

File No. CA 007-95

L. Kamerman)
Mining and Lands Commissioner) Friday, the 25th day
of April, 1997.

THE CONSERVATION AUTHORITIES ACT

IN THE MATTER OF

An appeal to the Minister under subsection 28(5) of the **Conservation Authorities Act** against the refusal to grant permission for the placement of fill and construction of a new residential development on Lots 7 and 8, R.P. 1224, Part Lot 71, G.C.T., Tallwood Drive, West Montrose.

B E T W E E N :

BILL CHALMERS

Appellant

- and -

GRAND RIVER CONSERVATION AUTHORITY

Respondent

ORDER

WHEREAS an appeal to the Minister of Natural Resources was received by this tribunal on the 2nd day of August, 1995, having been assigned to the Mining and Lands Commissioner (the "tribunal") by virtue of Ontario Regulation 795/90;

AND WHEREAS a hearing was held on January 28th, 29th and 30th, 1997 and continued on February 6th, 1997;

UPON hearing from the representatives for the parties and reading the documentation filed;

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1. **THIS TRIBUNAL ORDERS** that the appeal from a refusal to grant permission for the placement of fill and construction of a new residential development on Lots 7 and 8, R.P. 1224, Part Lot 71, G.C.T., Tallwood Drive, West Montrose, be dismissed.

IT IS FURTHER DIRECTED that the parties or their representatives make submissions as to costs on account of the hearing of the merits at a time and in a manner to be discussed with the Registrar of the tribunal after receipt of this Order.

DATED this 25th day of April, 1997.

Original signed by L. Kamerman

L. Kamerman
MINING AND LANDS COMMISSIONER

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GRAND RIVER CONSERVATION AUTHORITY

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REASONS

This matter was heard in the tribunal's Court Room, 24th Floor, 700 Bay Street, Toronto, Ontario on January 28th, 29th and 30th, 1997 and at the Holiday Inn in Cambridge, Ontario on February 6, 1997.

Appearances

William P. Haley Agent for the Appellant, Bill Chalmers

John Olah Counsel for the Grand River Conservation Authority

Background

On March 13, 1995, Bill Chalmers submitted through his agent, William P. Haley and Associates, a Fill, Construction and Alteration to Waterways Permit Application (Ex. 1, Tab 1) for permission to place fill and construct two dwellings with associated septic systems on Lots 7 and 8, R.P. 1224, Part Lot 71, G.C.T., Tallwood Drive, West Montrose, in the Township of Woolwich. The matter was considered at a hearing of the General Membership of the Grand River Conservation Authority (the "GRCA") on June 30, 1995. Permission was refused in writing, pursuant to subsection 28(3) of the **Conservation Authorities Act**, R.S.O. 1990, c. C.27, by a letter to Mr. Chalmers of the same date (Ex.1, Tab 3). The reasons for the refusal are set out below:

1. The proposal is contrary to Authority and Provincial Policy for One Zone Flood Plain Planning Areas.
2. The fill associated with this application would reduce flood storage capacity of the flood plain in an area that has experienced flooding and would result in the cumulative loss of storage leading to increased risk to life and property damage.
3. Approval of this and similar applications would increase public expenditure through evacuation, emergency operation and installation of expensive protective measures.
4. Damage to the proposed residential lots could victimize the present and future land owners of the property.
5. The approval of this application would create pressure to approve future applications for associated accessory uses and structures as has occurred on adjacent properties.
6. This proposal is not unique therefore the granting of an exemption to policy could be seen as setting a precedent to permit similar applications within the watershed.
7. Granting of permission in this instance could be viewed as a change in Authority Policy by Municipalities with respect to considering future planning matters under the Planning Act.
8. The approval of this application could hinder the opportunities to meet the Grand River Corridor Conservation Plan objective to provide a continuous open space system accessible to the public.

Mr. Haley filed an appeal on behalf of Mr. Chalmers with the Office of the Mining and Lands Commissioner by letter dated August 2, 1995 (Ex. 12). An appeal pursuant to subsection 28(5) of the **Act** is to the Minister of Natural Resources. The Mining and Lands Commissioner (the “tribunal”) is appointed pursuant to subsection 6(1) of the **Ministry of Natural Resources Act**, R.S.O. 1990, c. M31 (the **MNR Act**”). The powers and duties of the Minister have been assigned to the tribunal by virtue of revised Ontario Regulation 795/90. Part VI of the **Mining Act**, R.S.O. 1990, c. M.14 applies with necessary modifications to these appeals, pursuant to subsection 6(7) of the **MNR Act**.

The property which is the subject matter of this appeal is located within the Settlement Area of West Montrose, within the Regional Municipality of Waterloo, being part of a subdivision developed in the 1960's.

The property itself is constituted of approximately 2.4 hectares, fronting on Tallwood Drive and backing directly onto the Grand River. The road which forms Tallwood Drive ends in a circle, with all of the properties radiating from this circle belonging to Mr. Chalmers. Currently, Mr. Chalmers has a home on the most northerly portion of the property furthest from the river, and is proposing to subdivide two lots, both of which would back onto the river.

Mr. Chalmers' application would involve the placing of sufficient fill, in the order of 1.9 metres in height, to bring two building envelopes and areas for septic systems above the regional flood line elevation. The areas proposed to be filled are wholly located within the regulatory flood plain, These would be connected to Tallwood Drive through raised hard packed driveways. The dwellings would be built on slab and have no openings below the regulatory flood line elevation. Neither of the proposed dwellings would have basements.

Mr. Chalmers home itself is situated outside of the regulatory flood plain, with a garage and decorative pond to the west and southwest, respectively. At the time the subdivision was created, all of the circle at the end of Tallwood Drive was believed to be above the flood line, so that both the garage and pond would have been outside the floodplain. However, following flooding which occurred in May, 1974, the GRCA updated its mapping along this reach of the Grand River, as the flood elevation was determined to be five feet higher than previously thought. The flood line is now located between the house and garage, so that much of the land which Mr. Chalmers wishes to retain outside of the current appeal, is below the flood line. The redrawing of the flood line elevation and its accuracy was put at issue by Mr. Haley.

The Topographic Map of the Grand Valley Watershed (Ex. 15) depicts the applicable flood line elevation, upon which the GRCA relies, outlined in pink with the limits of the scheduled area in orange, this line being an interpretation and not reflective of actual mapping.

In the initial subdivision, the lands below the original flood line elevation were left as open space, and were dedicated to the Municipality. During the early 1980's, these lands were found to be surplus and were conveyed to adjoining landowners for an amount not disclosed at the hearing. All of the land which Mr. Chalmers is proposing to develop was caught in this conveyance. On the Granbridge Subdivision Draft Plan T-16856 (Ex. 4, Tab 7), an area is outlined in green, delineating all of Mr. Chalmers' holdings. According to the Draft Plan, all of those lands below what was then the regulatory flood line elevation, including those lands which are the subject matter of this appeal, and lands to the west owned by Mr. Crutcher, are shown as being proposed for Grandview Park.

The subject lands are situate along the north shore of the Grand River within the Settlement area of West Montrose, which is delineated by that portion of Regional Road #86, located to the north, running in a northwest to southeasterly direction, the bisection of that road with the Grand River to the east of West Montrose, and the covered bridge located on the Grand River to the west. Immediately to the east of the Chalmers property is a trailer park, which extends from Regional Road 86 to the River, upon which are located seasonal trailers. For purposes of reference, this community is located just north of the City of Kitchener. West Montrose is largely residential, with some general commercial uses and is surrounded by rural agricultural land.

There is a municipal pumphouse located within a rectangular portion of land, found in between the two proposed building envelopes. Permission for its construction, along with accessory uses on the Chalmers and Crutcher lands, were discussed at length during the course of the hearing.

Issues

1. The flood susceptibility of the upper portion of the subject lands where the building envelopes are located was at issue. The regional flood line elevation, the means of its determination including the reliability of revisions, and the value of anecdotal evidence of the extent of actual flooding at the site will be considered by the tribunal in the determination of this issue.
2. What are the impacts of the proposed filling, at the site, upstream, downstream and generally with respect to available storage capacity. Should storage capacity be an issue when measured impacts upstream and downstream are seen to be minimal? What is the proper mechanism for measuring proposed impacts, namely on a local basis or on a reach basis?
3. Would the proposed filling and construction constitute a precedent for similar activity elsewhere in the watershed, or is the issue of precedent limited to the immediate vicinity. What constitutes precedent. Do the past accessory and infrastructure permits constitute precedents for the proposed development?

4. Will the proposed filling and construction cumulatively impact on the watershed? What is the meaning of cumulative impact?
5. Can safe access and egress be achieved?
6. Are the proposed flood proofing measures, including a caution on title sufficient to overcome the watershed management concerns?
7. What is the impact of the proposed filling and construction on costs of emergency operation, evacuation and restoration? Should this be a factor in consideration of this application?

Evidence

Witnesses on behalf of the Appellant:

William P. Haley, agent for Mr. Chalmers, was recognized as an expert, qualified to give opinion evidence on planning matters. **William John Chalmers**, the appellant, gave evidence concerning the purpose of the application and anecdotal evidence of the history of flooding in the community.

Witnesses on behalf of the GRCA:

Elizabeth Ann Caston, Senior Resource Planner for the GRCA, was recognized as an expert, qualified to give opinion evidence on watershed management planning. **Guntis Davis Rungus**, Senior Water Resources Engineer for the GRCA, was recognized as an expert qualified to give opinion evidence in matters of water resources engineering. **Linda Lorraine Minshall**, Manager of Water Resources Planning for the GRCA and a professional engineer, was recognized as an expert qualified to give opinion evidence in matters of water resources planning. **Frederick Ivan Lorant**, Chief Water Resources Engineer and Principal of M.M. Dillon Limited, was recognized as an expert and having previously been accepted by this tribunal as such, qualified to give opinion evidence on hydrology and watershed management issues.

Details of Application and Site Plan

The Chalmers Concept Plan (Ex. 18), prepared by Wm. Haley and Associates, identifies the subject lands. The existing single family dwelling, being the Chalmers home, the garage and pond are shown. Mr. Haley described the application which is the basis of this appeal, as an attempt by Mr. Chalmers to create two new lots, severing that portion of land which contains Mr. Chalmers' current home, garage and pond. The sizes of the three resulting lots would be 9,000 square metres, 9,030 square metres and 6,150 square metres respectively. The proposed building envelopes are shown in purple. The driveways and septic beds are outlined and identified. The municipal pumphouse and associated easement, located between the two building envelopes, is shown in red.

According to Mr. Haley, the Chalmers pond provides a storm outlet, which runs to the drainage ditch along the eastern property line, where it joins another drainage ditch running from the northeast. These run south of the tree line and then bisect the property to join another ditch which runs north to south along the western property line. There is an easement for water lines which runs from the pumphouse to three submersible wells located at the edge of the Grand River. Mr. Haley described the upper portions of the subject land as having considerable tree cover. The site surrounding the eastern building envelope is covered with dense tree cover from the easement for the water lines with its southern limit being the open ditch and its northern limit being the Chalmers pond. While less tree cover surrounds the western building envelope, nonetheless, it is found to extend beyond the southern limit of the building envelope to the north, and runs a considerable distance towards the open ditch which bisects the property.

The Enlarged Site Plan of the Chalmers Severance Proposal (Ex. 16) reflects the single family dwellings along Tallwood Drive and to the east. Mr. Haley described the slope of the property from north to south, with contour lines drawn in. The Crutcher tennis courts, fencing and pond to the west are also shown.

Mr. Haley referred to the Enlarged Chalmers Severance Proposal Cross-Sections (Ex. 19) for the two proposed dwellings. The height and extent of proposed fill is graphically illustrated, and drawn to scale and show a 3/1 slope at the back of the properties. On the front, the fill would be sloped downward to Tallwood Drive. The existing ditch, tree line, and pumphouse, along with the proposed driveway of one of the homes, is also shown.

It is the intent of the application to construct the buildings above the regional flood elevation of 324.78 metres. Fill would be added to bring the building envelopes and septic beds to the regional flood elevations. The dimensions of the fill would be 60 metres in length and having a height of approximately two metres. The width of each building envelope is approximately 20 metres. Mr. Haley stated that the considerable tree cover to the south of the proposed building envelope would act as a sufficient natural barrier to ice jams, which he acknowledged occur on a regular basis. Under cross-examination, Mr. Haley was asked to calculate the volume of fill, which was estimated at between 1800 and 2400 cubic metres. This translates to a range of between 257 and 342 truckloads, based upon a capacity of 7 cubic metres. Mr. Haley felt that the amount of fill was reasonable and maintained that the number of truckloads was not relevant. What is relevant is the upstream and downstream impacts, which based upon modelling done by Totten Simms Hubicki, was, in his opinion minimal. Mr. Olah rephrased this, suggesting that it is only the engineering impact which is important, rather than a function of the number of trucks. Mr. Haley agreed.

Under cross-examination, Mr. Haley agreed that no expert in slope stability was engaged to examine the effectiveness of the proposed 3/1 slope of the proposed fill. No inquiry was made as to the impact of flood waters or velocities to ensure a stable slope. Mr. Haley agreed that the issue was not addressed by Dyer in the Totten Simms Hubicki analysis (Ex. 2, Tab Exhibit C).

Mr. Chalmers stated that he has lived on Tallwood Drive since 1983. He represents the third generation of his family in this community. The family homestead, operated by his grandfather, is across the river. His father took over the farm in 1945. In 1949, he moved up the river, but his grandmother maintained a home on the farm. He was born three miles away.

Mr. Chalmers has been in the construction field for 24 years, involved in aluminium siding, new construction and the log home business for 12 years. He has built over 40 new homes, but sold the business four years ago to go into siding. His home located on Tallwood Drive is a Scandinavian log home of 2230 square feet, built from cedar logs, with a shake roof and plank flooring. He considers it an upper scale home, which runs in the vicinity of \$100 per square foot to build, which is added to the cost of the property.

Since he built his home, he has continued to improve his property, obtaining the necessary permits. He built a pond the following year, purchased more land and put in the garage and change room. In 1987 he purchased the subject lands, which had never been maintained in the past. There was no grass and it was very rough looking. Now, the entire four acres has been graded and has grass, in keeping with the quality and character of the rest of Tallwood Drive. Since his purchase of the subject lands, the improvements he has made have had a positive impact on others, immediately apparent when one looks from across the river.

Mr. Chalmers takes a great deal of pride in his property, which he would bring to the proposed new development. The municipal pump house, on the other hand, is not well maintained. Mr. Chalmers intends to build a smaller, retirement home for himself on one of the lots and create one more home for the subdivision. Concerned about restrictions due to flooding, he would ensure that there are covenant restrictions placed on title to ensure that appropriate flood control measures would be binding on future owners. Mr. Chalmers reiterated his role as a responsible builder in this regard.

Ms. Caston stated that the subject lands are comprised of 2.4 hectares, with both building envelopes being located wholly within the regulatory flood line elevation. With the proposed filling, the two building envelopes would form two islands within the vastly flooded area. Under cross-examination, Ms. Caston agreed that the trees might provide some protection from ice jams although she could not comment on the extent.

Planning Issues/Infrastructure

Mr. Haley gave opinion evidence that, as a land use planner in dealing with the issue of whether a client should proceed, based upon the research and work he has done on this case, he believes that the application is meritorious, being reasonable in light of the land use assessment. He relied upon the Totten Simms Hubicki report (Ex. 2, Tab Exhibit C) in making his recommendations to proceed. Mr. Haley pointed out that these lands were in no way protected by the GRCA on the Official Plan or any By-Law. He suggested that this absence of information on the land use documentation affected his client's decision to bring forward this application. There was some discussion of the tribunal's jurisdiction to hear planning matters.

