



MINISTRY OF ENVIRONMENT,  
LANDS AND PARKS

OPERATIONAL CERTIFICATE  
PR 12217

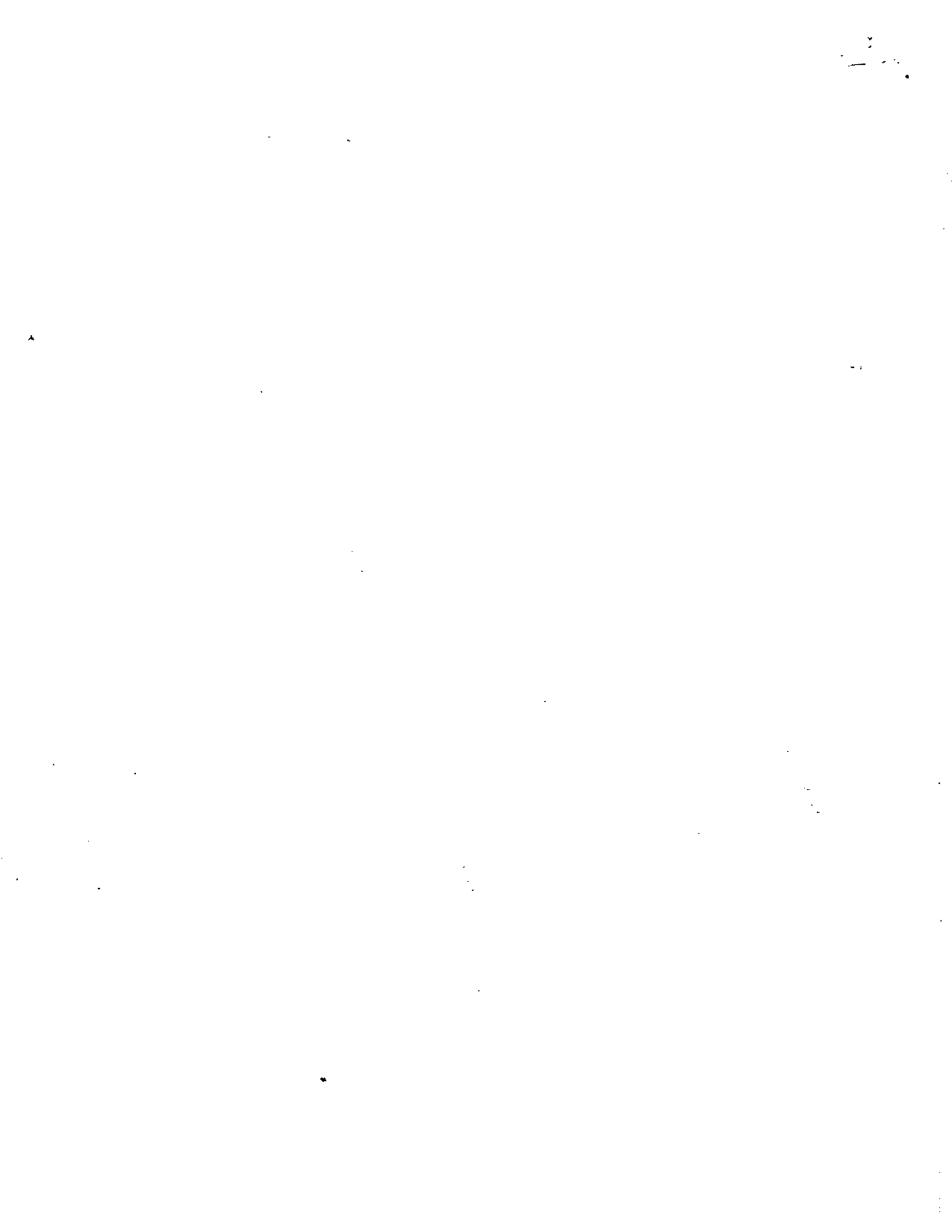
*Under the provisions of the Waste Management Act and in accordance with the  
Approved Regional District of Central Okanagan Solid Waste Management Plan,*

Regional District of Central Okanagan  
1450 KLO Road  
Kelowna, British Columbia  
VIW 3Z4

is authorized to manage recyclable materials and to discharge refuse to the ground at a landfill facility located approximately 2.5 km north of Westbank, British Columbia, subject to the conditions listed below. Contravention of any of these conditions is a violation of the *Waste Management Act* and may result in prosecution.

1 AUTHORIZED DISCHARGES

- 1.1 The discharge of refuse to which this Sub-Section is applicable is shown on the attached Site Plan A. The reference number for this discharge is E223888.
- 1.1.1 The maximum rate at which refuse may be discharged to the landfill is 20,000 tonnes per year.
- 1.1.2 The type of refuse which may be discharged is municipal solid waste and other wastes as authorized by the Regional Waste Manager.
- 1.1.3 The works authorized are a sanitary landfill and related appurtenances.
- 1.1.4 The location from which the discharge originates is generally the area on the west side of Okanagan Lake within the boundaries of the Regional District of Central Okanagan.



- 1.1.5 The location of the approximate area of discharge is that Part of District Lot 3794 ODYD shown on Plan C11135 Except Plan KAP46607 as shown on Site Plan A.

