Presentation to: Members of the Panel of the Future of the Trent-Severn Waterway.

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Please accept the following comments and suggestions as part of the public input solicited for the Panel Review of the future of the Trent-Severn Waterway

I moved, with my family, to Peterborough in November 1967 from the UK to take up a position as sessional lecturer in the Department of Biology at Trent University. Over the years, I taught and researched in the areas of plant biology, physiology and ecology.

You cannot imagine my surprise to discover that this new university was built on the banks of such a beautiful river, in which the water was clear and not muddy and polluted, as was the case, and still is, with most rivers in the UK. Additionally, I was amazed to discover that the campus covered an area of 1500 acres of diverse habitats, which included much land along both river banks, some of which was in a relatively natural state. I will say more about this later.

On the other hand, I was dismayed to find that much of the Otonabee River bank in the City of Peterborough had been developed and that the beauty and natural features of the river were not being exploited for their aesthetic, recreational and tourist values. This, though has changed and the City by creating a park, marina and walkways is now making good use of the river for these purposes.

Peterborough also has a policy of purchasing properties on the riverbank along Water Street between the downtown area and Trent University to create a linear park. In the early 1990's I was part of a group that lobbied successfully to convince the City and PUC (PUS) to purchase riverbank property from a developer who was proposing to build condominiums on a former motel site. This land was added to the north end of the very successful and popular Riverview Park and Zoo.

An early purchase I made was a copy of the "Rideau-Trent Severn Yesterday Today Tomorrow" report by the Canada-Ontario Rideau-Trent-Severn Study Committee (CORTS report) on the recreational development of the system. This document was used a source for many enjoyable family day trips along the system.

In the above CORTS report on page 7, under the "Need for a Plan" I am still struck by the statement:

> ***"Poorly planned private development endangers the future of the waterway corridor. If construction of vacation homes continues to increase at the present pace, little open space or natural area will be left"***

Forty years later guess what? The same lament plus some other issues that the panel has identified as affecting the waterway system in its introduction/background information on its website.

We, European immigrants and their offspring, have managed in less that 175 of so years to eliminate or modify all virgin vegetation, mainly forest, not only from along the Trent Severn Waterway, but throughout southern Ontario. It took a couple of thousand years to do the same thing to the vegetation of the United Kingdom where the last remaining virgin forest is believed to have disappeared in Henry VIII's time.

There are some relatively undisturbed natural areas in southern Ontario that are reasonably similar to the virgin forest existing when European settlement began. I believe that such remaining relatively undisturbed natural areas along the TSW should be protected and remain undeveloped for future generations. Waterway users, whether boating on the system or day visitors to locks and other sites, and school children and students deserve the chance to visit use such areas for education and research, and for aesthetic and recreational purposes as a reminder of our natural heritage

An example of untoward development of a relatively undisturbed natural area on the Trent-Severn Waterway is proposed here in the City of Peterborough. A narrow,1.4 km long stretch of river bank at the north end of the City and adjacent Smith Township is threatened by a massive, at least for a mid-sized city, hydroelectric development proposal which will involve gouging out a 15 m wide, 5 km deep, 1.2 km long canal to carry water from upstream of the dam at lock 23 to a generating station, where the dykes will be 8m in height and spread across 90 m of land. This generating station will be located on land south of the dam at lock 22 whereupon the water would re-enter the river. Most of this project will be located on a 13 ha parcel of Trent University land. Eight hectares of vegetation will be cleared, most of which, equivalent to 5 soccer fields in area, is closed canopy woodland.

This major project has been treated by the City and its Planning Department as a "minor variance" to City's Official Plan. This decision is being appealed to the Ontario Municipal Board.

Most of the to-be-affected riverbank property is home to a magnificent, closed canopy, woodland of sugar maples, American beech, black cherry trees, and white cedars and associated biota. The woodland, as you can see, from the panoramic view of about half of the affected river bank, presents a stunning spectacle in the fall of the year. This land, however, has been declared by the current University Administration to be "vacant" and the river bank to be undeveloped. This, however, has not always been the University description of this beautiful river front property, the best stretch of such riverbank vegetation in the City of Peterborough.

The to-be-affected land and most of the campus was purchased and expropriated (the parlance is "endowed") to create what was later named the "Symons Campus". The land area of the campus is about 1450 acres and contains a wide diversity of habitats. The main feature, though, is magnificent - it is the Otonabee River flowing through the campus core.

