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Department of Environment and Conservation



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GUIDANCE DOCUMENT

Title: Environmental Standards for
Waste Management at Remote Camps

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Environmental Standards
For Remote Camps
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Table of Contents

1.0 Purpose	3
2.0 Policy Statement	3
3.0 Background	3
4.0 Application of Environmental Standards	4
5.0 Legislation and Approvals.....	4
5.1 - Legislative Authority	4
5.2 - Certificate of Approval Process.....	5
5.3 - Financial Assurance / Environmental Insurance	5
6.0 Locating a waste management site for a remote camp	6
6.1 Siting information required for waste storage/management	6
6.2 Site Investigation.....	6
Table 1:Recommended Setback Distances for Waste Storage/Management at Remote Camps.....	7
7.0 Materials/Waste Management in Remote Areas	8
8.0 Records and Reporting	11
Inventory Records	11
Annual Report	11
9.0 Environmental Emergency Health and Safety Contingency Plans and Personal Protective Equipment.....	11
10.0 Environmental Management/Monitoring	11
Site Water Management	11
Air Quality, Dust and Noise	12
Vector Control.....	12
11.0 Decommissioning	12

Attachment 1 - Environment Canada -Technical Document for Batch Waste Incineration
January, 2010

Attachment 2 - USEPA Emissions limits for small remote incinerators

1.0 PURPOSE

This document sets out the Department's standard for the management of solid waste in remote locations, anywhere in the Province of Newfoundland and Labrador.

The standard is intended to serve as guidance in the development of a waste management plan, and application for a Certificate of Approval for the Construction and Operation of a Waste Management System/ Facility from the Department.

2.0 POLICY STATEMENT

2.1 In keeping with the Waste Management Strategy:

- 1) All non-hazardous waste material generated at the site shall be transported to the nearest accepting regional waste management facility.
- 2) Hazardous or special waste shall, in all cases and under a valid Certificate of Approval from the Department, be transported from the site to a licensed treatment or final disposal facility.

2.2 Alternatively, incineration using an appropriately sized and correctly operated, approved system that meets the Department's regulatory requirements for air pollution control may be approved.

Approval of incineration is contingent upon the development of a comprehensive waste management plan focused on waste minimization, recycling and diversion. A sound waste management shall include:

- a) Environmentally sound, temporary on-site storage of reusable and recyclable material to be reused on site, or shipped at regular intervals to licensed recycling facilities.
- b) Composting of organic material in an appropriately sized and secure facility, preferably using approved in-vessel technology suitable to the climatic conditions.
- c) Under extenuating circumstances, limited landfilling of inert, non-hazardous materials may also be considered.

2.3 Small camps (e.g. mining exploration or hunting/fishing lodges), housing less than 50 people at any one time, may be permitted to safely burn food and non-hazardous residual waste, and pack/ship out all other waste and recyclables. Please refer to section 7.0 3) for further information. Additional technical information is appended.

3.0 BACKGROUND

A camp may be considered remote if road access or another form of transportation is restricted for part of the year. In such a case it may not be possible, or safe, or it may be financially prohibitive to transport the anticipated volume of waste material from the site on a regular basis. As well, there may be safety concerns for workers if waste material, particularly food waste, accumulates, due to area wildlife. In all cases, an approved plan must be developed to minimize waste production, and provide for environmentally sound containment and final disposal.

The Department may require a Certificate of Approval under the Environmental Protection Act for the operation of a waste management system at a remote camp based on the size and nature of the undertaking. Waste management plans are reviewed on a site specific basis.

Camp waste may include kitchen (organic), and septic waste, construction and demolition debris, hazardous waste dangerous goods, special waste, packaging, recyclable materials, and miscellaneous residual waste. Appropriate management practices, as outlined in an approved waste management plan are essential to the environmental permitting and environmentally sound management of an undertaking.

Adverse environmental impacts associated with poorly managed waste material may include: odour or impaired air quality; unsightly and unsanitary conditions; litter, attracting bears or other large carnivores, nuisance vectors and rodents; potentially toxic leachate and surface water run-off; contamination due to petroleum hydrocarbon or other hazardous materials spills, explosions and fire.

Due to restricted access, and the often seasonal or temporary nature of undertakings in remote areas, appropriate waste management practices are especially important to maintain a pristine environment, and to return sites as closely as possible to the natural condition when the undertaking is concluded.