## 2 GENERAL REQUIREMENTS

### 2.1 Maintenance of Works and Emergency Procedures

The holder of the Operational Certificate shall inspect the landfill, any related pollution control works and designated areas for managing recyclable or reusable materials regularly and maintain them in good working order. In the event of an emergency or condition beyond the control of the holder of the Operational Certificate which prevents continuing operation of the authorized method of pollution control, the holder of the Operational Certificate shall immediately notify the Regional Waste Manager and take appropriate remedial action.

### 2.2 Process Modifications

The holder of the Operational Certificate shall notify the Regional Waste Manager prior to implementing changes to any process that may affect the quality and/or quantity of the discharge.

### 2.3 Plans - New Works

Plans and specifications of any new works related to this facility shall be submitted to the Regional Waste Manager and his consent obtained before construction commences. The works shall be constructed in accordance with such plans. Review of the submitted plans and specifications is for the purpose of administration of the Operational Certificate and only implies that the works specified therein meet the appropriate guidelines, criteria or standards.

### 2.4 Operational and Closure Plan

- 2.4.1 An *Operational and Closure Plan*, prepared by a suitably qualified professional shall be submitted for authorization by the Regional Waste Manager, on or before July 31, 1997.



T.R. Forty, P.Eng.  
Assistant Regional Waste Manager

2.4.2 The *Operational and Closure Plan* shall include the following:

- Anticipated total waste volumes and tonnage, and life of the landfill (ie: closure date);
- A topographic plan showing the final elevation contours of the landfill and surface water diversion and drainage controls;
- Design of the final cover including the thickness and permeability of barrier layers and drainage layers, and information on topsoil, vegetative cover and erosion prevention controls;
- Procedures for notifying the public about the closure and about alternative waste disposal facilities;
- Rodent and nuisance wildlife control procedures;
- Proposed end use of the property after closure;
- A plan for monitoring groundwater, surface water and landfill gas, erosion and settlement for a minimum post-closure period of 25 years;
- A plan and accompanying design for the collection, storage and treatment/use of landfill gas for a minimum of 25 years;
- A plan for operation of any required pollution abatement engineering works such as leachate collection and treatment systems, for a minimum post-closure period of 25 years;
- A schedule of reserve funds or security to be collected each year until closure; to cover estimated costs of closure, post-closure and a contingency for remediation;
- A screening plan, ie: vegetative or berm, designed by a landscape architect with particular focus on the east side of the landfill;
- A detailed fill plan for the east side of the landfill;
- A perimeter and electric bear control fencing design;
- Litter and odour control measures;
- Design of gas monitoring wells for lateral migration and the proposed gas monitoring program;
- Final cover design and a schedule to cover previously filled areas that are no longer going to receive waste, particularly on the east side of the landfill;
- Contingency plan & notification procedures in the event of an emergency;
- Training procedures for operators; and
- Any other site specific concerns as identified by the Regional Waste Manager.

2.4.3 Terms of reference for the *Operational and Closure Plan* are subject to authorization by the Regional Waste Manager.



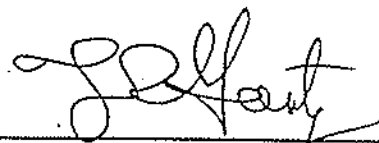
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- 2.4.4 The Regional Waste Manager may request revisions to the *Operational and Closure Plan*. Terms of reference for the revisions to the *Operational and Closure Plan* are subject to authorization by the Regional Waste Manager.
- 2.4.5 Operation of this landfill is to be in substantial accordance with the authorized *Operational and Closure Plan*.
- 2.4.6 If there is an inconsistency between this Operational Certificate and the authorized *Operational and Closure Plan*, the Operational Certificate shall take precedence.

## 2.5 Ground and Surface Water Quality Impairment

- 2.5.1 Landfills must not be operated in a manner such that ground or surface water quality decreases beyond that allowed by the *Approved and Working Criteria for Water Quality* dated 1995 prepared by the Water Quality Branch of the Ministry of Environment, Lands and Parks at or beyond the landfill property boundary. The appropriate water quality criteria will be specified by the Regional Waste Manager after reviewing uses of the ground and surface water resources.
- 2.5.2 If excursions result to the specified water quality criteria, the Regional Waste Manager may require that leachate management control measures or works be undertaken. Terms of reference for any leachate management study and/or design work is subject to the authorization of the Regional Waste Manager.

## 2.6 Landfill Gas Management

- 2.6.1 An assessment of the emissions of non-methane organic compounds (NMOCs) is required for landfills exceeding a total capacity of 100,000 tonnes. If NMOCs are determined to exceed 150 tonnes/year, landfill gas recovery and management systems will be required to be designed, installed and operational within 3 years. If NMOCs are projected to be less than 150 tonnes/year for the operating life of the landfill, an assessment for the need of passive gas venting will be required. Terms of reference for any landfill gas study or design is subject to the authorization of the Regional Waste Manager.
- 2.6.2 The gas monitoring wells, designed by a suitably qualified professional, are to be installed on or before August 31, 1998.

## 2.7 Property Boundary

The buffer zone between any municipal solid waste discharged after the issuance of this Operational Certificate and the property boundary is to be at least 50 metres of which the 15 metres closest to the property boundary must be reserved for natural or landscaped screening (berms or vegetative screens). Depending on adjacent land use and environmental factors, buffer zones of less than 50 metres but not less than 15 metres may be authorized by the Regional Waste Manager.

