

**STANDARDS FOR
COMPOSTING FACILITIES IN ALBERTA**

Alberta Environment
Environmental Assurance
Environmental Policy Branch

July 2007



FOREWORD

Until the updated regulatory revisions are legislated, these *Standards* will only apply to new composting facilities or lateral expansions as required by the Director issuing approvals or reviewing applications for registration. It is expected that those responsible for composting facilities, including consultants, will use the *Standards* to prepare approval and registration applications and improve composting facility design, operation, and closure measures.

Existing composting facilities operating under an approval or registration shall follow the conditions of their approval or registration. However, facility owners and operators should begin updating their operations plan, monitoring plans, and other requirements of the *Standards* in preparation for legislation changes.

The use of the standards does not absolve a composting facility owner from Alberta Environment or other ministries regulatory requirements. The composting facility owner should consult agencies such as the local development authority, the Energy and Utilities Board if accepting oilfield wastes, and Federal Ministries such as Environment Canada to determine other applicable regulatory requirements.

Any comments or concerns with the content of the Standards should be submitted in writing to:

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INTRODUCTION

Alberta Environment is updating its waste management regulatory requirements. The *Standards for Class II & Class III Composting Facilities in Alberta (Standards)* is one initiative in upgrading waste management regulatory requirements. The *Standards* outline the minimum requirements for development, operation, monitoring, and closure of a Class II & Class III composting facility.

These standards were built on the following outcomes:

Alberta's composting facilities are designed, constructed, operated and closed in a manner that is protective of air, land, water, biodiversity, human health, and human quality of life.

Facilities will meet local land use planning requirements, and not create a risk to the local community.

Compost quality meets minimum requirements to not adversely affect the land, plants, or crops.

These standards outline the requirements for Class II and Class III composting facilities. Persons responsible for composting facilities affected by these standards should consult with Alberta Environmental prior to commencing the construction and operation of a composting facility.

The classifications for composting facilities are as follows:

Class I composting facilities are facilities that accept more than 20,000 tonnes of feedstock per year. Persons responsible for Class I composting facilities should contact Alberta Environmental for more information regarding regulatory requirements.

Class II composting facilities are facilities that accept 500 to 20,000 tonnes of leaf and yard waste feedstock per year, or up to 20,000 tonnes of feedstock per year. Acceptable feedstock for Class II facilities includes: animal bedding, brewery/winery waste, cardboard and paper products, food waste, manure, milk processing waste, paunch manure, hatchery waste, source separated organics, wastewater sludge, and vegetative matter. Additional feedstock may be received at a Class II facility, pending approval by Alberta Environment.

Class III composting facilities are facilities that accept 100 to 500 tonnes of leaf and yard waste feedstock per year.

These standards do not apply to composting facilities accepting less than 100 tonnes per year of leaf and yard waste.

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DEFINITIONS

For the purposes of these Standards,

- (a) “Act” means the *Environmental Protection and Enhancement Act.*, R.S.A. 2000 c. E-12, as amended;
- (b) “Active Composting Area” means the area where windrows or piles of feedstock are placed for active composting;
- (c) “Aerobic conditions” means an environment which is conducive to the microbial degradation of organic solid waste in the presence of oxygen
- (d) “Amendments” means a supplemental material mixed with compostable feedstock in preparation for composting to create a favorable condition for composting, either by adjusting the moisture content, or the carbon to nitrogen ratio;
- (e) “Animal bedding” is absorbent material that is used for covering the floor of livestock confinement areas, and includes straw, wood shavings, and associated manure and urine;
- (f) “Animal Mortality” means a deceased animal, not including hatchery waste
- (g) “Animal Part” means any part of an animal that is not food waste or hatchery waste;
- (h) “Background groundwater quality” means the groundwater quality prior to the start of composting operations;
- (i) “Brewery/winery waste” means non-hazardous organic waste from beer and wine manufacturing. This includes materials such as: spent grain, yeast, and grape marc;
- (j) “Bulking agent” means a material that is added to compostable feedstock to enhance porosity and airflow;
- (k) “CCME” means the Canadian Council of Ministers for the Environment;
- (l) “Class I composting facility” means a waste management facility which accepts 20,000 tonnes or more per year of feedstock for composting, for composting, but does not include:
 - a. a residential composter, or
 - b. a manure storage facility as defined in the *Agricultural Operation Practices Act*;
- (m) “Class II Composting Facility” means a waste management facility that accepts under 20,000 tonnes /yr wet weight of feedstocks for composting, but does not include
 - a. a residential composter;
 - b. a Class I composting facility;
 - c. a Class III composting facility; or,
 - d. a manure storage facility as defined in the *Agricultural Operation Practices Act*.
- (n) “Class III Composting Facility” means a waste management facility accepting between 100 and 500 tonnes per year of leaf and yard waste feedstock for composting, but does not include
 - a. a residential composter;
 - b. a Class I composting facility;
 - c. a Class II composting facility; or,
 - d. a manure storage facility as defined in the *Agricultural Operation Practices Act*.
- (o) “Certified Operator” means a person who holds qualifications recognized by the Director;

