



**Conservation and Water Stewardship**

Climate Change and Environmental Protection Division  
Environmental Approvals Branch  
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**CLIENT FILE NO.: 4885.00**

May 30, 2013

Rhonda Stewart, CAO  
Town of Virden  
Box 310  
Virden MB R0M 2C0

Dear Ms. Stewart:

Enclosed is revised **Environment Act Licence No. 2627 RRR** dated May 30, 2013 to the **Town of Virden** for the construction and continued operation of the Development being a Class 1 Waste Disposal Ground known as the Virden Industrial Waste Treatment and Disposal Facility in the Rural Municipality of Wallace located at the South East 1/4 of Section 24 - Township 11 - Range 26 WPM in accordance with the Proposal filed under *The Environment Act* on December 10, 2002, and the additional information dated December 10, 2004 and March 21, 2013.

In addition to the enclosed Licence requirements, please be informed that all other applicable federal, provincial and municipal regulations and by-laws must be complied with. A Notice of Alteration must be filed with the Director for approval prior to any alteration to the Development as licensed.

For further information on the administration and application of the Licence, please feel free to contact Peter Crocker, Environment Officer at 204-726-6565.

Pursuant to Section 27 of *The Environment Act*, this licensing decision may be appealed by any person who is affected by the issuance of this Licence to the Minister of Conservation and Water Stewardship within 30 days of the date of the Licence.

Yours truly,

Tracey Braun, M.Sc.  
Director  
Environment Act

Enc.

c: Don Labossiere, Director, Environmental Compliance and Enforcement  
Ash Raichura, Dillon Consulting / Public Registries

**NOTE:** Confirmation of Receipt of this Licence No. 2627 RRR (by the Licencee only) is required by the Director of Environmental Approvals. Please acknowledge receipt by signing in the space provided below and faxing a copy (letter only) to the Department by June 13, 2013

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On behalf of The Town of Virden

Date

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

# LICENCE

|                                 |                          |
|---------------------------------|--------------------------|
| Licence No. / Licence n°        | <u>2627 RRR</u>          |
| Issue Date / Date de délivrance | <u>October 29, 2003</u>  |
| Revised :                       | <u>December 13, 2004</u> |
| Revised :                       | <u>April 12, 2005</u>    |
| Revised :                       | <u>May 30, 2013</u>      |

In accordance with *The Environment Act* (C.C.S.M. c. E125)  
Conformément à *la Loi sur l'environnement* (C.P.L.M. c. E125)

Pursuant to Section 11(1) / Conformément au Paragraphe 11(1)

**THIS LICENCE IS ISSUED TO: / CETTE LICENCE EST DONNÉE À:**

**THE TOWN OF VIRDEN**  
**"the Licencee"**

for the construction and continued operation of the Development being a Class 1 Waste Disposal Ground known as the Virden Industrial Waste Treatment and Disposal Facility in the Rural Municipality of Wallace located at the South East 1/4 of Section 24 - Township 11 - Range 26 WPM in accordance with the Proposal filed under *The Environment Act* on December 10, 2002, and the additional information dated December 10, 2004 and March 21, 2013 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 able to demonstrate, upon request, that it has the quality assurance/quality control (QA/QC) procedures in place equivalent to accreditation based on the Canadian Standard Can/CSA-Z753, extension of the international standard ISO 9000, Guide 25;

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

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

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

**"authorized personnel"** means persons, companies or firms authorized by the Licencee to have access to the waste disposal ground;

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

**"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"** has the same meaning as in The Dangerous Goods Handling and Transportation Act;

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

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

**"full characterization"** means testing of the waste to determine the concentration of its components, including but not limited to leachable metals, petroleum hydrocarbons, PCBs, ions such as chloride and the petroleum hydrocarbon surrogates: n-hexane, decane, eicosane, naphthalene, pyrene and benzo-a-pyrene;

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

**"hazardous waste"** means any substance or group of substances that meets the criteria of a hazardous waste as determined by Manitoba Regulation 282/87, or any future amendment;

**"industrial waste"** means waste generated by industrial processes;

**"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 fails the Paint Filter Liquids Test-Method 9095 (U.S E. P. A., 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 fails the Paint Filter Liquids Test-Method 9095 ( U.S E. P. A., SW-846);

**"miscellaneous oil field waste"** means any materials contaminated by non hazardous wastes generated by oil exploration or production well sites or gas exploration or production sites or by oil and/or gas pipeline activities in Manitoba or Saskatchewan;

**"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;
- 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;

**"perimeter drainage control 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;

**"pollutant"** has the same meaning as in The Environment Act

**"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;

**"the Virden Industrial Waste Treatment and Disposal Facility"** means the facility where the operations described in the proposal dated December 10, 2002 are carried out. (see diagram attached as Figure 1.);

**"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

**"waste type"** means a waste material that has separate and identifiable chemical or physical characteristics, or process origins, that enable it to be distinguished from other waste materials;

### **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, at all times, shall carry out a high standard of equipment maintenance and good housekeeping and operational practices with respect to the Development.
2. The Licencee shall construct surface drainage from the access roads to the Development to divert surface runoff from the site.
3. The Licencee shall construct an internal drain system to divert non-contaminated runoff from the Development to the perimeter drainage control area.
4. The Licencee shall submit, within 60 days of the date of issuance of this Licence, to the Director for approval, a plan for all fences and fence gates proposed for the Development.

5. The Licencee shall construct all fences and gates in accordance with the plan approved pursuant to Clause 4 of this Licence.
6. The Licencee shall at a minimum:
  - a) have an attendant on duty at the gate and scale at all times during hours of operation;
  - b) have gates at all access locations to the site;
  - c) keep the gates locked when the necessary attendants are not on duty or the Development is closed; and
  - d) have other attendants on duty to direct traffic and operate heavy equipment as required.
7. 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 and each submission shall be clearly labeled with the Licence Number and Client File Number associated with this Licence. Each report shall be provided in hard copy (paper) and in electronic copy .
8. The Licencee shall notify the Director in writing of any proposed alteration or expansion to the Development as Licenced, and receive approval from the Director prior to proceeding with the alteration.

