Ontario
Executive Council
Conseil des ministres

Order in Council
Décret

JUIN 2 1 1990

On the recommendation of the undersigned, the Lieutenant Governor, by and with the advice and concurrence of the Executive Council, orders that

Sur la recommandation du soussigné, le lieutenant-gouverneur, sur l'avis et avec le consentement du Conseil des ministres, décrète ce qui suit :

WHEREAS the Joint Board ("the Board") (under the Consolidated Hearings Act, 1981) by a decision made on November 17, 1989, refused acceptance of an environmental assessment and refused approval to proceed with an undertaking being a sanitary landfill site, known as site 41, on parts of Lots 10 and 11, in Concession 2, in the Township of Tiny ("Tiny"); the Board consequently did not make an order (i) directing the issuance of a certificate of approval under Part V of the Environmental Protection Act for the proposed waste disposal site, or an order (ii) approving the necessary amendments to the official plan and zoning by-law of Tiny, (iii) approving the acquisition of land in Tiny by the Association (hereinafter referred to) under the Municipal Act, (iv) approving the debentures and long term contracts that related to the project and (v) approving the expropriation of the necessary lands under the Expropriations Act.

AND WHEREAS The Corporations of the Towns of Midland and Penetanguishene, The Corporation of the Township of Tay, The Corporations of the Villages of Port McNicoll and Victoria Harbour, constituting the North Simcoe Waste Management Association ("the Association") ask that the Board's decision and order be rescinded and the environmental assessment be accepted

and that approval for the undertaking be given under the Environmental Assessment Act; other necessary approvals of matters referred to in the preceding paragraph are also sought;

AND WHEREAS by by-laws passed on the 23rd day of January 1990 and the 22nd day of February, 1990 pursuant to the Municipal Act, as amended, the Council of The Corporation of the County of Simcoe assumed all waste management powers of all the local municipalities forming part of the County for municipal purposes.

IT IS ORDERED THAT the following decision be substituted for that of the Joint Board:

1. The hearing is adjourned in order to allow the proponent an opportunity to produce evidence of further investigations of other areas comparable to site 41. No further investigation for an "attenuation" site need be made.
2. Whether another site is or is not found, the rating for the agricultural lands component of the comparative analysis should be reconsidered and the final selection process should be carried out with this adjustment.
3. If, as a result of the investigations a better site or sites is or are found then, in such case, the proponent will proceed to an environmental assessment, a governmental review of such assessment, and a new hearing for which an early date will be given.
4. It is acknowledged that, having regard to the evidence already given, site 41 may once again be the preferred site.
5. If the preferred site is once again site 41 the proponent's evidence may be limited to evidence of its additional

hydrogeological and other investigations and the rationale for such preference together with evidence of the site selection process as set out in an addendum to the environmental assessment. An early date for the resumed hearing will be settled by the Board on application by the proponent. The evidence will be expected to address the Board's previous criticism that there may be other preferable containment sites. If the Board is satisfied regarding the investigation for alternative sites, no further evidence need be called in regard to other aspects apparently accepted by the Board as satisfactory, nor need new or additional evidence be called regarding the effect of site 41 on the agricultural community, or regarding conditions in the event approval is granted.

6. In this order "proponent" will be deemed to include its successors.

Recommended _____
Minister of Consumer and Commercial Relations and Acting Chairman, Cabinet Committee on Legislation

Concurred _____
Chairman

Approved and Ordered *June 14, 1990* _____
Date

Administrator of the Government

STATEMENT APPROVED BY CABINET

RE: Application to the Lieutenant Governor in Council (the "LGIC") by the North Simcoe Waste Management Association ("NSWMA") by way of appeal from a Decision of the Joint Board re Tiny Township Landfill Site

---

The Joint Board, after a hearing lasting several months, decided to refuse acceptance of an environmental assessment and to refuse approval to proceed with a landfill site for five municipalities ("NSWMA"); namely the Towns of Midland and Penetanguishene, the Township of Tay, and the Villages of Port McNicoll and Victoria Harbour. The area has a population of 40,000 people.

The landfill site which was finally selected (site 41) in Concession 2 of the Township of Tiny comprises 153 acres of which approximately 1/3 would be used for actual landfill. The site has a depth of clay varying from six metres to fifteen metres except for the north-west corner which has a depth of five metres. The area in the vicinity of the site is level. It is valuable farmland in active use as such.

The Board was critical of the process or methodology used in the selection of alternative sites leading up to the final seven candidate sites and it was also critical of the comparative analysis of the seven sites. The Board considered that it was impossible to say whether a different site (or the same site) would have been chosen if the process had been more methodical and it refused acceptance and approval for that reason.

The Board considered that there were certain areas outside the clay plain, which is in the south part of Tiny Township, which were not investigated adequately. These areas included "Unit 1 and 2 lands" (as shown on the hydrogeological survey), indicating hydrogeological potential. The Board also noted that there appeared to be areas of good potential within the clay plain that were not comprised of prime agricultural lands.

The environmental assessment process and the process of selection are subject to the requirements of the Environmental Assessment Act. The Board found that because the methodology was, in its opinion, unsatisfactory, it was not in conformity with Sections 5(3)(c) and (d) of the Environmental Assessment Act

The hydrogeology of the site was considered in detail and the plans for dealing with ground water and surface water were found to be satisfactory and in compliance with the Environmental Protection Act. Satisfactory hydrogeology was accepted by the Board and by all parties as a necessary prerequisite of any candidate site.

The Board also accepted as satisfactory evidence relating to such matters as traffic, noise, odour and many other aspects requiring the Board's approval. Site 41 is approximately 5 kms from the Huronia Airport whereas the Federal Government's guidelines would recommend 8 kms. The applicant's gull control programme appeared to satisfy the Board. The Board also considered other alternative methods of waste management and accepted the need for a landfill site.

The applicant refers to the evidence of Mr. Jagger, its hydrogeologist, who stated that the likelihood of finding a better site than site 41 was probably remote. It points out that the Board not only did not criticize Mr. Jagger but accepted most of his evidence. NSWMA submits therefore that the Board ignored a key part of his evidence, that he was the only hydrogeologist who made a regional survey and that this part of his evidence could not be ignored by the Board. The Board appeared to accept Mr. Jagger's finding of "superior and more acceptable hydrogeological conditions of the clay plain in south Tiny". Moreover, the NSWMA says that the Board did not refer to any other qualified witness who suggested that, in the final selection process, another site rated better than site 41 using the comparative analysis process.

The Ministry of the Environment found the environmental assessment acceptable before the hearing and supported the application at the hearing but neither supported or opposed the appeal. Its submission on the application to the Lieutenant Governor in Council was made available to all parties.

The Ministry of Agriculture and Food has reviewed the Joint Board's decision, the application to the Lieutenant Governor in Council and the responses to the application. The Ministry was not a party at the hearing at which process was a major issue. The Ministry did not object to the use of site 41 as a landfill site.

The selection of site 41 was opposed by the Township of Tiny and the W.Y.E. Citizens Group and detailed responses to the application to the LGIC were filed with the Executive Council office. These and some 40 other responses from individuals and from groups strongly supported the Board's decision.

Cabinet has decided to substitute a different decision for that of the Joint Board. This decision would give an opportunity to the proponents to present and the Board to consider further evidence as to whether there are other areas comprising possible

containment sites within the Townships of Tiny and Tay which may not have been previously adequately investigated for suitability as landfill sites. The preferred site may be site 41 or some other site.

Cabinet has decided that it is improbable that any "attenuation" site would prove to be comparable to a "containment" site (from a hydrogeological view point) and for that reason further investigation should be confined to the soils where a "containment" site is likely to be found.

Ontario

ENVIRONMENTAL ASSESSMENT BOARD

CH-87-03

REASONS FOR DECISION

AND

DECISION

IN THE MATTER OF an application by the North Simcoe Waste Management Association for the acquisition of land for the construction, operation, and maintenance of a sanitary landfill site to contain 1,200,000 cubic metres of waste.

Before: Robert B. Eisen
Dorothy H. McRobb

Dated at **TORONTO** this **17TH** day of **NOVEMBER**, **1989**.

2300 Yonge Street
Suite 1201
Toronto, Ontario M4P 1E4
Tel: (416) 323-4806

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CONSOLIDATED HEARINGS BOARD

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

- and -

IN THE MATTER OF the Environmental Assessment Act, R.S.O. 1980, c. 140, as amended;

- 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 6, 7 and 8 of the Expropriations Act, R.S.O. 1980, c. 148;

- and -

IN THE MATTER OF Section 34(11) of the Planning Act, S.O. 1983, c. 1, as amended;

- and -

IN THE MATTER OF an appeal to the Ontario Municipal Board by the Corporation of the Town of Midland, the Corporation of the Town of Penetanguishene, the Corporation of the Township of Tay, the Corporation of the Village of Port McNicoll, and the Corporation of the Village of Victoria Harbour, constituting the North Simcoe Waste Management Association (hereinafter "the North Simcoe Waste Management Association") for an order amending By-Law 30-77 to rezone lands comprised of Lots 10 and 11, Concession 2, to permit the establishment of a sanitary landfill site;

- and -

IN THE MATTER OF Sections 17 and 22(1) of the Planning Act, S.O. 1983, c. 1, as amended;

- and -

IN THE MATTER OF an intended referral to the Ontario Municipal Board by the Honourable John Eakins, Minister of Municipal Affairs, on a request by the North Simcoe Waste Management Association for consideration of part of the Official Plan for the Township of Tiny Minister's File No. 43-OP-4001;

- and -

IN THE MATTER OF Section 64 of the Ontario Municipal Board Act, R.S.O. 1980, c. 347, as amended;

- and -

IN THE MATTER OF Sections 210(83) and 210(84) and 210(85) of the Municipal Act, R.S.O. 1980, c. 302 as amended;

- and -

IN THE MATTER OF an undertaking by:

The Corporation of the Town of Midland, The Corporation of the Town of Penetanguishene, The Corporation of the Township of Tay, The Corporation of the Village of Port McNicoll and The Corporation of the Village of Victoria Harbour acting jointly, for approval of

a) the acquisition of land for the construction, operation, maintenance, closure and long term care, monitoring and rehabilitation of a sanitary landfill site to contain 1,200,000 cubic metres of waste in the Township of Tiny located on the west half of lot 10 and the southeast quarter of lot 11, Concession 2, as shown on the attached map, and the improvement of the off-site access road and the improvements to the land for the purpose of establishing a waste disposal site at an estimated cost of $3,000,000.00 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 the necessary debentures in the amount of $1,200,000.00 for a term not to exceed ten years to the maximum amounts by the participating municipalities as follows:

1)	Town of Midland	- $647,640.00
2)	Town of Penetanguishene	- $246,240.00
3)	Township of Tay	- $172,080.00
4)	Village of Port McNicoll	- $90,720.00
5)	The Village of Victoria Harbour	- $43,320.00

c) the establishment of a compensation policy relating to the undertaking at an estimated gross cost of $700,000.00 and the borrowing of money by way of temporary advances not exceeding in the aggregate such estimated cost pending the sale of debentures.

d) the issuance of the necessary debentures in the amount of $200,000.00 for a term not to exceed ten years to the maximum amounts by the participating municipalities as follows:

1)	Town of Midland	- $107,940.00
2)	Town of Penetanguishene	- $41,040.00
3)	Township of Tay	- $28,680.00
4)	Village of Port McNicoll	- $15,120.00
5)	The Village of Victoria Harbour	- $7,220.00

Appearances

Rodney K. Smith	- for North Simcoe Waste Manangement Association
Harry Dahme	- for Township of Tiny
Peter Pickfield	- for Wye Citizens' Group
Jerry G. Herlihy Peter Van Den Bergh Stella M. Couban	- for the Ministry of the Environment
Gary E. French	- for Wayne Johnston
Doug Thomson	- Tiny Residents Against Pollution (T.R.A.P.)

A. REASONS FOR DECISION

1. Introduction and Background

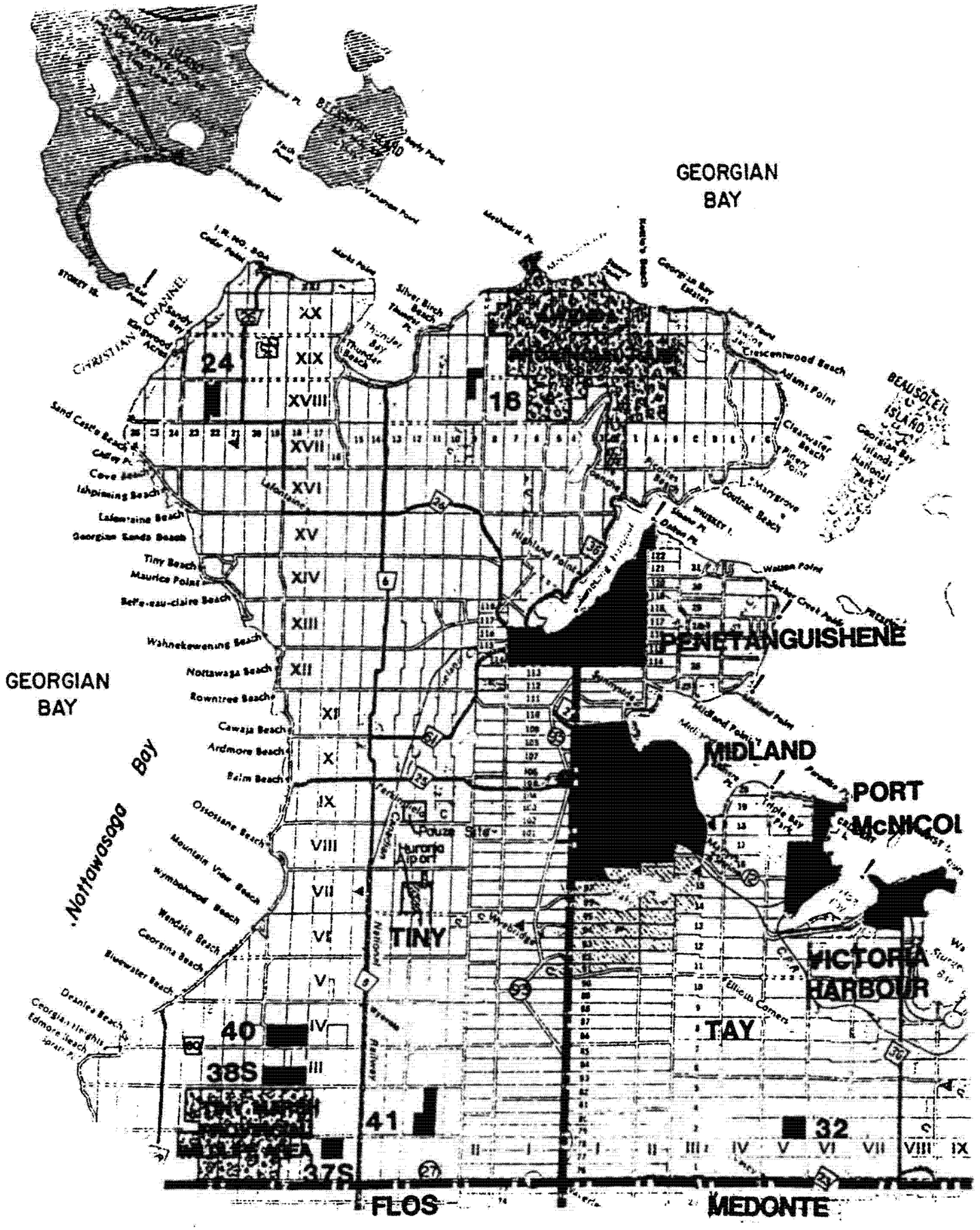
The Corporation of the Town of Midland,
The Corporation of the Town of Penetanguishene,
The Corporation of the Township of Tay,
The Corporation of the Village of Port McNicoll and
The Corporation of the Village of Victoria Harbour

(hereinafter referred to collectively as the "proponent" or the "Association") apply for approval to proceed with its undertaking i.e. to acquire an area known as site 41 for the purpose of constructing and operating a sanitary landfill site. The site is shown on Figure 1 and, if approved, would receive domestic and solid commercial and industrial waste. The Association is supported in its application by the Ministry of the Environment (MOE) and is opposed by the Corporation of the Township of Tiny (hereinafter referred to as "Tiny"), the Wye Citizens' Group as well as by landowners and tenants in the area and other individuals and groups.