The reasons for acquiring such a large area and the extensive Otonabee River bank lands are significant and are well explained in a 1964 Peterborough Examiner article that is appended to this presentation. The lands assembled along the Otonabee River were to be

> ***"a continuation of the beautiful river parklands of the city, available for the pleasure of the citizens of the community as much as for the members of the university"*** (President Symons, the first President, quoted in the Peterborough Examiner, March 5, 1964, copy attached).

President Symons and the founding committee went on to stress

> *"**we want to work with the parks board and the conservation authority and other public bodies and citizens who share a concern for conservation, to care for our natural resources"***.

In 1990, the Trent University Board of Governors and the University Senate, by resolution declared that a significant part of this west bank river property was to be included as one of 16 nature areas on the University Campus where

"building and incompatible use will be prohibited".

In 1996, along with two other professors, I was asked by the then President, Leonard Conolly to prepare a "**Stewardship Plan for the University Nature Areas**". University funds were provided to hire assistance and to hire teaching relief for the Departments to which we belonged. A draft stewardship plan (www.trenu.ca/biology/tna) was presented to President Patterson and her Administration in October 2002. Nearly fours years later, in June 2006, after a development plan for the endowment lands had been proposed, completed, and approved by the Board of Governors, the Stewardship Plan was presented to the Board of Governors. The Administration advised that the Plan be put on indefinite hold. The Board agreed.

One of the recommendations in the Stewardship Plan was that all of the west bank of the Otonabee River beyond Woodland Drive consisting of wetland and woodland should be given nature area status. This is the land where the canal is proposed. The University Administration, during preparation of a development plan for lands, rejected this recommendation and also deleted the nature area on the west bank of the Otonabee and part of another nature area to make way for the proposed hydroelectric project.

A significant part of the to-be-affected closed canopy woodland has been described by Professor Dennis McGee, a forestry expert, hired for the past 15 years by Trent University to teach a third year course in forestry management in the Department of Environmental and Resource Studies,

> *"**as the best example of a late succession tolerant hardwood forest on campus even though it is only a forest-fragment"***.

I, many other ecologists, conservationists and members of the Peterborough Field Naturalists, agree with him. It is also the best such example of tolerant hardwood woodland along the banks of the Otonabee River in the City of Peterborough and on the river between Peterborough and Lakefield and likely along the Trent Severn Waterway between Rice Lake and Lakefield.

This west-bank ecosystem includes sugar maples, American beech trees that are over 150 years of age and there are also black cherry and white cedar trees that are over 100 years of age.

A good reason why his area should be considered to be a natural heritage (and historic) site is because it is one of the best remaining examples of relatively undisturbed forest-fragments in the area on the Otonabee River bank and is illustrative of the once vast forest that Susanna Moodie referred to in her book "*Roughing it in the Bush*" when she described a walk on a cold January day in 1839 to Dummer.

> ***"On and on for hours, the same interminable forest stretched to the right and left, before and behind* us"**

She suggested that an apt name for her destination that day might have been

> *"**the last clearing in the world**"*.

Susanna Moodie and Catherine Parr Trail could probably not have imagined or believed that in such a relatively short period during the 20th and 21st centuries that the "**interminable forest**" would be almost completely gone and that the vast majority of people would need some form of motorized transport to get from the clearing to the bush!

This forest fragment and woodland is not just composed of trees but is also home to, and illustrates the many kinds of shrubs, herbaceous plants, fungi and animals from microscopic size to deer that are integral components of this kind of woodland and that helped create its special environment over the course of several thousands of years - it is an ecosystem.

Furthermore, the forest fragment and the woodland has been little disturbed by human activity since being acquired by Trent University in 1964. For 43 years this woodland has been allowed to slowly revert towards the kind of forest that originally grew on this stretch of Otonabee riverbank.

What is more, this beautiful heritage stretch of woodland is adjacent to (really part of?) a National Park and is readily accessible to visitors to the Park who wish to absorb and sense at least a small part of the "interminable" forest, now utterly fragmented, that existed along the Otonabee River before the Europeans arrived.

If, however, the 1.2 km long canal with its 8-m high dykes, protective chain link fences and 2 ha in area and 6 m high spoil heaps, is created, then boaters, day visitors, school children and students will be

presented with an example of man's arrogance at trying to repeat nature. There will be a sliver of an island left between the canal and the river where most trees are likely to die of drought. Visitors and others will experience an artificial mixture of stunted trees, shrubs and invasive species, particularly European buckthorn on the dykes. The two untenable fragments of woodland remaining are likely to have an impenetrable under-storey composed mainly of European buckthorn that will shade out practically all native species.

