

Environment Act Licence

Loi sur l'environnement Licence

Manitoba
Conservation
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Manitoba



Licence No./Licence n° 2109 S2 R

Issue Date/Date de délivrance May 27, 1996

Revised: March 1, 2004

IN ACCORDANCE WITH THE MANITOBA ENVIRONMENT ACT (C.C.S.M. c. E125)
THIS LICENCE IS ISSUED PURSUANT TO SECTIONS 11(1) AND 14(2) TO:

THE SOLID WASTE AREA MANAGEMENT PROJECT (S.W.A.M.P.):
"the Licencee"

for the construction and operation of the Development being a Class 1 Waste Disposal Ground and impacted soil treatment facility located in NW 36-3-4 WPM in the Rural Municipality of Stanley in accordance with the Proposal filed under The Environment Act on December 15, 1994 and the additional information received on May 13, 2003 and subject to the following specifications, limits, terms and conditions:

DEFINITIONS

In this Licence,

"**access road**" means a road that leads from a Provincial Trunk Highway, Provincial Road, or a municipal road;

"**active area**" means a designated trench or berm confined area of a waste disposal ground in which solid wastes are deposited;

"**approved**" means approved in writing;

"**background water quality**" means the quality of water in the uppermost aquifer with regards to the chemical and microbiological parameters specified in a Licence issued pursuant to The Environment Act by the Director;

"**body of water**" includes any body of flowing or standing water whether natural or artificially created;

"**cell**" means a deposit of waste that has been covered by cover material so that no waste deposited in the cell is directly exposed to the atmosphere;

"**Class 1 Waste Disposal Ground**" means a waste disposal ground serving a population in excess of 5,000 persons;

"**closure plan**" means a plan indicating the actions to be taken for the closure of the Development;

****A COPY OF THE LICENCE MUST BE KEPT ON SITE AT THE DEVELOPMENT AT ALL TIMES****

"compliance boundary" means the planar surface that circumscribes the Development, extends vertically downward from the land surface, and constitutes the place at which the parameters of the background water quality as specified in a Licence issued pursuant to The Environment Act by the Director, are not to be exceeded;

"contaminant limitation" means a restriction established by a Licence issued by the Director on quantities, discharge rates and concentrations of pollutants;

"cover material" means material which is free of roots, vegetation and frozen material, or other material as approved by the Director;

"director" means a Director designated under The Environment Act;

"dwelling" means a building or part of a building that is used for living or business purposes and includes a mobile home;

"final cover material" means inorganic soil free of refuse, trash, vegetation, frozen material, and having a hydraulic conductivity of 1×10^{-7} centimetres per second or less, or other material as approved by the Director;

"groundwater" means water below the surface of the ground saturating a zone of the earth's mantle;

"hazardous waste" means any substance or group of substances that meets the criteria of a hazardous waste as determined by Manitoba Regulation 282/87, as amended from time to time;

"leachate" means liquid that has percolated through solid waste, and that contains dissolved and suspended materials from such matter;

"liner" means a continuous layer of reworked soil, or man-made materials beneath and on the sides of a land disposal facility, compost facility, or storage area and that restricts the downward or lateral escape of solid waste, leachate, and gas;

"liquid industrial waste" means waste generated by industrial processes that does not pass the Paint Filter Liquids Test – Method 9095 (US EPA, SW-846), and does not include hazardous waste or industrial waste;

"liquid waste" means sewage, sewage effluent and sludge from septic tanks, holding tanks and municipal sewage treatment systems and that does not pass the Paint Filter Liquids Test – Method 9095, (US EPA, SW-846);

"monitoring point" means any installation or location used to determine the quality or physical characteristics of groundwater, surface water, or water in the unsaturated zone;

"notify" means notify in writing;

"post-closure plan" means a plan indicating the actions to be taken for the care, maintenance, and monitoring of the Development after closure that will prevent, mitigate, or minimize the threat to public health and environment posed by the closed Development ;

"site" means the area both permanent and temporary which is required for the construction and operation of the Development including borrow areas, and such undefined contiguous areas as may reasonably be considered to be subject to impact from the activities of the Development;

"top soil" means soil that is free of roots, vegetation, weeds and stones larger than 50 mm, and capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding;

"uppermost aquifer" means the geologic formation nearest the natural ground surface that is an aquifer, as well as lower aquifers that are hydraulically interconnected with this aquifer within the facility's property boundary; and

"water table" means the surface of the groundwater at which the pressure is atmospheric.