Mr. Olah pointed out that the issues before the tribunal are those of hydraulics and hydrology and not of land use planning. The tribunal referred Messrs. Haley and Olah to its decision in **611428 Ontario Limited v. the Metropolitan Toronto and Region Conservation Authority**, (unreported), File CA 007-92, wherein the tribunal states at page 73:

The use of Official Plans, Official Plan Amendments and by-laws is of no assistance in determining the jurisdiction of a conservation authority or, under appeal, the tribunal. In fact, it must be recognized that, notwithstanding a designation on an Official Plan which would be favourable to development, a proposal must still obtain the permission of the conservation authority for lands within its jurisdiction.

Under cross-examination, Mr. Haley stated that he was unaware that the subject lands were found on the Draft Plan of Subdivision as part of Grandbridge Park. He knew only that the land was left vacant and ultimately deeded to the landowners by the municipality. Mr. Haley agreed that, should permission to build be given, what would otherwise be considered nearly worthless flood prone lands would suddenly become quite valuable. Mr. Haley reiterated that, from a planning perspective, existing opportunities for infill and infrastructure in place form the core issue of the case in land use terms. Mr. Olah suggested that infilling is a planning concept as opposed to a water management concept.

Mr. Chalmers testified that the GRCA never offered to purchase the subject lands for flood protection measures. He was not aware of the lands being zoned as flood plains. He agreed that land does have a water resource use. The lower back portion of the property, below the tree cover and open ditch, in his opinion, is needed for purposes of flood control and ice jams. However, he believes that the upper portion is just vacant land which would be better taken care of if a house were built on it. This would ensure that the grounds would be properly maintained.

Description of Watershed and History of Flooding

Mr. Haley, in his evidence, questioned the drawing of the flood line elevation and posed the question of which mapping, that prior to 1970 or that done after 1974 should apply. In the course of Mr. Haley's testimony, the issue arose concerning the information contained in the Totten Simms Hubicki Associates report and hydraulic modelling (Ex. 2, Tab Exhibit C), performed by Charles L. Dyer, P.Eng. Mr. Dyer would not be called as a witness and, based upon objections from Mr. Olah regarding the inability to cross-examine, the tribunal found that Mr. Haley could not give evidence concerning the report, which would be admitted as an exhibit for information purposes only. Mr. Haley pointed out that the regional flood line elevation of the subject lands was identified, and that the upstream and downstream impacts were modelled. In his opinion, these calculations have merit and were not substantially different than the calculations provided by Mr. Rungus.

Under cross-examination, Mr. Haley stated that in his experience, the extent of flooding is a matter of opinion. Mr. Olah suggested that the regulation is based upon engineered lines, to which Mr. Haley responded, "Which regulation?" After Mr. Olah's explanation, Mr. Haley responded that he was aware that the flood line elevations were based upon the regional storm as defined by the Province using engineering data.

Mr. Haley was asked to review flood levels on the property. At the rear, flood levels would be 3.28 metres or 10.7 feet. Nearer the front, but off the two islands, levels would be 4.2 feet, sufficient to inundate a small child, according to Mr. Olah. Tallwood Drive would be covered with 2.8 feet of water and the driveways themselves would be under water for a distance of 30 metres.

In re-direct, Mr. Haley suggested that the flood levels resulting from the proposed placing of fill and building are acceptable to Provincial standards.

Mr. Chalmers stated that he was not aware of these lands being zoned as flood plain. His father lived in the area during the Hurricane Hazel event, and while he has experienced flooding, it has never been seen beyond the tree line. In speaking with numerous neighbours, Mr. Chalmers could find no one who has seen it beyond this level, nor has he seen this level exceeded. Mr. Chalmers agreed that the property does flood, but that he has never seen flooding beyond the tree line at the south end beyond the western building envelope, where the drainage ditch is located. He indicated that there have been ice jams up to that line and that the trees could act as an ice break, whereby they bend and move and withstand the considerable pressure of the ice. Under cross-examination, Mr. Chalmers reiterated that, had water come up to the cul de sac, he would have remembered.

Ms. Caston stated that the original flood line elevation, as depicted on the Draft Plan of Subdivision from the 1960's, was revised due to actual flooding which had been experienced during the early 1970's. The observed flooding at that time was in excess of what had been modelled for the severity of the storm event experienced. The regional flood line was moved after subsequent modelling, which was recalculated using the actual data from these early 1970's storm events. Under cross-examination, Ms. Caston indicated that she was not personally involved in the updating of the flood line elevation, but understood that it was done either by the GRCA or a consultant, she assumed, through engineering means. In re-direct, Ms. Caston clarified that the regional flood line is not constantly moving, but that its depiction becomes successively more accurate as more information, such as site surveys and changes in elevational information which may result in minor changes, becomes available.

The change in flood line elevation mapping was further explained by Mr. Rungus. The line drawn on the original Draft Subdivision Map is the product of prior flood line mapping. The new line involves reanalysis and new data from the stream gauge, which had been installed after the previous model had been run. Therefore, the model was run with ten more years of stream data plus more accurate contour elevations.

Mr. Rungus was able to add cross-section 144.5 from the Totten Simms Hubicki data to the HEC-2 model, thereby establishing a more accurate flood elevation of 324.8 metres. Based upon recent history, Mr. Rungus described the rear of the property as very flood prone, and could almost be considered part of the river itself. There is also a fairly severe ice regime along the river. Due to the various events and passage of huge volumes of water, the lower area along the banks provides necessary storage for water as well as ice.

Mr. Rungus stated that, based upon the stream gauge data and hydraulic analysis, the front portion of the property has also flooded recently from high flows twice and from an ice jam event once. Mr. Rungus stated that the extent of projected flooding is known from modelling. The modelling of two floods within the building envelop in the last 27 years, along with one ice jam event, is considered severe, while not more than once since 1948 is considered acceptable.

The building sites themselves, before the placement of fill, would be severely flood prone, subject to 1.8 metres of flooding in a regional storm event. If the placement of fill and building were allowed, this would have the effect of reducing available flood storage capacity in the flood plain. Mr. Rungus stated that the rear of the proposed buildings would be subject to ice damage. Mr. Rungus agreed, under cross-examination, that he has never observed the flood elevations on the subject lands, but that they are modelled.

Mr. Rungus stated that the local drainage area in the vicinity of the subject lands is insignificant compared to the upstream flows of the upstream drainage area.

Mr. Lorant stated that the site is unique, with the availability of a stream gauge not more than 300 metres downstream, giving the opportunity to estimate the magnitude and frequency of flood events. Also, in calibrating models, it is a rare luxury to have records for the site itself. Usually, engineers must rely on mathematical models. Therefore, there is a greater comfort level with the projected elevations. A properly maintained gauge chart will give accurate data to 1 cm, which is far more valuable than anecdotal evidence. Also, Mr. Lorant stated that Mr. Rungus had projected the observed data horizontally to similar elevations at the Chalmers site, which has the effect of showing flood levels less than they actually are, as water flows downhill. Mr. Lorant concluded that the entire Chalmers property is vulnerable to flooding.

Under cross-examination, Mr. Rungus stated that the Shand Dam controls the area which drains to the dam. It is operated on a daily basis depending on the flood events. A determination is made on how it is adjusted. While its operation could have an effect on flows in West Montrose, it was not a factor in the 1974 storm. Its operation is multipurpose, with the object of reducing flooding.

Mr. Lorant clarified the role of the Shand Dam. As a general rule, dams are not designed to cope with regional storm flood elevations. In a storm event, what goes into a dam is calculated to also go out, so that the fact that there is a dam becomes irrelevant. The Implementation Guidelines say that, if there is a dam upstream, the flood line elevations of the lower reaches should not be altered. Safety is very much an issue in determining the risk of flood prone areas and dams are not permitted to be a factor in reducing the risk of flood prone lands.

Flood line Elevation and Mapping and Regulation

Mr. Rungus discussed the stream gauge located 300 metres downstream of the property, although Mr. Chalmers stated that he was unaware of its existence. Mr. Rungus stated that the gauge measures depths of water of the river. Records exist from 1968, give actual water elevation levels which are projected onto the property. In his professional opinion, the hydrological information is far more valuable than anecdotal data. The gauge is located on the southwest downstream side of the bridge. It operates as a continual transmission of water levels on a chart. The gauge records ice jams which were projected horizontally onto the property. In terms of extrapolation, Mr. Rungus stated that, in obtaining useful data for an application, one generally does not get much better than having a stream gauge just downstream. It is very reliable, very valuable data.

Mr. Lorant stated that he had been asked by the Province to review its provincial stream flow network and give an opinion on which over 800 gauges should be maintained. His selection recommended retention of 40, of which the one located at the covered bridge is one of the most important as it records flows from a major river system in excess of 1000 square kilometres, with a large number of flood vulnerable communities. Long terms records of stream flows are needed to predict the impact from meteorologic events.

Referring to the Draft Plan of Subdivision (Ex. 4, Tab 7), Ms. Caston stated that the original concept had been the creation of 15 lots, all of which were outside of the flood line elevation as it was known at that time. Ms. Caston was not aware of development of the open space lands which had been dedicated to the municipality. During the 1980's they were deemed surplus and conveyed to the surrounding landowners.

The revision of the flood line to a higher elevation occurred during the 1970's, as a result of the 1974 floods. The impetus for the change was the realization that the previously existing flood line had nearly been reached during this and flooding which occurred in 1972, even though these were not related to a regional storm event. This redrafting affected lots 6, 7 and 8, with all of lot 7 now being found within the floodplain.

According to Mr. Rungus, the GRCA carried out flood line mapping, first in the mid 1960's, through the firm of Kilbourne Engineering, but due to the fact that observed flooding exceeded what was predicted by this earlier work, and actual stream gauge data being available, the GRCA undertook a project through Philips Consulting to update the mapping.

Hydraulic and Hydrologic Modelling

Mr. Rungus referred to the Watershed Map (Ex. 14) which outlines the drainage area of the Grand River and its tributaries in pink. The drainage area which flows through to the West Montrose location is comprised of 1,170 square kilometres. The Grand River, through to its outflow at Dunville, is one of the largest riverine systems in Southern Ontario, being 6,700 square kilometres.

Mr. Rungus identified the location of a stream gauge on the river, located at the southwest downstream corner of the covered bridge in West Montrose. Installed in 1968, the stream gauge measures depths of the water, which is used in the hydrologic modelling of the watershed processes. The fact that the hydrologic and hydraulic modelling is able to use actual data from a location 300 metres downstream to calculate velocities and flood line elevations for the various storm events provides a highly accurate prediction of what would happen on the Chalmers land. Mr. Rungus described this data as unusual, in that it is highly accurate and not remote from the site being modelled, which is more often the case. In his opinion, the results of this modelling provide far more accurate predictions of flooding than anecdotal evidence.

The most recent establishment of flood line elevations was done by Philips Consulting, having completed the project in 1977. To do this, the Technical Guidelines made pursuant to the Provincial Flood Plain Planning Policy would have been followed. Using the full Hurricane Hazel storm rainfall depth of 11 inches, the GAWSER hydrologic model was used to distribute flows throughout the Grand River watershed. Information needed for this includes stream gauge data from several locations, land use, topography, soils, length of watercourse, relief of the land and contours. Once flows have been determined, they are converted to elevations using an open channel hydraulics model, the HEC-2, which is plotted on topographic maps. The stream gauge data was utilized to input information ensuring the correct calibration of the model. The Philips work described by Mr. Rungus was only used to establish the flood levels for the regional storm and not other return periods.

Mr. Rungus performed his own calculations, using the covered bridge stream gauge data, to establish the return period flood flows for West Montrose, found in Table 1 of his witness statement (Ex. 4, Tab 20). His calculations show flows in both cubic metres per second and cubic feet per second for the 2, 5, 10, 20, 50 and 100 year storm events. He explained that a return event is a method of showing the severity of flow, such that statistically speaking, the 2 year storm corresponds to a 50 percent chance of occurring in a given year. It was explained that calculated flows downstream of a property, in this case the covered bridge at cross-section 144, is most relevant to the Chalmers site for purposes of flood line elevations, rather than cross-section 145.

Mr. Rungus performed a series of calculations for cross-section 144.5, using in part the data provided by Totten Simms Hubicki, which had been extrapolated, and in part his own ground survey data, which was done from sensitivity work. The data was input into the HEC-2 model to establish accurate flood line elevations for the Chalmers site. Mr. Rungus also reran the hydraulic model to establish flow rates. The resulting calculations are depicted in Table 2 of his witness statement, and are reproduced below:

Table 2 - Grand River Return Period and Regulatory Flood Levels at Section 144.5

Return Period	Flow (ft³/s)	Flow (m³/s)	Elevation (ft)	Elevation (m)
2 year	12600	358	1058.9	322.7
5 year	18500	525	1060.9	323.4
10 year	22100	625	1061.9	323.7
20 year	26700	756	1063.0	324.0
50 year	30700	869	1063.9	324.4
100 year	34300	972	1064.6	324.5
Regulatory	39000	1105	1065.5	324.8

Using topographic elevations from the Site Plan provided by the appellant (Ex. 16), and gauge data from observed flows calibrated for use in the hydraulic model, Mr. Rungus calculated flood depths for the various return periods, and applied this information to various locations on the property. The flood depths and descriptions, taken from Table 3 and Mr. Rungus' evidence are set out below:

(Return Period	Flood Level m)	Flood Depth on Site
2 year	322.7	Rear of property flooded to 1.2 metres
5 year	323.4	Building site flooded to 0.4 metres Rear of property flooded to 1.9 metres
10 year	323.7	Flooded almost to Tallwood Drive, Chalmers garage Building site flooded to 0.7 metres Rear of property flooded to 2.2 metres
20 year	324.0	Building site flooded to 1.0 metres Rear of property flooded to 2.5 metres
50 year	324.3	Access along Tallwood Drive flooded to 0.3 metres Building site flooded to 1.3 metres Rear of property flooded to 2.8 metres
100 year	324.5	Statistically, 2% chance of occurrence Access along Tallwood Drive flooded to 0.5 metres Building site flooded to 1.5 metres Rear of property flooded to 3 metres
Regional storm	324.8	Access along Tallwood Drive flooded to 0.8 metres or 2.5 feet Building site flooded to 1.8 metres Rear of property flooded to 3.3 metres

Mr. Rungus also plotted flood line elevations for the various return periods on the site plan, reproduced at Exhibit 4, Tab 23.

Using the hydraulic and hydrologic models and existing data from the stream gauge, Mr. Rungus was able to calculate flow rates and elevations for the past 27 years (1968 to 1996) which have actually been experienced on the Chalmers land at cross-section 144.5. These figures are found in the chart at the bottom of the site plan at Exhibit 4, Tab 23, and are reproduced below:

years equalled or exceeded	Flows		Flood elevations	
	m³/s	cfs	feet	metres
27 of 27	100	3530	1053.8	321.2
22 of 27	150	5300	1055.2	321.6
15 of 27	200	7060	1056.2	321.9
11 of 27	225	7943	1056.7	322.1
8 of 27	280	9884	1057.7	322.4
5 of 27	350	12355	1058.8	322.7
3 of 27	420	14826	1059.7	323.0
2 of 27	634	22380	1062.0	323.7
1 of 27	674	23792	1062.3	323.8

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According to this calculation, Mr. Rungus stated that the building sites would have been flooded on two occasions in the past 27 years in flood, rather than ice jam, events.

With respect to ice jam history in the area, Mr. Rungus stated that information is available for West Montrose through both the stream gauge data retrieved from the covered bridge and data of Water Survey Canada. Ice jams occur when large pieces of ice block the channel and the flow of water is blocked. Upstream water continues to flow and with no possibility of outlet, water levels rise significantly. Mr. Rungus explained that the hydrograph for ice jams differs from a regular flood event, so that the history of ice jams is known. For purposes of calculating flood line elevations, the HEC-2 does not lend itself to ice jam events. Therefore, he took actual water level elevations and plotted them for the same elevations on the Chalmers property. The results are set out in Table 4 of Ex. 4, Tab 20, set out below. Mr. Rungus stated that the Chalmers property has been flooded due to ice jams seven times in the last 27 years, with one incident reaching the building envelope.