### **SPECIFICATIONS, LIMITS, TERMS AND CONDITIONS**

#### **General**

9. 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.
10. 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.

11. 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.
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 at least one sign along the primary access road to the disposal site indicating the location of the site and the hours of operation.
16. 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) authorized personnel only allowed into the site;
  - c) the hours and days of operation; and
  - d) the telephone numbers that should be called in the event of an emergency occurring at the site.
17. 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.
18. The Licencee shall not allow burning at the Development unless otherwise approved by the Director.
19. The Licencee shall, with the exception of miscellaneous oil field waste, not accept the following substances at the Development, unless otherwise approved by the Director:
  - a) liquid industrial waste;
  - b) liquid waste;
  - c) explosives;
  - d) biomedical wastes;
  - e) radioactive wastes;
  - f) dead livestock;
  - g) waste containing polychlorinated biphenyls in excess of 50 mg/kg;

- h) soils or sediments containing contaminants at concentrations that cannot be treated to meet 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
  - i) hazardous wastes.
- 20. Notwithstanding Clause 19 h) of this Licence the Licencee may, with approval of the Director, accept for disposal petroleum hydrocarbon contaminated soils that are not hazardous waste and that cannot be treated to meet 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.
- 21. Notwithstanding Clause 19 h) of this Licence, the Licencee may, with approval of the Director, accept for disposal contaminated solids that are not hazardous waste and that cannot be treated to meet 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. These solids may contain salts, metals or other contaminants that inhibit the bacterial action necessary to break down the hydrocarbons.
- 22. Notwithstanding Clause 19 h) of this Licence, petroleum hydrocarbon contaminated soils received by the Licencee for treatment to meet 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, shall be allowed in the designated treatment pad area at the Development.
- 23. Notwithstanding Clause 19 i) of this Licence the Licencee may, with approval of the Director, accept for disposal wood ash generated by the Louisiana-Pacific Corporation in accordance with Schedule "A" attached to this Licence.
- 24. The Licencee shall submit, within 60 days of the date of issuance of this Licence, to the Director for approval, a plan for the management of leachate generated at the Development.
- 25. The Licencee shall manage leachate in accordance with the leachate management plan approved pursuant to Clause 24 of this Licence.
- 26. The Licencee may, prior to acceptance of the plan specified in Clause 23 of this licence, recirculate leachate and contaminated water collected at the site through the landfill active area and may transport leachate and contaminated water to a disposal and treatment facility approved by the Director.
- 27. The Licencee shall only accept for disposal at the Development, waste types that pass the Paint Filter Liquids Test-Method 9095 (U.S. EPA, SW-846).



**Respecting the Construction of Development**

28. The Licencee shall, prior to initiating construction or expansion of the active area, submit 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.
29. The Licencee shall prior to the construction or expansion of the active area:
- a) undertake a detailed sub-soil investigation indicating the stratigraphy and hydrogeology ; 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; and
    - ii) a map showing the locations of the holes.
30. The Licencee shall prior to the construction or expansion 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.
31. Where the design of a new active area or the expansion of an existing active area includes a compacted clay liner, the Licencee shall comply with Clauses 32, 33, 34 and 35 of this Licence and where the design of a new active area or the expansion of an existing active area includes a geomembrane liner the Licencee shall comply with Clause 36 of this Licence.
32. The Licencee shall construct and maintain the active area with a continuous liner under all interior surfaces of the cells in accordance with the following specifications:
- a) the clay liner is recompacted to a minimum thickness of 1 metre for the side slopes and 1 metre for the base of the active area; and
  - b) the in-place recompacted hydraulic conductivity of the clay liner on the side slopes and base of the active area is  $1 \times 10^{-7}$  cm/second or less.
33. The Licencee shall take and test undisturbed soil samples, in accordance with Schedule "B" attached to this Licence, from:
- a) the compacted clay liner of the active area(s);
  - b) the compacted clay liner of the leachate collection pond(s); and
  - c) the compacted clay pad of the soil remediation facility.
- 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 active area or pad.
34. 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.
35. The Licencee shall, prior to operation of the area tested, submit to the Director the results of the tests carried out pursuant to Clause 33 of this Licence.

36. The Licencee shall, unless otherwise required by this Licence or by the Director, install the 60 mil High Density Polyethylene geomembrane liner in accordance with Section B of the Oil Field Waste Disposal Cells Report dated June 2003, or future amendments thereof. Section B, June 2003 Report excerpt is Appendix "A" attached to this Licence.
37. The Licencee shall hire 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 active areas in accordance with the plans, specifications and design drawings submitted in support of the Proposal filed on December 10, 2002.
38. The Licencee shall:
  - a) prepare " record drawings" for all new or expanded active areas and shall label the drawings " record drawings" ; and
  - b) provide to the Director, 30 days after completion of construction, two sets of " record drawings" of the waste disposal ground and all appurtenances.
39. The Licencee shall construct the final side slopes of the above ground deposit of waste including final cover so that they do not exceed one unit vertical to three units horizontal and so that the final top slope is not less than one unit vertical to 20 units horizontal.
40. The Licencee shall undertake the 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.
41. The Licencee shall construct the leachate collection system so that:
  - a) the hydraulic capacity of the perforated leachate collection pipes can readily accommodate the expected quantity of leachate;
  - b) leachate that enters the pipe can readily flow within the pipes;
  - c) blockage of the perforations of the leachate collection pipes by sedimentation is minimized; and
  - d) the leachate collection pipes have adequate structural integrity to withstand impacts from waste placement and other site operations.