GENERAL TERMS AND CONDITIONS

This Section of the Licence contains terms and conditions intended to provide guidance to the Licencee in implementing practices to ensure that the environment is maintained in such a manner as to sustain a high quality of life, including social and economic development, recreation and leisure for present and future Manitobans.

1. The Licencee shall locate the northern boundary of the Development at least 740 metres from Shannon Creek.
2. With the exception of Clause 1 and Clause 15 of this Licence, the Licencee shall construct the Development so that the boundaries of the Development conform to the location requirements of MR 150/91, or subsequent amendments to this Regulation.
3. The Licencee shall construct the Development so that the elevation of the adjoining roads to the Development are increased one metre above adjoining prairie elevation on the north and west sides of the Development.
4. The Licencee shall construct permanent and temporary dyke structures and surface drainage to divert surface runoff from active waste disposal cells under construction.
5. The Licencee shall construct the Development so that surface drainage outside of the active area has a gradient away from the active area and leads to the adjoining access road drainage system and the network of municipal ditches off the site.

6. The Licencee shall construct the Development so that diversion of surface drainage other than that specified in Clause 5 of this Licence, does not generate more drainage flow than presently exists in the area of the site.
7. The Licencee shall, prior to the construction of the active area, remove all top soil to a minimum depth of 150 mm and store this top soil at a suitable location for future use.
8. The Licencee shall construct the Development so that areas designated for use for the construction of the active areas are graded to design lines as indicated in the design plans submitted in support of the Proposal.
9. The Licencee shall construct all areas in accordance with the design shown in Sheet 5 of the design plans, and as indicated in Section 02590 of the specifications submitted in support of the Proposal.
10. The Licencee shall deposit all waste, other than material intended for recycling, in an active area within the Development.

SPECIFICATIONS, LIMITS, TERMS AND CONDITIONS

11. Notwithstanding any of the Clauses of this Licence, the Licencee shall, upon the request of the Director:
 - a) sample, monitor, analyze, and/or investigate specific areas of concern regarding any segment, component or aspect of operation of the Development;
 - b) determine the environmental impact associated with the release of any pollutants from the Development; or
 - c) provide the Director, within such time as may be specified, with such reports, drawings, specifications, analytical data, bioassay data, flow rate measurements, corrective actions and other information as may from time to time be requested.
12. Burning of waste materials will be allowed at the Development, at the Licencee's discretion, and subject to the following terms and conditions:
 - a) burning at the Development is prohibited, unless otherwise approved by the Director;
 - b) only separated and readily combustible materials such as boughs, leaves, straw, paper products, cardboard, non-salvageable wood and packaging materials derived from wood may be burned, and only when there is an appropriate volume of this type of waste to warrant burning;
 - c) burning of garbage, rubber tires, railway ties, derelict vehicles, and like large metal objects, waste oil, pesticide containers is prohibited;
 - d) burning is to occur when weather conditions permit, taking into consideration wind direction and velocity being favorable such that no nuisance to any neighboring resident and/highway occurs;
 - e) burning must take place within the confines of a trench or in a berm-confined area and not on or above the prevailing grade;
 - f) the burning operation is to be restricted to daylight hours only;

- g) the burning operation must be under constant supervision;
- h) residents in close proximity to the Development and Manitoba Conservation's regional office are to be notified of the proposed controlled burning, prior to the actual time and date the burning is to occur;
- i) appropriate signs must be posted at the Development to advise persons using the facility not to initiate any fire that would lead to an uncontrolled burn at the facility;
- j) if burning is started as a result of vandalism or act of God, the Licencee shall extinguish the fire as quickly as possible by the most appropriate means;
- k) the Licencee shall keep a record of all controlled burns during a calendar year and provide to the Director a report indicating date and duration of each burn, volume of waste disposed of by burning and type of waste burned on each occasion, within thirty days following the end of that calendar year; and
- l) open burning not in compliance with the terms and conditions above is subject to enforcement action as deemed appropriate by the Director. It is further noted that any liability that accrued from the decisions to burn would be borne by the Licencee.

