Environment Act Licence
Loi sur l'environnement Licence

Manitoba Conservation
Conservation Manitoba

Licence No./Licence n° 2612 R

Issue Date/Date de délivrance August 8, 2003

Revised: December 24, 2004

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

EVERGREEN ENVIRONMENTAL TECHNOLOGIES CORPORATION INC.
"the Licencee"

for the construction and operation of the Development being a Regional Integrated Waste Disposal Facility in the Rural Municipality of Odanah located on northern ½ of Section 11 - Township 14 - Range 17 EPM, in accordance with the Proposal filed under The Environment Act on February 25, 2003, and the additional information received May 28, 2004 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;

"accredited laboratory" means an analytical facility accredited by the Standard Council of Canada (SCC), or accredited by another accrediting agency recognized by Manitoba Conservation to be equivalent to the SCC, or be able to demonstrate, upon request, that it has the quality assurance/quality control (QA/QC) procedures in place equivalent to accreditation based on the international standard ISO/IEC 17025, or otherwise approved by the Director;

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

"affected area" means a geographical area, excluding the property of the Development;

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

"approved" means approved in writing;

"background water quality" means the quality of water in any geologic zone monitored with regards to the chemical and microbiological parameters specified in a Licence issued pursuant to The Environment Act by the Director;

"body of water" means 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;

"concentration value" means a restriction established by a Licence issued pursuant to The Environment Act by the Director on quantities, discharge rates and concentrations of pollutants;

"contaminant" in relation to the site, means any product, substance or organism that is foreign to or in excess of the natural constituents of the environment at the site and that:

a) has affected, is effecting or may affect the natural, physical, chemical or biological quality of the environment; or
b) is, or is likely to be, injurious or damaging to the health or safety of a person;

"cover material" means material which is free of roots, vegetation and frozen material, or other material as approved by the Director, that is used to cover compacted solid waste;

"Director" means an employee so designated pursuant to The Environment Act;

"Environment Officer" means an employee so designated pursuant to The Environment Act;

"groundwater" means water below the surface of the ground and within a zone of saturation;

"hazardous waste" means any substance or group of substances so designated by the regulations or conforming to criteria set out in regulations, or any future amendments thereof;

"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 has a slump of more than 150 mm using the slump test method (slump test, C.S.A. Standards Test Method A 23.1-5C), 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 has a slump of more than 150 mm using the slump test method (slump test, C.S.A. Standard Test Method A 23.2-5C);

"noise nuisance" means a continuous or repeated noise in an affected area, which is offensive, obnoxious, troublesome, annoying, unpleasant, or disagreeable to a person:

a) residing in an affected area;
b) working in an affected area; or
c) present at a location in an affected area which is normally open to the members of the public;

if the noise

d) is the subject of at least 5 written complaints, received by the Director in a form satisfactory to the Director and within a 90-day period, from 5 different persons falling within clauses a), b) or c), who do not live in the same household; or
e) is the subject of at least one written complaint, received by the Director in a form satisfactory to the Director, from a person falling within clauses a), b) or c), and the Director is of the opinion that if the noise had occurred in a more densely populated area there would have been at least 5 written complaints received within a 90-day period, from 5 different persons who do not live in the same household;

"odour nuisance" means a continuous or repeated odour, smell or aroma, in an affected area which is offensive, obnoxious, troublesome, annoying, unpleasant or disagreeable to a person:

a) residing in the affected area;
b) working in the affected area; or
c) present at a location in the affected area which is normally open to members of the public;

if the odour, smell or aroma

d) is the subject of at least 5 written complaints received by the Director in a form satisfactory to the Director, and within a 90 day period, from 5 different persons falling within clauses a), b), or c), who do not live in the same household; or
e) is the subject of at least one written complaint, received by the Director in a form satisfactory to the Director, from a person falling within clauses a), b), or c), and the Director is of the opinion that if the odour, smell or aroma had

occurred in a more densely populated area there would have been at least 5 written complaints received within a 90 day period from 5 different persons who do not live in the same household;

"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 the environment;

"site" means the area both permanent and temporary which is required for the construction and operation of the Development;

"Standard Methods for the Examination of Water and Wastewater" means the most recent edition of Standard Methods for the Examination of Water and Wastewater published jointly by the American Public Health Association, the American Waterworks Association and the Water Environment Federation;

"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; and

"water storage area" means an area constructed in a manner approved by the Director to retain storm water runoff, for a limited time, for the purpose of chemical and bacterial analysis prior to disposal in a manner approved by the Director.

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 construct permanent and temporary dyke structures and surface drainage to divert surface runoff from active waste disposal cells under construction to the storm water retention pond.

2. The Licencee shall construct an internal drain system to divert non-contaminated runoff from the Development to the storm water retention pond.

3. The Licencee shall not construct diversion for surface drainage other than that specified in Clauses 1 and 2 of this Licence.

4. The Licencee shall receive approval from the Director prior to discharge of water from the storm water retention pond.

5. The Licencee shall submit all information required to be provided to the Director under this Licence, in writing, in such form (including number of copies), and of such content as may be required by the Director.

6. The Licencee shall obtain approval in writing from the Director for any proposed alteration to the Development before proceeding with the alteration.

SPECIFICATIONS, LIMITS, TERMS AND CONDITIONS

General

7. In addition to any of the following specifications, limits, terms and conditions specified in this Licence, the Licencee shall, upon the request of the Director:
   a) sample, monitor, analyze or investigate specific areas of concern regarding any seepage and discharge rates and for such duration and frequencies as may be specified;
   b) determine the environmental impact associated with the release of any pollutant from the Development; or
   c) provide the Director within such time as may be specified, with such reports, drawings, specifications, analytical data, flow rate measurements corrective actions and such other information as may from time to time be requested.