The approvals sought are as follows:

Environmental Assessment Act - to proceed with the undertaking.

Environmental Protection Act - the issuance of a certificate of approval under Part V of the Act for the proposed waste disposal site.



LOCATION OF SITES
Figure 1

C0274-014

Planning Act - amendments to the Official Plan and to the Zoning By-law of Tiny.

Municipal Act - approval of the Ontario Municipal Board to the acquisition of land in Tiny by the Association. This is necessary because the proposed site is not within the Association's boundaries.

Ontario Municipal Board Act - approval of the Ontario Municipal Board for debenturing and/or long-term contracts that relate to the project.

Expropriations Act - a hearing of necessity may be required for the purpose of expropriating the lands comprising site 41.

There is, at present, no operating landfill site in North Simcoe - the total land area shown in Figure 1 - to service the 5 proponent municipalities plus Tiny. Waste from the 6 municipalities has been stored temporarily since October 1987 at a transfer station in Tiny, known as site 1 and from there hauled to the Keele Valley Landfill site situated in Maple. Prior to that time, wastes were landfilled at the Pauze Landfill located near Perkinsfield.

Tiny's use of the privately owned Pauze site dates back to 1966. In 1970, the Towns of Midland and Penetanguishene, (having closed their own landfill site, site 1) began using the site and they were followed at later dates by the Township of Tay, and the Villages

of Port McNicoll and Victoria Harbour. However, starting in 1979, there was a growing perception that a new site should be found to anticipate the time when the Pauze site would reach capacity. In that year, the engineering firm of Gartner Lee and Associates Limited was retained by the M.P.T. Landfill Committee, a predecessor of the Association, to investigate the possibility of expanding the Pauze site or of reopening site 1. Both were rejected.

A hydrogeological study conducted in 1982 indicated that a leachate plume was migrating from the Pauze site and a further study in 1983 confirmed that leachate was migrating through the sandy soils down into the aquifer. This aquifer was the source of water to the downgradient residents of Perkinsfield. That 1982 study further established that the plume had migrated about 700 metres from the site and was moving at the rate of 70 metres a year westward towards Nottawasaga Bay.

Besides the main plume there was evidence of an even more serious plume caused by unauthorized dumping of liquid industrial waste.

Mr. Patrick Lee, hydrogeologist, concluded that in view of the hydrogeologic setting and other factors it was impractical to capture and remove the plumes by use of purge wells and then treat this contaminated water. Among the recommendations made by him was the supply of piped water to downgradient residents who might be

impacted by the plume. This recommendation was subsequently implemented.

The Pauze site was scheduled to be closed in 1984. However a mediator was appointed to meet with the residents and representatives of the various municipalities. The results of the mediation are incorporated in an agreement dated June 30, 1984, which is set out in Appendix 3 of Exhibit 11. The parties agreed: to continue landfilling at the Pauze site until October 1987; to the installation of a municipal water system for the Village of Perkinsfield; and to continue efforts to establish a long-term waste management system.

The Pauze experience left a legacy of distrust and suspicion and explains, in part, the fierce opposition to this application. The individual presentations must be seen against the backdrop of the Pauze experience in order to appreciate the deep-rooted opposition and resentment at the Association's attempts to establish a new site in Tiny.

Tiny, at one time a member of the Association and its predecessor committees, now is pitted against the proponent. It purported to withdraw from the Association in 1986 citing as its reasons, objections to the process that the proponent was following in its environmental assessment and the inadequate concern for the protection of prime agricultural land in Tiny.

Subsequently, Tiny chose to proceed with the preparation of an environmental assessment of its own for site 4, close to the Pauze site. Tiny submitted an environmental assessment document to the Minster for review in preparation for a hearing but withdrew the document from further consideration some short while prior to the commencement of this hearing.

Mr. H. Dahme, counsel for Tiny, submitted in his opening statement that Tiny had been unfairly targeted by the other 5 municipalities comprising the Association as the host municipality for landfilling. This is the role that it has played for the past 20 years in relation to the producers of the largest amounts of waste in North Simcoe, the Towns of Midland and Penetanguishene. Tiny was also host for the waste of the other 3 municipalities constituting the Association for shorter periods of time. The time had come for another municipality to assume the host role.

The closing of the Pauze site in October 1987 compelled the proponent and Tiny to seek alternative means for disposal of their waste. Permission was granted to allow such disposal at the Keele Valley site in Maple.

On the day that the Pauze site was closed in October 1987, the municipalities were paying a tipping fee of between $7.00 and $8.00 a tonne. The tipping fee that met the municipalities at the Keele Valley site was $18.00 a tonne in October of 1987. On May 1, 1988 the tipping fee increased to $50.00 a tonne and as of May 1, 1989

the fee is $83.33 a tonne. The operation of the transfer station and haulage costs from the station to the site bring the cost of landfilling to about $100.00 per tonne. All six municipalities are under some pressure to find an alternate site or means of disposing their waste.

In spite of the apparent need for a waste disposal system, there was almost a complete disregard of the consequences that might follow if the application was denied. The proponent did not deem it necessary to offer evidence of what may be termed the "no go" alternative or situation. Nor did the opposing parties seem to be overly concerned about waste disposal beyond their immediate goal of blocking the proponent's application.

Mention was made of other possible sites but no evidence was submitted to support any viable alternative to the denial of this application if the Keele Valley Landfill is closed down in the not too distant future.

2. Environmental Assessment Act

A consideration of some sections of the Environmental Assessment Act provides guidance as to the requirements of an environmental assessment. "Environment" in section 1(c) is defined as not only the natural environment, i.e. air, land and water but is expanded to include, among other things,

> "the social economic and cultural conditions that influence the life of man or a community."

Section 5(3) sets out the required contents of an environmental assessment which includes a description of the undertaking, alternatives and alternative methods of carrying out the undertaking. In addition, it must provide:

> 5(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
>
> 5(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.

Environmental assessment has been interpreted consistently by various boards to mean more than just the original documentation submitted by a proponent for consideration by the Minister together with any subsequent or additional material as may be required by the Minister. Once a proposal has reached the hearing stage, the environmental assessment is expanded to encompass all the evidence

presented at the hearing, whether written or oral, and whether submitted by the proponent or by intervenors.

This expanded definition reflects the evolving nature of the process and provides the most comprehensive and updated material which the Board can use in arriving at its decision. If an environmental assessment were limited to the original written documentation, then there would be no justification for a long expensive hearing where evidence, not only explains, amplifies and supplements initial documentation but may also provide new and often contradictory evidence. That evidence can be crucial in determining the Board's decision.

"Alternative methods of carrying out the undertaking" is taken to mean methods of a similar technical character or methods which are functionally the same. Thus, in the case of an undertaking, which is a landfill site, an alternative method would be another and different landfill site. By contrast, an alternative to such an undertaking, would be functionally different e.g. exporting outside the area, incineration with landfilling and energy from waste with landfilling.

The Board then turns to these sections of the Act for the purpose of evaluating the adequacy of the environmental assessment before it.

3. Process

(i) Stages in Arriving at Preferred Site

The proponent divided its investigation into three stages in the process of arriving at its preferred site: a) consideration of alternatives b) site selection (short list) and c) a comparative analysis of sites on the short list.

(a) Consideration of Alternatives

Mr. D.G. Barker acknowledged that he was the "hand on the helm" - the person generally responsible for directing the proponent's case and providing much of its evidence. He presented a large portion of the testimony on behalf of the proponent which included an over-all view of the proponent's case, a consideration of alternatives and alternative methods of carrying out the undertaking, the design report for the landfill itself, a description of the public involvement and general information and history of waste management in North Simcoe.

Mr. Barker outlined 10 alternatives that were considered, their estimated net disposal cost, potential environmental impacts, available mitigation measures, net environmental impacts and advantages and disadvantages of each. He reduced these 10 options to 3 by means of a screening exercise and the coupling of 2 options into one. The 3 options are:

(a) landfilling in a new location (as opposed to landfilling at the Pauze site or the other previously used site)

(b) incineration and landfilling of incinerator residue and non-processable waste

(c) incineration with energy recovery (EFW) and landfilling of incinerator waste and non-processable waste.

Mr. Barker commenced his analysis by determining a centroid - a theoretical point within a specific area from which all material is considered to originate. He then provided an initial analysis of the environmental impacts of the three options, applying criteria to include technical, economic and environmental and found landfilling by itself the preferred option. In this process, some of the criteria were not applied where it was considered that a particular alternative did not merit further investigation.

The objectors submit that there was not a sincere and realistic evaluation of alternatives and that cost outweighed all other considerations that might have been favourable to incineration or EFW. They further submit that, even on the basis of cost alone, the evaluation was unfair as all costs such as roads and the compensation proposal were not included in landfill costs. They suggest that there was a predisposition to examine landfill as the preferred alternative.

The Board generally agrees that a more in-depth analysis of alternatives could have been undertaken. However, it recognizes that the municipalities involved are not large and that resources

are limited. They considered costs to be important and a factor that could not be ignored.

A survey of local industries did indicate that there was no likelihood of a user for energy recovery that could assist in funding that cost. In addition, the fact that certain costs were excluded from the original landfill estimates would not alter significantly the large cost difference between landfill and incineration.

The Board finds, in the circumstances, that the evaluation of alternatives was adequate to satisfy the requirements of section 5(3) of the Act.

(b) Site Selection (Short List)

The proponent divided its quest for suitable sites into 10 stages. The stages have been characterized as both chronological (with some overlapping between stages) and functional i.e. the tasks performed within each stage. The Board does not intend to deal with each stage but rather describe some features of the process and the criteria purported to be used by the proponent. Following this, the Board will deal in separate subsections, with the comparative analysis leading to the choice of the preferred site and provide a critique of the methodology employed by the Association. A separate subsection will describe the public involvement and its relationship to the process.

The proponent designated hydrogeology (to include both groundwater and surface water) to be the principal factor in identifying suitable areas for study. It also took into account other evaluation criteria where these were found to be overwhelmingly negative. Negative factors included inadequate size of lots, and, in the early stages of investigation, proximity to Huronia Airport and the use of prime agricultural land. On the other hand, positive features were considered to be areas for sale, idle, or under utilized.

A consulting team, working under Mr. Barker, investigated 46 sites with some care out of a larger number that had been submitted to the team. The Association as well as the clerks of Tay and Tiny selected the areas to be investigated by the consulting team.

The investigation of sites commenced in 1979 and the initial review included the original landfill site (site 1) and the Pauze site (site 4).

A hydrogeological survey (Exhibit 120) in the form of a map was prepared in March/April 1981 which took into account; the surficial geology, the groundwater regime, the thickness of soil over bedrock and other factors. The map is a composite of these various factors and it identifies six hydrogeological units, distinguished one from another by different colours. The units range from 1, which represent the soils offering prospects of lowest permeability to

6 with the highest permeability. It was recognized that each unit was not necessarily uniform as to soil type.

Mr. D. Jagger, the proponent's hydrogeologist, states at Volume 26 page 4008 :

> "This map was supplied to Barker Terp Gibson to be used to assist them in identifying potential properties that would then be evaluated in more detail".

That map, however, was not used to identify potential sites but, rather as an aid after sites had been identified.

During the selection process, the consulting team looked at property records and attempted to match them to the suitable areas on the hydrogeological map. It was concerned about annoyance and dislocation of people where expropriation might become necessary. The team, therefore, considered it prudent to examine properties that were for sale or idle, particularly if they lay idle within a favourable hydrogeologic unit, (page 1381, Volume 9).

In the initial stages and even later stages of investigation, no sites were investigated on the south clay plain because of a desire to avoid prime agricultural lands.

Thirty-six sites had been investigated up until the end of 1982. Sites 32 and 40 were subjected to more detailed investigation including the drilling of one or two boreholes at each area. It

was determined that there was potential for off-site contaminant movement at each of these areas.

It was at this time, and more precisely, in early January 1983, that the proponent concluded that it was facing severe constraints in finding a suitable site. A suitable site, to this point in time, had been considered to be one that prevented the migration of contaminants off site. As a result of this impasse, the proponent and the consultant decided to meet with MOE personnel to discuss problems associated with site selection. They were informed that the Ministry was prepared to accept off-site migration with some attendant degradation of groundwater depending upon the use that is made of that particular groundwater and its significance as a major resource.

At stage 7, the period from February to May 1983, the 36 properties, previously identified, were then reevaluated and three sites, 16, 24 and 32 (see Figure 1) were identified as the sites having the best potential for minimizing effects on ground and surface water resources.

Subsequently, site 40, on the fringe of the clay plain, was investigated again and was found to have hydrogeological potential similar to that of the other 3 sites.

There had been an initial look at the clay plain at its fringes when site 40 was selected but in the fall of 1984 the consulting

team decided to conduct a reconnaissance study of the plain. It was felt that the whole of the North Simcoe peninsula should be assessed to take into consideration this large area that had heretofore been excluded. Six boreholes were dug and the results were found to be encouraging in that a thick layer of clay with the prospect of low permeability covered the plain. Three sites, 37S, 38S and 41 were selected. These were considered containment* sites as opposed to the 4 attenuation* sites previously selected.

It now remained for the consulting team to conduct a comparative analysis of the 7 sites, 4 attenuation and 3 containment, in order to choose the one preferred site from among them.

(c) Comparative Analysis of the 7 Sites

The comparison of the 7 sites falls into 2 initial stages which were then combined into a third stage. The first is the net effect rating; the second is the importance ranking and the third combined the two.

The seven candidate sites were examined with a view to identifying the net effects that each would have on the environment. Twenty environmental factors (criteria) were chosen and potential effects designations, ranging from severe to minimal, were assigned to each

* see definitions on page 65.

factor. Mitigation measures were then taken into account to produce the net effect for each factor for each candidate site. The net effect could be either severe, major, moderate, minor, minimal or not a factor.

In order to refine the process, it was necessary to determine the importance for each of the factors. The members of the Association performed this task in October 1984 by assigning 1 of 4 rankings to each factor - very high, high, medium and low. Mr. Barker tabulated the results of the rankings by the 14 members of the Association who had participated in the exercise. Three factors - residential land uses, groundwater and surface water - were given very high ratings; 12 of the twenty factors qualified for high, 3 for medium (including agriculture); and 2 were considered low.

The two stages (net effects and importance ranking) were then combined in the third stage to give a total number of net effects rating for each importance ranking for each of the seven sites. The seven sites were then compared by pairing two sites at a time, taking into account the number and level of net effects for each importance category. This combined method applied to the seven sites, paired one with another, produced the preferred site, 41.

(ii) Public Involvement

There is no requirement under the Environmental Assessment Act that the public be involved in the selection process. However, the MOE

urges that the public become involved throughout the planning process. The aim is the minimization of confrontation and delays. The proponent offered the following meetings as evidence of public involvement:

(a) August 1983 - an "open house" was held in Tay and Tiny Townships on successive days at which illustrative material was displayed and representatives of the Association and its consultants answered questions. Four attenuation sites 16, 24, 32, and 40 were being considered at that time. The members of the public, either by petition or individual submissions, expressed their concerns. There was opposition to all four sites.

(b) a further public meeting was held in February 1985, at the Penetanguishene Municipal Building. Again this was an open meeting. Some 8 candidate sites were considered and property owners in the vicinity of these sites had been provided with hand-delivered copies of the notice. This was in addition to a general notice that was published. During the course of the meeting, it became evident that the public in attendance wished to hear individual presentations followed by questions and answers. The format of the meeting was changed accordingly.

(c) an ad-hoc Committee had been formed in the spring of 1985 to act as liaison between the Association and Tiny to ensure, for its purposes, that the Association was acting responsibly in its dealing with waste management issues. It called a meeting in April

1985 to which the public and the Association were invited. The Board has no knowledge of what transpired at the meeting.

(d) members of the Association conducted a field visit in the vicinity of site 41 on May 1, 1985 at the request of a number of residents who were concerned about the artesian wells in the area which they felt might affect a decision with regard to site 41. Some discussion was held with the residents.

(e) the mediator previously mentioned, called a public meeting on October 10, 1985. Members of the mediation committee, members of the Tiny Township Council and members of the Association were present. The Association had just released what it called the Phase I environmental assessment document. The Association's representatives reviewed the contents of the document, listened to comments and responded to questions. The document contains material that was subsequently incorporated in the final environmental assessment. The undertaking itself was outlined in general terms since a preferred site had as yet not been chosen.

