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The Mining and Lands Commissioner  
Le Commissaire aux mines et aux terres

G.H. Ferguson, Q.C. ) Wednesday, the 30th day  
Mining and Lands Commissioner ) of May, 1990.

IN THE MATTER OF THE CONSERVATION AUTHORITIES ACT

AND IN THE MATTER OF

An appeal against the refusal to issue permission to construct single family residential buildings, install a septic system and place fill on part of Lots 15 and 16 in Beasley's Broken Front Concession municipally known as Riverbank Drive, in the City of Cambridge, in the Regional Municipality of Waterloo.

B E T W E E N :

JOHN MARKOU

Appellant

- and -

GRAND RIVER CONSERVATION AUTHORITY

Respondent

M.J. Somerville, Q.C., for the appellant.

J.M. Harris, Q.C., and J.A. Olah, for the respondent.

The appellant appealed to the Minister of Natural Resources from the refusal of the respondent to issue permission to construct single family residential buildings, install septic systems and place fill on part of Lots 15 and 16 in Beasley's Broken Front Concession in the City of Cambridge. Under Ontario Regulation 364/82 the power and duty of hearing and determining such appeals were assigned to the Mining and Lands Commissioner. The appeal was heard in Toronto.

The application sought permission for the construction of four houses on a parcel of land lying between the east bank of the Grand River and Riverbank Drive measuring approximately 450 metres in length and 80 metres in width and containing approximately ten acres or 3.8 hectares. Although the original proposal was to construct five homes, the application was reduced to four homes on a reference plan excluding the fifth parcel which was patently subject to surficial slippage and contained springs.

The westerly part of the subject lands are situate within the floodplain of the regional flood which is the Hurricane Hazel standard in the area. The subject lands are within a schedule to the regulation administered by the respondent and prohibiting the placing of fill without the permission of the respondent. They also lie on the outside curve of the river which according to the expert evidence would make the toe of the bank more susceptible to the flows of the river, particularly in flood conditions, than other parts of the banks of the river.

Section 4 of Ontario Regulation 154/86 provides for the issue of permission by the respondent to create an exception to the prohibition of construction of buildings and placing of fill and reads,

4. Subject to the Ontario Water Resources Act or to any private interest, the Authority in writing may permit the construction of any building or structure or the placing or dumping of fill or the straightening, changing, diverting or interfering with the existing channel of a river, creek, stream or watercourse to which section 3 applies if, in the opinion of the Authority, the construction, the placing or dumping or the straightening, changing, diverting or interfering will not affect the control of flooding or pollution or the conservation of land. O. Reg. 154/86, s. 4.

In dealing with this case the respondent expressed concern in respect of all three matters that are required to be considered in making applications for an exception. The lower parts of the slope are subject to flooding both in a regional storm and lesser storms and toe protection would be required to prevent damage to the land and any improvements thereon in flooding. The greatest concern was toe erosion and it was apparent that if the proposed toe erosion was not sufficient, it could be increased in length and in height. However there was additional factors of exposure of children and others to drowning by falling into the flood waters of the river.

Concern was also raised in respect of pollution and conservation of land. The former issue became apparent at the beginning of the hearing but there were adjournments to enable the gathering of expert evidence on this issue. The latter issue reflected the matter of soil stability on the bank and the risk of slope failure with the

construction of buildings and services and the more extensive use of the banks that would occur from the use of four homes.

Having regard to Exhibit 16 there are three distinctive areas of slope elevation. The part of the slope between the edge of the river and the elevation of the regional flood rises 5.5 metres in a horizontal distance of 16 metres and has a slope of one vertical to three horizontal. The part of the slope between the elevation of the regional flood and the site of the proposed houses rises eight metres in 34 metres and has a slope of one to 4.25. The site of the houses rises 6.5 metres in 15 metres and has a slope of one to two.

To deal with the engineering aspects of the project the appellant engaged the firm of Paragon Engineering Limited to deal with the issues of the erosion, filter bed installation, the location of homes, lot grading, lot drainage and procedure to abate the risk of erosion during construction. W.P. Allen, P. Eng. of that firm prepared a report which was filed as Exhibit 14 and gave evidence in support thereof. His report fairly mentioned the inability to impose restricted activities on the proposed lots by future owners.

