/civix/document/id/complete/statreg/7_2015

1.7 Documentation

Types of Records That Must Be Kept

The person responsible for coordinating animal tissue burial, including the farm or ranch owner or operator, and/or the Disposal Group Supervisor where an incident management team is active, must keep records related to disposal by burial for all on-farm and centralized (off-farm) sites, including the following information:

1. Type and volume of materials buried
2. Number of animals buried
3. GPS location for the start and end (all corners and sides) of each burial trench
4. Depth and width of each burial trench
5. Type of soils below the base of the burial trench and depth to groundwater
6. Distances from nearest edges of trench or pit to any domestic well or water body
7. Site sketch
8. Legal address of site
9. When the burial trench was started, or opened and closed
10. All requirements and steps applied from the Protocol; including plans for containment and prevention of accidental release
11. The site specific exemption or authorization issued by the BC Ministry of Environment Director.

A copy of each discharge authorization letter issued by the Ministry of Environment must be included in the records archived after the event.

Specified Risk Material (SRM)

Additional records will be required for sites that receive SRM that are not located on the farm of origin. For these sites, the following records (in addition to those already listed above) must also be kept:

1. Name and address of the person transporting SRM to the site
2. Date of SRM received at the site and associated weights
3. Date of burial in landfill (if different from the date the SRM is received)
4. If applicable, numbers of approved CCIA tags or, in the case of carcasses not bearing approved tags, information regarding origin and ownership of the cattle.

All records for such sites must be kept for a minimum of 10 years.

*Disposal Group
Supervisor Keeps
EOC Informed*

The Disposal Group Supervisor must ensure that any activated Emergency Operations Centre (EOC) receives daily records on the progress of disposal activities.

2.0 Occupational Health and Safety

2.1. Background

All provisions in this section must be used in addition to all applicable provisions of the BC Occupational Health and Safety Regulations (OHSR), the *Workers Compensation Act* and the *Canadian Labour Act*.

For federally reportable diseases: Stringent and specific safety and security measures are needed when burying and handling carcasses infected or suspected of being infected with federally reportable diseases. The procedures must follow general CFIA occupational health and safety (OHS) guidelines or disease specific Provincial guidelines if applicable including requirements for personal protective equipment (PPE).

For all emergencies: General occupational, health and safety provisions specified in section 2.2 to 2.6 must be applied to all burial activities described in this protocol whenever CFIA (OHS) guidelines and/or disease specific Provincial guidelines do not apply. For more information on OHS requirements, consult WorkSafeBC prior to performing any burial activities described in this protocol.

2.2 Procedures & Equipment

Hand hygiene must be performed before putting on and after removal of personal protective equipment (PPE). Hand hygiene is accomplished by washing the hands thoroughly with soap and water (a source of clean water must be on site). An alcohol based hand sanitizer may be used if hands are not visibly soiled.

*Personal Protective
Equipment*

Site personnel engaged in the burial of animal carcasses and waste are required to wear the following personal protective equipment (PPE):

- Disposable face shield or goggles
- Gloves that are impervious to water and resist puncture and tear
- Coveralls that are impervious to water
- Rubber or polyurethane boots
- Disposable head or hair cover

Appropriate respirator equipment (with annual fit tests) and PPE is required if there are respiratory risks (e.g., presence of infectious agents).

<i>Worker Monitoring</i>	All site personnel are required to monitor their own health and safety, and to report any unusual conditions to their supervisors. All supervisors are required to report health and safety complaints to the Safety Officer when the ICS is active, and to local WorkSafeBC offices.
<i>Supplies & Equipment</i>	<p>The following equipment should also be on-site:</p> <ul style="list-style-type: none">• A first aid kit, along with a working cell phone with service (satellite phone may be required)• Supplemental lighting (and associated power source) may be required if operating at dusk or later• Source of potable water• Hand sanitizer and soap• Toilets• Appropriate disinfectant (e.g., for cleaning disposal equipment) and equipment/materials to administer it
<i>Machine Operation</i>	Machinery (bobcats, tractors, skid steers) must only be used by trained operators. A minimum of two people must be on-site while heavy machinery is operated.