#### **Respecting the Operation of Development**

42. The Licencee shall take remedial action to correct the situation where an increase occurs in the slope of the final cover, or erosion of the final cover occurs during the post-closure period.
43. The Licencee shall only discharge water from the perimeter drainage control area to the adjacent 40 acres north of the Development after obtaining approval from an Environment Officer for the discharge.

44. The Licencee shall inspect the leachate collection system annually.
45. The Licencee shall carry out a full characterization of all waste types, not previously received at the Development, before the waste is accepted at the Development.
46. The Licencee shall prior to accepting waste types that have been previously received at the Development, carry out the waste acceptance protocol as described in the Proposal dated December 10, 2002 and as attached as Appendix "B" to this Licence.
47. The Licencee shall maintain, at the operator's office and make available for inspection by an Environment Officer upon request records of all wastes received and deposited in the active area at the Development. These records shall contain, but not be limited to the following:
  - a) the date wastes were received at the Development;
  - b) the original location of generation of the wastes;
  - c) the volume received, either estimated or actual; and
  - d) results of laboratory analyses of the wastes.
48. The Licencee shall maintain, at the operator's office and make available for inspection by an Environment Officer upon request records of all soils received at the soil treatment pad at the Development. These records shall contain, but not be limited to the following:
  - a) the date soils were received at the Development;
  - b) the original location of the soils;
  - c) the volume received, either estimated or actual;
  - d) results of laboratory analyses of the soils;
  - e) the frequency of sampling, area of sampling and the depth the sample was taken from within the Development; and
  - f) the location within the Development of the soil for treatment.
49. The Licencee shall maintain, at the operator's office and make available for inspection by an Environment Officer upon request records of all soils removed from the soil treatment pad at the Development. 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 the individual BTEX components, benzo(a)pyrene, anthracene, the petroleum hydrocarbon fractions 1, 2, 3 and 4 as defined in the CCME PHC Canada Wide Standards and leachable lead components of the soils removed; and
  - e) any additional information as requested by the Director.
50. The Licencee shall operate the Development so that, monitoring at the property line indicates that ground level concentration values of any of the following air pollutants are not in excess of the following limits for the measurement criteria as determined from any ambient air sample or samples collected and analyzed in accordance with procedures and methods satisfactory to the Director.

| <b>Air Pollutant</b> | <b>Measurement Criteria</b> | <b>Ground Level Concentration Limits</b> |
|----------------------|-----------------------------|------------------------------------------|
| Toluene              | 24 hour average             | 2000 micrograms per cubic metre of air   |
| Ethyl Benzene        | 24 hour average             | 1000 micrograms per cubic metre of air   |
| Xylenes              | 24 hour average             | 2300 micrograms per cubic metre of air   |

51. The Licencee shall, at such times, for such duration, for such pollutants and at such locations as may be requested by the Director:
  - a) arrange to have a qualified person(s) undertake monitoring, source tests and/or special studies to determine the ambient air quality beyond the property line of the Development, in a manner satisfactory to the Director, and including an interpretation of the results relative to limits of Clause 50 of this Licence; and
  - b) submit a report on the test results and all related data, including the interpretation, to the Director within 90 days after completion of the test(s)/study(ies).
  
52. The Licencee shall operate the Development so that groundwater concentration values of the chemical and microbiological parameters listed in Table 2 to this Licence, do not exceeded background levels.

**Respecting Monitoring and Reporting**

53. The Licencee shall undertake, for a period of time deemed appropriate by the Director, the sampling and analysis of water stored in the perimeter drainage control area, prior to discharge, for the parameters listed in Table 2 to this Licence and shall submit the results of all such analyses to the Director.
  
54. The Licencee shall submit to the Director within 30 days from the date of issuance of this Licence, a performance monitoring program for the Development. The performance monitoring program shall address, but not be limited to:
  - a) obtaining information on surface and groundwater quality during operation of the Development;
  - b) details of the location of the sampling locations with respect to property lines; and
  - c) the frequency of monitoring.
  
55. The Licencee shall undertake the sampling and analysis of the groundwater quality for the chemical and microbiological parameters listed in Table 2 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 other protocols as approved by the Director.
  
56. Where the Licencee fails to undertake the performance monitoring program approved pursuant to Clause 54 of this Licence, the Director may undertake such monitoring and recover the cost of such monitoring from the Licencee.

57. The Licencee shall develop an action plan to be implemented in the event that the monitoring program identifies any pollutant in surface water 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.
58. The Licencee shall arrange that records are kept for inspection at the landfill office for the following information:
- a) the daily quantity of waste deposited at the Development;
  - b) the daily quantity of all soils received at the soil treatment pad;
  - c) the daily quantity of all soils removed from the soil treatment pad.
  - d) the number of samples collected to establish groundwater quality data;
  - e) details of all incidents requiring the implementation of the contingency action plan regarding groundwater or surface water pollution; and
  - f) all monitoring, testing and analytical data generated.
59. The Licencee shall, unless otherwise approved by the Director, on or before the 15th day of April of each year and beginning in 2005, submit to the Director an annual report with respect to all activities at the facility 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:
- a) the amount and type of each waste received and subsequently deposited at the Development;
  - b) the amount and type of petroleum contaminated soils treated at the Development;
  - c) a summary of the results of after treatment analyses of petroleum contaminated soils and the final disposition of the treated soils;
  - d) the results of all waste type characterizations;
  - e) summary reports and details of all incidents that required implementation of the contingency plan;
  - f) with respect to the groundwater well monitoring program:
    - i) the results for the monitoring wells of the analyses of the chemical and microbiological parameters listed in Table 2 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;
  - g) with respect to the surface water monitoring program:
    - i) the results for the surface water analyses of the chemical and microbiological parameters listed in Table 2 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;

- h) with respect to the leachate monitoring program:
  - i) the results for the leachate analyses of the chemical and microbiological parameters listed in Table 2 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;
  - vi) quality assurance and quality control data; and
  - vii) the volume of leachate produced at each active area and the final disposition of the leachate; and
- i) the status of the contingency reserve fund referred to in Appendix J of the Proposal filed on December 10, 2002.