4.0 APPLICATION OF ENVIRONMENTAL STANDARDS

The standard applies to any activity undertaken, for any duration, and to all remote areas. Remote areas, for the purpose of this document, may be defined as any area that does not have an existing approved waste disposal regime in place. Camps that may be reached by any form of transportation (by land, air or water) are included, irrespective of linear distance from a populated area or a waste management system/region.

5.0 LEGISLATION AND APPROVALS

5.1 Legislative Authority

Remote camps are subject to all Provincial and Federal legislation applicable to waste management practices as would be more local systems/ facilities. A non-exhaustive list is provided below.

Undertakings in remote areas may be subject to registration in accordance with Part X of the *Environmental Protection Act* (EPA) and as detailed in the *Environmental Assessment Regulation*, which would require a full description of the undertaking, including a discussion of expected waste streams and how they are to be handled/managed. Prior consultation with the Environmental Assessment Division is recommended to determine whether the remote camp/undertaking is required to be registered.

The legislative authority for the establishment, development and operation of a waste management system is provided through the *Environmental Protection Act*, Parts IV, V and XI (specifically sections 16, 78 and 83).

Provincial legislation

- *Environmental Protection Act SNL 2002 cE-14.2. and Regulations*
- *Water Resources Act, 2004 and Regulations*
- *Occupational Health and Safety Act (O.C. 96-478) and Regulations*
- *Municipalities Act , 1999 and Regulations*
- *Public Health Act, Sanitation Regulations*

Federal legislation

- Canadian Environmental Protection Act and Regulations
- Transportation of Dangerous Goods Act and Regulations
- Fisheries Act
- National Fire Code
- Explosives Act
- Nuclear Safety and Control Act

Also, Canadian Council Ministers of the Environment (CCME) Guidelines (for example: Soil and

Sediment Quality Guidelines; and Water Quality Guidelines for the Protection of Freshwater/Marine Aquatic Life (as applicable)), specifically referenced in the Terms and Conditions of Certificates of Approval to Construct/Operate a Waste Management System, as issued by the Department, are enforceable under the Environmental Protection Act.

5.2 Certificate of Approval Process

Upon completion of the Environmental Assessment Process, a Certificate of Approval to construct and to operate a waste management facility/ system would be requested from the Department pursuant to the *Environmental Protection Act, Parts IV, V and XI*.

The Department may issue a Certificate of Approval for a specified operating period after which time a renewal may be requested by the owner/operator. There will also be monitoring and reporting requirements, and provision for inspections by the Department as a term/condition of an approval.

This guidance document outlines the information required to support an application for a Certificate of Approval to construct and operate a waste management facility/ system, but additional information may be required by the Department. The *General Environmental Standards for Municipal Solid Waste Management Facilities (GD-PPD-063)* may also provide some guidance with respect to the various considerations, components and operations for waste management facilities designed for remote camps.

In most cases the preferred option will be to securely contain waste at the remote location, for transport out of the area and disposal to the nearest accepting regional waste management facility. The rationale is simple: goods and people are moved back and forth from the site, therefore waste can also be removed from the site.

On site waste management requirements will vary depending upon the nature and scale of the activity in the remote location. For very large industrial developments that will be operating for an extended period of time e.g. a mine/mill operation, the design of the waste management system shall be completed by a Qualified Professional and outline all system components and assumptions. Engineering drawings and technical descriptions shall be provided in sufficient detail to allow an evaluation of compliance with the applicable environmental standards e.g. for in-vessel composters, approved incineration, landfilling of inert waste and hazardous materials storage. A Quality Control/Quality Assurance program would also be required for the design, construction and operation and environmental monitoring of the system.

For a moderate level of mining exploration activities, waste/recyclable material treatment, and containment including composting of organics; segregation, storage, compaction, and baling of recyclables and residual material; batch incinerators, and packing hazardous and special waste, may be involved. The Certificate of Approval issued from the department will reflect the scale of operations and level of complexity associated with waste management.

5.3 Financial Assurance / Environmental Insurance

The proponent of an undertaking at a remote location is reminded of the “polluter pays principle”, a tenet of the *Environmental Protection Act, 2002* to achieve environmental protection and sustainable development for Newfoundland and Labrador.

Under the EPA (Part III specifically), those who generate pollution will be held financially responsible for its treatment, disposal and clean-up. No person should benefit financially from polluting and taxpayers should not bear the cleanup costs. It is in everyone’s interest that

environmentally acceptable processes and practices be adopted.