8. The Licencee shall, unless otherwise specified in this Licence:
   a) carry out all preservations and analyses on liquid samples in accordance with the methods prescribed in "Standard Methods for the Examination of water and Wastewater" or in accordance with an equivalent analytical methodology approved by the Director;
   b) certify that all analytical determinations are undertaken by an accredited laboratory; and
   c) report the results to the Director, in writing or in a format acceptable to the Director, within 60 days of the samples being taken.

9. The Licencee shall locate fuel storage and equipment servicing areas established for the construction and operation of the Development a minimum distance of 100 metres from any body of water, and shall comply with the requirements of *Manitoba Regulation 188/2001* respecting *Storage and Handling of Petroleum Products and Allied Products* or any future amendments thereof.

10. The Licencee shall, during construction and operation of the Development, report spills of fuels or other contaminants to an Environment Officer in accordance with the requirements of *Manitoba Regulation 439/87* respecting *Environmental Accident Reporting* or any future amendments thereof.

11. The Licencee shall assign an engineer(s), registered with the Association of Professional Engineers and Geoscientists of the Province of Manitoba, to be responsible for the construction of the Development in accordance with the plans, specifications and design report submitted in support of the proposal.

12. The Licencee shall not cause or permit a noise nuisance to be created as a result of the construction, operation or alteration of the Development, and shall take such steps as the Director may require to eliminate or mitigate a noise nuisance.

13. The Licencee shall not cause or permit an odour nuisance to be created as a result of the construction, operation or alteration of the Development, and shall take such steps as the Director may require to eliminate or mitigate an odour nuisance.

14. The Licencee shall deposit all waste, other than material intended for recycling, in an active area within the Development.

15. The Licencee shall post adequate signage at the entrance to the Development indicating, but not limited to the following:
    a) the types of wastes not accepted at the site;
    b) the hours and days of operation; and
    c) telephone numbers to be called in the event of an emergency occurring at the site.

Construction – General

16. The Licencee shall, prior to initiating construction of the Development, submit eight sets of final engineering design plans, sealed by an engineer(s) registered with the Association of Professional Engineers and Geoscientists of the Province of Manitoba, to the Director for approval.

17. The Licencee shall construct the Development in accordance with the design plans approved by the Director pursuant to Clause 16 of this Licence.

18. The Licencee shall 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.

19. The Licencee shall take and test undisturbed soil samples, in accordance with Schedule "A" attached to this Licence, from:
    a) the compacted clay liner of the waste disposal cell(s);
    b) the compacted clay liner of the leachate collection pond(s);
    c) the compacted clay liner of the storm water retention pond(s);
    d) the compacted clay pad of the soil remediation facility;
    e) the compacted clay pad of the compost facility; and
    f) the compacted clay pad of the pesticide container collection depot.

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, pad or pond.

20. The Licencee shall, prior to operation of the area tested, submit to the Director the results of the tests carried out pursuant to Clause 19 of this Licence.

21. The Licencee shall construct and maintain the waste disposal cells, the leachate collection pond(s), the soil remediation facility and the compost facility with a continuous clay liner under all interior surfaces of the cell, pad or pond in accordance with the following specifications:
    a) the clay liner is recompacted to a minimum thickness of 1 metre for the side slopes and for the base; and
    b) the hydraulic conductivity of the clay liner is $1x10^{-7}$ cm/second or less.

22. The Licencee shall, prior to commencing operation of the Development, submit a plan for all fences and fence gates proposed for the Development to the designated Environment Officer for approval.

23. The Licencee shall, prior to commencing operation of the Development, construct all fences and gates in accordance with the plan approved pursuant to Clause 22 of this Licence.

24. The Licencee shall, prior to commencing operation of the Development, submit a plan for landscaping and planting of trees and shrubs at the Development to the designated Environment Officer for approval.

25. The Licencee shall complete the proposed landscaping and planting of trees and shrubs at the Development within the first year of operation as indicated in the final engineering design plans, as approved pursuant to Clause 24 of this Licence.

Construction – Waste Disposal Cells

26. The Licencee shall, prior to the construction of the waste disposal 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.

27. The Licencee shall submit to the Director for approval at least 30 days prior to construction of the waste disposal cells eight sets of engineering design plans. The engineering design plans, sealed by an engineer(s) registered with the Association of Professional Engineers and Geoscientists of the Province of Manitoba shall address construction specifications of the waste disposal cells and include, but not be limited to the following:
    a) engineering design with respect to construction of the waste disposal cells base and sides;

b) location of access road(s) to the waste disposal cells;
c) details of the location of the waste disposal cells with respect to property lines; and
d) details of a drainage system to prevent storm water runoff from entering the waste disposal cells.

28. The Licencee shall construct the waste disposal cells in accordance with the design plans approved pursuant to Clause 27 of this Licence.

29. 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.

Construction – Leachate Collection Ponds

30. The Licencee shall, prior to the construction of the leachate collection ponds, remove all top soil to a minimum depth of 150 mm and store this top soil at a suitable location for future use.

31. The Licencee shall submit to the Director for approval at least 30 days prior to construction of the leachate collection ponds eight sets of engineering design plans. The engineering design plans, sealed by an engineer(s) registered with the Association of Professional Engineers and Geoscientists of the Province of Manitoba shall address construction specifications of the leachate collection ponds and include, but not be limited to the following:
a) engineering design with respect to construction of the pond base and sides;
b) location of access road(s) to the leachate collection ponds;
c) details of the location of the leachate collection ponds with respect to property lines; and
d) details of a drainage system to prevent storm water runoff from entering the leachate collection ponds.