## 2.8 Other Facilities

The distance between the discharged municipal solid waste and the nearest residence, water supply intake, hotel, restaurant, food processing facility, school, church or public park is to be a minimum of 300 metres. Greater or lesser separation distances may be authorized where justified. For those landfills designed to collect and recover methane gas generated, the issue of potential on-site or off-site users of the energy should be addressed in siting the landfill, consistent with the preceding regarding public places. An exemption is granted to discharge municipal solid waste closer than 300 m to the existing residences located in the subdivision to the east of the landfill.

## 2.9 Natural Control Landfill

2.9.1 The bottommost solid waste cell is to be at least 1.2 metres above the seasonal high water table. Greater or lesser separation depths may be authorized based on soil permeability and the leachate renovation capability of the soil.

2.9.2 There is to be at least a 2 metres thick layer of low permeability soil with a hydraulic conductivity of  $1 \times 10^{-6}$  cm/s or less (i.e. silt or clay), below each of the bottommost waste cells. Lesser thicknesses or no layer of low permeability soil may be authorized based on the potential for leachate generation and the unsaturated depth, permeability and leachate renovation capability of the existing soil.

## 2.10 Water

The disposal of municipal solid waste into water is unacceptable. Surface water diversion to restrict storm water runoff from contacting the wastes is required.



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## 2.10 Water

The disposal of municipal solid waste into water is unacceptable. Surface water diversion to restrict storm water runoff from contacting the wastes is required.



## 2.11 Final Cover

Final cover for landfill sites is to consist of a minimum of 1 metre of low permeability ( $<1 \times 10^{-5}$  cm/s) compacted soil plus a minimum of 0.15 metre of topsoil with authorized vegetation established. The depth of the topsoil layer should be related to the type of vegetation proposed (ie rooting depth). Soils of higher permeability may be authorized based on leachate generation potential at the landfill site. Final cover is to be constructed with slopes between 4% and 33% with appropriate run-on/run-off drainage controls and erosion controls. An assessment of the need for gas collection and recovery systems shall be made so that, in the event such systems are required, cover can be appropriately designed and constructed. Final cover is to be installed within 90 days of landfill closure or on any areas of the landfill which will not receive any more refuse within the next 12 months. Completed portions of the landfill are to progressively receive final cover during the active life of the landfill.

Additional layers of natural materials including earth and aggregate and/or synthetic materials may be necessary for inclusion in the final cover design due to site specific conditions and the presence of management systems for leachate and landfill gas.

## 2.12 Access Road

An appropriately constructed and maintained access road to, and a road system within the landfill site capable of supporting all vehicles hauling waste, are required during the operating life of the landfill.

## 2.13 Fencing and Access

2.13.1 Fencing is required to be installed around the perimeter of the landfill on or before April 1, 1998. The type and extent of fencing will depend on the existing natural vegetation and topographic features and is to be authorized by the Regional Waste Manager. All access points are to have locking gates.

2.13.2 Bears shall be prevented from accessing any and all putrescible refuse from April to November inclusive through the use of electric fencing. Electric fencing is to be installed on or before April 1, 1998 and maintained thereafter.



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2.13.3 The holder of the Operational Certificate is to conduct a public relations campaign 3 months prior to the installation of electric fencing. The purpose of the campaign is to inform the public of the impacts of installing electric fencing around the landfill. The Conservation Officer Service is to be consulted in the development of the public relations campaign.

2.13.4 Signage is to be attached to the electric fence at regular intervals with an appropriate safety warning indicating that the fence is electrified.

## 2.14 Design by Qualified Persons

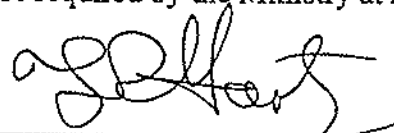
All landfills are to be designed by persons qualified in landfill site selection, design and operation. All plans, specifications, and reports are to be sealed by a professional engineer or geoscientist licensed to practice in the province of British Columbia.

## 2.15 Prohibited Wastes

The co-disposal of the following wastes with the rest of the municipal solid waste is prohibited unless specifically authorized by the Regional Waste Manager:

- Special Wastes other than those specifically authorized in the *Special Waste Regulation*
- Bulk liquids and semisolid sludges which contain free liquid;
- Liquid or semisolid wastes including septage, black water, sewage treatment sludge, etc.;
- Automobiles, white goods, other large metallic objects and tires;
- Biomedical waste as defined in the document *Guidelines for the Management of Biomedical Waste in Canada* (CCME, February 1992); and
- Dead animals and slaughter house, fish hatchery and farming wastes or cannery wastes and byproducts.

Burial of these wastes in dedicated locations (i.e. avoiding co-disposal) at a landfill site may be authorized by the Regional Waste Manager only if there is no other viable alternative such as treatment/disposal, recycling, reprocessing or composting. The viability of alternatives is to be determined by the Regional Waste Manager based on submission of cost data by the holder of the Operational Certificate. For those cases in which the dedicated disposal of otherwise prohibited wastes is authorized, the specific on-site location of the disposal shall be recorded to allow ready access to the waste should corrective or further action pertaining to the management of these wastes be required by the Ministry at some time in the future.