It is therefore incumbent upon the proponent to ensure that appropriate and adequate funding/ financial assurances and/ or environmental impairment liability (pollution abatement) insurance and automotive insurance policies are in place for all operators contracted to construct and to support the operations of site.

6.0 LOCATING A WASTE MANAGEMENT SITE FOR A REMOTE CAMP

6.1 Siting information required for Waste Storage/Management / Treatment Facilities

Siting of all waste storage, management or treatment facilities shall be in accordance with the Recommended Setback Distances described in Table 1. Setback distances in remote areas are to ensure worker safety, protection of the environment and regulatory compliance. But the Department may alter setback requirements based on site specific information, provided that the proposed design and setback distance continues to achieve an equivalent or higher level of environmental protection.

A site plan, an accurate description of the facilities and location coordinates shall also be required for Departmental records. This information should include, where possible, the following information:

- ✓ aerial photos;
- ✓ plot plan for the camp showing boundaries and the full extent of activities which may involve, clearing, construction, processing, storage, treatment and shipping of materials and waste;
- ✓ an accurate description of the selected area for waste storage/management/ treatment facilities; and
- ✓ GPS coordinates/GIS system mapping of the remote camp and areas used for processing, storage, treatment and shipping of material and waste

6.2 Site investigation

An environmental baseline study, to provide information on local hydrogeology, and groundwater and surface water conditions to establish the background conditions of the proposed site, may be required prior to approval for construction/ site activity. Further information on these type of investigations is provided in the *General Environmental Standards for Municipal Solid Waste Management Facilities (GD-PPD-063)* and *Appendix C* available on the Department's website.

TABLE 1 RECOMMENDED SETBACK DISTANCES FOR WASTE STORAGE /MANAGEMENT
AT REMOTE CAMPS

Feature	Recommended Setback Distances
Environmentally sensitive areas	Waste storage/management facilities shall not be sited in environmentally sensitive areas (flood plains, parks, nature reserves, areas where there may be endangered species of plants or animals, wildlife migration corridors, wetlands, etc).
Access road for waste management/storage.	Access roads shall not be located in environmentally sensitive areas. They shall be constructed and maintained consistent with current <u>Resource Road Construction Environmental Guidelines and Design Criteria</u> . Access at or to the remote location shall be removed and/or restricted when activity at the site is curtailed or terminated.
Hydrogeology and soil conditions	Any waste storage or treatment shall occur in an area of low soil permeability using liner system and shall be at least 1m above the seasonal high groundwater table. Areas where there is a reasonable depth of native soils and no useful groundwater resources are preferred locations.
Waterbodies	Waste storage shall be a minimum of 100 m distance from the High Water Mark of a significant waterbody as defined under the Water Resources Act or assessed by the Department.
Potable water supply	Waste storage shall be a minimum of 100 m distance from any water supply area.
Remote landing strips	Waste storage shall not be located in the path of local flyways to reduce the potential for wildlife and birds creating a hazard for aircraft. Wildlife and bird control measures may be required in all cases. Transport Canada and the Department may need to be consulted.
Prevailing wind direction	Waste storage shall always be predominately down wind of camp and work areas.
Unstable Area	No waste shall be stored within 100 metres of an unstable area
Fire Break	Distance(s) to be approved in consultation with the Fire Commissioner's Office. The Department of Natural Resources shall be notified of remote camp locations

The requirements for site investigations will depend upon the nature, scope and duration of activity proposed for the remote area. Larger and more intrusive undertakings will require greater scrutiny in an effort to protect the environmental resources and valued ecosystem components. Hydrogeological, surface water and groundwater investigations, where required shall be conducted by a suitably Qualified Professional. Study results shall be submitted to the Department, for evaluation based on the appropriate Canadian Water Quality Guidelines.

7.0 MATERIALS/ WASTE MANAGEMENT IN REMOTE AREAS

Waste storage and management in remote areas shall be conducted in an environmentally sound and secure manner, that also meets the practical and functional needs of the undertaking/activity. It will be necessary for the proponent/ site owner/operator to provide an inventory of waste volumes, types and throughput associated with activities at the remote camp. The level of site activity may vary seasonally, so a schedule of activities may also be required.

The environmentally preferred option at remote camps is storage of waste in appropriate containers, in a designated area, for regular removal to recycling and/ or disposal at the nearest approved waste disposal site. Waste management options may include minimizing the volumes of hazardous materials brought to the remote location at any one time, and maximizing reuse of construction materials on the site. These are also common cost saving measures.