32. The Licencee shall construct the leachate collection ponds in accordance with the design plans approved pursuant to Clause 31 of this Licence.

Construction – Soil Remediation Facility

33. The Licencee shall, prior to the construction of the soil remediation facility, remove all top soil to a minimum depth of 150 mm and store this top soil at a suitable location for future use.

34. The Licencee shall submit to the Director for approval, at least 30 days prior to construction of the soil remediation facility, eight sets of engineering design plans. The engineering design plans, sealed by an engineer(s) registered with the Association of Professional Engineers and Geoscientists of the Province of Manitoba shall address construction specifications of the soil remediation facility and include, but not be limited to the following:
    a) engineering design with respect to construction of the soil remediation facility base;
    b) location of access road(s) to the soil remediation facility;
    c) details of the location of the soil remediation facility with respect to property lines;
    d) details of the soil remediation facility area drainage system; and
    e) details of a drainage system to prevent storm water runoff from entering the soil remediation facility.

35. The Licencee shall construct the soil remediation facility in accordance with the design plans approved pursuant to Clause 34 of this Licence.

Construction – Compost Facility

36. The Licencee shall, prior to the construction of the compost facility, remove all top soil to a minimum depth of 150 mm and store this top soil at a suitable location for future use.

37. The Licencee shall submit to the Director for approval at least 30 days prior to construction of the compost facility eight sets of engineering design plans. The engineering design plans, sealed by an engineer(s) registered with the Association of Professional Engineers and Geoscientists of the Province of Manitoba shall address construction specifications of the compost facility and include, but not be limited to the following:
    a) engineering design with respect to construction of the compost facility;
    b) location of access road(s) to the compost facility;
    c) details of the location of the compost facility with respect to property lines;
    d) details of the compost facility drainage system; and
    e) details of a drainage system to prevent storm water runoff from entering the compost facility.

38. The Licencee shall construct the compost facility in accordance with the design plans approved pursuant to Clause 37 of this Licence.

Construction – Storm Water Retention Ponds

39. The Licencee shall, prior to the construction of the storm water retention ponds, remove all top soil to a minimum depth of 150 mm and store this top soil at a suitable location for future use.

40. The Licencee shall submit to the Director for approval, at least 30 days prior to construction of the storm water retention ponds, eight sets of engineering design plans. The engineering design plans, sealed by an engineer(s) registered with the Association of Professional Engineers and Geoscientists of the Province of Manitoba, shall address construction specifications of the storm water retention ponds and include, but not be limited to the following:
    a) engineering design with respect to construction of the storm water retention ponds;
    b) location of access road(s) to the storm water retention ponds; and
    c) details of the location of the storm water retention ponds with respect to property lines.

41. The Licencee shall construct the storm water retention ponds in accordance with the design plans approved pursuant to Clause 40 of this Licence.

42. The Licencee shall ensure that the storm water retention ponds are designed and constructed to contain runoff from the Development on the basis of a 1 in 25 year rainfall event.

Construction – Waste Transfer Area

43. The Licencee shall submit to the Director for approval, at least 30 days prior to construction of the waste transfer area, eight sets of engineering design plans. The engineering design plans, sealed by an engineer(s) registered with the Association of Professional Engineers and Geoscientists of the Province of Manitoba, shall address construction specifications of the waste transfer area and include, but not be limited to the following:
    a) engineering design with respect to construction of the waste transfer area;
    b) location of access road(s) to the waste transfer area;
    c) details of the location of the waste transfer area with respect to property lines;
    d) details of the waste transfer area drainage system; and
    e) details of a drainage system to prevent storm water runoff from entering the waste transfer area.

44. The Licencee shall construct the waste transfer area in accordance with the design plans approved pursuant to Clause 43 of this Licence.

Construction – Recycling/Scale/Maintenance Building

45. The Licencee shall submit to the Director for approval, at least 30 days prior to construction of the recycling/scale/maintenance building, eight sets of engineering design plans. The engineering design plans, sealed by an engineer(s) registered with the Association of Professional Engineers and Geoscientists of the Province of Manitoba, shall address construction specifications of the recycling/scale/ maintenance building and include, but not be limited to the following:
    a) access road(s) to the recycling/scale/maintenance building;
    b) details of the location of the recycling/scale/maintenance building with respect to property lines; and
    c) details of the design and layout of the recycling/scale/maintenance building.

46. The Licencee shall construct the recycling/scale/maintenance building in accordance with the design plans approved by the Director pursuant to Clause 45 of this Licence.

Construction – Glass, Metals and Tires Storage Areas

47. The Licencee shall submit to the Director for approval, at least 30 days prior to construction of the glass, metals and tires storage areas, eight sets of engineering design plans. The engineering design plans, sealed by an engineer(s) registered with the Association of Professional Engineers and Geoscientists of the Province of Manitoba, shall address construction specifications of the glass, metals and tires storage areas and include, but not be limited to the following:
    a) engineering design with respect to construction of the glass, metals and tires storage areas;
    b) location of access road(s) to the glass, metals and tires storage areas; and
    c) details of the location of the glass, metals and tires storage areas with respect to property lines.

48. The Licencee shall construct the glass, metals and tires storage areas in accordance with the design plans approved pursuant to Clause 47 of this Licence.