- (p) “Compost” is a solid mature product resulting from composting;
- (q) “Composting” is a managed process of bio-oxidation of a solid heterogeneous organic substrate including a thermophilic phase;
- (r) “Contaminant” means a substance that is present in an environmental medium in excess of natural background;
- (s) “Curing Area” means the area where composting materials are placed to stabilize to reach maturity;
- (t) “Day” means any period of 24 consecutive hours unless otherwise specified;
- (u) “Design Capacity” means the processing capacity of the composting facility in tonnes (w/wt) of feedstock accepted per year;
- (v) “Expanding Facility” means a facility that applies to increase the registered design capacity;
- (w) “Feedstock” means all materials that are accepted at the composting facility and used in the composting process, including amendments and bulking agents;
- (x) “Feedstock Preparation Area” means the area where feedstocks are temporarily placed for processing prior to active composting;
- (y) “Food waste” means food and food preparation wastes from residences and commercial establishments such as grocery stores, restaurants, produce stands, institutional cafeterias and kitchens, and industrial sources like employee lunchrooms;
- (z) “Foreign matter” means any matter over 2mm in dimension that results from human intervention and has organic or inorganic components such as metal, glass, synthetic polymers (for example plastic and rubber) and that may be present in the compost including metal, glass, plastic, rubber and other synthetic polymers, but excluding mineral soil, woody material and pieces of rock;
- (aa) “Final Closure” means the period after all feedstock acceptance has ceased;
- (bb) “Groundwater” means all water under the surface of the ground whether in liquid or solid state;
- (cc) “Groundwater contamination” is defined as a change in water quality that produces a noticeable or measurable change in groundwater characteristics;
- (dd) “Hatchery waste” means broken or unhatched eggs, unhatched chicks, membranes, embryonic fluids and egg shell;
- (ee) “Hydraulic conductivity” means the ease with which a fluid can be transported through a material;
- (ff) “ISO 17025” means the international standard, developed and published by International Organization for Standardization (ISO), specifying the management and technical requirements for laboratories;
- (gg) “Leaf and yard waste” means vegetative matter resulting from gardening, horticulture, agriculture, landscaping or land clearing operation, including materials such as tree and shrub trimmings, plant remains, grass clippings, leaves, trees and stumps;
- (hh) “Liner” means a continuous layer constructed of natural or man made materials, beneath or on the sides of a structure or facility, which restricts the downward or lateral migration of the contents of the structure or facility;

- (ii) “Mature compost” means a stable compost that has little or no organic phytotoxic substances that can cause delayed seed germination when used as a soil amendment, and meets maturity compost quality requirements, as set out in the Guidelines for Compost Quality, published by CCME, as amended;
- (jj) “Manure” means excreta in liquid or solid form from livestock, poultry, pets, animals in zoological facilities, and aquaculture;
- (kk) “Manure storage facility” means a manure storage facility as defined in the *Agricultural Operation Practices Act*;
- (ll) “Milk processing waste” means sludge or biomass from treatment of milk or fluid milk;
- (mm) “Monitoring well” means a well drilled at a site to measure groundwater levels and collect groundwater samples for the purpose of physical, chemical, or biological analysis to determine the concentration of groundwater contaminants;
- (nn) “Natural protective layer” means a continuous layer of natural materials, beneath or on the sides of a structure or facility, which restricts the downward or lateral migration of the contents of the structure or facility;
- (oo) “Pathogens” means organisms, including some bacteria, viruses, fungi, and parasites, that are capable of producing an infection or disease in a susceptible human, animal or plant host;
- (pp) “Paunch manure” means undigested stomach contents of ruminants;
- (qq) “Positive slope” means a slope that encourages positive drainage of water and minimizes ponding;
- (rr) “Process water” means a combination of storm water run-on, leachate, equipment wash down water and any other wastewater generated on site;
- (ss) “Processing area” means the combination of the feedstock processing and the active composting area;
- (tt) “Receiving area” means the area used to receive incoming feedstocks;
- (uu) “Registered Design Capacity” is the design capacity that has been registered with Alberta Environment;
- (vv) “Retention Pond” means a pond that is designed to store process water and run-off from storm events;
- (ww) “Run-off” means any rainwater or meltwater that drains as surface flow from the receiving, processing, curing and associated storage areas of a compost facility;
- (xx) “Run-on” means any rainwater or meltwater that drains as surface flow onto the receiving, processing, curing and associated areas of a compost facility;
- (yy) “Sharp foreign matter” means any foreign matter over 3mm dimension that may cause damage or injury to humans and animals during or resulting from its intended use, and may consist of, but is not limited to the following: metallic objects or pieces thereof; glass or porcelain or pieces thereof;
- (zz) “Source separated organics” means the organic fraction of municipal solid waste, that has been accumulated and presorted by the generator, and collected separately from household hazardous material and non-compostable material;
- (aaa) “Spring” means an area where groundwater flows naturally onto the earth’s surface at an identified location;

- (bbb) “Storage area” means the area used to store mature compost;
- (ccc) “Storage capacity” means the storage area size that is capable of storing one year’s worth of compost production for a period of eight months;
- (ddd) “Subsoil” means the layer of soil directly below the topsoil, to a maximum depth of 1.2 metres below the topsoil surface, that consists of the B and C horizons as defined in The System of Soil Classification for Canada, Agriculture and Agri-Food Canada, 1998, Publication 1643, 3rd Edition, as amended or replaced from time to time;
- (eee) “Topsoil” means the uppermost layers of soil that consist of the L, F, H, O, and A horizons as defined in The System of Soil Classification for Canada, Agriculture and Agri-Food Canada, 1998, Publication 1643, 3rd Edition, as amended or replaced from time to time;
- (fff) “Trace elements” are chemical elements present in compost at a very low concentration;
- (ggg) “Wastewater sludge” means the accumulated wet or dry solids that are separated from wastewater during treatment, including the precipitate resulting from the chemical or biological treatment of wastewater;
- (hhh) “Water body” means a water body as defined in the *Water Act*.
- (iii) “Water table” means the upper level of groundwater: the level below which the pore spaces in the soil or rock are saturated with water;
- (jjj) “Water well” means an opening in the ground, whether drilled or altered from its natural state, that is used:
- for the production of groundwater for any purpose;
 - obtaining data on groundwater; or
 - recharging an underground formation from which groundwater can be recovered, and includes any related equipment, buildings, structures and appurtenances;
- (kkk) “Working surface” means a surface that can withstand the wear and tear of composting equipment and forms the base of the receiving, feedstock preparation, active composting, screening, and curing areas of a composting facility;
- (lll) “Vegetative matter” means source-separated organics that consist of plant matter, including but not limited to non-treated wooden material, leaf and yard waste, agricultural crop residues, vegetable processing plants, and pre-consumer meat-free food wastes;
- (mmm) “Year” means a calendar year.