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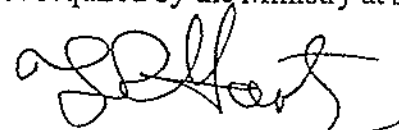
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## 2.16 Hydrocarbon Contaminated Soils

The deposit of hydrocarbon contaminated soils below the *Special Waste Regulation* criteria is authorized at this landfill subject to the following conditions:

- Soil contaminated with hydrocarbons shall be deposited in layers less than 0.3 meters; and
- Soil contaminated with hydrocarbons shall be deposited a minimum of 1.2 meters above the seasonal high groundwater level and a minimum of 2.0 meters below the final grade of the landfill to prevent the impact on groundwater and any future vegetation on the site.

## 2.17 Designated Areas

Maintain areas for the separation, handling and storage of recyclable or reusable materials where applicable.

When a separated recyclable material is a special waste it is to be stored and managed in accordance with the *Special Waste Regulation*.

Composting of yard waste is to be in accordance with the *Production and Use of Compost Regulation*.

## 2.18 Signs

A sign is to be posted at each entrance of the landfill with the following current information:

- Site name
- Owner and operator
- Contact phone number and address for owner and operator
- Phone number in case of emergency (such as fire)
- Hours of operation (if applicable)
- Materials/wastes accepted for landfill and recycling
- Materials/wastes banned
- Tipping fees (if applicable)

Additional signs which clearly indicate the directions to the active tipping face, public disposal area, recycling and waste separation areas, etc. should also be displayed.



T.R. Forty, P.Eng.  
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## 2.19 Supervision

Fulltime, trained operators on-site are required at this landfill during operating hours. The gates are to be locked to prevent unauthorized access during non-operating hours. Properly designed and maintained public waste disposal and/or recyclable material bins situated outside the main gate may be provided for after hours use. The operator is required to be familiar with the Operational Certificate, inspection records, the authorized *Operations and Closure Plan* and all annual reports.

## 2.20 Scavenging

Scavenging of waste is to be prevented. The salvaging of wastes should be encouraged by providing areas and facilities for separation of recyclable or reusable materials.

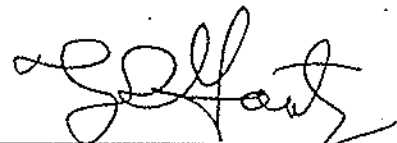
## 2.21 Dust Control

Dust created within the landfill property is to be controlled, using methods and materials acceptable to the Regional Waste Manager, such that it does not cause a public nuisance.

## 2.22 Waste Compaction and Covering

2.22.1 Wastes are to be spread in thin layers (0.6 m or less) on the working face and compacted. The working face area should be minimized as much as possible. A compacted layer of cover material of at least 0.15 metre of soil or functionally equivalent depth of other cover material, as authorized by the Regional Waste Manager, is to be placed on all exposed solid waste at the end of each day of operation. If the landfill should operate continuously 24 hours per day, 0.15 m of cover material is to be applied at a frequency authorized by the Regional Waste Manager. Under specific circumstances, such as during bear season, the Regional Waste Manager may specify more stringent cover requirements. During periods of extreme weather conditions, such as those that cause the ground to freeze, an exemption to the normal cover requirements may be authorized at a frequency authorized by the Regional Waste Manager.

2.22.2 An intermediate cover consisting of a compacted layer of at least 0.30 metre of soil or functionally equivalent depth of other cover material is to be placed where no additional solid waste has been deposited or will be deposited within a period of 30 days.



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### 2.23 Litter Control

Litter is to be controlled by compacting the waste, minimizing the working face area, applying cover, providing litter control fences and instituting a regular litter pickup and general good housekeeping program or any other measures required by the Regional Waste Manager.

### 2.24 Vectors

Vectors are to be controlled by the application of cover material at a specified frequency or by other control measures as required and authorized by the Regional Waste Manager.

### 2.25 Wildlife

The landfill is to be operated so as to minimize the attraction of wildlife such as bears and birds by applying cover at required frequencies and instituting a good housekeeping program. Further control measures, such as bear control fences, and bird control devices, may be specified by the Regional Waste Manager.

### 2.26 Fire Protection

Adequate fire fighting equipment is to be available to extinguish surface or underground fires. Recyclables and reusable materials are to be stored in such a manner to not constitute a fire hazard.

## 3 MONITORING AND REPORTING REQUIREMENTS

### 3.1 Municipal Solid Waste Measurement

- 3.1.1 Provide and maintain a weigh scale and record the weight of refuse discharged to the landfill over a 24-hour period.
- 3.1.2 Record the weight of recyclable and reusable materials not being discharged and that are being separated, stored or processed at the landfill over a 24-hour period.
- 3.1.3 Density tests are to be performed utilizing a known scaled volume of representative compacted refuse at a frequency of at least once per year and reported in kg per m<sup>3</sup>.



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T.R. Forty, P.Eng.  
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### 3.2 Water Levels

Measure the water level and determine the elevation, on a quarterly basis, in monitoring wells BH1 (E224611), BH2 (E224612), BH4 (E224617), BH5 (E224618), BH6 (E224620), BH7 (E224621), BH8 (E224623) and Dobbin's Well (E224624) as shown on Site Plan B.