Just as all the kings horses and men discovered when humpty dumpty took his great fall, all the environmental and landscape consultants in Ontario will not be able to put together again this magnificent stretch of relatively natural river bank environment and its ecosystem. It should be allowed to remain in its current condition and continue to evolve and be available to the Peterborough community, and even for everyone in Canada since it borders a national park, for teaching, research, discovery, aesthetics, and to grace this 1.4 km long stretch of the west bank of the Otonabee as it did when the European settlers first arrived in the area. A remnant of the forest that has been growing here for hundreds, if not thousands of years, deserves more than to be dismissed as 'vacant', undeveloped river bank land. The vision of the founders of Trent University should be respected. It is a valuable natural heritage stretch of river bank woodland on the Trent Severn Waterway, recognised by the founders of Trent University, included in the City of Peterborough' Official Plan as Open Space and that should be preserved and not be irrevocably destroyed.

None of my concerns and comments should be interpreted that I am against the use of the dams at locks 22 and 23 for hydroelectric power production. They may well be suitable sites. An option not explored by Trent Rapids Corporation is to delay using these dams for hydro-power generation until they are refurbished or rebuilt at which time generators could be built into the dams. This could well be an efficient use of taxpayers dollars.

While this option may involve excavation work at the west end of each dam, this is preferable to the tremendous damage to be caused to the terrestrial environment by digging a canal and disposing of the excavated spoil and also would not result in potential detrimental environmental impacts on the section of Otonabee River between the two dams.

This option also would not present the potential threat to water quality and quantity in wells belonging to homeowners along Highway 29(28) that may be caused by digging a canal.

Furthermore, and importantly, the option of installing electricity generators when the dams are refurbished or replaced could well be financially beneficial to Parks Canada since the revenue generated from the power generated could be shared in a partnership between a developer (e.g. PUC Inc) and Parks Canada and be used to help support the Trent Severn Waterway. As an example, revenue generated by electricity power stations existing in dams associated with locks along the Danube River is, I believe, used to support the operation of the lock system along this river.

This way of helping finance the Trent Severn Waterway, and at the same time producing green energy, may well be something that the Panel may wish to explore.

Delay of approval of proposed hydroelectric projects on the Trent Severn Waterway.

A news release from the Ministry of Natural Resources on March 7. 2005 states that

> "**The Ontario Government does not believe that every water power site in the province should be developed for energy purposes. Some more remote undeveloped water power sites may not be economically feasible to develop. In addition, some viable sites should remain undeveloped to meet environmental, natural resource wilderness, and recreational requirements**".

Hopefully, in its deliberations, the Panel will be guided by similar sentiments and come to the conclusion that the 1.4 km of west bank land and related shoreline of the Otonabee River has greater value for its environmental, natural resource, historical, educational and research, aesthetic and recreational values than to be destroyed to produce a relatively small amount of electricity.

As Shaman Power Corp (a 50% partner with PUS Inc of Peterborough in the Trent Rapids Power Corp.) notes on its website http://www.fwsi.ca/shaman.htm

> **"We provide a fraction of the power utilized in the Ontario market through our two non-utility generation stations (NUG's)"**

The hydroelectric project using locks 22 and 23, if approved as proposed with a canal, in the relatively undisturbed environment along a 1.2 km stretch of Otonabee River bank in the north end of the City of Peterborough will make only a minor contribution to the electrical requirement of the Province Ontario but will wreak tremendous, irreversible damage to a 1.4 km section of river bank land of the Trent Severn Waterway.

Consequently, I respectfully urge that the Panel indicate to the Federal Government and Parks Canada that any reviews of hydroelectric projects proposed for the Trent Severn Waterway be postponed until the Panel's review of the Waterway has been completed and the report considered by the Federal Government.

Respectfully submitted,

Yours sincerely,

Roger Jones

Some Specific Environmental Issues

Climate change (i.e. global warming)

An important environmental issue that received scant attention in the Environmental Screening Reports is that of climate change and especially global warming. Practically the only mention of this phenomenon occurs on page 102 in Version 4 of the Environmental Screening Report under item 4.5.2.3 Climate Change

> ***"Climate change could affect generation at a hydroelectric plant in both a positive and negative manner by altering precipitation patterns throughout the year. The recent trend of hotter, drier summers and warmer wetter winters could have the affect (should read effect - RJ's note) of reducing generation during summer months yet increasing production during winter months. It is possible that more steady river flows over the course of a year could be expected .i.e. lower peak flows in spring".***

Climate change (i.e. global warming) is probably the most important environmental influence in our future yet this short, unsubstantiated paragraph is the extent to which climate change and its potential impact on TRPC's preferred Option 1 (the canal on the west bank of the Otonabee River) is addressed in the Environmental Screening Report.

