COMPLIANCE INSPECTION REPORT

CAMBRIDGE TOWNSHIP
St. ALBERT
WASTE DISPOSAL SITE

REPORT PREPARED BY

INSPECTIONS UNIT

CORNWALL DISTRICT ABATEMENT SECTION

MINISTRY OF ENVIRONMENT AND ENERGY, EASTERN REGION

Inspected By: Larry L. Benoit, Senior Environmental Officer
Date Of Inspections: August 30 & Novemebr 24, 1995
Date Of Report: 10 January 1996

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APPENDICES

COMPLIANCE INSPECTION REPORT
St. ALBERT WASTE DISPOSAL SITE

1 GENERAL

Purpose

The purpose of this report is to assess the operating authority's compliance with applicable Ontario Ministry of Environment and Energy (MOEE) policies, guidelines, regulations and control documents with respect to the development, operation and closure of the landfill site.

1.1	Site Inspected:	**Township of Cambridge - St. ALBERT Lot 21, Concession VIII**
1.2	Certificate of Approval Number:	**A471108 Last issued April 2, 1981**
1.3	Site Owner:	**Township of Cambridge R.R. #3, Casselman, Ontario K0A 1M0**
1.4	Person(s) Contacted:	**Roger Brunet, Clerk (Tel: 764-5444, Fax: 764-3310) Ovila Boucher, Site Operator (res:443-2980, work:443-3437)**

2 LOCATION AND GENERAL INFORMATION

2.1 Location and Background Information:

The landfill waste disposal site is located approximately 1.5 kilometre north-west of the Community of St. Albert (see the location map in Appendix "B"). Surrounding landuse consists of agricultural lands. The South Nation River is situated about 50 metres to the east.

The site has been receiving waste since the late 1970's when the former St. Albert site located south east across the river was closed. The current

Certificate of Approval was issued in 1981 for use and operation of a 2.2 hectare landfill site. Until a few years ago, domestic, commercial and non-hazardous industrial wastes from the south half of the township was disposed of at the site. Now only solid non-hazardous commercial/industrial wastes are taken to the site. Domestic waste in the municipality is now disposed of at the Central site.

Compliance inspection reports are also being prepared for the other two approved sites (Central and Limoges) in conjunction with this document.

2.2 Is there a FAP or WMIP in effect?

Review of District files reveals that no recent funding has been received from MOEE for Waste Management Improvement Program or Financial Assistance Program projects at the St. ALbert site.

2.3 Is there a Municipal Recycling Program in effect?

A "blue box" recycling program has been established with financial assistance from the MOEE and has been in operation for a little more than a year. Additional information on waste diversion can be found in section 3.5 on page 4 of this report. Appendix "F" contains the collection schedule and routes for the municipalities.

2.4 Is there a Household Hazardous Waste Collection Program in effect?

A Household Hazardous Waste Collection Program was implemented in 1993, but has not been repeated since the funding program was dropped.

2.5 Is the Municipality a member of an area Waste Systems Management Plan?

The Township is not a current member of an Area Waste Management Systems Plan.

2.6 Other facilities at the site:
(leaf/yard waste composting or recycling site)

Brush, wood, tires, scrap metal, and white goods are segregated and stored in separate locations at the site.

2.7 Is there a municipal waste management committee (or PLC)?

There is no committee in place to address waste management matters in the

community. The road superintendent, Mr. Hubert Burelle, oversees covering operations at the site and the site supervisor reports to the Clerk. Council deals with waste tenders, contracts, etcetera, during the course of normal council meetings.

The Municipality should consider establishment of a Municipal Waste Management Committee [that should include a member(s) of the public, a representative(s) of the Village of Casselman, and a technical person(s) in addition to a Township council member(s)] to oversee operation of all waste disposal sites in the Township, to deal with complaints, review tenders/ contracts, and to advise Council on all waste management issues and options on both the short and long term bases. Responsibilities of the committee could also include a self assessment and reporting function to ensure compliance with approvals and operating standards for the site.

2.8 Waste management haulers utilizing the site:

Only residents of the Township of Cambridge use the site.

3 SITE CAPACITY

3.1 Population Served:

The site receives solid non-hazardous industrial/commercial wastes only and serves the ST. Albert area and south half of the municipality (1000 to 1500 people),

Source of data pertaining to population: Clerk

3.2 Area of the Site including buffer:

The latest (1981) Provisional Certificate of Approval (Appendix A") specifies a 2.2 hectare landfilling site. Total area of the site, including buffers, is 4 hectares.

3.3 Reserve Capacity:

Projected remaining capacity is not known. An O&D plan does not exist for the site.

There are no records kept on the amount of waste entering the landfill site

as well as the amount of recyclable materials sold or shipped elsewhere.

Total Approved Capacity: **2.2 hectares (5.5 acres) is specified in the original application**

Total Lands owed by the Municipality: **approximately 4 hectares (10 acres)**

3.4 Volume of waste deposited (1995):

Domestic: 1995: dry household waste only

I,C & I: 1995: not known

Source of data (ie. scales, hailers invoice, surveys):

There is no scale house but the site supervisor estimates 20 to 30 users (cars and small trucks) in summer and 10 to 20 in winter visit the site with small amounts of waste; loadings vary from 1 to 5 tonnes per week.

3.5 Volume of recyclables diverted (1995):

3.6 Material: **White goods & scrap metal**

Volume: **50 m3 currently on site - 150 m3 estimated per year**

Disposal/Destination: **Charleboise Scrap - Lachute**

a) Material: **Tires**

Volume: **<500 units currently on hand**

disposal/destination: **currently searching for receiver**

Information is not available on volumes of "Blue Box" waste collected in the municipality. Newspaper, glass, plastics, and aluminum & steel cans are currently collected.

4 OBSERVATIONS BY MOEE INSPECTION STAFF

4.1 OPERATING PLAN

Does the operating Authority have a suitable site operation, development and

closure plan?

A Site Development and Operations Plan (D&O plan) does not exist for the site.

4.2 MONITORING PROGRAM

Does the operating Authority have suitable monitoring programs for groundwater, surfacewater and landfill gas?

The site is not monitored for groundwater and surface water contamination.

4.3 METHOD OF OPERATION (INCLUDING COMPACTION AND COVERAGE)

An area fill method of operation is being utilized for disposal of waste at the site. However, active disposal area are numerous and interim & final cover is required over most of the site. A site closure plan is required to address this and all other operation and development aspects of the site.

4.4 SITE SECURITY/SUPERVISION:

Does the operating Authority provide suitable security and supervision for the site?

The entrance to the site is kept locked except when open to the public on Saturdays when it is supervised. Despite the municipality's desire to accept only solid non-hazardous industrial/commercial/institutional, construction, and dry domestic waste at the site, domestic garbage continues to be dumped onto the site and outside of the gate. It is recommended that the site be better policed by the operating authority and that enforcement provisions of the municipal by-law be applied for any violations.

4.5 SIDE SLOPES

Side slopes on the landfill perimeter faces are approximately 1 vertical to 1 horizontal in some areas. A 4 to 1 exterior side slope is recommended to improve slope stability around the entire site.

4.6 SIGNS

Does the operating Authority provide suitable signs for the site?

a) Entrance signs:

The entrance sign states when the site is open and indicated that there is By-law in effect to prohibit scavenging and unauthorized use of the site. The name and telephone number of the operator of the landfill and fire department emergency telephone number or the types of wastes accepted at the site are not specified.

b) Site signs:

The main entrance sign also contains a sketch showing general areas for disposal of tires, wood, domestic waste and metals; however there are no signs on the site to identify theses areas.

4.7 ROADS

a) Local travel routes:

The Concession Road allows two way traffic and has a gravel surface. The road is in good condition and is suitable for year-round use.

b) On site:

The on-site roads should be improved near the low lying entrance way and should be kept in good condition year round..

4.8 SCREENING

Waste is visible from the adjacent road and nearest farm dwellings. Improvements in screening with grassed berms or trees is recommended.

4.9 SPECIAL CONDITIONS (OPEN BURNING ETC)

Are there any special conditions of operation at the site?

There are no special conditions at this site.

4.10 SEGREGATION OF MATERIALS

Does the operating Authority have suitable materials segregation/recycling facilities?

As indicated in section 3.5 on page 4, a material segregation program is in effect. Tires and scrap metals are stock piled and removed periodically and only concrete, wood waste and dry domestic waste is accepted at the site;

however domestic garbage is mixed in with these wastes. (Blue box items are picked up throughout the community and are shipped directly to the receiver).

4.11 TIPPING FEES

Does the operating Authority have a system of tipping fees?

Cost of operation is covered in the tax assessment for all residents of the township. Users must show proof of residency upon request by the site supervisor.

4.12 LITTER CONTROL

Does the operating Authority have suitable litter control programs?

a) On site:

During the inspections, litter was observed to be a problem in the buffer areas within the landfill site.

b) Adjacent lands:

Litter was observed on the adjacent lands and at the entrance to the site.

c) Transportation routes:

Litter was not observed along the transportation routes leading to the site.

The operating authority should establish a quarterly litter cleanup program on and adjacent to the site.

4.13 GENERAL COMMENTS

Major improvements are required to bring the site up to current day standards with regard to operations & development plans, site closure, ground & surface water monitoring, contingency plans and day to day operation. Serious consideration should be given to waste management issues for this and the three other disposal sites in the Township of Cambridge.

Operation of 4 waste disposal sites in one municipality is likely no longer practical or economical for such a small population base.

5 CONTINGENCY PLANS

Have contingency plans been formulated for this facility?

There is no contingency plan for the landfill site.

Comments:

A contingency plan should document reporting procedures and actions to be taken in the event of such occurrences as a fire, equipment failure, odour complaints, rodent infestation, leachate migration, methane gas, disposal of non-hazardous spill cleanup material, and any other problem associated with waste collection, recycling and disposal and failure of the site to operate in compliance with the requirements of the operation/development/closure plan(s) and the requirements of the Ministry of Environment and Energy and other regulatory agencies. This contingency plan should also stipulate actions to be taken to comply with Terms and Conditions of the Certificate of Approval.

Contingency plans should be maintained and up-dated on a regular basis and should be available to municipal employees/officials and site operator(s) and posted at site attendant's building and municipal office(s).

6 ATTENDANT TRAINING/INSTRUCTION/DUTIES

6.1 Has the attendant been instructed regarding the following issues:

a) Operating/development plan: **None exists**

b) Ont. Reg. 347: **No**

c) MOEE Guidance Manual For Landfill Sites Receiving Municipal Waste November 1993: **No**

d) Training courses: **Hazardous waste handling - MTO**

e) Certificate of Approval requirements: **Yes**

The weekend supervisor has received basic instructions on the types of waste permitted at the site, material segregation, etcetera, but has not received formal training in waste management for municipal landfill site operation. The municipalities should consider developing a policy for ongoing training for operating staff.