### 3.3 Water Quality

3.3.1 Install a suitable sampling facility and obtain a grab sample on a quarterly basis, of the groundwater, in monitoring wells BH1 (E224611), BH2 (E224612), BH4 (E224617), BH5 (E224618) and Dobbin's Well (E224624) as shown on Site Plan B.

3.3.2 Obtain analyses of the samples in section 3.3.1 for the following:

conductivity, total alkalinity ( $\text{CaCO}_3$ ), chloride, sulphate, ammonia nitrogen, nitrate nitrogen, aluminum, antimony, arsenic, barium, beryllium, bismuth, cadmium, calcium, chromium, cobalt, copper, iron, lead, lithium, magnesium, manganese, molybdenum, nickel, phosphorous, potassium, selenium, strontium, thallium, tin, titanium, tungsten, vanadium, and zinc.

3.3.3 Obtain grab samples, every two years, of the groundwater in monitoring wells BH1 (E224611) and BH4 (E224617) as shown on Site Plan B.

3.3.4 Obtain analyses of the samples in section 3.3.3 for the following:

total dissolved solids, boron, total purgeable hydrocarbons, total extractable hydrocarbons, volatile organics (EPA 624) and acid and base/neutral extractable organics (EPA 625), BOD, COD, and phenolics.

3.3.5 Obtain suitable grab samples, on an annual basis, of the groundwater in all domestic water wells being used for drinking water purposes within 1000m down-gradient of the landfill subject to obtaining permission from the water well owner.

3.3.6 Obtain analyses of the samples in section 3.3.5 for conductivity and chloride.



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3.4 Vegetation Monitoring

Inspect vegetation during the growing season in the vicinity of the landfill at least once per year to determine if any environmental impacts are occurring.

3.5 Sampling and Analytical Requirements

3.5.1 The sampling and monitoring requirements specified above shall be carried out in accordance with the appropriate procedures listed in the table below. Alternative test methods may be used provided that the alternative test methods are authorized by the Regional Waste Manager prior to performing the actual source testing. Test methods for parameters not listed below require the consent of the Regional Waste Manager.

DISCHARGES TO AIR, AMBIENT AIR:		
Parameter	Source Testing Procedure	Analytical Procedure
Particulate Matter Rate of Discharge (flow rate) Gaseous emissions	Stationary Emission Testing Code - contained in British Columbia Field Sampling Manual for Continuous Monitoring plus the Collection of Air, Air-Emission, Water, Wastewater, Soil, Sediment, and Biological Samples, 1996 Permittee Edition	A Laboratory Manual for the Chemical Analysis of Ambient Air, Emissions, Precipitation, Soil and Vegetation, 3rd edition, April, 1983, 253 pp.
LIQUID EFFLUENTS, SURFACE WATER, GROUND WATER, SOILS, SEDIMENTS, VEGETATIVE MATTER:		
Parameter	Source Testing Procedure	Analytical Procedure
Metals Nutrients Organics Toxicity	British Columbia Field Sampling Manual for Continuous Monitoring plus the Collection of Air, Air-Emission, Water, Wastewater, Soil, Sediment, and Biological Samples, 1996 Permittee Edition	British Columbia Environmental Laboratory Manual for the Analysis of Water, Wastewater, Sediment and Biological Materials, March, 1994, Permittee Edition

The above manuals are available from Queen's Printer Publications Centre, P.O. Box 9452, Stn. Prov. Govt, Victoria, BC, V8W 9V7 (1-800-663-6105 or (250) 387-4609). The above manuals are also available for inspection at all Pollution Prevention offices.

3.5.2 Proper care should be taken in sampling, storing and transporting the samples to adequately control temperature and avoid contamination and breakage.

3.5.3 Maintain the groundwater monitoring wells including provisions to ensure protection from damage due to vehicles or vandalism.



T.R. Forty, P.Eng.  
Assistant Regional Waste Manager

3.5.4 Groundwater monitoring wells are to be covered with lockable caps, fitted with locks all keyed alike, and a key is to be provided to the Regional Waste Manager.

3.5.5 Three well bore volumes are to be pumped from each monitoring well prior to sample collection.

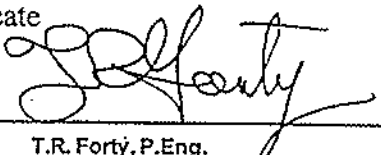
### 3.6 Changes to Sampling and Monitoring Program

On the basis of findings during routine inspections and any other information related to the effect of the discharge on the receiving environment, the Regional Waste Manager may allow reductions or require additional sampling and monitoring of the discharge and receiving environment.