Table 4 - Ice Jam Flooding

Year	Elevation (metres)
1973	322.1
1980	322.1
1981	323.0
1985	322.5
1986	322.4
1994	322.2
1996	322.0

Mr. Rungus pointed out that the gauge is located downhill from the Chalmers land. As water flows downhill, it is logical to assume that the flood levels due to ice jamming experienced at the site would be at least that experienced at the gauge itself, for which these elevations are shown. Based upon this conservative data, the entire rear of the property has been flooded on seven occasions in the last 27 years, and the building site has been flooded once in the past 27 years from ice jamming. Under cross-examination, Mr. Rungus did not know the extent to which the trees posed a barrier to the ice jams from moving to the front of the property.

Mr. Lorant stated that ice jams, through their blocking of channels, can cause floods even greater than the regional storm event. Here, the fact that there is a bridge downstream causes a greater likelihood of a barrier to ice, much the same way as piers act as a barrier, in that they prohibit and hinder the movement of ice. While ice jams are difficult to predict in future, those which have occurred in the past would be indicative of flood elevations on the property, accurate to ten centimetres. Mr. Lorant pointed out that Mr. Rungus' figures were more favourable to the Chalmers site as they did not make any adjustments for being upstream. Under cross-examination, it was suggested that the trees are much taller than the ice jam blocks are likely to be. Mr. Lorant stated that the ice breaks up and moves through the trees in pieces.

Mr. Rungus gave evidence on the effects of the proposal, which is also contained in his witness statement at page five. He pointed out that the impacts modelled by Totten Simms Hubicki on behalf of the appellant were similar to the results of the HEC-2 analysis performed by the GRCA. His conclusions are that the placing of fill would result in upstream increases in flood level elevations of 1.9 inches at cross-section 145. The local velocities would also increase from the proposed placing of fill by a factor of nine percent in the channel and south overbank areas, across from the Chalmers site. Local velocities at the site would increase by a factor of 12 percent to velocities of 4.93 feet per second.

Flood Plain Planning Policy Statement, One Zone Policy Area and Two Zone Policy Area

Ms. Caston referred to three underlying principles (denoted below with an asterisk) of the Provincial Flood Plain Planning Policy Statement (Ex. 4, Tab 9), at page 6. In cross-examination, Mr. Haley asked about those which were omitted. All five are reproduced below:

- * (1) effective flood plain management can only occur on a watershed basis with due consideration given to the upstream/downstream and cumulative effects of development;
- (2) local conditions (physical, environmental, economic, and social characteristics) vary from watershed to watershed and, accordingly, must be taken into account for the planning and managing of flood plain lands;
- * (3) the degree of risk (threat of life and priority damage) can vary within the flood plain of a watershed and from watershed to watershed; some portions may be too hazardous for development while the potential for development to safely occur may exist for other portions;
- * (4) new development susceptible to flood damages or which will cause or increase flood related damages to existing uses and land must not be permitted to occur; however, some communities have historically located in the flood plain and as a result, special consideration may be required to provide for their continued viability; and
- (5) flood plain management and land use planning are distinct yet related processes that require overall co-ordination on the part of

According to Ms. Caston, the GRCA formally endorsed the Policy through resolution 153-91 on June 14, 1991 (Ex. 4, Tab 10).

Commencing at page 9 of the Policy, information on the One Zone and Two Zone Concepts is provided as follows:

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(4) One Zone Concept

It is the policy of the Province of Ontario that subject to policies (5) and (6):

- 4.1 The flood plain will consist of one zone, defined by the regulatory flood standard (see Figure 2).
- 4.2 New development in the flood plain is to be prohibited or restricted.
- 4.3 Where the one zone concept is applied, municipalities and planning boards include policies in their official plans that explain the intent of the one zone concept.
- 4.4 Where the one zone concept is applied, the flood plain be appropriately zoned in conformity with the official plan designation, to reflect its prohibitive or restrictive use.

(5) Two Zone Concept

It is the policy of the Province of Ontario that:

- 5.1 For portions of flood plains that could potentially be safely developed with no adverse impacts, the Conservation Authorities in Ontario, or where no Conservation Authorities exist, the Ministry of Natural Resources, in co-operation with the watershed municipalities have the option of selective application of the two zone (floodway - flood fringe) concept (see Figure 3).
- 5.2 New development in the floodway is to be prohibited or restricted.
- 5.3 The extent of the floodway is to be determined based on local watershed conditions, such as critical flood depth and velocity, existing and proposed development, and the potential for upstream and downstream impacts.
- 5.4 New development that may be permitted in the flood fringe be protected to the level of the regulatory flood.
- 5.5 Where the two zone concept is proposed to be applied or is considered to be a plausible option, municipalities include policies in their official plans that explain the intent of the two zone concept and development potential of the flood fringe versus the floodway.

- 5.6 Where the two zone concept is applied, the flood fringe be zoned in conformity with the official plan designation, and the flood hazard and requirements for floodproofing be recognized in the zoning document.
- 5.7 Where the two zone concept is applied, the floodway be appropriately zoned to reflect its prohibitive or restrictive use.

(6) Special Policy Area Concept

Ms. Caston summarized these concepts by stating that new development is prohibited in the one zone areas, and the special concept area is an area which has been agreed to by the Province that a higher flood risk is acceptable, with flood proofing measures agreed to by all parties. The two zone concept is another option, which provides more flexibility, but does not apply to all areas. It is used for urbanized areas, with a mechanism to have an area declared two zone, under agreement between the municipality and the conservation authority.

As far as West Montrose is concerned, it is a one zone policy area and new development is prohibited. There have never been discussions entertaining the possibility of changing its status, notwithstanding that in 1989, the Regional Municipality of Waterloo, affected townships and the GRCA identified areas which could be considered for the two zone approach. This discussion enabled the GRCA to have input into the technical delineation between flood plain and flood fringe.

Factors for consideration of the two zone approach (refer to Two Zone Policy Areas General Approach, Ex. 4, Tab 11) which are found lacking are:

- 1. There have been no channel improvements;
- 2. There is no history of infilling or special agreements;
- 3. There is no threat to community viability;
- 4. West Montrose does not fit the model of a central core with historic development, such as due to mills along the river;
- 5. The criteria of floodway/flood fringe delineation would not have the proposed building envelopes included in the flood fringe, but rather in the floodway, where the former of which would have shallower depths and lower velocities and the latter would have greater velocities and depths; and
- 6. The frequency of flooding on this property would pose a higher risk than acceptable for the two zone concept.

Ms. Caston referred to the comprehensive set of Policy Statements pursuant to Bill 163, which changes the requirement for agencies from "have regard to" to "be consistent with" and stated that, owing to the date of the application, the applicable test is the former, having governed at the time the application was made.

The municipal pumphouse, for which permission had been obtained, is within the exceptions listed in the one zone policy areas, being a "public work... requiring proximity to the water" (see section 3.0.1 of A Synopsis of Policies, Guidelines and Procedures for the administration of: Fill, Construction and Alteration to Waterways Ontario Regulation 149 as amended by 69/93 and 669/94, Ex. 20).

In cross-examination, referring to the first principle of the Provincial Policy, Ms. Caston stated that, while the application did touch upon upstream and downstream effects and cumulative impacts, it failed to take into account the entire watershed. Mr. Haley suggested that impacts within one half mile either way, reflected in the modelling done by Totten Simms Hubicki, was sufficient, as the third principle of the Provincial Policy. He pointed out that, according to the third principle, impacts of development vary from watershed to watershed and within a watershed. According to Ms. Caston, some areas may be too hazardous, while others have potential for development. Slopes, rainfall, building locations, number of accessory structures, soil conditions and the like could be factors. Mr. Haley suggested that the special policy area or two zone concept is implied for these lands. He also suggested that the continued viability of this community should be a factor. Ms. Caston, in re-direct, reiterated that there are established procedures which must be followed for the creation of a two zone policy area, assuming that the criteria can be met.

Mr. Rungus gave his opinion as to whether the subject lands would qualify for a two zone approach. The safe access test of flood depths less than three feet would be passed, with depths being 2.8 feet. Upstream water levels increase, measured at 1.9 inches for cross-section 145, would also be passed, with the threshold being increases of 0.1 metres or 0.3 feet. He qualified this by stating that the analysis of encroachment should be done on a reach, rather than on a site specific basis, and indicated that, even though the site impact basis is minor, the encroachment limit in a reach based analysis has not been done and is unknown. However, the frequency of flooding test, being not more than once since 1948, would clearly fail, as the building site has flooded on at least 3 occasions since 1968. The depths of flooding on the site, if left as is, would be in excess of the allowable 1.2 metres. The velocities at and across from the site are also in excess of that permissible, and would generally cause erosion in the river and at the site. Mr. Rungus concluded his analysis by suggesting that the proposed construction would be in the floodway. Under cross-examination, he agreed that he had not done the calculations identifying a line denoting the floodway and flood fringe, to support this opinion.

Ms. Minshell stated that the application is contrary to the established watershed management principles of both the GRCA and the Province. All planning boards must have regard to the implications of any actions concerning the aggravation of existing flood plain management problems. It is their duty to consider.

All of the flood plain of the Grand River watershed is a one zone area, unless it has been otherwise designated. As such, new development is prohibited, and this is further defined in the Implementation Guidelines at page 19 (Ex. 4, Tab 18):

3.4.1 Explanation

Under the one zone concept new development is generally prohibited. However, certain buildings and structures must locate in the flood plains by the nature of their use.

Buildings and structures which can be located outside the flood plain are not permitted.

Ms. Minshell echoed Ms. Caston's evidence that the Chalmers' land does not qualify for a two zone approach, stating that she felt it was necessary to include this analysis, as evidence led on behalf of Mr. Chalmers suggested that these lands were in the flood fringe. In her opinion, they are not. As a general approach, this concept will be considered where there is existing development, where previous agreements have existed prior to the establishment of the Policy and where the municipality feels that the viability of the community may be affected. In this case, there has been no such discussion with the municipality that the one zone approach is too onerous.

Under the best case scenario, even if this stretch of the Grand were two zone, the Chalmers lands would not be within the flood fringe according to the Two-Zone Policy Areas General Approach (Ex. 4, Tab 11) which has as criteria that the site cannot have flooded more than one time since 1948, incur more than 1.2 metres of flooding, development would cause increases in flood line elevations upstream and downstream, and pedestrian and emergency access of .8 metres of flooding cannot be experienced. Applied to this situation, there has been flooding, likely in 1947 and 1952, having been spring snow melts, and recorded flooding in 1972 and 1974, plus an ice jam in 1981. The flood depths of 1.8 metres at the building envelope is greater than the limit set. The test for increased flood velocities is marginally passed. The flooding of access to a depth of .8 metres is marginally passed. Therefore, one would have to conclude that this is a floodway, where no new development is permitted.

Mr. Lorant gave evidence that the historical perspective brought to the issue of flooding is that of the watershed basis. In the early days of conservation authorities, namely the 1940's and 1950's, the focus was on protection. This was soon recognized as a band aid approach, and the Province recognized that the entire watershed would have to be considered in terms of land use, protection and prevention. Protective measures would occur where a vulnerable community is protected by a dyke. Recent flood disasters in the U.S. and Quebec illustrate the impact of the absence of development control in the flood plain. The focus in Ontario, which has helped prevent repetition of this mistake, is on prevention.

The preventative aspect was incorporated into the Policy Statement as a means of exercising land use control in that a determination could be made as to where development should not be permitted and to define flood prone areas. This was the genesis of the flood plain mapping program.

The purposes of the Policy are to prevent loss of life and minimization of property damage. Once it was known where the flood prone lands were located, it would ensure that no development or placement of fill would take place. The purpose behind preventing the placement of fill in flood prone areas is that it causes increases in upstream flood elevations and downstream flood flows, through the removal of available storage capacity. Mr. Lorant stated that the orderly development referred to in the Policy means keeping development out of vulnerable areas.

The intent of the one zone concept was the original way in which the Province proposed to deal with development issues. It was determined that in areas where flood depths are shallow or velocities are low, that new development might be permissible under certain conditions. The two zone concept does not allow new development in the floodway. However, it could be allowed in the flood fringe.

The proposed application does not conform to sound flood plain management principles, and is contrary to the Policy Statement. For the tribunal's information, Mr. Lorant advised that new technical guidelines in support of the Implementation Guidelines would be released this year. Everything discussed as it applies to the Chalmers' application will remain the same.

Mr. Lorant commented that it is interesting to note that, historically, Mr. Chalmers' family farm was located well away from the flood plain. He suggested that settlers knew better than to build in high risk flood prone areas.

Under cross-examination, Mr. Haley stated that he worked with the Flood Plain Planning Policy Statement, but was not intimately familiar with it. Mr. Haley indicated that the experience of flooding is a matter of opinion. In re-direct, Mr. Haley stated that the implementation guidelines to the Policy are only guidelines, and are not law. The Policy Statement is simply to provide direction, but is not intended to be administered to the letter of the law.

CA Mandate

Ms. Minshell stated, on cross-examination, that the mandate of the GRCA is the conservation, protection and development of natural resources other than oil and gas. Its stated business is that of watershed management. Ms. Minshell touched on the municipal review and advisory process. With respect to applications for permits, specifically, the applications are considered with respect to the Fill, Construction and Alteration to Waterways regulation, applying the governing principle of determining whether the proposed activity is likely to affect flooding, pollution or the conservation of land. Staff will review an application and make its recommendations to the Executive. Staff will provide information on how the proposed activity relates to Provincial and GRCA Policies. The Executive does not go very far in exercising discretion on applications, but remains true to the Policies. The granting of permission for the accessory uses discussed, as well as the municipal pumphouse, is within the ambit of the Policies.

In redirect, Ms. Minshell stated that there are serious problems experienced along the river. Homes flood regularly due to ice jams, suffering extensive property damage. Also, the trailer park is quite close to the water level, and during high flow events, there is limited time to warn occupants for evacuation. While the Chalmers building sites are a bit higher elevation, it is within the objectives of the GRCA to prevent new homes from being built in the flood plain.

Other Permits, Including Accessory Uses and Municipal Pumphouse

Much evidence and discussion was heard concerning other applications which were either refused or for which permits were issued, in the immediate vicinity at the end of Tallwood Drive. These were plotted on a map (Ex. 4, Tab 8) and colour labelled as to whether new residential (pink), accessory structures (green) or infrastructure (blue).

153/80	a residence on lot 9, partially in the flood plain	approved
152/80	previous owner of Chalmers' property, first application	refused
182/80	was refused; revised and allowed, but never built	approved, but not built
43/81	Chalmers' current residence	approved
31/77	application for residence was refused	refused
76/80	subsequent application by new owner was not heard not heard as it had already been considered	
324/86	application for Chalmers' garage	refused
398/86	revised application for Chalmers' garage	approved
153/84	Chalmers' pond	approved
12/92	Crutcher garage	approved, with conditions
423/87	Crutcher pond and tennis court	approved
156/88	Municipal pumphouse	approved

Mr. Haley stated that, as part of his review in bringing this application, he considered the history of permits in the area. While not part of the permitting process, during the creation of the subdivision Tallwood Drive was permitted to extend past Granbridge Drive, leaving the impression that all of these lands could be developed as part of the West Montrose Settlement Area community. In the time since Mr. Chalmers built his home in 1984, there have been permits for his and the Crutcher garage, his and the Crutcher pond, the Crutcher tennis courts and the municipal pumphouse courts. Due to what he termed the "significant history of permits issued" Mr. Chalmers had been led to form the opinion that he too could build new residential development on the subject lands.