7 RECORD KEEPING AND DATA SUBMISSION

7.1 Does the Operating Authority have a Self Assessment Reporting Strategy?

Basic operation of the site is overseen by the road superintendent, the clerk and council; however, procedures are not in place for a formal self assessment reporting strategy.

7.2 Is there a documented method of providing status reports to the Ministry of Environment and Energy?

Status reports regarding reserve capacity, waste volumes, complaints, monitoring results, etc, are not prepared for submission to the Cornwall District Office of the M.O.E.E. A report on status of operations and reserve capacity should be submitted on a regular basis.

8 COMPLIANCE WITH MOEE LEGISLATION AND APPROVALS

8.1 *PROVISIONAL CERTIFICATE OF APPROVAL*

Expiry Date: **None**

Does the Operating Authority comply with the terms and conditions specified in the Certificates of Approval?

The current Certificate of Approval No. A471108, last issued on April 2, 1981 lists no conditions of operation (see Appendix "A").

8.2 *ONTARIO REGULATION 347, ENVIRONMENTAL PROTECTION ACT*

Does the operating Authority comply with the requirements of Ont. Reg. 347, EPA?

Part 7 of Section 11 of Ont. Reg. 347 states the following:

"Where there is a possibility of water pollution resulting from the operation of a landfilling site, samples shall be taken and tests made by the owner of the site to measure the extent of egress of contaminants and, if necessary, measures shall be taken for the collection and treatment of contaminants and for the prevention of water pollution."

Groundwater and surfacewater studies have not been completed.

9 CONFORMANCE WITH MOEE POLICIES AND GUIDELINES

Does the operating Authority conform with the following applicable MOEE POLICY(S) and the "GUIDANCE MANUAL FOR LANDFILL SITES RECEIVING MUNICIPAL WASTE" dated November 1993?

9.1 ***Guideline C-5 (formerly Policy 14-06): Registration on Title of Certificates of Approval For Waste Disposal Sites.***

The Certificate has been registered on title.

9.2 ***Guideline B-7 (formerly Policy 15-08): "Incorporation of the Reasonable Use Concept Into M.O.E.E. Groundwater Management Activities" (Appendix "D")***

The municipality has not conducted a Reasonable Use Assessment of the groundwater adjacent to the landfill site.

9.3 *Guidance Manual For Landfill Sites Receiving Municipal Waste November 1993*

The above-noted manual is a comprehensive document which covers most topics associated with municipal landfills. In summary, the Township of Cambridge- St. Albert landfill site is not operated in conformance with the following sections of the manual:

a) Contingency Plans:

There is no contingency plans for this site.

b) Status Reports:

An annual or bi-annual status report is not prepared for this site.

c) Cell cover:

For small sized sites (service population less than 1500), the manual recommends a minimum of monthly coverage. Changes in cover frequency are not considered necessary unless odour, rodents, litter, or other related problems develop on or adjacent to the site.

d) Monitoring Program:

There is no monitoring program for this site. A thorough evaluation should be undertaken to determine what impact the landfill site is having on the on-site and off-site groundwater and surfacewater regimes.

e) Signs:

The entrance sign does not provide an emergency telephone number and should include specific information on fines for illegal dumping at the gate and on the site.

For more specific information on these and other standards of operation, please refer to the "SUMMARY OF OPERATIONAL PRACTICES AT LANDFILL SITES" in Appendix "E" of this report.

10 DEFICIENCIES

NON-COMPLIANCE WITH CONTROL DOCUMENTS

1. *Provisional Certificate of Approval:*

The operating authority (municipality) is operating in compliance with listed terms and conditions of the Provisional Certificate of Approval. However, the approval is outdated in many regards and should be re-issued to include preparation and use of a Development, Operation, and Closure Plan which includes a comprehensive Contingency Plan, and a Compliance Monitoring Program.

NON-CONFORMANCE WITH MINISTRY OF ENVIRONMENT AND ENERGY GUIDELINES

2. *Guideline B-7 (formerly Policy 15-08): "Incorporation of the Reasonable Use Concept Into M.O.E.E. Groundwater Management Activities"*

   The municipality has not conducted a Reasonable Use Assessment of the groundwater adjacent to the landfill site.

3. *"Guidance Manual For Landfill Sites Receiving Municipal Waste - November, 1993"*

   It is recognized that this document is not well known to many municipalities and privately owned waste disposal site operator; however, the site is not being operated in conformance with the guidelines with specific regard to a comprehensive contingency plan, cell cover frequency, site signs, and preparation and submission on annual/bi-annual status reports.

11 RECOMMENDATIONS

1. **The operating authority and municipality should immediately undertake actions necessary to resolve the above noted deficiencies.**

2. **The Municipality should consider establishment of a Municipal Waste Management Committee [that should include a member(s) of the puplic, a representative(s) of the Village of Casselman, and a technical person(s) in addition to a Township council member(s)] to oversee operation of all waste disposal sites in the Township, to deal with complaints, review tenders/ contracts, coordinate or prepare self assessment reports, and to advise Council on all waste management issues and options on both the short and long term bases.**

3. **The operating authority should ensure that all people associated with operation of the site are adequately trained on duties related to the operation, development, and closure plans, Ontario Regulation 347, Certificate of Approval Requirements, the MOEE Guidance Manual (Appendix 'D"); and are made aware of formal training courses available for landfill site operation.**

4. **Improvements in screening with grassed berms or trees is recommended.**

5. **It is recommended that the site be better policed by the operating authority and that enforcement of the municipal by-law be applied for domestic waste dumping violations at the gate area and on the site.**

6. **The operating authority should establish a quarterly litter cleanup program on and adjacent to the site.**

7. **The entrance sign should provide an emergency telephone number and should include specific information on fines for illegal dumping at the gate and on the site.**

8. **Status reports regarding reserve capacity, waste volumes, complaints, monitoring results, etc, should be prepared for submission to the Cornwall District Office of the M.O.E.E. on a regular basis.**

Date of report: **10 January 1996**

The above report is a compilation of information obtained for the purposes of the Compliance Inspections conducted in 1994 and 1995 and does not imply by omission that the facility meets or does not meet all applicable laws and regulations.

Provincial Officer/Inspector: **Larry L. Benoit, Senior Environmental Officer**

Signature:

APPENDIX "A"

CERTIFICATES OF APPROVAL

Ministry of the Environment
Ontario

Provisional Certificate No. A 471103

PROVISIONAL CERTIFICATE OF APPROVAL
WASTE DISPOSAL SITE

Under The Environmental Protection Act, 1971 and the regulations and subject to the limitations thereof, this Provisional Certificate of Approval is issued to:

Township of Cambridge
Box 86
St. Albert, Ontario
K0A 3C0

for the use and operation of a 2.2 hectare landfilling site located within a total area of 4.0 hectares.

all in accordance with the following plans and specifications:

Listed in Schedule "A"

Located: S.E. Pt. Lot 21, Concession 8
Township of Cambridge
Prescott and Russell Counties

which includes the use of the site only for the disposal of the following categories of waste (NOTE: Use of the site for additional categories of wastes requires a new application and amendments to the Provisional Certificate of Approval) Domestic, commercial and non-hazardous solid wastes (limited to miscellaneous debris from agriculture such as wood and wire fencing).

and subject to the following conditions:

Dated this 2nd day of April, 1981.

T. W. [illegible]
Director, Section 39,
The Environmental Protection Act, 1971

SCHEDULE "A"

To Provisional Certificate # A471108.

1. Application and supporting information forms dated October 20, 1978.
2. Location and detailed site Plan as prepared by the Consulting Engineers - Lascelles, Sequin, Tremblay, Hawkesbury, Ontario, dated October 30, 1978.
3. Legal Survey Plan, dated October 3, 1977.
4. Letter from the Township of Cambridge confirming the meeting of January 22, 1979, when the township agreed to reseve the southern portion of the landfill site for buffer.

Ontario
Ministry of the Environment

Provisional Certificate No.
A 471108

PROVISIONAL CERTIFICATE OF APPROVAL
FOR A
WASTE DISPOSAL SITE

Under The Environmental Protection Act, 1971 and the regulations and subject to the limitations thereof, this Provisional Certificate of Approval is issued to:

Township of Cambridge
St. Albert, Ontario

For the use, operation and establishment of a 2.2 hectare (5.5 acre) landfilling site within a 4 hectare (10 acre) site all in accordance with the documents listed in Schedule "A".

Located S.E.Pt. Lot 21, Concession 8
Township of Cambridge
Prescott & Russell Counties

SUBJECT TO THE FOLLOWING CONDITIONS:

1. No operation shall be carried out at the site until this Certificate including the reasons for this condition has been registered by the applicant as an instrument in the appropriate Land Registry Office against title of the site and a duplicate registered copy thereof has been returned by the applicant to the Director.

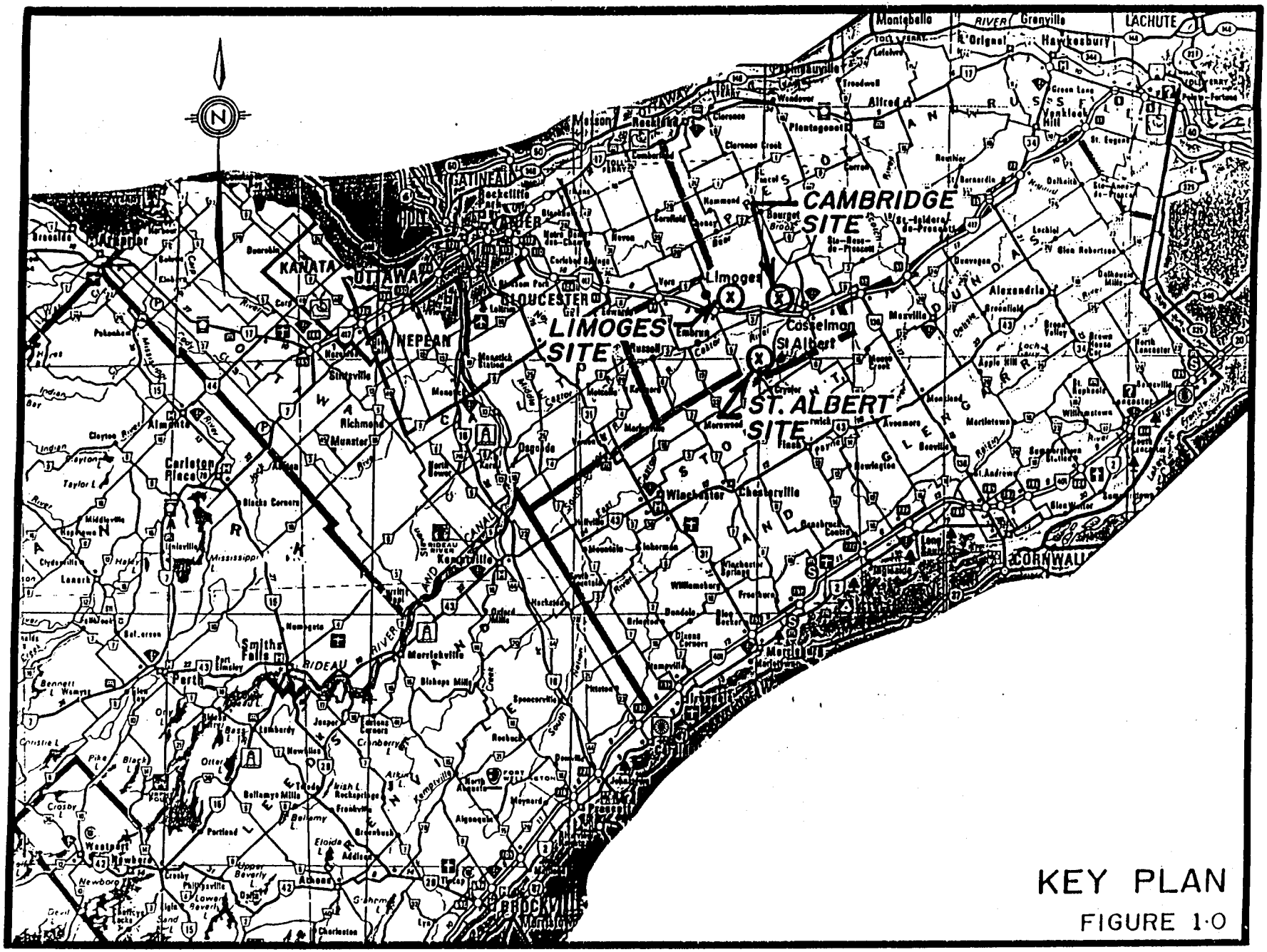
This Provisional Certificate expires on the 31st day of December, 19 80

