CH-86-02

BEFORE THE JOINT BOARD

IN THE MATTER OF the
Regional Municipality of Halton's
Landfill Environmental Assessment

SUMMARY OF FINAL

SUBMISSIONS ON BEHALF

OF THE MINISTRY OF THE ENVIRONMENT

John R. Tidball
Counsel for the
Ministry of the Environment

October 17, 1988

BEFORE THE JOINT BOARD

IN THE MATTER OF Section 2 and 3 and 6(3) of the Consolidated Hearings Act, 1981, S.O. 1981, c. 20;

- and -

IN THE MATTER OF Section 12(2) of the Environmental Assessment Act, R.S.O. 1980, c. 140;

- and -

IN THE MATTER OF Sections 30, 35 and 38 of the Environmental Protection Act, R.S.O. 1980, c. 141, as amended;

- and -

IN THE MATTER OF Sections 24 and 61(2) of the Ontario Water Resources Act, R.S.O. 1980, c. 361, as amended;

- and -

IN THE MATTER OF Section 28(3) of, and Regulation 164 under, the Conservation Authorities Act, R.S.O. 1980, c. 85, as amended;

- and -

IN THE MATTER OF Section 40(12) of the Planning Act, S.O. 1983, c. 1, as amended; In connection with site plan control of the sanitary landfill site;

- and -

IN THE MATTER OF Section 22(1) of the Planning Act, 1983 in connection with a referral to this Board by the Honourable Bernard Grandmaitre, Minister of Municipal Affairs, on a request by the Regional Municipality of Halton to amend the Official Plan for the Town of Milton to redesignate a parcel of land comprising Part Lots 3 and 4, Concession 2 N.S. in the Town of Milton from "Agriculture" and "Conservation and Hazard Lands" to permit the construction, operation and maintenance of a landfill site, Minister's File No. 24-0P-0208-A01;

- and -

IN THE MATTER OF Section 34(11) of the Planning Act, 1983 in connection with an appeal to this Board by the Regional Municipality of Halton for an order directing an amendment to By-law 61-85 of the Town of Milton to rezone the lands situated at Lot 3 and part of Lot 4, Concession 2 N.S., in the Town of Milton from "Agriculture" to permit a regional sanitary landfill site and ancillary uses;

- and -

IN THE MATTER OF Section 15(1) of the Planning Act, R.S.O. 1980, ch. 379 in connection with a referral by the Honourable Claude F. Bennett, Minister of Housing on a request by Tremaine Britannia Citizen's Group for consideration of part of the Official Plan for the Halton Planning Area with respect to Sections 1 to 5 inclusive, 7, 9 and 10 of Part III D3 Solid Waste Management, Minister's File No. OPC-0026;

- and -

IN THE MATTER OF Section 64 of the Ontario Municipal Board Act, R.S.O. 1980, c. 347 as amended in connection with an application by the Regional Municipality of Halton for an order approving:

(a) the acquisition of land for the construction, operation and maintenance of a sanitary landfill site to contain 7.96 million cubic metres of waste in the Regional Municipality of Halton and to do so by one of two alternative methods as follows:

    (i) landfilling at the site referred to in Halton's Environmental Assessment as Site F in the City of Burlington;

    (ii) landfilling at the site commonly referred to in Halton's Environmental Assessment as Site D in the Town of Milton

    at an estimated cost of $12,775,000.00, and the borrowing of money by way of temporary advances not exceeding in the aggregate such estimated cost pending the sale of debentures, and

(b) the issuance of necessary debentures to a maximum of $12,775,000.00 for a term not to exceed fifteen years;

- and -

IN THE MATTER OF Section 193(5) and Paragraph 84 of Section 210 of the Municipal Act, R.S.O. 1980, c. 302, as amended;

- and -

IN THE MATTER OF Sections 6, 7 and 8 of the Expropriations Act, R.S.O. 1980, c. 148;

- and -

IN THE MATTER OF an undertaking by the Regional Municipality of Halton to provide facilities for the purpose of receiving, dumping and disposing of waste as required by section 137 of the REGIONAL MUNICIPALITY OF HALTON ACT, R.S.O. 1980, c. 436, as amended by acquiring the land for, constructing, operating and maintaining a landfill to contain 7.96 million cubic metres of waste in the Regional Municipality of Halton.

SUMMARY OF

FINAL SUBMISSIONS ON BEHALF

OF THE MINISTRY OF THE ENVIRONMENT

Jurisdiction of the Joint Board

1. This Joint Board has been established pursuant to the provisions of subsection 4(2) of the Conservation Authorities Act, 1981 with respect to a notice given by the Regional Municipality of Halton to the Hearings Registrar.

2. Subsection 5(2) of the Act states:

> "The joint board may make any decision that might be made by a tribunal that has a power, right or duty to hold a hearing in respect of which the joint board hearing was held or that might be made by anybody or person after the holding of the hearing including but not limited to the granting of any authority or directing the granting or issuing of a permit or licence in the imposition of terms and conditions."

3. This Joint Board has the jurisdiction and the duty to make decisions and grant approvals under the following statutes:

   (a) the Environmental Assessment Act, R.S.O. 1980, c. 140.

   (b) the Environmental Protection Act, R.S.O. 1980, c. 141, as amended.

   (c) the Ontario Water Resources Act, R.S.O. 1980, c. 361, as amended.

   (d) Regulation 164 under the Conservation Authorities Act, R.S.O. 1980, c. 85, as amended.

   (e) the Planning Act, 1983, S.O. 1983, c. 1, as amended.

   (f) the Ontario Municipal Board Act, R.S.O. 1980, c. 347.

   (g) the Municipal Act, R.S.O. 1980, c. 302, as amended.

   (h) the Expropriations Act, R.S.O. 1980, c. 148.

Position of the Ministry of the Environment

4. The Ministry of the Environment only takes a position with respect to the Environmental Assessment Act (EAA) and Environmental Protection Act (EPA) matters before the Joint Board.

5. With respect to the matter of an approval under Section 24 of the Ontario Water Resources Act, it is submitted that the section does not apply to the on-site leachate collection facilities proposed at either site. Therefore, no approval need be issued by the Joint Board.

6. With respect to the issuance of a permit under Regulation 164, the Ministry takes no position. The conditions of approval agreed to between the Halton Region Conservation Authority and the Regional Municipality of Halton have been included in the EPA conditions herein proposed.

7. With respect to the various approvals sought under the Planning Act, it is submitted that the required Planning Act approvals should flow as a matter of course from the overall decision to be made by the Joint Board.

8. With respect to approvals required under the Ontario Municipal Board Act, the Municipal Act and the Expropriations Act, the Ministry takes no position.

Environmental Assessment Act

9. The Joint Board derives its jurisdiction to make decisions under the EAA from Section 12 of that Act. The Board is required to make a decision with respect to,

> (a) the acceptance or amendment and acceptance of the environmental assessment;
>
> (b) whether approval to proceed with the undertaking in respect of which the environmental assessment was submitted should or should not be given; and
>
> (c) whether the approval should be given subject to terms and conditions, and, if so, the provisions of such terms and conditions.

10. The contents of an environmental assessment are prescribed by subsection 5(3) of the EAA. It states:

"(3) An environmental assessment submitted to the Minister pursuant to subsection (1) shall consist of,

(a) a description of the purpose of the undertaking;

(b) a description of and a statement of the rationale for,

(i) the undertaking,

(ii) the alternative methods of carrying out the undertaking, and

(iii) the alternatives to the undertaking;

(c) a description of,

(i) the environment that will be affected or that might reasonably be expected to be affected, directly or indirectly,

(ii) the effects that will be caused or that might reasonably be expected to be caused to the environment, and

(iii) the actions necessary or that may reasonably be expected to be necessary to prevent, change, mitigate or remedy the effects upon or the effects that might reasonably be expected upon the environment,

by the undertaking, the alternative methods of carrying out the undertaking and the alternatives to the undertaking; and

(d) an evaluation of the advantages and disadvantages to the environment of the undertaking, the alternative methods of carrying out the undertaking and the alternatives to the undertaking."

11. It is submitted that the environmental assessment submitted to the Minister, as amended, should be accepted by the Joint Board.

12. It is submitted that approveability under the EAA is at least in part related to approveability under the EPA. That is, if an undertaking is unacceptable and therefore unapproveable under the EPA it should not be given approval to proceed under the EAA.