3.0 Biocontainment

3.1 Incident Commander Responsibilities

Training in Biocontainment

For Federally Reportable Diseases: When the ICS is active, the Incident Commander is responsible for ensuring that all ICS personnel or agent of the ICS on the quarantined premises are fully trained with respect to biosecurity. The Incident Commander is also responsible for establishing and monitoring biocontainment measures for work being conducted at the site by ICS staff or its agents. The Incident Commander may delegate the aforementioned biocontainment responsibilities to qualified professionals.

Whenever the Incident Commander is not responsible for biocontainment or training (e.g., when the ICS is not managing the field disposal activities), it is the responsibility of the animal owner (or carcass owner) to ensure that all appropriate biocontainment measures are taken and staff are adequately trained with respect to biosecurity.

Biocontainment measures include, among other procedures, the cleaning and disinfection of equipment being removed from a site.

For Non-Federally Reportable Diseases: Adequate biocontainment measures must be conducted which includes the cleaning and

disinfection of equipment being removed from the site.

4.0 Accidental Release

4.1 Material Spills

Report Any Spills

For Federally Reportable Diseases: Any spill of material that may contain federally reportable disease agents outside of a quarantined zone must immediately be reported to Emergency Coordination Centre (hosted by EMBC) by phoning 1-800-663-3456.

The Provincial Emergency Program (PEP) must be notified as well as required by the BC Spill Reporting Regulation.

Spill Removal and Site Decontamination

Trained and equipped staff must remove the spilled materials. The area in which the spill occurred must be decontaminated with suitable disinfectant and according to CFIA guidelines if applicable. Operational activities that potentially could result in accidental release or cross-contamination are to be monitored and appropriately altered or suspended when a release is imminent. Risks related to imminent release include but are not limited to the following:

- Vehicle and unregulated foot traffic
- Winds, >10 km/h while handling dusty litter
- Spillage during transfer

5.0 Equipment and Supplies

5.1 List of Equipment for Burial

Equipment for Both On-Farm and Centralized Burial

For All Emergencies: Equipment and supplies required for a crew to conduct burial of poultry or livestock materials on-farm or at a centralized location may include the following:

- Excavator capable of digging a 5-m deep and 4-m wide straight walled trench
- Loader capable loading carcasses into trenches and of pushing excavated dirt for backfilling of trench
- Shovels and scrapers (snow shovels or equivalent for tidying site)
- Truck with leak proof box capable of transporting several animal carcasses per load to burial site
- Skid steer loader (or similar) capable of lifting animal carcasses into the truck box
- Forks, bucket or chains for skid steer loader to allow for loading carcasses into truck box

- GPS to enable registration of UTM zone as well as Northing and Easting for start and end (all corners and sides) of each burial trench
- Portable toilets

For Federally Reportable Diseases: In addition to the list above, burial crews must have access to the following equipment.

- All biosecurity gear, including personal protective equipment as outlined in section 2.0
- Support equipment, including systems for high volume disinfectant delivery for equipment and shower units

Handling SRM

For SRM: All equipment and/or pieces of equipment that handle or make contact with SRM, should be designated as SRM equipment. Otherwise, all equipment must be pressure washed and cleaned after each handling event and any resulting organic material must remain on the compost site.

All equipment and/or piece of equipment must be pressure washed and cleaned before leaving the SRM designated area. All organic debris in the wash water that is greater than 4 mm in size must be contained within the SRM pit and any discharge from washing operations should be contained within the SRM area.

6.0 Procedures

6.1 Site Consultations

For All Emergencies: The Disposal Group Supervisor of the incident management team (when active) should consult the operator of the affected premise concerning the burial process while options are under evaluation.

For Federally Reportable Diseases: The operator and/or assistants should retrieve information from the responsible health authority concerning risks to human health from animal disease.

Seek Assistance of Local Operators

For all emergencies: The assistance of the operators should be sought as they are familiar with their land and facilities and the manner in which they are normally run. They are also the most skilled at running their own equipment and can make the burial procedure more timely and efficient.