CLASS II COMPOSTING FACILITIES

1. Registration

1.1. Registration Application

In addition to any information required by the Director under the Approvals and Registration Procedure Regulation (A.R. 113/93), an application for registration of a newly proposed or an expanding composting facility shall contain at a minimum the following documents:

- a) a registration application form;
- b) a composting facility checklist;
- c) a facility design plan and specifications;
- d) a topsoil stockpile plan;
- e) an operations plan;
- f) an odour management program;
- g) a groundwater monitoring program; and
- h) a background groundwater quality report.

1.2. Facility Design Plan and Specifications

- (a) Unless authorized in writing by the Director, the Facility Design Plan and Specifications shall be prepared by a professional registered with the Association of Professional Engineers, Geologists, and Geophysicists of Alberta (APEGGA).
- (b) The Facility Design Plan and Specifications shall include, as a minimum, all of the following:
 - (i) An engineering design report that provides a description of proposed:
 - a. feedstocks;
 - b. composting methods;
 - c. design capacity, including:
 - i. processing area capacity;
 - ii. storage area capacity; and
 - iii. curing area capacity.
 - d. environmental control measures included in the design; and
 - e. monitoring systems.
 - (ii) Engineering maps and plans that include:
 - a. soils investigation report;
 - b. topographic site plans showing the overall site development and setbacks;
 - c. cross-sections showing based grades and elevations;
 - d. a description and interpretation of groundwater elevations, flow, patterns and composition;
 - e. details of components of the composting facility;
 - f. a design for liner for receiving areas, feedstock storage, active composting areas, curing areas, and process water retention ponds;
 - g. a working surface that has a positive slope and capable of withstanding wear through normal operations;
 - h. a run-on control system to prevent flow of water onto developed areas of the composting facility for events of up to

- at least the peak discharge from a 1 in 25 year – 24 hour duration storm event;
 - i. run-off control system to collect and control the volume of process water run-off for a 1 in 25 year – 24 hour duration storm event; and
 - j. a groundwater monitoring system, unless authorized in writing by the Director.
- (iii) Soil Conservation Plan, that includes:
- a. provisions to conserve all topsoil and subsoil for reclamation;
 - b. the location of the stockpiles;
 - c. the content of the stockpiles;
 - d. the volume of the stockpiles; and
 - e. provisions to stockpile the soil as follows:
 - i. to locate all soil stockpiles at the facility;
 - ii. on stable foundations; and
 - iii. on undisturbed topsoil.

1.3. Operations Plan

The Operations Plan shall include, at a minimum, the following:

- (a) a list of feedstock accepted at the composting facility;
- (b) feedstock acceptance policies and procedures;
- (c) prohibited waste handling procedures;
- (d) site security and public access control procedures;
- (e) working surface maintenance program;
- (f) liner maintenance program;
- (g) a composting process plan, including:
 - (i) a description of composting technology used;
 - (ii) procedures for maintaining aerobic conditions;
 - (iii) a pathogens reduction plan;
 - (iv) a composting temperature monitoring program;
 - (v) quality assurance and quality control program;
 - (vi) procedures for curing compost to meet maturity requirements;
 - (vii) procedures for storage and management of final product; and
 - (viii) procedures for preventing pathogen re-growth in final product;
- (h) an odour management program;
- (i) process water management procedures;
- (j) environmental monitoring program;
- (k) compost quality monitoring plan;
- (l) procedures for handling and disposal of residual materials;
- (m) a site safety and emergency response plan;
- (n) contingency plan for reasonably foreseeable events;
- (o) nuisance management plan; and
- (p) reporting procedures.

1.4. Odour Management Program

The Odour Management Program shall include all the following components:

- (a) a description of odour control technology;
- (b) best management practices to mitigate offensive odours;
- (c) a method to detect odours;
- (d) a procedure to track and document public complaints regarding odours from the composting facility;

- (e) a procedure to respond to public complaints regarding odours originating from the composting facility; and
- (f) an odour contingency response plan to minimize or remedy offensive odours.

1.5. Groundwater Monitoring Program

Unless authorized in writing by the Director, the groundwater monitoring program shall include, at a minimum, the following:

- (a) a program to establish background groundwater quality prior to the start of composting operations;
- (b) a detailed program for groundwater sample collection and analysis, that includes, at a minimum, the following:
 - (i) retrieval of representative samples from each groundwater monitoring well at least once per year;
 - (ii) laboratory analysis of the samples for parameters as set out in Table 1; and
 - (iii) monitoring the depth to water at each monitoring well at time of sampling.

TABLE 1
Groundwater Parameters for Routine Monitoring

Dissolved Metals
Arsenic
Barium
Boron
Cadmium
Chromium
Copper
Iron
Lead
Manganese
Mercury
Vanadium
Other Parameters
Total phosphorus
Ammonia
Nitrate-Nitrogen
Total Kjeldahl Nitrogen
pH
Total dissolved solids
Electrical conductivity
Chemical oxygen demand
Total organic carbon
Calcium
Magnesium
Sodium
Potassium
Chloride
Sulphate
<i>E. coli</i>
Total coliform

1.6. Background groundwater quality report

A background groundwater quality report shall include analysis of:

- (a) routine groundwater chemistry;
- (b) trace elements;
- (c) total coliform, fecal coliform, and *E. coli*; and
- (d) the Director may, by notice in writing, require the registration holder to test additional background groundwater parameters.