Under cross-examination, Mr. Haley was asked to consider that the development of the subdivision and many of the permits issued pre-dated the introduction of the Flood Plain Planning Policy Statement in 1988, which governs this application. Mr. Olah also attempted to distinguish the permission for Mr. Chalmers' current residence, as being outside of the flood line elevation, as distinguished from those disallowed within the flood plain. Mr. Haley remained unmoved from his position that this history of permits issued have left Mr. Chalmers with the impression that additional permits are possible, suggesting that this demonstrates an established course of conduct by the GRCA. Mr. Haley did not accept Mr. Olah's suggestion that permits within the flood plain were limited to accessory structures and municipal infrastructure, stating that this was not the "big picture".

Ms. Caston provided details of the applications. Of those proposing residential structures, only the one for Mr. Chalmers' current residence and the immediately preceding application for the identical location which had not been built, were approved. The second application for the Chalmers' garage was approved, as it was not a residential structure posing no risk to life. She explained that the GRCA looks at residential uses in the flood plain from the perspective of risk to loss of life and is very stringent in applying principles that new residential uses are not permitted in the flood plain. The Chalmers' pond was similarly approved as an accessory use. The Crutcher garage was approved on the condition that it not be serviced by plumbing, which would leave it vulnerable to conversion to residential use in future.

The municipal pumphouse was built by the developer of the subdivision. It was approved as it required a minimal amount of fill, had a raised main floor and was operated with an automatic shut off valve, so that at times of flooding no person would be put at risk in having to attend at the site. Ms. Caston explained that this type of use is in accordance with the Policy Statement, so long as it is of an approved structural design, which was the case.

Under cross-examination, Ms. Caston explained that approval was necessary for the Martin application (152/80), even though it was above the flood line elevation as staff felt that a permit was required. Mr. Haley suggested that the drawing of the flood line elevation was a factor, that the floor had to be raised by fill. Ms. Caston replied that if there was no grade below the flood line elevation, this would not be necessary. However, if the driveway was below the flood line, it would have to be raised.

The Chalmers' garage was permitted after a survey provided new site elevations. The issue appears to have been, not where the flood line was drawn, but rather, the depths of flooding which would be experienced.

With respect to the Crutcher's pond and tennis court, the fill removed from the pond was used in part to level the ground for the tennis court, to a level of one foot. Ms. Caston explained that cut and fill relates to net storage at a given elevation. She could not say with certainty whether all of the fill removed from the pond was used for the tennis courts, or whether the net result was a reduction of storage in the flood plain. Ms. Caston deferred to her colleagues on the question of how there could be available storage if the pond is filled with water.

With respect to the Crutcher garage, which also has boat storage and a solarium, Ms. Caston could not say whether issues of fill or the amount of storage used had been considered. Loss of storage is considered for purposes of new residential development.

The finished flood elevation of the pumphouse is 325.2 metres. While Ms. Caston could not find reference in the file with respect to the flood line elevation, she stated that +.2 metres is used for purposes of floodproofing, so that the flood line elevation used could be extrapolated to be 325 metres. Mr. Haley suggested that there was a discrepancy between the elevation used for the pumphouse and that being applied to the Chalmers application, which was 324.78 metres.

In re-direct, Mr. Olah referred to the implementation guidelines, which allow for storage yards, parking areas and open space for private and public recreation.

Mr. Rungus, in cross-examination, did not know whether there was a cut and fill issue related to the Crutcher accessory uses. Mr. Haley suggested that these structures do take up storage volume, but Mr. Rungus could not say whether this issue was modelled.

Mr. Lorant, in cross-examination, stated that the tennis courts would not impact on storage volume, but that the fence, light towers and wood storage shed would have an impact. He stated over the last 21 years, a person seeing the activity at the end of Tallwood Drive might have a false sense of hope regarding potential for development. However, when the background data was examined, one would realize that no precedent had been created by the allowable accessory and infrastructure development.

Potential Areas Which Could Become Vulnerable to Development

Based upon a random inquiry, Ms. Caston chose three areas within the Grand River watershed which have similar characteristics and stated that if the application were approved, it would create a precedent for new residential development in these areas:

1. In the City of Cambridge, along the Speed River, 25 kilometres away. There are existing streets with three or more vacant properties within the flood plain, experiencing flood depths of up to two metres. Not all back onto the river.

2. In the Village of Eden Mills on the Eramosa River five kilometres east of Guelph, which has its confluence with the Speed River in Guelph. There are existing roads and wells, with properties backing onto the river, and having flood depths of two metres. The one zone concept applies.
3. In the Village of Cayuga, along the Grand River within the southern portion of the watershed, south east of Brantford. There are properties on existing streets, infrastructure and vacant lots, some of which front on the river, and flood depths of two metres.

The potential for other property owners to come forward exists within urban areas which apply the two zone concept, where properties having similar characteristics to the Chalmers property, and are located within the floodway. There would be little to distinguish these cases, should the appeal be allowed. In addition, there are a number of rural properties, such as farms and rural estates, which could seek similar approvals if granted here.

In her witness statement at page 5 (Ex. 4, Tab 29), Ms. Minshell states:

In the Grand River watershed, there are portions of 32 cities, towns, villages and settlement areas that are in the flood plain. In each of these cities, towns villages, and settlement areas, there are streets which back onto or butt into the floodplain of the Grand River or one of its major tributaries. Most of these streets present a similar situation to the situation surrounding the Chalmers application. A review of the floodplain maps for just a few of these flood damage centres yields the following sampling of similar situations:

Grand River in Cambridge (Preston)	Conestogo River in Drayton
Fountain Street	King Street
Rose Street	Eramosa River in Eden Mills
Nelson Street	Ash Street
Beaver Street	Nith River in New Hamburg
Dover Street	Shade Street
Chopin Drive	Hilton Street
Grand River in Caledonia	Stone Street
Haddington Street	Hunter Street
Berwick Street	Beams Road
Grand River in Cayuga	
John Street	
Chippewa Street	
Tuscarona Street	
Brant Street	

Ms. Minshell stated that she believes there may be hundreds of situations within the greater watershed significantly similar to the Chalmers application which, if allowed, would severely impact on the ability of the GRCA to manage.

Under cross-examination, Ms. Minshell admitted that she did not inspect the sites which she cited as having similar characteristics, nor could she state with certainty that factors such as slope of the land or extent of tree cover were similar. Her inquiry was limited to one-zone concept areas, wholly within the floodplain requiring two metres of fill to raise above the regional storm flood elevation. Ms. Minshell also admitted that she did not look at past applications for these various areas.

Precedent

Mr. Haley stated that the precedent for allowing this appeal exists based upon the considerable number of permits allowed for activities at the end of Tallwood Drive over the years, including all of the various accessory uses and the pumphouse. The natural features of the subject site, namely the substantial tree cover, drainage ditches and slope of the land to prevent flooding from ice jams or damage caused by logs, being a factor on the proposed building envelopes. Due to the limited number of lots available on Tallwood Drive, there would be no opportunity for precedent to be applied. Also, the extensive land use controls and safety features proposed, namely the caution on title and the driveway gauges, would answer any specific concerns caused by flooding on the subject lands. Mr. Haley disagreed that the issue of precedent is determined on similar areas within the watershed, and maintained that it was specific to the particular area. He pointed out that each application must be determined on its own merits, and the relevance of all factors must be given weight applicable in the circumstances.

Ms. Caston stated that she was concerned that approval of this application would create substantial pressure to approve similar applications within the watershed, for which there are considerable opportunities. The issue of applying the GRCA mandate fairly, on a case by case basis, does not mean granting a significant exception to one landowner. This type of exception would result in others feeling that they have been treated unfairly, should similar approval not be granted. Ms. Caston echoed her testimony concerning the other areas which have similar characteristics, which would become vulnerable to encroachment into the flood plain.

Under cross-examination, Ms. Caston maintained her position that there were sufficient similarities with other areas for precedent to be of concern. She agreed that the specific factors, including drainage, ponds, accessory structures and the like would have to be looked at in the other areas. The staff of the GRCA would still have to make recommendations based on policies, but the decision makers might feel some pressure if this type of precedent were created. Ms. Caston agreed that there may be physical differences in the other sites, including tree cover, slope, etc. and she admitted that she did not personally inspect the sites. Ms. Caston stated that the GRCA has been consistent in its approach, pointing out that the two other past applications for residential development within the flood plain along Tallwood Drive had been refused.

Ms. Minshell stated that the resulting encroachment from successive permissions would be cumulative. This would, in turn, pose a serious threat that the Provincial and GRCA Policies would not be able to stand up. Once there is a substantial exception to a policy, it would result in exceptions that were so numerous that it would not be a policy anymore. Under cross-examination, Ms. Minshell explained that one application would impact on successive applications through the process whereby an application is compared to existing policies. Where an application for new residential development which is allowed is contrary to policies in that it is entirely within the floodplain and requires placement of two metres of fill to raise it above the flood line, the question becomes, how should those policies be applied in the future. Mr. Haley suggested that, to be fair, each application must be reviewed on its merits, and not on whether there was an earlier denial.

Mr. Lorant stated that allowing this application would not be consistent with those which had been approved previously as accessory or infrastructure, but would create an adverse and dangerous precedent. Other applications having similar characteristics, would have to be approved, as there would be no justifiable reason to disallow them. This would result in major loss of control over the watershed by the GRCA. He cited the Scarborough Golf Club case **Scarborough Golf & Country Club v. City of Scarborough** (1988) 660 O.R. (2d) 257 (C.A.); (1986) 57 O.R. 202 (H.C.); (1986) 55 O.R. 193 (H.C.).

Cumulative Impacts Upstream and Downstream

Mr. Haley stated that the cumulative impact must be measured not on the type of permits but rather on the numbers of permits which had been issued. All of these have potential to impact on available storage, such as lighting, fencing, groundwork. The GRCA cannot have it both ways, in that these uses do have an impact which must be recognized as not insignificant.

Mr. Rungus stated, based upon his modelling, the impact of the proposed placing of fill would be an increase of 1.9 inches upstream at cross-section 145, corresponding to the bridge at Regional Road #86 and the Grand River. Local velocities of the river would increase by a factor of nine percent on the south bank and 12 percent on the north side. In his professional judgement, based upon the technical guidelines, in a two zone area, an increase of flood elevations of two inches is not significant. The increase in velocities, however, are significant, causing erosion in the river generally, and at the subject and neighbouring sites.

In measuring the impact of the application, Mr. Rungus stated that the issue of frequency of flooding arises. The property has a high rate of flooding, while the greater incidence is clearly at the rear. However, all of the property is associated with a comparatively high incidence of flooding.

Ms. Minshell stated that flooding is caused when water elevations exceed the level of the banks and spill over into shallower depths within the flood plain. The flood plain plays a role in times of flooding in that it slows the movement of flood waters, so that the water enters the downstream reaches more slowly and causes less flooding. The encroachment, such as that proposed, pushes the water back into the channel, making it deeper and faster. It enters the lower reaches more quickly and will flood those areas more extensively. Essentially, a lot more water gets downstream faster.

One application will not cause measurable effects. However, over a series of approved applications of similar impacts, cumulatively impacts will be noticeable both up and downstream. This progressive encroachment will increase flooding. The Chalmers' proposal would remove available storage for any storm greater than a five year return period. Cumulatively, such proposals would harm communities downstream. Under cross-examination, Ms. Minshell clarified that cumulative impact means that the more that is put into the flood plain, the faster the resultant flows.

Mr. Lorant stated that he had reviewed all of the tribunal cases between 1974 and 1995. Of 200 cases, those dealing with cumulative impact or precedent numbered approximately 100. Eight were allowed, being nine percent, and 91 percent were dismissed. Mr. Lorant stated that minuscule increases in flood elevations of even three or four inches would accumulate so that, several permits could see the impact measurable in feet. For those developments whose floor elevations are currently two inches below the regional storm flood elevation, such an increase would be disastrous. With the removal of flood storage, one sees the increase in velocities as well as elevations.

Mr. Lorant stated that the fill placed upon the building site will be subject to settling, erosion and flooding. This could, in turn, damage the buildings and certainly result in soil deposition problems downstream. This, in turn, could impact on fish. Mr. Lorant stated that, while he is not a soil expert, the impact on the two islands to be created by the proposed fill, given the projected velocities, would be considerable. If velocities are minimal, a three to one slope can withstand the impact of the waters. However, once velocities exceed one metre per second, and here they are four feet per second, one must be cautious about stability of the slope. Once the fill erodes, the buildings will move or collapse. This would not be the case with the municipal pumphouse, where the type and placement of fill were properly designed before permission was granted.

Safety, Access and Egress and Caution Registered on Title.

Mr. Haley stated that the proposed building envelopes would be raised by fill to the regional flood elevation. There would be no building openings below this level and in fact the dwellings would be built on concrete pads. Concerning the driveways, which would be below the regional flood line elevation, they are proposed to be constructed having a hard, coarse granular surface, with the edges identified with level gauges to identify the location of the driveway and flood depths for safety vehicles. Mr. Haley discussed this matter with the local fire department.

It is proposed that all flood proofing and safety measures be registered on title with standard covenant restrictions, so that any subsequent landowners would know from the outset that the house must be engineered to standards set. Also, Mr. Chalmers is a builder, and therefore is able to exercise some element of control with respect to floodproofing measures. He wishes to build these buildings himself and would be the best person to regulate, enforce and institute these safety measures.

Under cross-examination, Mr. Haley stated that the driveways would not be elevated and that parts would be under water for a distance of 30 metres, for depths of up to .8 metres until one got to dry land. Mr. Olah suggested that cars could not get through depths in excess of .3 to .5 metres, due to the electrical systems shorting out. This would include ambulances and police vehicles. Mr. Haley stated that the design was based upon larger emergency vehicles. In re-direct, Mr. Haley stated that the proposed design was within the provincial guidelines for safety measures.

Mr. Chalmers stated that he would ensure that the homes would be built properly and that all required measures would be registered on title.

Ms. Caston stated that, based upon the guidelines, notwithstanding that some emergency vehicles could pass through depths of .8 metres, .3 to .5 metres is the maximum depth that most vehicles could be expected to be able to pass. The families on the two islands created by the fill where the proposed homes would be built would have to be contacted concerning evacuation. There are also direct and indirect costs associated with flood events, such as damage costs from erosion which could endanger the very stability of the homes themselves. There would also be costs experienced due to damage to accessory uses and such items as lawn furniture. Also, costs of evacuation and possible accommodation.

Due to the depths of flooding, velocities and slope of the fill, some portion of this property would be hazardous to inhabitants. This would be a very dangerous situation.

Under cross-examination, Ms. Caston did not concur with the view of the local fire department, stating that she was required to rely on the implementation guidelines. While the driveways might be engineered to be resistant to water flows and therefore stable, the concerns of the authority would be in getting people to safety. Ms. Caston stated that the flooding issues would remain of concern and the only way to overcome these concerns would be to not develop the site. The proposed remedial measures are not sufficient. She stated that the gauges do not overcome her concerns, as there is an inability of many ordinary vehicles to pass. The gauges indicate depths only.

Mr. Rungus, in cross-examination, stated that one problem with driveway level gauges is that those persons outside of emergency services might not know how they operate. Also, the visibility of these gauges might be impaired by rain or night conditions. Mr. Rungus stated that, taken alone, level gauges might offer some assistance; however, there are too many problems with the proposed building which taken together cannot be overcome. Also, he could not think of an instance when their use has been acceptable for flooding concerns within the watershed.

Mr. Lorant stated that level gauges could be damaged by snow removal. He also stated that, based upon U.S. data from testing with policy and emergency evacuation personnel, flood depths of .8 metres is the absolute maximum depth that trained crew using ropes and being roped together can pass through. It would be misleading to believe that an ordinary home owner, let alone a child, would be able to walk through water of this depth.

