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May 8, 1985

Chairman and Members of Regional Council
Region of Halton
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Mr. Chairman & Members of Council:

re: Response by the Town of Oakville to the
Walker Wright Phase II, Stage 2C Study
Landfill Site Selection Study

We appear this evening as counsel for the Corporation of the Town of Oakville, and appreciate the opportunity of addressing you on this matter. This letter attempts to summarize the submissions on behalf of the Town of Oakville on the Landfill Site Selection Study and the Draft Reports before you.

The Town of Oakville put forward its position on the site selection process, in general terms, in its letter of March 20th, 1985.

I restate that position basically as follows: that hydrogeology and the ability of the chosen site to contain safely and securely the landfill refuse and leachate generated thereby, are the pre-eminent and overriding factors to be considered in the selection process. There is no point in picking a site that cannot handle this basic requirement -- analysis of factors involving traffic safety, population or visual impact, land use compatibility etc, are all of minor consequence if the basic criterion is not met. The great public concern and the resistance to landfill sites by the public is principally rooted in a fear of leachate migration off-site, of seepage and escape beyond the landfill site area itself. What is needed is an analysis of how each site can function as a secure sanitary landfill site, and an analysis of the risk (of leachate escape) at each site.

Therefore it is our submission, that hydrogeology, the ability of each site to contain safely and securely the landfill material, and the question of risk and risk analysis to public safety and the natural environment are the first and foremost issues that dictate the selection of a site. All other factors pale in insignificance, by comparison.

Since Oakville's original submission, the Town has retained and instructed independent professional consultants to carry out detailed site work on Site A in Oakville, to determine whether Site A can be considered an adequate landfill site, or whether it has the same characteristics of Sites B and C. In this respect, Mr. Ray Blackport of Terraqua Investigations Limited was retained, and has carried out a detailed drilling programme on Site A.

The Town of Oakville also retained the firm of Golder Associates, one of the pre-eminent hydrogeological firms in North America with particular expertise in landfill sites and site selection, to provide its professional opinion on the six candidate sites, based on a hydrogeological assessment and a risk analysis of each site relative to public safety and the natural environment. Mr. Victor Milligan of Golder's served as the Chairman of the National Research Council Task Force on Waste Disposal Sites, Dr. Denys Reades of Golder's served as a member of the Task Force (along with Dr. Cherry and others), and the 1983 Report of the Task Force represents the state of the art analysis of the subject in Canada and the United States. Golder Associates also act as consultants and advisors to Environment Canada, the Ministry of the Environment for Ontario, Metropolitan Toronto (with respect to the Maple landfill site), and the State of New York (with respect to remediation at various Hooker Chemical sites).

We enclose with these submissions the report of Terraqua Investigations respecting the drilling and additional work done on Site A, and the report of Golder Associates respecting the comparative analysis of the six candidate sites.

The Terraqua Investigations Report

Very briefly, the Town of Oakville undertook additional site work at Site A (as it had recommended should be done in its March 20th letter on all four of the top candidate sites), in order to establish a detailed and accurate hydrogeological profile of Site A.

The Region's consultants had not carried out continuous soil sampling, nor exhaustive soil permeability tests nor water level monitoring on Site A, nor the other sites for that matter, presumably because of the cost that would be incurred. Terraqua Investigations drilled eight additional boreholes on Site A during the week of April 22nd, obtained continuous soil sampling of all eight boreholes, carried out preliminary soil permeability tests, and are carrying out water level monitoring to quantify the recharge/discharge features of the site. Not all the results are in yet; however, major parts of the investigation are complete and are set forth in their report attached.

The enclosed report from Terraqua finds:

1. That most boreholes drilled at Site A encountered various thicknesses (up to 10 metres) of sand, sandy till and gravel deposits. These deposits infill two underground channels, at least one of which extends south to Site C. There are no clay deposits of any substance found at depth (below 6 metres) in the site.
2. The depth to bedrock is extremely shallow in the centre of the site (2.7 - 3.5 metres) and on average is less than 7.5 metres across most of the rest of the site.,
3. The centre of the site (where the bedrock is high) is a recharge area, whereas the east and west sides of the site are discharge areas, and all of the site has a high water table lying at or close to ground surface.
4. On the basis of the above findings, Site A should be removed, just as Sites B and C were removed, from any further consideration as a potential candidate for a landfill site, for the same reasons and because of the same geological characteristics as Sites B and C.