2. Environmental Setbacks

Unless authorized in writing by the Director, no person shall construct or operate a composting facility within any of the following distances:

- (a) within 100 metres from a spring;
- (b) within 100 metres from a water well; and
- (c) within 30 metres from a water body.

3. Construction Specifications

3.1. Facility Construction

- (a) The construction of the composting facility shall comply with the Design Plan and Specifications.
- (b) Any deviations from the construction requirements outlined in 3.2 through 3.3 must be authorized in writing by the Director.

3.2. Liner System

- (a) The liner system included in the Design Plan and Specifications shall include, as a minimum, the following construction criteria:
 - (i) the liner system must be placed under all active areas of the facility, including the receiving, feedstock preparation, active composting, and curing areas;
 - (ii) the liner system must have a separation of at least 1 metre between the seasonally high water table and the bottom of the liner;
 - (iii) the liner system must have a positive slope to avoid ponding; and
 - (iv) the liner system must be constructed of a clayey material:
 - a. with a thickness of at least 0.5 metres measured perpendicular to the liner surface; and
 - b. with a hydraulic conductivity of 1×10^{-9} m/sec or less or alternative material that provides equivalent protection.
- (b) Notwithstanding 3.2 (a) the liner system shall be comprised of a natural protective layer only where all the following conditions are met:
 - (i) the liner system prevents the lateral movement and downward migration of process water;
 - (ii) the natural protective layer is comprised of 2 metres or more of a material that has a hydraulic conductivity of 1×10^{-8} m/sec or less;
 - (iii) there is at least 1 metre of a material between the bottom of natural protective layer and the seasonally high groundwater table; and
 - (iv) the natural protective layer has a positive slope to avoid ponding.

3.3. Retention Pond Liner

- (a) The retention pond liner included in the Design Plan and Specifications must include, as a minimum, the following construction criteria:
 - (i) a separation of at least 1 metre between the seasonally high water table and the bottom of the liner; and
 - (ii) construction of a clayey material:
 - a. with a thickness of at least 1 metre measured perpendicular to the liner surface, and
 - b. that has a hydraulic conductivity of 1×10^{-9} m/sec or less or alternative material that provides equivalent protection..
- (b) Notwithstanding 3.3 (a), the retention pond liner shall be constructed of a natural protective layer only where all the following conditions are met:
 - (i) the retention pond liner prevents the lateral movement and downward migration of process water;
 - (ii) there is 5 metres or more of a clayey material that has a hydraulic conductivity of 1×10^{-8} m/sec or less; and,
 - (iii) there is at least 1 metre of a clayey material between the bottom of natural protective layer and the seasonally high groundwater table.

3.4. Groundwater Monitoring System

- (a) Unless authorized in writing by the Director, the registration holder shall install a groundwater monitoring system for the composting facility.
- (b) The groundwater monitoring system for the composting facility shall consist of
 - (i) at least one monitoring well up gradient of the facility;
 - (ii) at least two monitoring wells down gradient of the facility; and
 - (iii) a type of well that is appropriate to monitor for contaminants.

3.5. Soil Conservation Plan

The registration holder shall:

- (a) stockpile soil according to the soil conservation plan;
- (b) take all steps necessary to prevent erosion, including but not limited to, all of the following:
 - (i) revegetating the stockpiles; and
 - (ii) any other steps as authorized in writing by the Director.
- (c) immediately suspend conservation of soil when wet or frozen field conditions will result in mixing, loss or degradation of soil; and
- (d) recommence conservation of soil only when wet or frozen field conditions in 3.4 (d) no longer exist.

4. Facilities Operations

4.1. Facility Maintenance

The registration holder shall maintain the composting facility to comply with the Design Plan and Specifications.

4.2. Certified Operator

The day to day operations of a Class II composting facility shall be supervised by a Certified Operator in accordance with the Waste Control Regulation, as amended.

4.3. Signage

The registration holder shall

- (a) post; and,
- (b) maintain signs at the composting facility entrance providing, at a minimum, the following information:
 - (i) name of registration holder or person responsible;
 - (ii) telephone numbers for:
 - a. 24hr emergency contact;
 - b. the local fire department; and
 - c. Alberta Environment (1-800-222-6514); and,
 - (iii) hours of operation.

4.4. Feedstock list

Unless authorized in writing by the Director, the registration holder shall accept only the following feedstock for composting:

- (a) animal bedding;
- (b) brewery/winery waste;
- (c) cardboard and paper products;
- (d) food waste;
- (e) hatchery waste;
- (f) manure;
- (g) milk processing waste;
- (h) paunch manure;
- (i) source separated organics;
- (j) wastewater sludge; and
- (k) vegetative matter, including those derived from processing plants.

4.5. Operations Plan

The registration holder shall:

- (a) implement; and
- (b) update the Operations Plan in compliance with the composting facility Design Plan and Specifications, as specified in section 1.3.

4.6. Odour Management Program

The registration holder shall:

- (a) implement; and
- (b) update an Odour Management Program.

4.7. Odour Complaints

Upon receiving a complaint regarding an offensive odour allegedly resulting from the composting facility, the registration holder shall:

- (a) investigate the complaint;
- (b) record the following information regarding the complaint:
 - (i) the place, date and time of the complaint;

- (ii) the name, and address of the complainant;
- (iii) the nature of the complaint; and
- (iv) a summary of all measures and actions that were taken to address the complaint.