Subsequently copies of the Phase I draft were made available at the municipal offices and libraries of all six municipalities and the public was invited to make written submissions. A total of 14 letters were submitted and responses were provided in a public report that was filed in the municipal offices and libraries.

(f) a public meeting, called by the Association, was held in Wyevale on November 23, 1985 to hear reaction to the Phase I environmental assessment and to answer questions.

(g) the mediator arranged a meeting at the Prince Hotel in Toronto in the spring of 1986. The Board does not know whether members of the public were present. However, representatives from Tiny and Association members came to an agreement: (i) to conduct a further review of site 4 (at Pauze); (ii) to fund a study of an EFW scheme and (iii) to have the hydrogeologists of Tiny and the Association meet to discuss criticisms and concerns with regard to the search for a waste management option being conducted by the Association.

(h) a draft of the environmental assessment was released for public review in early March 1987 and copies were made available in the municipal offices and libraries of each of the 6 municipalities. Notices of the release of the document were published and the public was invited to comment. A total of 16 submissions was received and these along with the responses appear as Appendix 12 to the environmental assessment document (Exhibit 11).

The proponent acknowledges that several of the meetings were commenced by parties other than itself but contends that those meetings or mediation sessions dealt with waste management and afforded opportunities to the general public to express views and concerns. In the Board's view, it does not matter who calls the

meeting and what the specific format is so long as the public is informed and has an opportunity to participate in the process.

Public involvement can serve two primary purposes. A proponent is able to learn the attitudes and concerns of the public and, in the best of circumstances, may be able to take such steps as will eliminate or ameliorate those concerns. At other times, a project may be misunderstood and an explanation by knowledgeable individuals might have the effect of reducing apprehensions. However, in the case of a landfill site, no amount of explanation or suggested mitigating measures will mute the objections and resistance of neighbouring residents and this is understandably so.

The second purpose of public involvement is the revelation of factual information concerning the local environment. The local population possesses information that can easily escape the attention of professionals however experienced the latter may be.

It was argued that the public involvement was too little, and too late. Moreover, it had no effect on site selection. Mr. Barker, for the proponent, admitted that in retrospect, and in light of present day standards, a greater effort could have been made to involve the public in order to elicit opinions and views. A proper choice of types of meetings e.g. explanations, presentations, questions and answers and their timing to correspond to various important stages in the preparation of the environmental assessment might have been more productive.

It is easy to criticize the proponent's program for public participation. It may be argued that the information and concerns of the public elicited at the hearing, in the form of individual presentations, extensive and helpful as they were, would have better served the purposes of all concerned had they been received and heeded at earlier stages.

The Board, however, finds that the public was able to receive information of the progress of the Association's waste management program. The Board also finds that the public had opportunities to voice its views and concerns at the various meetings mentioned above.

The proponent is criticized for not involving the public in the process leading to the selection of the preferred site. The public's representatives, that is the Association's members, including those of Tiny, undertook the task of assigning importance ratings to the 20 environmental factors identified by the proponent's consulting team. However, the public was not directly involved as was the case in the application for a landfill site by the Regional Municipality of Halton. There, the public was asked to rank the order of priorities of environmental factors and the ranking coincided with that of the professional planners.

There is a growing perception of the value of public participation both prior to and at the hearing. It is to a proponent's advantage to apprise itself of views, concerns and information at an early

stage where some form of dialogue may take place rather than in the adversarial atmosphere of a hearing when positions and attitudes have hardened. In this way, changes can be made to resolve concerns.

(iii) Critique

The 1983 publication of the MOE Review Criteria (Green Hat): Environmental Assessment on Waste Management (Exhibit 275) states that an environmental assessment can be considered to be a planning process. It further states that the environmental assessment should demonstrate that a systematic approach has been employed.

This approach was endorsed in the evidence presented by:

Denis Stevens - environmentalist called by Tiny

Steven Rowe - professional town planner, experienced in waste management planning, called by the Wye Citizens' Group

Paul Bowen - hydrogeologist and hydrogeotechnical engineer, called by the Wye Citizens' Group

The Board, for the most part, accepts the collective evidence of these 3 experts which forms the basis and some of the content of the remarks that follow.

In 1981, the proponent's hydrogeologist drew up a hydrogeological map inventory. The proponent states at page 45 of the environmental assessment document (Exhibit 11) that hydrogeology

was the principal factor in the initial stages in identifying areas selected for further examination. Instead of reliance on this map as the basis for identifying prospective areas, the evidence indicates that other considerations prevailed - size of lots, single ownership and areas that were for sale, idle or under utilized. Certainly for the first 36 sites, the hydrogeologic mapping, if used, was as a screen or constraint to assess sites already identified rather than as the primary tool to identify sites that would merit further investigation.

It is true that the results of investigation of some areas did not always support the map classifications assigned to them. However, the hydrogeologic mapping represents an initial and suitable tool that could have been used to greater advantage. The Board adopts the statement in the MOE Review Criteria (Green Hat) Environmental Assessment on Waste Management (Exhibit 275) at page 7 that states that a proponent should:

> "establish a minimum requirement for acceptability of hydrogeologic conditions to prevent the assessed relative importance of the other evaluation criteria from overwhelming the hydrogeologic conditions (i.e. a site which is not acceptable hydrogeologically, should not be selected as the preferred alternative)"

Thus hydrogeological acceptability is a sine qua non of a preferred site and it is a waste of time, energy and money to consider sites that do not hold out promise of meeting this basic requirement.

At one stage, the clerks of Tay and Tiny forwarded a list of some 81 sites to the consulting team and these were subsequently reduced to a more manageable number - 28. The Board has no indication of the criteria used in the selection of the 81 sites by the clerks but doubts that proper hydrogeological or other environmental factors played a part.

The proponent also used size of lots i.e. 100 acres and a single ownership to help locate suitable sites. These criteria may have had the effect of disqualifying suitable areas from consideration. Part of a large lot (or even a larger lot than required) or the combining of two smaller lots with different ownerships may have provided a satisfactory site. The proponent removed such solutions from the realm of possibility. The proponent did not elaborate on its reasons for searching lands of a certain size or in single ownership. Presumably, this was done for ease and to eliminate complications and unnecessary costs.

The reasons given for confining the search to lots for sale or that were under utilized, were the reluctance of the proponent to interfere with farming operations and more especially its reluctance to use its expropriation powers. The Board can understand the Association's dilemma when it wishes to carry out borehole drillings and the owner of the field, proposed to be drilled, is adamant in refusing entry. This is a problem for which there is no simple solution.

Boreholes can be dug on adjoining road allowances and on adjoining properties, where allowed, to determine the suitability of a particular site. A general program of borehole drilling involving several sites might not meet the same resistance, especially if no particular site is zeroed in as the one preferred by the proponent and if the implementation program is preceded by a well planned explanatory program. Even all these measures may not prove to be sufficient and a proponent may be compelled to resort to the expense and delay of expropriation proceedings in order to be able to carry out a proper investigation of a site.

The proponent initially contended that the use of prime agriculture land and proximity to airports were overwhelmingly negative factors. Presumably one or both of these factors served as deterrents to an early investigation of Tiny's southern clay plain which, for the most part (but not all), is good agricultural land and lies almost entirely in close proximity of the Huronia Airport. And yet, the proponent discarded these overwhelming constraints in 1984 when it was decided to look at the clay plain. At that point the proponent had already identified 4 attenuation sites that it considered suitable and these appear in the short list of 7 used for the purpose of site comparisons. Furthermore, it had the approval of MOE officials for attenuation sites. The Association offered as its rationale, the desire to look at the whole peninsula from a hydrogeological viewpoint. This appears to be poorly timed since such a survey would have been expected in the earlier stages of the investigation.

The reconnaissance study of the clay plain, carried out in the fall of 1984, indicated good leachate containment potential and from that point on the quest for a suitable site appears to have been dominated by the containment criterion, at the expense of other environmental factors. The proponent seems to have had some afterthoughts with regard to the potential of the 4 attenuation sites to interfere with groundwater resources and, perhaps for that reason, turned to the clay plain. Yet, at a later stage it considered the same sites to be acceptable for purposes of site comparisons.

The Board finds that even though the purported aim of the Association was to consider the whole North Simcoe peninsula, it seems to have focused on the clay plain without taking into account other areas i.e. unit 1 and 2 lands, outside of the clay plain that might have offered hydrogeological potential. This focusing on the clay plain was carried out without any apparent consideration of the obvious trade-offs involved - the scrapping of the constraints of agriculture and proximity to airport. The Board notes that there appear to be areas of good hydrogeological potential within the clay plain that are not comprised of prime agricultural lands.

The exercise of identifying the 7 candidate sites, rather than following a logical plan, produced a mass of detail lacking both structure and intelligible direction.

The site comparison phase of the proponent's endeavours also presents problems. It did not take into account social factors concerning the farming community and the proximity of sites to Huronia Airport. Furthermore, in the Board's opinion, the comparison phase did not assign a high enough ranking to prime agricultural lands. These matters are discussed in detail in subsequent sections.

The major defect is the proponent's failure to apply the same level of investigation to the 7 sites before choosing the preferred site. There seems to be a predisposition to have site 41 selected as preferred - a predisposition that indicates bias.

Mr. D.M. Fraser, the proponent's biologist, commenced his detailed work and investigation of site 41 in 1985, a full year before he carried out the comparative analysis of the 7 sites. Mr. D.F. McQuay, the proponent's agricultural expert, undertook his detailed work of site 41 at about the same time as the comparative analysis of the 7 sites. Surely, the comparative analysis of all sites should have preceded the intensive attention paid to site 41.

The pairing of the sites performed by Mr. Barker leaves the Board with considerable doubt as to its efficacy and fairness. There were occasions in comparing any two sites, including site 41, where Mr. Barker found that they ranked almost equally. He admits to "close choices", "choices were difficult", "even a dilemma",

"extremely close choice" (Volume 7 pages 1033-4). He invariably gave the preference to site 41.

The pairing exercise consists of taking 2 initial sites for comparison and the one that comes out ahead is retained as the better. The person performing the exercise then moves on to compare it with the next until a first rank is established, then the second and so on. Mr. Dahme, Tiny's counsel, submitted that the choice in the order of sites used for comparison can have a bearing on the outcome of the ranking. The Board has considered this submission and finds it to have merit. A method that results in different outcomes, merely by changing the order of comparisons between sites, cannot, in the Board's view, have much credibility.

The Board does not question Mr. Barker's sincerity nor his integrity. The Board realizes that in any comparison of this type there is a subjective element which might manifest itself unwittingly on the part of the person performing the task. However, the site comparison is replete with indications that site 41 is being favoured.

The Board notes the requirement for "traceability" mentioned in the Government Review, Exhibit 36. This is taken to mean the ability to follow through, in a logical and systematic manner, the path chosen by the proponent in arriving at its preferred site. That element is absent. The Government Review states on page 39 paragraph 3.9.1

> "Parts of the landfill site process are difficult to trace ..."

and the Board can only concur in this evaluation.

Another concept that was discussed at the hearing is replicability. This is taken to mean that a different person could reasonably have come to the same conclusion as the proponent. The Board is able to say that the proponent's process defies replicability.

The proponent has formulated 10 stages in the site selection process which do not logically follow one another. It has unleashed a torrent of detail to describe its selection activities and would ask the Board to find method in this exercise, where none exists. In the site comparison exercise that followed site selection, the method used is seriously flawed and therefore unacceptable. It is painful to see sincere and laborious efforts leading to such lamentable results. A simple, well-thought out process may have produced a more felicitous ending to the proponent's quest.

An environmental assessment must not only come to a conclusion as to the suitability of the undertaking but must also demonstrate how the proponent arrived to it. Implicit in section 5(3) of the Act is a wide ranging investigation that involves a reasonable and logical application of criteria so that the final result is consistent with the steps taken along the way. The Board finds

that the proponent's environmental assessment lacks the basic combination of reasonableness, consistency and systematic approach.

It is easy for the Board and probably in hindsight, for the proponent to identify those steps that led to this fiasco. It should be recalled that the Association had little guidance except for consultations with MOE personnel and Ministry guidelines, some of which were not issued until well into the process. This is the second application for a landfill site that has reached the hearing stage under the Environmental Assessment Act, the first one, the Region of Halton having been decided only during the course of this hearing.

The Board, in setting out its extensive criticism of the process, should not be seen as demanding a perfect, well-planned and finely-tuned methodology (although that may be theoretically required by the Act and is desirable). Resources are limited, precedent is meagre and the task is not small. What the Board sought was a semblance of a rational plan that could meet the minimum requirements of the Act. Alas, a plan, or a methodology or a process was absent in the search for candidate sites and seriously flawed in the site comparison exercise.

4. Acceptance of the Environmental Assessment and Approval to Proceed with the Undertaking

Section 12(2) of the Environmental Assessment Act reads in part:

> "The Minister, by notice in writing may .... require the Board to hold a hearing with respect to;
>
> c) the acceptance or amendment and acceptance of the environmental assessment;
>
> d) whether approval to proceed with the undertaking ... should or should not be given;

The Board is enjoined to make 2 decisions: first with respect to the acceptance of the environmental assessment (hereinafter referred to as "acceptance") and secondly with respect to giving approval to proceed with the undertaking (hereinafter referred to as "approval"). These decisions are obviously not synonymous nor does approval necessarily follow acceptance. The structure of the Act and specifically section 14, contemplate acceptance and approval as two separate and distinct decisions. It would also appear that a decision regarding approval cannot be made unless and until there has been acceptance.

What are the matters to be taken into account for a decision to be made with respect to acceptance? Section 8 sets out those matters to be considered by the Minister in making this decision: the purpose of the Act, the environmental assessment, the review thereof, the written submissions, reports and any further reviews. The Board, in making this decision, should be guided by the same considerations and, consistent with the evolving nature of the environmental assessment, by all the evidence submitted at a hearing.

There is no specific definition of acceptability. There is, however, some indication what that term entails when the decision is to be made by the Minister as opposed to the Board. Section 9 makes it clear that the Minister shall accept the environmental assessment when he is of the opinion that the environmental assessment is satisfactory to enable a decision to be made whether approval to proceed should or should not be given.

The meaning of unsatisfactory is given in section 11(1) to be "does not comply with this Act", (or) "is inconclusive ...". The Board finds that the environmental assessment is unsatisfactory because the requirements of section 5(3) have not been met. A process or planning or methodology is implicit in that section and further it should be reasonable. The proponent's efforts in reaching the short list of 7 sites lacks any semblance of structure or method and the process used in the comparative analysis is deficient and biased. The Board, therefore, cannot accept the environmental assessment. To do so would be to grant recognition to a process that is in part non-existent, (site selection) and where it does exist, (site comparison) to legitimize it although it is flawed.

Yet section 12(2)(c) requires the Board to make a decision as to acceptance or amendment and acceptance. The third alternative i.e. non-acceptance is not mentioned. Indeed, resort to the Minister's powers in this respect indicates that he is limited to accepting or requiring further work in respect of the environmental assessment so that he can amend and accept the environmental

assessment. The implication by analogy is that the Board is likewise restricted. One may argue, however, that if the Board has the power and jurisdiction to accept, it follows that it also has the power and jurisdiction not to accept.

There are several reasons why the Board may have the benefit of the third option of non-acceptance which is denied to the Minister. First, there is doubt whether the Board has the same powers as the Minister, as set out in section 11(1), to order the proponent to carry out research, investigations, studies and monitoring programs. Secondly, even if the Board did have such powers so as to allow it to amend and accept the environmental assessment those powers would only address factual deficiencies and not process and so would not cure the flawed nature of the environmental assessment. Thirdly, even if the Board possessed those powers and those powers were expanded to address the environmental assessment process, the result would be a reformulation of almost the entire environmental assessment - in effect a new environmental assessment. This reformulation could very well lead to the choice of a different site (a different undertaking) in respect of which proper notice has not been given.

Lastly, the Board is in a different position than the Minister since it has had the benefit of a comprehensive hearing and has had extensive information and evidence presented to which the Minister might not have had access. The conclusion of a hearing is too late in the day for an order requiring back-tracking to the initial

stages of the environmental assessment process where more than just additional and supplementary information is required. Logic and good sense dictate a new environmental assessment and a new hearing with a fresh notice if the proponent wishes to continue in its efforts.

The Board is of the opinion that, in the circumstances of this case, non-acceptance should be sufficient to effect a termination of the proceedings arising out of the environmental assessment. This is also the view of counsel for Tiny, MOE and the Wye Citizens' Group. If, however, finality requires a decision with respect to approval, the Board has no hesitation in deciding that approval to proceed with the undertaking should be denied.