Construction

13. The Licencee shall construct the precipitation collection ponds:
 - a) in accordance with the site location plan and Sheets 4 and 5 of the design plans as submitted in support of the Proposal;
 - b) with inner slopes covered with a clay type soil liner of at least 1.5 metre thick having a hydraulic conductivity of 1×10^{-7} centimetres per second or less;
 - c) with a scarified and compacted base with compaction extending to a minimum depth of 150 mm below the surface being compacted;
 - d) with the soil liner material laid in uniform layers not exceeding 150 mm loose thickness, and compacted to 95% Standard Proctor Density;
 - e) with the liner constructed to an elevation of 2.5 m above the floor elevation of the cells;
 - f) with a cut-off constructed of clay with a hydraulic conductivity of 1×10^{-7} centimetres per second or less, and which is keyed into the underlying clay liner to a minimum depth of 0.3 metres;
 - g) with dykes constructed to the slopes as shown in the design plan 5 as submitted in support of the Proposal; and
 - h) with underground piping and appurtenances installed as indicated in the Section 02702 of the specifications submitted in support of the Proposal.
14. The Licencee shall construct the Development so that the Development is fenced in accordance with the requirements of MR 150/91, the design indicated on Sheet 5 of the design plans, and Section 02833 of the specifications submitted in support of the Proposal.

15. The Licencee shall construct the Development so that the boundaries of the Development are located at least 400 metres from the building line of any dwelling not associated with the Development.
16. The Licencee shall construct the liner for the cell in accordance with the design plans and design report submitted in support of the Proposal. The minimum construction specifications for the clay liner are:
 - a) the material shall consist of the following particle size range:
 - Sand: 2 - 0.06 mm;
 - Silt: 0.06 - 0.002 mm;
 - Clay: 0.002 mm and less;
 - b) the soil used for liner construction shall be:
 - Liquid limit (LL) greater than or equal to 30 %;
 - Plasticity Index (PI) greater than or equal to 15 %;
 - Clay fraction greater than or equal to 25 %;
 - Hydraulic conductivity of 1×10^{-7} centimetres per second or less;
 - c) the liner shall be laid in uniform layers not exceeding 150 mm loose thickness, and compacted to 95% Standard Proctor Density;
 - d) the liner shall not be exposed to freeze-thaw conditions; and
 - e) the liner shall not be subjected to periods of drying immediately after construction.
17. The Licencee shall construct the cells so that the maximum slope of the above ground outside cell walls does not exceed 20 percent.
18. The Licencee shall restrict the maximum elevation of the above ground deposit of waste including the final cover to a height not to exceed 6.3 meters.
19. The Licencee shall, prior to the construction of any future cells of the Development:
 - a) undertake a detailed sub-soil investigation to indicate any bedrock surface elevations; and
 - b) submit a report on the sub-soil investigation to the Director, which includes but is not limited to:
 - i) logs for all holes drilled;
 - ii) a map showing the locations of the holes; and
 - iii) till surface and bedrock surface elevations contours.
20. The Licencee shall, prior to use or operation of any future cells of the Development, arrange with the designated Environment Officer a mutually acceptable time and date for any required soil sampling between the 15th day of May and the 15th day of October of any year.
21. The Licencee shall take and test undisturbed soil samples, in accordance with Schedule "A" attached to this Licence, from the compacted clay liner of the waste disposal cell(s). The number and location of samples and test methods will be specified by the designated Environment Officer up to a maximum of 20 samples per cell.

22. The Licencee shall, prior to operation of the area tested, submit to the Director the results of the tests carried out pursuant to Clause 21 of this Licence.

Operation - General

23. Unless otherwise approved by the Director, the Licencee shall not accept the following wastes at the Development:
- liquid waste;
 - liquid industrial waste;
 - dead livestock;
 - automobile/vehicles;
 - soils or sediments containing contaminants at concentrations that do not meet Guideline 2002-02E, May 2002, Criteria for Acceptance of Contaminated Soil at Licenced Waste Disposal Grounds; and
 - hazardous wastes.
24. The Licencee shall require that commercial vehicles transporting wastes to the Development are covered to prevent the spread of litter on transportation routes and the surrounding areas.
25. The Licencee shall cover wastes deposited in the active areas daily with cover material.
26. The Licencee shall position portable litter fences approved by the Director, around the active area or such other locations where unloading and handling may cause wind blown litter.
27. The Licencee shall transport leachate collected from the cell(s) of the Development to a facility approved by the Director for treatment.
28. The Licencee shall post at least one sign along the primary access road to the disposal site indicating the location of the site and the hours of operation.
29. The Licencee shall post adequate signage at the entrance to the Development indicating, but not limited to the following:
- the types of wastes not accepted at the site;
 - authorized personnel only allowed into the site;
 - the hours and days of operation; and
 - telephone numbers that should be called in the event of an emergency occurring at the site.
30. The Licencee shall require at a minimum that:
- an attendant is on duty at all times during hours of operation;
 - gates are provided for all access locations to the site; and
 - the gates are kept locked when an attendant is not on duty or the Development is closed.
31. The Licencee shall store bulky metallic wastes:
- at a designated location above grade within the Development; and
 - for a period not exceeding one year.