13. The position of the Ministry set out below is that both Sites D and F are acceptable under the EPA and that either site could be given a certificate of approval. It is submitted that approval to proceed with the undertaking under the EAA should be granted by the Joint Board. The

Ministry takes no position overall in support of one site over the other. There are factors that go to approval under the EAA, such as social and economic impact, that are not within the mandate of the Ministry of the Environment. It is submitted that impacts on surface and ground waters have been given appropriate weight in the environmental assessment and that either site is acceptable with respect to those issues.

14. It is submitted that approval to proceed with the undertaking should be given subject to the terms and conditions set out at either Tab 1 (Site D) or Tab 2 (Site F).

Environmental Protection Act

15. The Joint Board derives its jurisdiction to approve the undertaking under the EPA from the powers of the director set out in Section 38 of that Act. Section 38 states:

"(1) The Director, after considering an application for a certificate of approval, may issue a certificate of approval or provisional certificate of approval.

(2) The Director may,

(a) refuse to issue or renew;

(b) suspend or revoke; or

(c) impose, alter or revoke terms and conditions in,

a certificate of approval or provisional certificate of approval where,

(d) the waste management system or waste disposal site does not comply with this Act or the regulations; or

(e) he considers, upon probable grounds, that the use, establishment, operation, alteration, enlargement or extension of the waste management system or the waste disposal site may create a nuisance, is not in the public interest or may result in a hazard to the health or safety of any person."

16. It is submitted that approval of an application for a waste disposal site under the EPA should be considered in light of the purpose of the Act which is "to provide for the protection and conservation of the natural environment" and in terms of impacts on the "natural environment", (the air, land and water of the Province of Ontario).

17. Potential environmental impacts from either site include dust and odour emissions, noise emissions, litter, visual impact, bird hazard impact, impacts from the generation of gas and impacts on ground water and surface water.

18. It is submitted that, in this case, the only critical impacts that affect the approveability of either site are impacts on ground water and surface water. The remaining potential impacts are all amenable to mitigation and the conditions of approval set out at Tabs 3 and 4 are specifically directed at those impacts. In particular, potential impacts on aircraft from increased bird populations does not affect the approveability of either site and can be addressed through conditions of approval.

Ground Water Impacts

19. It is submitted that there are three primary criteria which must be satisfied in order to conclude that the impact of a proposed landfill site on ground water is acceptable. They are:

    (1) It should be demonstrated that any predicted leachate migration from the landfill will not impair the reasonable use of ground water on adjacent property.

    (2) It should be demonstrated that a monitoring program can be developed which will be capable of identifying any movement of landfill-derived contaminants.

(3) It should be demonstrated that feasible contingency measures will be available to mitigate any impact on adjacent property that is identified by the monitoring program.

20. A certain degree of predictability is inherent in all three suggested criteria but predictability in and of itself should not be a separate and distinct criterion.

21. There are two policies of the Ministry of the Environment which are directly applicable to the first criterion. The "Reasonable Use Policy" (Exhibit E-154) sets out the basis for determining the reasonable use of ground water on adjacent property and suggests a method of determining the level of acceptable discharge to ground water. The "Engineered Facilities Policy" (Appendix B to Exhibit E-928) applies to the viability and long term maintenance of engineered facilities proposed to prevent unacceptable off-site impacts over the anticipated contaminating life-span of a landfill site.

Surface Water Impacts

22. It is submitted that the criterion for determining the acceptability of a proposed landfill site in terms of surface water impacts should be that it is demonstrated that any predicted leachate migration from the site will have no impact on surface water. While the Ministry's MISA program (Exhibit E-930 is the MISA White Paper), is not directly applicable to indirect discharges from a landfill, it is submitted that a consistent approach would require the use of the best available technology to prevent discharges to surface water.

Site D

23. It is submitted that the reasonable use of ground water in the vicinity of Site D and, more particularly, in the granular units beneath the site, is domestic and agricultural use. It is further submitted that, given the fact that certain key parameters in the ground water are currently near provincial drinking water quality objectives, the boundary criteria as determined using the formula in the reasonable use policy is zero. No discharge of contaminants to ground water would be permitted from the proposed Site D.

24. The applicant's proposal to design the site as a "hydraulic trap" would preclude the escape of contaminants to the ground water. It is submitted that, as designed, Site D can meet the requirements of suggested criterion 1. if was as designed.

25. The "contaminating life-span" of Site D has not been accurately defined throughout the course of the hearing. The length of time over which the leachate collection system can be expected to function and maintain the hydraulic head in the landfill at an appropriately low level has also not been precisely defined. It is submitted that the prudent finding of fact from all the evidence is that the leachate collection system will probably not last as long as it needs to prevent off-site impacts.

26. It is submitted that additional engineering features are required at Site D to prevent off-site movement of contaminants in ground water over the contaminating life-span of the site.

27. It is submitted that the .4 metre margin of safety between the maximum hydraulic head at the base of the landfill and the lowest measured hydraulic head in the underlying geologic strata is insufficient. While evidence in support of any other margin of safety is not strong, a one

metre margin of safety would be more appropriate and environmentally prudent in all the circumstances. Condition 5.4.1 of the Site D EPA Conditions (Tab 3) imposes a design requirement for that margin of safety.

28. It is further submitted that a second level of engineering will in all likelihood be required in the event of failure of the leachate collection system. The inclusion of condition 14.3 in the Site D EPA conditions (Tab 3) would address that concern by requiring the installation of wells completed to the base of the waste in each landfill Cell which could be used to pump leachate if required.

29. In reply evidence, Mr. Stan Feenstra expressed the opinion that there is a reasonable possibility that fracturing extends through the unweathered upper till and that such fracturing would allow for the rapid movement of contaminants to the upper granular unit and therefore off-site. It is submitted that Mr. Feenstra's hypothesis should be accepted and that the most appropriate additional level of engineering is a liner at the base of the site. Condition 5.3 in the Site D EPA Conditions (Tab 3) would require such a liner.

30. It is submitted that, with the addition of the additional design features suggested above, Site D will not impair the reasonable use of ground water on adjacent property. Therefore, Site D can meet suggested criterion 1.

31. It is submitted that a monitoring program can be developed which will be capable of identifying any movement of landfill-derived contaminants at Site D. Therefore, Site D can meet suggested criterion 2.

32. There are several levels of contingency measures that can be implemented to mitigate any impacts in the event that contaminants do migrate from

Site D. It is therefore submitted that Site D can meet suggested criterion 3.

33. In conclusion, with respect to impacts on ground water, it is submitted that Site D can be designed in such a way to be acceptable.

34. No surface water impacts are predicted at Site D. It is therefore submitted that the suggested criteria for acceptability has been met.

35. It is submitted that, with the imposition of the conditions set out at Tab 3, Site D is acceptable under the Environmental ~~Assessment~~ Act and a certificate of approval can be issued. Protection

Site F

36. It is submitted that, in the vicinity of Site F, the reasonable use of ground water in the Queenston Shale is contaminant attenuation and the reasonable use of the ground water in the lacustrine sands south of Highway 403 is drinking water. Groundwater in the Queenston Shale does not constitute a viable resource in terms of quantity or quality because of its poor natural quality and limited yield. The reasonable use policy will bear the interpretation suggested and in all the circumstances it is submitted it is the only reasonable interpretation. On the other hand, the ground water resource in the "rind" in Aldershot has some limited present and potential use.

37. It is submitted that the hydrostratigraphic interpretation advanced by Trow Hydrology Consultants Limited was a simplistic interpretation necessary for the purposes of impact assessment but is not supported by the evidence. It is submitted that the most reasonable hydrostratigraphic interpretation that can be made at Site F is the interpretation advanced by Mr. Stan Feenstra in reply evidence.

38. While the majority of the hydrogeologic debate throughout the hearing focused on the magnitude of the infiltration to the deeper shale, it is submitted that the most reasonable interpretation is that very little infiltration passes below the "active zone", perhaps in the order of 1 millimetre per year. The existence of an "active zone" in the Queenston Shale is supported, in part, by every hydrogeological witness called before the Board.

39. The "active zone" in the Queenston shale is imprecisely defined at the present time. However, the weight of the evidence before the Board is that discharge from the active zone will be to surface water in relatively close proximity to the site. It is submitted that a deep perimeter drain suggested by Mr. Feenstra is an essential element of the design of Site F.

40. It is submitted that it is common ground on the part of all hydrogeologists that there will be no impact on the ground water in the lacustrine sand deposit in Aldershot.