### 3.7 Annual Report

An annual operations and monitoring report is to be submitted to the Regional Waste Manager within 60 days of the end of the calendar year. The first annual report is due on March 1, 1998. These reports are to contain at least the following information:

- Total volume and/or weight of waste discharged into the landfill for the year;
- Service population and waste discharge rate for the year (in tonnes per capita per year) and a trend analysis with a comparison to the 1990 baseline waste discharge rate of 1.20 tonnes per capita per year ;
- Authorized design volume;
- Remaining site life and capacity;
- Operational plan for next 12 months;
- Operation and maintenance expenditures;
- Monitoring data compilation, interpretation and trend analysis prepared by a suitably qualified professional regarding landfill gas, vegetation and leachate/water quality including a review of groundwater elevations and flow direction and a comparison made to the drinking water parameters found in the *Approved and Working Criteria for Water Quality* dated April 1995.;
- Amounts of leachate collected, treated and disposed;
- Any changes from authorized reports, plans and specifications;
- any changes to the contingency plan;
- Amount of landfill gas collected and its disposition;
- Review of the closure plan and associated estimated costs, including an update of the schedule of reserve funds or security to be collected each year until closure; to cover estimated costs of closure, the 25 year post-closure period and a contingency for remediation; and
- Any other data relevant to this Operational Certificate



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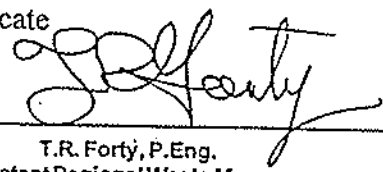
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### 3.8 Format of Submission

Monitoring and/or reporting information shall be submitted in an electronic and/or printed format which is suitable for review by the public and/or other government agencies and is satisfactory to the Regional Waste Manager.

### 3.9 Financial Security

Provide a future financial security of the operations at and beyond closure by establishing a Closure Fund in a form acceptable to the Regional Waste Manager, such as upfront security or a fund financed on a charge per tonne of waste disposed basis. Such a fund would be analogous to the provincial Waste Management Trust Fund which the Minister may establish under Section 53 of the *Waste Management Act*. The ultimate amount of the financial security shall meet or exceed the currently estimated closure and post-closure costs as outlined in the closure plan plus a reasonable contingency for any remediation which may be required. For municipally owned landfills, the financial security can be built up over time according to a schedule authorized by the Regional Waste Manager.

### 3.10 Legal Survey

Landfills sited on titled land must register a covenant that the property was used for the purpose of waste disposal as a charge against the title to the property as provided for under Section 215.1 of the *Land Title Act*. Landfills located on crown land are to have a "notation on file" registered that the property was used for the purpose of waste disposal.

### 3.11 Buildings and Structures

The construction of buildings and other structures on landfills containing putrescible wastes is not recommended for a minimum period of 25 years after closure due to concerns about combustible gas and excessive settlement. Such activity will only be considered and /or authorized after an investigation and report by qualified persons. The report is to be submitted for authorization to the Regional Waste Manager prior to initiating construction activities.

### 3.12 Operation of Gas Recovery and Management System

Where landfill gas recovery and management is required, operation of the system should be considered an integral part of overall landfill management. The system should be planned for from the early design stage of the landfill and arrangements made for its operation for a minimum 25 year life after closure.



T.R. Forty, P.Eng.  
Assistant Regional Waste Manager


### 3.13 Operation of Other Control Systems

Operation of other environmental control systems for leachate and run-off as well as monitoring of leachate, groundwater and surface water must be continued during the entire post-closure period unless the early suspension of such operations or monitoring is authorized by the Regional Waste Manager.



### 3.13 Operation of Other Control Systems

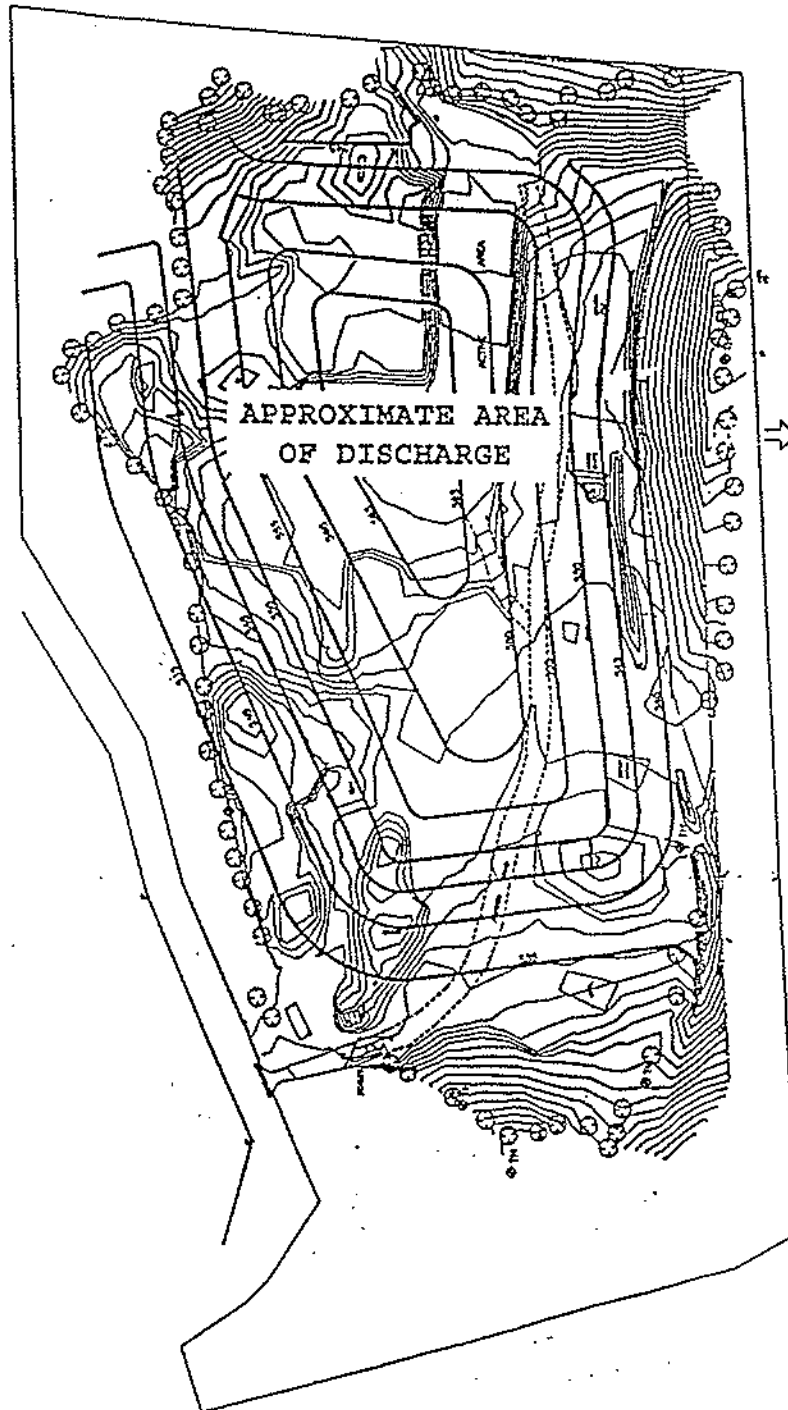
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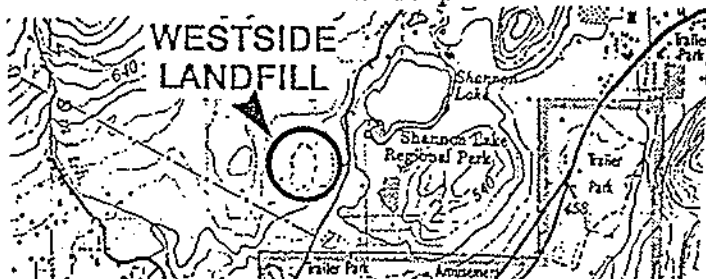
### SITE PLAN A