Dated this 8th day of June, 19 79

DIRECTOR, SECTION 3 (a) E.P.A.

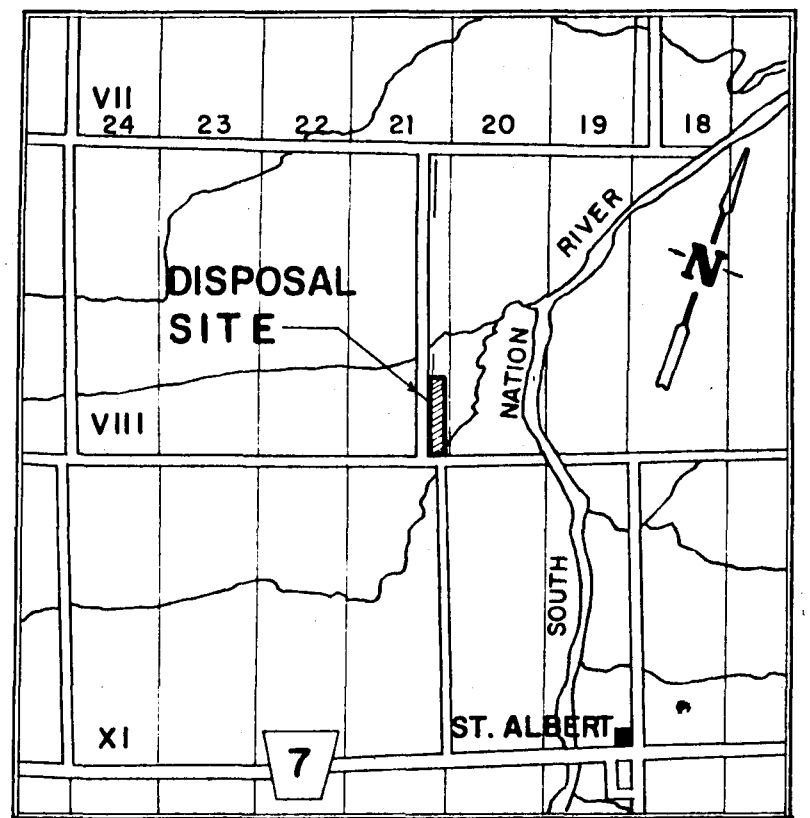
APPENDIX "B"