Construction – Weigh Scale

49. The Licencee shall submit to the Director for approval, at least 30 days prior to construction of the weigh scale, eight sets of engineering design plans. The engineering design plans, sealed by an engineer(s) registered with the Association of Professional Engineers and Geoscientists of the Province of Manitoba, shall address construction specifications of the weigh scale and include, but not be limited to the following:
    a) access road(s) to the weigh scale;

b) details of the location of the weigh scale with respect to property lines; and
c) details of the weigh scale.

50. The Licencee shall construct the weigh scale in accordance with the design plans approved pursuant to Clause 49 of this Licence.

Construction – Household Hazardous Waste Depot

51. The Licencee shall submit to the Director for approval, at least 30 days prior to construction of the household hazardous waste depot, eight sets of engineering design plans. The engineering design plans, sealed by an engineer(s) registered with the Association of Professional Engineers and Geoscientists of the Province of Manitoba, shall address construction specifications of the household hazardous waste depot and include, but not be limited to the following:
a) engineering design with respect to construction of the household hazardous waste depot;
b) location of access road(s) to the household hazardous waste depot;
c) details of the location of the household hazardous waste depot with respect to property lines; and
d) details of a drainage system to prevent storm water runoff from entering the household hazardous waste depot.

52. The Licencee shall construct the household hazardous waste depot in accordance with the design plans approved pursuant to Clause 51 of this Licence.

Construction – Pesticide Container Collection Depot

53. The Licencee shall, prior to the construction of the pesticide container collection depot, remove all top soil to a minimum depth of 150 mm and store this top soil at a suitable location for future use.

54. The Licencee shall submit to the Director for approval, at least 30 days prior to construction of the pesticide container collection depot, eight sets of engineering design plans. The engineering design plans, sealed by an engineer(s) registered with the Association of Professional Engineers and Geoscientists of the Province of Manitoba, shall address construction specifications of the pesticide container collection depot and include, but not be limited to the following:
a) engineering design with respect to construction of the pesticide container collection depot;
b) location of access road(s) to the pesticide container collection depot;
c) details of the fencing of the pesticide container collection depot;
d) details of the location of the pesticide container collection depot with respect to property lines; and

e) details of a drainage system to prevent storm water runoff from entering the pesticide container collection depot.

55. The Licencee shall construct the pesticide container collection depot in accordance with the design plans approved pursuant to Clause 54 of this Licence.

Construction – Cover Material Stockpile Area

56. The Licencee shall submit to the Director for approval, at least 30 days prior to construction of the cover material stockpile area, eight sets of engineering design plans. The engineering design plans, sealed by an engineer(s) registered with the Association of Professional Engineers and Geoscientists of the Province of Manitoba, shall address construction specifications of the cover material stockpile area and include, but not be limited to the following:
a) access road(s) to the cover material stockpile area;
b) details of the location of the cover material stockpile area with respect to property lines;
c) details of the cover material stockpile area drainage system; and
d) details of a drainage system to prevent storm water runoff from entering the cover material stockpile area.

57. The Licencee shall construct the cover material stockpile area in accordance with the design plans approved pursuant to Clause 56 of this Licence.

Operation – General

58. The Licencee shall not burn waste at the Development unless otherwise approved by the Director.

59. Unless otherwise approved by the Director, the Licencee shall not accept the following wastes at the Development:
a) liquid industrial waste;
b) liquid waste;
c) dead livestock;
d) radioactive waste or materials;
e) unbagged asbestos;
f) soils or sediments containing contaminants at concentrations in excess of the criteria specified for industrial occupancy in the Canadian Council of Ministers of the Environment (CCME), Environmental Quality Guidelines (latest edition), and the CCME Canada Wide Standards; and
g) hazardous wastes.

60. Notwithstanding Clause 59 of this Licence, household hazardous waste collected or received by the Licencee, shall be allowed in the designated area at the Development.

61. Notwithstanding Clause 59 of this Licence, petroleum contaminated soils received by the Licencee for remediation, shall be allowed in the designated area at the Development.

62. 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.

63. 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.

64. The Licencee shall position adequate portable litter fences around the active area or such other locations where unloading and handling occurs.

65. The Licencee shall require that at minimum:
    a) an attendant is on duty at the scale at all times during hours of operation;
    b) gates are provided for all access locations to the site;
    c) the gates are kept locked when the attendants are not on duty or the Development is closed; and
    d) other attendants to direct traffic and operate heavy equipment are put on duty as necessary.

66. The Licencee shall, prior to operation of the Development, provide to the designated Environment Officer a copy of an agreement with Manitoba Highways respecting dust control on PTH #466.

67. The Licencee shall, prior to operation of the Development, have in place an on site dust control program.

Operation – Waste Disposal Cells

68. The Licencee shall submit to the Director for approval at least 30 days before any wastes are deposited at the Development, an operations manual prior to the operation of the waste disposal cells. The operations manual shall address, but not be limited to:
    a) cell development and sequencing;
    b) waste receiving, placement and covering;
    c) nuisance control;
    d) surface water management;
    e) landfill gas management;
    f) leachate management; and
    g) monitoring and reporting.

69. The Licencee shall operate the waste disposal cells in accordance with the operations manual approved pursuant to Clause 68 of this Licence.

70. The Licencee shall inspect the leachate system annually.

71. The Licencee shall, when the waste is delivered directly to the active area, compact the wastes deposited in the active areas and cover the wastes daily with cover material.

72. The Licencee shall, on days when baled waste is delivered to the active area, cover the wastes daily with appropriate material as approved by the Director.

73. The Licencee, upon a written request approved by the designated Environment Officer, may, during extreme cold weather conditions, utilize temporary covering of wastes deposited in an active area. Such temporary covering material shall be replaced with permanent cover material when the extreme cold weather conditions ceases.