4.8. Offensive Odours

Upon discovery of an offensive odour resulting from the composting facility, the registration holder shall:

- (a) implement the Odour Contingency Response Plan, which shall include:
 - (i) procedures to minimize or remedy the cause of the offensive odour, which may include:
 - a. monitor, measure, contain, remove, destroy or otherwise dispose of the substance or thing causing the offensive odour or control or prevent the offensive odour from occurring again;
 - b. install, replace or alter any equipment or thing in order to control or eliminate the offensive odour;
 - c. construct, improve, extend or enlarge the facility, structure or thing if that is necessary to control or eliminate the offensive odour; or
 - d. mitigate the odour in accordance with the Odour Management Program;
 - (ii) record the:
 - (i) date of the occurrence of the offensive odour;
 - (ii) actions done to minimize or remedy the offensive odour; and
- (b) take any action deemed necessary by the Director, in addition to any other duties imposed under the Act or the regulations under the Act.

4.9. Facility capacity

- (a) The amount of feedstock accepted each year to a composting facility must not at any time exceed the registered design capacity of the facility.
- (b) The registration holder must not, at any time, exceed the registered compost curing area and storage capacity area.

4.10. Nuisance Management

The registration holder shall control nuisances such as, but not limited too, litter, fires, disease vectors, and dust, by:

- (a) establishing and maintaining litter controls that include:
 - (i) minimize the escape of litter from the composting facility;
 - (ii) implementing controls to prevent litter to be washed, blown, or transported onto adjacent properties; and
 - (iii) retrieving litter that has been washed, blown, or transported onto adjacent properties, provided the consent of the owner of the adjacent property is first obtained.
- (b) managing the feedstock storage and the composting process to minimize disease vectors;
- (c) applying weed controls to prevent accumulation of weeds at the facility and in compost products;
- (d) managing feedstock storage and composting process to prevent the occurrence of fires; and

- (e) set up or construct artificial barriers, utilizing natural barriers, or other effective measures to control access to the site to prevent the uncontrolled depositing of wastes or other materials.

5. Environmental Monitoring Standards

5.1. Sampling and Analytical Standards

- (a) With respect to any sample required to be taken pursuant to these standards, all samples shall be:
 - (i) collected;
 - (ii) preserved;
 - (iii) stored;
 - (iv) handled; and
 - (v) analyzed

in accordance with:

 - (vi) the *Standard Methods for the Examination of Water and Wastewater*, published jointly by the American Public Health Association, American Water Works Association, and the Water Environment Federation, 1998, as amended; or
 - (vii) the *Methods Manual for Chemical Analysis of Water and Wastes*, Alberta Environmental Centre, Vegreville, Alberta, 1996, AECV96-M1 as amended; or
 - (viii) the *Guidelines for Compost Quality*, published by the CCME, as amended; or
 - (ix) *The Test Methods for the Examination of Composting and Composts*, published by the United States Department of Agriculture and the United States Composting Council, as amended; or
 - (x) a method authorized in writing by the Director.
- (b) The registration holder shall analyze all samples that are required to be obtained by these standards in a laboratory accredited pursuant to ISO 17025 standard, as amended, for the specific parameter(s) to be analyzed, unless otherwise authorized in writing by the Director.
- (c) The term sample as used in 5.1(b) does not include samples directed to continuous monitoring equipment, unless specifically required in writing by the Director.
- (d) The registration holder shall comply with the terms and conditions of any written authorization issued by the Director under 5.1(b).

5.2. Groundwater Monitoring Program

- (a) Unless otherwise authorized in writing by the Director, the registration holder shall
 - (i) implement; and
 - (ii) maintain;a groundwater monitoring program.
- (b) Unless otherwise authorized in writing by the Director the registration holder shall ensure that each groundwater monitoring well is:

- (i) protected from damage; and
 - (ii) locked, except when samples are taken.
- (c) If a groundwater sample cannot be collected because the monitoring well is damaged or is no longer capable of producing a representative sample
- (i) the groundwater monitoring well shall be cleaned, repaired or replaced; and
 - (ii) a representative groundwater sample shall be collected prior to the next scheduled sampling date, unless otherwise authorized in writing by the Director.
- (d) If at any time throughout the operational and final closure period groundwater contamination occurs at the composting facility, the registration holder shall:
- (i) immediately notify the Director in accordance with the Act and the regulations under the Act,
 - (ii) identification of the source that is adding contaminant mass to the groundwater;
 - (iii) remove or control of the source to prevent further contamination;
 - (iv) construct, repair, or replace the structure or thing, if that is necessary, to prevent further contamination;
 - (v) conduct additional groundwater monitoring; and
 - (vi) any other duties imposed under the Act or the regulations under the Act.
- (e) Throughout the operational and final closure period of the composting facility, the groundwater quality at each of the monitoring wells shall not exceed the numerical criteria published in Table 3 of the *Alberta Tier 1 Soil and Groundwater Remediation Guidelines*, published by Alberta Environment, as amended, unless otherwise authorized in writing by the Director.

5.3. Process Water Disposal Procedures

Process water from the retention pond shall be disposed of only in the following manner:

- (a) at an Alberta Environment approved wastewater treatment facility;
- (b) by irrigation in accordance with the safe limits “Guidelines for Municipal Wastewater Irrigation” published by Alberta Environment, as amended; or,
- (c) as otherwise authorized in writing by the Director

5.4. Retention Pond Sediments

Retention pond sediments shall be disposed of only in the following manner:

- (a) At an Alberta Environment approved waste management facility authorized to accept such waste;
- (b) by land application in accordance with “Guidelines for the Application of Municipal Wastewater Sludges to Agricultural Lands”, published by Alberta Environment, as amended; or,
- (c) as otherwise authorized in writing by the Director.