Legal Description:

Part of  
District Lot  
3794 ODYD shown  
on Plan C11135  
Except Plan  
KAP46607

Location Map

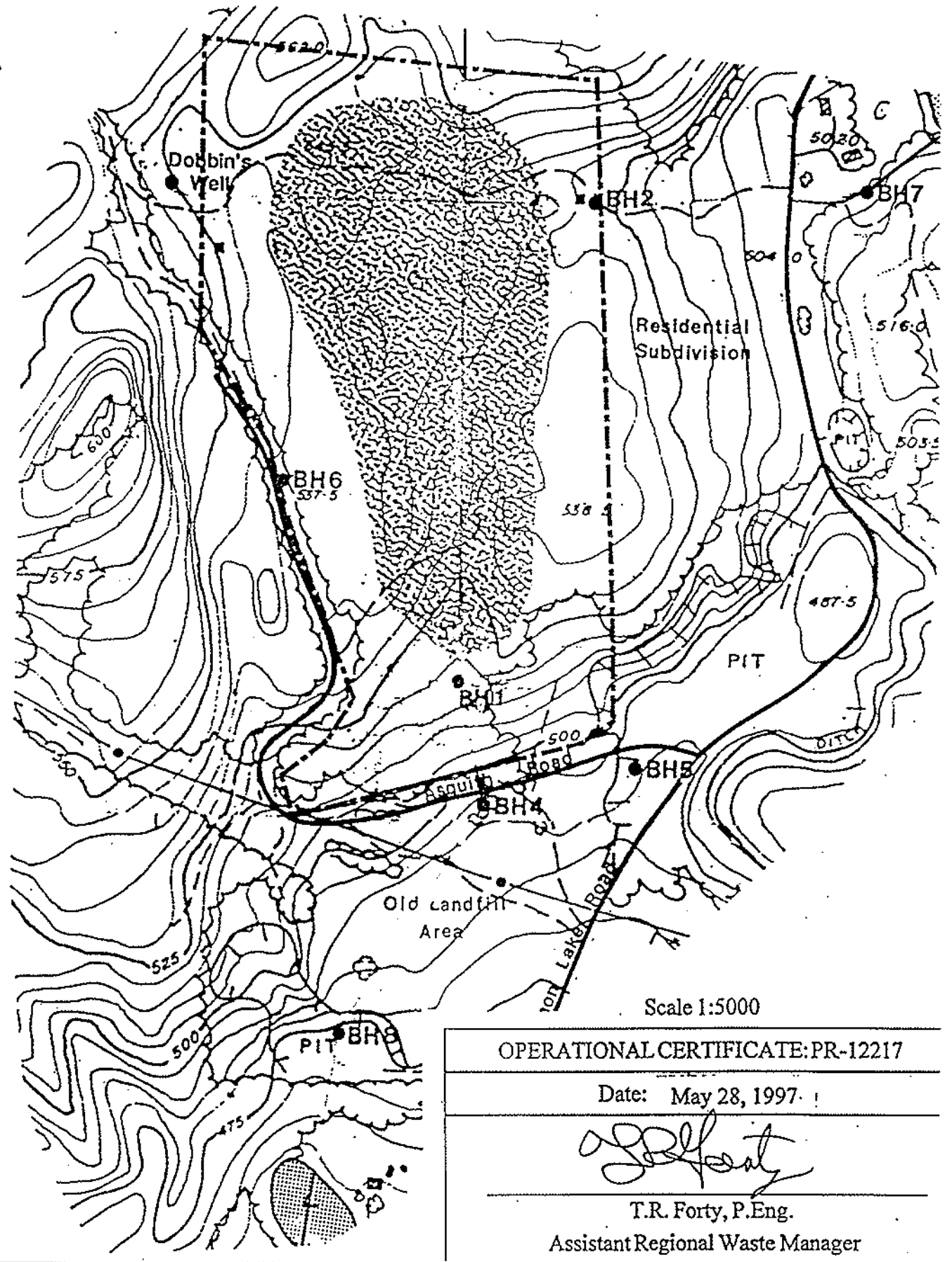


OPERATIONAL CERTIFICATE: PR-12217

Date: May 28, 1997

T.R. Forty, P.Eng.  
Assistant Regional Waste Manager

### SITE PLAN B



Scale 1:5000

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OPERATIONAL CERTIFICATE: PR-12217