74. The Licencee shall, where an increase occurs in the slope of the final cover, or erosion of the final cover occurs during the post-closure period, take remedial action to correct the situation.

75. The Licencee shall construct the final side slopes of the above ground deposit of waste including final cover to not exceed one unit vertical to four units horizontal and the final top slope to not less than one unit vertical to 20 units horizontal.

76. The Licencee shall restrict the maximum elevation of the above ground deposit of waste, including the final cover, to the height of the trees planted as a visual barrier to the site. This maximum elevation shall not exceed 15 metres.

Operation – Leachate Collection Ponds

77. The Licencee shall submit to the Director for approval, at least 30 days prior to the operation of the waste disposal cells, an operations manual for the leachate collection ponds. The operations manual shall address, but not be limited to:
    a) leachate management procedures;
    b) handling and treatment procedures; and
    c) inspection and maintenance.

78. The Licencee shall operate the leachate collection ponds in accordance with the operations manual approved pursuant to Clause 77 of this Licence.

79. The Licencee shall not recirculate leachate and contaminated water collected at the site through the landfill cells and shall collect all such leachate and

contaminated water in the leachate collection ponds or transport the leachate and contaminated water to a disposal and treatment facility approved by the Director.

80. The Licencee shall not implement any method of leachate treatment without receiving prior approval of the Director.

Operation – Soil Remediation Facility

81. 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 prior to 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.

82. The Licencee shall operate the soil remediation facility in accordance with the operations manual approved pursuant to Clause 81 of this Licence.

Operation – Compost Facility

83. The Licencee shall submit to the Director for approval at least 30 days before any wastes are deposited at the compost facility, an operations manual prior to the operation of the compost facility. The operations manual shall address, but not be limited to:
    a) waste receiving and placement;
    b) nuisance control;
    c) surface water management;
    d) compost handling and treatment procedures;
    e) inspection and maintenance;
    f) leachate management; and
    g) monitoring and reporting.

84. The Licencee shall operate the compost facility in accordance with the operations manual approved by the Director pursuant to Clause 83 of this Licence.

Operation – Storm Water Retention Ponds

85. The Licencee shall submit to the Director for approval at least 30 days before any water is placed in the storm water retention ponds, an operations manual prior to the operation of the storm water retention ponds. The operations manual shall address, but not be limited to:
    a) surface water management;
    b) pond inspection and maintenance; and
    c) monitoring and reporting.

86. The Licencee shall operate the storm water retention ponds in accordance with the operations manual approved pursuant to Clause 85 of this Licence.

87. The Licencee shall restrict the maximum liquid depth in the water storage area to 2.5 metres or less at any given time.

Operation – Waste Transfer Area

88. The Licencee shall submit to the Director for approval at least 30 days before any wastes are deposited at the waste transfer area, an operations manual prior to the operation of the waste transfer area. The operations manual shall address, but not be limited to:
    a) waste receiving and placement;
    b) nuisance control;
    c) security; and
    d) monitoring and reporting.

89. The Licencee shall operate the waste transfer area in accordance with the operations manual approved pursuant to Clause 88 of this Licence.

90. The Licencee shall:
    a) carry out recycling activities in a location separate from the active area(s);
    b) post appropriate signs indicating which materials will be accepted for recycling at the drop off bins; and
    c) provide appropriate containers for all materials being recycled.

Operation – Recycling/Scale/Maintenance Building

91. The Licencee shall submit to the Director for approval at least 30 days before any wastes are received at the recycling/scale/maintenance building, an operations manual prior to the operation of the recycling/scale/maintenance building. The operations manual shall address, but not be limited to:
    a) hours of business;
    b) types of waste to be received;
    c) waste receiving and sorting;
    d) waste baling and storage; and

e) waste shipping.

92. The Licencee shall operate the recycling/scale/maintenance building in accordance with the operations manual approved pursuant to Clause 91 of this Licence.

Operation – Glass, Metals and Tires Storage Areas

93. The Licencee shall submit to the Director for approval at least 30 days before any wastes are deposited at the glass, metals and tires storage areas, an operations manual prior to the operation of the glass, metals and tires storage areas. The operations manual shall address, but not be limited to:
a) glass and tires receiving and placement;
b) nuisance control;
c) surface water management;
d) inspection and maintenance; and
e) monitoring and reporting.

94. The Licencee shall operate the glass, metals and tires storage areas in accordance with the operations manual approved pursuant to Clause 93 of this Licence.

95. The Licencee shall not store metals or tires for a period exceeding one year.

Operation – Weigh Scale

96. The Licencee shall submit to the Director for approval at least 30 days before any wastes are accepted at the Development, an operations manual for the weigh scale prior to the operation of the weigh scale. The operations manual shall address, but not be limited to:
a) procedures for acceptance of waste;
b) waste receiving and tipping fee recording;
c) hot loads (loads that are smoking or visibly burning);
d) waste inspection;
e) rejection of waste procedures; and
f) procedures for special wastes.

97. The Licencee shall operate the weigh scale in accordance with the operations manual approved pursuant to Clause 96 of this Licence.

Operation – Household Hazardous Waste Depot

98. The Licencee shall submit to the Director for approval at least 30 days before any wastes are deposited at the household hazardous waste depot, an operations manual prior to the operation of the household hazardous waste depot. The operations manual shall address, but not be limited to:
a) hours of operation;

b) waste received;
c) volumes accepted;
d) inventory management;
e) storage procedures;
f) safety procedures and training; and
g) monitoring and reporting.