The report shall be made available to the public and the Rural Municipality of Wallace.

#### **Financial Assurance/Insurance**

- 60. The Licencee shall within 60 days of the date of the issuance of this Licence, 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.
- 61. The Licencee shall provide the Director with a certificate of insurance as written evidence of required coverage.

#### **Respecting Contingency/Emergency Response Plans**

- 62. The Licencee shall, within 30 days of the date of issuance of this Licence, 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.
- 63. The Licencee may submit, to the Director for approval, amendments to the contingency plan as needed and the Licencee shall implement any amendments approved by the Director in a manner and within the time frames specified by the Director.

64. The Licencee shall submit to the Director the details of all incidents requiring contingency action regarding groundwater or surface water pollution within 7 days from the occurrence of such incidents.

**Respecting Closure and Post Closure Plan**

65. The Licencee shall submit, within 6 months of the date of issuance of this Licence, for the approval of the Director, a Preliminary Closure and Post Closure Plan for the Development outlining the methods and procedures to be initiated at the decommissioning of 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) removal of all ancilliary equipment associated with the Development;
  - d) groundwater monitoring;
  - e) financial assurance/insurance required to implement the Plan; and
  - f) restoration of the site to the satisfaction of the Director.
66. 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.
67. The Licencee shall implement and maintain the approved Closure and Post Closure Plan for the Development.

**REVIEW AND REVOCATION**

- A. This Licence replaces Environment Act Licence No. 2627RR 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.

Client File No.: 4885.00

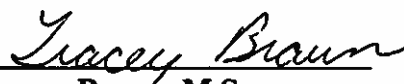
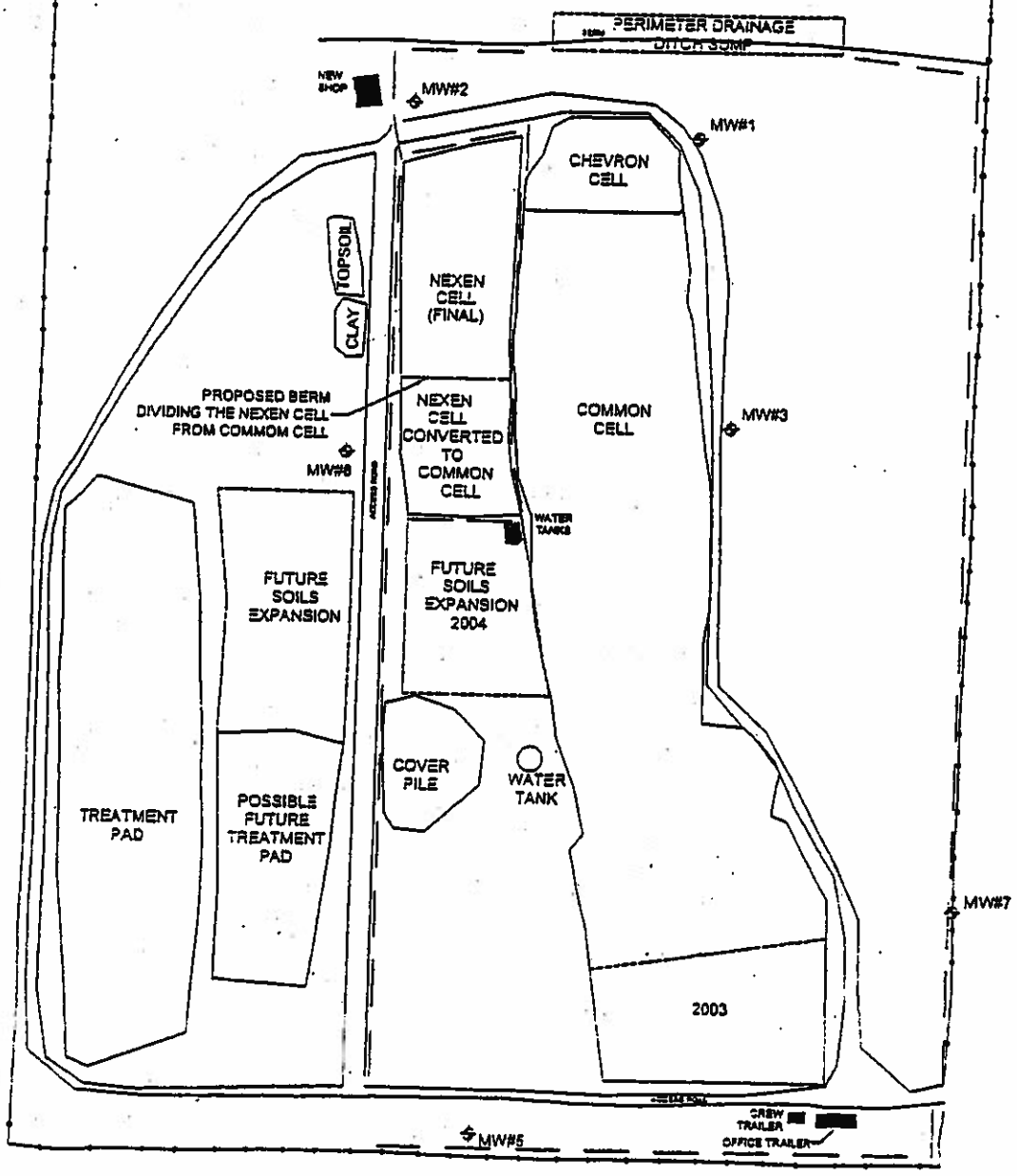
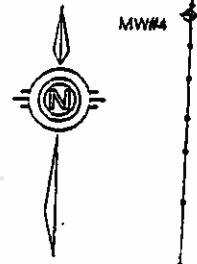
  