Such decision regarding non-approval without acceptance would appear to circumvent or ignore the 2 step approach set out in the Act; acceptance followed by a decision with regard to approval.

There can be no doubt that a decision granting approval to proceed cannot be made without acceptance of the environmental assessment. There is less certainty that a denial of approval to proceed requires prior acceptance of the environmental assessment. The non-acceptance of an environmental assessment at the end of a long hearing should be reason enough to make a decision that approval to proceed with the undertaking be denied. The initial rejection of the environmental assessment cannot but lead to a rejection of the undertaking itself.

5. Social/Community

The comparative evaluation of the seven candidate areas with respect to the impact of a landfill site on the social environment included the potential and net effects on residential land uses, other land uses, traffic, visual prominence, nuisance effects and property value.

The first four criteria were analyzed by the planner. Nuisance effects such as litter, noise, odour and dust were considered to be amenable to mitigation and good operating practices and, with the exception of a noise analysis for the preferred site, no special consideration was deemed necessary. Any anticipated effect on property values was to be taken care of by a compensation policy.

The planner's analysis consisted of an inventory of the land uses within 500 m and within 3 km. The 500 m distance is suggested by a MOE guideline to be the area of most significant effects. The 3 km distance was selected by the planner. Impacts were generally measured relative to the number of residences. The addition of a third lift to accommodate a projected increased volume of waste did not materially change the planner's assessment.

Visual prominence was determined by a drive around the sites. Site 41 is flat and open and can be seen easily from the concession roads and by area residents. The planner considered that the major

visual impact would be the operating activity and that once the site was completed, even though a new 20 foot hill would be the end result, it would not be a visual intrusion but become a part of the landscape. There was no disagreement that the site would be easily seen from almost all directions and from some distance. The Board therefore finds that the site would create a visual impact during operations.

There was some criticism of the methods used to determine visual prominence, however the Board is satisfied that nothing would have been gained by sophisticated quantitative measurements for each site and a comparison of viewshed patterns as suggested by Tiny's witness, Mr. R. MacDonald, a landscape architect. There is nothing wrong with field observations and professional judgement as used by the proponent's planner. None of the sites were particularly complex or unique as to require anything more. As a matter of fact, Tiny's witness generally agreed with the conclusions reached by the proponent's planner. The only criticism was with the method employed to arrive at those conclusions. This is a classic example, in the Board's view, of a waste of resources. Nothing whatsoever, was gained by the evidence of Mr. MacDonald.

The impact of traffic was measured by the exposure of residences to the anticipated increase in traffic. Site 41 is situated such that traffic will be split between two haul routes: the first, south on Highway 93, then west on Highway 27 to Baseline Road then north to Concession 2 and west along Concession 2 to the site; the

second, south on County Road 6 to Concession 2 and east along Concession 2 to the site. The precise number of vehicles using each route is unknown. The expected daily traffic in 1991 to the site is projected to be 100 vehicles, with only the refuse and leachate vehicles, totalling 29, amenable to control along the defined haul routes. The remainder consists of private cars and trucks. Township roads are to be widened and improved. Funds would be provided to Tiny for this purpose.

Although traffic was a concern expressed by some residents it was not a significant issue, except for the issue of the potential interference with slow moving farm equipment. The Board is satisfied that the provincial highways and the county road, designed as they are to handle major traffic volumes, would not be unduly impacted by the increased traffic. The increased traffic on the lightly travelled township roads will undoubtedly be evident to those who are now using and living along the roads. Certainly a full-blown traffic engineering study would be unnecessary in view of the relatively small number of vehicles anticipated, the proposed road upgradings, and the ability to control haul routes of some 30% of the vehicles.

The Board is satisfied that even though the Association had not specifically considered the movement of farm machinery, it had given sufficient consideration to traffic impacts. The farmers indicated that they move farm machinery on the provincial highways and county roads at the present time with minimal difficulty

because these roads generally do have wider shoulders than township roads. The township roads, in this case, are to be widened. In any event, the Board notes that farm equipment moves on those township roads in association with trucks from Huronia Nurseries, Mr. Gordon Leonard's sod business, Mr. Ross Leonard's repair garage and Mr. Murray MacDonald's livestock haulage operation, all without apparent difficulty.

The proponent acknowledges that there may be some noise impact on adjoining residences when operations occur in the southwest corner. Mitigation measures are proposed to ensure compliance with Ministry of the Environment noise guidelines. Also hours of operation will be regulated to normal daytime working hours. Noise was not raised as a significant concern.

The main criticism of the social evaluation was that no consideration was given to the people in the area other than to count houses. While this was the extent of the planner's evaluation other criteria were evaluated by the proponent's agricultural expert including agricultural uses and investment in farm facilities and farm community. However, these latter considerations were aggregated with agricultural soils to arrive at a single agriculture resource evaluation criterion. Thus effects on community as a separate consideration were not evaluated. The data used in assessing farm community even as a component of the agriculture resource evaluation criterion were also criticized. The proponent's agricultural expert indicated

that he had talked to farmers and area residents when he could but in some cases lands were vacant, no one was home, or owners were unwilling to speak to him.

A comparison of the community type information contained in the detailed agricultural study of site 41 (Exhibit 60) and the information provided to the Board by the area residents and as summarized in their planners' reports (Exhibits 228 and 254) disclosed relevant information that was unavailable to the proponent for purposes of evaluation. Thus the proponent lacked information concerning the long-term - even to second and third generation farming operations in the area. The Association's assessment had no information about the magnitude of some of the farm businesses, such as the large dairy operations. There was no information concerning dependent family and/or partnership working arrangements for sharing work, equipment and property. There was no information concerning the specialized organic farm in the area. Without such information the proponent could not, in the Board's view, evaluate the possible risks that might face the community.

For example, dairy farmers are concerned about the possibility of water contamination and consequent milk contamination and loss of milk quotas. Such an event could mean that they would be out of business. The organic farmer faces the same sort of prospect plus the additional threat of public perception of merely being identified as carrying on a sensitive farming operation adjacent to a landfill site. The Board recognizes that the proponent, in

choosing what it considers to be a safe site, might come to the conclusion that these fears are unfounded. However, at the very least, these fears should have been considered.

Some of the witnesses indicated that they would move if a landfill site were to be established. Thus family and partnership connections would be severed. The Board notes that the proposed compensation policy may well precipitate these actions.

The counting of residences may be useful in evaluating effects on an urban community, but farm operations are much more than a family residence. Farm operations also constitute a family business as an integral part of an agricultural community and a part of an important provincial industry. These aspects of the community were not considered in the environmental assessment. Even the consideration of community was relegated to a component in the agricultural resource factor, hardly a justifiable position, in the Board's view.

6. Public Concerns

The Board held two evening sessions, one early in the hearing and another, later to which public notices invited interested residents to present their concerns and views to the Board. Some of those giving evidence were also members of the Wye Citizens' Group. In addition, the Board accommodated interested parties by hearing evidence throughout the hearing at their requested times.

The hearing process was criticized as being intimidating and only for the lawyers. The Board was accused of bias. It is unfortunate that the necessity of having some form of procedural structure conveys such impressions to the public. The Board sees as one of its tasks to offer a more comprehensive explanation of the process to the public. Counsel, who share a similar interest with unrepresented residents, might offer advice to these residents informally explaining the process and what may be expected in their presentations. In addition, counsel can set the tone to be emulated by all participants, that there can be a considerable amount of co-operation without prejudicing their individual cases. Hostility to an undertaking such as a landfill site need not carry over to the hearing process.

The views of the public seem to divide into categories as follows:

1. Water Quality

- the possibility of surface water contamination.

- the possibility of groundwater contamination.

With respect to these issues the public was not confident that the experts could be trusted. Even representatives of the Ministry of Tourism, the Martyrs' Shrine and the Wye Marsh Wildlife Centre expressed concern that water contamination might affect tourism. The residents are influenced by the legacy of the Pauze site

contamination and there is really no possibility that they will again trust the experts, especially the MOE officials.

2. Nuisance Effects

- Litter - Farmers were particularly concerned that litter might blow onto their fields and become small particles in feed with the result that their livestock could eat plastic or other such material which tear their insides. Good management at the landfill site should control this problem but obviously there is no 100% guarantee.

- Traffic - concerns related not only to conflicts with farm machinery, but also to the increase of private vehicles on the township roads and the possibility that some drivers might throw their garbage in the ditches if the landfill site were closed. Also, private vehicles could not be restricted to specific routes and increased traffic could be a hazard. Vandalism could result.

- Smell, mess, vermin. Again with good management these problems should not occur.

- Gulls - eat worms, eat crops, contamination/disease from droppings.

3. Loss of good farm land and contravention of Tiny official plan policies.

4. Spoil way of life of a strong farming community.

5. Property devaluation.

6. Process - slow, expensive, elitist, intimidating, lacking community involvement and process; decision foregone conclusion, hearing a rubber stamp, MOE directed the process.

7. Lack of confidence in the operators and in MOE.

8. Find a better way than landfill.

9. Site may be used by other municipalities.

10. Transport Canada Guidelines regarding airports, disregarded.

11. Tiny has been the municipality for landfill in the past - go somewhere else.

12. Suggestions for waste reduction - composting, fuel pellets, packaging control, elimination of disposable diapers, elimination of "junk" mail.

7. Agricultural Resource

Two of the seven candidate sites consist of prime agricultural lands and are located in active farming communities. Site 32, in Tay Township, has a considerable investment in buildings with two recently constructed barns. There are 18 sets of farm buildings within about 1 km. Site 41, in Tiny Township, the preferred site, has more open and flatter fields with a lower investment in buildings. It is in the centre of an active farm area of some 28 sets of farm buildings within about 1 km. The Association's agricultural witness was of the view that the use of either of these sites for a landfill would have a major effect on the agricultural resource. At the conclusion of his evidence, the Board had no difficulty in accepting that a landfill at site 41 would remove prime agricultural land from production. Similarly the evidence of the Association's planning witness confirmed that the site 41 lands are designated agriculture in the Official Plan and that the policies of the Plan encourage the preservation of and protection of prime agricultural lands. Further, it was emphasized that the provincial policy as set out in the Food Land Guidelines encourages the preservation of agricultural lands of classes 1 to 4. All the parties agreed that an agricultural after use would be unlikely.

Notwithstanding the clear and early recognition of these facts, Tiny called a panel of two expert agrologists who confirmed these facts. They took issue with the weight given to the agricultural

factor by the Association and were of the opinion that the factor should have ranked in importance immediately after health and safety. The Ministry of Agriculture expressed a similar view in a letter to the Government Review Committee, but did not appear at the hearing to support its position. The Board recognizes that the Food Land Guidelines do not prohibit the use of prime agricultural lands for alternative uses when such uses are adequately justified. Tiny's witnesses were of assistance to the Board, however, in that they identified areas within North Simcoe that would not be class 1 to 4 agricultural land and would be in units 1 and 2, areas of good hydrogeological potential. Whether or not these areas as shown on Exhibit 208 would be acceptably safe hydrogeological sites is unknown, but in the Board's view the environmental assessment should have been designed to take them into consideration.

Agriculture was ranked medium by the Association. Only 2 other factors were medium and 2 were low. The remaining 15 factors were all rated higher than agriculture. This ranking seems questionable in view of the apparent initial concern to avoid prime agricultural land. Further the policies in the Tiny Official Plan with respect to agriculture and the provincial policies as contained in the Food Land Guidelines would, in the Board's view, require a higher importance rating for agriculture. The Board recognizes that it may prove necessary to use prime agricultural land for a safe site but at least the impact of that decision should be properly evaluated.

8. Gull-Aircraft Interaction

Site 41 is situated about 5 km from Huronia airport also known as the Midland Airport (see Figure 1). A guideline issued by Transport Canada directs that a landfill site should be located at least 8 km from an airport. The reason for such a guideline is to reduce the chances of collision of aircraft with gulls.

The major gull colonies are situated north of the airport and they are estimated to have a gull population of about 81,000 with an annual compound growth rate of 8.4 percent for Ring-bill gulls and 3.6 percent for the less populous Herring gull. The gulls would probably fly over the airport en route to their feeding destination - site 41 which is located directly south of the airport.

Huronia Airport is used mainly for recreational flying and for training. Seventy-five percent of flying activity takes place on weekends, when, but for Saturday mornings, the landfill site would be closed. In addition, the working face of the landfilling area would be covered by earth daily, thus making it less attractive to the birds. Finally, it was pointed out to the Board that in the 20 years of airport operations, there have been no reported cases of gull/aircraft collision, notwithstanding the proximity of the Pauze site to the airport.

Transport Canada has cautioned the Association in writing on several occasions against breaching the 8 km guideline. On the

other hand, it has committed itself to a grant of approximately $458,000 for the purpose of extending the 3,000 foot runway southward by another 1,000 feet bringing aircraft activity ever closer to the site. The extension of the runway is in anticipation of increased activity at the airport and it would also accommodate smaller jet airplanes and turbo-prop aircraft. This extension would increase the danger of collision between aircraft and gulls, not only because of the closer proximity between runway and site, but because of the greater speeds of the two new types of aircraft.

The Association recognizes the seriousness of a possible gull/aircraft interaction and is prepared to adopt measures in order to reduce the chances of such occurrences. The first steps suggested are good site operating rules including a small working face, elimination of standing water, cleaning of vehicles on site, revegetation, daily cover, minimization of litter. In addition, the Association has considered a variety of techniques and has adopted an overhead wiring barrier as its first deterrent with falconry as a possible back-up.

The overhead wire barrier consists of stainless steel wires supported by poles at 6 metre intervals and are 10 metres high. The poles would be telescopic to allow increases in height as different lifts are installed.

The wires would be strong enough to physically bar the birds but thin enough so as not to be detected. The 6 metre interval,

although much wider than the wingspan of the gulls, has been found to be effective since the birds focus on the food on the ground and come into contact with the wires. Eventually, they become discouraged and fly away.

The second technique, falconry, involves the use of tethered birds of prey that are trained by an experienced falconer to execute certain manoeuvres. Sometimes these manoeuvres may actually kill gulls but generally this does not happen since gulls recognize these birds as natural predators and take evasive action when they see them. This deterrent is labour-intensive involving daily activity and dependence on the falconer. It is also a costly technique.

The Airport Commission has no concern with the site location and is satisfied with the gull management plan set out in Exhibit 175. Transport Canada continues to point out its concern about the breach of the 8 km guideline and in a letter dated July 11, 1989, Exhibit 292, where the breach is noted, the following paragraphs appear:

> "... the concept of a management program incorporating operational activities, physical barriers and habitat modification is being proposed as the alternative to reduce the likelihood of a bird strike. However, although a number of gull control techniques (physical barrier component) were identified, the conclusion that "the overhead wire barrier was considered to be the one best suited to Area 41" (Page 8) appears questionable. No detailed discussion of Area 41 has been

> provided and there is no indication that each potential technique was assessed against the specific characteristics of Area 41. To conclude that wire barriers are best suited to Area 41 appears unsubstantiated based on the discussion provided."
>
> "Further with respect to the wire barrier, it is generally considered that any bird control program may have to rely on more than one technique for control. The effectiveness of the wire cover may have to be reinforced with other control measures involving manpower and equipment."

The Board does not challenge the opinions expressed by Transport Canada although the evidence submitted with regard to the overhead barriers seemed to have merit. The proponent is addressing the concerns of the second paragraph by reliance on falconry as a possible back-up system.

It appears inconsistent for Transport Canada to caution the Association against breaching the 8 km distance between airport and site and at the same time undertake to contribute $458,000 to extend the runway at the airport.

If the landfill site is located at site 41 it may, in fact, place the grant in jeopardy as evidenced by the statement included in a news release (Exhibit 283) dated September 22, 1988, as follows:

> "This contribution is conditional on the current selection of a landfill site in the vicinity of the airstrip taking into consideration its potential hazard to aviation safety".

9. Planning

As previously noted the importance afforded to the protection of prime agricultural lands in the Township Official Plan was emphasized through the proponent's planning witness and, not to be outdone, Tiny and the Wye Citizens' Group also called planning evidence. There was certainly no disagreement among the experts or any doubt left in the Board's mind that the policies in the Official Plan clearly encourage the preservation of prime agricultural land and that site 41 is designated and zoned for agricultural use. The only point of disagreement seemed to be whether or not the Official Plan could be amended to permit the landfill site. The recently approved Official Plan prohibits the location of a landfill on prime agricultural land. The recommended amendment to permit the landfill at site 41 is to insert a "notwithstanding" provision. The opposing planners considered that if any amendment is to be made it should be to all the applicable landfill Official Plan policies so that there are not two sets of policies in the Plan for landfill sites.