Climate change is surely the most major important factor that has the potential to adversely affect this project environmentally and financially and could result in it becoming a white elephant on the banks of the Otonabee. Huge international conferences are held on this express environmental concern, such as the recent international conference in Bangkok, Thailand. Trent University hosted presentations about Climate Change at the Holiday Inn on Thursday (May 17, 2007).

Instead, there is much hype in the Screening Report that Option 1 will reduce carbon dioxide emissions by 0.02 to 0.03 kilo-tonnes per year which is an insignificant reduction since emissions in Ontario and Canada are measured in tens and hundreds of mega-tonnes per year. The TRPC claim of a reduction of 30,000 tonnes per year of carbon dioxide equivalent represents about a 0.04% reduction of the 80,000,000 tonnes of carbon dioxide equivalent emitted in Ontario in 2005 (see Pollution Watch Fact Sheet at www.pollutionwatch.org). TRPC does not provide estimates of the carbon dioxide equivalent to be produced by their preferred option of digging a canal and clearing 8 ha of vegetation and should be asked to do so. For example, what will be the impact on methane production of piling up a huge area of rubble over a wetland? How much carbon dioxide will be liberated by the decomposition of roots systems and above ground debris of felled trees? The biomass of tree roots is often equal to or greater than the biomass of the above ground parts.

It is odd that TRPC has not addressed the potential impact of climate change on this hydroelectric project, especially given the fact the Parks Canada website (PC website) expresses great concern that

> **"the climate is changing our national parks"** and that **"higher temperatures and lower water levels are expected throughout the Great Lakes-St. Lawrence system"** .

The Parks Canada website suggests that a temperature increase in the range of 4.6 to 7.5 degrees C could occur in the Great Lakes Region but that precipitation is more difficult to model than temperature. It also states

> **"However, we can make certain assumptions. Warmer temperatures, especially in the winter, will result in less snowfall and a reduced snow pack. This in turn would lower lake and groundwater levels and reduce stream flow"**

This suggests lower lake levels in headwater lakes feeding the Otonabee River and reduced water flow in the river. Furthermore, a 2006 extensive review by the World Wildlife Fund (www.wwf.ca) of existing scientific studies on observed and projected changes in the climatic and hydrologic conditions of the Great Lakes - St Lawrence Basin and impacts on hydro power generation concludes "that there is a large body of research that supports the point that water levels are likely to decline due to climate change"(www.wwf.ca).

One would have expected that TRPC would provide an analysis of the Otonabee River flow data to determine if indeed river flow is being affected by the TRPC assertion of

> **"the recent trend of hotter, drier summers and warmer wetter winters"**.

Also that TRPC would have discussed the implications that this trend may have on the amount of electricity to be generated. Instead they used average river flow data from 1962 to 2001.

<u>Leakage of water because of the condition of the dams</u>

TRPC points out that the amount of electricity generated will be determined by water flow in the river yet the Screening Reports do not provide estimates for leakage rates for the lock 23 or lock 22 dams or discuss the effects water leakage rates associated with the dams on flow rates anticipated in the proposed canal, even though TRPC stresses the

> ***"poor existing structural condition of dams, as evidenced by the spalling concrete, poor seating of stop logs, excessive log leakage, possible piping of flows around the dams".***

Leakage rates as high as 15 to 20 cubic metres per second have been suggested for the dams. Not mentioned by TRPC is leakage due to drainage under the River Road from the bay above lock 23 dam.

A short biography for Roger Jones

1967 Ph. D. in Plant Ecology, University of Wales, Cardiff, UK.

1967 to 2000 Employed by Trent University teach undergraduate botany and plant physiology in the Department of Biology. Also taught general ecology course for 10 years and a third-year level plant ecology course beginning in 1974.

For 15 years before retiring as a full professor in 2000 I was a member of the University Nature Committee, which I chaired at times.

2002 Lead author, along with Professors M. Fox and J. Marsh of the "*The Stewardship Plan for Trent University Nature Areas" (www.trentuniversity.ca/biolgy/tna*) presented to the current University administration in Oct. 2002. The Stewardship Plan was placed by the Administration before the University Board of Governors in June 2006 with the recommendation that it not be implemented but be treated as a "resource document" for the future management of University Nature Areas. The BOG agreed.

I have published research papers in Plant Ecology