LOCATION MAPS



KEY PLAN

FIGURE 1·0



LOCATION PLAN

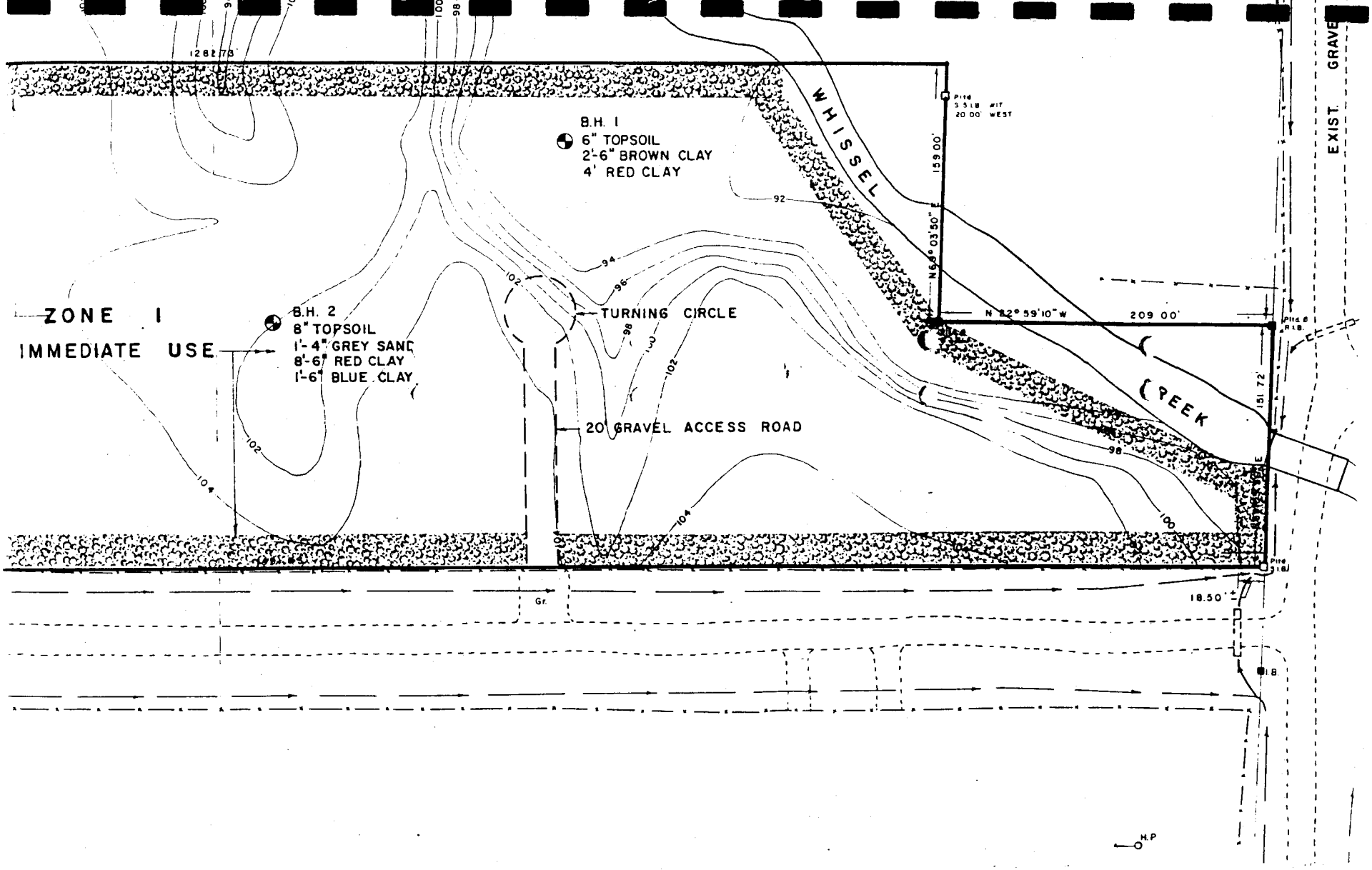
TOWNSHIP OF CAMBRIDGE

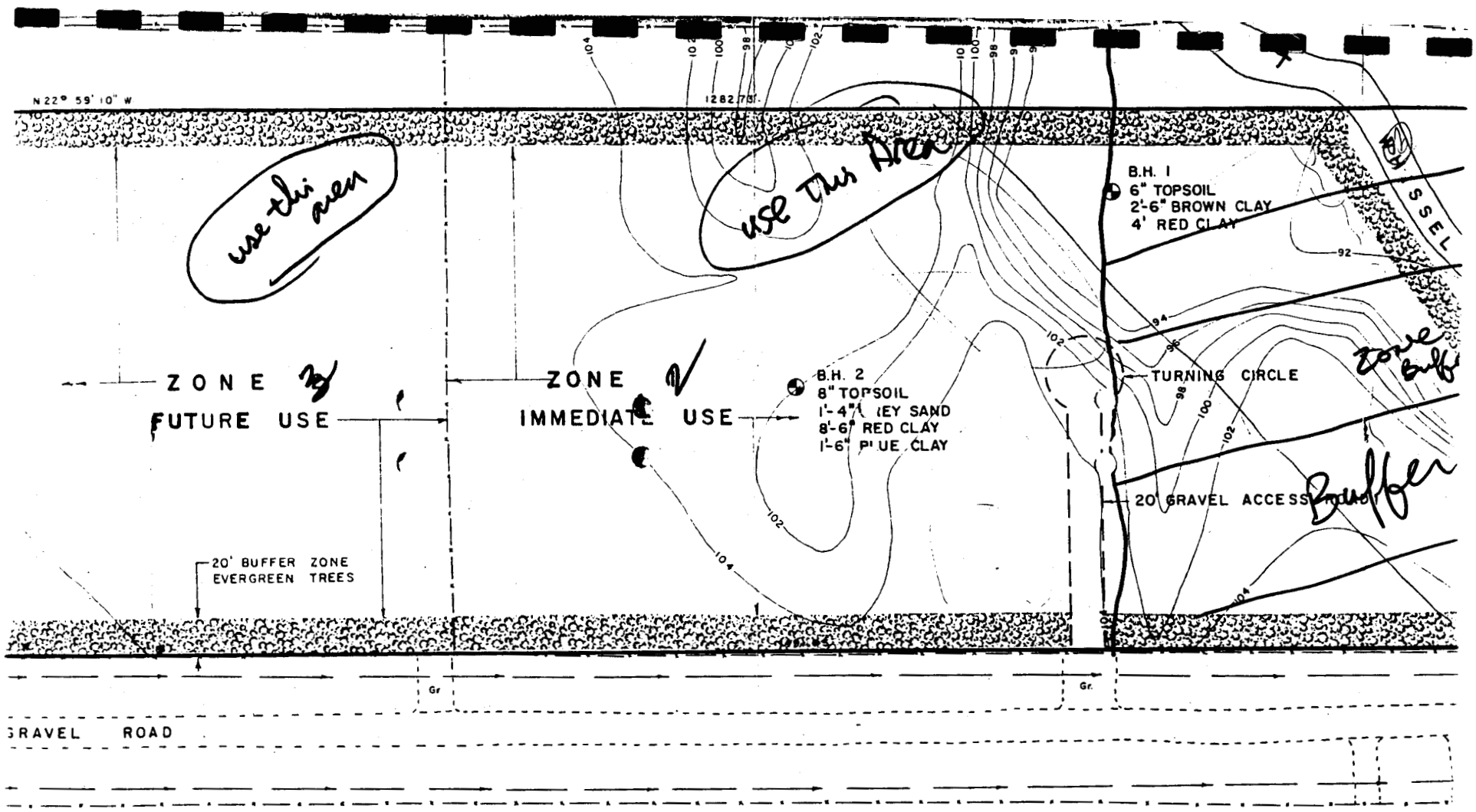
COUNTY OF RUSSELL

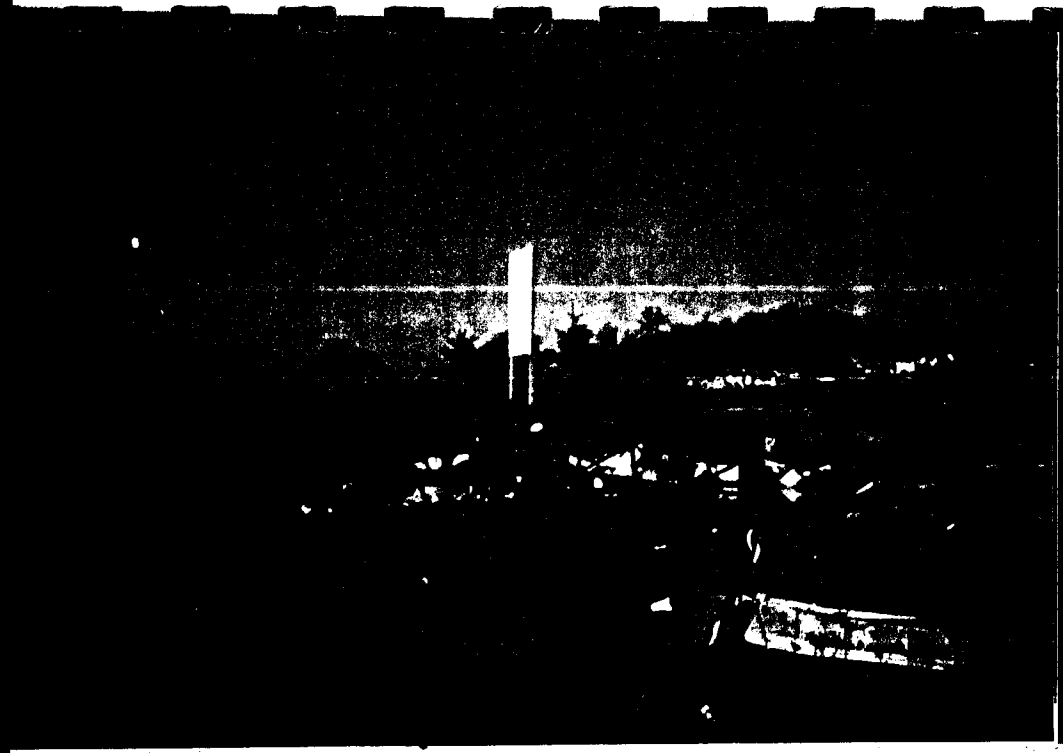
SCALE: 1" = $\frac{1}{2}$ MILE

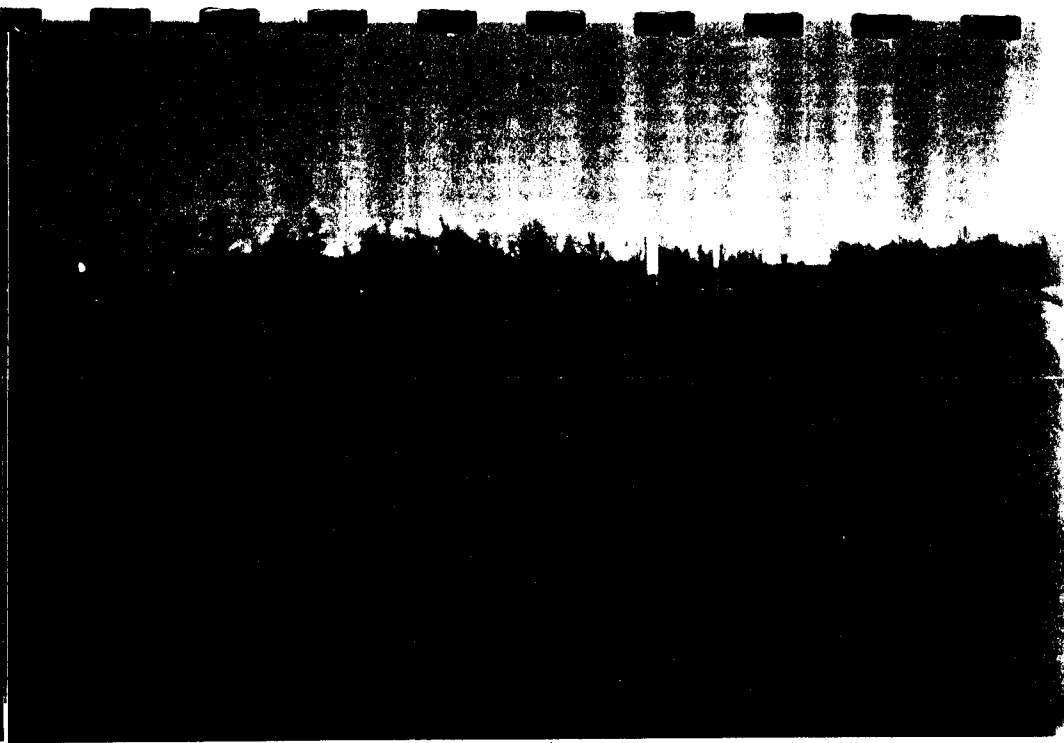
APPENDIX "C"