While the ideal may be to have one set of policies apply to landfill sites the Board has no doubt that the provisions of the Planning Act permit the Official Plan to be amended as requested. In fact, the referral to the Board is only with respect to site 41 and the policies applicable to that site. The Board rejects Mr. Smith's suggestion that the Board has jurisdiction to amend the policies generally and that such policies would then be applicable

to all landfill sites. Also the Board has no evidence upon which to amend the policies generally, except perhaps for the proponent's planner's suggestion that an outright prohibition is not considered advisable in an official plan.

Whether or not site 41 should be designated for a landfill site is the issue to be determined. The Board has determined that site 41 is not to be approved for a landfill site. It therefore follows that it is unnecessary to amend the Official Plan and zoning By-Law.

10. Compensation Policy

The Association proposes to provide a compensation policy for property owners whose houses are located within 500 metres of the boundary of the landfill site. Such property owners would be able to enter into an agreement with the Association giving them the right to require the Association to purchase their property at any time within two years of the opening of the landfill site. In addition to the purchase at fair market value, certain costs of relocation are also to be provided. The rights under the Expropriation Act would not be affected. All parties support a compensation policy.

The estimated net cost of acquisition is $200,000. This is based on an appraiser's estimate of the reduction in market value of the six properties eligible for the policy. No estimate was included

in the environmental assessment documents as filed. The information supplied by the appraiser was not based on a detailed appraisal but rather on experience and discussions with local real estate people and assessors. It was his view that vacant land would not suffer any loss in value.

The Board is requested to approve an application for capital expenditures of $700,000 and debentures of $200,000. The difference is represented by the estimated recovery of $500,000 from the resale of the properties.

In view of the Board's decision it is not necessary to consider approval of this application.

The Board would, however, raise the following matters that might be considered if it were contemplating approval of the undertaking. First, is compensation a mitigation measure where new owners will be operating under the same conditions as the former residents? Secondly, should vacant land be included in the compensation policy as was suggested in a letter from the Ministry of Agriculture and as was raised by some residents? Also the Board notes that the policy does not include compensation for business loss. Thirdly, what are the implications of such a policy in expanding the concept of compensation as set out in the Expropriations Act? Should there be compensation for impacts caused by other public works such as highways, airports and sewage treatment plants?

The Board recognizes that similar compensation policies have been provided for in other Joint Board decisions and already the argument of accepted precedent is submitted. The Board acknowledges that there may be situations where the purchase of property is necessary because of a real or reasonably probable danger to people but that is not the case here.

11. Costs of the Undertaking

Costs were not a major issue at the hearing. The estimates contained in the environmental assessment document as filed were not specific to any particular site but were typical of high, medium and low permeability sites. The Board was not afforded any direct evidence on how the estimates were arrived at. The low permeability sites are typical of sites 37S, 38S and 41. The semi-permeable areas are typical of sites 16, 24, 32 and 40. The high permeability site is typical of Pauze and includes a liner. Estimates were also included for the alternatives of exporting outside the area, incineration plus landfill and energy from waste plus landfill.

The Board finds no comfort in any of the cost estimates, particularly in view of the fact that the evidence indicated a lack of knowledge about whether or not certain anticipated costs were included such as gull management and some mitigation features. The Board was asked to accept on faith that the estimates of contingency provisions would be adequate. As it turned out the

application for capital expenditure approval for site 41 had to be increased from $2.2 million to $3.0 million. This was partly due to the time delay as well as the necessity of including certain items not previously provided for. With 60% Ontario grant assistance the net to be debentured is anticipated to be $1.2 million for site acquisition and development rather than the $880,000 originally applied for. In addition, if the proposed compensation policy is implemented, a further capital cost of $700,000 is estimated to be required with some $500,000 expected to be recovered and $200,000 debentured.

The evidence submitted by the Association's Deputy-Secretary (Exhibits 165 and 177) satisfies the Board that the capital costs, as now estimated, can be financed by the applicant municipalities and that the resulting burden of taxation would, in fact, be less than the present taxation required to pay for the costs of waste disposal at Keele Valley in Maple. Even without any grant assistance the municipalities would be able to incur the debt.

While the Board accepts that the municipalities can afford the proposed waste management system, on the assumption that the estimates will turn out to be reasonably close to final actual costs, the Board does not agree that cost should either be the only deciding criterion or should be cavalierly treated. Throughout the hearing many suggestions were made for modifying the site 41 proposal and for various incineration and energy from waste options. There seemed to be an implicit assumption that if the

proposal is sound, funding would be automatic and available from some level of government. Such attitudes are not, in the Board's view, either responsible or helpful. When it comes to paying the taxes necessary to fund some of these suggestions taxpayers are often not quite so enthusiastic.

12. Waste Reduction

Recycling of cans, newspapers, cardboard and glass has been practised in the six North Simcoe municipalities since 1985. Midland passed a mandatory recycling by-law in 1988. The percentage of waste recycled is expected to average 8% in 1989. A program of advertising and promotion was initiated in 1989 and further funds were committed to the purchase of recycling equipment. It was the view of the Association's Administrator that, with further initiatives such as composting, collection and recycling of cardboard, construction material and scrap metal, the Provincial goal of recycling 25% of waste by 1992 can be met. One problem is the availability of markets for recyclable materials. Also the revenue from the sale of recyclable material may fall as evidenced by the prices per tonne for cardboard which are now $20.00 as compared to a previous price of $65.00, and for paper at $20.00 now and previously $35.00.

A number of residents made suggestions for reducing wastes such as household composting and the recycling of a wide variety of products. Suggestions were also put forward which would require

provincial government initiatives limiting and regulating packaging. These suggestions included the banning of disposable diapers and junk mail and the limiting of the types of resins permitted in the production of plastics. Also the building of large central incinerators coupled with the production of electric power was recommended as a provincial initiative. Provincial assistance to recycling companies was also suggested.

The Board had the opportunity of viewing a video showing some innovative solutions to waste management as practised in a U.S. jurisdiction where a reduction in excess of 50% is being achieved through sorting and processing some items into fuel pellets, and through composting and recycling.

The Association's 5% waste reduction projection was criticized as being too conservative. However, it should be remembered that this figure was selected prior to the 1989 anticipated figure of 8% and the recently set provincial targets. Counsel for Tiny suggested that the Association's provision for excess landfill capacity (as a result of too-low projected reductions due to recycling, etc.) would, in itself, act as a disincentive to recycling. The Association's Administrator rejected this suggestion as the municipalities involved would not wish to look for a new site.

The Board considers the Association's recycling initiatives to be very positive. No doubt more can be done, but the Association is

certainly directing substantial resources to reducing waste volumes that are now being landfilled.

13. Site 41 - Operation

The total area of the site is approximately 60 ha (150 acres) of which 21 ha (53 acres) are proposed for landfilling. The site consists of two parcels; a northerly and southerly parcel. The northerly 50 acre parcel contains a small woodlot, a field and some cropland and would not be used in connection with the landfilling operation.

The larger and southerly 100 acre parcel, on part of which landfilling would take place, is relatively flat with a ridge extending in an east-west direction. It is entirely cropland and contains a home and barn.

There are no permanent watercourses on the property but the site is traversed by 2 drainage swales, one on each parcel. These swales carry surface waters intermittently and flow in a north-east direction to a channel situated to the east of the site and then to a large year-round creek to the east known as McDonald's Creek, to the Wye River and through the Wye Marsh to Georgian Bay.

The site would be owned and operated by the 5 municipalities comprising the Association and would be limited to accepting waste

originating within the boundaries of those municipalities together with the waste from Tiny.

The site would receive a total of 790,000 tonnes of waste including sludge over a 20 year period commencing in 1991. The sludge would comprise about 49,000 tonnes of that total, some of which is presently stored at the transfer station. The balance would be sludge received from the Midland Sewage Treatment Plant. The final contour would reach just under 8 m above grade level.

The site would be equipped with a leachate collection system: an underdrain and a perimeter toe drain. The excavation on the site would be about 2 to 2.2 metres below the surface and the underdrains would be placed next below the excavation. Collector pipes for the underdrain system would be spaced at 30 m intervals in excavated trenches. These underdrains would be embedded in a granular filter and connected to a collector sewer to convey the leachate to a holding pond. From there, the leachate would be taken to the Midland Sewage Treatment Plant.

The toe drain would be installed in the native soil, embedded in a granular filter and connected to the under-drain system. It would be located close to the surface of the excavation - where the refuse is first applied.

The landfill area would be divided into 2 phases, a westerly and easterly, separated by a road allowance down the middle. There

would be 3 lifts consisting of trenches that would be excavated as needed to secure cover material. Filling would take place in the trenches. As the first lift is completed, the second lift would be started and then on to the third lift which would be contoured to final grade. At the end of each day, all exposed refuse would be covered with 0.15 m of earth cover. A final cover of 0.6 m of top soil would be applied on completion of landfilling in order to minimize leachate generation. There would be progressive seeding of the final cover.

There would be buffer zones of 100 m on all sides except on the west side, where the buffer would be only 50 m. This last buffer is in contravention of an MOE guideline (Exhibit 70) which recommends a 100 m zone. The Association relied on a different MOE guideline (Exhibit 185) in establishing the 50 m buffer on the west side. The buffer zone may have some significance depending on the hydrogeological conditions obtaining in the northwest corner of the landfill area - a subject discussed later in this decision.

The road in the middle of the 2 phase areas would allow for a sewer leading to the leachate collection pond and permits easier access to the underdrain pipes for cleaning and maintenance. This is in addition to the access man holes provided throughout the leachate collection system.

The proponent would undertake a sedimentation control program in order to limit the amount of sediment allowed to leave the site in

the waters entering the drainage channel to the east. The program would involve the construction of one or more sediment basins and filter berms at the point at which the waters exit from the site. This matter would be dealt with in detail in the final design stage.

Methane gas, generated by the decomposition of refuse, would be restricted from migrating laterally by the clay surrounding the excavation. The proponent does not propose to install any gas venting facilities since the gas would move naturally upward and vent to the atmosphere.

14. Hydrogeology - Groundwater

(i) Introduction

Hydrogeology is the study of water in the ground and the ways it moves through the ground. The Board's consideration of the topic of hydrogeology is related to its concern with the chemicals in the ground and in the water and the possible changes in the chemical composition of groundwater as a result of the landfilling operation. One of the by-products of landfilling is leachate and leachate is produced by the percolation of water through refuse. Left uncontrolled, the leachate could enter ground or surface water systems and contaminate them. The contamination could reach water wells used for human consumption and, in the case of surface water,

could affect both aquatic biology and other water uses, e.g. farming operations.

(ii) Site Hydrogeology Description

Mr. D.E. Jagger, the proponent's hydrogeologist, began his work in North Simcoe in 1980, as a project manager. He was responsible for all hydrogeological studies which he himself either completed or that were carried out under his supervision.

What is contained in this subsection is Mr. Jagger's description of the hydrogeological setting, surveys conducted by him, his analyses, findings and predictions. The following subsection (iii) will deal with criticisms directed at Mr. Jagger's analyses, his responses and the Board's conclusions.

The basic approach adopted by the proponent was a hydrogeological differentiation of sites into two categories; containment and attenuation sites. The latter is a site where leachate undergoes a variety of processes to reduce its strength or severity as it passes through the soil. The leachate is not confined to the landfill site but moves off site. A containment site is defined by the proponent to mean one where the leachate movements are restricted to the landfill site through natural and artificial barriers. The generated leachate is collected through a series of underdrains and is disposed of in a safe manner.

Site 41 is situated on a clay plain near the southern boundary of Tiny. The geology of the North Simcoe area, outside of the clay plain, is complex and unpredictable. It is unpredictable in that it is characterized by variable stratigraphy i.e. a layering of different types of soils. The geology is complex in the sense that it changes from one area to another over short distances.

The geology of the clay plain, however, is relatively uniform and more predictable. The 3 containment sites, 37S, 38S and 41, located in the plain, exhibit similar hydrogeological traits i.e. deep clay underlain by a sand aquifer under artesian pressure.

The plain was flooded during the melting of glaciers and was covered by the waters of an ancient lake known as Lake Algonquin. Sediments were carried into the waters and formed layered beds over the basement glacial till soils. Coarse sands were deposited followed by the finer-grained clay and silt to form the clay plain.

Mr. Jagger carried out an investigation of site 41 which consisted of the following:

- A field study involving the sampling of soils from 4 test pits and 13 boreholes, the installation of piezometers and standpipes to measure water levels and pressures, slug tests to measure the in situ soil permeability, and the preparation of a water well inventory.

- A soils laboratory program to establish the physical properties of the soil units.

- A hydrogeological analysis which included the preparation of physical data maps, geological cross-sections, groundwater velocity calculations, travel times for groundwater, cation exchange, mass balance and predictive analysis, water budgets, and geotechnical aspects.

The investigation disclosed that the depth of clay at the site varies from about 6 m to 15 m. This overlays a sand unit that has a depth of 6.6 m at one borehole and, in turn, the sand unit is underlain by glacial till. The total soil thickness is estimated at between 80 to 90 m below ground surface.

The upper part of the clay unit - extending 2 to 4.5 m below ground surface - is fractured and weathered. The unweathered zone beneath it consists of layers of soft to very soft clayey silt as evidenced by the relatively low N values - the standard penetration resistance figures - and these are generally less than 5 and often less than 1.

Slug tests carried out in the field indicated an average vertical permeability of the clay unit of 2.7×10^{-8} m/sec or about .85 metres per year. The laboratory test indicated a lower permeability than the field tests - 2×10^{-9} m/sec or 0.06 metres per year. The horizontal permeability of the soil was found to be

2.3 X 10^{-10} m/sec or .007 metres per year. These indicate low permeability. The clay thus provides for the natural restriction of contaminant movement.

There is another factor affecting leachate flow. The water in the sand aquifer below the clay is under pressure because it is a discharge area. The water tends to move upwards and creates an upward pressure in the clay which resists the downward movement of leachate. This phenomenon is known as upward groundwater gradients which, if strong enough, would produce artesian wells. These upward groundwater gradients will be maintained so long as the downward leachate pressure is less that the upward water pressure.

The leachate pressure, in turn, depends on its level in the landfill area and the level is controlled by the underdrain collection system. The upward gradients, according to Mr. Jagger's initial analysis, are found throughout the entire area to be landfilled.

The sand aquifer is not uniform in thickness nor in soil texture. It was not found at one borehole, No. 6, located on the west boundary of the parcel in which the landfill area would be situated.

There are 2 groundwater flow systems: one is found in the weathered part of the clay and the second, and more important, in the sand aquifer. The groundwater table in the unweathered clay is within

one to two metres of the ground surface and the average rate of flow is about 3.8 metres per year. However, the unweathered clay zone beneath experiences upward groundwater gradients and the clay soils serve to restrict groundwater movement to a much slower rate.

The far more important groundwater system is in the sands below the clay and is referred to as a confined sand aquifer. "Confined" means that the water is under pressure which manifests itself in the upward push in the clay that counteracts the downward pressure. The groundwater enters the aquifer in the uplands, a recharge area, in the vicinity of Waverley, and flows to the discharge area of the clay plains. Drinking water and water used for farming operations is drawn from the sand aquifer. The groundwater flow in the sand aquifer is in a north-northwest direction.

The landfill would be located entirely within the weathered clay, which is harder and offers more stability than the unweathered clay underneath.

Contaminant migration in low permeability soils occurs through two processes. One is advection and that is the mass transport through the pores of the soil. The other, diffusion, is a slower process and involves a molecular exchange from areas of higher concentrations to areas of lower concentration. Generally, diffusion will govern in low permeability clay types of soil but it could be accompanied by advection where there is a reversal of the upward gradients. This could take place if the build up of

leachate in the waste were to go above the artesian head potential (pressure) in the aquifer.

The chloride ion is used as a measurement to assess the movement of contaminants because it is not affected to a great extent by attenuation through the soils and also because it travels at approximately the same speed as the groundwater. It is, of course, subject to dilution.