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Date: May 28, 1997

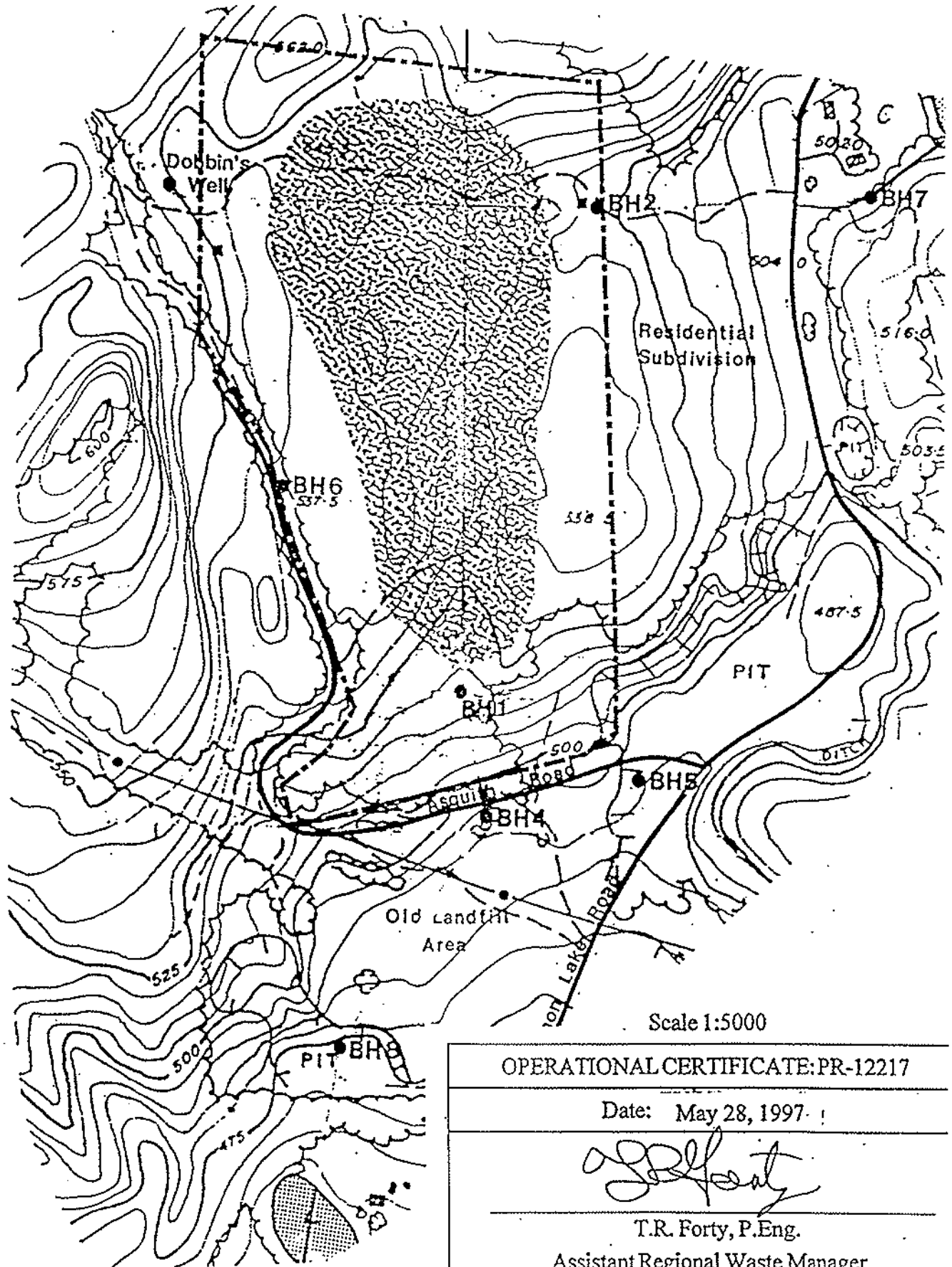
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*T.R. Forty*

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T.R. Forty, P.Eng.  
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### SITE PLAN B



Scale 1:5000

OPERATIONAL CERTIFICATE: PR-12217

Date: May 28, 1997

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