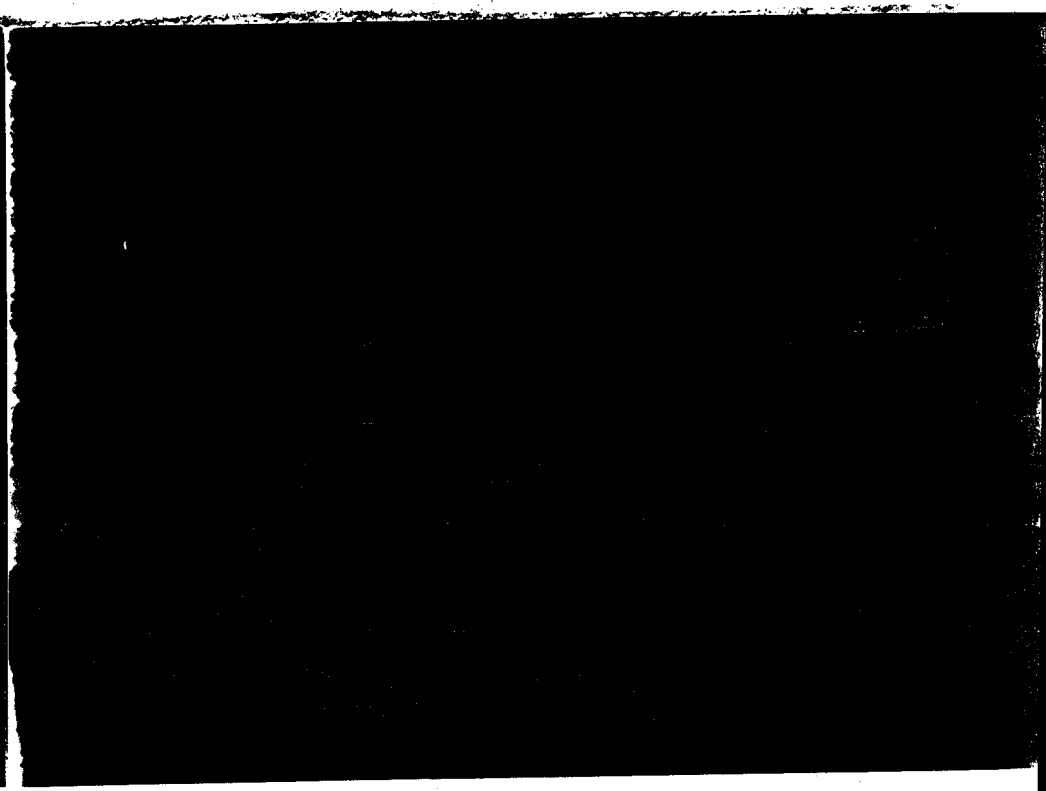
SITE PLAN & PICTURES

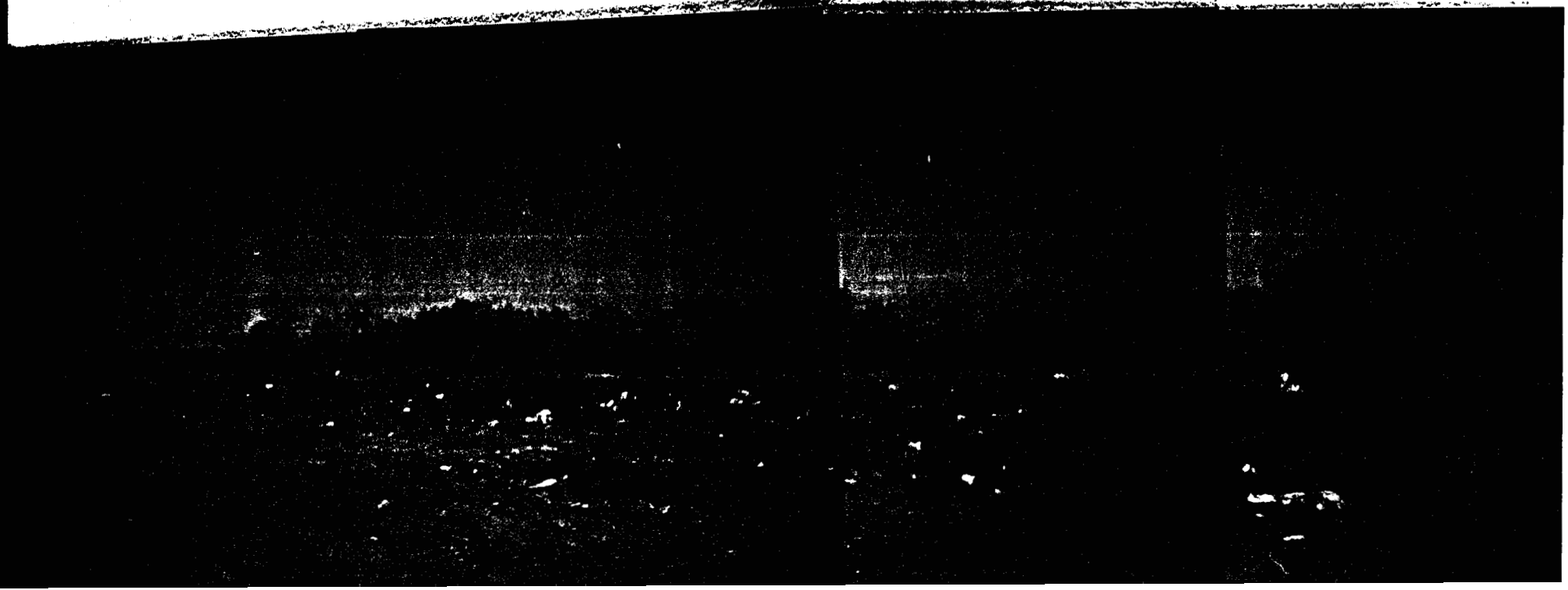

WHISSEL
CREEK
EXIST. GRAVE
B.H. 1
6" TOPSOIL
2'-6" BROWN CLAY
4' RED CLAY
B.H. 2
8" TOPSOIL
1'-4" GREY SAND
8'-6" RED CLAY
1'-6" BLUE CLAY
ZONE 1
IMMEDIATE USE
TURNING CIRCLE
20' GRAVEL ACCESS ROAD
N 82° 59' 10" W
209 00'
159 00'
N 64° 03' 50" E
151 72'
18.50'±
Gr.
H.P.


N 22° 59' 10" W
1282.75'
use this area
use This Area
B.H. 1
6" TOPSOIL
2'-6" BROWN CLAY
4' RED CLAY
ZONE 3
FUTURE USE
ZONE 2
IMMEDIATE USE
B.H. 2
8" TOPSOIL
1'-4" [illegible] SAND
8'-6" RED CLAY
1'-6" BLUE CLAY
TURNING CIRCLE
20' GRAVEL ACCESS
Buffer
20' BUFFER ZONE
EVERGREEN TREES
Gr
Gr.
GRAVEL ROAD









APPENDIX "D"

GUIDELINE B-7: "INCORPORATION OF THE REASONABLE USE CONCEPT INTO MOEE GROUNDWATER MANAGEMENT ACTIVITIES"

GUIDELINE B-7
(formerly 15-08)

INCORPORATION OF THE REASONABLE USE CONCEPT INTO MOEE GROUNDWATER MANAGEMENT ACTIVITIES

Legislative Authority:

The Ontario Water Resources Act

Responsible Director:

Director, Program Development Branch

Last Revision Date:

April, 1994

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SYNOPSIS

This guideline establishes the basis for determining the "reasonable use" of groundwater on property adjacent to sources of contaminants and for determining the levels of contaminant discharges considered acceptable by the Ministry.

The guideline is designed to facilitate implementation of the groundwater quality management directions contained in Procedure B-1-1: "Water Management -- Guidelines and Procedures of the Ministry of Environment and Energy," which are predicated on the protection of existing and potential reasonable uses of water. The reasonable use concept, in this context, applies only to groundwater quality management.

The technical details necessary for the application of the

reasonable use approach shall be found in Procedure B-7-1: "Determination of Contaminant Limits and Attenuation Zones."

1.0 INTRODUCTION

The Ministry is charged with the conservation of the groundwater resources of the Province and the control of the use of these resources in an effective manner for the public good. To this end, the Ministry may wish to discourage the use of some environments for waste disposal and encourage the use of other environments. The Ministry position is that disposal sites should be placed in environments where their impact will be limited, that acceptable disposal methods should be used and that these methods should be compatible with those particular environments.

2.0 OBJECTIVES AND APPLICATION OF REASONABLE USE APPROACH

This document explains the role of a "reasonable use" approach in the Ministry's activities related to the protection of groundwater quality. It establishes procedures for determining what constitutes the reasonable use of groundwater on property adjacent to sources of contaminants and establishes limits on the discharge of contaminants from facilities, approved by the Ministry, that are used for the disposal of waste into the shallow subsurface (referred to as "disposal sites" or "disposal facilities" in this document).

The impact a disposal facility may have on the reasonable use of neighbouring properties shall be limited to an amount that would not justify an award for damages in a civil law suit.

This guideline facilitates implementation of the Ministry procedures document B-1-1, "Water Management -- Goals, Policies, Objectives and Implementation Procedures of the Ministry of Environment and Energy," which are designed to protect existing and potential uses of water.

This guidelines applies to matters which fall under the authority of the Environmental Protection Act or the Ontario Water Resources Act (subject to appeal). In cases where the Environmental Assessment Act or the Consolidated Hearings Act is utilized, the decision-making power lies outside the Ministry, and the Ministry can only make recommendations.

The reasonable use concept applies only to groundwater quality management. Ministry surface water quality management guidelines are presented in procedures document B-1-1.

This guideline does not apply to the restoration of groundwater supplies that have been contaminated by "unregulated" sources, such as closed landfills or spills. These situations are addressed by Guideline B-9 (formerly 15-10): "The Resolution of

Groundwater Quality Interference Problems."

2.1 Definitions

The terms "disposal site," "contaminant attenuation zone," and "adjacent property" are defined in Procedure B-7-1: "Determination of Contaminant Levels and Attenuation Zones."

3.0 THE ADMINISTRATIVE BASIS FOR THE REASONABLE USE APPROACH

3.1 Guidelines

The Ministry position, as presented in the procedures document B-1-1, requires sufficient levels of environmental control to protect reasonable uses of the groundwater for present and future users in the Province.

This guideline is intended to assist in making decisions about current and future activities of the Ministry. It is not intended that all disposal facilities be investigated immediately to determine if they meet the levels for contaminant discharge described in this document.

3.2 Determination of Reasonable Use

The Ministry decision as to what constitutes reasonable uses of groundwater (either existing or potential) on land associated with, or adjacent to, disposal sites shall be made on a case-by-case basis. This is necessary because the wide variation in the quality, quantity and availability of groundwater makes a fixed approach impractical.

The responsibility for deciding what constitutes the reasonable use of the groundwater, as well as what uses should be protected, shall normally rest with the Regional Director. The Director's decision shall be made with input from a proponent and/or an assessment by staff. If this decision becomes a major issue, it may be made subject to a public hearing.

Reasonable current and potential uses shall be established, with respect to specific soil and water-bearing units in the subsurface, and would apply to all of the ground lying beneath a particular property.

The decision as to the reasonable use of the groundwater at a particular location shall be based on three major considerations:

3.2.1 The present use of groundwater in the vicinity

This is easily determined by a survey of the uses being made of the groundwater by nearby land owners and from data contained in Ministry files. In most instances, the current use shall be taken as the reasonable use.

3.2.2 The potential use of groundwater in the vicinity

Where there is no current use being made of the groundwater, criteria shall be established on the basis of the potential reasonable use(s) of that water, based on the existing quality and quantity of groundwater and the current use(s) of groundwater in the general area. In addition, planning agencies and others may provide input in determining potential land use (which might affect the use of the groundwaters).

3.2.3 The existing quality and quantity of the groundwater in the vicinity

The existing quality of the groundwater, and the amount that would be available to wells, shall be assessed by using data contained in Ministry files and a general knowledge of the hydrogeology in the area.

3.3 Potential for Domestic Consumption

The potential use of groundwater in Ontario will almost always be for domestic consumption. This is because:

(a) there are virtually no areas of Ontario where the quantity of groundwater that could be collected by a well would not meet the basic needs of a single family; and

(b) although there are parts of Ontario where the quality of the groundwater does not meet the Ontario Drinking Water Objectives, in most cases, individual owners have used such waters on a continuing basis over many years.

The presence of piped or surface water supplies does not, necessarily, mean that the groundwater is unsuitable for domestic consumption. However, such supplies may be a contributing factor in a determination where other considerations, such as groundwaters of poor quality and/or limited quantity, would detract from the usefulness of the groundwater.

The desirable qualities of drinking water are specified in the document "Ontario Drinking Water Objectives." Water quality objectives for the protection of fish and aquatic life and for agricultural use are stipulated in Tables 1 and 5 of the procedures document B-1-1. Each publication contains, in addition to the numerical objectives, directions as to their application.

It is also advisable to check with the Ministry for current Provincial Water Quality Objectives and Ontario Drinking Water Objectives.

In those instances where there is no Ministry objective for a given parameter, the Regional Director may specify what is considered to be an appropriate objective based on current scientific evidence.

3.4 Other Land Uses

Related land uses which could be affected by contaminants transported by groundwater, and which are compatible with a reasonable use approach, include:

(a) the use of the soil for agricultural activities;
(b) the use of the sub-surface for facilities such as sewers, electrical conduits or building foundations; or
(c) the use of the soil as fill.

4.0 THE TECHNICAL BASIS FOR THE REASONABLE USE APPROACH

A number of general technical considerations have been taken into account in the development of this document.

4.1 Good Groundwater Management Practices

The Ministry considers that the following positions shall represent good groundwater management practice:

(a) By selecting a suitable location and employing appropriate technology, no substantial groundwater resource in Ontario need be degraded by a waste disposal site or facility. However, there are subsurface units that contain groundwater that is unlikely to be used for water supplies. This may be because the groundwater in these units has naturally poor quality (e.g. brine), or the yield is too low for practical use, or the groundwater has been contaminated (by, for example, urban development) and this contamination is expected to continue. A beneficial and reasonable use of such a unit may be to receive and naturally attenuate or treat contaminants that have been generated as a result of the disposal of waste.

(b) Allocation of all of the attenuation capacity in a particular area to a single source of contaminants may not be prudent, because it may not be possible to prevent additional contaminant loadings in the future. Anticipated contaminant loadings shall be assessed, on a case-by-case basis.

(c) Provision shall be made for alleviating unacceptable environmental impacts, to the extent possible, should this prove to be necessary in the future. Unexpected events or failures shall be dealt with in a contingency plan. Those events that can reasonably be expected to occur shall be dealt with as part of the site design.

4.2 Safety Margins

Using current technology, it is not generally possible to estimate accurately the quantity or the quality of contamination which will be discharged by a disposal facility. Uncertainty factors, on the order of at least five-fold, are common in the measurement of parameters such as hydraulic conductivity. Therefore, safety margins shall be considered in all estimates of contaminant discharge.

The appropriate safety margin would have to be calculated on a

case-by-case basis and depend on the complexity of the hydrogeological environment, the characteristics of the waste treated and the contaminants produced, the value of the resource, and the consequences of failure.

A higher level of certainty is possible when an existing contaminant plume is present and can be used in an assessment.