**Tracey Braun, M.Sc.**  
**Director**  
**Environment Act**

FIGURE 1

To Environment Act Licence No. 2627RRR





HAZCO Environmental Services Ltd.  
 200, 5720 - 4th Street S.E.  
 Calgary, Alberta, T2H 1K7

SITE PLAN - DECEMBER 2003  
 VIRDEN INDUSTRIAL INFRASTRUCTURE

|   |                   |  |
|---|-------------------|--|
| 1 | Drawn by          |  |
| 2 | Checked by        |  |
| 3 | Approved by       |  |
| 4 | Plot Date/Version |  |

SCHEDULE "A"

To Environment Act Licence No. 2627RRR

1. The Licencee shall only accept for disposal the wood ash from Louisiana Pacific Corporation as described in the Dillon Consulting Limited Report entitled "Risk Assessment of Wood Disposal at a MSW landfill – Swan Valley, Manitoba OSB Plant."
2. This wood ash which exhibits a pH of over 12.0 is not considered a Hazardous Waste in the circumstances of this Licence.
3. The Licencee shall only accept wood ash for disposal that is transported by a licenced carrier in compliance with MR 175/87 the Generator Registration and Carrier Licencing Regulation.
4. The Licencee shall only accept the wood ash for disposal that is transported in covered vehicles that will prevent the escape of ash during transportation.
5. The Licencee shall dispose of the wood ash in the Common Cell, co-mingling the wood ash with the petroleum hydrocarbon contaminated soil that is also being disposed of in the Common Cell.
6. The Licencee shall only accept the wood ash for disposal for the three years starting May 1, 2005 and ending April 30, 2008 or some other date as approved by the Director.
7. The Licencee shall collect the leachate from the Common Cell. This collection shall be monthly starting in June 2005 and the leachate shall be analysed for the parameters listed in Table 2 of this Licence
8. The Licencee shall review the level of parameters in the leachate monthly starting in June 2005 and continuing monthly up to and including April 2008, or some other date as determined by the Director .
9. The Licencee shall provide to the Director the chemical analyses of the leachate as received from the laboratory that carried out the analyses, and in a tabular form in which the monthly results are compared to the previous monthly results.
10. On or about November 1, 2007 the Licencee shall provide the Director with a report identifying the levels of contaminants in the common cell leachate during the previous 30 months together with an appraisal of the impact of the Wood Ash on the levels of contaminants in the leachate.

**TABLE 1**  
**TO ENVIRONMENT ACT LICENCE NO. 2627RRR**  
**LEACHATE WATER QUALITY CHEMICAL**  
**PARAMETERS**

| Parameter              | Notes    |
|------------------------|----------|
| pH                     | pH units |
| Specific Conductivity  |          |
| Turbidity-NTU          |          |
| Residue-non filterable |          |
| Residue-total          |          |
| Chloride               | Total    |
| Sulphate               | Total    |
| Aluminum               | Total    |
| Boron                  | Total    |
| Calcium                | Total    |
| Iron                   | Total    |
| Magnesium              | Total    |
| Manganese              | Total    |
| Potassium              | Total    |
| Sodium                 | Total    |
| Zinc                   | Total    |

**TABLE 2**  
**TO ENVIRONMENT ACT LICENCE NO. 2627RRR**  
**BACKGROUND WATER QUALITY CHEMICAL**  
**AND MICROBIOLOGICAL PARAMETERS**

| Parameter                     | Notes     |
|-------------------------------|-----------|
| Alkalinity-bicarbonate        |           |
| Alkalinity-carbonate          |           |
| Alkalinity-hydroxide          |           |
| Alkalinity-total              |           |
| Hardness as CaCO <sub>3</sub> |           |
| pH                            |           |
| Specific Conductivity         |           |
| Turbidity-NTU                 |           |
| Residue-filterable            |           |
| Residue-non filterable        |           |
| Residue-total                 |           |
| Chloride                      | Dissolved |
| Sulphate                      | Dissolved |
| Total Kjeldhal Nitrogen       |           |
| Ammonia                       | Dissolved |
| Nitrate-Nitrite-Nitrogen      | Dissolved |
| Chemical Oxygen Demand        | Total     |
| Arsenic                       | Dissolved |
| Barium                        | Dissolved |
| Cadmium                       | Dissolved |
| Calcium                       | Dissolved |
| Chromium                      | Dissolved |
| Copper                        | Dissolved |
| Iron                          | Dissolved |
| Lead                          | Dissolved |
| Magnesium                     | Dissolved |
| Manganese                     | Dissolved |
| Mercury                       | Dissolved |

**TABLE 2 (cont'd.)**  
**TO ENVIRONMENT ACT LICENCE NO. 2627RRR**  
**BACKGROUND WATER QUALITY CHEMICAL**  
**AND MICROBIOLOGICAL PARAMETERS**

| <b>Parameter</b>  | <b>Notes</b>  |
|-------------------|---------------|
| Nickel            | Dissolved     |
| Potassium         | Dissolved     |
| Selenium          | Extractable   |
| Sodium            | Dissolved     |
| Zinc              | Dissolved     |
| Naphthalene       |               |
| Benzo a pyrene    |               |
| Anthracene        |               |
| Total volatile HC |               |
| Benzene           |               |
| Ethylbenzene      |               |
| Toluene           |               |
| Coliforms         | Fecal & Total |

**SCHEDULE "B"**

**To Environment Act Licence No. 2627RRR**

### 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 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 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.