The firm of England Naylor Engineering Ltd. was engaged to report on the geotechnical engineering aspects of the project. J.B. England prepared reports which were filed as Exhibits 18, 19 and 20 and gave evidence on slope stability. Exhibit 18 indicates that the overall slope of the bank is approximately three horizontal to one vertical and there are locally steeper areas with slopes of 1.2 horizontal to one vertical. England concluded that there was an overall factor of safety of at least 1.3. Following a discussion with staff of the respondent in which a safety factor of 1.5 was understood to be the requirement, Exhibit 19 was prepared recommending that the original Part 5 and the south half of the original Part 4 be removed from the project as they did not meet to 1.5 safety factor. Exhibit 20 deals with further studies made after a meeting of the executive committee and concludes that at its steepest slope there was a safety

factor of two and that in the opinion of the firm the slope had sufficient stability for the project, subject to revetment works at the toe.

In addition to England's evidence the parties provided the tribunal with the opinion evidence of two of the most senior, experienced and respected geotechnical engineers in the province. E.M. Peto, P. Eng. of the firm of Peto MacCallum Ltd. gave evidence for the appellant. J.L. Seychuk, B. Sc., D.I.C., P. Eng. the senior principal of Golder Associates gave evidence for the respondent.

Peto's preliminary approach to the matter was that notwithstanding that the project was not in accord with standard geotechnical engineering principles, he was of the opinion that because of the exceptional stability of the glacial till underlying the topsoil an exception could be created in the present instance. Seychuk's approach was that notwithstanding the stability of the glacial till there was still sufficient risk from surficial failures, whether they be shallow or rotational failures or surficial sheetslide, to disallow the project. Both experts were cross-examined extensively and intensively in connection with their testing and conclusions not only in this case but in the case of Seychuk, his report in respect of a water supply project involving the specific part of the Grand River known as the Mannheim Study which was a study of the erosive effects, if any, on the river banks of a weir in the river in this area, i.e. a study related primarily to flood flows. Both experts admitted that their opinions rested on a matter of judgment and there are no principles of geotechnical engineering which can be relied upon to mathematically establish that the opinions were sound. The only conclusion that can be made with the conflict of expert opinion is that this tribunal in allowing the appeal, would be toying with the safety and the lives of the occupants of the proposed houses, matters which the Conservation Authorities Act was designed to protect. Where there is doubt expressed by such a renowned expert as J.L. Seychuk, it would be most inappropriate for this tribunal to come to a decision inconsistent with his opinion.

In this regard, the evidence indicated that the respondent had developed formulas for the safe construction of buildings near the top of a bank. Under these principles setbacks from the brow of the bank were established. As the proposed homes would be erected on the slope of the bank it would follow that the refusal of the respondent to issue permission in this case was consistent with its policy.

There was no evidence to show that the respondent had granted permission in analogous cases and it cannot be said that the appellant had been denied permission in a situation where other applicants had been granted permission.

The third issue in the case is the risk of pollution arising from the construction and the subsequent use of the four homes. It is somewhat paradoxical that the reason for the proposed exception to the geotechnical position was evidenced to be one, if not the most serious, of the considerations in dealing with the pollution aspect. The expert evidence, particularly that of the respondent, relied on the stability and impermeability of the glacial till in submitting that there was a risk of pollution to the waters of the part of the Grand River adjoining the subject lands. There was a further element of a higher susceptibility of that part of the river by reason of the Mannheim project. The general approach of this project is to use the waters from this part of the river as a recharge source for the wells that service the cities of Kitchener and Waterloo and the communities of Elmira and St. Jacobs that are experiencing severe difficulties in maintaining safe drinking water in the municipal water supply systems. The respondent was particularly concerned that any potential increase in the risk of pollution from private sewage plants, particularly those that would drain into the key part of the Grand River, should not be permitted to occur.