4.3 Hydrogeological Aspects

There are some practical differences in the hydrogeological aspects of facilities used for the disposal of solid waste and those used for liquid waste. These differences, which can be considered in applying this guideline, are:

(a) As a contaminant plume will generally develop more rapidly from liquid than solid wastes, the monitoring data needed to measure the performance of a liquid waste disposal facility may be collected relatively quickly. The technical, administrative and financial concerns associated with long-term monitoring of a solid waste disposal facility are greater.

(b) Contingency measures for a liquid waste disposal facility include shutting off the waste discharge and providing pre-treatment for the effluent. Such relatively simple contingency measures are probably impractical for a solid waste disposal facility.

4.4 Adjacent Land Use

The use of land adjacent to a disposal facility, in addition to those uses associated with water supplies, can be affected by liquid or gaseous contaminants transported by the groundwater or moving through the unsaturated zone in the subsurface. The protection of these uses is also the responsibility of the Ministry. This is addressed in Guideline D-4 (formerly 07-07) "Land Use On or Near Landfills and Dumps."

5.0 ENVIRONMENTS UNSUITABLE FOR WASTE DISPOSAL

The Ministry may not support proposals for facilities for the

disposal of waste in the following environments:

5.1 No appreciable attenuation can be provided

A disposal facility may not be supported in a location where no appreciable attenuation can be provided in the subsurface and an excessive amount of the attenuation required for acceptable discharge must be provided by dilution in surface waters. The impact on surface water by contaminants carried from a disposal site by the groundwater will almost always be undetectable.

However, unacceptable circumstances might exist where the subsurface travel time for contaminants is very short and the time for the degradation of the easily biodegradable organic contaminants is inadequate to substantially reduce their concentrations.

5.2 Natural attenuation capacity is weak

A disposal facility may not be supported in a location where the ability of the natural environment to attenuate contaminants is weak, as in fractured rocks, and as compensation, a very large area is required for the attenuation of contaminants. For technical reasons, environments where this is necessary are generally quite expensive to evaluate and contingency plans in such environments are seldom practical.

5.3 The subsurface is suited for better use

A disposal facility may not be supported in a location where the subsurface beneath the facility is particularly suited for a better use. For example, waste disposal may not be supported in an esker of sand and gravel where the esker might be needed at some future date for the development of a water supply.

5.4 The consequences of failure are unacceptable

A disposal facility may not be supported in a location where the consequences of failure are unacceptable. For example, waste disposal may not be supported where failure and a resulting contaminant discharge might affect the sole source of a community water supply to an unacceptable degree.

6.0 DETERMINATION OF CONTAMINANT LIMITS AND ATTENUATION ZONES

The technical details necessary for the application of the reasonable use approach to proposed disposal sites, operating disposal sites, and disposal sites requesting approval for expansion shall be found in Procedure B-7-1 "Determination of Contaminant Limits and Attenuation Zones." In this document, guidance is provided for:

(a) determining quantitatively the acceptable levels of various contaminants originating in disposal sites and impinging on

adjacent properties; and

(b) assessing the suitability of a contaminant attenuation zone, and the limits of a disposal site.

APPENDIX "E"

SUMMARY OF OPERATIONAL PRACTICES AT LANDFILL SITES

4.25 SUMMARY OF OPERATIONAL PRACTICES AT LANDFILL SITES

The tables presented in this subsection provide a summary of typical landfill practices necessary to meet requirements stipulated by Acts, regulations, or otherwise necessary for approval. The tables also include operational features, beyond and above minimal requirements, but may be necessary due to site conditions in order to achieve good waste disposal practices. The tables are not intended as a comprehensive check-list covering all possible considerations in operation and management of landfill sites. **The requirements for a landfill site are determined on a site-specific basis, and upon approval of the site, described in the Certificate of Approval and the approved Design and Operations Plan.**

Feedback received from the past public consultation process indicated that landfill regulations and requirements were general and believed to be more applicable to larger landfill sites. Small municipalities have stated that it would be unreasonable to impose the same requirements of the large landfills for small and remote sites. Existing regulations and guidelines on waste management practices, including Regulation 347, do not provide distinctions between the operational standards for landfills of differing size. For the purposes of Subsection 4.25, the concept of categorizing landfill sites as small, medium and large is introduced to illustrate operational practices that can be implemented to achieve efficient and effective landfilling that will protect the environment and public health and safety. The tables should be especially useful with respect to small or medium sites.

Landfill sites are categorized as small, medium, or large based on its site capacity, with consideration given to using higher or lower level measures because of specific site conditions and proximity to, and nature of, surrounding land uses. The landfill capacities are based on an assumption of 20 years lifespan of the site. Regardless of site capacity or location, certain minimum operational controls are required. The main objective of landfill site categorization would be that all sites must conform to the minimum standards, however, for medium and large sites, more stringent requirements would apply. Regardless of the minimal operational standards specified in the tables, specific site conditions may allow lower requirements or dictate higher requirements at the discretion of the MOEE.

Small sites can be defined as those sites having a designed lifetime capacity of under 40,000 m^3 and serving populations less than 1,500 people. Generally, these sites would have considerably lesser potential for environmental degradation effects than medium or large landfill sites. For example, landfill sites owned/operated by rural municipalities or the Ministry of Natural Resources would generally fall under the small category.

Medium sites can be defined as sites having designed lifetime capacity of 40,000 to 200,000 m^3. This equates to servicing populations of approximately 1,500 to 7,500 people.

Large sites can then be defined as those sites having designed lifetime capacity in excess of 200,000 m^3 and serves a community of approximately 7,500 people or more.

Adjacent land uses of particular concern, for the purposes of this subsection, include the following existing or proposed land uses near the landfill site:

i) permanent structure used in animal husbandry;
ii) agricultural land for pasturing livestock; or
iii) permanent structure where
- a person sleeps, or
- a person is employed, full-time, for at least three months in a year, but not including food or motor vehicle service facilities adjacent to a highway, utility operations, scrap yards, heavy industrial uses, pits and quarries, mining activities or forestry activities.

LEGAL SURVEY OF THE SITE

DESCRIPTION	SMALL LANDFILL	MEDIUM LANDFILL	LARGE LANDFILL
1. Legal Survey	Survey, undertaken by Ontario Land Surveyor, is prepared for all lands that are used for landfilling waste. Crown lands without legal descriptions are the exceptions, for which, general descriptions and plans of the sites are acceptable.		

** Refer to Subsection 4.2 for details

REGISTRATION ON TITLE

DESCRIPTION	SMALL LANDFILL	MEDIUM LANDFILL	LARGE LANDFILL
1. Registration on Title	The Certificate of Approval is registered on land title for all existing and new landfill sites. For new sites, registration must be completed prior to waste deposition. Unpatented Crown lands are the exceptions, for which, MNR policies should be consulted.		

** Refer to Subsection 4.3 for details

HYDROGEOLOGICAL EVALUATION

DESCRIPTION	SMALL LANDFILL	MEDIUM LANDFILL	LARGE LANDFILL
1. Evaluation and Report	Hydrological evaluation is completed to determine if the site is hydrogeologically acceptable for landfilling.	Hydrological evaluation is necessary for establishment and operation of landfill site.	Hydrological evaluation is necessary for establishment and operation of landfill site.
2. Content and Level of Detail	Content and level of detail are determined on site specific basis, but basic soil assessments including determination of soil properties and water table achieved by back-hoe and/or soil maps are acceptable.	Content and level of detail are determined on site specific basis such as the complexity of the hydrogeological system and consequences of site design failure.	Content and level of detail are determined on site specific basis such as the complexity of the hydrogeological system and consequences of site design failure.

** Refer to Subsection 3.5 for details

SITE OPERATIONS PLAN

DESCRIPTION	SMALL LANDFILL	MEDIUM LANDFILL	LARGE LANDFILL
1. Site Operations Plan	Plan(s) outlines site development, operations, contingency plan, as well as closure and post closure. The Plan should address operational criteria listed in these tables.	Plan(s) details site development, daily operations,environmental control measures, monitoring program, contingency plan, as well as closure and post closure activities. The Plan should address operational criteria listed in these tables.	Plan(s) details site development, landfilling, daily operations,environmental control measures, monitoring program, contingency plan, as well as closure and post closure activities. The Plan should address operational criteria listed in these tables.
2. Preparation of Plan	The Plan can be prepared by the site owner/operator or by a professional knowledgeable in waste management and landfilling techniques.	A detailed and extensive Plan is prepared by professionals who are proficient in waste management and landfilling techniques.	A detailed and extensive plan is prepared by professionals who are proficient in waste management and landfilling techniques.

** Refer to Subsection 3.7 for details

BUFFER

DESCRIPTION	SMALL LANDFILL	MEDIUM LANDFILL	LARGE LANDFILL
1. Operation, maintenance and monitoring	30 m minimum	30 m minimum	30 m minimum
2. Control and corrective measures	30 m	100 m	100 m
3. Nuisance controls	30 m	100 m	100 m
4. Physical separation	30 m	100 m	100 m

** Refer to Subsection 4.4 for details; and Regulation 347, Section 11

ON-SITE ROADS

DESCRIPTION	SMALL LANDFILL	MEDIUM LANDFILL	LARGE LANDFILL
1. Road width	3 m for single lane traffic.	3 m (single lane) and/or 7 m for two way traffic.	Generally all on-site access roads should be 7 m wide for two way traffic.
2. Road surface	Compacted gravel or as appropriate.	Based on truck traffic, compacted gravel or as appropriate.	To support large heavy trucks, compacted gravel or asphalt on roads leading to site offices and main disposal areas.
3. Road drainage	Sloped road surface with roadside ditches.	Sloped or crowned road surfaces, roadside ditches, and culverts if necessary.	Crowned road surfaces, cross drains and culverts, stabilized ditches. Catch-basins with storm water drain pipes if necessary
4. Maintenance	Semi-annual grading and compaction. Emergency repairs year round. Snow clearance, if the site is operational during winter months. Cleaning of ditches semi-annually.	Monthly inspection; grading and compaction every quarter. Emergency repairs year round. On-site equipment for snow clearance. Quarterly clean-out of ditches.	Monthly inspection; grading, compaction, repair/restoration. Emergency repairs year round. On-site equipment for snow clearance. Regular clean-out of ditches, culverts, and drainage works, catch basins and storm sewers.
5. Dust control	Spraying surfaces with water when necessary. Waste oil is not permitted.	Spraying surfaces with water during high winds and as necessary. Waste oil is not permitted.	Regular use of approved dust control measures. Waste oil is not permitted.
6. Control of debris transported off-site	Instruction signs for drivers of leaving vehicles. If warranted, vehicle inspections.	Inspection of vehicles leaving site. Instructions on sign boards for trucks leaving site.	Truck washing facilities available on-site. Signs for drivers of leaving vehicles.