## 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.

APPENDIX "A"

To Environment Act Licence No. 2627RRR

## 1.0 GENERAL

### 1.1 Purpose, References and Definitions:

- 1.1.1 This section is intended to provide direction and guidance for the installation, testing, inspection and reporting activities related to the construction of the Geomembrane Liner ("Liner").
- 1.1.2 Refer to the Geosynthetic Research Institute's ("GRI") GM13 specification and test standards. Refer to all appropriate ASTM Standards, as referenced by the GRI-GM13 specification, relative to manufacturing quality control and quality assurance activities and confirmatory testing.
- 1.1.3 Refer to all appropriate ASTM Standards relative to quality control and confirmatory testing during the installation of the Liner.
- 1.1.4 The Liner, for the purpose of executing the Work, is to be a smooth, nominal gauge 1.5 mm (60 mil) thick High Density Polyethylene (HDPE) geomembrane.
- 1.1.5 The Liner Supplier ("Supplier") shall be defined as the company that manufactures and supplies the HDPE geomembrane.
- 1.1.6 The Liner Installer ("Installer") shall be defined as the contractor that installs the HDPE geomembrane to form an integral and continuous Liner. The Installer can also be the Supplier.
- 1.1.7 The Owner ("Owner") is the Town of Virден. HAZCO Environmental Services Ltd. ("HAZCO") is a legal partner of the Town of Virден, therefore, HAZCO shall be deemed to be an agent of the Owner.

### 1.2 Submittals:

- 1.2.1 The Installer is required to provide and submit documents to demonstrate that the quality of the manufactured product meets the standards and requirements specified herein and that the installation is executed and completed in accordance with the best available industry practices. Submittals shall be provided as outlined below:

#### Prior to or in Conjunction with Material Deliveries:

- Submit Certificates of Compliance for both the geomembrane and the welding rod shipped or to be shipped to the Site, and do so in a timely fashion;
- Submit a Projects Resume, if requested to do so;

- Submit the name of an Independent Testing Laboratory, if requested to do so;
- Submit the resume of the Project Supervisor, if requested to do so; and
- Submit the Liner Installation Quality Assurance (QA) and Quality Control (QC) Manual that is intended to guide and capture Liner installation preparation, welding, testing, sampling, repair and recordkeeping activities and operations.

After the Completion of the Installation:

- ◆ Submit an As-Built or Liner Installation Completion Report that will serve to identify that the Liner has been manufactured and installed in accordance with this specification and the manufacturer's recommendations, and has been completed in accordance with the industry's best practices and is ready for the intended use.

**1.3 Supplier's Experience:**

- 1.3.1 The Supplier (manufacturer) shall have at least ten (10) years of continuous experience in the manufacture (blown film) of Polyethylene ("PE") based geomembranes.

**1.4 Installer's Experience:**

- 1.4.1 The Installer shall have at least five (5) years of Liner installation experience with PE based geomembranes and shall have installed at least 450,000 m<sup>2</sup>.

**1.5 Owner's Quality Assurance:**

- 1.5.1 The Owner reserves the right to employ a Quality Assurance / Quality Control (QA/QC) Monitor ("Monitor") during the Liner installation. The terms "QA/QC Monitor" and "Engineer" are interchangeable for the purposes of this Specification.
- 1.5.2 The Installer shall coordinate his activities with the Monitor and shall provide access to the Work and all construction and quality control documents and records throughout the duration of the Work.

**1.6 Warranties:**

- 1.6.1 The Supplier of the geomembrane shall provide a pro-rated Material Weathering Warranty to the Owner within thirty (30) days of the completion and acceptance of the Liner installation. This Warranty shall cover a twenty (20) year period.
- 1.6.2 The Installer of the Liner shall provide an Installation Warranty to the Owner within thirty (30) days of the completion and acceptance of the Liner installation. This Warranty shall cover a one (1) year period.

**1.7 Geomembrane Roll Identification:**

- 1.7.1 The Supplier shall ensure that each roll of geomembrane is appropriately tagged and suitably marked prior to leaving the manufacturing plant. In addition, the Installer is to ensure that any and all such tags or markings are maintained in good order.
- 1.7.2 Roll identification is to include, but not be limited to, the thickness of the material, the roll dimensions, resin batch, roll number, the date of production and the name of the manufacturer.

**1.8 Measurement and Payment:**

- 1.8.1 The unit of measurement is square metres (m<sup>2</sup>). The actual surface area of the installed Liner in contact with the prepared surface shall be the basis for the Measurement for Payment. Payment shall be full compensation for mobilization and demobilization, and all labour, equipment, tools, subsistence, travel, insurance, fees, consumables, and all materials necessary for the supply and installation of the Liner as delineated by the project drawings.

**1.9 Quality Assurance (QA) & Quality Control (QC) System Approval:**

- 1.9.1 The submitted Liner Installation Quality Assurance (QA) and Quality Control (QC) Manual shall be subjected to a review and approval process. Once the Manual is approved, it shall form the basis for all QA & QC activities related to the installation of the Liner

**2.0 PRODUCTS**

**2.1 Geomembrane Liner:**

- 2.1.1 The Geomembrane Liner is to be a smooth, nominal gauge 1.5 mm (60 mil) thick High Density Polyethylene (HDPE) geomembrane.

2.1.2 The Liner material is to be manufactured with virgin resin in accordance with the GRI-GM13 Standard.

2.1.3 The Liner material shall be free of all surface and internal defects and shall contain a maximum of ten percent (10%) of reworked material originating only from within the manufacturing plant.

2.2 Welding Rod:

2.2.1 Welding rod used shall be formulated from a compatible resin batch and shall be labeled in a suitable and appropriate manner.

3.0 EXECUTION

3.1 Subgrade Inspection and Acceptance:

3.1.1 The Liner Installer, upon arrival at the Site, shall inspect all or the completed portions of the prepared subgrade surface(s) and shall provide a written confirmation that the surface upon which the Liner is to be installed has been inspected and approved. This process may proceed in increments.

3.1.2 For the purposes of this specification, typical subgrade preparation consists of trimming the earthen surface to smooth, neat lines so that there are no sharp or abrupt changes in grade, hand raking and rockpicking and rolling the prepared surface with a smooth drum compactor.