In the case of diffusion and assuming a concentration of 1,500 mg/L (which is considered typical), it would take 1,200 years for the chloride to be released into the aquifer at about 150 mg/L. This concentration would not likely reach the aquifer because the initial concentration of 1,500 mg/L would reduce over time due to rainfall infiltrating the waste, to the removal of leachate by the collection system, and to the continuous dilution of the remaining leachate. The chlorides would probably arrive at the aquifer at a figure much lower than 150 mg/L.

Mr. Jagger then offered a worst case scenario where the leachate level is allowed to go 1 m above the artesian head potential in the aquifer. This assumes that the leachate collection system is not functioning. Advection would be introduced in addition to diffusion. It would require 180 years for the leachate to travel through 5 m of clay at 50% of initial strength assuming a constant source i.e. without the decaying process. Presumably, after 180 years, the concentration would continue to increase to the maximum

concentration of 1,500 mg/L. Actually, it would take many more hundreds of years for the leachate to reach the aquifer and it would be at a lower concentration due to the greater thickness of clay over most of the site, the decaying process and the proper functioning of the leachate collection system.

A comprehensive monitoring system is recommended including existing groundwater monitors and new monitors placed close to the edge of the landfill. Manholes would allow easy access for underdrain cleaning and maintenance. Wells could be drilled down into the refuse and leachate pumped from the wells if there were a complete failure of the underdrains and leachate were mounding.

Site 41, according to Mr. Jagger, is a good containment site which, with proper engineering and monitoring, would serve to restrict contaminants within its boundaries.

(iii) Challenges to Mr. Jagger's Findings - The Board's Conclusions

Tiny's witnesses challenged several of Mr. Jagger's assumptions and findings. These witnesses are:

Dr. N. Eyles, quaternary geologist

Dr. D. Charlesworth, hydrogeologist

Dr. R.K. Rowe, geotechnical engineer

"Quaternary" refers to the latest episode in earth history and in Canada, quaternary geology refers specifically to glacial geology, the history of ice sheets.

It was the basic submission of all three experts that the geology and hydrogeology regarding site 41 have not been sufficiently investigated. Dr. Eyles found the information on geology to be insufficient. He was of the opinion that the profile of the sand aquifer was unknown and that the clay was not a single structure but represented a complex stratigraphy. Dr. Eyles based his findings on the borehole logs and a soil profile that he observed some distance away from the site.

Twelve boreholes were drilled around the perimeter of the site and one borehole in the area of the actual landfilling. Five of the boreholes encountered the aquifer and two penetrated it fully. One borehole, No. 6, on the west boundary, did not encounter the aquifer at all. In addition, Mr. Jagger performed a variety of tests including the measuring of penetration resistance of soils (N values), examining soil samples carefully in the field, and in the laboratory, installing groundwater monitors and tabulating results, carrying out slug tests to determine in situ permeability, a survey of water well records, testing of soils at the laboratory including moisture content, particle size distribution, porosity, and cation exchange capacity. These were followed by hydrogeological analyses which included the preparation of physical

data maps, geological cross sections, the determination of groundwater velocity, cation exchange and water budgets.

The Board accepts Mr. Jagger's investigations as sufficient to allow him to make proper findings subject to the qualifications and reservations that are set out below in this subsection.

Another criticism levelled at Mr. Jagger's findings was that the clay plain did not represent uniform and predictable geology and that the contact between the clay unit and the aquifer was not distinct but rather gradational. This latter criticism is important since it has relevance to the movement of contaminants. Mr. Jagger's findings of uniform and predictable geology at area 41 and the clay plain are based on the reconnaissance study of the clay plain in 1984, the well records, an area inspection and the borehole information. The Board accepts Mr. Jagger's findings. The Board also concurs in Mr. Jagger's conclusion that a distinct contact exists between the clay and the aquifer based on his investigation of soil samples, his comparing of N values and testing for moisture content of the soils.

Dr. Charlesworth expressed a concern that there were insufficient data to determine the direction of the groundwater flow in the aquifer. Mr. Jagger had established the direction to be north-northwest based on the data from 4 monitoring stations. Dr. Charlesworth was of the opinion that the direction might be north-east and that water well data seemed to support his opinion. More

information was required. Even if Dr. Charlesworth's opinion were correct, this would only improve the containment aspect of the site since upward gradients exist in the north-east section compared to the downward gradients in the north-west area.

Dr. Charlesworth believes that there are not enough data to substantiate the hydraulic conductivity of 2 X 10^{-9} m/sec used by Mr. Jagger in his calculations. Mr. Jagger's evidence is based on 2 laboratory tests conducted on soils collected at one location. One was a consolidation test and the other was a permeability test carried out on a triaxial testing machine. Mr. Jagger took the average of the two tests. There was further confirmation by way of a tactile examination of the soil. In addition, the texture of the soils was compared by particle size distribution tests.

Dr. Charlesworth points out that Mr. Jagger found the permeability of the upper crust to be 10^{-6} m/sec which is a higher permeability. Dr. Charlesworth criticizes Mr. Jagger for using the lower permeability of 2 X 10^{-9} m/sec for purposes of the diffusion calculation for both clay units - the upper crust and the lower unweathered clays.

The Board notes that the results of the 2 laboratory tests were quite close and that Dr. Charlesworth could offer no reason why those results together with the tactile examination and particle size distribution tests would not provide accurate results except

to say that the laboratory results are not sufficient. The Board finds Mr. Jagger's calculations to be reasonable.

The other criticism, that only the permeability of the lower clay was used for the diffusion coefficient, is not significant. It appears to the Board that the greater part of the desiccated layer will be excavated and the main component for purposes of calculation would be the unweathered clay beneath. The Board is, therefore, prepared to accept Mr. Jagger's figure for the purpose of determining the diffusion coefficient.

Dr. Rowe pointed to very soft clay at the southern boundary of the site. If that condition also prevails at the southern edge of the landfill area, then the stability of the slopes in the area is called into question. The design calls for a 3.1 slope and this slope may be too steep to be supported by the soft clays.

Mr. Jagger acknowledged that there might be a problem and raised the possibility of flattening the slope to a 4 to 1 ratio if the soils were not of sufficient strength. This means that it would be necessary either to increase the footprint at the base of the landfill or to increase its height in order to accommodate the same amount of waste.

The Board is of the opinion that Dr. Rowe's concern is justified but that this may be a matter to be resolved in the later final

design stage. Dr. Rowe performs a service in pinpointing areas of possible trouble and these should be taken into account.

Dr. Rowe severely criticized Mr. Jagger's calculation of the settlement that might occur in the underdrain system. This system works by gravity and if there is differential settlement - different degrees of settlement in different parts of the system - leachate collection could be severely impaired. The consequences are critical because a leachate mound could develop and this could lead to a reversal of the gradients over large landfill areas and cause a much more rapid migration of leachate towards the aquifer.

Mr. Jagger had initially forecast very little or no differential settlement. Dr. Rowe's criticism centred on the compressibility aspect of the clay in determining the range of differential settlement. He found that the testing was limited to 1 consolidation test and that reliance on "N" values for the soil was not justified. Most importantly, Dr. Rowe found that Mr. Jagger had omitted an important factor in his settlement calculation and that is the depth of the soil. Thus where Mr. Jagger might forecast a 1 mm per m settlement, that figure should be multiplied by the depth of the compressible material e.g. if the latter were 10 m then the settlement figure should be multiplied by 10. Mr. Jagger conceded that he had made an error in his calculations. Dr. Rowe forecasts a settlement possibly of about 30 cm.

Mr. Jagger, however, is of the opinion that the stresses caused by the landfilling would be below the preconsolidation pressures of the soil and that, therefore, the anticipated settlement is low. The total stresses that would be induced at the landfill would be in the order of 48 kilopascals which is significantly less than the preconsolidation pressure of 80 kilopascals as determined by the consolidation curve that he drew. His worst case scenario allows for a 10 cm settlement and the stresses to be applied are considerably less than in that scenario.

The Board, again, acknowledges the importance of Dr. Rowe's contribution to the understanding of this matter. While there will be a greater differential settlement than originally calculated by Mr. Jagger the Board finds that it will not be significant. However, it is the Board's opinion that this matter would require further attention and possible redesigning that would enter into the final design stage.

Dr. Rowe also raised the matter of the stability of the trench slopes to accommodate the underdrain pipes. He offered evidence as to slope angles and the material in which the pipes would be embedded. However, the Board finds that the evidence does not point to a problem that could not be addressed during design and construction.

Dr. Rowe, using only the data submitted by Mr. Jagger, was able to identify a significantly large downgradient area at the northwest

corner of the intended landfill. The clay cover in this area varies from about 5 m to 7.5 metres. That beneficial component of upward pressure is not only missing but is so at some of the thinnest clay areas of the site. The Board was provided with evidence that leachate could penetrate the aquifer in the space of 35-40 years after the commencement of landfilling and migrate beyond the site boundaries. This could impact on wells supplying drinking water.

The quality of groundwater leaving a site is determined by an MOE guideline known as "The Incorporation of the Reasonable Use Concept Into the Groundwater Management Activities of the Ministry of the Environment" (Exhibit 263) dated September, 1986.

Section 3.5.1.1 of that guideline, which deals with the quality of groundwater, sets out allowable degradations of groundwater leaving the site to be used for drinking. Section 3.5.2 presents a formula for calculating the allowable chloride limit assuming that the background natural concentration is 10 mg/L. The allowable limit for chloride when it reaches the boundary of the site is 130 mg/L. If it is higher, then landfilling is not a reasonable use and contravenes the guideline.

The revelation of a downward gradient area illustrated the importance of dilution since that process would be crucial in determining the chloride figure at the site's boundary. Accordingly, Mr. Jagger prepared a dilution calculation for the

downward gradient area (Exhibit 298) but this time using 1,000 mg/L as the initial concentration for chloride rather than 1,500 mg/L, the figure given in his earlier evidence. He justified this change on the average concentration found at the Glenridge Quarry Landfill Site, in respect of which he acted as consultant.

While this change may be justified based on empirical facts, it certainly raises some doubts and concerns in the minds of the Board members.

The criticism of the opposition was aimed, in part, at the lower figure but also at the fact of the change. It may be that the lower figure of 1,000 mg/L is acceptable and that the use of the higher figure in the initial calculation was perhaps a result of overconfidence in the containment ability of the site. However, it would be more credible to retain the initial hypothesis than to change a parameter in mid-stream unless it is clearly wrong.

The calculations in Exhibit 298 indicate that even with the downward gradients, the reasonable use criterion would be met. Mr. Jagger found that, generally, the chloride reading would be less than 30 mg/L at the boundary.

The opposition evidence is to the effect that there is not enough data to determine the hydraulic conductivity of the clay. In addition, the evidence regarding the aquifer is scarce in that its head values, hydraulic characteristics and direction of flow are

not known. The ultimate question then, is what will be the level of contamination leaving the site? That question according to Dr. Rowe cannot be answered because of the insufficiency of data.

There were allegations to the effect that Mr. Jagger had not considered the matter of dilution except in a general way until the north-west downward gradient area was brought to his attention. Mr. Jagger's reply to this is that he did not carry out an earlier dilution calculation because the design report had not been compiled at the time of the writing of his report (Exhibit 58). Presumably the design report would provide the calculation of the hydraulic head in the waste which would have a bearing on the hydraulic gradients in the soil. He does, however, concede that he had not overlaid the relevant drawings which would have allowed him to identify the downgradient area in the north-west corner.

Mr. Jagger did, however, present the dilution calculations in Exhibit 298 which clearly show that the MOE guidelines would be met. Even if the chloride concentration is taken to be 1,500 mg/L instead of 1,000 mg/L, this would not significantly change its strength of 30 mg/L that would occur at the boundary. This would be well within the Reasonable Use guideline.

The Board, therefore, considers site 41 to be hydrogeologically suitable for landfilling. It is not the superior containment site as originally presented by Mr. Jagger. It is, to a degree, an

attenuation site and in the Board's opinion, the net effect rating should be changed to indicate a more serious impact.

Dr. Charlesworth is of the opinion that geologic areas other than the south clay plain may offer prospects for landfilling, especially in Tay Township but they have not been adequately investigated. The Board, generally, agrees with this assessment. However, the Board also accepts Mr. Jagger's opinion regarding the uniformity and consistency of the soils on the southern clay plain on which site 41 is situated as opposed to the unpredictability of other areas.

Dr. Charlesworth believes that site 32, equipped with an artificial liner, would be hydrogeologically superior to site 41. Dr. Rowe referred to the efficacy of the artificial clay liner at the Keele Valley site in Maple and suggested that 1.5 metres of artificial liner of uniform clay is the equivalent of 11 metres of clay at site 41 because of its lower permeability.

Mr. Patrick Lee, a hydrogeologist, presented evidence regarding artificial clay liners to the effect that:

1. A source of clay is required and sources in the North Simcoe area are limited. Transportation may be required.

2. The excavation of the clay would leave a deep scar.

3. The clay would have to be compatible with the soil conditions of the site where landfilling would take place. In addition the artificial clay liner would have to be installed to take into account differential loading on every part of it. Finally, its water content has to be the same throughout for effective operation.

Mr. Jagger also raised concerns, e.g. variation in liner material, concerns related to the placement of the clay material to ensure quality control, the harmful effects of excessive drying or wetting of the material and the clogging of sand mats. He did concede that these matters could be addressed during construction and that the clay liner at the Glenridge Quarry Landfill was not only working effectively but that its actual permeability was lower than its design permeability. It was his opinion that natural clays are almost always preferable to an engineered liner but there may be instances where an artificial clay liner may be appropriate.

As a last point, in the matter of comparison of sites 41 and 32, the Board notes the upward gradients for most of the landfill area of site 41. This feature affords it an added advantage over site 32 which has downward gradients and this is partially recognized by Dr. Rowe's qualified preference for site 41.

That is not to say that area 32 and other areas outside of the clay plain may not be suitable sites from a hydrogeological viewpoint. Indeed, site 32 was so designated by the proponent itself as one

of its 7 candidate sites, but that in no way detracts from Mr. Jagger's finding of superior and more acceptable hydrogeological conditions of the clay plain in south Tiny.

15. Hydrology - Surface Water

A berm would be constructed on the west perimeter to intercept the waters that would otherwise traverse the area of landfilling, and divert these waters to drainage ditches that follow the entire landfill perimeter. These ditches would connect with the existing natural drainage system that continues east of the site and in this manner, prevent the contamination of these waters. On-site precipitation would run off the surface to be intercepted by the ditches which connect to the natural drainage system i.e. McDonald's Creek and then the Wye River. Precipitation percolating through the cover material into the refuse would become leachate which would be collected by the leachate collection system.

A source of surface water contamination is leachate break out at the sides of the landfill mound. This occurs in a clay setting where the leachate is produced at a rate faster than it can exfiltrate through the bottom. The result is a gradual build up of the leachate within the refuse itself to produce what is called the bathtub effect. The leachate levels, however, would be controlled by the use of underdrains.

Leachate levels would be monitored in order to prevent this occurrence but in the event of break out at the sides of the mound, the perimeter toe drain system would collect the leachate and prevent its migration from the site area.

Leachate break out could also occur through poor hydraulic connection between the layers of refuse. Improper placing of daily cover could result in lateral deflection and cause springs to break out along the side slopes. However, in case of a break out, the leachate would be captured by the perimeter toe drain.

A surface water program would be established to monitor McDonald's Creek and ensure the quality of the water leaving the site.

The Board finds the surface water program satisfactory and in its opinion, would prevent the contamination of surface water leaving the site.

16. The Design Report and Certificate of Approval

The matter of the stability of the southern slope, discussed above, highlights an aspect of the hearing and more particularly the design report that was repeatedly called into question by Mr. Dahme and some witnesses. It was their contention that the application in respect of the Certificate of Approval under the Environmental Protection Act lacked sufficient detail. According to them, there is a duty and an obligation on the proponent to provide more

technical information at the hearing stage, this being the only hearing to which the public is privy and in which it can participate. This matter should not be left to a later determination following the granting of a Certificate of Approval.

There is merit to this argument. However, Mr. Barker stated on a number of occasions that the design report is conceptual in nature and that final details may depend on further tests and investigations and necessary changes and modifications would be effected in the implementation of the undertaking.

The Board would merely add that the granting of a Certificate of Approval would be subject to the approval of final plans and specifications by the Director. The Board is of the opinion that the Director and his staff are better able than the Board to analyze such plans and specifications. Furthermore, it would be unreasonable to require the Association to lay out large amounts of money for such plans prior to the Board's decision when there is the possibility that the undertaking will be rejected.