Photographs, Including GRCA Practice in Taking Pictures

Mr. Olah introduced a series of pictures (Ex. 4, Tab 15, Numbers 1 to 24) through Ms. Caston to which Mr. Haley objected, stating that there was no evidence as to when they were taken and questioned the accuracy of what was depicted or whether they represent flooding at the same elevation. He submitted that they should be considered irrelevant, as they are not of Mr. Chalmers' property. Mr. Olah submitted that the pictures are offered as corroborative evidence, with the threshold being that they are an accurate depiction and are probative and relevant. He submitted that the test is not one of admissibility, but rather one of weight. Mr. Olah advised that Ms. Minshell would be able to testify as to the GRCA practice in taking photographs and give evidence of who took the various pictures. The tribunal determined that it would accept the photographs and make a determination of their weight at the time of making its final decision.

Photograph 9 shows the municipal pumphouse, the foundation being poured concrete and the building being brick. The brick corresponds to the inside floor and is above the regional flood line elevation. Photograph 10 depicts, from a short distance, the amount of fill which would be necessary to bring the building envelopes up to the regional flood line elevation.

Photographs 11 and 13 through 15 were taken in 1981 by Holger Hansen and Scott Heal, former GRCA employees, according to Ms. Minshell, and are an historic depiction of an ice jam event. The photographer for number 16 could not be identified. Ms. Minshell took photographs 17 and 18 on the 25th of February, 1995, during another ice jam event.

Ms. Caston took photographs 21 through 24 on February 26, 1996. The GRCA reported flooding and ice movement down the river. Ms. Caston went out after the event to determine whether there was ice on the Chalmers property. The photographs were to determine the extent of ice on the property. Ms. Caston stated that she is aware that ice jams do occur which create a risk of flooding and flood hazard. Her concern is the extent to which ice might damage dwellings as well as accessory structures. Photographs 22 through 24 depict her concerns. Ice is not stopped by the trees, but she could not say whether the ice extends well beyond the tree line.

Ms. Minshell explained that the GRCA keeps a photographic library, where designated people take photographs during flood events. This is an important practice of the GRCA and improves modelling and forecasting capabilities. Sites are selected to get an indication of flood levels relative to landmarks. Some might be indicative of high water marks or how high flood waters come onto existing buildings. These are compared to the gauge data, which allow better warning systems to be implemented.

Photograph 11, taken near from the covered bridge, depicts flood waters on the road across the river and downstream from the Chalmers property, but the flood line elevation is similar to the rear portion of the Chalmers property. The street shown is definitively known to be flooded, but one cannot tell by how much. Ms. Minshell described ice on the neighbouring trailer park. She agreed, under cross-examination, that flooding was not observed on Tallwood Drive, which is a higher elevation from the photographs where flood waters are shown.

Submissions

Mr. Haley

Mr. Haley submitted that Mr. Chalmers, having a family background which extends generations into the past, is in a position to have experience, knowledge and respect for the river system. As a landowner, Mr. Chalmers is serious and the appeal should not be construed as frivolous, recognizing that his strategy in not engaging a lawyer or offering engineering evidence, is reflective of the economic times.

The application is submitted to be reasonable, with sufficient distinguishing characteristics to merit warranting an exception. Mr. Haley submitted that the weight of the issues must be considered in the context of synergistic effect or cumulative effect of all matters whereupon it can be reasonably concluded that the lands are subject to unique characteristics.

The GRCA has the discretion to determine under what conditions it may grant permission, based upon the objective of the Provincial Flood Plain Planning Policy, specifically the prevention of loss of life and minimizing damage to property and social disruption. This discretion has been exercised by the GRCA specifically concerning the end of Tallwood Drive nine times in the past 25 years. Although the GRCA does not agree, the fact is that these past permissions have created an atmosphere which attracts interest in this area as developable. The construction of the municipal pumphouse is significant in this regard.

Mr. Haley made submissions on five issues which he invited the tribunal to consider as determinative:

1. Flood Line Elevations

The proposed building envelopes have never been observed to be flooded during three generations of the Chalmers family in the immediate vicinity. In spite of its various efforts, the staff of the GRCA has not introduced evidence of actual flooding on the building envelopes. Instead, relying on models using data from downstream, or photographs from upstream and downstream, the GRCA is asking the tribunal to conclude that this is evidence of flooding at the building envelopes. Throughout, Mr. Haley has conceded that the lower, rear portion of the Chalmers land floods frequently or is subjected to ice jams, but that is not the land which the tribunal is dealing with.

In their evidence, staff of the GRCA, whose mandate it is to identify flood prone areas, have identified West Montrose as a sensitive area. Mr. Haley submitted that one could reasonably infer from this focus and attention that if flooding on the site were as severe as suggested, it would have been observed by a person or documented in photographs. However, none of the GRCA evidence from three witnesses, including the photographs by Boyd and Hansen includes any mention of flooding of these envelopes within the last 20 years. As part of his direct evidence argument, Mr. Haley submitted that limited weight should be given to photographs depicting severe flooding in Montrose, as none have relevance to the subject location. Similarly, attention is drawn to the evidence of Mr. Rungus, that the flood line elevation is modelled rather than observed, with hard data not from the subject site, but from a stream gauge 300 metres downstream. Mr. Rungus admitted that he has never done this type of analysis in his eight years of experience. Also, Mr. Haley drew attention to the fact that the Shand Dam does provide opportunity to control flows and elevations at the site, and that this is not being used in an advantageous manner for the Chalmers land.

2. Safe Access

Mr. Haley submitted that safe access can be achieved. The depths on Tallwood are not in issue - .78 metres. This, along with the velocities, are within acceptable levels contained in the Implementation Guidelines. Mr. Haley submitted that guidelines are not to be interpreted with strict rigidity by a tribunal, but that they are simply guidelines. Mr. Haley reiterated that it should be kept in mind that the depths are based upon engineering models. As such, they are based on assumptions and interpretation of data, not actual experience.

3. Flood Proofing

The proposed flood proofing is submitted by Mr. Haley to be adequate and reasonable for the site. There would be no openings beneath the regulatory flood line elevation. It should be pointed out that this level of flood proofing was allowable in the case of the pumphouse. Driveway access can be secured through good engineering practices, namely hard, permanent surfaces, and three to one slopes. The tribunal has accepted driveway markings in the past as an acceptable means of identifying flood depths.

Also, the effectiveness of the tree cover as a barrier to ice cannot be underestimated. The proposed dwellings, it is submitted, will not appear out of place. For the property generally, the use of restrictive covenants on title will be effective and is recognized as gaining favour in many new subdivisions, much like a mortgage, which can be with you forever.

4. Upstream and Downstream Impacts

Mr. Haley submitted that the measured impact should be considered insignificant, in that it is 1.9 inches upstream at cross-section 145. Mr. Rungus came up with similar figures and indicated that velocities at the north end of the site would be 4.93 feet per second, within the acceptable range of the Implementation Guidelines to be considered a low risk hazard. Indeed, Mr. Lorant also indicated that 1.9 inches would be significant if buildings upstream were flood proofed at the regional storm elevation. This is not, however, the case, as there are no buildings, other than seasonal trailers, which would be affected at or near cross-section 145.

Mr Haley submitted that neither Mr. Rungus nor Mr. Lorant are neither civil nor soils engineers and that as a consequence, their opinions respecting three to one engineered slopes surrounding the dwelling should be given limited weight. There is no hard evidence to suggest that there are other upstream or downstream impacts of this proposal, rather merely opinions and assumptions. Numbers of truckloads of fill denoting volume are not part of the application, were never contemplated, and do not form part of the measured impacts on flood elevation levels or velocities. The Totten Simms Hubicki report shows that there is no increase in flood level elevations downstream at cross-section 144.

Mr. Haley submitted that the issue with respect to flood storage is something of a red herring, because flood storage must be measured. There is no hard evidence to show that this has been done. It is Mr. Haley's opinion that flood storage has also been lost with accessory structures, tennis courts, pumphouses et cetera. Finally, there is no hard evidence to suggest that the river flow is bouncing toward the site by the south bank as suggested by Mr. Lorant.

5. Precedent

Mr. Haley submitted that each application must be reviewed on its own merits and decisions must be made on the particular facts of the case. He submitted that it is his view that the tribunal is not bound by its past decisions.

It has been the Chalmers' position throughout these proceedings that the regulatory flood line is neither factual or accurate, supported by evidence at the hearing that this line has changed twice. However, flooding has never been observed on the proposed building envelopes. The model from which the flood line is defined is based upon the extrapolation of physical data taken from 1975, from storm water information, soils composition, existing land use and topography for the entire watershed, which incidentally is very large, which begs the question, if the change of any one of these variables has occurred, would we not see a change in the corresponding flood line? Furthermore, would the creation of two additional building lots on this entire watershed create such an onerous and negative impact?

Mr. Haley submitted that the precedent has already been established, created through the history of applications. There is also a precedent for floodproofing to minimal opening elevations, of which the pumphouse is a prime example. There has been a precedent due to the potential loss of substantial accessory structures. Although it is not the position of the appellant that two wrongs make a right, Mr. Haley does suggest the allowing of accessory structures in the lower parts of the flood plain does indeed create a dangerous precedent.

With the existing precedents of infrastructure, namely Tallwood Drive past Granbridge Drive and the municipal pumphouse, pressure for additional applications of this sort has been created. Mr. Haley stated that he understands clearly that the GRCA has discretion to permit infrastructure facilities on these lands. However, when one examines the combination of these facilities, along with the many accessory uses, rightly or wrongly, it has created interest in development pressure in this area.

In conclusion, Mr. Haley submitted that the GRCA could distinguish the Chalmers matter from future applications, as they do with other applications, based on features such as tree cover and restrictive covenant, among other factors discussed above. With respect to the latter factor, Mr. Haley provided authority. In **Allerton v. Lake Simcoe Region Conservation Authority**, March 25, 1996, File CA-001-95 (Unreported), the tribunal granted the appeal on certain conditions which were:

1. that the appellant submit a site plan satisfactory to the conservation authority showing the location and dimensions of all fill and construction proposed on the property;
2. that the appellant submit construction plans satisfactory to the conservation authority, showing all openings and finished floor to be a minimum elevation of 219.6 metres above sea level;
3. that the appellant submit grading plans satisfactory to the conservation authority, permitting fill to remain on site or to be deposited solely for the purpose of raising a reasonable building envelope to a level consistent with the elevation of adjoining properties, and showing that the elevation of the remainder of the property will be unchanged; and
4. that the appellant register the agreement on title, indicating that the lot is within a flood plain and that the appellant has accepted all liability for damages from flooding.

Mr. Olah asked whether Reasons for this decision were available. Mr. Haley stated that his intent in referring to the order was to provide direction to the tribunal. Mr. Olah pointed out that unknown factors include, whether this is a one zone or two zone concept, it is on the outskirts of the floodplain or in the middle of the floodway.

Mr. Olah

In his submissions, Mr. Olah reframed the issues posed by Mr. Haley. It is the impact on the watershed which should form the basis of the tribunal's determination. Therefore, it is the cumulative effects on the watershed, rather than the pressure being created by the accessory uses, which should be determined. This is the type of inquiry anticipated by the Provincial Policy.

Dealing first with Mr. Haley's submissions, Mr. Olah submitted that in so far as pressure being created by accessory uses, the tribunal should consider the pressure which would be created if actual residential development were permitted. With respect to restrictive covenants, they provide little protection for the life cycle of the dwelling created, not to mention visitors, both of whom will not have the degree of information regarding the concerns of the property. Restrictive covenants would not disclose the nature and extent of the inherent risks involved. There are sufficient problems with the operation of driveway level gauges, to cause concern. New owners cannot be expected to see the significant danger which everyone is currently aware of; the significant depth of flooding at the rear of the property. Nor will they see that their driveway will be underwater in a regional storm and that they will effectively be caught on an island. Restrictive covenants just illustrate the danger this would pose to future inhabitants.

On the issue of whether there is evidence of the flood levels of a regional storm on this property, of course there is no direct anecdotal evidence, which according to Mr. Olah is a very good thing. There is no question that Hurricane Hazel or its equivalent has not occurred over this watershed at any time, but the Policy is designed to prevent a similar tragedy. It is obvious that Mississippi and Quebec in recent memory have not been so lucky. The fact that it has not been seen at this location does not mean that it won't happen and inevitably it will.

As to whether storage is a red herring, Mr. Olah submitted that it forms the basis of good water management policy and it should not go unnoticed the total absence of expert evidence on behalf of the appellant. Mr. Haley has called no evidence to support his position. In fact, the expert evidence on behalf of the GRCA suggests that this is a critical factor which needs to be considered and in fact is the gist of the case: What is good water management and how is the public right balanced, the total public community on the watershed, with Mr. Chalmers' which to develop, sever and sell at least one of the newly created properties.

No hard evidence was called, which is what the tribunal must base its decisions on, that the accessory structures had any impact on available flood storage. In any event, it is Policy that such accessory uses are permitted, because there is historical development prior to the Regulation, where the prior development is not straight-jacketed. They are allowed a modicum of use on their properties in terms of constructing small additions or accessory structures, because they do not have the significant impact that new development would pose.

Therefore, it is submitted that accessory uses and structures do not form the basis for precedent for new development, especially when one is talking about 370 truckloads of fill to create acceptable building envelopes. This is not just a few shovel fulls, but represents a significant intrusion. Its effects are not immediate as might be seen in a smaller watershed, but nonetheless, it does have measurable impact.

Before covering the headings which he submitted the tribunal must consider in making its determination, Mr. Olah reviewed the relevant facts, which were not dealt with by Mr. Haley.

As far as the re-drawing of the regional flood line elevation, Mr. Olah submitted that this is appropriate, because further and better data was available. Such lines are redrawn to reflect the best available information at the time. Mr. Olah also explained that Mr. Rungus' statement that he had never done modelling like this before was not presented accurately, but the point of the statement was that the results were uniquely reliable due to the excellent quality of data available. As far as the modelling which Mr. Haley has invited the tribunal to consider as unacceptable or unreliable, in Mr. Olah's submission, it is the most reliable modelling the tribunal is likely to see for some time, because, as luck would have it, a stream gauge is located what he terms "a stone's throw down the river from the site." Adjustments were made for distance, but actual historic data from flood events was used.

Similarly, ice flood levels were not modelled, but simply applied using exact levels from the same elevation downstream, which was very conservative, because no extrapolation was involved.

Mr. Olah submitted that the anecdotal evidence of Mr. Chalmers could not be so reliable. For one thing, his family had been located across the river and he had been away from the area for 15 years. The photographs, similarly, provide good hard data a mere 300 metres downstream, at the same elevation, so that it is a fair inference that there was flooding on the subject property when those pictures were taken. The reason that no pictures were taken of the site is that there is no development on it. Rather, pictures are taken where buildings and property are jeopardized, such as the Black house and the trailer park.

Based upon Ex. 4, Tab 20, the extent of flooding is frequent and of serious depth. The back of the property floods to 2.8 metres, the building envelope of the north-easterly site floods between 1.5 and 1.8 metres, the septic bed to 1.9 metres and the other envelope in the neighbourhood of 2 metres. The application itself involves a substantial intrusion into the flood plain. At least 370 truck loads of fill would be required, representing 82 metres or a one third distance across the width of the flood plain. This is significant.

The impact of this intrusion increases flood elevations upstream by 1.9 inches. This is the impact of just one proposal, almost 2 inches in a regional storm event. There is a nine percent increase in velocity along the south channel and a twelve percent increase at the Chalmers' side. According to Mr. Rungus, this is significant.

Mr. Olah referred to the original plan of subdivision and pointed out that these lands were originally parkland, acquired at minimal cost, so that if the approval is received, substantial financial benefit would occur. He submitted that the onus to call adequate and compelling evidence is on the appellant, which was not done. There is no evidence to suggest that the proposal is consistent with good watershed management principles. There is no evidence to indicate why an exception should be made, especially as there are significant hydrological and hydraulic issues to be addressed. The nub of this case is for the appellant to show why an exception should be made, providing good, cogent reasons. There is no evidence to rebut the GRCA's position, including that of Mr. Lorant, the province's most pre-eminent water management specialist, of cumulative impact, loss of storage capacity, minimal evidence on access and cost of evacuation.