99. The Licencee shall operate the household hazardous waste depot in accordance with the operations manual approved pursuant to Clause 98 of this Licence.

Operation – Pesticide Container Collection Depot

100. The Licencee shall submit to the Director for approval at least 30 days before any wastes are deposited at the pesticide container collection depot, an operations manual prior to the operation of the pesticide container collection depot. The operations manual shall address, but not be limited to:
a) waste container receiving and storage;
b) nuisance control;
c) surface water management;
d) inspection and maintenance; and
e) monitoring and reporting.

101. The Licencee shall operate the pesticide container collection depot in accordance with the operations manual approved pursuant to Clause 100 of this Licence.

Operation – Cover Material Stockpile Area

102. The Licencee shall submit to the Director for approval at least 30 days before any wastes are deposited at the cover material stockpile area, an operations manual prior to the operation of the cover material stockpile area. The operations manual shall address, but not be limited to:
a) cover storage procedures;
b) cover dust control;
c) nuisance control; and
d) surface water management.

103. The Licencee shall operate the cover material stockpile area in accordance with the operations manual approved pursuant to Clause 102 of this Licence.

Monitoring and Reporting – General

104. The Licencee shall submit to the Director for approval at least 30 days before any wastes are deposited at the Development, a monitoring program prior to the operation of the Development. The monitoring program shall address, but not be limited to:

a) obtaining background information on surface and groundwater quality prior to operation of the development;
b) ongoing monitoring during Development operation; and
c) the frequency of monitoring.

105. The Licencee shall undertake construction of the wells in the network of the approved monitoring program, 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, or any future amendment thereof.

106. The Licencee shall undertake the sampling and analysis of the background water quality 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 Environment Guidelines for the Siting of a Class 1 Waste Disposal Ground in Manitoba, Guideline No. 94 - 01E supplement dated October, 1994, or any future amendment thereof, or other protocols as approved by the Director.

107. The Licencee shall operate the Development so that the concentration values of the chemical and microbiological parameters listed in Table 1 to this Licence, do not exceed the groundwater quality at the monitoring wells approved by the Director as compliance monitoring wells.

108. The Licencee shall develop an action plan to be implemented in the event that the monitoring program identifies any pollutant in surface or ground water, 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.

109. Where the Licencee fail to undertake the monitoring program approved pursuant to Clause 104 of this Licence, the Director may undertake such monitoring and recover the cost of such monitoring from the Licencee.

110. The Licencee shall keep for inspection, records of all monitoring at the Development, at the Town of Neepawa municipal office, the Rural Municipality of Odanah municipal office and at the Development site office.

111. The Licencee shall submit to the designated Environment Officer the details of all incidents requiring contingency plan action regarding groundwater or surface water pollution within 7 days from the occurrence of such incidents.

Monitoring and Reporting – Cells

112. The Licencee shall maintain records containing 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; and
b) the monthly quantity of wastes deposited at the waste disposal cells.

113. The Licencee shall have available for inspection by an Environment Officer upon request the records referred to in Clause 112 of this Licence and shall provide annually to the Director a report summarizing the activities at the cells in the annual report pursuant to Clause 135 of this Licence.

Monitoring and Reporting – Leachate Pond

114. The Licencee shall undertake, at a frequency deemed appropriate by the Director, the sampling and analysis of water stored in the leachate pond, for the chemical and microbiological parameters listed in Table 1 to this Licence, and shall maintain records of the results of all such analyses.

115. The Licencee shall measure the volume of leachate produced monthly from each cell and provide a report to the designated Environment Officer indicating the volume of leachate generated and how the leachate is to be disposed of or treated.

116. The Licencee shall have available for inspection by an Environment Officer upon request the records referred to in Clause 114 of this Licence and shall provide annually to the Director a report summarizing the activities at the leachate ponds in the annual report pursuant to Clause 135 of this Licence.

Monitoring and Reporting – Soil Remediation Facility

117. 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.

118. 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.

119. 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.

120. The Licencee shall have available for inspection by an Environment Officer upon request the records referred to in Clauses 118 and 119 of this Licence and shall provide annually to the Director a report summarizing the activities at the soil remediation facility in the annual report pursuant to Clause 135 of this Licence.

Monitoring and Reporting – Compost Facility

121. The Licencee shall sample any surface waters collected at the compost 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 to the storm water retention pond.

122. The Licencee shall maintain, at the operator's office, records of all wastes received at the compost facility. These records shall contain, but not be limited to the following:
   a) the date wastes were received at the compost facility;
   b) the original location of any industrial source wastes; and
   c) the volume received, either estimated or actual.

123. The Licencee shall maintain, at the operator's office, records of all waste or compost removed from the compost facility. These records shall contain, but not be limited to the following:
   a) the date the waste or compost were removed;
   b) the volume removed;
   c) the final end use destination of the waste or compost removed; and
   d) any additional information as requested by the Director.

124. The Licencee shall have available for inspection by an Environment Officer upon request the records referred to in Clauses 122 and 123 of this Licence and shall provide annually to the Director a report summarizing the activities at the compost facility in the annual report pursuant to Clause 135 of this Licence.

125. The Licencee shall inform the designated Environment Officer whenever an odour complaint is received and provide to the Environment Officer a report on the incident, including information on what action was taken to resolve the concerns.

Monitoring and Reporting – Storm Water Retention Ponds

126. The Licencee shall undertake, at a frequency deemed appropriate by the Director, the sampling and analysis of water stored in the storm water retention ponds, for the chemical parameters listed in Table 2 to this Licence.