6.2 Site Selection

For All Emergencies: Site selection should be guided by a regional GIS burial suitability assessment and by predetermined site suitability in cases where such information exists. Contact the Waste Management Engineer for the BC Ministry of Agriculture or the Emergency Coordinator for the local Regional District to determine if the area in question has been pre-assessed. If not, site assessments will have to occur on a site-by-site basis led by the Disposal Group Supervisor or designate, and based on Qualified Professional (QP) assessment.

The site selected for burial must be in a suitable geological area, on ground that is dry enough to be trafficable for heavy transport equipment, and sufficiently distanced from the public so as not to cause health concerns related to disease vectors transmitted by wind and dust.

Exclude or Avoid Certain Features

Selection of a burial site must exclude or avoid the following landscape features:

- Wetland areas or areas immediately adjacent to wetlands
- Any locations above aquifers with high vulnerability (Class A), based on consideration of consequence of contamination
- National parks, provincial parks, cemeteries, flood prone areas, rock outcrops
- Underground and overhead utilities
- Difficult sites for excavation such as excessive trees, rocks, and other physical obstructions
- Steeply sloping land (greater than 25%)

Set-Back Requirements

In addition to the exclusions noted above, burial sites must be set back from certain identified geographic features. Table 1 identifies the minimum set-back distances for a suitable burial site. Setback distance must be measured from nearest edge of pit or trench to feature.

Table 1. Setback Distances for Burial Sites

Property or Community Feature	Setback Distance
Property line	50 m
Provincial highway or road	100 m
Railroads	100 m
Unstable areas, steep banks, cliffs, ravines	100 m
Watercourses (a place that perennially or intermittently contains surface water, including a lake, river, stream, creek, canal, marsh, swamp)	100 m
Ditch (that leads to any watercourses)	30 m
Residences	300 m
Domestic wells	300 m
Hotels, restaurants, food processing facilities, schools, churches and public parks	300 m

Technical Suitability Criteria

Technical criteria that limit what can be considered a suitable site include the fact that:

- Burial trenches must be constructed in low permeability soil such that all sides and base of the pit have a minimum of 2 meters of soil with a hydraulic conductivity less than 1×10^{-6} cm/s (refer to Figure 1). The use of a non-permeable or low permeable material as a liner should also be considered.
- Burial trenches must be constructed in an area where the seasonal high groundwater level is at a minimum depth of 8 m, as measured from the soil surface, so the trench can be no deeper than 3-7 m, depending on sub-soil conditions.

On-Farm Burial Site Should Not Impede Flow of Traffic

In addition, the site selected for on-farm burial should not compromise biosecurity measures upon resumption of farm or ranch operations (e.g., it should be sufficiently removed from the regular flow of traffic to reduce the risk of contamination). The site should also be maintained to ensure that vectors are controlled.

Use of GIS Tools in Site Selection

Several regional districts and local municipalities in British Columbia are in the process of preparing Mass Carcass Disposal Emergency Plans. As suggested above, these plans will eventually include identification of suitable disposal sites through a Geographical Information System (GIS) mapping assessment. The GIS mapping assessment can be used to

6.3 Ownership and Responsibility

Site Owner and/or
Landfill Operator is
Responsible
for Leachate

identify suitable sites only when the GIS assessment is based on burial criteria as presented in this Protocol.

The site owner and/or landfill operator is responsible for managing potential leachate or scavengers and notifying the BC Ministry of Environment if any leachate or scavenging problems occur. For sites that receive SRM and are not on the farm of origin or in the case of animal diseases, the site owner and/or landfill operator must also notify CFIA of any leachate or scavenger problems.

The site owner and/or landfill operator is responsible for managing wastes identified in section 1.3 and for ensuring that the burial practices are conducted in accordance with this Protocol.

The landfill site includes the burial pit or pits and trench or trenches as well as the appropriate surrounding areas.