41. It is submitted that it has been demonstrated that any leachate migration from Site F will not impair the reasonable use of ground water on adjacent property. Therefore, Site F can meet suggested criterion 1.

42. It is submitted that the applicant has demonstrated that a monitoring program can be developed at Site F that is capable of identifying the movement of landfill-derived contaminants. Condition 12.1 in the Site F EPA Conditions adopts many of the proposals made by Mr. Feenstra with regard to ground water monitoring. With the imposition of that condition, Site F can meet suggested criterion 2.

43. The applicant has suggested that ground water from the shale could be pumped with purge wells in the event that impacts are unacceptable. It is submitted that feasible contingency measures have been demonstrated to be available to mitigate any unanticipated impacts and therefore Site F can meet suggested criterion 3.

44. It is therefore submitted that, in terms of impacts on ground water, Site F is acceptable.

45. With respect to impacts on surface water, it is submitted that additional design features, namely a deep perimeter drain as suggested by Mr. Feenstra, are necessary to make Site F acceptable. Mr. Feenstra suggested that such a drain should intercept the flow in the "active zone" of the Queenston Shale around the southwestern, southern and southeastern parts of Site F. Given the sequence of landfilling proposed at Site F, a perimeter drain serving the same function is logically necessary around Cell 1 as well. Condition 5.6 in the Site F EPA Conditions reflects that necessity.

46. Collection in the "active zone" of the Queenston Shale is necessary with or without the addition of a liner to the Site F design. It is submitted that it is a reasonable finding from all the evidence that 10 - 20 millimetres a year of exfiltration can be expected from the base of Site F without a liner and that approximately 8 millimetres per year exfiltration can be expected with the liner. It is submitted that it has not been demonstrated that a liner is necessary to prevent surface water impacts from Site F.

47. It is therefore submitted that, with the imposition of the conditions set out at Tab 4, Site F can be approved under the Environmental Protection Act and a certificate of approval can be issued.

Issuance of a Certificate of Approval

48. While the Joint Board has the jurisdiction to "stand in the shoes of the Director" and make the decision under Section 38 of the Environmental Protection Act, the jurisdiction of the Board to actually issue a certificate of approval is questionable. It is therefore submitted that the most appropriate course would see the Board direct the Director of Approvals to issue a certificate of approval subject to the terms and conditions set out in either Tab 3 or Tab 4.

49. In order that some flexibility can be achieved in the process, it is submitted that the Director should be given the authority to add additional conditions or to alter the wording of the conditions set out at Tab 3 or 4 for the purposes of clarity as long as the substance of the Board's conditions are not changed.

All of which is respectfully submitted.

John R. Tidball
Counsel for
The Ministry of the Environment

PROPOSED CONDITIONS OF APPROVAL
ENVIRONMENTAL ASSESSMENT ACT

Site D

1. The Regional Corporation shall make all reasonable efforts to institute programs and activities and to encourage area municipalities to institute programs and activities to promote the re-use, reduction and separation at source and recycling of waste.

2. The Regional Corporation shall make all reasonable efforts to comply with the strategy and timetable for the implementation of an Energy From Waste facility as set out in Part 3 of "Halton Region's Response to the Ontario Government Review of Halton's Environmental Assessment - Solid Waste Management System for the Regional Municipality of Halton- Landfill Component", with the objective of starting up such a facility within 8 years of the first receipt of waste at the landfill site.

3. If 50 percent of the waste generated within the Regional Municipality is not diverted from the landfill site by the end of the eight year of operation, the Regional Corporation shall immediately commence appropriate waste management studies required for the approval of new waste reduction, reuse, recycling, recovery and disposal programs and facilities.

4. Within one year of this approval, the Regional Corporation shall make all necessary arrangements to provide facilities for the collection and transfer of household hazardous wastes. Such facilities shall be convenient and available for use by all residents in the Regional Municipality at least once in each month.

5. The Regional Corporation shall establish a Review Committee to monitor waste haulage practices in the Regional Municipality. The purpose of the committee shall be to review public concerns, haulage routes and practices with the goal of improving general traffic safety.

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6. The Regional Corporation shall ~~take all reasonable steps~~ to form a Citizen's Advisory Committee to make recommendations for the avoidance or minimization of off-site impacts from the landfill. The Committee shall consist primarily of local residents. The Regional Corporation shall provide a reasonable annual budget to provide for the operation of the Committee.

7. The Regional Corporation shall undertake industrial and commercial waste generator surveys to identify all potential generators of commercial and non-hazardous solid industrial waste and the disposal method of each type of waste. The information in the survey shall be up-dated as appropriate and at least annually. The information in the surveys shall be made available to the operators of the site on a continuous and interactive basis and to the Director of the Central Region of the Ministry of the Environment upon request.

8. (a) Prior to site preparations, the Regional Corporation shall complete the archeological survey of the site.

(b) The Regional Corporation shall either avoid significant archeological sites or conduct salvage operations if avoidance is not possible because of landfilling operations.

9. Within one year of this approval, the Regional Corporation shall submit an application to the Town of Milton for an Official Plan Amendment to provide for the creation of a Special Policy Area pertaining to the lands surrounding Site D. The Special Policy Area shall be created in accordance with Ministry of the Environment Policy #07-07.

10. The Regional Corporation shall design and operate the site in a manner

that will allow for the implementation of an agricultural after-use at the site.

11. The Regional Corporation shall take all reasonable steps to preserve and maintain the Ford Farmhouse and associated landscape plantings.

12. Prior to the receipt of waste at the site, the Regional Corporation shall make the necessary arrangements with the Ontario Ministry of Transportation to widen Highway No. 25 at the entrance to the site with the addition of right and left hand turn lanes.

13. On or before December 31, 1996, the Regional Corporation shall make all necessary applications for the construction of a gravity sewer or forcemain to connect the site to the Mid-Halton Water Pollution Control Plant or for the installation of leachate treatment facilities at the site.

14. On or before October 1st of each year, the Regional Corporation shall submit a report to the Director of the Environmental Assessment Branch of the Ministry of the Environment for filing on the public record which describes compliance with these conditions of approval. Copies of the report shall be provided to the Director, Heritage Branch, Ministry of Citizenship and Culture, the Manager, Electricity Section, Liaison and Planning Branch, Ministry of Energy, the Director, Foodland Preservation Branch, Ministry of Agriculture and Food and the Clerk of the Town of Milton.

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Agric afteruse

PROPOSED CONDITIONS OF APPROVAL
ENVIRONMENTAL ASSESSMENT ACT

Site F

1. The Regional Corporation shall make all reasonable efforts to institute programs and activities and to encourage area municipalities to institute programs and activities to promote the re-use, reduction and seperation at source and recycling of waste.

2. The Regional Corporation shall make all reasonable efforts to comply with the strategy and timetable for the implementation of an Energy From Waste facility as set out in Part 3 of "Halton Region's Response to the Ontario Government Review of Halton's Environmental Assessment - Solid Waste Management System for the Regional Municipality of Halton-Landfill Component", with the objective of starting up such a facility within 8 years of the first receipt of waste at the landfill site.

3. If 50 percent of the waste generated within the Regional Municipality is not diverted from the landfill site by the end of the eighth year of operation, the Regional Corporation shall immediately commence appropriate waste management studies required for the approval of additional waste reduction, reuse, recycling, recovery and disposal programs and facilities.

4. Within one year of this approval, the Regional Corporation shall make all necessary arrangements to provide facilities for the collection and transfer of household hazardous wastes. Such facilities shall be convenient and available for use by all residents in the Regional Municipality at least once in each month.

5. The Regional Corporation shall establish a Review Committee to monitor waste haulage practices in the Regional Municipality. The purpose of the committee shall be to review public concerns, haulage routes and practices with the goal of improving general traffic safety.

6. The Regional Corporation shall take all reasonable steps to form a Citizen's Advisory Committee to make recommendations for the avoidance or minimization of off-site impacts from the landfill. The Committee shall consist primarily of local residents. The Regional Corporation shall provide a reasonable annual budget to provide for the operation of the Committee.

7. The Regional Corporation shall undertake industrial and commercial waste generator surveys to identify all potential generators of commercial and non-hazardous solid industrial waste and the disposal method of each type of waste. The information in the survey shall be up-dated as appropriate and at least annually. The information in the surveys shall be made available to the operators of the site on a continuous and interactive basis and to the Director of the Central Region of the Ministry of the Environment upon request.