127. The Licencee shall have available for inspection by an Environment Officer upon request the records referred to in Clause 126 of this Licence and shall provide annually to the Director a report summarizing the activities at the storm water retention pond in the annual report pursuant to Clause 135 of this Licence.

Monitoring and Reporting – Waste Transfer Area

128. The Licencee shall have available for inspection by an Environment Officer upon request records containing the following information:
    a) the monthly quantity of wastes deposited at the waste transfer area;
    b) any incidents requiring action to be taken to implement nuisance control; and
    c) any incidents requiring action to be taken with respect to security.

Monitoring and Reporting – Recyclables Collection Area

129. The Licencee shall have available for inspection by an Environment Officer upon request records containing the following information:
    a) the monthly quantity of recyclables received at the recyclables collection area;
    b) any incidents requiring action to be taken to implement nuisance control; and
    c) any incidents requiring action to be taken with respect to security.

Monitoring and Reporting – Glass, Metals and Tires Storage Areas

130. The Licencee shall have available for inspection by an Environment Officer upon request records containing the following information:
    a) the monthly quantity of glass and tires received at the glass, metals and tires storage areas; either estimated or actual; and
    b) the final end use destination of any glass, metals or tires removed.

Monitoring and Reporting – Weigh Scale

131. The Licencee shall have available for inspection by an Environment Officer upon request records containing the following information:
    a) the monthly quantity of incoming waste;
    b) any incidents concerning delivery of unacceptable wastes; and
    c) any incidents concerning wastes requiring special handling.

Monitoring and Reporting – Household Hazardous Waste Collection Depot

132. The Licencee shall have available for inspection by an Environment Officer upon request records containing the following information:
   a) the monthly quantity of household hazardous waste received at the household hazardous waste collection depot;
   b) the final end use destination of any household hazardous waste removed;
   c) any incidents requiring action to be taken to implement nuisance control; and
   d) any incidents requiring action to be taken with respect to security.

Monitoring and Reporting – Pesticide Container Collection Depot

133. The Licencee shall have available for inspection by an Environment Officer upon request records containing the following information:
   a) the monthly quantity of pesticide containers received at the pesticide container collection depot;
   b) any incidents requiring action to be taken to implement nuisance control; and
   c) any incidents requiring action to be taken with respect to security.

Monitoring and Reporting – Cover Stockpile area

134. The Licencee shall inform the designated Environment Officer whenever a dust complaint is received and provide to the Environment Officer a report on the incident, including information on what action was taken to resolve the concerns.

Annual Report

135. The Licencee shall, unless otherwise approved by the Director, on or before the 15th day of April of each year and beginning in 2004, submit to the Director an annual report with respect to all activities at the Development conducted pursuant to this Licence during the previous calendar year. The format of the report shall be approved by the Director and contain, as a minimum, the following information. The report shall be made available to the public by deposit at the Town of Neepawa municipal office, the Rural Municipality of Odanah municipal office and at the Development site office.
   a) the amount and type of each waste received and subsequently deposited in the waste cells;
   b) the volume of leachate produced at each cell and a summary of the results of chemical and microbiological analyses of the leachate and the final disposition of the leachate;
   c) 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;

d) the amount of wastes treated at the compost facility and a summary of the results of treated compost and the final disposition of the compost;
e) a summary of the results of storm water retention ponds water analyses of the chemical and microbiological parameters listed in Table 1 of this Licence;
f) a summary of the quantities of wastes deposited at the waste transfer area and copies of all reports with respect to any incidents at the waste transfer area;
g) a summary of the quantities of recyclables received at the recyclables collection area and copies of all reports with respect to any incidents at the recyclables collection area;
h) a summary of the quantities of glass, metals and tires received at the glass, metals and tires storage areas and a summary of the final disposition of the glass, metals and tires;
i) the amount of wastes received at the weigh scale and copies of all reports with respect to any incidents at the weigh scale;
j) the amount of wastes received at the household hazardous waste collection depot, copies of all reports with respect to any incidents at the household hazardous waste collection depot and the final disposition of the household hazardous wastes;
k) the quantity of pesticide containers received at the pesticide container collection depot, copies of all reports with respect to any incidents at the pesticide container collection depot and the final disposition of the pesticide containers;
l) copies of all reports with respect to any incidents at the cover stockpile area;
m) summary reports and details of all incidents that required implementation of the contingency plan;
n) with respect to the groundwater well monitoring programmes:
    i) the results for the monitoring wells of the analyses of the chemical and microbiological parameters listed in Table 1 of this Licence;
    ii) the date(s), exact place, and time(s) of sampling or measurements;
    iii) the date(s) analyses were performed;
    iv) the individual(s) who performed the analyses;
    v) documentation to verify the appropriate certification of the laboratory used to perform the analyses; and
    vi) quality assurance and quality control data;
o) with respect to the surface water monitoring programmes:
    i) the results for the surface water analyses of the chemical and microbiological parameters listed in Table 1 of this Licence;
    ii) the date(s), exact place, and time(s) of sampling or measurements;
    iii) the date(s) analyses were performed;
    iv) the individual(s) who performed the analyses;
    v) documentation to verify the appropriate certification of the laboratory used to perform the analyses; and
    vi) quality assurance and quality control data; and
p) with respect to the leachate monitoring programme:
    i) the results for the leachate analyses;

ii) the date(s), exact place, and time(s) of sampling or measurements;
iii) the date(s) analyses were performed;
iv) the individual(s) who performed the analyses;
v) documentation to verify the appropriate certification of the laboratory used to perform the analyses; and
vi) quality assurance and quality control data.