3.1.3 Under no circumstances will the integrity of the Liner be compromised by the presence of sharp, protruding objects, soil lumps or incomplete subgrade preparation.

3.1.4 Any deficiencies in the subgrade observed or found by the Installer shall be reported immediately and directly to HAZCO.

3.1.5 If required, HAZCO shall effect repairs to the subgrade and shall do so in accordance with the current state of practice and industry standards.

3.2 Liner Material Deployment:

3.2.1 Deployment and installation operations shall be performed under the constant supervision of the Installer's Project Supervisor.

3.2.2 The methods and equipment used to deploy the Liner shall not in any way scratch, crimp, mark or otherwise damage the Liner material.

- 3.2.3 The Installer shall mark and document all defects resulting from and/or observed after the deployment. The total number of defects shall not exceed ten (10) per five hundred (500) m<sup>2</sup> or that section of Liner may have to be removed and replaced in its entirety.
- 3.2.4 Liner ballast is required to be placed at positions and at a frequency that will not damage the Liner and in a manner that is intended to minimize the potential for wind uplift.
- 3.2.5 The deployment of the Liner material shall be executed in such a fashion as to allow for the incorporation of slack to compensate for installation thermal expansion and contraction. The amount and location of slack shall be in accordance with the approved Installer QA & QC Manual and the best practices of the industry.
- 3.3 **Liner Panel Identification:**
- 3.3.1 Each Liner panel shall be identified with a unique number marked directly on the deployed panel. These identifiers shall be recorded as part of the permanent as-built record.
- 3.4 **Trial Seams:**
- 3.4.1 Trial seams shall be performed and tested in accordance with the approved Installer QA & QC Manual.
- 3.4.2 In general, Trial Seams shall be performed when:
- A new day or shift has started;
  - A new or not previously used welder is being prepared;
  - A new or different operator is about to be employed;
  - Welding activities have ceased for more than two (2) hours;
  - There has been a noticeable and meaningful change in the ambient conditions; and/or
  - Instructed to do so or as directed by HAZCO.
- 3.4.3 As a minimum, at least three (3) - 25 mm (1") wide coupons cut from the Trial Seam shall be tested in the shear and peel modes by using a field portable Tensiometer. The Tensiometer shall be calibrated not more than three (3) months prior to the unit being employed on this Work.
- 3.4.4 All Trial Seam test data shall be recorded and all Trial Seam test coupons shall be retained as an archive for a period of not less than three (3) years.

**3.5 Field Seams:**

3.5.1 Field Seams shall be performed and tested in accordance with the approved Installer QA & QC Manual.

3.5.2 All Liner Field Seams shall be oriented parallel with the fall of the slope, insofar as is practical.

3.5.3 Butt seams shall be positioned at least two (2) metres away from the toe of the slope.

3.5.4 Field Seams shall be completed with a wedge welder that uses a split wedge wherever possible. Extrusion welds shall be limited to patching, repairs, detailed connections and other such work.

3.5.5 Grinding shall only be completed in advance of the deposition of the extrudate bead and shall not be exposed to ambient conditions for more than ten (10) minutes. Grinding shall not penetrate the surface of the geomembrane by more than ten percent (10%).

3.5.6 Failure to maintain adequate overlap may be the cause for rejection of all or a part of the Field Seam.

**3.6 Seaming and Testing Equipment:**

3.6.1 All seaming and testing equipment shall be maintained in good operating order.

3.6.2 Seaming equipment shall be appropriately calibrated and adjusted specifically for the installation of the Liner.

3.6.3 All testing equipment shall possess a suitable Calibration Certificate, where applicable.

3.6.4 All seaming and testing equipment shall be made available to the Owner or his agent(s) for the purpose of inspection and assessment.

3.6.5 Any piece of equipment deemed unsafe shall be repaired prior to use or shall be removed from the site inventory if repairs cannot be effected.

**3.7 Field Seam Destructive Testing:**

3.7.1 Field Seam Destructive Testing shall be performed in accordance with the approved Installer QA & QC Manual.



- 3.7.2 Field Seams shall meet the following specifications:
- > Shear Strength - 120 PPI (pounds / inch width) min.; and  
- Film Tear Bond ("FTB");
  - > Peel Strength - 90 PPI min., for wedge welds; or  
- 78 PPI min., for extrusion welds; and  
- FTB;
  - > Test Standard is ASTM D6392-99, strain rate 50 mm (2") / min
- 3.7.3 FTB is defined as failure of one (1) of the sheets by tearing, instead of separating from the other sheet at the weld interface (i.e.: the sheet fails before the weld).
- 3.7.4 No more than 25% seam separation will be allowed on any one seam coupon that is tested.
- 3.7.5 One (1) - 25 mm (1") wide coupon shall be removed from either the beginning or end of each Field Seam. These are to be subjected to Destructive Testing in accordance with this specification.
- 3.7.6 In addition to the above requirement, the Liner Installer shall cut a 0.45 m (18") wide by 1.20 m (4') long sample from designated Field Seams as directed by the Owner, his agents or the Monitor. Field Seam Destructive Test samples shall be removed at a frequency of approximately 1 per 750 metres of Field Seam, and at least one (1) per installation.
- 3.7.7 Field Seam samples shall be subjected to Destructive Testing in accordance with this specification.
- 3.7.8 All Field Seam Destructive Test data shall be recorded and all test coupons shall be retained as an archive for a period of not less than three (3) years.
- 3.7.9 Defects caused by Field Seam sampling shall be repaired in accordance with this specification.
- 3.7.10 Failed areas of Field Seam shall be repaired or removed in accordance with this specification.
- 3.8 Non-Destructive Testing:
- 3.8.1 Non-Destructive Testing shall be performed in accordance with the approved Installer QA & QC Manual.