8. (a) Prior to site preparations, the Regional Corporation shall carry out an archeological survey of the site.

   (b) The Regional Corporation shall either avoid significant archeological sites or conduct salvage operations if avoidance is not possible because of landfilling operations.

9. Prior to any construction activities at the site, the Regional Corporation shall, in cooperation with the City of Burlington, either design and implement measures at Bayview Park to mitigate noise, dust, odour and visual impacts of the landfill site or make provision for replacement facilities during the operation of Cell 1.

10. (a) The Regional Corporation, or its designate, shall maintain, in accordance with the provisions of the Pits and Quarries Control Act

(Ontario) (the "Act") or any successor legislation, the license to extract shale on Site "F" until the filing of the final closure plan in respect of Site "F", providing that, if any future legislative or regulatory provision governing the requirements for maintenance of such a license impose any greater obligation or duty on the Regional Corporation or its designate, as holder of the license, concerning the need to extract or remove shale from the licensed area than are imposed pursuant to the Act as at the date hereof there, at the Regional Corporation's option, this condition and the obligation of the Regional Corporation pursuant to this condition shall terminate.

(b) The Regional Corporation shall be free, in consultation with the District Manager, Ministry of Natural Resources, Cambridge District or his successor and with the approval of the Director of Approvals of the Ministry of the Environment, to make such modifications from time to time to the Final Design and Operations Plan as to the Regional Corporation seem desirable to accommodate the potential extraction of shale in excess of landfill cover requirements, and its storage on or removal from or both, the area licensed under the Act or any successor legislation for shale extraction. For greater certainty, the Regional Corporation shall not be obliged hereunder to cause to be carried out or to carry out the extraction of shale in excess of landfill cover requirements from the site. This condition is intended to ensure that the Regional Corporation shall have flexibility to make modifications in the future to the Final Design and Operations Plan should such be possible and desirable in the opinion of the Regional Corporation to accommodate such extraction of shale in excess of landfill cover requirements.

11. The Regional Corporation shall design and operate the site in a manner that will allow for the implementation of a passive recreational after-use at the site.

12. On or before October 1st of each year, the Regional Corporation shall submit a report to the Director of the Environmental Assessment Branch of the Ministry of the Environment for filing on the public record which describes compliance with these conditions of approval. Copies of the report shall be provided to the District Manager, Cambridge District, Ministry of Natural Resources, the Director, Heritage Branch, Ministry of Citizenship and Culture, the Manager, Electricity Section, Liaison and Planning Branch, Ministry of Energy and the Clerk of the City of Burlington.

PROPOSED CONDITIONS OF APPROVAL
ENVIRONMENTAL PROTECTION ACT

Site D

Definitions

1.1. In these conditions,

"Approvals Director" means the Director of the Approvals Branch of the Ministry of the Environment or his designate;

"District Officer" means the District Officer of the Halton-Peel District of the Ministry of the Environment;

"Regional Corporation" means the Regional Municipality of Halton;

"Regional Director" means the Director of Central Region of the Ministry of the Environment or his designate;

"site" means the waste disposal site.

Design and Operations

2.1. The Regional Corporation shall submit detailed design, operations and monitoring documents to the Approvals Director for approval. The documents shall be prepared to reflect conditions 3 to 14 of this approval and conditions of the approval to proceed with the undertaking under the Environmental Assessment Act and shall contain at least the following:

2.1.1. A description of site preparation activities, including borehole sealing and base preparation.

2.1.2. A base contour plan.

2.1.3. A description of liner construction activities and quality control measures.

2.1.4. Plans and a description of the leachate collection system, including a precise definition of the maximum permissible leachate mound required for the operation of a hydraulic trap.

2.1.5. A description of leachate collection system inspection and maintenance activities.

2.1.6. A description of leachate flow measurement locations, facilities and methods.

2.1.7. Plans and descriptions of surface water collection and containment structures.

2.1.8. A description of daily, intermediate and final cover activities, including depths, material characteristics, installation procedures and storage locations.

2.1.9. A description of cover stockpile activities, including use, timing, locations, erosion protection and temporary vegetation measures.

2.1.10. A description of methods and procedures to be used in the construction of berms on the outside of each level of waste.

2.1.11. Interim and final contour plans.

2.1.12. Plans and descriptions of site roads.

2.1.13. A landscape plan describing the locations of interim and permanent vegetation, including types, sizes and planting schedules, and earthen, vegetative or other types of barriers for the purpose of providing windbreaks and mitigating visual impacts from the site.

2.1.14. A description of daily operating activities.

2.1.15. A description of litter control activities on and off the site.

2.1.16. Plans and descriptions of site fencing.

2.1.17. A description of piped water facilities.

2.1.18. Plans and a description of a storage facility for suspect wastes.

2.1.19. A description of vector control activities, including overwiring.

2.1.20. A description of any gas monitoring activities.

2.1.21. A ground water monitoring program.

2.1.22. A surface water monitoring program.

2.1.23. A leachate monitoring program.

2.1.24. A description of contingency plans to mitigate impacts from leachate or gas migration.

2.2. The Regional Corporation shall construct and operate the site and carry out monitoring activities and programs in accordance with the design, operations and monitoring documents as approved by the Approvals Director and with any modifications as may be approved from time to time by the Approvals Director.

2.3. No activity for which approval of the Approvals Director is required under condition 2.1 shall be carried out without that approval.

2.4. As built surveyed drawings shall be submitted to the Approvals Director for all facilities, including base contours, leachate collection facilities, final cell contours and elevations, berms and monitoring installations, together with certifications from appropriately qualified persons that the facilities have been completed in accordance with the approved design.

2.5. new.

Inspection and Control of Waste

3.1. Only 7.96 million cubic metres of domestic, commercial and non-hazardous solid industrial waste may be deposited at the site. In no case shall any hazardous or liquid industrial waste be deposited at the site.

3.2. The Regional Corporation shall establish a comprehensive system of incentives and penalties to enforce compliance with site operating rules by users and to ensure to the greatest extent practicable that only permissible waste is deposited at the site.

3.3. Prior to any receipt of waste at the site, the Regional Corporation shall establish a computerized record-keeping system at the site to continuously record details of the following information with respect to each load of waste to be landfilled at the site:

3.3.1. sources of waste by generator;

3.3.2. waste types;

3.3.3. weight;

3.3.4. hauler name;

3.3.5. hauler certificate of approval number;

3.3.6. driver identification;

3.3.7. infractions of site operating rules; and

3.3.8. disposal location.

3.4. Condition 3.3 does not apply with respect to waste received at the public container area but does apply to waste transferred from the public container area to the disposal area.

3.5. Prior to any receipt of waste at the site, a storage facility with appropriate environmental protection measures shall be established at the site to safely hold and contain any suspect wastes requiring either confirmation of suitability for disposal or removal and disposal at an alternate approved facility. Appropriate equipment shall be maintained on-site to immediately load and remove suspect wastes from the working face to the waste holding area.

3.6. Prior to the commencement of site preparation, the Regional Corporation shall retain a full-time environmental inspector who shall be responsible for,

3.6.1. monitoring compliance with these conditions,

3.6.2. monitoring the installation of all works and ongoing site management and operations throughout the life of the site,

3.6.3. reporting to the Regional Director on all incidents of non-compliance with the regulations, these conditions, the conditions of approval under the Environmental Assessment Act and the approved design, operations and monitoring documents,

3.6.4. reviewing the raw data associated with all groundwater, surface water and gas monitoring and reporting to the Regional Director on any data which indicate actual or potential contaminant movement,

3.6.5. preparing written inspection reports for submission to the Regional Director on a monthly basis, or more frequently as required by the Regional Director,

3.6.6. preparing an annual report for submission to the Regional Director summarizing his or her activities and findings, and

3.6.7. participating on the Citizen's Advisory Committee.

3.7. Detailed terms of reference concerning the activities and responsibilities of the Environmental Inspector shall be submitted to the Regional Director for review and approval no later than 2 months after the date of this approval.

3.8. The Regional Corporation shall employ at least one properly trained waste inspector to exclusively monitor the dumping of all waste at the working face.

3.9. The Regional Corporation shall employ traffic controllers to supervise the movement of vehicular traffic at both public disposal areas and at the working face.

3.10. Once in each month during the first year of site operation and annually thereafter until closure, the Regional Corporation shall arrange for an inspection of the site by a pest control contractor. The annual inspection shall be increased to a monthly frequency if pest control problems occur. Records of inspections shall be maintained at the site office.