Material/waste storage and management areas/facilities shall be sized and designed to safely handle the anticipated volume to be received/processed/stored /shipped out (i.e.throughput) for disposal, for the maximum time delay between shipments.

Permitting and documentation requirements (approvals including design specifications and operations plans, training records, quality control/assurance records and inventory records) shall be consistent with the size of the remote camp and the nature and volume of the associated waste storage/management facilities. In all cases inventory records shall be maintained for all materials brought to the remote camp and removed / shipped from the camp. The location of recycling, final waste treatment and/or final disposal (either on or off-site) shall always be documented.

A site Operations Plan shall be in place providing sufficient space for safe handling of the volume and type of material received regularly. The site Operations Plan shall correspond with the actual Waste Management Plan, and include contingencies for additional storage space where transfer, treatment or disposal may be interrupted or delayed. The Environmental Emergency Health and Safety Contingency Plan shall also correspond with the Waste Management Plan to specifically address situations that may arise. Employees handling waste materials and waste dangerous goods shall be appropriately trained in all safety and regulatory requirements, and in hazardous material emergency response.

In most cases, the proponent or owner/operator of a remote camp will only be dealing with material brought onto the site and resultant waste generated at the site. Therefore the requirement for inspection and monitoring of materials leaving the site is applied to ensure that material is packaged to meet regulatory requirements, and safely transported in a manner that does not pose a hazard to workers, the environment or to the mode of transport. It should be noted that certain materials/wastes require specific containment and packaging to meet Federal Regulations for marine or air transport. Some waste types may also be prohibited.

All waste management systems, components and features shall be technically sound, and demonstrated to meet environmental standards set by the Department in terms of structure and performance.

All waste generated at a remote camp shall be disposed to an appropriate, approved (licensed) waste treatment, recycling or final disposal facility in keeping with regulatory requirements. Depending upon the origin and nature of the waste material, other Provincial, and Federal Legislation and Regulations, or Agreements and Guidelines may apply.

Specific terms and conditions regarding the proposed/projected waste stream will be addressed in the Certificate of Approval. But in all cases the following will apply:

- 1) Organic waste- Containers shall be wildlife (bear) proof, and storage shall be placed at a reasonable distance from work areas and camps to minimize potential for wildlife encounters.
- 2) Composting of organic kitchen waste will require the use of in-vessel systems/technology suited to the remote conditions and climate. Conditions include inclement weather, extremely cold temperatures and problems due to attraction and encounters with wildlife. The department may be contacted for further information and to discuss possible options.
- 3) Incineration of camp/residual waste may be permitted using an approved incinerator that meets the operational requirements for the camp size and waste type/volume anticipated. Clean-burning, small scale batch (50-3000 kg) incinerators that do not incorporate air pollution control devices may be considered for reasons of worker safety and feasibility where best practices are implemented.

Best practices for small scale incineration serves to suitably treat and dispose waste, while minimizing emissions, and reducing occupational exposure and other hazards. Best practices include:

- ✓ Effective waste reduction and segregation, ensuring the smallest amount of waste is incinerated that produces the fewest air quality contaminants.
- ✓ Locating / siting so as to minimize exposure and risk to camp personnel and the environment (refer to Table I). Containment within a building is recommended for harsh weather conditions to minimize equipment corrosion and provide reasonable comfort for attendants overseeing incinerator operation.
- ✓ Ensuring correct installation and construction of incinerators are mounted on-site.
- ✓ Proper operation which is critical to achieve the desired combustion conditions and emissions, and includes appropriate start-up and cool-down procedures; loading/charging rates (both fuel and waste) to maintain required temperatures; proper disposal of ash; and protection and training for workers.
- ✓ Regular and periodic maintenance to replace or repair defective components including inspection, spare parts inventory and record keeping.

The Environment Canada *Technical Document for Batch Waste Incineration, January 2010*, was developed to provide guidance for owners and operators of batch waste incinerators regarding proper system selection, operation, maintenance and record keeping, with the goals of assisting them in achieving the intent of the Canada-wide Standards (CWS) for dioxins/furans and mercury, and reducing releases of other toxic substances. The document focuses on batch waste incinerators systems ranging in size from 50 kg to 3000 kg that are operated in a non continuous manner. Non-continuous means that they are charged with waste prior to the initiation of the burn cycle, and the door remains closed until the ash has cooled inside the primary chamber (fill and burn). The document provides an overview of the batch waste incineration process and is appended.