** Refer to Subsection 4.5 for details; and Regulation 347, Section 11

FENCING

DESCRIPTION	SMALL LANDFILL	MEDIUM LANDFILL	LARGE LANDFILL
1. Perimeter Fencing	Natural topographic barriers, page or chain link fence.	Natural topographic barriers, with page or chain link fence along adjoining roadways and elsewhere as needed.	Chain link or similar with minimum height of 1.8 m (6').
2. Security Fencing	Lockable gate at entrance.	Chain link fence at entrance with lockable gates and elsewhere as needed.	Chain link fence at entrance with lockable gates and elsewhere as needed.
3. Litter Fencing	As needed.	Moveable litter fences.	Moveable, with permanent litter fences in critical areas.
4. Other Fencing	According to Occupational Health and Safety Act (OHSA) or other regulations.	According to OHSA or other regulations, and as needed to control access to treatment or control works.	According to OHSA or other regulations, and as needed to control access to treatment, control or gas utilization works.

** Refer to Subsection 4.6 for details; and Regulation 347, Section 11

SIGNS

DESCRIPTION	SMALL LANDFILL	MEDIUM LANDFILL	LARGE LANDFILL
1. As a minimum, one sign at the public entrance(s)	Sign with basic information such as the identity of the owner/operator; time of operations and wastes accepted.	Sign with basic information such as the identity of the owner/operator, time of operations and wastes accepted.	Sign with basic information such as the identity of the owner/operator, time of operations and wastes accepted.
2. Signs along on-site roads	Directions to waste haulers and other users. Basic road safety and warning signs depending on frequency of use.	Directions to waste haulers and other users. Road safety speed limits, hazard warnings and other site-specific needs.	Directions to waste haulers and other users. Road safety speed limits, hazard warnings and other site-specific needs. Signs, hazard warnings, etc. are more frequent than at medium site.
3. Signs at waste disposal locations	Identify areas for unloading waste and stockpiling brush/wood or metal waste and other site-specific needs.	Site-specific, including instructions for disposal and segregation of recyclables	Site-specific, including instructions for disposal and segregation of recyclables with prominent warning signs.
4. Signs at leachate and gas control installations and at monitoring locations	As needed.	Site-specific, with warnings at all hazardous locations and control works.	Site-specific, but with more instructions, safety precautions and hazard warnings.

** Refer to Subsection 4.7 for details

SCREENING

DESCRIPTION	SMALL LANDFILL	MEDIUM LANDFILL	LARGE LANDFILL
1. Extent of screening	Normally from roads, but depends upon distance to nearby land uses.	From roads and nearby land uses, but depends upon distance to nearby land uses	From roads, all nearby land uses, and general view.
2. Best location and types of screening measures	Generally in buffer area. Use of natural features and large separation distance is encouraged.	Generally in buffer area. Fencing & screening berms are usually adequate with natural features and large separation distances.	Generally in buffer area. Fencing & screening berms are usually adequate with natural features and large separation distances. Off-site measures may be needed on a site-specific basis.

** Refer to Subsection 4.8 for details; and Regulation 347, Section 11

SURFACE DRAINAGE

DESCRIPTION	SMALL LANDFILL	MEDIUM LANDFILL	LARGE LANDFILL
1. Run-Off Analysis and analysis of capacity of receiving streams, drainage paths, or storm sewers to accommodate site run-off	Generally not needed.	Depends on site-specific conditions and land-use sensitivity, and significance of off-site watercourses.	Normally needed. To be undertaken by qualified water resources engineer or hydrologist.
2. Types of diversion structures	Ditches, and natural drainage swales, usually sufficient.	Ditches, culverts, diversion berms or dykes and natural drainage swales.	Engineered structures including drainage ditches, culverts, storm water catch basins and storm sewers, berms, retention ponds and natural drainage swales.
3. Methods of discharge off-site	Control structures are not needed if site topography, and geology and off-site land use permits to off-site drainage path, watercourse or municipal ditch.	Controlled discharge to off-site watercourse, drainage path or municipal ditches. Energy breaks, stone pitching, rip-rap protection may be necessary at outlet.	Controlled discharge off-site with energy breaks and erosion controls, to watercourse, preferably with permanent flow. Discharge to municipal storm sewer system.
4. Erosion and sedimentation controls	Stabilized ditches with seeded or sodded bed and slopes.	Stabilized, seeded or sodded ditches, straw bales in ditches, rock check dams, filter berms and sedimentation ponds.	Stabilized, seeded or sodded ditches, straw bales in ditches, rock check dams, filter berms, sedimentation ponds and other means.
5. Sedimentation pond	Generally not needed	Depends on site-specific conditions, off-site land use and importance of off-site watercourses, wetland, etc.	Generally needed, but depends on site-specific conditions, off-site land use and importance of off-site watercourses, wetland, etc.
6. Monitoring of water quality	In accordance with approved monitoring program.	Yes - in accordance with approved monitoring program.	Yes - in accordance with approved monitoring program.
7. Treatment prior to discharge	Generally not needed but depends on monitoring results.	Generally not needed but depends on monitoring results.	Depends on monitoring results and on local municipal storm water by-laws, or assimilation capacity of receiving stream.
8. Maintenance program	Generally, inspection and clean-out of ditches in spring and fall.	Quarterly inspection and clean-out of all drainage control works. Regular grading of fill areas.	Monthly inspections, quarterly clean-out of all drainage control works. Regular grading of fill areas. Clean-out of sedimentation ponds in accordance with approved maintenance program. Semi-annual check on integrity and stability of all drainage control works.

** Refer to Subsection 4.9 for details; and Regulation 347, Section 11

LEACHATE CONTROL

DESCRIPTION	SMALL LANDFILL	MEDIUM LANDFILL	LARGE LANDFILL
1. Design Concept	Natural attenuation of the leachate.	Natural attenuation with leachate controls as required by site conditions.	Generally, leachate control facilities are needed.
2. Collection method (new sites)		Perimeter or underdrain collection system.	Perimeter or underdrain collection system.
3. Collection method (remedial actions)	Interceptor trench, toe drain, purge wells, barrier walls on a site-specific basis.	Interceptor trench, toe drain, purge wells, barrier walls on a site-specific basis.	Interceptor trench, toe drain, purge wells, barrier walls on a site-specific basis.
4. Access to system		Needed for cleaning, maintenance, contingency use.	Needed for cleaning, maintenance, contingency use.
5. Leachate handling - the level depends on: site conditions, leachate characteristic, and the availability of sewer system, wastewater treatment facilities and receiving water bodies	None needed - generally natural attenuation is adequate;	None needed if natural attenuation is adequate; or Collection, on-site pretreatment with discharge to sanitary sewer or haul off-site to WPCP.	Collection for off-site treatment; or Collection, on-site pretreatment with discharge to sanitary sewer or haul off-site to WPCP.
6. Approvals for leachate collection, treatment and haulage	EPA, Part V and Regulation 347.	EPA, Part V and Regulation 347.	EPA, Part V and Regulation 347.
7. Approvals for leachate treatment and off-site discharge.	Municipal consent for discharge to sanitary sewer or municipal WPCP. OWRA for discharge to storm sewer, watercourse, or water body.	Municipal consent for discharge to sanitary sewer or municipal WPCP. OWRA for discharge to storm sewer, watercourse, or water body.	Municipal consent for discharge to sanitary sewer or municipal WPCP. OWRA for discharge to storm sewer, watercourse, or water body.

Leachate control, including containment, collection, handling and treatment, is considered and assessed on a site-specific basis. When required, the methods employed should be state of the art using the best available technology that is economically available.

** Refer to Subsections 3.3 and 4.10 for details; and Regulation 347, Section 11

GAS CONTROL

DESCRIPTION	SMALL LANDFILL	MEDIUM LANDFILL	LARGE LANDFILL
1. Gas migration control facilities	Generally not needed.	Site conditions determine the need.	Generally needed.
2. Preferred method to deal with migrating gas	Adequate buffer area.	Adequate buffer area.	Collection and flare or energy utilization.
3. Investigation for gas migration	Determine if the buffer is adequate in preventing off-site migration of landfill gas. As a rule, for each depth of waste fill, there is potentially 10 times lateral distance of significant gas migration. Determine extent and concentrations of gas migration, verify stratigraphy, locate water table, or bedrock surface, determine limit of fill Relate observed condition to seasonal changes.	As a rule, for each depth of waste fill, there is potentially 10 times lateral distance of significant gas migration. Determine extent and concentrations of gas migration, verify stratigraphy, locate water table, or bedrock surface, determine limit of fill. Relate observed condition to seasonal changes.	As a rule, for each depth of waste fill, there is potentially 10 times lateral distance of significant gas migration. Determine extent and concentrations of gas migration, verify stratigraphy, locate water table, or bedrock surface, determine limit of fill. Relate observed condition to seasonal changes.
4. Gas interceptor system - barrier, passive, or active	Generally not needed.	If needed, choice depends on - depth of excavation required, - sustained integrity of liner materials, - permeability and diffusion potential of adjacent native materials, - the ability to achieve negative pressure in the soil along the landfill boundary without or with the use of a fan.	Choice depends on - depth of excavation required, - sustained integrity of liner materials, - permeability and diffusion potential of adjacent native materials, - the ability to achieve negative pressure in the soil along the landfill boundary without or with the use of a fan.
5. Design standards for barriers, passive and active venting system	Generally, gas control facilities are not necessary.	As needed to prevent migration from landfill site.	As needed to prevent migration from landfill site; commonly designed to facilitate increase in volume of landfill gas over time (piping and fan capacities).
6. Safety considerations during construction	Generally, gas control facilities are not necessary.	Be aware of malodorous and combustible gases and follow a Health and Safety Plan.	Be aware of malodorous and combustible gases and follow a Health and Safety Plan.
7. Emission standards for gas control facilities.	Generally, gas control facilities are not necessary.	Set in a site-specific way by approval under Section 9 of EPA.	Set in a site-specific way by approval under Section 9 of EPA.
8. Contingency flaring	Generally not necessary.	Generally not needed, but depends on adjacent land use and emission level.	Generally needed, but depends on adjacent land use and emission level.

** Refer to Subsections 3.4 and 4.11 for details

CONTINGENCY PLAN

DESCRIPTION	SMALL LANDFILL	MEDIUM LANDFILL	LARGE LANDFILL
1. Immediate response plan for fires, accidents, spills, etc	Preparation of site-specific plans and arrangements for outside assistance.	Preparation of site-specific plans and arrangements for outside assistance.	Preparation of site-specific plans and significant on-site capabilities.
2. Ground water contamination	Needs consideration.	Site-specific plan.	Site-specific plan.
3. Gas migration	Needs consideration.	Site-specific plan.	Site-specific plan.
4. Surface water contamination	Site-specific plan.	Site-specific plan.	Site-specific plan.
5. Equipment failure	Alternative operating plan, with arrangements to secure replacement equipment.	Alternative operating plan, with arrangements to quickly secure replacement equipment.	Backup capability needed on-site to avoid delays in waste disposal.
6. Financial assurance	Normally required for private site. May be required for municipal site.	Normally required for private site. May be required for municipal site.	Normally required for private site. May be required for municipal site.