Mr. Olah suggested that the reason the author of the Totten Simms Hubicki report, Mr. Dyer, was not called, is that his evidence would have sealed the appellant's fate, being adverse to their position. He invited the tribunal to draw an adverse inference from a failure to have called Mr. Dyer. The GRCA position is that the proposed construction under cumulative impact is contrary to well established flood plain management policies and principles, and in this case, there was a real danger of cumulative impact occurring. There is a major intrusion, involving loss of storage capacity. It would also constitute a blow against the ability of the GRCA to manage the watershed in a coherent manner, using sound principles. Others, with similar proposals, of which there is considerable opportunity, would want similar treatment.

This property can be distinguished in that it is highly flood susceptible, with storm and ice events.

Cumulative Impact

Mr. Olah pointed out that the issue of cumulative impact has never been dealt with directly by this Commissioner, other than tangentially. He submitted that this is an interesting case with which to come to terms with a critical issue in flood plain management.

Sound watershed management principles, as embodied in the Provincial Policy and adopted by the GRCA, are based upon prevention, which is a cost-effective means of ensuring that new buildings and structures are not susceptible and that upstream and downstream problems do not occur as a direct result of such new development. Effective flood plain management can occur only on a watershed basis. Therefore, when considering issues from the individual property owner's perspective, the tribunal has a duty to the public and to who is living on the watershed, to look after their interest, in effect examining the issues from a macro rather than a micro perspective. The watershed perspective requires that consideration must be had to upstream and downstream impacts, as well as the cumulative impacts of development.

In the facts of this appeal, it is the one zone policy concept which is applicable, being that new development in the flood plain is prohibited or restricted. This is consistent with the general principle of prevention. Moreover, the property is not a candidate for the two zone concept. The municipality has not put West Montrose forward for consideration; the necessary steps for the process have not been taken. More importantly, it does not qualify due to frequency of flooding, the criteria of which have been greatly exceeded. While it meets the criteria of upstream flood level increases of less than .1 metre, the calculation was done in isolation for cross-section 145, rather than on a reach basis. This analysis has not been performed by or on behalf of Mr. Chalmers, or by the GRCA. Similarly, the requirement for safe access is marginal when compared with the criteria.

Mr. Lorant reiterated that the tribunal must consider the entire watershed and the effects cumulatively on the watershed of proposed encroachment. This proposal could have significant upstream impacts on the trailer park, where the floor elevations are unknown but could potentially be at or near the regulatory flood elevation level. There is no evidence to this effect, but it must be remembered that the trailers were in place prior to the regulation, so that their level of floodproofing is unknown.

Mr. Lorant also expressed concern regarding the ability of the GRCA to manage the watershed, suggesting that the effect of leaving open the door to similar development would be devastating. It would strike at the very core, the GRCA's ability to protect the public through prevention of destructive flooding, which can cause risk to life and property.

The flood line elevation is not a hypothetical line, as Mr. Haley has suggested. In **611428 Ontario Limited v. Metropolitan Toronto Conservation Authority**, unreported, February 11, 1994, CA-007-92, the tribunal stated, commencing at the bottom of page 72:

The tribunal finds that there is sufficient evidence that the proposed developments will cause impact elsewhere in a watershed which have not been provided for. Cumulatively, a few similar proposals to fill are found to have sufficient impact on a watershed in respect of flooding, alterations to the channel and the quality of water, such that the proposed filling should be refused.

Mr. Olah submitted that the current case is even stronger, notwithstanding that the actual amount of fill is less. The potential cumulative impacts on others, he suggests, would be substantial, and would remove from the GRCA the ability to prevent what it is charged to protect such as occurred in Scarborough with substantial urban development upstream of the Golf Club, which had severe impacts on frequency of flooding and extent.

Storage Capacity

Mr. Olah submitted that the evidence shows that this case would involve a loss of storage capacity in the range of 370 truckloads of fill worth. It would encroach into the flood plain a distance of 85.3 metres or 280 feet, in a flood plain which is 256 metres wide or 800 feet. The evidence shows that when such an instruction into the flood plain occurs, it has the effect of backing up, in other words increasing, the flood levels upstream and accelerating velocity downstream. Local velocities increase between nine and 12 percent, across the channel and at the site respectively. The slopes of the proposed fill will be very steep, and subject to the pounding of this velocity. The result would be the creation of two islands well into the flood plain, which will be vulnerable to erosion due to the increased velocities. While the GRCA did not introduce evidence through a soils technical, it was submitted that these concerns were not dealt with in evidence by the appellant and that the very real concern regarding erosion and possible collapse of the structures was not refuted. Also, there are very real issues of sediment movement, deposition and erosion.

The velocities, being in excess of one metre per second, in the neighbourhood of 4.9 metres (feet) per second, are of concern. Taken cumulatively, when similar development is permitted, inches increase in flood elevations could quickly add up to feet. This translates to additional properties being inundated in a regional storm and increased velocities impacting stability of soils and structures downstream.

Precedent

Referring to the evidence of Ms. Caston and Ms. Minshell, Mr. Olah submitted that there are 32 similar areas in the watershed, all with properties which have sufficiently similar characteristics to these lands which would be vulnerable to development, should this appeal be allowed. This would, in turn, severely undermine future attempts on the part of the GRCA to carry out its preventative mandate. Referring to **Lacelle v. Rideau Valley Conservation Authority**, unreported, April 6, 1995, CA 004-91, at page 32:

The policies of an authority amount to an analysis of acceptable risk in a given watershed. There is no suggestion that the properties falling within the allowable exceptions are not subject to flooding.

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The issue of precedents created by the granting of permission by a conservation authority must be refocussed. Through its policies and where there are none, thorough the regard to the provincial policy, the conservation authorities have put the public on notice as to where precedents will be considered to (sic) the absolute prohibition of the development within certain lands.

. . . . 39

Mr. Olah stated that the whole object of the exercise of policies and precedents is to put the public on notice as to where development can occur, so that people like Mr. Chalmers are forewarned as to whether land is developable. At the time of the acquisition of the subject lands, the policies were in place, and Mr. Chalmers had notice. In the words of Mr. Lorant, granting permission in this case would set a dangerous precedent.

Flood Susceptibility of the Site

Mr. Olah submitted that the flooding in a regional storm is substantial. It has been conceded that there is frequent and serious flooding at the back of the property. At the building site itself, the flood elevation in a regional storm is 1.8 metres, and at Tallwood Drive it is .8 metres. Mr. Haley has submitted that this line has never been seen. Recall why there are two lines. The creation of the newer line is appropriate, based upon new data. Where Mr. Rungus states that he has never seen this type of case before, he is saying that it has such good data. Mr. Olah submitted that it is the most unique situation which this Commissioner has dealt with, in that there is hard data going back to 1968 just 300 yards downstream being the most reliable data one is likely to see in a long time.

In the case of ice flooding, it was not necessary to do conversions, as Mr. Rungus simply applied the depths of flooding at the gauge to the site, being a very conservative estimate. However, it was not an extrapolation, but actual data.

Mr. Olah reviewed the flood depths, which are set out in Mr. Rungus' evidence. Mr. Haley's contention that development is encouraged by the extension of Tallwood Drive is not supportable, as the flood line elevation had to be changed to reflect better data which came available. Therefore, construction of Tallwood Drive cannot be regarded as a precedent. Similarly, the pumphouse cannot be regarded as a precedent, as construction of this type is contemplated by the Provincial Policy, where the public good through construction of necessary infrastructure outweighs the risk. Mr. Olah submitted that this is a macro picture of the watershed, where there is a specific exemption contemplated by both the Provincial and GRCA policies.

There is very significant flooding on the building envelope, as well as Tallwood Drive, in a regional storm. Added to this is vulnerability to ice jamming. It is also significant in terms of frequency. This is shown by the photographs, particularly #1 (Ex. 4, Tab 15), which, contrary to Mr. Haley's position, show very well the extent of flooding, just 300 metres from the site. The photographs are persuasive, as is the hard data, in unseating the impact of anecdotal evidence. Again, the evidence of the expert witnesses was reiterated.

Added Cost of Emergency Operations, Evacuation and Restoration

Development of the Chalmers property would result in costs, in Mr. Olah's submission, due to ice and flood damage to property, including to accessory structures. There will be damage to structures from floods, as well as damage caused by erosion, including ultimate collapse. There will be costs of evacuation and emergency shelter costs. Also, after any flood event, there is pressure from individuals whose property experiences near-damage, to improve the protective measures currently in place.

Access and Egress

Due to the extreme distance which must be travelled along Tallwood Drive and the driveways, depths of .8 metres for distances of 60 metres, would prevent average automobiles and emergency vehicles, other than large ones, from being able to pass through the flooding. This will impact on individuals in the dwellings, their ability to bring family members to safety, particularly young children. Neighbours, visitors and emergency crews will be affected when attempting to offer assistance or simply vacate the premises themselves.

The gauges do not answer these concerns, particularly where the elderly and young children are involved. Rather, they serve to highlight the problem which does exist. Individuals will need training on their operation, the gauges themselves may become damaged or removed, all of which leaves the islands which form the building envelopes very dangerous for purposes of access.

Applicable Law

Mr. Olah referred to **Lacelle** in setting out the four step process which should be followed by the tribunal in reaching its determination. 1) The Policy must be considered generally, to determine whether it will be adopted or rejected. He submitted that both the Provincial and GRCA Policies should not be rejected. 2) If adopted, the Policy need not be reconsidered, unless a party pleads exceptional circumstances. There are no such circumstances in this case. It is not a case of hardship, where there is an existing dwelling with a proposed addition. Rather, it is a case of subdivision and opportunity to make a profit. 3) If rejected, reasons must be given. Mr. Olah submitted that the Policies should be followed. 4) If the Policy is to be followed, then the tribunal must examine the facts of the case to determine whether an exemption should be granted. There is no watershed evidence which has been presented to merit a finding of exemption. The appellant was silent in this regard.

Mr. Olah submitted that the Policies are reasonable, given the depth and frequency of flooding, the extent of intrusion into the flood plain, the velocities, precedent, access and costs.

In conclusion, Mr. Olah submitted to the tribunal that Mr. Haley was not qualified as an expert in watershed planning matters. His opinions concerned matters of land use planning, relying on concepts such as land use and infilling. These are not helpful to the tribunal in making its findings. The issues of cumulative impact and danger were not dealt with.

As far as the prior approvals are concerned, they are distinguishable, providing for accessory uses which are contemplated by the Policies. All residential structures which were applied for, two in number, which would have been inside the flood plain, were denied. This is consistent application of the Policies.

In conclusion, Mr. Olah asked that, if successful in having the appeal dismissed, the GRCA was seeking the opportunity to make submissions on costs.

Mr. Haley

In reply, Mr. Haley reiterated that the photographs were not of the subject site. As far as the Totten Simms Hubicki report is concerned, the GRCA concurred with the findings. The reason for not calling Mr. Dyer is economic. The fact that Mr. Chalmers could not afford to hire similar expertise to that provided by Mr. Lorant should not make him subject to costs in this matter.

Mr. Haley suggested that it is almost impossible to measure storage capacity. He submitted that there is no hard concrete information regarding storage capacity. Mr. Haley distinguished the **611428 Ontario Limited** case, pointing out that 67,000 cubic metres of fill were involved, which would, using Mr. Olah's conversion, be in the neighbourhood of 9,571 trucks. With respect to costs, he submitted that it is significantly unfair and unreasonable to ask for costs. He submitted that an award of costs by the tribunal would go far in preventing the average citizen in making an argument for a fair hearing.

Findings

Flood Susceptibility, Modelled Flood Line Elevation and Anecdotal Evidence

Clauses 28(1)(b),(e) and (f) of the **Conservation Authorities Act** (set out below) form the legislative basis upon which conservation authorities in the province have made regulations approved by the Lieutenant Governor in Council, known generally as the Construction, Fill and Alteration to Waterways regulations. The regulation of the GRCA is O. Reg. 154/86, as amended by O. Reg. 631/88, now being the consolidated Revised Regulation 149/90.

The GRCA, which was initially established as, two bodies, the Grand River Conservation Commission by **The Grand River Conservation Commission Act, 1932**, S.O. 22 Geo. V., c.55, and the Grand Valley Conservation Authority in 1948 pursuant to the **Conservation Authorities Act** became the Grand River Conservation Authority in 1966 pursuant to the **Grand River Conservation Authority Act, 1966**, S.O. 1966, c. 63. It was continued under section 7 of the **Conservation Authorities Act**, having jurisdiction over the Grand River Watershed, which is defined in the 1966 legislation to mean "the area drained by the Grand River and its tributaries" (cl. 1(d)).

28. - (1) Subject to the approval of the Lieutenant Governor in Council, an authority may make regulations applicable in the area under its jurisdiction,
- (b) prohibiting or regulating or requiring the permission of the authority for the straightening, changing, diverting or interfering in any way with the existing channel of a river, creek, stream or watercourse;

.....

 - (e) prohibiting or regulating or requiring the permission of the authority for the construction of any building or structure in or on a pond or swamp **or in any area susceptible to flooding during a regional storm, and defining regional storms for the purposes of such regulations;** (emphasis added)
 - (f) prohibiting or regulating or requiring the permission of the authority for the placing or dumping of fill or any kind in any defined part of the area over which the authority has jurisdiction in which in the opinion of the authority the control of flooding or pollution or the conservation of land may be affected by the placing or dumping of fill.

Clause 28(1)(e) of the legislation specifically gives conservation authorities throughout the province the authority and responsibility to define the regional storm which meteorologically could occur over the watershed under their jurisdiction. There are three storms which are found described in the thirty-seven sets of conservation authority regulations, that of the Hurricane Hazel storm or the 100 year storm, the flood produced by the Timmins Storm or the 100 Year Flood, whichever is greater; and the 100 Year Flood (found at Figure 1, page 7, of the Provincial Flood Plain Planning Policy, Ex 4 Tab 9).

It must be recognized that there is a random element to the tracking of storm events. Storms of the magnitude of Hurricane Hazel, the Timmins storm or a 100 year storm have not occurred in recent history over every portion of every watershed for which the regulatory flood has been determined. Therefore, it has been necessary to use hydrological and hydraulic models to predict where the floodline elevation would be during the applicable storm event.

The remoteness of this statistical probability cannot be questioned. The authority to draw the regional storm flood line elevations is found in the legislation, not policy or guidelines. There is no discretion in either the GRCA or the tribunal in applying this standard. The only question is which storm applies. The determination of which storm is based upon meteorological analysis which is compiled in Figure 1 of the Implementation Guidelines and the definition which corresponds to the correct storm event is set out in the regulation. Found in section 1 of the revised regulation, the definition is:

1. In this Regulation,

"regional storm" means a storm producing in a forty-eight hour period in a drainage area of,

- (a) ten square miles or less, a rainfall that has the distribution set out in Table 1, or
- (b) more than ten square miles, a rainfall such that the number of mm of rain referred to in each case in Table 1 shall be modified by the percentage amount shown in Column 2 of Table 2 opposite the size of the drainage area set out opposite thereto in Column 1 of Table 2;

Table 1

73 mm of rain in the first 36 hours
 6 mm of rain in the 37th hour
 4 mm of rain in the 38th hour
 6 mm of rain in the 39th hour
 13 mm of rain in the 40th hour
 17 mm of rain in the 41st hour
 13 mm of rain in the 42nd hour
 23 mm of rain in the 43rd hour
 13 mm of rain in the 44th hour
 13 mm of rain in the 45th hour
 53 mm of rain in the 46th hour
 38 mm of rain in the 47th hour
 13 mm of rain in the 48th hour

Table 2

COLUMN 1 Drainage Area (in square kilometres)	COLUMN 2 Percentage
26 to 45 both inclusive	99.2
46 to 65 both inclusive	98.2
66 to 90 both inclusive	97.1
91 to 115 both inclusive	96.3
116 to 140 both inclusive	95.4
141 to 165 both inclusive	94.8
166 to 195 both inclusive	94.2
196 to 220 both inclusive	93.5
221 to 245 both inclusive	92.7
246 to 270 both inclusive	92.0
271 to 450 both inclusive	89.4
451 to 575 both inclusive	86.7
576 to 700 both inclusive	84.0
701 to 850 both inclusive	82.4
851 to 1000 both inclusive	80.8
1001 to 1200 both inclusive	79.3
1201 to 1500 both inclusive	76.6
1501 to 1700 both inclusive	74.4
1701 to 2000 both inclusive	73.3
2001 to 2200 both inclusive	71.7
2201 to 2500 both inclusive	70.2
2501 to 2700 both inclusive	69.0
2701 to 4500 both inclusive	64.4
4501 to 6000 both inclusive	61.4
6001 to 7000 both inclusive	58.9
7001 to 8000 both inclusive	57.4

Based upon the evidence of Mr. Rungus, which the tribunal accepts, Hurricane Hazel is the standard used for the regional storm by the GRCA. The tribunal finds that the GRCA has exercised its jurisdiction, found in clause 28(1)(e) to define the regional storm and has done so. Through hydrologic and hydraulic modelling, the regulatory floodline elevations have been determined, resulting for purposes of this hearing, in the plotting of the regulatory floodline set out in pink on Exhibit 15.