Financial Assurance/Insurance

136. The Licencee shall within 60 days of the date of this Licence and prior to commencing operation of the Development, provide to the Director confirmation of the following financial insurance coverage:

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 the Province of Manitoba. The Province of Manitoba is to be added as an Additional Insured on the policy. 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.

Contingency/Emergency Response Plans

137. The Licencee shall, 30 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 plan shall be developed and maintained in accordance with the *Industrial Emergency Response Planning Guide* (MIAC September, 1996) or other equivalent standard approved by the Director.

138. The Licencee shall keep for inspection, records of the details of all incidents requiring the implementation of the contingency action plan at the Development, at the Town of Neepawa municipal office, the Rural Municipality of Odanah municipal office and at the Development site office.

Closure and Post Closure

139. 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;
c) groundwater monitoring;
d) landfill gas monitoring; and

e) financial assurance/insurance required to implement the Plan.

140. The Licencee shall submit for the approval of the Director, within one year prior to imminent closure of the Development, a formal detailed Closure and Post Closure Plan for the Development.

141. The Licencee shall implement and maintain the approved Closure and Post Closure Plan for the Development.

As-Constructed Drawings

142. The Licencee shall:
a) prepare "as constructed drawings" for the Development and shall label the drawings "as Constructed"; and
b) provide to the Director, 30 days after completion of construction, two sets of "as constructed" drawings of the waste disposal ground and all appurtenances.

REVIEW AND REVOCATION

A. This Licence replaces Environment Act Licence No. 2612 which is hereby rescinded.

B. If, in the opinion of the Director, the Licencee has exceeded or is exceeding or has or is 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.: 4914.00

TABLE 1
TO ENVIRONMENT ACT LICENCE NO. 2612R
BACKGROUND WATER QUALITY CHEMICAL AND MICROBIOLOGICAL PARAMETERS

Parameter	Notes
Alkalinity-bicarbonate	Dissolved
Alkalinity-carbonate	Dissolved
Alkalinity-hydroxide	Dissolved
Alkalinity-total	Dissolved
Hardness- as $CaC0_3$	Dissolved
pH-units	Dissolved
Specific Conductivity	Dissolved
Turbidity-NTU	
Residue-filterable	
Residue-non filterable	
Residue-total	
Chloride	Dissolved
Sulphate	Dissolved
Cyanide-total	Dissolved
Ammonia	Dissolved
Nitrate-Nitrite-Nitrogen	Dissolved
Total Kjeldhal Nitrogen	
Phosphorus	Dissolved
Arsenic	Dissolved
Barium	Dissolved
Beryllium	Dissolved
Cadmium	Dissolved
Calcium	Dissolved
Chromium	Dissolved
Copper	Dissolved
Iron	Dissolved
Lead	Dissolved

TABLE 1 (cont'd.)
TO ENVIRONMENT ACT LICENCE NO. 2612R
BACKGROUND WATER QUALITY CHEMICAL AND MICROBIOLOGICAL PARAMETERS

Parameter	Notes
Magnesium	Dissolved
Manganese	Dissolved
Mercury	Extractable
Nickel	Dissolved
Potassium	Dissolved
Selenium	Dissolved
Silver	Dissolved
Sodium	Dissolved
Zinc	Dissolved
Naphthalene	
Benzo a pyrene	
Anthracene	
CCME Petroleum Hydrocarbon Fraction 1	
CCME Petroleum Hydrocarbon Fraction 2	
CCME Petroleum Hydrocarbon Fraction 3	
CCME Petroleum Hydrocarbon Fraction 4	
Benzene	
Ethylbenzene	
Toluene	
Xylene	
Vinyl Chloride	
Diazinon	
2, 4-D	
Coliforms	Fecal & Total

TABLE 2
TO ENVIRONMENT ACT LICENCE NO. 2612R
BACKGROUND WATER QUALITY CHEMICAL AND MICROBIOLOGICAL PARAMETERS

Parameter	Notes
Alkalinity-bicarbonate	Dissolved
Alkalinity-carbonate	Dissolved
Alkalinity-hydroxide	Dissolved
Alkalinity-total	Dissolved
Hardness as $CaCo_3$	Dissolved
pH-units	Dissolved
Specific Conductivity	Dissolved
Turbidity-NTU	
Residue-filterable	
Residue-non filterable	
Residue-total	
Chloride	Dissolved
Sulphate	Dissolved
Cyanide-total	Dissolved
Ammonia	Dissolved
Nitrate-Nitrite-Nitrogen	Dissolved
Total Kjeldhal Nitrogen	
Phosphorus	Dissolved
Arsenic	Dissolved
Barium	Dissolved
Beryllium	Dissolved
Cadmium	Dissolved
Calcium	Dissolved
Chromium	Dissolved
Copper	Dissolved
Iron	Dissolved
Lead	Dissolved

TABLE 2 (cont'd.)
TO ENVIRONMENT ACT LICENCE NO. 2612R
BACKGROUND WATER QUALITY CHEMICAL AND MICROBIOLOGICAL PARAMETERS

Parameter	Notes
Magnesium	Dissolved
Manganese	Dissolved
Mercury	Dissolved
Nickel	Dissolved
Potassium	Dissolved
Selenium	Extractable
Sodium	Dissolved
Zinc	Dissolved

Schedule "A" to Environment Act Licence No. 2612R

Soil Sampling:

1. The Licencee shall provide a drilling rig, acceptable to the designated Environment Officer, to extract soil samples from the specified liner 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 Licencee 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 Licencee as to the soil testing method that must be used on each sample. The oedometer method may be used for a sample were 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 Licencee 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.

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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 were the sample was taken, which ever 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.