** Refer to Subsection 4.12 for details; and Regulation 347, Section 11

SITE PREPARATION REPORT

DESCRIPTION	SMALL LANDFILL	MEDIUM LANDFILL	LARGE LANDFILL
1. Site preparation report contents	Describe the readiness of the site to receive waste as per approved plans. The Report is normally required to be submitted to the MOEE prior to any deposition of waste at the site. Base, final contours. Site facilities and services. Identify geologic and other site conditions not envisaged during the design phase. Describe mitigative measures taken. Changes to the site design will require amendment to the C of A prior to construction.	Describe the readiness of the site to receive waste as per approved plans. The Report is normally required to be submitted to the MOEE prior to any deposition of waste at the site. Base, final contours. Where part of design, information on all facilities for the control, handling or treatment of leachate or landfill gas. Site facilities and services. Identify geologic and other site conditions not envisaged during the design phase. Describe mitigative measures taken. Changes to the site design will require amendment to the C of A prior to construction.	Describe the readiness of the site to receive waste as per approved plans. The Report is normally required to be submitted to the MOEE prior to any deposition of waste at the site. Base, final contours. Where part of design, information on all facilities for the control, handling or treatment of leachate or landfill gas (including gas utilization). Site facilities and services. Identify geologic and other site conditions not envisaged during the design phase. Describe mitigative measures taken. Changes to the site design will require amendment to the C of A prior to construction.

** Refer to Subsection 4.14 for details

CELL COVER

DESCRIPTION	SMALL LANDFILL	MEDIUM LANDFILL	LARGE LANDFILL
1. Frequency of cell cover application	Monthly. Cell cover may not be necessary during winter.	Daily basis, and weekly in certain cases based on site conditions.	Daily basis.
2. Daily soil cover thickness	150 mm	150 mm	150 mm
3. Intermediate soil cover thickness	300 mm	300 mm	300 mm
4. Use of material other than soil as daily or interim cover	Permitted on site specific basis but requires evaluation and MOEE approval of its suitability as cover material.	Permitted on site specific basis but requires evaluation and MOEE approval of its suitability as cover material.	Permitted on site specific basis but requires evaluation and MOEE approval of its suitability as cover material.

** Refer to Subsection 4.17 for details; and Regulation 347, Section 11

SUPERVISION

DESCRIPTION	SMALL LANDFILL	MEDIUM LANDFILL	LARGE LANDFILL
1. Site personnel	Site Supervisor, Operator for all site work, note: positions may be shared by one or more persons	Site Supervisor, Site Technician, Foreman - Equip./Operation, Operators, alternating work on spreaders, scrapers and compactors, Weigh Scale Attendant (if scales are installed), Spotter at working face.	Site Supervisor, Site Engineer, Equipment Foreman, Working Face Foreman, Operators for spreaders and scrapers for daily cover, Operators for compactors, Weigh Scale Attendant and Clerks for billing, Spotters at working face.
2. Site personnel training	Basic Health and Safety and site inspection. WHMIS. Emergency response procedures and contingency plan implementation.	Basic Health and Safety, and site inspections, WHMIS, Regulation 347, operations of monitoring systems, control works and treatment plants. Emergency response procedures and contingency plan implementation.	Basic Health and Safety, and site inspections, WHMIS, Regulation 347, operations of monitoring systems, control works and treatment plants. Emergency response procedures and contingency plan implementation.
3. Site personnel facilities	Weather tight, heated, site office with a water supply and toilet facilities are desirable.	Site office, trailers with lockers, a pressurized water system, potable water and lunchroom and wash-up toilet facilities.	Site office, trailers with showers, lockers, pressurized water system, potable water, and wash-up toilet facilities, lunchroom, parking area.
4. Site supervision or inspection	Inspection of facilities and equipments for adherence to the approved Design & Operations Plan.	Supervision or inspection of staff, users, facilities and equipments for adherence to the approved Design & Operations Plan.	Supervision or inspection of staff, users, facilities and equipments for adherence to the approved Design & Operations Plan.

WHMIS - Workplace Hazardous Materials Information System, Regulation 644/88, under Occupational Health and Safety Act
** Refer to Subsection 4.18 for details; and Regulation 347, Section 11.

HOUSEKEEPING

DESCRIPTION	SMALL LANDFILL	MEDIUM LANDFILL	LARGE LANDFILL
1. Nuisance factors to be controlled	Noise, dust, litter, odour, vectors, vermin and scavenging bird and animals. Local municipal by-laws may impose more stringent requirements.	Noise, dust, litter, odour, vectors, vermin, scavenging birds and animals. Local municipal by-laws may impose more stringent requirements.	Noise, dust, litter, odour, vectors, vermin, scavenging birds and animals. Local municipal by-laws may impose more stringent requirements.
2. Housekeeping program	Spring and fall general clean-up with good site operational practices.	Site-specific program needed.	Site-specific program needed.
3. Control of specific landfill generated nuisance factors	Diligent inspection of the site with regular pick up of litter and use of litter fences down wind.	Good compaction and covering of waste is generally effective. Diligent inspection of the site and implementation of the housekeeping program.	Good compaction and covering of waste is generally effective. Diligent inspection of the site and implementation of the housekeeping program. Control measures will be more rigorous.
4. Vector and Vermin Control	Generally, contingency measures are adequate.	Routine pest control program may be necessary.	Routine pest control program is necessary.
5. Dealing with and resolving public complaints and concerns regarding nuisance	Good communication with local "landfill liaison committee". Expedite remedial measures and demonstrate willingness to co-operate.	Same as small site. Regularly employ professional for pest and disease control measures.	Same as medium site. Environmental officer or supervisory official of owner/operator to maintain contact with local "landfill liaison committee". Environmental updates, detailing housekeeping measures should be issued regularly.

** Refer to Subsection 4.20 for details

OPEN BURNING OF WASTE

DESCRIPTION	SMALL LANDFILL	MEDIUM LANDFILL	LARGE LANDFILL
1. Open burning of waste	Open burning of waste at landfill sites is prohibited. Segregated, clean wood and brush, however may be burned at certain isolated sites subject to conditions.	Open burning of waste at landfill sites is prohibited.	Open burning of waste at landfill sites is prohibited.

** Refer to Subsection 4.21 for details

FINAL COVER

DESCRIPTION	SMALL LANDFILL	MEDIUM LANDFILL	LARGE LANDFILL
1. Final cover	Soil cover of minimum 750 mm, with topsoil and vegetation, or approved alternate cover.	Soil cover of minimum 750 mm, with topsoil and vegetation, or approved alternate cover.	Soil cover of minimum 750 mm, with topsoil and vegetation, or approved alternate cover.
2. Slope	Minimum 5% and maximum 25%	Minimum 5% and maximum 25%	Minimum 5% and maximum 25%

** Refer to Subsection 4.22 for details; and Regulation 347, Section 11

MONITORING PROGRAM

DESCRIPTION	SMALL LANDFILL	MEDIUM LANDFILL	LARGE LANDFILL
1. Components of a monitoring program	Monitoring of existing adjacent wells and/or watercourses is normally adequate.	(a) ground water, (b) surface water, (c) gas migration, (d) leachate, (e) liner (if installed).	(a) ground water, (b) surface water, (c) gas migration, (d) leachate, (e) liner (if installed).
2. Stages	(a) Baseline Monitoring Program, (b) Operational Monitoring Program, (c) Post Closure Monitoring Program.	(a) Baseline Monitoring Program, (b) Operational Monitoring Program, (c) Post Closure Monitoring Program.	(a) Baseline Monitoring Program, (b) Operational Monitoring Program, (c) Post Closure Monitoring Program.
3. Monitoring Plan	Where required, (a) listing of devices to be used, (b) water quality parameters to be measured, (c) sampling and analytical procedures, (d) evaluation procedures, (e) implementation schedule.	(a) listing of devices to be used, (b) water quality parameters to be measured, (c) sampling and analytical procedures, (d) evaluation procedures, (e) implementation schedule. (f) Site-specific concerns for impacts on adjacent land use.	(a) listing of devices to be used, (b) water quality parameters to be measured, (c) sampling and analytical procedures, (d) evaluation procedures, (e) implementation schedule. (f) site-specific concerns for impacts on adjacent land use.
5. Data Records	Where required, (a) surface water quality, and (b) ground water quality. (c) changes in ground water levels.	(a) surface water quality, (b) ground water quality, (c) gas migration, (d) contaminant migration rate, (e) comparison to predicted contaminant levels. (f) changes in ground water levels.	(a) surface water quality, (b) ground water quality, (c) gas migration (d) contaminant migration rates (e) comparison to predicted contaminant levels, and (f) changes in ground water levels.

** Refer to Subsections 3.6 and 4.23 for details; Regulation 347, Section 11

STATUS REPORT

DESCRIPTION	SMALL LANDFILL	MEDIUM LANDFILL	LARGE LANDFILL
1. Submission frequency	Annual or bi-annual, unless contamination has been measured requiring more frequent reporting.	Annual, unless contamination has been measured requiring more frequent reporting.	Annual, unless contamination has been measured requiring more frequent reporting.
2. Contents	(a) environmental quality monitoring, (b) operations monitoring, (c) analysis of data, and (d) recommendations.	(a) environmental quality monitoring, (b) operations monitoring, and (c) analysis of data, and (d) recommendations.	(a) environmental quality monitoring, (b) operations monitoring, and (c) analysis of data, and (d) recommendations.

** Refer to Subsection 4.24 for details

SITE CLOSURE

DESCRIPTION	SMALL LANDFILL	MEDIUM LANDFILL	LARGE LANDFILL
1. Closure Plan	Yes	Yes	Yes
2. Post-closure inspection and maintenance	Annually as a minimum.	Quarterly as a minimum.	Quarterly or more frequently if necessary.
3. Monitoring	Monitoring of existing adjacent wells and/or watercourses is normally adequate. Monitoring will generally be quarterly for at least the first two years and annually thereafter.	Site-specific monitoring program necessary. Monitoring will generally be quarterly for at least the first two years and semi-annually thereafter.	Site-specific monitoring program is necessary. Monitoring will generally be quarterly.
4. Control Works	Generally, continuation of existing control works, if any. eg, natural attenuation and buffer are normally sufficient.	Generally, continuation of existing control works, if any. eg, operation of leachate collection and treatment systems and gas control for as long as needed	Generally, continuation of existing control works, if any. eg, operation of leachate collection and treatment systems and gas control and energy utilization facilities for as long as needed

The Closure Plan should address all the pertinent and site-specific items listed in Subsection 5.1, regardless of site size. Larger, more sophisticated sites will generally require more detail than small, simple sites.

** Refer to Subsection 4.22 and Section 5