5.5. Compost Quality Monitoring

The registration holder shall not give away or sell compost unless the compost meets:

- (a) the compost quality requirements, as set out in the *Guidelines for Compost Quality*, published by CCME, as amended, for the following criteria:
 - (i) maximum concentrations for trace elements;
 - (ii) foreign matter;
 - (iii) sharp foreign matter;
 - (iv) maturity/stability;
 - (v) pathogen reduction requirements; and
- (b) any other requirements as specified in writing by the Director.
- (c) The registration holder shall collect, at a minimum, 1 sample from each 1000 tonnes (wet weight) of compost produced per year for compost quality monitoring.
- (d) The registration holder shall collect sample(s) collected under 5.6 (b) so that the samples are representative of the batch of compost.
- (e) The registration holder shall dispose of all finished products that do not meet the compost quality requirements set out in 5.6 (a):
 - (i) at an Alberta Environment approved waste management facility authorized to accept such waste; or,
 - (ii) as otherwise authorized in writing by the Director.

6. Reporting and Record Keeping

6.1. Operating Record

- (a) The registration holder shall establish and maintain an Operating Record for a composting facility until the end of the final closure period.
- (b) The Operating Record shall contain, at a minimum, the following information:
 - (i) a copy of the Registration document;
 - (ii) a current organizational chart of the operating company;
 - (iii) operation/procedures logbook;
 - (iv) the most recent version of the design plan for the composting facility;
 - (v) public issues and complaints;
 - (vi) nuisance management;
 - (vii) monitoring reports;
 - (viii) inspection reports;
 - (ix) maintenance records;
 - (x) records of contraventions;
 - (xi) tonnage reports; and
 - (xii) all annual reports for the composting facility.

6.2. Monitoring Records

The registration holder shall record and retain all the following information in respect of any sampling conducted or analyses performed in accordance with these standards for a minimum of ten years, unless otherwise authorized in writing by the Director:

- (a) the place, date and time of sampling;
- (b) the dates the analyses were performed;
- (c) the analytical techniques, methods or procedures used in the analyses;

- (d) the names of the persons who collected and analyzed each sample; and
- (e) the results of the analyses.

6.3. Tonnage Report

- (a) Each year the registration holder shall prepare a Tonnage Report for the composting facility covering the calendar year reported on.
- (b) The registration holder shall submit the Tonnage Report to the Director by March 31 of the year following the year on which the report is based.
- (c) The Tonnage Report shall contain, at a minimum, the following information:
 - (i) total tonnes (wet weight) of feedstock accepted;
 - (ii) total tonnes (wet weight) of amendments and bulking agents used;
 - (iii) total tonnes (wet weight) of compost produced; and
 - (iv) total tonnes (wet weight) of compost used, sold, or given away.

6.4. Reporting of Contraventions

- (a) In addition to any other reporting required pursuant to the Act or the regulations, the registration holder shall immediately report to the Director by telephone any contravention of the terms and conditions of these Standards at 1-780-422-4505.
- (b) The registration holder shall submit a written report to the Director within 7 days of the reporting pursuant to 6.4 (a).
- (c) The report required in 6.4 (b) shall contain, at a minimum, all of the following:
 - (i) a description of the contravention;
 - (ii) the date of the contravention;
 - (iii) an explanation as to why the contravention occurred;
 - (iv) a legal land description of the location of the contravention;
 - (v) the name of the registered owner or owners of the parcel of land on which the contravention occurred;
 - (vi) a summary of all measures and actions that were taken to mitigate any effects of the contravention;
 - (vii) the Registration number provided by the Director for the composting facility, and the name of the person who held the Registration number at the time when the contravention occurred;
 - (viii) the names, addresses, telephone numbers and job titles of all persons operating the site at the time that the contravention occurred;
 - (ix) the names, addresses and telephone numbers of all persons who had charge, management or control of the site at the time that the contravention occurred;
 - (x) a summary of proposed measures that will prevent future contraventions including a schedule of implementation for those measures;
 - (xi) any information that was maintained or recorded under these Standards, as a result of the contravention; and
 - (xii) any other information required by the Director in writing.

6.5. Annual Report

- (a) During each year of operation of the composting facility, the person responsible shall prepare an Annual Report for the facility covering the calendar year reported on.
- (b) The person responsible shall place the Annual Report in the Operating Record by March 31 of the year following the year on which the report is based.
- (c) The Annual Report shall contain, at a minimum, the following information:
 - (i) any changes in persons responsible;
 - (ii) any changes made to the operations plan;
 - (iii) the types and quantities of feedstocks processed at the composting facility;
 - (iv) the amount of compost permanently removed from the facility or used on site;
 - (v) records demonstrating pathogen reduction;
 - (vi) compost quality records, including:
 - a. pathogen analysis;
 - b. sharp foreign matter analysis; and
 - c. trace element analysis;
 - (vii) the following environmental monitoring records and their interpretations:
 - a. process water monitoring;
 - b. table or graphical presentation of yearly groundwater monitoring records;
 - c. quality and quantity of process water removed from the composting facility for irrigation or disposal; and,
 - d. quality and quantity of sediments removed from the composting facility for land application or disposal.
 - (viii) any remedial actions taken;
 - (ix) a summary of non-compliance issues;
 - (x) a summary of nuisance management issues;
 - (xi) a summary of complaints received, and the action or actions taken as a result of the complaints; and
 - (xii) adjustments to financial security necessary for final closure, if applicable.

6.6. Record Keeping

- (a) The registration holder shall immediately provide any records, reports, documents or data required to be created under these Standards to the Director, or a representative of the Director, upon request.
- (b) The registration holder shall place the Annual Report in the Operating Record by March 31 of the year following the year on which the report is based.
- (c) The registration holder shall record and retain all the following information regarding each contravention of these standards or complaints from the facility for a minimum of 10 years:
 - (i) the place, date and time of the contravention/complaint;
 - (ii) the name, and address of the contravention/complainant;
 - (iii) the nature of the contravention/complaint; and
 - (iv) a description of the contingency plan implemented.