32. The Licencee shall require that:
- a) recycling activities are carried out in a location separate from the active area(s);
 - b) appropriate containers are provided for all materials being recycled; and
 - c) appropriate signs are posted indicating which materials will be accepted.

Operation – Soil Remediation Facility

33. Notwithstanding Clause 23 of this Licence, petroleum contaminated soils received by the Licencee for remediation, shall be allowed in the designated soil treatment area at the Development.
34. The Licencee shall only receive petroleum contaminated soils for remediation at the Development that comply with the requirements of Manitoba Conservation Guideline 96-05 for "Treatment and Disposal of Petroleum-Contaminated Soil (June 1996, Revised April 2002)" or any future amendment thereof.
35. The Licencee shall treat petroleum contaminated soils that will be used as cover at the landfill so that the treated soil complies with the requirements of Manitoba Conservation Guideline 2002-02E "Criteria for Acceptance of Contaminated Soil at Licenced Disposal Grounds (May 2002)" or any future amendment thereof.
36. The Licencee shall submit to the Director for approval at least 30 days before any soils are deposited at the soil remediation facility, an operations manual for the operation of the soil remediation facility. The operations manual shall address, but not be limited to:
- a) soil remediation procedures;
 - b) handling and treatment procedures;
 - c) inspection and maintenance;
 - d) soil receiving and placement;
 - e) surface water management;
 - f) leachate management; and
 - g) monitoring and reporting.
37. The Licencee shall operate the soil remediation facility in accordance with the operations manual approved pursuant to Clause 36 of this Licence.

Monitoring and Reporting - General

38. The Licencee shall submit to the Director at least 90 days before any wastes are deposited at the Development, a performance monitoring program for approval prior to the operation of the Development. The performance monitoring program shall address, but not be limited to:
- a) obtaining background information on air, surface and groundwater quality;
 - b) ongoing monitoring during Development operation; and
 - c) the frequency of monitoring.

39. The Licencee shall locate monitoring wells as indicated on Sheet No. 3 of the design plans submitted in support of the Proposal, and shall undertake construction of such wells in accordance with Appendix 5 - Guidelines for the Siting of a Class 1 Waste Disposal Ground in Manitoba, Guideline No. 94 - 01E supplement dated October, 1994.
40. The Licencee shall undertake the sampling and analysis of the background water for the chemical and microbiological parameters listed in Table 1 to this Licence. The sampling protocol is to be carried out in accordance with Appendix 7 - Guidelines for Sampling Protocol as specified in Manitoba Conservation Guidelines for the Siting of a Class 1 Waste Disposal Ground in Manitoba, Guideline No. 94 - 01E supplement dated October, 1994, or other protocols as approved by the Director.
41. The Licencee shall operate the Development so that the concentration values of the chemical and microbiological parameters listed in Table 1 to this Licence, are not exceeded over the background water quality in the uppermost aquifer at the relevant monitoring wells at the compliance boundary.
42. The Licencee shall develop an action plan to be implemented in the event that the monitoring program identifies any pollutant in air, soil, surface or groundwater, as a result of the operation of the Development, in excess of background levels. The plan shall be submitted to the Director for approval within 60 days of the date of this Licence.
43. Where the Licencee fails to undertake the monitoring program pursuant to Clause 40 of this Licence, Manitoba Conservation may undertake such monitoring and recover the cost of such monitoring from the Licencee.
44. The Licencee shall keep records for inspection at the Development for the following information:
 - a) the daily quantity of waste deposited in the cells;
 - b) the number of samples collected to establish groundwater quality data;
 - c) details of all incidents requiring the implementation of the contingency action plan regarding groundwater or surface water pollution; and
 - d) all monitoring, testing and analytical data generated.
45. The Licencee shall submit to the Director the following information:
 - a) the results of the analysis of the chemical and microbiological parameters listed in Table 1 to this Licence, from the monitoring wells within 60 days from the end of the calendar year;
 - b) the results of the gas monitoring within 60 days from the end of the calendar year;
 - c) the annual quantity of wastes by categories deposited at the waste disposal site within 60 days from the end of the calendar year;
 - d) the amount and type of petroleum contaminated soils treated at the soil remediation facility and a summary of the results of after treatment analyses of petroleum contaminated soils and the final disposition of the treated soils within 60 days from the end of the calendar year; and

- e) the details of all incidents requiring contingency action regarding groundwater or surface water pollution within 7 days from the occurrence of such incidents.