- 3.8.2 The Installer shall Non-Destructively Test all field seams, repaired seams and repair patches and other repair areas as deemed necessary by this specification.
- 3.8.3 Any defects caused by testing shall be repaired in accordance with this specification.
- 3.9 Defects and Repairs:
  - 3.9.1 The Installer shall inspect all seam and non-seam areas of the installation. The Owner or his agents reserve the right to inspect the Liner installation at any time during the performance of the Work.
  - 3.9.2 The Liner surface shall be cleaned if dust and other debris inhibit inspection activities.
  - 3.9.3 Defective seams shall be repaired by capping, complete removal and reseaming or extrusion welding. The repair method used shall not cause further degradation of the seam area or geomembrane material surrounding the affected seam.
  - 3.9.4 Small holes and deep scars and scratches shall be repaired by applying a small length of extrudate bead. This applies to areas of damage that are less than 5 mm (3/16") in diameter.
  - 3.9.5 Holes larger than 5 mm (3/16") in diameter shall be repaired by patching. Patches shall have rounded corners and the patch shall extend a minimum of 150 mm (6") beyond the edge of the defect. Beveling of the edge of the patch shall not be required if the geomembrane is 1 mm (40 mil) thick or less.
  - 3.9.6 Tears in the geomembrane shall be repaired by patching. If the tear is on the slope or in an area prone or susceptible to stress, the tear shall be recontoured to minimize tear propagation.
  - 3.9.7 All repairs shall be tested by a suitable non-destructive method.
- 3.10 Seam, Test, Repair and Verification Records:
  - 3.10.1 All data and information related to seaming, destructive and non-destructive testing, repair activities and re-testing shall be recorded in accordance with the approved Installer QA & QC Manual.

3.11 As-Built (Construction) Record Documents and Report:

3.11.1 The Liner Installer shall provide a written report on the completed installation to the Owner within thirty (30) days of the completion.

3.11.2 This Report shall include all seaming, quality control test records and inspection records compiled during the performance of the Work. A minimum of three (3) copies will be required.

3.11.3 In addition to the requirements stated herein, the Report shall include an as-built record drawing that will serve to indicate panels, seams, extent of installation, penetrations (if any), repairs, panel and seam identification and any other data related to the Liner installation.

END OF SECTION

APPENDIX "B"

To Environment Act Licence No. 2627RRR

## WASTE ACCEPTANCE PROTOCOL

The Virden Petroleum Industry Waste Treatment & Disposal Site is capable of managing a wide variety of waste streams including Petroleum Contaminated Soils (PCS) resulting from industrial activities and oil and gas exploration and development in the Manitoba and Southeastern Saskatchewan areas. Hazardous wastes, biomedical wastes and radioactive wastes will not be accepted. The PCS waste received on site will be of two different classifications. There will be Recyclable (Treatable) Petroleum Hydrocarbon Contaminated, or Non-Recyclable.

### Acceptable Wastes

Waste must be non-hazardous by Manitoba regulation to be accepted for disposal or bioremediation at the facility. Potential recyclable soils must be subjected to hydrocarbon F1-F4 analysis. Soils with >10,000 ppm of hydrocarbon above C30 are classified as not suitable for bio-treatment. Soils with an EOX value above 2ppm are also not suitable for treatment but may be acceptable if the total EOX is below 50ppm. Soils with EOX above 50ppm are subject to further analysis to confirm them as non-hazardous.

Waste streams not suitable for bioremediation are acceptable for direct disposal at the facility. These waste streams must be non-hazardous by Manitoba regulation and are disposed of according to the operating procedures listed above.

### Prohibited Wastes for Direct Disposal

- Liquids
- Hazardous waste as defined in Manitoba Regulation 172/85
- Biomedical, explosive and radioactive wastes

Records of all waste rejections will be maintained on file.

### Analytical Requirements

Some of the following testing may be required prior to accepting any wastes at the Virden Facility. Any material that exceeds the following limits is may not be acceptable for direct disposal at the landfill.

| Leachable Metals | mg/l  |
|------------------|-------|
| (TCLP)           |       |
| Arsenic          | 5.0   |
| Barium           | 100.0 |
| Boron            | 500.0 |

|          |     |
|----------|-----|
| Cadmium  | 0.5 |
| Chromium | 5.0 |
| Lead     | 5.0 |
| Mercury  | 0.1 |
| Selenium | 1.0 |
| Silver   | 5.0 |
| Uranium  | 2.0 |

|                   |                              |
|-------------------|------------------------------|
| <b>Total BTEX</b> | <b>mg/kg</b>                 |
| Benzene           | <100 ppm for direct disposal |
| Toluene           | <100 ppm for direct disposal |
| Ethylbenzene      | <100 ppm for direct disposal |
| Xylenes           | <100 ppm for direct disposal |

*\*greater than 100 ppm BTEX may be accepted on the bioremediation pad for treatment prior to disposal.*

PCBs < 33 ppm

**Additional testing which may be required:**

- Extractable Organic Halogens (EOX)
- Total Extractable Hydrocarbons, Total Volatile Hydrocarbons
- Chlorides
- Major Ions and SAR
- Phenols
- Standard Aerobic Plate Count

Other testing may be required at the discretion of the approvals group, based on the origin of the waste and its description. This testing must be sufficient to establish both treatability and identification as suitable for disposal.

**Waste Approval Applications**

All waste generators must fill out a HAZCO Waste Approval Application (WAA) to describe the physical and chemical characteristics of their waste. WAA's and supporting information (such as Material Safety Data Sheets (MSDS's), and analytical results) are then sent to Calgary to determine whether the waste is suitable for treatment / disposal at the VPIWTDS.

All WAA's are sent to HAZCO Environmental Services Ltd (200, 5720 4th Street S.E.; Calgary, Alberta; T2H 1K7; Attn: Waste Approvals Department; Fax (403) 253-3188.