Nevertheless, the public and the Board are entitled to receive a sufficient degree of technical detail which, if the undertaking is approved, could be incorporated as conditions to be attached to the Certificate of Approval and act as a guide for the Director in evaluating the final plans and specifications.

During the course of the hearing, the Association found it necessary to add a third lift to the landfill as a result of larger projected quantities of waste. It proceeded to revise its design report at the suggestion of the Board.

New design considerations might now be required as a result of the uncertainty with regard to the stability of the southern slopes and the possibility of altering the footprint or the height of the landfill. The easier solution might be to maintain the same height and footprint and to landfill a lesser amount of waste. These considerations are academic in view of the Board's decision.

Notwithstanding the difficulties raised with regard to slope instability, differential settlement of the underdrains and especially the northwest area of downward gradients, the Board is of the opinion that it has before it enough information and detail to have made a decision with regard to granting a Certificate of Approval under the Environmental Protection Act.

17. Leachate and the Midland Sewage Treatment Plant

The leachate generated at the site would be hauled to the Midland Sewage Treatment Plant for treatment. MOE submitted evidence of the ability of the Plant to accommodate the leachate resulting from increased volumes of liquids and the increased BOD demand. BOD levels are important as they indicate the amount of oxygen required

to keep bacteria alive in order to consume all the organic material at the Plant.

The design capacity for the Plant is 13,600 m^3 per day and the 1988 figure indicated a daily inflow of 11,316 m^3. The leachate volume from the landfill site is anticipated to be 10,000 m^3 per annum or about 274 m^3 per day. After closure, the daily production will be 156 m^3 per day. These figures are within the Plant's capacity to accommodate the volume.

The design capacity of the Plant for BOD is 1,632 kg per day and for 1988 the BOD figure is 757.1 kg per day or 46.4% of the design capacity. The added BOD demand resulting from the infusion of leachate would be about 68.45 kg per day which is approximately 4.2% of the design capacity.

The Board finds that the Plant is capable of accepting the anticipated volumes of leachate.

18. <u>The Disposal of Sludge at the Landfill Site</u>

Sludge, now stored at the transfer station, would be landfilled at the site within the first year or two of operation. In addition, the site would receive the sludge produced at the Midland Sewage Treatment Plant for the period of the site's active life.

The Board heard the following evidence:

1. The sludge generated at the Plant would not be hazardous in that it would not be ignitable or corrosive. Furthermore, waste from sewage works is exempted from the category of hazardous wastes by virtue of Item xiii of Section 27 of Regulation 309, under the Environmental Protection Act.

2. A leachate extraction test was undertaken to determine whether concentrations of any contaminants would exceed limits imposed for drinking water. The test endeavours to emulate what happens within a landfill with regard to contaminant generation. There is no concentration that would exceed the hazardous waste criteria. Therefore the leachate reaching the Plant would not be hazardous and it would not add a hazardous component to the sludge.

Since the sludge would not be hazardous it would be acceptable at the site for landfilling.

19. General Comments

(i) The Public Interest

Society in general, has become aware of environmental problems and seeks solutions. On the face of it, approval of a landfill site is regarded by society as a solution, albeit imperfect, to the

problem of waste disposal. When the Board turns down an application for a site it appears not to have participated in such a solution. Rather it has left a problem that, with the passage of time, becomes exacerbated and all the more pressing.

Site 41 cannot be considered in isolation. It is part of a larger investigation that involves other sites. It is only in that context that a determination of site suitability can be made. If that investigation i.e. process is flawed, then a question mark hangs over the end result. A proper investigation might have led to the selection of site 41, or to another site on the short list of 7, or for that matter, a site not considered by the proponent. Therefore, the Board cannot say that site 41 is the preferred site and cannot grant approval to proceed with this undertaking.

Thus a comparison need not be made of the advantages of site 41 i.e. acceptable hydrogeology, good hydrology, lower costs as against the disadvantages i.e. use of prime agricultural land, social impact, visual impact and proximity to airport.

The Board considered another aspect of the public interest which was not raised at the hearing. Should not the interest of the area's population numbering some 34,000 augmented by 7,000 vacationers, who would benefit from a landfill site, not override the interest of the much fewer numbers of residents who will be directly and adversely impacted by the site? If it can be proven that there is sufficient groundwater and surface water protection,

should not the benefits accruing to the majority outweigh the discomfort, disruption and possible displacement to be endured by the few?

If numbers were the deciding factor, then in every case of a hydrogeologically suitable site, the Board would be compelled to grant approval irrespective of the hardships that the undertaking would inflict on nearby residents whose numbers would be much smaller than the population that would benefit. This would have the effect of nullifying both the wide definition of environment and the provisions of section 5(3) of the Environmental Assessment Act. It would place that Act in the same category as the Environmental Protection Act which is concerned primarily with the natural environment and where a comparison of alternatives is not required.

The Board's decision leaves the matter without a solution but with the hope that its comments may be of help to future applicants, and in the longer run, will improve the quality of waste disposal in Ontario. The Board notes that the Province has recently enacted enabling legislation permitting county-wide waste management programs. Such a program may provide the solution.

(ii) Evidence

(a) Expert Evidence - Hydrogeology

The objective of hydrogeological experts should be to assist the Board in ensuring that a landfill site can be operated safely. The Board should be able to rely on expert opinions being fair and objective whether or not such experts are called by the proponent or an objector. Experts should never be advocates.

Hydrogeological evidence, put forward by the opposition, initially suggested that site 41 would not be safe. This evidence could have had the effect of alarming the public. Yet, in the final analysis, the opposition evidence confirmed that the site could operate safely.

(b) Relevant Evidence

It is unnecessary to present evidence on the effects of a landfill site if such effects can result from the existing permitted use of the property. For example, if there is no existing restriction on the cutting of trees, the cutting of the trees is not a special effect related to a landfill site. Similarly the loss of some particular species of plant, which could be lost by the clearing of a field for farming, is also not a special effect related to a landfill site.

In this case Tiny called Mr. Richard Babbette, a consulting practical naturalist, who identified certain areas of wetland both on the property and adjacent to it. Considerable time was spent on whether or not the proponent's identification of these areas as natural vegetation was correct. Surely the issue should have been whether or not the proponent identified and took into account these wet areas, not what they should be called. The Board found Mr. Babbette's evidence of no assistance.

(c) Superfluous Evidence

The proponent had supplied the intervenors with its environmental assessment documents and many reports well in advance of the hearing. Nevertheless, some of the parties, even where they agreed with the proponent's conclusions, e.g. the evaluation of the agricultural resources, the review of the official plan policies and visual impacts, considered it necessary to submit their own evidence. This resulted in a waste of time and money.

It is, thus, incumbent on the parties to critically analyze their concerns and to determine the importance or relevance of the evidence they propose to call.

(iii) Cooperation Among Parties

Greater cooperation among counsel might have contributed to the reduction of repetitious or irrelevant evidence. The Board had

urged counsel at the preliminary hearing to consult with one another and to meet informally to resolve outstanding matters. It is the Board's impression that a satisfactory degree of cooperation was lacking. Again, it is the Board's view that significant cooperation can be effected without prejudicing one's case.

(iv) Hearing Costs

The Board is concerned that the benefits to the public of a full and complete environmental assessment of an undertaking may be in jeopardy if the process is exploited by excessive use of expert evidence at increasingly higher costs in order to provide evidence of questionable assistance.

20. Costs Awards

The Wye Citizens' Group assisted the Board by consolidating and summarizing community concerns under an umbrella organization and by presenting useful information concerning the social impact of the proposed undertaking on area residents and businesses. Expert evidence concerning the environmental assessment process was also of assistance. The group, through fund raising endeavours, has secured $36,573.92 toward the costs of the hearing. Furthermore, it made submissions and received $28,000 as pre-hearing funding from the Ministry of the Environment. The Association has no objection to the costs as submitted based on a revised total of $142,242.22.

The Board finds that the Wye Citizens' Group should receive an award of costs in full as requested less the amount raised by the Group. The Board will thus require the Association to pay the Ministry of the Environment $28,000 being the pre-hearing funding and to pay Garrod Associates $77,668.30.

The evidence called by the Township of Tiny concerning hydrogeology was of particular assistance to the Board. The evidence with respect to gull/aircraft interaction was also of assistance. The planning evidence was to a large extent unnecessary; however as the planner is the Township's planning consultant he was able to provide the Board with some planning history of Tiny. The agricultural evidence with respect to soils and farm uses was, for the most part, a duplication of the proponent's evidence. However, these experts did provide a useful overlay map relating areas of good hydrogeology and poorer farm land which was helpful to the Board. The evidence with respect to the environmental assessment process was helpful. The evidence by the consulting practical naturalist and the landscape architect was of no assistance to the Board and accordingly the costs for these two witnesses should be deducted from the costs as submitted.

Counsel for the Association argued that the Township of Tiny should not receive any award of costs. He submitted that there was no indication that the Township was in dire straights and needed financial assistance in order to participate. He pointed out that section 96 of the Ontario Municipal Board Act and section 7 of the

Consolidated Hearings Act are similar with respect to the jurisdiction of the Boards to award costs and that the Ontario Municipal Board rarely awards costs to municipalities. He further pointed out that the Order in Council approved December 15, 1988, authorizing intervenor funding with respect to this hearing, specifically excludes municipalities from receiving public funding. The Board notes that the Intervenor Funding Project Act, 1988 contains no list of exclusions.

The Board finds that intervenor funding has no relevance to the Joint Board's jurisdiction under the Consolidated Hearings Act to award costs. The Joint Board however does agree that, generally, costs would not be awarded to municipalities as they are unlikely to be in financial difficulty. To merely transfer the tax burden from one set of taxpayers to another, particularly where all taxpayers in North Simcoe would benefit to some extent by this undertaking, would not, in the Board's view, be fair. The Board also considers that a municipality represents its ratepayers' interest and that, being the case, the municipality should finance that interest.

MOE, in this case, is funding the Association by a grant of 60% of its costs of the hearing. Thus the taxpayers in Tiny should also receive similar assistance. If the Board were to require the proponent to pay Tiny 60% of its costs, the proponent would receive 60% of that figure from the Ministry and the taxpayers in the five Association municipalities would have to bear the balance to bring

it up to the full 60% level. The objective in the Board's view should be to have all municipal taxpayers fund 40% of all costs of the hearing and for the Province to fund 60%. In order to have this occur it is necessary for the Province to pay Tiny 60% of its costs.

The Board, in order to create municipal taxpayer equity, finds that Tiny should receive 60% of the costs incurred as adjusted by the deletion of the amounts acknowledged by Mr. Dahme to be included in error (Golder Associates - April 13 - $2,097.18; Morrison Beatty Ltd. - June 1 - $1,925.00; Morrison Beatty Ltd. - Sept. 13 - $1,625.00) and by the deletion by the Board of the costs for Mr. R.S.W. Babbette ($1,156.75 + $649.25) and for LGL Limited who were retained to review Mr. Fraser's report and who retained Mr. Babbette ($2,597.09) and for Mr. Roderick MacDonald (Land Plan $2,301.25 + $3,813.39). In order that the MOE fund 60% the Board will require the Ministry to pay Tiny $162,015.71, as summarized below:

Total as submitted			$286,191.09
Less: included in error	$2,097.18		
	1,925.00		
	1,625.00		
		$5,647.18	
deleted by Board	$1,156.75		
	649.25		
	2,597.09		
	2,301.25		
	3,813.39		
		10,517.73	
			16,164.91
Total as revised			$270,026.18
60%			$162,015.71

B. DECISION

1. The Environmental Assessment, as amended to include all the evidence presented at the hearing, is not accepted.

2. Approval to proceed with the undertaking is denied.

3. (a) the North Simcoe Waste Management Association shall pay

(i) to the Ministry of the Environment the sum of $28,000.00

(ii) to Garrod Associates the sum of $77,668.30

(b) the Ministry of the Environment shall pay the Corporation of the Township of Tiny the sum of $162,015.21.

Dated at TORONTO this 17TH day of NOVEMBER, 1989.

"R.B. Eisen"
R.B. Eisen

"D.H. McRobb"
D.H. McRobb

Appendix 1

CH-87-03

LIST OF WITNESSES

William Alexander Agnew
Sharon Armstrong
Donald G. Barker
Elliott Thompson Barker
Julie Barker
John Barrett-Hamilton
Richard Stanley Watson Bobbette
Harald Boker
Wilhelm Boker
John R. Bousfield
Paul Bowen
Peter Brasher
Robert Alexander Breeze
David Charlesworth
Garry Claassen
Ethel Ann Clark
Lloyd Delaney
Arthur Dyer
Joseph Dyer
John B. Dyer
Nicholas Eyles
Father James Farrell
Dale Fawcett
Donald MacDougall Fraser
Peggy A. French
Brian A. French
Yvon Gagne
Donald Greidanus
Kathleen Greidanus
John Haines
Paul Alexander Hayes
Douglas Hoffman
Michael R. Hoffman
Marjorie R. Holt
John Houston
Barry Barnsley Humphreys
James R. Hunter
Gordon R. Irwin
Douglas Jagger
Allan Edward Johnson
Wayne John Johnston
Jonathan Kauffman
Kurt Krohn
Allan Lambie
Marlene Lambie
Paul Lambie

Sharon Lapham
Patrick Kaye Lee
Beverley Iris MacDonald Leonard
Darrell Grant Leonard
Gordon Leonard
Milton L. Leonard
Ross Milton Leonard
Alfred David Lightstone
John Garfield Lucas
Elizabeth MacDonald
Malcolm MacDonald
Murry Malcolm MacDonald
Roderick Macdonald
John A. McCullough
Donald F. McQuay
Tony Nahuis
Roy Nahuis
Aki Oda
Stephen Ogden
Kenneth Ralph Parnell
Harry Powell
Stanley George Rich
Ronald K. Rowe
Steven Rowe
Denis G. Stevens
Authur Henry Stewart
Peter Stubbins
Linda Ward
Ronald Bruce Watkin
Bob Whittam

Appendix 2

CH-87-03

JOINT BOARD

NORTH SIMCOE WASTEMANAGEMENT ASSOCIATION

LIST OF EXHIBITS

1. Referral, September 1, 1988.
2. Appointment of the Joint Board, November 25, 1988.
3. Affidavit of Service, Jan. 6, 1989.
4. Affidavit of Publication of Notice, Jan. 18, 1989.
5. Affidavit of Service of Peter Pickfield, Wye Citizens Group, Jan. 18, 1989.
6. Executive Summary of the Environmental Assessment.
7. Brief of G.R. Irwin.
8. Curriculum Vitae of Donald G. Barker.
9. Firm Profile of Barker Terp Gibson Ltd.
10. Glossary of Terms.
11. Environmental Assessment.
12. Environmental Assessment, Phase 1, September 1985 (Appendix 1.1).
13. Responses to Comments, dated March, 1986 (Appendix 1.4).
14. Design Report of August, 1987 (Appendix 1.11).
15. Key Map of North Simcoe area.
16. Regional Hydrogeological Study - Site Selection Report.
17. Letter from the Ministry of the Environment to Mr. P.A. Ehler, March 14, 1983.
18. Report to NSWMC from Mr. D.G. Barker, dated March 9, 1983.

19A. Panel: Solid Waste Management.

19B. Panel: Incineration Option.

19C. Panel: Resource Recovery.

19D. Panel: Sanitary Landfill.

19E. Panel: Some Definitions - Environment.

19F. Panel: Landfill Option.

19G. Panel: Hydrogeological Inventory.

19H. Panel: Environmentally Significant Areas.

19I. Panel: Site Plan - Areas Examined at August, 1983.

19J. Panel: Sites 16, 24 and 40 Tiny and 32 Tay.

19K. Panel: Detail, Site 16.

19L. Panel: Detail, Site 24.

19M. Panel: Detail, Site 32.

19N. Panel: Detail, Site 40.

20. Report of the North Simcoe Sanitary Landfill Committee Meeting of October 3, 1983.

21. Notes on Incineration and Energy Recovery.

22. Letter from Mr. D.G. Barker to Mr. Roger Clarke of the Ministry of the Environment, dated October 9, 1984.

23. Report to the North Simcoe Waste Management Association from Mr. D.G. Barker, dated November 8, 1984.

24. Witness Statement of Mr. Donald G. Barker.

25. Letter to North Simcoe Waste Management Association from Mr. D.G. Barker dated October 18, 1984.

26. Importance Factors, dated October 29, 1984.

27A. Panel: Solid Waste Management.