Monitoring and Reporting – Soil Remediation Facility

- 46. The Licencee shall sample any surface waters collected at the soil remediation facility sump and shall have this water analyzed for the parameters listed in Table 1 to this Licence, or others as approved by the Director, prior to discharge.
- 47. The Licencee shall sample all soils received at the soil remediation facility. The parameters for which the soils shall be analyzed will be determined by considering the source of the soils and by using the CCME Canadian Environmental Quality Guidelines for soil.
- 48. The Licencee shall maintain, at the Development site office, records of all soils received at the soil remediation facility. These records shall contain, but not be limited to the following:
 - a) the date soils were received at the soil remediation facility;
 - b) the original location of the soils;
 - c) the volume received, either estimated or actual;
 - d) preliminary analyses of the soils e.g. head space results or field composite results;
 - e) results of laboratory analyses of the soils;
 - f) the frequency of sampling, area of sampling and the depth the sample was taken from within the soil remediation facility; and
 - g) the location within the soil remediation facility of the soil for treatment.
- 49. The Licencee shall maintain, at the operator's office, records of all soils removed from the soil remediation facility. These records shall contain, but not be limited to the following:
 - a) the date the soils were removed;
 - b) the volume of soils removed;
 - c) the final end use destination of the soils removed;
 - d) the results of analyses to determine the concentrations of those parameters for which the soil was being remediated; and
 - e) any additional information as requested by the Director.

Financial Assurance/Insurance

- 50. The Licencee shall within 60 days of the date of this Licence, provide to the Director confirmation of the following financial insurance coverage:
 - a) Environmental Impairment Liability insurance providing coverage subject to a minimum limit of \$1.0 million per occurrence or claim, including coverage for gradual, and sudden and accidental pollution. Coverage to include on-site and off-site clean up costs, and be placed with insurers satisfactory to Manitoba. Manitoba is to be added as an Additional Insured on the policy.
 - b) The policy shall contain a clause stating that the Insurer will give Manitoba 60 days prior written notice in case of significant reduction in coverage or policy cancellation.

- c) The Insured will provide Manitoba with a certificate of insurance as written evidence of required coverage prior to commencing operations.

Contingency/Emergency Response Plans

50. The Licencee shall, 90 days prior to commencing operation of the Development, submit for the approval of the Director, a contingency plan relating to emergency planning and response at the development. The contingency plan shall be developed in accordance with the Guidelines attached as Appendix A to this Licence, and shall include input from relevant municipal, provincial and federal agencies.
51. The Licencee may submit, to the Director for approval, amendments to the contingency plan. The Licencee shall implement any amendments approved by the Director in a manner and within the time frames specified by the Director.

Closure and Post Closure

52. The Licencee shall submit, within one year of the date of issuance of this Licence, for the approval of the Director, a Preliminary Closure and Post Closure Plan for the Development. The plan shall include, but not be limited to, information with respect to:
- a) final cover design and maintenance;
 - b) maintenance of leachate detection, collection and treatment;
 - c) groundwater monitoring;
 - d) landfill gas monitoring, and
 - e) financial assurance required to implement the Plan.
53. Within one year prior to imminent closure of the Development, the Licencee shall submit, for the approval of the Director, a formal detailed Closure and Post Closure Plan for the Development.
54. The Licencee shall implement and maintain the approved Closure and Post Closure Plan.

REVIEW AND REVOCATION

- A. This Licence replaces Licence No. 2109 S2 which is hereby rescinded.
- B. If, in the opinion of the Director, the Licencee has exceeded or are exceeding or have or are failing to meet the specifications, limits, terms, or conditions set out in this Licence, the Director may, temporarily or permanently, revoke this Licence.