For larger, and longer term operations, proposing to incinerate waste volumes of 1 ton/week (approximately 200 person camp) for most of the calendar year, the Departmental regulatory requirements as specified in the Air Pollution Control Regulations will normally apply. Alternatively, Attachment 2 provides the USEPA Emission Limits for Small Remote Incinerators, which may be applied. Noting that all Certificates of Approval issued by the Department will be site specific to each undertaking.

- 4) Raw sewage/septic sludge The Department of Government Services shall be contacted regarding options and permitting requirements to manage camp sewage disposal. The *Environmental Control Water and Sewer Regulations, 2003* apply to all surface water discharges from the site (as per Section 9.0 of this document). Composting toilets may be considered as an interim option. For larger operations with in-vessel composters, dewatering and composting of sludge solids may also be considered.
- 5) Construction and Demolition Debris – C & D shall be segregated from the domestic (kitchen and residual) waste stream and directed to the appropriate location for reuse and recycling where this is possible. C & D debris shall ordinarily be shipped out to a specialized landfill for final disposal. In some cases clean wood waste and landscaping debris may be directed to the composting.
- 6) Fuel storage tanks (commercial or residential size) shall not be disposed or accepted at a waste disposal site without confirmation that the tanks have been purged of product, tank bottom sludge and vapour. The tank must also be cut in half or sufficient openings cut to prevent the accumulation of vapour and to accommodate visual inspection.
- 7) Petroleum based products – The storage of products such as used oil and grease; and hazardous materials including chemicals and solvents; shall be in approved containers, and on an impermeable surface with 100% secondary containment. Materials such as oil filters that may be contaminated with petroleum based products shall be allowed to fully drain prior to appropriate disposal.*
- 8) Equipment containing regulated substances (refrigeration, air conditioning and fire extinguishing equipment) shall first having the regulated substance recovered by a person approved under the Halocarbon Regulations and shall be labelled “Halocarbon Free”.*
- 9) Electronic Waste that is intact and uncompromised, shall be collected in a secure storage area for regular removal to a recycling option where a program exists. Electronic waste such as communications equipment and computers/ monitors, that have been damaged, or dismantled to potentially expose hazardous constituents, is considered to be hazardous waste for regulatory purposes.*
- 10) Explosives are separately regulated under the Explosives Act by Natural Resources Canada.
- 11) Radioactive materials (>70 becquerals/g) are separately regulated by the Canadian Nuclear Safety Commission.

* The handling and transportation of hazardous materials, and low level radioactive materials to licensed final treatment or disposal facilities shall be conducted by a licensed transporter.

8.0 RECORDS AND REPORTING

Inventory records

The information documented shall include: a materials/ waste flow summary sheet: detailing the origin and quantity of material received at the camp, and waste shipped from the camp. The location of recycling or final treatment/disposal of all waste material from the site shall be documented.

Annual Report

In the event that a remote camp is maintained for a number of years, an annual report shall be submitted to the Department to summarize waste material management at the site and provide details on recycling, treatment and/ or shipment to final disposal. Copies of waybills, transport manifests / environmental control documents shall be submitted to the Department.

The report shall also include an evaluation of environmental monitoring data where this has been required; any proposed changes in camp operations, and a description of any environmental incidents / contingency plan implementation

9.0 ENVIRONMENTAL EMERGENCY HEALTH AND SAFETY CONTINGENCY PLANS AND PERSONAL PROTECTIVE EQUIPMENT

Employees shall be trained to identify and safely handle hazardous and unacceptable materials. Maintaining the appropriate level of training/certification will help ensure material is properly stored for treatment/ packaging for shipment to approved recycling or final disposal facilities.

All personnel shall have up to date training and practice on the implementation of the Environmental Emergency Health and Safety Contingency Plan, and the use of appropriate Personal Protective Equipment Emergency response equipment shall be conveniently located and clearly marked.

10.0 ENVIRONMENTAL MANAGEMENT/MONITORING

Surface water management

Waste storage areas shall be located where soil permeability is low, or on an impermeable surface installed for this purpose. Sloping and drainage shall be designed to reduce run-on and accumulations of surface water (pooling). Any environmentally hazardous substances/waste and waste to be shipped from the site shall be protected from the elements. Where possible any run-off from the site shall be directed so as to minimize adverse environmental impact. Run-off or generated leachate that may contain contaminants shall be collected and tested prior to discharge to the environment.