Surface Water

4.1. Surface water collection and containment structures shall be designed to,

4.1.1. convey, at a minimum, the fifty year design storm with erosion control protection up to the five year storm condition;

4.1.2. ensure that there are no increases in post-development flow rates over pre-development flow rates for a range

of storms up to and including the one in one hundred year storm;

4.1.3. ensure that potential discharges of leachate to surface water can be contained and, if necessary, immediately discharged to an appropriate treatment facility; and

4.1.4. prevent any potential increase in erosion along the Bronte and Sixteen Mile Creek tributaries should any changes in flow result from the final design.

4.2. The Bronte Creek tributary diversion along First Line shall be sized to convey the regional storm flow and designed to maintain the existing stage storage and stage discharge for a variety of storm flows up to and including the regional storm event. The diversion shall contain a low flow channel to prevent erosion.

4.3. Surface water storage facilities shall have the capability for storing surface water for at least 48 hours under average annual flow conditions.

4.4. Surface water collection and containment structures shall be designed using the appropriate computer modelling method of hydrological and hydraulic calculations as specified in "Flood Plain Management in Ontario, Technical Guidelines, Ministry of Natural Resources" and "Storm Water Management Guidelines, Central Region, Ministry of Natural Resources".

4.5. All surface water storage areas shall be inspected at least once in each year and dredged as required.

Site Preparation

5.1. Prior to any excavation at the site, all boreholes and any other conduits for possible leachate movement within areas of landfilling shall be properly sealed to the satisfaction of the Director.

5.2. Schedules for the construction and installation of site facilities shall be provided in advance to the District Officer.

5.3. A liner of compacted glacial till with a thickness of at least one metre and a permeability not exceeding 1 X 10-7 cm/sec shall be constructed at the base of the excavation.

5.4. The leachate collection system to be constructed on the base of the site shall be designed and operated to,

5.4.1. ensure that the maximum hydraulic head at the base of the landfill is at least one metre lower than the lowest measured hydraulic head in the underlying geologic strata;

5.4.2. provide for a slope on all collectors and headers that will minimize clogging; and

5.4.3. provide maximum possible access to collectors for routine inspection and maintenance.

5.5. Retention tanks shall be installed for the purpose of storing leachate collected in the leachate collection system. The tanks shall be sized to accommodate a minimum 72 hours of average anticipated flow volumes.

5.6. Leachate shall be trucked from the site so that a minimum of 48 hours of leachate retention capacity, to be calculated on the basis of average anticipated flows, shall be available in the retention tanks at all times.

5.7. Conditions 5.4 and 5.5 cease to apply when leachate is discharged directly to a sewer or forcemain.

5.8. The berm situated adjacent to the First Line shall be installed in as expeditious a manner as possible and in accordance with the "Berm Assembly Procedure" contained in Appendix 1 of the "Halton Region Technical Study, Noise Analysis, Site D, Schedule J-D, September 11, 1986", prepared by Barman Coulter Swallow Associates. The berm shall be installed with an outside slope of 6:1 except that the slope may be steeper in the vicinity of the First Line woodlot, which shall be preserved to the greatest extent possible. The berm shall be seeded and planted with other types of vegetation immediately following installation.

Roads

6.1. All site roads, except those located on areas that are to be landfilled, shall be paved and shall be cleaned on a daily basis, when in use.

6.2. All non-paved site roads shall be treated with dust suppression materials as required in order to minimize dust generation.

Equipment

7.1. All off-road equipment used at the site shall not be operated in a

manner which exceeds a sound level of 85 decibels at 15 metres measurement distance.

7.2. All off-road equipment shall be tested annually for sound levels in accordance with the procedures specified in Publication NCP-115 of the Ministry of the Environment's Model Municipal Noise Control By-Law.

7.3. Equipment shall be maintained to minimize downtime.

General Operations

8.1. Prior to the commencement of landfilling in each level of waste above grade, a compacted berm of cover material shall be placed at the fill perimeter to the maximum anticipated height of waste in that level. A layer of material with a permeability greater than 1 X 10-3 cm/sec shall be placed on the interior side of the berm, extending onto the floor of the level, to ensure a positive hydraulic connection with the level below.

8.2. Waste shall be deposited in a manner that minimizes the size of the working face and shall be compacted before cover material is applied.

8.3. Cover material with a material size no greater than 25 millimetres shall be applied in a layer at least 15 centimetres thick over newly deposited and compacted waste at the end of each day that the site is open in a manner that ensures that no waste is exposed.

8.4. Cover material shall be applied so that vertical hydraulic connection is maintained in each cell.

8.5. An alternative supply of cover material for at least five working days shall be maintained at the site at all times and used when regular daily cover materials cannot satisfy conditions 8.3 and 8.4.

8.6. Additional cover material shall be applied in a layer at least 15 centimetres thick in areas where no further waste is to be deposited for 60 days.

8.7. Whenever any part of a fill area has reached its limit of fill, final cover material shall be applied and compacted. The compacted cover material shall be at least one metre thick.

8.8. Cover material which has cracked or eroded so that waste is exposed shall be immediately regraded and compacted.

8.9. The working face of the site shall be overwired for bird control purposes.

8.10. Surface ponding of water shall be minimized and permanent surface water catchment areas shall be overwired for bird control purposes.

8.11. Grass on finished or temporarily stabilized areas shall be maintained at a minimum height of 12 centimetres to discourage bird loafing.

Public Containers

9.1. The public container area shall be screened from Highway No. 25.

9.2. Each bin in the public container area containing waste at the end of an operating day shall be closed or covered overnight.

Litter Control

10.1. The Regional Corporation shall take all necessary steps to prevent the egress of litter from the site.

10.2. Litter shall be recovered as soon as possible and, in any event, within 24 hours.

10.3. In addition to the provisions of conditions 10.2, litter shall be picked up at least weekly from the following roads and ditches in the vicinity of the site:

10.3.1. Highway No. 25 between Lower Baseline Road and Britannia Road.

10.3.2. First Line between Lower Baseline Road and Britannia Road.

10.3.3. Britannia Road between Highway No. 25 and First Line.

10.3.4. Lower Baseline Road between Highway No. 25 and First Line.

10.4. Permanent fencing to be installed at the site shall be chain link and a minimum of 3.5 metres in height.

10.5. Temporary fencing to be installed at the site shall be portable and a minimum of 3.5 metres in height.

10.6. Temporary or permanent fencing shall be placed around all tipping areas, except that snow fencing may be utilized within 30 metres of and parallel to the west edge of the active fill area.

10.7. The deposit of waste at the site shall generally progress in a west to east direction.

Soil Replacement

11.1. A qualified pedologist and/or agronomist shall supervise all topsoil stripping and operations and the placement of final cover in all areas to be utilized for agricultural after use.

11.2. The parts of the fill area to be used for agriculture following closure of the landfill shall be covered with at least one metre of topsoil over and above the final compacted cover.

11.3. No agricultural use shall be permitted on any slopes greater than 8:1.

Ground Water Monitoring

12.1. The ground water monitoring program shall be designed to identify, delineate and characterize any movement of landfill-derived contaminants and, in particular, to identify any impacts on the use of ground water for domestic or agricultural purposes off-site which would trigger implementation of contingency measures. The program shall be designed in accordance with the following:

12.1.1. New well nests shall be established around the site with particular emphasis on the area adjacent to First Line, where information suggests that granular units may extend off-site. Exact locations shall be selected to investigate the lateral continuity and hydraulic characteristics of the granular units and to facilitate

comprehensive monitoring along major contaminant pathways. Where possible, new well nests shall be located and designed for contingency purge well purposes.

12.1.2. Each new well shall be installed in a separate borehole. No multilevel devices shall be employed.

12.1.3. The deepest borehole at each monitoring location shall be continuously sampled during drilling. All boreholes shall be drilled using a technique that minimizes the introduction of foreign water into the substrata and that minimizes borehole smearing.

12.1.4. At each location, wells shall be installed in at least each granular unit encountered at the location and in the weathered till.

12.1.5. The lateral continuity and hydraulic characteristics of each granular unit shall be investigated through the use of environmental isotopes and hydraulic testing methods, including pumping tests.

12.1.6. New wells are to be constructed with regard to the detection of volatile organic compounds. In particular, well casing material shall be constructed of stainless steel which has been steam cleaned at the borehole site. A sample of the rinse water shall be analyzed to confirm the absence of contaminants.