- C. If, in the opinion of the Director, new evidence warrants a change in the specifications, limits, terms or conditions of this Licence, the Director may require the filing of a new proposal pursuant to Section 11 of The Environment Act.
- D. The Financial Assurance/Insurance requirements of this Licence shall be reviewed, affirmed or amended by the Director at five year intervals.



Larry Strachan, P. Eng.
Director
Environment Act

Client File No.: 3752.00

Rescinded

TABLE 1
TO ENVIRONMENT ACT LICENCE NO. 2109 S2 R

**BACKGROUND WATER QUALITY CHEMICAL
AND MICROBIOLOGICAL PARAMETERS**

Parameter	Abbreviation	Notes
Alkalinity-bicarbonate	HCO ₃	
Alkalinity-carbonate	CO ₃	
Alkalinity-hydroxide	OH	
Alkalinity-total	as CaCO ₃	
Hardness	as CaCO ₃	
PH		
Specific Conductivity		
Turbidity	Nephelometric Turbidity Units	
Residue-filterable		
Residue-non filterable		
Residue-total		
Chloride	Cl	Soluble
Sulphate	SO ₄	Soluble
Cyanide	CN	Total
Ammonia	NH ₃ as N	Soluble
Nitrate-Nitrite-Nitrogen	NO ₂ - NO ₃ as N	Soluble
Total Kjeldhal Nitrogen	TKN	
Phosphorus	P	Total
Arsenic	As	Total
Barium	Ba	Total
Beryllium	Be	Total
Cadmium	Cd	Total
Calcium	Ca	Total
Chromium	Cr	Total
Copper	Cu	Total
Iron	Fe	Total
Lead	Pb	Total

**TABLE 1 (cont'd.)
TO ENVIRONMENT ACT LICENCE NO. 2109 S2 R**

**BACKGROUND WATER QUALITY CHEMICAL
AND MICROBIOLOGICAL PARAMETERS**

Parameter	Abbreviation	Notes
Magnesium	Mg	Total
Manganese	Mn	Total
Mercury	Hg	Total
Nickel	Ni	Total
Potassium	K	Total
Selenium	Se	Total
Silver	Ag	Total
Sodium	Na	Total
Zinc	Zn	Total
Naphthalene		
Benzo a pyrene		
Anthracene		
Leachable Lead		
Benzene		
Ethylbenzene		
Toluene		
Vinyl Chloride		
Diazinon		
2, 4-D		
Coliforms		Fecal & Total

CONTINGENCY PLAN GUIDELINE

1. GENERAL POLICY STATEMENT

Provide a general statement on the company's policy as they relate to emergency planning and the way in which the contingency plan addresses these policies.

2. HAZARD IDENTIFICATION

Describe the types of situations this plan will address. (Hazardous materials releases, fire, severe weather, power outages, etc.)

3. COMPANY EMERGENCY PERSONNEL LIST

List the company personnel who are assigned specific functions in the case of an emergency. Include job titles, home and office phone numbers, and a description of the person's emergency response duties.

4. OUTSIDE CONTACTS

List any agencies or individuals outside the company who may have to be contacted in the case of an emergency. Include 24 hour numbers and a description of the agency's function in an emergency. Typical listings in this section would include local fire and police departments, local ambulance and/or hospital, provincial or federal environmental agencies, contractors and suppliers and any other agency that may be of assistance in responding to and mitigating an emergency situation.

5. EVACUATION PLAN

Describe how employees would be evacuated from various parts of the operation, including alarm or warning procedures, assembly points, rescue operations. This section should address procedures for determining how many employees are in a work area and how those employees can be accounted for during an evacuation. Evacuation co-ordinators for each area should also be identified.

6. EMERGENCY RESPONSE PROCEDURES

For each of the hazard types identified in Section 2, an outline of the steps to be taken to contain, control and correct the situation should be prepared. The outline should identify who is responsible for initiating the action and some brief statements that can be used to determine what initial actions are required (eg. methods for containing and recovering a petroleum spill).

7. EQUIPMENT LISTING

List any equipment and supplies available on or off site which may be useful during response to an emergency. This might include spill absorbents, monitoring equipment, communication gear, patching kits, etc. For each item, identify where they are stored and how they can be mobilized.

**Appendix "A" to Environment Act Licence No. 2109 S2 R
(continued)**

8. MAPS/DRAWINGS

Provide site maps, building plans and any other material which may be required during an emergency to identify evacuation routes, hazardous material storage areas, and any other pertinent site information.