7. Final Closure

7.1. Final Closure Plan

- (a) The registration holder shall notify the Director of the closure of the composting facility by submitting a Final Closure Plan within 6 calendar months after the final acceptance of feedstock at the composting facility.
- (b) The Final Closure Plan shall include, at a minimum, the following:
 - (i) schedule for completion;
 - (ii) description of the final use of the closed areas;
 - (iii) description of site restoration procedures, including:
 - a. drainage;
 - b. soil replacement;
 - c. erosion control;
 - d. revegetation, where applicable;
 - (iv) compost removal;
 - (v) waste disposal;
 - (vi) maintenance and operations of contaminant monitoring systems until performance measures are met for soil and groundwater, if applicable.
- (c) The Final Closure Plan shall be implemented in accordance with written authorization of Director.

7.2. Final Closure Report

- (a) The registration holder shall file a copy of the Final Closure Report in the Operating Record for the calendar year in which Final Closure will be complete.
- (b) The Final Closure Report shall include, at a minimum, the following:
 - (i) the date of completion of the final closure;
 - (ii) a statement including supporting evidence that the final closure has been completed in accordance with the final closure plan;
 - (iii) a description of any deviations to the final closure plan and the reasons for the deviations; and
 - (iv) a description of how the following elements (if applicable) have been, or will be dealt with
 - a. the final use of the closed areas;
 - b. drainage restoration;
 - c. soil replacement;
 - d. erosion control; and
 - e. re-vegetation.
 - (v) a groundwater report with supporting evidence to show that groundwater has not been contaminated.

CLASS III COMPOSTING FACILITIES**1. Notification**

1.1. Notification Form

- (a) The person responsible for a Class III composting facility shall submit the following to the Director prior to commencing construction and operation of the composting facility.
 - (i) a Notification form;
 - (ii) a Composting Facility Checklist; and
 - (iii) an Operations Plan.

1.2. Operations Plan

- (a) The Operations Plan shall include, at a minimum, the following:
 - (i) feedstock acceptance policies and procedures;
 - (ii) site security and public access control procedures;
 - (iii) working surface maintenance program;
 - (iv) a composting process plan, including:
 - a. procedures for maintaining aerobic conditions;
 - b. corrective measures for excessive odours;
 - c. a pathogens reduction plan;
 - d. a composting temperature monitoring program;
 - e. quality assurance and quality control program, based on regulatory requirements;
 - f. procedures for curing compost to meet maturity requirements;
 - g. procedures for storage and management of final product;
 - h. procedures for preventing pathogen re-growth in final product;
 - (b) process water management procedures;
 - (c) procedures for handling and disposal of residual materials (compostable and non-compostable); and
 - (d) nuisance management plan.

2. Facility Design Requirements

2.1. Facility Design

The receiving, feedstock preparation, active composting, curing and storage areas must:

- (a) have a working surface that is capable of withstanding the wear and tear from normal operations;
- (b) be located on a liner or natural protective layer to prevent the release of process water into the environment;
- (c) have a separation of at least one meter above the seasonally high water table; and
- (d) be graded for positive drainage to prevent ponding of water.

2.2. Run-off, Run-on Control

The entire composting facility must have run-on and run-off controls that:

- (a) prevents the flow of surface waters on to the composting facility; and
- (b) prevents process water from contaminating groundwater and surface water.

3. Facility Construction

The person responsible shall construct the composting facility in accordance with the design specified in 2.1 and 2.2.

4. Environmental setbacks

Unless authorized in writing by the Director, no person shall construct or operate a composting facility:

- (a) within 100 metres from a spring;
- (b) within 100 metres from a water well; or
- (c) within 30 metres from a water body.

5. Composting Facility Capacity

The amount of leaf and yard waste accepted each year to a Class III composting facility must not at any time exceed 500 tonnes per annum, wet weight.

6. Facilities Operations

6.1. Person Responsible

The person responsible must notify the Director within 30 calendar days of a change of ownership.

6.2. Signage

The person responsible shall

- (a) post; and
- (b) maintain signs at the composting facility entrance providing, at a minimum, the following information:
 - (i) name of registration holder or person responsible;
 - (ii) telephone numbers for:
 - a. 24hr emergency contact;
 - b. the local fire department; and
 - c. Alberta Environment (1-800-222-6514); and,
 - (iii) hours of operation.

6.3. Operations Plan

The person responsible shall:

- (a) implement; and
- (b) update the Operations Plan in compliance with the composting facility design plan and specifications.

6.4. Nuisance Management

The shall control nuisances such as, but not limited to, litter, fires, disease vectors, and dust, by:

- (a) establishing and maintaining litter controls that include:
 - (i) minimize the escape of litter from the composting facility;
 - (ii) implementing controls to prevent litter to be washed, blown, or transported onto adjacent properties; and
 - (iii) retrieving litter that has been washed, blown, or transported onto adjacent properties, provided the consent of the owner of the adjacent property is first obtained.
- (b) managing the feedstock storage and the composting process to minimize disease vectors;
- (c) applying weed controls to prevent accumulation of weeds at the facility and in compost products;
- (d) managing feedstock storage and composting process to prevent the occurrence of fires; and
- (e) set up or construct artificial barriers, utilizing natural barriers, or other effective measures to control access to the site to prevent the uncontrolled depositing of wastes or other materials.