12.1.7. A monitoring well network, consisting of new wells,

appropriate existing wells and potentially affected domestic wells, shall be established.

12.1.8. Each monitoring well shall be equipped with a dedicated sampling device. Sampling devices and techniques shall be designed to provide representative samples and to ensure sample integrity.

12.1.9. Each well in the monitoring well network shall be sampled over a period of at least one year to characterize baseline water quality.

12.1.10. Sampling and analytical procedures, including quality assurance and quality control activities, shall be documented.

12.1.11. A ground water sampling program shall be developed to ensure early detection of contaminants which have escaped the landfill. Ground water shall be sampled at least twice per year with more frequent sampling along contaminant pathways consistent with ground water velocities and estimated arrival times for contaminants at the site boundary. Parameters for analysis shall include chloride, nitrate and a suite of organic compounds characteristic of leachate generated at the site. Sampling frequency and parameters for analysis shall be adjusted as ground water and leachate monitoring information becomes available.

12.1.12. Equilibrium water levels shall be measured in all wells in the ground water monitoring network and other existing observation wells at a frequency sufficient to

investigate short term and long term fluctuations and their influence on the ground water flow system and potential movement of contaminants in the vicinity of the site.

12.2. The results of all analyses shall be provided to the Environmental Inspector within one month of each analysis being completed. The results of analyses of each domestic well and a copy of each Annual Report shall be provided to the owners of that well.

Surface Water Monitoring

13.1. The surface water monitoring program shall be designed in accordance with the following:

13.1.1. Permanent surface water monitoring stations shall be established to detect and quantify any impacts originating from the site. Stations shall be located, where possible, to avoid other sources of contamination.

13.1.2. Surface water at each station shall be monitored monthly over a period of two years to establish background water quality and quantity.

13.1.3. Following the two year period of monthly monitoring, surface water shall be monitored at each station at least four times in each year. Frequency shall be increased in the event that landfill-derived contamination is suspected.

Leachate Monitoring

14.1. Leachate samples shall be collected from the leachate collection system in order to characterize and monitor the leachate chemistry in each landfill cell during the contaminating lifespan of the site. Leachate shall be sampled at least four times per year to monitor annual trends in leachate chemistry. Leachate shall be analyzed for a full suite of inorganic and organic parameters with the objective of establishing a critical contaminant. The frequency of sampling and parameters for analysis shall be adjusted as leachate monitoring information becomes available. The parameters for analysis shall always include, as a minimum, the same parameters for which groundwater is being analyzed.

14.2. The flow of leachate from each cell and the total flow of leachate generated at the site shall be continuously measured. The information shall be integrated into an annual site water balance and used as part of an annual assessment of the performance of the underdrain system.

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14.3. Following the completion of each landfill cell, wells shall be completed to the base of the waste. The configuration and construction of these wells shall allow monitoring of leachate levels and the pumping of leachate, if required. Following installation, these wells shall be developed and hydraulic tests undertaken to determine the hydraulic conductivity of the waste.

14.4. Leachate samples from wells installed in the waste shall be collected as frequently, and analyzed for the same parameters, as leachate samples from the leachate collection system.

14.5. Equilibrium leachate levels shall be measured in each well installed in the waste prior to sample collection and at the same time as equilibrium water levels are measured in the groundwater monitoring network.

14.6. In addition to the wells required by condition 14.3, the hydraulic head at the base of each cell shall be monitored using pressure transducers or other appropriate devices.

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Contingency Plans

15.1. If, in the opinion of the Regional Director, monitoring or other information identifies an unacceptable impact from leachate or gas migration, the Regional Corporation shall immediately take all necessary steps to implement contingency plans.

Staff Training

16.1. Prior to any receipt of waste at the site, the Regional Corporation shall prepare a manual of practices and procedures for landfill staff use and reference. The manual shall be updated and improved as required. A copy of the manual and any updates shall be provided to the Regional Director.

16.2. The Regional Corporation shall implement a regular training program for all landfill staff.

Annual Report

17.1. The Regional Corporation shall submit an annual report to the Regional Director covering each calendar year. Each report shall include the following information:

17.1.1. The raw data and an interpretive analysis of all monitoring programs.

17.1.2. A yearly summary of volumes and weights by type of all wastes received at the site including a list of all vehicles refused entry to the site together with reasons for any refusal.

17.1.3. Any environmental and operational problems encountered during the operation of the site and any mitigative actions taken.

17.1.4. A description of the quality and quantity of the leachate collected and discharged to the sanitary sewer system.

17.1.5. An assessment of the operation and performance of all leachate collection facilities.

17.1.6. The results of all routine inspections of the leachate collection facilities.

17.1.7. A statement as to compliance with all conditions of approval and with the inspection and reporting requirements of the conditions.

Closure

18.1. At least two years before closure of the site, the Regional Corporation shall submit a complete plan for the closure, long term

maintenance, long term monitoring and after use of the property to the Regional Director. The plan shall include:

18.1.1. Plans for fencing and access control.

18.1.2. Details of any additional cover.

18.1.3. Details of any additional vegetative cover.

18.1.4. After use plans.

18.1.5. Plans for continued monitoring of the leachate collection system, surface and ground waters and gas.

18.1.6. Plans and schedules for routine inspection and maintenance of the site after closure.

18.1.7. Updated contingency plans to mitigate impacts from leachate or gas migration.

Land Ownership

19.1. Prior to the receipt of any waste at the site, this certificate, including the reasons for this conditions, shall be registered by the Regional Corporation as an instrument in the appropriate Land Registry Office against the title of the site and a duplicate registered copy thereof shall be returned by the Regional Corporation to the Director.

19.2. No part of the site shall be conveyed prior to or after closure of the site to any person by the Regional Corporation or any

transferee from the Regional Corporation without the prior approval of the Director.

PROPOSED CONDITIONS OF APPROVAL
ENVIRONMENTAL PROTECTION ACT

Site F

Definitions

1.1. In these conditions,

"Approvals Director" means the Director of the Approvals Branch of the Ministry of the Environment or his designate;

"Regional Director" means the Director of Central Region of the Ministry of the Environment or his designate;

"District Officer" means the District Officer of the Halton-Peel District of the Ministry of the Environment;

"the Regional Corporation" means the Regional Municipality of Halton.

"site" means the waste disposal site.

Design and Operations

2.1. The Regional Corporation shall submit detailed design, operations and monitoring documents to the Approvals Director for approval. The documents shall be prepared to reflect conditions 3 to 14 of this approval and conditions of the approval to proceed with the undertaking under the Environmental Assessment Act and shall contain at least the following:

2.1.1. A description of site preparation activities, including

borehole sealing, infill materials and compaction plans and base preparation.

2.1.2. A base contour plan.

** [2.1.3. A description of liner construction activities and quality control measures.]

2.1.4. Plans and descriptions of the leachate collection systems for both the valley bottoms and site base, including a definition of the maximum permissible leachate mound to prevent leachate break-outs and a description of sewer connections.

2.1.5. A description of leachate collection system inspection and maintenance activities.

2.1.6. A description and plan of leachate flow measurement locations, facilities and methods.

2.1.7. Plans and descriptions of surface water collection and containment structures.

2.1.8. A description of daily, intermediate and final cover activities, including depths, material characteristics, installation procedures and storage locations.

2.1.9. A description of cover stockpile activities, including use, timing, locations, erosion protection and temporary vegetation measures.

2.1.10. A description of methods and procedures to be used in the construction of berms on the outside of each level of waste.

2.1.11. Interim and final contour plans.

2.1.12. Plans and descriptions of site roads.

2.1.13. A landscape plan describing the locations of interim and permanent vegetation, including types, sizes and planting schedules, and earthen, vegetative or other types of barriers for the purpose of providing windbreaks and mitigating visual impacts from the site.

2.1.14. A description of daily operating activities.

2.1.15. A description of litter control activities on and off the site.

2.1.16. Plans and descriptions of site fencing.

2.1.17. A description of piped water facilities.

2.1.18. Plans and a description of a storage facility for suspect wastes.

2.1.19. A description of vector control activities.

2.1.20. A description of any gas monitoring activities.

2.1.21. A ground water monitoring program.

2.1.22. A surface water monitoring program.

2.1.23. A leachate monitoring program.

2.1.24. A description of contingency plans to mitigate impacts from leachate or gas migration.

2.2. The Regional Corporation shall construct and operate the site and carry out monitoring activities and programs in accordance with the design, operations and monitoring documents as approved by the Approvals Director and with any modifications as may be approved from time to time by the Approvals Director.