9. HAZARDOUS MATERIALS LIST

Provide a complete list of materials stored or used on site which may present a hazard to the environment or public health or safety, if they are involved in a release or impacted by a fire. Where possible, describe the type of containment used, usual volumes on site and where they are stored.

GENERAL COMMENTS

A contingency plan should be a quick reference to be used as an information source either for pre-planning or during an emergency. The sections of the plan should be written in point form in clear, concise wording with clear headings and a comprehensive table of contents. Since some of the information in the plan will change periodically, it is important that the plan be reviewed and updated on a regular basis. A current distribution list for plan copies should be kept with the original. The contingency plan should not be used as a "how-to" manual for responding to an accident. This should be addressed in the company training and pre-planning procedures.

Schedule "A" to Environment Act Licence No. 2109 S2 R

Soil Sampling:

1. The Licencees shall provide a drilling rig, acceptable to the designated Environment Officer, to extract soil samples from the specified line of the structure. This includes all liners constructed with clay. The drill rig shall have the capacity to drill to the maximum depth of the clay liner plus an additional 2 metres. The drill rig shall be equipped with both standard and hollow stem augers. The minimum hole diameter shall be 5 inches.
2. For liners placed or found at the surface of the structure, the Licencees shall provide a machine, acceptable to the designated Environment Officer, capable of pressing a sampling tube into the liner in a straight line motion along the centre axis line of the sample tube and without sideways movement.
3. Soil samples shall be collected and shipped in accordance with ASTM Standard D 1587 (Standard Practice for Thin-Walled Tube Sampling of Soils), D 4220 (Standard Practice for Preserving and Transporting Soil Samples) and D 3550 (Standard Practice for Ring-Lines Barrel Sampling of Soils). Thin-walled tubes shall meet the stated requirements including length, inside clearance ratio and corrosion protection. An adequate venting area shall be provided through the sampling head.
4. At the time of sample collection, the designated Environment Officer shall advise the Licencees as to the soil testing method that must be used on each sample. The oedometer method may be used for a sample where the Environment Officer determines that the soil sample is taken from an undisturbed clay soil which has not been remoulded and which is homogeneous and unweathered. The triaxial test shall be used for all samples taken from disturbed and remoulded soils or from non homogenous and weathered soils.
5. The Licencees shall provide a report on the collection of soil samples to the designated Environment Officer and to the laboratory technician which includes but is not limited to: a plot plan indicating sample location, depth or elevation of sample, length of advance of the sample tube length of soil sample contained in the tube after its advancement, the soil test method specified by the Environment Officer for each soil sample and all necessary instructions from the site engineer to the laboratory technician.
6. All drill and sample holes shall be sealed with bentonite pellets after the field drilling and sampling has been completed.

Schedule "A" to Environment Act Licence No. 2109 S2 R
(Continued)

Soil Testing Methods:

1. Triaxial Test Method
 - a) The soil samples shall be tested for hydraulic conductivity using ASTM D 5084 (Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter).
 - b) Soil specimens shall have a minimum diameter of 70 mm (2.75 inches) and a minimum height of 70 mm (2.75 inches). The soil specimens shall be selected from a section of the soil sample which contains the most porous material based on a visual inspection. The hydraulic gradient shall not exceed 30 during sample preparation and testing. Swelling of the soil specimen should be controlled to adjust for: the amount of compaction measured during sample collection and extraction from the tube and the depth or elevation of the sample. The effective stress used during saturation or consolidation of the sample shall not exceed 40 kPa (5.7 psi) or the specific stress level, that is expected in the field location where the sample was taken, whichever is greater.
 - c) The complete laboratory report, as outlined in ASTM D 5084, shall be supplied for each soil sample collected in the field.
2. Oedometer Test Method
 - a) The soil samples shall be tested for hydraulic conductivity using ASTM D 2435 (Standard Test Method for One-Dimensional Consolidation Properties of Soils).
 - b) Soil specimens shall have a minimum diameter of 50 mm (2 inches) and a minimum height of 20 mm (0.8 inches). The soil specimens shall be selected from a section of the soil sample which contains the most porous material based on a visual inspection. The soil specimen shall be taken from an undisturbed soil sample. The soil specimen shall be completely saturated.
 - c) The complete laboratory report, as outlined in ASTM D 2435, shall be supplied for each soil sample collected in the field.