7.0 Construction of Burial Sites

7.1 Burial Sites

*Construction of
Burial Trenches*

Burial Trench Construction

- Burial pits should be in the form of trenches no more than 5 m deep, about 2-4 m wide and as long as is required to accommodate the required number of animals. Straight wall trenches are temporarily acceptable in stable soils but no persons are allowed to enter the pits for any reason.
- Burial trenches must be backfilled so that carcasses are completely covered at the end of each day.
- The backfill must not be compacted due to the problem of compacting against a soft layer of carcass material that will bulge up at an adjacent location and cause the soil to become unstable. In addition, settlement of the soil will occur and neutralize any compaction that might have been achieved.
- High carbon material such as shavings or sawdust can be used to line burial pits that may help attenuate potential contaminants. This is a recommended but optional practice.
- Capping of the burial trench must consist of a cover system consisting of a minimum 1 m thick low permeability soil with hydraulic conductivity of maximum 1×10^{-6} cm/sec (e.g., clay) and

Cross-Sectional View of Burial Trench

an additional 1 m low permeability soil mounded and extending 0.3 m beyond the trench edges at surface and feathered outwards to promote run-off.

- Each trench must be oriented lengthwise at an angle relative to the direction of the slope of the land, such that pooling of water around trench caps does not occur (e.g., align trench length parallel to the land slope or at a non-perpendicular angle).

Figure 1 presents a descriptive cross sectional representation of burial site for a natural landfill.

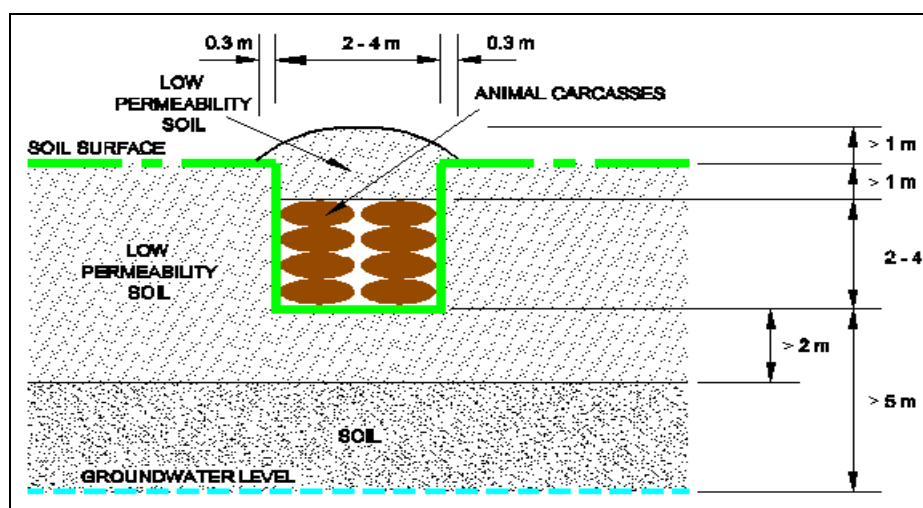


Figure 1. Cross-Section of a Natural (Non-engineered) Landfill (The groundwater level indicates the “seasonal high”)

Protection of Aquifers

Geotechnical/Geological Criteria and Aquifer Protection

- Burial trenches must be constructed over low permeability soil that has a hydraulic conductivity below 1×10^{-6} cm/s (see Figure 1).
 - If the area in which the burial trench is located typically receives an average of less than 600 mm total annual precipitation or less, the layer of low permeability soil must be at least 2.0 m thick below the trench bottom.
 - If the area in which the burial trench is located typically receives an average of 600 mm or more of total annual precipitation, the layer of low permeability soil must be at least 4.0 m thick below the trench bottom.
- Ensure that the burial trench is constructed at a site where a minimum of 5 m soil buffer can be ensured between the level of the