2.3. No activity for which approval of the Approvals Director is required under condition 2.1 shall be carried out without that approval.

2.4. As built surveyed drawings shall be submitted to the Approvals Director for all facilities, including base contours, leachate collection facilities, final cell contours and elevations, berms and monitoring installations, together with certifications from appropriately qualified persons that the facilities have been completed in accordance with the approved design.

Inspection and Control of Waste

3.1. Only 7.96 million cubic metres of domestic, commercial and non-hazardous solid industrial waste may be deposited at the site. In no case shall any hazardous or liquid industrial waste be deposited at the site.

3.2. The Regional Corporation shall establish a comprehensive system of incentives and penalties to enforce compliance with site operating

rules by users and to ensure to the greatest extent practicable that only permissible waste is deposited at the site.

3.3. Prior to any receipt of waste at the site, the Regional Corporation shall establish a computerized record-keeping system at the site to continuously record details of the following information with respect to each load of waste to be landfilled at the site:

3.3.1. sources of waste by generator;

3.3.2. waste types;

3.3.3. weight;

3.3.4. hauler name;

3.3.5. hauler certificate of approval number;

3.3.6. driver identification;

3.3.7. infractions of site operating rules; and

3.3.8. disposal location.

3.4. Condition 3.3 does not apply with respect to waste received at the public container area, but does apply to waste transferred from the public container area to the disposal area.

3.5. Prior to any receipt of waste at the site, a storage facility with appropriate environmental protection measures shall be established at the site to safely hold and contain any suspect wastes requiring either confirmation of suitability for disposal or removal and disposal

at an alternate approved facility. Appropriate equipment shall be maintained on-site to immediately load and remove suspect wastes from the working face to the waste holding area.

✓ 3.6. Prior to the commencement of site preparation, the Regional Corporation shall retain a full-time Environmental Inspector who shall be responsible for:

3.6.1. monitoring compliance with these conditions,

3.6.2. monitoring the installation of all works and ongoing site management and operations throughout the life of the site,

3.6.3. reporting all incidents of non-compliance with the regulations, these conditions, the conditions of approval under the Environmental Assessment Act and the approved design, operations and monitoring documents,

3.6.4. reviewing the raw data associated with all groundwater, surface water and gas monitoring and reporting to the Regional Director on any data which indicate actual or potential contaminant movement,

3.6.5. preparing written inspection reports for submission to the Regional Director on a monthly basis, or more frequently as required by the Regional Director,

3.6.6. preparing an annual report for submission to the Regional Director summarizing his or her activities and findings, and

3.6.7. participating on the Citizen's Advisory Committee.

3.7. Detailed terms of reference concerning the activities and responsibilities of the Environmental Inspector shall be submitted to the Regional Director for review and approval no later than 2 months after the date of this approval.

3.8. The Regional Corporation shall employ at least one properly trained waste inspector to exclusively monitor the dumping of all waste at the working face.

3.9. The Regional Corporation shall employ traffic controllers to supervise the movement of vehicular traffic at both public disposal areas and at the working face.

3.10. Once in each month during the first year of site operation and annually thereafter until closure, the Regional Corporation shall arrange for an inspection of the site by a pest control contractor. The annual inspection shall be increased to a monthly frequency if pest control problems occur. Records of inspections shall be maintained at the site office.

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Surface Water

4.1. Surface water collection and containment structures shall be designed to,

design conditions - plans - add MOE

4.1.1. maintain the naturally existing catchment area of Indian and Falcon Creeks;

4.1.2. convey, at a minimum, the fifty year design storm with

erosion control protection up to the five year storm condition;

4.1.3. ensure that there are no increases in post-development flow rates over pre-development flow rates for a range of storms up to and including the one in one hundred year storm;

4.1.4. prevent any potential increase in erosion along the Indian Creek should any changes in flow result from the final design; and

4.1.5. ensure that potential discharges of leachate to surface water can be contained and, if necessary, immediately discharged to an appropriate treatment facility.

4.2. Surface water storage facilities shall have the capability for storing surface water for at least 48 hours under average annual flow conditions.

4.3. Surface water collection and containment structures shall be designed using the appropriate computer modelling method of hydrological and hydraulic calculations as specified in "Flood Plain Management in Ontario, Technical Guidelines, Ministry of Natural Resources" and "Storm Water Management Guidelines, Central Region, Ministry of Natural Resources".

4.4. All surface water storage areas shall be inspected at least once in each year and dredged as required.

Site Preparation

5.1. Prior to any excavation at the site, all boreholes and any other conduits for possible leachate movement within areas of landfilling shall be properly sealed.

5.2. Schedules for the construction and installation of site facilities shall be provided in advance to the District Officer.

5.3. Prior to base preparation, a leachate collection system shall be constructed on the floor of the valleys, as shown conceptually on Drawing 5-r of the "Site F: Design and Operations Report, September 1986", prepared by Trow Hydrology Consultants Limited.

5.4. In areas where valleys are to be infilled, valley wall slopes shall be cut back to a maximum of 3:1 and fill materials shall be compacted to a minimum density of 95% Standard Proctor.

5.5. The leachate collection system to be constructed on the base of the site shall be designed and operated to,

5.5.1. provide for a slope on all collectors and headers that will minimize clogging;

5.5.2. maintain the leachate heads within the waste at levels that will not cause leachate break-outs to the ground surface; and

5.5.3. provide maximum possible access to collectors for routine inspection and maintenance.

5.6. Drains and, if necessary, purge wells shall be constructed at or beyond the limits of fill around the southern, southeastern and southwestern perimeter of both cell 1 and cell 2 to intercept ground water flow in the active zone of the Queenston shale.

5.7. Connections shall be made to the regional sanitary sewer and water supply systems prior to the receipt of any waste at the site.

Roads

6.1. All site roads, except those located on areas that are to be landfilled, shall be paved and shall be cleaned on a daily basis when in use.

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6.2. All non-paved site roads shall be treated with dust suppression materials as required in order to minimize dust generation.

Equipment

7.1. All off-road equipment used at the site shall not be operated in a manner which exceeds a sound level of 85 decibels at 15 metres measurement distance.

7.2. All off-road equipment shall be tested annually for sound levels in accordance with the procedures specified in Publication NCP-115 of the Ministry of the Environment's Model Municipal Noise Control By-Law.

7.3. Equipment shall be maintained to minimize downtime.

General Operations

8.1. Prior to the commencement of landfilling in each level of waste above grade, a compacted berm of cover material shall be placed at the fill perimeter to the maximum anticipated height of waste in that level. A layer of material with a permeability greater than 1 X 10-3 cm/sec shall be placed on the interior side of the berm, extending onto the floor of the level, to ensure a positive hydraulic connection with the level below.

8.2. Waste shall be deposited in a manner that minimizes the size of the working face and shall be compacted before cover material is applied.

8.3. Cover material with a material size no greater than 25 millimetres shall be applied in a layer at least 15 centimetres thick over newly deposited and compacted waste at the end of each day that the site is open in a manner that ensures that no waste is exposed.

8.4. Cover material shall be applied so that vertical hydraulic connection is maintained in each cell.

8.5. An alternative supply of cover material for at least five working days shall be maintained at the site at all times and used when regular daily cover materials cannot satisfy conditions 8.3 and 8.4.

8.6. Additional cover material shall be applied in a layer at least 15 centimetres thick in areas where no further waste is to be deposited for 60 days.

8.7. Whenever any part of a fill area has reached its limit of fill, final cover material shall be applied and compacted. The compacted cover material shall be at least one metre thick.

8.8. Cover material which has cracked or eroded so that waste is exposed shall be immediately regraded and compacted.

8.9. Soil stockpiles shall be located such that impacts on rare plants are minimized.

8.10. Surface ponding of water shall be minimized.

8.11. Grass on finished or temporarily stabilized areas shall be maintained at a minimum height of 12 centimetres to discourage bird loafing.

Public Containers

9.1. The public container area shall be screened from the North Service Road.

9.2. Each bin in the public container area containing waste at the end of an operating day shall be closed or covered overnight.