27B. Panel: Sanitary Landfill.

27C. Panel: Development of a Waste Management System.

27D. Panel: Site Selection Process.
27E. Panel: Evaluation and Choice of Options.

27F. Panel: Site Plan of the Candidate Areas.

28. Submission of Mrs. Alice Sproule.

29. Land Use Plan of Site 41.

30. Report of Gartner Lee Ltd., dated March 6, 1986.

31. Estimated Total Waste Quantities.

32. Environmental Assessment Biological Review of Candidate Sites , July, 1987 (Appendix 1.7).

33. Influence of four Candidate Areas in Tiny on Gull/Aircraft (Appendix 1.8).

34. Land Use Planning Assessment, January 1987 (Appendix 1.9).

35. Agricultural Review of Candidate Areas , July 1987 (Appendix 1.10).

36. Review under the Environmental Assessment Act.

37. Letter from Mr. D.G. Barker to the Ministry of Agriculture, dated December 22, 1988.

38. Letter from Mr. Barker to the Ministry of Tourism, dated October 17, 1988.

39. Waste Recycling Study, March 1985, R. Cave and Associates Ltd.

40. News Release of the Ministry of the Environment, dated March 10, 1989.

41. Brief to the Minister of the Environment by the North Simcoe Sanitary Landfill Committee, dated November, 1983.

42A. Candidate Landfill Areas Access Road Improvements, October 23, 1986.

42B. Candidate Landfill Areas Access Road Improvements, January 26, 1989.

43. Interim Report on the Waste Management Program, dated November 5, 1984.

44. Map of the Hydrogeological Inventory and Candidate Areas.

45. Net Effects Analysis Worksheets.

46. Application for a Certificate of Approval under the E.P.A.

47. Background Information on Recycling.

48. Collection of Agreements for Committees and Associations - (History of NSWMA).

49. Representatives from 1979 to the present and the various committees.

50. Letter from Mr. Gagne (NSWMA) to Mr. Maurice (Twp. of Tiny), dated March 6, 1985.

51. Waste to Transfer Station, October 1988 to February, 1989.

52. Minutes of the North Simcoe Waste Management Association, dated April 17, 1986.

53. Pre-Submission Consultation in the EA Process.

54. Draft EA, dated February 12, 1987.

55. Letter to Mr. D.G. Barker from Transport Canada, dated June 11, 1986.

56. Gartner Lee Report of September, 1986 - Reconnaissance Hydrogeological Study - Three Selected Areas.

57. Canada Land Inventory, North Simcoe.

58. Detailed Hydrogeological Study of Area 41.

59. Detailed Biological Study of Area 41.

60. Detailed Agricultural Study of Area 41.

61. Archaeological Study of Area 41.

62. Environmental Noise Assessment of Area 41.

63. Supplemental Hydrogeological Investigations, App. 1.5.

64. Site 41, Existing Features.

65. Current and Future Waste Quantities, Part 3 of the Proctor and Redfern Report on the Tiny EA, dated November, 1987.

66. Revisions to Certain Tables in the Design Report.

67. Landscaping, Area 41.

68. Site Development Details.

69. Witness Statement of Mr. D.G. Barker regarding the Design Report.

70. Extract P43 from the MOE Guidelines for the Establishment of Landfill Sites.

71. Outline of Evidence: Curriculum Vitae of John Bousfield.

72. Study Site 16 (Fig. 2B, Ex.34).

73. Photographs of seven candidate sites.

74. Study Site 24 (Fig. 3B, Ex.34).

75. Study Site 32 (Fig. 4B, Ex.34).

76. Study Site 37S (Fig. 5B, Ex.34).

77. Study Site 38S (Fig. 6B, Ex.34).

78. Study Site 40 (Fig. 7B, Ex.34).

29. Study Site 41 (Fig. 8B, Ex.34).

79. Draft By-Law Amendment.

80. Letter from Mr. Bousfield to Mr. Barker, dated December 6, 1985.

81. Letter from Mr. Barker to Mr. Bousfield, dated August 21, 1986.

82. Witness Statement and Curriculum Vitae of James R. Hunter.

83. Witness Statement and Curriculum Vitae of Donald M. Fraser.

84. Biological Review of Area 16.

85. Biological Review of Area 24.

86. Biological Review of Area 32.

87. Biological Review of Area 37S.

88. Biological Review of Area 38S.

89. Biological Review of Area 40.

90. Biological Review of Area 41.

91. Vegetation Cover Types.

92. Locations of Ring-Billed Gull colonies.

93. Curriculum Vitae and Witness Statement of Mr. Donald F. McQuay.

94. Candidate Site and Adjacent Agricultural Lands.

95A. Soil Capability Map of Area 16.

95B. Agricultural Use Map of Area 16.

96A. Soil Capability Map of Area 24.

96B. Agricultural Use Map of Area 24.

97A. Soil Capability Map of Area 32.

97B. Agricultural Use Map of Area 32.

98A. Soil Capability Use Map of Area 37S.

98B. Agricultural Use Map of Area 37S.

99A. Soil Capability Map of Area 38S and 40.

99B. Agricultural Use Map of Area 38S and 40.

100A. Soil Capability Map of Area 41.

100B. Agricultural Use Map of Area 41.

101A. Agricultural Use Map of Area 41, Detailed.

101B. Drainage & Soils of Area 41, Detailed.

102. Existing Land Use and Property Ownerships - Noting Interviews.

103. Excerpt from a Report and Study by Blokpoel and Tessier on Ring-billed Gulls in Ontario.

104. Report of Barry B. Humphreys - Property Values.

105. Witness Statement and Curriculum Vitae of Dr. Alfred Lightstone.

106. Letter from Dr. Livingstone of Valcoustics to the Ministry of the Environment, dated May 25, 1988.

107. Letter from Dr. Livingstone of Valcoustics to Barker/Terp, dated April 3, 1989.

108. Environmental Noise Panel: Affected Zones for Third Lift.

109. Witness Statement of William A. Agnew (Sandy).

110. Memo to Rodney Smith from Sandy Agnew, dated April 19, 1989.

111. Witness Statement of Mr. Douglas Jagger.

112. Physiographic Regions Map.

113. Surficial Geology Map.

140. Physical Setting of Area 40.

141. Ground Water Regime of Area 40.

142. Site Plan of Area 37.

143. Physical Setting of Area 37.

144. Ground Water Regime of Area 37.

145. Site Plan of Area 38.

146. Physical Setting of Area 38.

147. Ground Water Regime of Area 38.

148. Site Plan of Area 41 and Base Contours.

149. Water Wells and Physical Setting of Area 41.

150. Geological Cross Sections of Area 41.

151. Ground Water Table and Ground Water Regime of Area 41.

152. Excavation Depths of Area 41.

153. Joint Board Decision of April 11, 1988, re Keele Valley.

154. Field Notes of Area B (b) - Stevens property.

155. Letter from Gartner Lee to the Ministry of Natural Resources, dated March 4, 1983.

156. Response to Interrogatory of Mr. Barker to Mr. Smith, dated May 10, 1989.

157. Fracture Effects in Shallow Ground Water Zone in Weathered Sarnia Area Clay - Article Sept. 1988.

158. Witness Statement and Curriculum Vitae of Patrick K. Lee.

159. Affidavit of Notice concerning Invitation to the Public, dated May 17, 1989.

160. Tiny/Tay Peninsula Planning Board extracts, Rural Area Policy, dated October 20, 1975.

161. Tiny Official Plan, dated November 1987, (approved February 1989).

162. MOE Industrial Waste Study, dated July 21, 1980.

163. Comparison of Sharing Cost Ratios.

164. MOE Policy 14-05-01, Engineered Facilities at Landfills.

165. Witness Statement of Yvon Gagne.

166. Response to Questionnaire of Environmental Advisory Committee of Tiny.

167. Environmental Advisory Committee Newsletter of July/August 1986.

168. Submission of Arthur Dyer.

169. Response to Interrogatory Letter of May 26, 1989 (R. Smith to H. Dahme).

170. Letter from the Minister of the Environment to Mr. Dion, dated June 6, 1988.

171. Publication LFS5, MOE "FACTS", July 3, 1987 re Funding Program for Waste Management.

172. North Simcoe Waste Management Association Budget 1989.

173. Proposed Official Plan Amendment.

174. Official Plan of Tiny, November 1971, Section 2.

175. Gull Management Plan, Site 41 - Final Report.

176. Manual of Airport Bird Hazard Control, October 1983.

177. Supplementary Witness Statement of Yvon Gagne.

178. Landfill Component Design Report, Revised May 1989.

179. Revised (Exhibit 67) Landscaping Area 41.

180. Revised Application (Exhibit 46) to MOE for Certificate of Approval for a Waste Disposal Site, June 5, 1989.

181. Revised Site Development Details Area 41. (Exhibit 68)

182. Executive Summary of Simcoe County Study, dated April 1983.

183. Interrogatory response of Mr. Jagger, dated June 1, 1989.

184. Interrogatory response of Mr. Barker, dated May 31, 1989.

185. MOE Policy 07-07-01 - Land Use on or near landfills and dumps.

186. Curriculum Vitae and Witness Statement of Mr. Robert A. Breeze.

187. Analysis results - Lagoon sludge May 1989.

188. Extracts Reg. 309.

189. Witness Statement of Mr. Aki Oda.

190. Ontario Waste Management - Courier May, 1989.

191. Model Sewer Use By-law.

192. Witness Statement and Curriculum Vitae of Mr. Ronald B. Watkin.

193A. Schedule A to 1971 Official Plan of Tiny.

193B. Schedule B to 1971 Official Plan of Tiny.

194. Schedule A, New Official Plan of 1989.

195. Approval of Official Plan, February 15, 1989.

196. Schedule F to 1989 Official Plan.

197. Land ownership 1970-1989.

198. Numerical ranking of Candidate Sites - Agriculture.

199. Numerical ranking of Candidate Sites - Land Use.

200. Numerical ranking of Candidate Sites - Agricultural & Land Use Combined.

201. Draft Official Plan amendment and by-law.

202. Witness Statement and Curriculum Vitae of Richard S.W. Bobbette.

203. Witness Statement and Curriculum Vitae of Dr. Douglas Hoffman.

204. Witness Statement and Curriculum Vitae of Michael Hoffman.

205. Soil Map of Area 41.

206. Land Use Site 41.

207. Food Land Guidelines.

208. Map and Overlay - Agriculture Capability and Hydrogeology.

209. Agricultural Capability Map.

210. Agricultural Land Use Systems Map.

211. Agricultural Capability Map - Area 32 and 41 and Lafontaine.

212. Witness Statement and Curriculum Vitae of Mr. Paul Hayes.

213. Report - Interference with aviation by gulls - May 1989.

214. Witness Statement and Curriculum Vitae of Roderick MacDonald.

215. Visual Assessment - extracts from Report for Tiny.

216. Witness Statement and Curriculum Vitae of Mr. Denis G. Stevens.

217. Worksheet Evaluation Criteria.

218. Net Effects Analysis.

219. Letter from Mr. Smith to Mr. Bradley, dated September 1, 1988.

220. Letter from Mr. Smith to Ms. Lane, dated September 1, 1988.

221. Letter from Mr. Smith to Mr. Eakins, dated September 1, 1988.

222. Letter from Mr. Smith to the Ontario Municipal Board, dated September 1, 1988.

223. Application to Tiny concerning zoning and official plan amendments, dated October 14, 1987.

224. Application to MOE concerning Certificate of Approval, dated June 2, 1989.

225. Letter from Mr. Bradley to Mr. Smith, dated October 13, 1988.

226. Witness Statement and Curriculum Vitae of Mr. Nicholas Eyles.

227. Scarboro Bluffs Study, 1988.

228. Profile Sheets to be appended to Kauffman report.

229. Air Photo/Map area 41.

230. Photos - Greidanus Property - home farm.

231. Photos - Jack Dyer home farm and other properties.

232. Agreement of Purchase and Sale, January 25, 1985 re Greidanus Property

233. Appraisal December 14, 1984, - Andrew and Latimer Ltd. re Greidanus and Johnston Properties.

234. Photos - Holt property and Malcolm MacDonald property.

235. Photos - French property.

236A. Photos - T & C property.

236B. Photos - T & C property.

237. Photos - Murray MacDonald farm.

238. Offer to Purchase, January 29, 1985, re John Lambie property.

239. Photos of Lambie properties.

240. Yield Data Lot 12 Conc. 1 Tiny (Parnell Property) - Corn-Soybean

241. Excerpt 1989-90 Field Crop Recommendations.

242. Heat Units for Corn and Rainfall data North Simcoe 1987.

243. Photos - Tony Nahuis property.

244. Photos - Roy Nahuis property.

245. Photos - Huronia Nurseries property.

246. Photos - Gordon Leonard property.

247. April 14, 1988, Letter - resolution of Simcoe County Federation of Agric. - March 3, 1988, Meeting.

248. April 14, 1988, Letter - Carter of Simcoe County Federation Agric. to Ont. Fed. Agric. Env. Com.

249A. Photos - Boker property.

249B. Photos - Boker property.

250. Certification Agreement - Society for Bio-Dymanic Farming and Gardening in Ontario.

251. Crop Rotation Records - Boker farm 1984-1989.

252. Field Map 1989, Boker Farm.

253. Witness Statement - Ethel Ann Clark.

254. Witness Statement - Jonathan Kauffman and Community Impact Study.

255. Witness Statement - George Rich.

256. Map - Figure 2 Building Locations.

257. Claassen Interview by McQuay.

258. Photos Site 41.

259. Photos Adjacent properties.

260. Witness Statement - David Charlesworth.

261A. Witness Statement - Ronald K. Rowe.

261B. Curriculum Vitae - Ronald K. Rowe.

262. Copies of Overheads.

263. MOE Reasonable Use Concept, Sept. 1986.

264. Answer to Interrogatory - July, 20, 1989, by Jagger.

265. By-Laws of WHY W.Y.E. Citizens' Group.

266. Brief - Huronia Heritage Group.

267. Brief - John Lucas of Midland-Penetang Field Naturalists' Club.

268. Witness Statement - Paul Bowen.

269. Witness Statement - Steven Rowe.

270. Halton EA for Landfill - Sequence of Decisions and Refinements.

271. Chart - Halton Process.

272. Extract from Halton EA - Maps.

273. Extract from Halton EA - Evaluation and Summary Report Stage 2C.

274. General Guidelines for Preparation of Environment Assessment - 1981 MOE.

275. MOE Guideline - Review Criteria ("Green Hat") (1983) - Waste Management.

276. Calculations of Areas of Candidate Locations.

277. Categorizations candidate sites and hydrogeological units.

278. 1988 MOE Guidelines - Waste Management Planning.

279. Sketch of WYE R. System.

280. Wetlands - Canadian Wildlife Service.

281A. Photos of Wetland on Murray McDonald's Lands.

281B. Photos of Wetland on Murray McDonald's Lands.

282. Chronology 1965-1989.

283. News Release September 22, 1988, re: Federal Contribution to Midland Airport.

284A. Research Document June, 1983, - submitted by Mrs. J. Barker.

284B. Miscellaneous Material submitted by Mrs. J. Barker.

285. Photos of Johnston farm.

286. Compensation Policy proposed by Griedanus.

287. Letter Barker to Gagne dated January 31, 1985.

288. Letter Barker to Maurice dated April 23, 1986.

289. Letter June 27, 1989 from David Staseff MOE.

290. Letter August 4, 1989 Barker to Staseff.

291. Memo August 2, 1989, Ramakishnan to Herlihy.

292. Letter July 11, 1989, Lane of Transport Canada to Barker and Barker response dated Aug. 4, 1989.

293. Revised applications for debenturing.

294. August 12/88 Report Gartner Lee re Glenridge Quarry.

295. Calculations re Diffusion by Jagger.

296. Hydrographs Boreholes 1, 3, & 9.

297. Article Canadian Geotechnical Journal - 1984.

298. Dilution Calculations by Jagger.

299. Affidavit of Service re Aug. 8 & 9, 1989 Public Meetings.

300. Letter August 18/89 MOE, Staseff to Barker.

301. Check on Final Design.

302. Material related to Check on Final Design (Ex. 301).

303. Canadian Foundation Engineering Manual - excerpts.

304. Letter August 23/89 from Markle Commissioner of Public Works, Peel Region, to Dahme.

305. Supplementary Calculations by Jagger.