	seasonally high water table and the bottom of the trench (see Figure 1).
<i>Protection of Surface Water</i>	<p>The land owner must ensure that erosion of soil surface and trench caps is monitored, prevented and/or mitigated and that pollution of surface waters does not occur.</p> <p><u>For sites with a land slope greater than 5%:</u> Soil surfaces, including burial trench caps, must be vegetated year round to prevent erosion from surface runoff and protect surface waters.</p> <p>Berms, terraces or other surface control structures must be constructed if required to prevent erosion and/or pooling of water around burial trenches. A QP must design these structures and supervise their construction.</p>
7.2 Engineered Landfills	<p>In situations where the soil conditions prohibit the construction of a burial trench, in accordance with the Protocol, an engineered landfill may be considered.</p> <p><i>Use CFIA's BSE Manual for Engineered Landfills</i></p> <p>Engineered landfills are outside of the scope of this Protocol and must be constructed in accordance with CFIA's <i>Bovine Spongiform Encephalopathy (BSE) Manual of Procedures</i> requirements for engineered landfills, available from CFIA through the Joint EOC.</p>
7.3 Reliance on Qualified Professionals	<p>A Qualified Professional (e.g., a registered geo-scientist) may be needed to verify site selection, or to design and oversee certain aspects of the burial process.</p> <p>A Qualified Professional (QP) is a person who:</p> <ol style="list-style-type: none"> 1. Is registered in British Columbia with a professional organization, is acting under that organization's code of ethics, and is subject to disciplinary action by that organization, and 2. Through suitable education, experience, accreditation and knowledge may reasonably be relied upon to provide advice within his or her area of expertise.
<i>Burial Construction Requiring QPs</i>	<p>Table 2 illustrates the situations where a Qualified Professional is required for on-farm and centralized (off-farm) burial.</p>

Table 2. Burial Site Construction Requiring Qualified Professionals

Burial Location	Landfill Type	Waste Quantity	Qualified Professional (QP)
On-Farm	Natural (non-engineered)	Less than 60 tonnes	<p>No QP required when:</p> <ul style="list-style-type: none"> - A Local/Regional government GIS map for disposal site suitability exists and indicates that soils hydraulic conductivity will be met at the site in question, <u>and</u> - Aquifer maps indicate groundwater more than 5 m below base of pit and not over Class B vulnerable aquifer. <p>* If the above conditions cannot be met, then a QP is required to verify site conditions meet the protocol. QP must assess what protective criteria needed, if over medium vulnerability aquifer (Class B).</p>
Off-Farm	Natural (non-engineered)	Less than 60 tonnes	A QP is required to verify site conditions meet the protocol and must assess what protective criteria needed, if over medium vulnerability aquifer (Class B).
On-Farm or off-farm	Natural (non-engineered)	Greater than 60 tonnes, less than 300 tonnes	QP required to verify site conditions meet the Protocol (confirm soil conditions and distances using professional judgement) and must assess what protective criteria needed, if over medium vulnerability aquifer (Class B).
On-Farm or off-farm	Natural (non-engineered)	Greater than 300 tonnes, less than 4,000 tonnes	<p>QP required to verify site conditions meet the Protocol (soil and water conditions confirmed down to 5 m below bottom and to sides of burial pit by sampling and analysis) and to develop a long term environmental monitoring plan, which includes monitoring of erosion of soil surface and burial trench cap for sites with a slope greater than 5%.</p> <p>A QP must also assess what protective criteria needed, if over medium vulnerability aquifer (Class B).</p>
On-farm or off-Farm	Natural (non-engineered)	More than 4,000 tonnes	QP required to verify site conditions meet the Protocol by implementing a rigorous test hole drilling program (minimum of 3 test holes distributed intelligently throughout the intended burial area) to get soil and water conditions confirmed down to 5 m below bottom and to sides of burial pit by sampling and analysis and to developing a long term environmental monitoring plan, which includes monitoring of erosion of soil surface and burial trench cap

			for sites with a slope greater than 5%. A QP must also assess what protective criteria needed, if over medium vulnerability aquifer (Class B).
On-Farm or off-farm	Engineered	Any quantity	QP required to design and oversee the construction in accordance with CFIA and ENV requirements for engineered landfills.

8.0 Site Security

8.1 Protection Against Vectors

Covers, Fences, and Monitoring

For SRM: If the burial site is not on the farm where the carcasses originated, the burial site must be fenced to prevent grazing and signed to inform public. Signs must state site ownership information (including emergency contact information) and must be legible and posted at all access points around the site.

Vector attraction reduction may be required on the site of burial. Fencing is recommended around the perimeter of the burial site to exclude large animals (e.g., dogs, coyotes, bears) and other vectors (e.g., birds, rats) and maintain biosecurity of the site. The owner of the burial site must monitor cover materials to ensure integrity of materials and security of the site.