All surface water (storm water runoff, or leachate) discharged from the site shall comply with the *Environmental Control Water and Sewage Regulations, 2003*. For parameters of concern that are not addressed by the regulations, the appropriate CCME Water Quality Guidelines will apply. If compliance monitoring and sampling indicates problems, then corrective action must be taken immediately. Additionally, liquid effluents shall not be acutely lethal as determined by the suite of biological Test Methods developed by Environment Canada for this purpose. The Department of Environment and Conservation Policy PD:PP2001-01: *Use of Accredited and Certified Laboratories* applies for sampling analysis (posted as a separate document on the Departmental website and available from the Department).

An appropriate environmental monitoring program shall be developed, where warranted, as part

of the Certificate of Approval process for the facility/ site. The requirements shall be based on an assessment of site investigations, including the hydrogeologic and surface water investigation, and proposed facility operations. Where groundwater and/ or surface water quality monitoring is required, the monitoring program, shall be designed and conducted by a suitably Qualified Professional and approved by the Department prior to implementation. The Department may develop or adjust the list of parameters and/or monitoring schedule on a site-specific basis.

Air Quality, Dust and Noise

Environmentally sound dust control measures shall be employed as necessary. Air quality in working areas shall meet or exceed Occupational Health and Safety guidelines. Worker exposure to noise shall be within safe and acceptable limits. Depending upon the nature of, and activity level at the waste management area, personal protective equipment may be required.

Where the proposed activity at the remote camp is very large, multi-year and may have air emissions associated, the Department may require the proponent to conduct air dispersion modeling to provide baseline information for air quality, and to identify parameters and limitations for future air quality testing.

Incineration will be considered at remote locations where air emissions criteria limits can be achieved. The *Air Pollution Control Regulations, 2004* would apply with respect to approving the proposed incineration technology.

Small, remote incinerators are defined in the proposed limits as those “that combust less than one ton of waste per day and are farther than 50 miles driving distance to the closest municipal solid waste (MSW) landfill.” The draft US EPA emission limits for small remote incinerators (please refer to Attachment 2) would presently be considered the minimum applicable standards. The proposed emission limit for mercury in this standard is 0.0029 mg/DSM3 which is more stringent than the NL Air Pollution Control Regulations (APCR) for municipal waste is 0.020 mg/DSM3; however the APCR limit for dioxins and furans is more stringent – 80 pg I-TEQ/m3 vs 130000 pg I-TEQ/m3 (USEPA small remote incinerators). The most stringent of these two limits will be applied to the parameter in question.

Vector Control

Waste shall be contained so as not to attract or lead to the propagation of disease carrying vectors. The camp shall be situated, constructed and maintained so as to avoid areas of standing water. Should a problem develop with potential disease and nuisance vectors (e.g. mosquitoes/flies/rodents) details shall be provided to the Department.

The *Pesticides Control Regulations, 2003* apply, and an approval, advance notification and signage are required if chemicals are to be used at the camp or worksite. Worker exposure shall be avoided.

11.0 DECOMMISSIONING

The design of the remote camp and associated waste management facility(ies) components shall take into consideration the requirements for proper closure and decommissioning at the end of the operating life.

The owner/operator shall submit a preliminary decommissioning plan to the Department when applying for a Certificate of Approval. Factors to be considered include final waste removal, site cleanup, repair and rehabilitation, and removal or securing of infrastructure, equipment and access. Controls/contingencies for nuisance including wind-blown debris, litter, rodents, other

vectors and illegal dumping may also be required. Updates shall be submitted to the department as any changes are made.

The owner/operator shall notify the Department in writing of the pending shutdown of the site at least 180 days in advance of the site ceasing operation. The final decommissioning plan is to be approved by the Department at least 6 months prior to final closure of the waste management facility / waste disposal site.

A decommissioning report and final inspection by the Department is required. There should be no waste remaining on site following closure and decommissioning. However, site specific arrangements for ongoing monitoring will be required in the event that some contamination occurred during the operation of a facility e.g. in the event of a fire, or a hazardous material incident.

As part of the decommissioning plan the proponent shall provide as built drawings for all remaining facilities, components and installations. An up to date and accurate plot plan, including geographic positioning system coordinates for site features, and showing the locations of permanent survey markers shall also be provided.

In all cases provision shall be made for an inspection of the site by the Department following closure/decommissioning.