With respect to the drawing of the regional flood line elevation, the tribunal accepts the evidence on behalf of the GRCA, particularly the explanation of Mr. Rungus, that revision of the regulatory floodline became necessary after actual flooding was observed. The evidence has shown, to the satisfaction of the tribunal, that actual stream gauge data, not available during the original modelling, along with documented storm events resulting in flooding which exceeded what had previously been predicted for severity of the storm event, is a valid reason for re-examining and ultimately re-drawing the regional floodline elevation. It should be noted that this re-drawing was not done as a result of speculation or the work of unqualified technicians. Rather, the evidence is, and the tribunal accepts its truth, that it was necessary to hire professional consultants to recalculate the regulatory floodline based upon new information which was not available at the time the original modelling was completed.

While evidence on behalf of the appellant did not challenge this modelling directly, the rationale behind the evidence was that flood levels projected on the mapping have never been observed. The tribunal accepts the truth of this evidence by and on behalf of Mr. Chalmers, and indeed on behalf of the GRCA witnesses, that actual flooding of the building envelopes or Tallwood Drive has never been observed. Indeed, there is no dispute that extensive flooding comparable to that which will be experienced in a regional storm has not been observed. However, this is not the test which the legislation anticipates.

Anecdotal evidence is limited by the chance element of history, in terms of occurrence of a major flood event and in terms of being on the ground to observe resultant flooding. The fact that there has been no documented history of flooding at the regulatory floodline elevation does not serve to disprove the correctness of its location on the ground and is of limited assistance to the tribunal. The purpose of the regulatory flood line, which is sanctioned by clause 28(1)(e) of the **Conservation Authorities Act**, is to delineate those lands which will be subject to flooding during an extreme flood event. The remote probability that it will occur is understood by the definition of a regional storm. The anecdotal evidence merely serves to support the evidence on behalf of the GRCA that the regional storm has not occurred at the Chalmers location. It does nothing to dispel the considerable engineering evidence of the location of the applicable floodline elevation for purposes of establishing the jurisdiction of the GRCA on the question of whether construction will be allowed to take place.

In a comparison between anecdotal evidence and the regulatory floodline, in the absence of meteorological or hydrological evidence that the regional storm has actually been observed for the watershed, the tribunal finds that it prefers the modelling evidence of the regional floodline as being indicative of the extent potential flooding for purposes of making a determination pursuant to clause 28(1)(e). Based upon the evidence of Mr. Rungus from Table 3 of his witness statement, supported by the floodplain mapping (Ex. 15) and related engineering work by Philips Consulting, the tribunal finds that the regional floodline elevation at the Chalmers site is 324.8 metres.

Relying on Table 3 of Mr. Rungus's witness statement, the tribunal finds that access along Tallwood Drive to the proposed driveways leading to the building envelopes will be flooded to a depth of 0.8 metres or 2.5 feet. Based on this evidence, the tribunal finds that the building envelopes would be flooded to a depth of 1.8 metres prior to the placement of the proposed fill.

The issue of whether the Shand Dam is being managed properly to ameliorate flooding conditions at the Chalmers site, the tribunal relies on the evidence of Mr. Lorant where he states that reservoirs and dams in Ontario are not designed to cope with a regional flood. Rather, they are operated so that water coming into the dam or reservoir will be released. The tribunal finds that it will accept Mr. Lorant's evidence that the existence of a dam and how it is operated is irrelevant for purposes of calculating the regional floodline elevation. The tribunal finds that it is not the purpose of the Shand Dam to be operated so as to protect new development and fill in the flood plain.

Concerning the issue of flooding resulting from ice jams, the tribunal finds that it accepts the evidence of witnesses on behalf of the GRCA in finding that the site is prone to flooding from ice jams, which occur downstream at the covered bridge, a man-made barrier to the passage of ice. Based upon the evidence of Mr. Rungus, taken from Table 4 of his witness statement, the building site has been flooded due to ice jams once in the past 27 years, in 1981. This flood elevation is 323.0, which on the Site Plan (Ex. 16) runs through most of the western building envelop, but excludes the septic bed, and touches only the corner of the eastern building envelop, but encompasses most of the septic bed.

The issue of whether the dense tree cover would act as a barrier to ice jams was presented in evidence at the hearing. With the exception of Mr. Lorant, the witnesses on behalf of the GRCA could not indicate whether the ice could move beyond the trees, with the suggestion by Mr. Haley being that to do so, the ice would have to go over top. Mr. Lorant indicated that the trees would serve to break up the ice, so that it would be able to move between the trees in smaller pieces. Mr. Chalmers and Mr. Haley gave evidence that the trees would be an effective barrier to ice movement. The issue, however, would appear to be one not of actual ice damage, but rather one of increased flooding due to ice jamming occurring on the river. As stated by Mr. Lorant, the covered bridge poses a barrier to the downstream movement of ice, in much the same way piers do. The impact of a downstream ice jam would be to cause flooding to upstream reaches, and this is clearly shown in Table 4 of Mr. Rungus' witness statement. To the extent that the lower lands offer storage for chunks of ice, the tribunal finds nothing in the proposal would interfere with the available storage on the lands beyond the trees.

Using the Topographic Map (Ex. 15), and photographs 11 and 12, which are located on the opposite site of the Grand River from the Chalmers property in the vicinity of the covered bridge, the extent of flooding can be extrapolated to the Chalmers site. 323.0 metres corresponds with 1059.7 feet.

The tribunal finds that it accepts the evidence of Mr. Rungus, that increases in local velocities which would be created by the proposed filling would be by a factor of 12 percent, or 4.93 feet per second. Across the channel, the local velocities would increase by a factor of nine per cent.

Applicable Policy(ies) and the One Zone and Two Zone Concepts

The test for whether the tribunal will adopt the policy or policies applied by a conservation authority is set out in a number of previous cases (**Lacelle v. Rideau Valley Conservation Authority**, unreported, CA-013-91, January 16, 1995, commencing at page 25; and **Strey v. Lakehead Region Conservation Authority**, unreported, CA-004-94, April 6, 1995, commencing at page 19). The test, adopted from **Segal v. The General Manager, The Ontario Health Insurance Plan** (Gen. Div. Div Ct.) unreported, 347/94, November 23, 1994 has four parts:

1. Consider the policy and determine whether generally it will be adopted or rejected by the tribunal
2. If adopted, it need not be reconsidered, unless a party pleads exceptional circumstances.
3. If rejected, the tribunal will give reasons.
4. If adopted, consider whether it is reasonable to apply the policy in the circumstances.

The GRCA has, by resolution 153-91 on June 14, 1991 (Ex. 4, Tab 10) endorsed the Provincial Flood Plain Planning Policy Statement, 1968 and indicated that its policies, procedures and guidelines will be updated to reflect the

- (1) the Authority's implementation of the policies in support of the Provincial Floodplain Planning Policy Statement, 1988;
- (2) 1980, 1986 and 1988 amendments to the Regulation; and
- (3) other policy decisions related to administration of the regulation made by the Executive Committee in recent years;

Mr. Olah has submitted that the tribunal consider the Provincial as well as the GRCA Policy in making its findings. With respect to the West Montrose Settlement Area, the GRCA has presented evidence that the one zone concept area is applied and the tribunal finds it is a fact that the Chalmers site is within a one zone policy concept area. The tribunal has determined that it will apply technical provisions of the Provincial Policy statements in consideration of technical issues (c.f. **Bye v. Otonabee Region Conservation Authority**, unreported, November 19, 1993, CC.1357). Therefore, with respect to the first test, the tribunal has considered the technical aspects of the Provincial Policy Statement in at least one previous case and has found generally that such provisions will be adopted. This means that, while the Provincial Policy deals with planning issues and will take into account economic and social factors, its provisions will only be recognized to the extent that they deal with issues of flooding, safety, risk to loss of life, property damage and costs associated with flood events.

The issue of two zone concept was introduced by the GRCA to attempt to persuade the tribunal to conclude that this area could not be considered as a two zone concept, or even if it were, the Chalmers' lands would be located in the floodway so that the proposal could not proceed in any event. As has been stated in **Strey v. Lakehead Region Conservation Authority**, unreported, April 6, 1995, CA-004-94, p.26:

the two zone concept is not one which can be applied unilaterally by this tribunal, but is instituted by the process and series of evaluations set out in Appendix B to the Implementation Guidelines [of the Flood Plain Planning Policy].

Notwithstanding the above, the GRCA has taken the position that the Chalmers building envelopes would not qualify for a two-zone concept because of frequency of flooding due to a combination of storm and ice jam events is more than once since 1948 and the depths at the building envelopes of 1.8 metres is in excess of the 1.2 metres (Ex. 4, Tab 11). It was suggested that the site is marginally acceptable for purposes of access, being 0.8 metres, increased velocities, being 12 and 9 percent in the adjacent channel being 4.93 feet per second adjacent to the building site, and increased flood levels upstream, being 1.9 inches.

However, viewing the Two-Zone Policy Area General Approach (Ex. 4, Tab 4), the criteria set out under the heading "Determining the Flood Fringe", it is the upstream velocities, along with flood levels, which are considered. The evidence presented on behalf of the GRCA introduces velocities for the channel at the site itself. Indeed, even though no evidence was led on the Totten Simms Hubicki report, a review of the covering letter to the model information indicates in paragraphs 4 and 5 that channel velocities were reported only for cross-section 144.5 and not for 145. The letter indicates that hydraulic modelling was performed, but there is no indication that hydrologic modelling was done.

There is considerable technical information contained in the Implementation Guidelines for the Flood Plain Planning Policy, found in Appendix "B", Application of the Two-Zone Concept Factors to be considered, commencing at page 108 and in Appendix "D", Floodproofing in Ontario, commencing at page 129. Only portions of these Guidelines were entered as an exhibit (Ex. 4, Tab 18), but it is sufficient to indicate that there is a process for purposes of having a stretch of a river considered for the Two-Zone Policy Concept.

Mr. Chalmers has heard sufficient opinion evidence at the hearing to indicate to him that, although Mr. Rungus has indicated not all of the calculations have been done, nonetheless, it would appear that the staff of the GRCA would not support an initiative to have these lands or West Montrose considered as a two zone concept. Whether the board would agree is not known. It is suggested that the process exists, and Mr. Chalmers is free to avail himself of it.

This tribunal makes no findings on the issue of whether this area could qualify as a two zone concept area, or in the event it does become two zone through proper channels, whether the building envelopes would be in the floodway or flood fringe. From a purely technical perspective, the calculations have not been exhaustively performed.

Safe Access and Egress

There is no issue that the depth of flooding on Tallwood Drive would be in the neighbourhood of 0.8 metres during a regional storm, although Mr. Haley has maintained that this depth would be 0.78 metres. The tribunal finds that it prefers the evidence on behalf of the GRCA as to the actual depths which would be experienced.

It has been suggested that such depths are marginal for purposes of street access for purposes of the flood fringe, based upon the Implementation Guidelines. Referring to the Implementation Guidelines (Ex. 4, Tab 18, page 37), a low risk hazard would be the product of depth and velocity of less than or equal to 0.4 metres squared per second (m^2/s) or 4 ft^2/s , where depth does not exceed 0.8 metres and velocity does not exceed 1.7 metres/second or 5.5 feet/second. While there are no calculations provided in evidence for velocities along Tallwood Drive or the driveways, even if the velocities were the same as calculated at the south end of the building envelopes of 4.92 $ft/sect$, it would appear that the proposal would provide safe access by foot. Vehicular access of regular sized private vehicles would not be possible, as their range is 0.3 to 0.5 metres. Large emergency vehicles would be able to pass, having a range of 0.9 to 1.2 metres.

In consideration of the second part of the test, the GRCA has pleaded exceptional circumstances, in that only emergency vehicles could access the dwellings under regional storm flood conditions, access by foot would be dangerous and a considerable distance must be travelled in order to reach land above flood levels. While the first two concerns appear to be within the scope for low risk hazard, the distance to be travelled is not mentioned in the Guidelines.

The western building envelop has attached to it a driveway of 60 metres, a substantial portion of which would be below the flood line elevations for even the five year storm event, according to slide 13 which formed part of Mr. Rungus' evidence (Ex. 22) At this and the 20 year storm, it would still be possible to locate the entrance to the driveway which would not be submerged. However, the 50 year storm would see all of the end of Tallwood Drive under water, so that the only way to locate the driveway would be with the level gauges, the effectiveness of which is in question. Their design does not guarantee that they will remain undamaged during snow removal. Moreover, during nighttime or heavy rain and low visibility conditions, these gauges, if damaged or not visible, would be of marginal use.

The eastern building envelop has a shorter driveway, by a factor of two thirds. While comments above concerning locating the entrance of the driveway apply, there is another factor which creates additional danger. The east side of the driveway skirts the Chalmers' pond, whose existence would be apparent only during the five year event. During the 20 year event, the entire area beyond the pond up to half of the footprint of the Chalmers' garage would be under water. The very real possibility exists of a vehicle going off the driveway and ending up in the pond, whose depths are not known but evidence at the hearing indicates that it is deep enough for swimming. The existence of this pond adjacent to the driveway poses a very real danger for all vehicles in a storm event equal to or greater than the 20 year storm.

With respect to the second test, the tribunal finds that the distance to be travelled, as pleaded by the GRCA, coupled with the danger of the inability to differentiate the adjacent pond in the case of the eastern building envelope are sufficiently exceptional circumstances to warrant departure from adoption of the Provincial Policy in this case. The tribunal finds that, based upon the Implementation Guidelines only, access to the two building envelopes is marginally within the acceptable limits. However, due to the inability to align with the foot of the driveway for those entering the properties, the existence of an adjacent point which cannot be differentiated under flood conditions associated with a 20 year event, the distance to be travelled and absence of evidence on how this distance would not pose a problem to foot access, safe access cannot be attained for the proposed construction.

Upstream and Downstream Impacts and Cumulative Impact

Mr. Dyer, who performed calculations for flood levels resulting from the proposed placing of fill as well as upstream and downstream impacts, in his capacity as Senior Water Resources Engineer of Totten Simms Hubicki Associates, was not called as a witness on behalf of Mr. Chalmers. The reasons given were financial constraints, as well as an indication that Mr. Dyer is no longer with the company. The tribunal found that it would not permit Mr. Haley to give evidence on the resultant report (Ex. 2, Tab Exhibit C) because there was no opportunity to cross-examine Mr. Dyer. Mr. Olah has invited the tribunal to conclude that an adverse inference must be drawn from the failure to call Mr. Dyer as a witness.