In order to reduce the risk of pollution to the minimum, the advisors of the appellant proposed the use of Class VI sewage systems rather than conventional septic systems. The respondent called R.L. Alarie, a specialist in sewage in the firm of Paragon Engineering Limited. He explained that there are ten classes of sewage

systems under Ontario Regulation 374/81 made under the Environmental Protection Act, 1971 but classes IV and VI are the most used classes of system. Class IV was described as a septic system or an anaerobic system, one which does not depend on additional oxygen for its operation. In contrast Class VI is an aerobic system in which added oxygen derived from forced air movements is utilized in the growth of bacteria which consume the solids in the system. He recommended a Class VI system with two chambers, one of which is a settling basin for the residue of solids. The raw sewage flows into the other tank and a series of discs provide aeration and oxygen. This system requires regular maintenance with the addition of bacteria and the removal of the solids at given intervals. If these procedures are not carried out, there is a risk of failure in the operation of the system but Alarie was satisfied that assuming all future owners carry out the maintenance program there was little risk of the system releasing pollutants into the area around the system and ultimately into the river. Technical evidence was given of the acceptable leaching beds which receive the affluent from the tank and the witness was of the opinion that acceptable leaching beds could be installed. On the other hand the respondent called D.J. Hallett, B.Sc., M.Sc., Ph.D. an eminently qualified chemist with a breadth of experience in biochemical matters and the effect of toxins and pollutants on the human body and other animals. Dr. Hallett has been recently involved in the water quality problems of the area and gave evidence regarding the proposed remedies of the existing situation and the need for the exclusion of all potential contaminants from the part of the river in issue.

His report on the matter was filed as Exhibit 31 and his conclusion at p.15 reads,

#### CONCLUSION

The construction of Class VI septic systems in this reach of the Grand River is inconsistent with the present and future uses of this reach of the river, particularly as a source of drinking water. Further degradation is inconsistent with the goals and objectives of the Ontario Provincial Water Management Procedures to protect aquatic life and those of the World Health Organization, adopted by the Canadian Department of National Health and Welfare, to protect sources of high quality drinking water.

In his examination of the implications of the proposed use of Class VI systems he concluded that there is a risk of pollution arising from the non maintenance of the system and from unusual weather conditions such as freezing or regional storms, particularly coupled with the lack of permeability of the subsoil which would permit unimpeded movement of escaped effluent into the river, and especially if the ground were frozen.

In his cross-examination some of Hallett's tables were shown to contain errors. In his reply evidence, he filed a further report as Exhibit 54 which amended the figures but did not amend his conclusion. He also referred at p.4 to a contaminant found in the area as follows:

The recent incident involving the dimethylnitrosamine (DMNA) contamination in the Grand River is a clear reflection of the extent to which the Grand River is utilized by communities. The DMNA contamination was sourced to the Uniroyal Chemical plant in Elmira and investigations showed that the Grand River contained DMNA at concentrations above acceptable levels at locations as far as fifty kilometres downstream from the source. Concentrations of DMNA in the Grand River at various locations are presented in Table 2 (MOE data). Acceptable concentrations were based on the interim guideline of 0.014 parts per billion(ppb) imposed by the Ontario Ministry of the Environment (MOE).

The DMNA incident has directly or indirectly affected more than one quarter of a million people who reside along the Grand River watercourse. The incident caused many communities to assess the quality of their drinking waters and led, in some areas, to serious water shortages for extended periods of time. The incident clearly shows the vulnerability of the Grand River to contamination from regulated industrial sources. Also, the incident demonstrates the wide ranging affects resulting from the contamination of the Grand River. It has raised some serious questions about the long term ability of the Grand River to supply drinking water to dependent communities.

Hallett's conclusion was that because the subject lands are situate adjacent to the part of the Grand River between Kitchener and Waterloo and form part of the Mannheim project any potential risk of pollution should be prevented and recommended against the installation of Class VI sewage systems on the subject lands. Notwithstanding that the reasons for his original opinion required amendment the tribunal accepts his opinion of the effect of the installation of Class VI sewage systems.

Having reviewed the evidence and the submissions of counsel, the tribunal is satisfied that the construction of the proposed houses, sewage systems and wells would affect the control of flooding, pollution and the conservation of land and that the decision of the respondent should not be reversed.

1. THIS TRIBUNAL ORDERS that the appeal is dismissed.
2. THIS TRIBUNAL ORDERS that no costs shall be payable by either party to the matter.

SIGNED this 30th day of May, 1990.

Original signed by G.H. Ferguson

MINING AND LANDS COMMISSIONER.