Appendix A

Application for a Section 53 Exemption under the Hazardous Waste Regulation

Please complete all information requested, and send by e-mail or facsimile to:

Attn. Regional Manager
Environmental Protection Division
BC Ministry of Environment
Lower Mainland Regional Office
10470 152nd Street
Surrey BC V3R 0Y3
Fax: 604 930-7119

The submission of this application does not imply that the request has been approved.

Treatment cannot begin until the exemption has been approved in writing by the Director, Ministry of Environment.

Each request will be evaluated on a case-by-case basis and will be time limited.

Each exemption approved will be conditional subject to the limitations set out by the Director at the time of an exemption.

When approved, treatment processes must start within one (1) month of the date on which the request is approved. Proposed treatments after that period will require a new application and approval.

All exemptions will be subject to an expiry date.

Minimum information required:

1. Date:	
2. Owner of treatment site:	
3. Address of site for which the exemption will apply:	
4. Address of source site from which hazardous waste originated:	
5. Responsible Party of hazardous material (e.g., ownership of hazardous waste and exemption applicant):	
6. Contact person:	
7. Contact information:	
8. The process generating the hazardous waste (e.g., avian influenza, foot and mouth disease, etc.):	
9. Characteristics of hazardous waste: (include all types of waste, e.g., carcasses, litter, etc.):	

10. Volume of hazardous waste:	
11. Title of treatment protocol(s) or method(s):	
12. Date of start of treatment protocol(s) or method(s):	
13. Final disposal method of treated material:	
14. Approvals required and /or regulation(s) for disposition of treated material:	
15. Other information relevant to this application:	

This application does not relieve the Responsible Party from following the requirements of the *Transportation of Dangerous Goods Act*, or any other relevant legislation.

The Ministry of Environment will contact the applicant for any additional information deemed necessary to consider this application for a Section 53 exemption under the Hazardous Waste Regulation.

Appendix B

Draft Template for Application for an Authorization in an Emergency to Discharge Waste under the Waste Discharge Regulation

Please complete all information requested, and send by e-mail or facsimile to the local Regional Environmental Office (*link to Regional Office Contact List*):

Attn. Regional Manager
Environmental Protection Division
BC Ministry of Environment

The submission of this application does not imply that the request has been approved.

The Ministry of Environment will contact the applicant for any additional information deemed necessary to consider this application for a Waste Discharge Authorization under the Waste Discharge Regulation.

Activity and construction on the site cannot begin until the authorization has been approved in writing by the Director, Ministry of Environment.

Each request will be evaluated on a case-by-case basis and will be time limited.

Each authorization approved will be conditional subject to the limitations set out by the Director at the time of an exemption.

When approved, activities must start within one (1) month of the date on which the request is approved. Proposed activities after that period will require a new application and approval. Activities started within one (1) month of the approved date may continue up to the expiry date.

All authorizations will be subject to an expiry date.

Minimum information required:

16. Date of application:	
17. Owner of disposal site:	
18. Address of disposal site for which the authorization will apply:	
19. Disposal site owner Phone number:	
20. Disposal site owner e-mail address:	
21. Address of source site where waste material originated:	
22. Does waste material need to be transported from source to disposal site?	<input type="checkbox"/> YES <input type="checkbox"/> NO
23. If YES, State mode of transport:	
24. Any transport licences or other regulations required:	
25. Owner of waste material:	

26. Event which produced the waste material (e.g., flood, barn fire):	
27. Characteristics of waste material: (include all waste material that needs disposal, e.g., types of carcasses, litter, etc.)	
Quantity of waste:	
28. Number of carcasses:	
29. Quantity of other material, e.g., litter, soiled bedding, etc.	
30. Total weight:	
31. State any treatment(s) or preparation of waste material prior to disposal:	
32. Date of start of disposal activities (e.g., preparation of site):	
33. Protocol(s) that will be followed:	
34. Other regulations or approvals required for disposal of waste material:	
35. Other information relevant to this application:	
36. Expiry Date of Waste Discharge Authorization:	