The meaning of this rule is set out in Sopinka and Letterman, **The Law of Evidence in Civil Cases** (Toronto: Butterworths, 1974) at the bottom of page 535:

In Blatch v. Archer¹

The application of this maxim has led to a well-recognized rule that the failure of a party or a witness to give evidence, which it was in the power of the party or witness to give and by which the facts might have been elucidated, justifies the court in drawing the inference that the evidence of the party or witness would have been unfavourable to the party to whom the failure was attributed.

The tribunal has considered the excerpt from Sopinka and Letterman, found at pages 535 to 537, as well as two cases submitted by Mr. Olah, **Vieszorek v. Piersma** (1987), 58 O.R. (2d) 583 and **Levesque v. Comeau** (1970) 16 D.L.R.(3d) 425. An adverse inference is drawn when certain facts or information which would assist in a determination is known only to a witness who has not been brought forward as a witness. The tribunal finds that this is not the case with respect to the evidence of Mr. Dyer, which would have been in his capacity as a water resource engineer and therefore based on similar raw data as was available to Mr. Rungus, not valuable proprietary information. The fact that data was treated differently between these two witnesses (Mr. Rungus indicated that he used some of Dyer's data and in turn did sensitivity work, rather than the extrapolated data used by Dyer) is not an indication of the existence of facts

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¹(1774), 1 Cowp. 63, at 65. "It is certainly a maxim that all evidence is to be weighed according to the proof which it was in the power of one side to have produced, and in the power of the other to have contradicted."

or data which were known only to Dyer. The tribunal finds that, although there are inherent risks in presenting an appeal without a qualified expert witness to speak in support of the proposal, in law this is not a situation from which an adverse inference can be drawn, as similar if not the same data are readily available to the experts on behalf of the respondent.

The tribunal finds that it will accept the evidence of Mr. Rungus for purposes of determining the actual impacts of the proposed filling. The resultant impacts are found to be an increase in flood line elevations upstream of 1.9 inches at cross-section 145. Increased velocities within the channel adjacent to the site are 9 percent on the far bank and 12 percent on the subject lands. Actual velocities at the south end of the western building envelop are 4.93 feet per second.

Based upon calculations performed through Mr. Haley in cross-examination, the tribunal finds that the amount of fill proposed to be used would be in the range of 1760 and 2400 cubic metres. This filling would create two islands within the flood plain and with respect to the western building envelope and septic bed, would extend approximately 1/3 of the width of the flood plain. The distance to the rear of the western building envelop, based upon the evidence of Ms. Caston, is 280 feet or 85 metres, with the width of the entire flood plain at cross-section 144.5 being 256 metres or 840 feet.

The measured impact of the proposed filling is not negligible. The very fact that an increase in flood level elevations of almost two inches is measured speaks to this. While within the parameters of 0.1 metres increase for a two zone concept approach, it must be remembered that two zone concept areas are created through procedures which provide for examination of upstream and downstream impacts, with mitigating measures undertaken, such as channel improvements or dykes. There is no evidence of channel improvements along this stretch of the Grand, nor is there evidence of dykes having been constructed in the adjacent trailer park.

The tribunal finds that the upstream and downstream impacts of proposed development must be calculated on a sub-catchment or local reach basis, being consistent with the Provincial Flood Plain Planning Policy and Implementation Guidelines. There is insufficient evidence on the impacts of the proposed filling for the tribunal to be satisfied that upstream and downstream impacts are negligible. Mr. Haley has suggested that it is sufficient to examine the local impacts, but the tribunal finds that it is not persuaded by this argument. The impacts of urbanization on a watercourse are well documented. One example is that of what happened on the Scarborough Golf Club lands when significant urbanization took place upstream over a period of 20 years. The lands upstream were rendered less permeable, resulting in a shorter residence time of regular rain water. Greater quantities of water entered the watercourse more quickly, resulting in considerable erosion and flooding of the golf course lands.

The tribunal finds that the upstream impacts on the flood line elevation from the proposed filling are not insignificant, within the confines of a one zone policy concept area. Cumulative impact must be considered on the basis of the entire watershed, for purposes of sound watershed management. In the absence of circumstances to offset the resultant increases in flood elevations, such as would be created by cut and fill, channel improvements or dykes, any measurable impact in a one zone policy area is found to contribute to the cumulative impact of engineering dynamics within the watershed.

In addition to the engineering impacts of the proposed development, the tribunal finds that the proposal does not adequately address soil erosion concerns raised by the GRCA. Based upon the quantity of fill proposed and the absolute velocities calculated for the southern end of the building envelopes, there exist very real concerns which have not been addressed as to the stability of the proposed fill, the potential danger to inhabitants caused by potential erosion and the impacts on the fisheries and downstream areas of the erosion which would take place under severe storm event conditions. A proposal involving 1.9 metres of fill at a 3 to 1 slope, subjected to velocities of nearly 5 feet per second, requires convincing evidence of stability, before approval can be given. The inherent risks of instability are too great to allow this activity to take place without adequate information of the extent of protective measures to be undertaken.

Storage Capacity

There is little evidence as to the loss in storage capacity caused in the flood plain through allowing accessory uses, with the exception of an admission from Mr. Lorant that some storage capacity is involved. Having found that it will apply the Provincial Flood Plain Planning Policy and the GRCA policy, it must be recognized that existing residential uses within a one zone policy area within the flood plain are not precluded from certain uses of their land. It is also clear from the evidence that accessory uses have not permitted filling, with the exception of fill to level out an area, such as the tennis courts, taken from an adjacent excavation, such as a pond.

Even in cases such as a garage or the municipal pumphouse, the loss in storage capacity can be roughly estimated, with dimensions of 10 metres by 10 metres and flooding along the walls to a depth of 1.9 metres, the resultant storage capacity loss would be in the neighbourhood of 200 cubic metres, considerably less than the proposed filling of between 1,760 and 2,400 cubic metres.

The effect of the policies in allowing accessory uses and municipal infrastructure is to prevent the sterilization of existing development. Mr. Chalmers has benefited from this, through construction of his pond and garage. Loss of storage capacity from permitted accessory uses falls within the measurable risk discussed in the decision of **Lacelle v. Rideau Valley Conservation Authority**, unreported, January 16, 1995, CA-013-91, at the top of page 32:

The policies of an authority amount to analysis of acceptable risk in a given watershed. There is no suggestion that properties falling within the allowable exceptions are not subject to flooding. Rather, they represent a determination that the extend of flooding which may occur is acceptable, not creating a risk to loss of life or risk of unacceptable levels of priority damage.

This is further supported by the fact that the GRCA would allow the Crutcher garage to go forward only if there was no plumbing installed, which would create the first step towards new residential development in the flood plain.

Floodproofing and Caution on Title

The proposed structures are to be placed above the regional flood line elevation, on concrete slabs, so that the placing of fill could be considered to be the floodproofing measures for the houses themselves. As stated above, there is no evidence that the fill will be stable at a 3 to 1 slope when subjected to the calculated velocities. As such, the proposed floodproofing cannot be found to be adequate, as there is no evidence to address the erosion concerns.

There is also no evidence concerning the floodproofing of the septic beds and associated pollution concerns if there is seepage due to flooding.

Finally, while cautions on title have been accepted by conservation authorities in certain circumstances, and adopted by the tribunal, such as in the Allerton case, the fact situations under which such cautions may be acceptable needs further clarification.

No reasons were issued with the **Allerton** Order, a practice of the tribunal which obviously needs to be changed in the future, and therefore, no comments can be made to bring out the facts behind the order. The **Allerton** decision can be distinguished on the basis, however, that it was made on consent of the parties. The merits of this appeal are such that they can be considered marginal at best on the basis of a two zone concept area would be considered marginal at best and far short of marginal on the basis of the one zone concept. Until presented with a situation far more persuasive of meriting permission than the facts of this case allow, the tribunal will be loath to impose the acceptance of conditions on title on an authority, where it has not accepted this course of action through the pre-hearing mediated solutions. Therefore, the tribunal finds that it is not persuaded that this there is sufficient strength in the appellant's case to warrant the granting of permission with conditions.

Added Costs of Emergency Operations, Evacuation, and Restoration

Resulting costs from new residential development in the flood plain susceptible to emergency measures and damage during and after a regional storm fall within the ambit of acceptable risk. It is the policy of the GRCA and the Province to use prevention of new development in the flood plain in a one zone concept area as a means of reducing costs.

Two additional dwellings would place additional strain on emergency and evacuation operations currently existing, in an area which is low density to being with. Added to this is the very real cost of restoration which, notwithstanding the proposed caution on title, does not provide a disclaimer for liability for costs, nor is it clear whether it would be an unwitting insurance company which would be saddled with this expense, or the prospective purchaser or purchaser following a succession of previous owners.

The tribunal finds that there are sufficient costs associated with emergency and restoration measures for the proposed construction whose existence is predicated on marginal if not outright failure to meet technical considerations set by the Implementation Guidelines.

Precedent

While the amount of proposed fill is not in the same order of magnitude of the proposed filling of the valley of a first order stream, as was the case in **611428 Ontario Limited v. Metropolitan Toronto and Region Conservation Authority**, nonetheless, it does represent a substantial encroachment into the flood plain. Looking at the Topographic Map of the Grand River Valley Watershed (Ex. 15), the Chalmers property lies in an elongated triangular area of flood plain which runs from beyond the bridge at Regional Road #86 to the covered bridge downstream. While it is recognized that there is no vehicular infrastructure throughout this stretch of the flood plain, with the exception of Tallwood Drive, nonetheless, this represents an area within the West Montrose Settlement Area which is vastly under utilized from a development perspective, when the existence of the flood plain is ignored. Within the immediate vicinity, the trailer park lands could be considered underutilized. If permission were granted, the trailer park owners could come forward with a similar proposal to develop their lands with permanent residences and infrastructure to a distance of 85 metres from the boundary of the flood line elevation. In effect, this would result in a redrawing of the boundaries of the flood plain, resulting in considerable additional upstream increases in flood line elevations and increased velocities downstream.

Mr. Haley has introduced considerable evidence to support his position that the Chalmers lands are unique, thereby not providing the basis upon which to create a precedent. The characteristics which he submits are unique include the presence of a municipal road, the only developable lands on this stretch of Tallwood Drive, and the presence of considerable tree cover to act as a buffer during times of ice jams. From the perspective of watershed management, these factors are not found to be sufficiently unique as to constitute persuasive reasons for the granting of permission. The existence of the road could be considered a mistake resulting from the history of the drawing of the floodline. The circular end of Tallwood Drive is now recognized as being a stretch of road which, during a regional storm, will disappear under water. Infilling and the existence of a small number of developable lots within a residential area are matters which are left to a conservation authority and the municipality when considering whether a portion of the flood plain will have applied to it the two zone approach. In applications and appeals under section 28 of the **Conservation Authorities Act**, availability of land for infilling must be considered as irrelevant, in the absence of a decision having been made to apply a two zone concept. The issue to be determined is whether the watershed can support the proposed development with respect to control of flooding, pollution and the conservation of land. As has been stated elsewhere, the fact that a municipality may deem lands suitable for development does not serve to supersede the jurisdiction of a conservation authority to ensure that the watershed can withstand the proposed development. Finally, the tribunal finds that there is no evidence to suggest that ice jams will come up over the trees and cause ice damage to the proposed building envelopes. While not succinctly stated by the GRCA, the ice jams are most likely to occur at the covered bridge downstream, causing flows and ice to back up. The lower

portion of the Chalmers lands, as well as those of the entire triangle described, will provide storage for the huge blocks of ice. While, as Mr. Lorant has suggested, the trees may serve to break up the ice, so that it passes through in smaller chunks, the tribunal is not satisfied that the building envelopes will be subject to damage from huge chunks of ice. Rather, they will be subject to the flooding which may occur as a result of the jamming.

Concerning the question of whether the accessory and municipal infrastructure uses constitute a binding precedent which must be followed in determining this appeal, the tribunal finds that there is a clear distinction between these uses and that of new residential development. The former are designed to minimize impact in the flood plain and more particularly, do not put additional people at risk in regional flood conditions. Concerning the fact that Mr. Chalmers believes he has been misled, or that the actions of the GRCA have contributed to a false sense of complacency, the tribunal finds that the situation could have been clarified through inquiries with the GRCA. The position of the GRCA is clear, and is supported by the Provincial Policy and Implementation Guidelines, which make a distinction between recreational uses and municipal infrastructure. With respect to the garages, while it is arguable that these do adversely impact on the flood plain, it is recognized by the tribunal that the GRCA and other conservation authorities will allow such structures to be built, as well as minor residential additions in some cases, in an effort to avoid sterilization of existing dwellings in the flood plain. This does not constitute precedent for new residential development, which involves orders of magnitude more fill, loss of storage capacity and most particularly, puts a whole new group of individuals at risk who would otherwise not be affected by flooding. It is this fact, that of risk to loss of life, which is associated with new residential development, which the tribunal determines is the distinguishing factor in finding that accessory and municipal infrastructure uses do not constitute a precedent.

The tribunal finds that it accepts the evidence of Ms. Caston and Ms. Minshell that sufficient similarly located vacant lands exist within the watershed that would not be able to be differentiated from a watershed management perspective. The most important aspect of this proposal is the extent of the encroachment into the floodplain. The proposed filling is not to take place for a few feet along the edge of the floodplain. It is a bold step of moving well into the flood plain. The proposal is purporting to redraw the limits of the floodplain on the Chalmers lands by effectively saying that the lower 1/3 to 1/2 of his land is all that the river should require. The suggestion that the flood plain is wide enough and all of the lands encompassed are not needed for flood storage is not acceptable. Encroachments such as would be involved in this proposal in a one zone policy area would effectively negate the difference between the two types of zones. The two zone concept is not readily available to all reaches of a river system upon which there is adjacent development within or near the flood plain. While the economic viability of a community may be a factor, the existence of channel improvement or dykes, as well as an analysis of the entire reach for upstream and downstream impacts will be determinative.

The tribunal finds that granting permission in this case would constitute a precedent for new residential development of other portions of the flood plain in one zone concept areas, involving considerable placing of fill which has measured impacts upstream. It is found that those residing, visiting or providing services to the new residences would unnecessarily be placed at risk. Moreover, it would provide precedent for granting of permission in other cases without the necessary calculations being performed on a reach or subcatchment

basis, thereby putting unknown others at risk from increases in flood elevations upstream or increases in flood velocities downstream. If allowed, the Chalmers proposal would amount to a rewriting of the Provincial Policy in respect of new development in the floodplain for areas within a one zone concept area, being a precedent of such an order of magnitude that it cannot be allowed. The tribunal finds that it will adopt the words of Mr. Lorant, whose expert evidence matters of watershed management bears considerable weight, in finding that the proposed filling and construction poses a dangerous precedent, both in terms of the Chalmers land itself and on the ability of this and other conservation authorities to manage watersheds within their jurisdictions.

Costs

Mr. Olah has asked for permission to make submissions on the issue of costs, should the appeal be dismissed. The tribunal indicated at the end of the hearing of final submissions that additional submissions on costs could be made, if the outcome was a dismissal. This being the case, the tribunal will make arrangements with Mr. Olah and Mr. Haley for receiving submissions on the matter of costs.

Sections 126 and 127 of Part VI of the **Mining Act** deal with the issue of awarding of costs, and by virtue of subsection 6(7) of the **MNR Act**, Part VI of the Mining Act applies with necessary modifications to the exercise of authorities, powers and duties assigned to the Commissioner under clause 6(6)(b). As the representatives of the parties are aware, subsection 28(5) of the **Conservation Authorities Act** provides for an appeal to the Minister of Natural Resources. The powers and duties of the Minister have been assigned to the tribunal by regulation. In addition to receiving submissions on the issue of whether the facts of this case are deserving of an award of costs, the tribunal would like to receive submissions on the question of whether an award of costs is appropriate where the appeal is allowed by legislation to the Minister.

Conclusions

In view of its foregoing findings, the tribunal dismisses this appeal..