Litter Control

10.1. The Regional Corporation shall take all necessary steps to prevent the egress of litter from the site.

10.2. Litter shall be recovered as soon as possible and, in any event, within 24 hours.

10.3. In addition to the provisions of condition 10.2, litter shall be picked up at least weekly from the following roads and ditches in the vicinity of the site:

10.3.1. North Service Road between Waterdown Road and Brant Street.

10.3.2. King Road between North Service Road and the base of the escarpment. Plains Road top of escarpment

10.4. Permanent fencing to be installed at the site shall be chain link and a minimum of 3.5 metres in height.

10.5. Temporary fencing to be installed at the site shall be portable and a minimum of 3.5 metres in height.

10.6. Temporary or permanent fencing shall be placed around all tipping areas, except that snow fencing may be utilized within 30 metres of and parallel to the west edge of the active fill area.

Landscaping and Vegetation

11.1. In areas of the site not to be used for landfilling and in areas which have received final cover, every effort shall be made to encourage natural vegetative succession in order to facilitate a passive recreational after use of the site. In particular, the following activities shall be undertaken:

11.1.1. Existing woodlots and hedgerows on site boundaries shall be preserved, where possible.

11.1.2. Vegetative linkages between the remaining vegetation, the closed Burlington Landfill Site and the Sassafras Woods ESA shall be preserved and encouraged where possible.

11.1.3. Individual provincially and regionally rare plants shall be transplanted, where appropriate, to similar habitats on or off site.

11.1.4. Those parts of the fill area to be planted in meadow species shall be covered with at least .5 metres of topsoil, over and above final compacted cover.

11.1.5. Those parts of the fill area to be planted in woody species shall be covered with at least 1 metre of topsoil, over and above final compacted cover.

11.1.6. Natural vegetation in areas adjacent to the landfill shall be encouraged to move onto the landfill area.

Ground Water Monitoring

Timing

12.1. The ground water monitoring program shall be designed to identify, delineate and characterize any movement of landfill-derived contaminants. The program shall be designed in accordance with the following:

12.1.1. New well nests shall be established along the southwest, southern and southeast boundaries of the site and, where possible, shall be located and designed for contingency purge well purposes. At least two new

background wells shall be constructed upgradient of the site.

12.1.2. Each new well shall be installed in a separate borehole. No multilevel devices shall be employed.

12.1.3. The deepest borehole at each monitoring location shall be continuously sampled and cored during drilling. All boreholes shall be drilled using a technique that minimizes the introduction of foreign water into the substrata.

12.1.4. Packer testing shall be conducted along the entire length of the deepest borehole at each well nest location to identify the most transmissive zones. Well screens shall be installed opposite fractures or fracture zones to intercept groundwater moving through discrete vertical intervals.

12.1.5. Pumping tests shall be conducted to investigate the lateral and vertical connection between fractures intercepted by the new monitoring wells.

12.1.6. New wells are to be constructed with regard to the detection of volatile organic compounds. In particular, well casing material shall be constructed of stainless steel which has been steam cleaned at the borehole site. A sample of the rinse water shall be analyzed to confirm the absence of contaminants.

12.1.7. A monitoring well network, consisting of new wells and appropriate existing wells, shall be established. Existing

wells shall not be used for the detection of trace organic contaminants.

12.1.8. Each monitoring well shall be equipped with a dedicated sampling device. Sampling devices and techniques shall be designed to provide representative samples and to ensure sample integrity.

12.1.9. Each well in the monitoring well network shall be sampled over a period of at least one year to characterize baseline water quality and to establish representative tritium and chloride levels to more accurately define the zone of active ground water flow in the Queenston shale.

12.1.10. Sampling and analytical procedures, including quality assurance and quality control activities, shall be documented.

12.1.11. A ground water sampling program shall be developed to ensure early detection of contaminants which have escaped the landfill. Ground water shall be sampled at least twice per year with more frequent sampling along contaminant pathways consistent with ground water velocities and estimated arrival times for contaminants. Parameters for analysis shall include a suite of organic compounds characteristic of leachate generated at the site. Sampling frequency and parameters for analysis shall be adjusted as monitoring information becomes available.

12.1.12. Equilibrium water levels shall be measured in all wells in the ground water monitoring network prior to the collection of each sample.

12.2. The results of all analyses shall be provided to the Environmental Inspector within one month of each analysis being completed.

Surface Water Monitoring

13.1. The surface water monitoring program shall be designed to identify any movement of landfill-derived contaminants to surface water. The program shall be designed in accordance with the following:

13.1.1. Permanent surface water monitoring stations shall be established along surface water courses on the site and between the site and Burlington Bay. Stations shall be located, where possible, to avoid other sources of contamination.

13.1.2. Shallow wells for the monitoring of ground water discharge to surface water shall be installed adjacent to each station.

13.1.3. Surface water at each station and ground water from each shallow well shall be monitored once in each month. Frequency shall be increased in the event that landfill-derived contamination is suspected.

13.1.4. Where possible, surface water sampling shall be coincident with ground water sampling.

Leachate Monitoring

14.1. Leachate samples shall be collected from the leachate collection system in order to characterize and monitor the leachate chemistry in each landfill cell during the contaminating lifespan of the site. Leachate shall be sampled at least four times per year to monitor annual trends in leachate chemistry. Leachate shall be analyzed for a full suite of inorganic and organic parameters with the objective of establishing a critical contaminant. The frequency of sampling and parameters for analysis shall be adjusted as leachate monitoring information becomes available. The parameters for analysis shall always include, as a minimum, the same parameters for which groundwater is being analyzed.

14.2. The flow of leachate from each cell and the total flow of leachate generated at the site shall be continuously measured. The information shall be integrated into an annual site water balance and used as part of an annual assessment of the performance of the underdrain system.

14.3. Following the completion of each landfill cell, wells shall be completed to the base of the waste. The configuration and construction of these wells shall allow monitoring of leachate levels and the pumping of leachate, if required. Following installation, these wells shall be developed and hydraulic tests undertaken to determine the hydraulic conductivity of the waste.

14.4. Leachate samples from wells installed in the waste shall be collected as frequently, and analyzed for the same parameters, as leachate samples from the leachate collection system.

14.5. Equilibrium leachate levels shall be measured in each well installed in the waste prior to sample collection and at the same time as equilibrium water levels are measured in the groundwater monitoring network.

Contingency Plans

15.1. If, in the opinion of the Regional Director, monitoring or other information identifies any unacceptable impact from leachate or gas migration, the Regional Corporation shall immediately take all necessary steps to implement contingency plans.

Staff Training

16.1. Prior to any receipt of waste at the site, the Regional Corporation shall prepare a manual of practices and procedures for landfill staff use and reference. The manual shall be updated and improved as required. A copy of the manual and any updates shall be provided to the Regional Director.

16.2. The Regional Corporation shall implement a regular training program for all landfill staff.

Annual Report

17.1. The Regional Corporation shall submit an annual report to the Regional Director covering each calendar year. Each report shall include the following information:

17.1.1. The raw data and an interpretive analysis of all monitoring programs.

17.1.2. A yearly summary of volumes and weights by type of all wastes received at the site including a list of all vehicles refused entry to the site together with reasons for any refusal.

17.1.3. Any environmental and operational problems encountered during the operation of the site and any mitigative actions taken.

17.1.4. A description of the quality and quantity of the leachate collected and discharged to the sanitary sewer system.

17.1.5. An assessment of the operation and performance of all leachate collection facilities.

17.1.6. The results of all routine inspections of the leachate collection facilities.

17.1.7. A statement as to compliance with all conditions of approval and with the inspection and reporting requirements of the conditions.

Closure

18.1. At least two years before closure of the site, the Regional Corporation shall submit a complete plan for the closure, long term maintenance, long term monitoring and after use of the property to the Regional Director. The plan shall include:

18.1.1. Plans for fencing and access control.

18.1.2. Details of any additional cover.

18.1.3. Details of any additional vegetative cover.

18.1.4. After use plans.

18.1.5. Plans for continued monitoring of the leachate collection system, surface and ground waters and gas.

18.1.6. Plans and schedules for routine inspection and maintenance of the site after closure.

18.1.7. Updated contingency plans to mitigate any impacts from leachate or gas migration.

Land Ownership

19.2. Prior to the receipt of any waste at the site, this certificate, including the reasons for these conditions, shall be registered by the Regional Corporation as an instrument in the appropriate Land Registry Office against the title of the site and a duplicate registered copy thereof shall be returned by the Regional Corporation to the Director.

19.3. No part of the site shall be conveyed prior to or after closure of the site to any person by the Regional Corporation or any transferee from the Regional Corporation without the prior approval of the Director.