The Golder Report

As indicated earlier, Golder Associates assessed the comparative hydrogeology of Sites A through F, and ranked them on the basis of potential risk to public safety and to the natural environment. As indicated above, the ultimate measure of suitability of any site as a landfill site should be the minimization of any risk associated with the landfill operation, both during its operational life and after final closure.

In assessing the sites, Golder considered all of the reports and data published on the hydrogeology of each site, as well as the following:

- (1) The Terraqua drilling results on Site A, and
- get. * (2) The OWMC borehole results for lands adjacent to Site D in Milton.

Golder analysed and compared the sites, first, on the basis of the natural hydrogeology of each site (and the comparative risk of off-site leachate migration) with a "minimal engineering" solution (as defined at page 30 of the report), and then with an "adequate engineering" solution (as defined at page 39 of the report).

The main findings of the report are as follows:

1. That based on all the available data, and the existence of substantial sand deposits, high bedrock and high water table, Site A should be dropped from any further consideration as a candidate for the regional landfill site. (See p.54 in their report.)
2. That, on a hydrogeological assessment and on a risk analysis of the detrimental effects of off-site leachate migration, with a "minimal engineering" solution, the sites rank as follows:

Least risk site

D

E

F

Greatest risk site

A

(See page 38 of their report)

3. On the basis of an "adequately engineered" solution, the sites were ranked as follows:

Least risk

D, E, F

Highest risk

A

4. On the basis of an "adequately engineered" solution, but taking into account the difficulty of designing, constructing and maintaining the various engineered components, based on 1985 technology, the ranking of the sites is as follows:

Lowest degree of difficulty
and lowest risk

F

D

E

Highest degree of difficulty
and highest risk

A

(See pages 52, 53 of their report)

OAKVILLE'S SUBMISSIONS IN SUMMARY

1. On the basis of all the information available for Site A, including the additional site work carried out by Terraqua, it is Oakville's submission that Site A should be dropped from further consideration as a candidate for the regional landfill site.

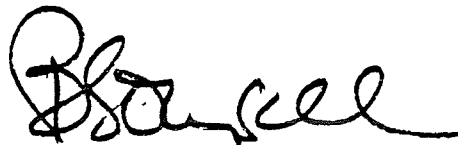
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2. Oakville's hydrogeological consultants, Golder Associates, seem to confirm the opinion of the Region's consultants, that Site F is the best site from a hydrogeological and least risk basis, as the Regional landfill site, if "adequate engineering" is provided. Site D is second best (also as found by the Region's consultants), followed by Site E. Site A presents the greatest risk because of its high bedrock, high sand and gravel content and high water table. *what mean*

3. The design of the landfill site should be modified to include a much higher degree of engineered protection than is presently proposed by the Region's consultants. If the sites are only minimally engineered as proposed by the Region's consultants, Site A still presents the greatest risk for the same reasons. Sites D and E, however, rank higher than Site F.

4. Oakville's additional borehole drilling in the specific landfill area of Site A showed substantially different results from the interpretations of results made by the Region's consultant on Site A. This experience reinforces the submission Oakville made in its March 20th communication to the Region, that additional borehole drilling should be done on the remaining Sites, site D, E, and F, in order to prove up (or disqualify) those sites as adequate candidates for the Region's sanitary landfill site. The cost incurred in the additional work is not expensive (\$15,000 - \$20,000 per site), and the time involved is not long (one week of drilling per site required). The value of having the additional information far outweighs the expense and time factor, and will allow Regional Council to make a higher quality decision with respect to the best site for the Region's sanitary landfill requirements.

The consultants and I will be pleased to elaborate on our reports and submissions and answer any questions that Council may have on the work undertaken.



B.S. Onyschuk, Q.C.
of Counsel for
The Corporation of Town of Oakville.