7. Environmental Monitoring Standards

7.1. Sampling and Analytical Standards

- (a) With respect to any sample required to be taken these guidelines, all samples shall be:

- (i) collected;
- (ii) preserved;
- (iii) stored,
- (iv) handled; and
- (v) analyzed

in accordance with:

- (vi) the *Standard Methods for the Examination of Water and Wastewater*, published jointly by the American Public Health Association, American Water Works Association, and the Water Environment Federation, 1998, as amended or
 - (vii) the *Methods Manual for Chemical Analysis of Water and Wastes*, Alberta Environmental Centre, Vegreville, Alberta, 1996, AECV96-M1 as amended; or
 - (viii) the *Guidelines for Compost Quality*, published by the CCME, as amended; or
 - (ix) *The Test Methods for the Examination of Composting and Composts*, published by the United States Department of Agriculture and the United States Composting Council, as amended; or
 - (x) a method authorized in writing by the Director.
- (b) The person responsible shall analyze all samples that are required to be obtained by these standards in a laboratory accredited pursuant to ISO 17025 standard, as amended, for the specific parameter(s) to be analyzed, unless otherwise authorized in writing by the Director.
- (c) The term sample as used in 7.1(b) does not include samples directed to continuous monitoring equipment, until specifically required in writing by the Director.

7.2. Compost Quality Monitoring

- (a) The person responsible shall not give away or sell compost unless the compost meets the compost quality requirements, as set out in the *Guidelines for Compost Quality*, published by CCME, as amended, for the following criteria:
- (i) maximum concentrations for trace elements;
 - (ii) foreign matter;
 - (iii) sharp foreign matter;
 - (iv) maturity/stability; and
 - (v) pathogen reduction requirements;
- (b) The person responsible shall collect a minimum of one composite sample for compost quality monitoring per calendar year if the compost is transferred to third parties.
- (c) The person responsible shall collect sample(s) collected under 7.2 (b) so that the samples are representative of the batch of compost.
- (d) The person responsible shall dispose of all finished products that do not meet the compost quality requirements set out in 5.6 (a):
- (i) at an Alberta Environment approved waste management facility authorized to accept such waste; or,
 - (ii) as otherwise authorized in writing by the Director.

8. Reporting and Record Keeping

Annual Report

- (a) During each year while the composting facility is operational, the person responsible shall prepare an Annual Report for the composting facility covering the calendar year reported on.

- (b) The person responsible shall provide the Annual Report to the Director upon a request in writing.
- (c) The Annual Report shall contain, at a minimum, the following information:
 - (i) any changes of ownership or persons responsible;
 - (ii) any changes made to the operations plan;
 - (iii) water quality testing, if done
 - (iv) compost quantity records;
 - (v) the amount of compost permanently removed from the facility;
 - (vi) the amount of compost stored at the facility;
 - (vii) records demonstrating pathogen reduction; and
 - (viii) compost quality records.

9. Final Closure Notification

The person responsible shall notify the Director of the closure of the composting facility by submitting a Final Closure Notification within 6 calendar months after the final acceptance of feedstock at the composting facility.

Appendix A
COMPOSTING FACILITY CHECKLIST
(TO BE SUBMITTED WITH REGISTRATION/ NOTIFICATION FORM)

Purpose of checklist:

The purpose of this checklist is to ensure the person responsible for the siting and construction of a newly proposed or laterally expanding compost facility has taken the necessary measures to suitably locate the facility according to the most recent version of the AENV Standards and Guidelines for composting facilities. This includes consultation with municipal planning staff regarding planning and development approvals.

NOTE: This checklist is not intended for composting facilities that are proposed at landfills or wastewater treatment plants where land use is already designated.

Name of proposed facility:
Name of applicant:
Address: Email: (optional)
Phone number: Fax:
Project Location:
Legal Land Description:
Facility Street Address: Parcel Size:
Tentative construction start date: Tentative Facility Start up Date:

1) List any provincial registrations, approvals or municipal permits that will be needed for your proposal, e.g. Composting facility registration, development permit, road side development permit, etc. and provide the names of local officials you are working with. If you need more space please attach a separate sheet.

Permit: Officer/Planner's Name:
Permit: Officer/Planner's Name:
Permit : Officer/Planner's Name:
Permit: Officer/Planner's Name:

2) Attach a site plan, vicinity map, and/or topographic map of the proposed location, if reasonably available.
3) How much land (hectares) will be leased/purchased for your proposal?

- 4) How much of that land will be used by the composting facility (facility footprint)? If possible please provide the size of the area designated for receiving, processing, curing, the retention pond, and buffer zones.

- 5) Give a brief description of the type and quantity of organic materials that will be composted at this facility. Please included all primary feedstocks and amendments.

- 6) Does this facility require financial security in accordance with Part 4, section 27 - 33 of the Waste Control Regulations? YES NO

- 7) Do you plan on doing a public consultation process? If so, please describe. YES NO

- 8) What general types of soils are found on the site (for example, clay, sand, gravel, peat)?

- 9) What is the current use of the site?

- 10) What is the current land use designation of the site?

- 11) Is the facility within 450 metres from schools, residential housing, and Food Establishments? YES NO
- 12) Is there a hospital within 450 metres from the site? YES NO
- 13) Identify existing roads or highways serving the site. Show on site plans, if any.
Permits are required if the facility is within 300 metres of a highway and 800 metres of an intersection of a controlled highway.

- 14) What designated and informal recreational opportunities are in the immediate vicinity?

- 15) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, rivers, lakes, ponds, wetlands)? If yes, describe type and provide names (if applicable). YES NO

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- | | | |
|---|-----|----|
| 16) Will the project require any work within 30 metres of the described bodies of water?
If yes, please describe | YES | NO |
| 17) Is there a drinking water well within 450 metres from the site? | YES | NO |
| 18) Is there a spring within 100 metres from the site? | YES | NO |
| 19) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.
Flood risk maps are available from Alberta Environment
http://www3.gov.ab.ca/env/water/flood/index.html) | YES | NO |
| 20) Will any wastewater be discharged to surrounding land? If so, please provide a general
description and indicate the area on the site plan. | YES | NO |
| 21) How deep is the seasonal high water table from the surface? | | |
| 22) Have you included the information required in Section 1 of the standards? | YES | NO |

The above answers are true and complete to the best of my knowledge.

Signature:

Date Submitted: