A Study of the Past, Present and Future of Water Management on the Trent-Severn Waterway National Historic Site of Canada

Observations and Conclusions

Prepared for:
Parks Canada Agency

By:

ecoplans Limited

May 31, 2007

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Acknowledgements

Ecoplans Limited is grateful to many people who contributed to the success of this project. Jack Alexander and Mike Jamieson of the Trent-Severn Waterway National Historic Site of Canada (TSW) provided overall direction to the project. Joan Chamberlain, Wayne Mitchell, and Dave Ness of the TSW provided valuable data and analysis. Ken East, Richard Scott, and Marnie Clement of the Panel on the Future of the Trent-Severn Waterway provided valuable context for the project. Rick Walden and Rick Cousins of the Lake of the Woods Control Board, Howard Goebel of the New York State Canal Corporation, Dave Servos of Ontario Power Generation, Fergus McLaughlin of the Ottawa River Regulating Committee. Dave Ballinger and Kerry McGonegal of the Rideau Canal National Historic Site of Canada, and Charles Bach of the Tennessee Valley Authority, all provided valuable insights into their respective organizations. Finally, a great many federal, provincial, municipal, ENGO, commercial and private organizations and individuals took the time to respond to the call for comments and give presentations.

1.0 Introduction

The Trent-Severn Waterway National Historic Site of Canada (TSW or "the Waterway") is a 386 km navigable waterway that runs through inland waters of central Ontario from Trenton on Lake Ontario to Port Severn on Georgian Bay (Figure 1-1). The main channel of the Waterway follows the course of the Trent, Otonabee, and Severn Rivers, their associated lakes and artificial canal cuts. Navigational draughts and water flows are maintained by drawing water from two watersheds covering more than 18,000 square kilometres (km^2) including approximately 4,500 km^2 in the reservoir lakes area north of the main system.

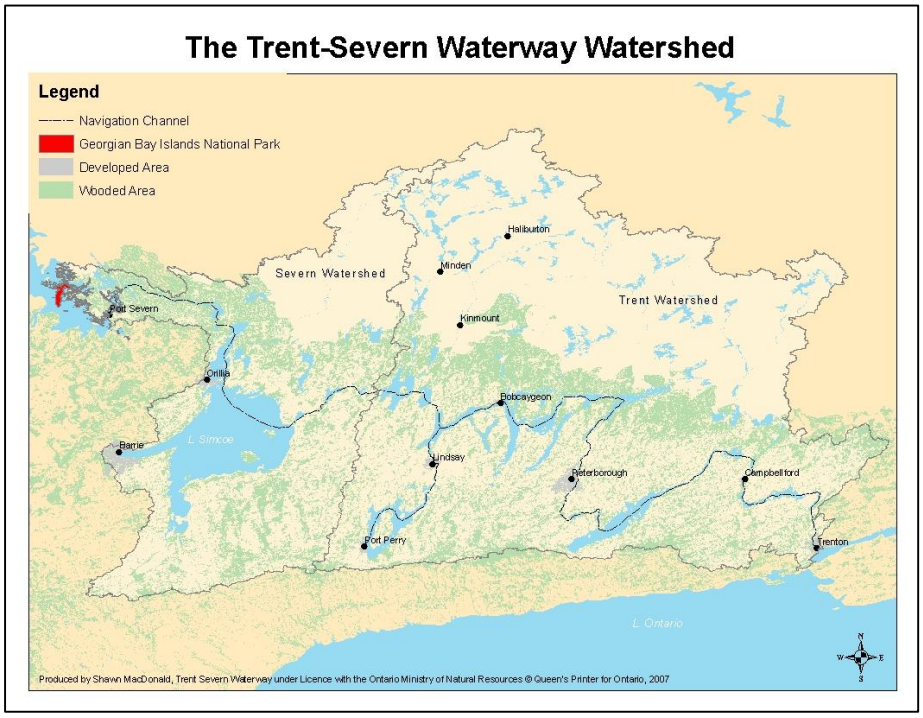

Figure 1-1 Watershed of the Trent-Severn Waterway
(Source: Parks Canada)

In preparation for an independent examination of The Future of the Trent-Severn Waterway, and a subsequent review of the Trent-Severn Waterway Management Plan (Parks Canada 2000), Parks Canada retained Ecoplans Limited to undertake an analysis of water management practices on the Trent-Severn Waterway. The study looked at the legislative history of the waterway, current water management practices and governance models at the TSW and other water management organizations, and stakeholder expectations. Stakeholders welcomed and embraced the opportunity to present their support for the Waterway and their views of what needs to be done in the future. The findings are presented in six stand-alone

Study Documentation

1. Observations and Conclusions
2. Legislative Review
3. Water Management Practices
4. Consultation Report
5. Obligations and Expectations
6. Other Water Management Organizations

documents. This report summarizes the main observations and conclusions and makes recommendations on future governance of the waterway.

2.0 Background and Challenges

2.1 Not Just a Waterway

The evolving landscape of the Waterway has created new economies and energy realities that are affected by water management (e.g., residential development in reservoir lakes, green energy). For example, an Economic Impact Study of the TSW published in 2000 (Parks Canada 2000b) highlighted the direct impact the Waterway has along the corridor. In 1997, there were expenditures of $49.7 million associated with the operation of the TSW. These expenditures generated $96.7 million of economic activity. More than 1600 jobs were generated by boaters and land-based visitors and Parks Canada expenditures. The number of permanent residents increased by 30 percent from 1986 to 1996. The Coalition for Equitable Water Flow claim that the number of shoreline residents in the Haliburton Sector is approximately 35,000 and property values in that area is about $3.6 billion (CEWF 2007). Much of the economic activity along the waterway is linked in some way to its recreational resources. Finally, the Ontario Water Power Association points out that waterpower facilities on the TSW annually produces, on average, 500,000 MWh of clean, renewable energy (P. Norris 2007). Water power generation opportunities are underutilized and provide partnering and revenue generation opportunities that are not being taken advantage of fully.

Issue #1– The Affected Landscape
The 18,000 km^2 landscape must be managed in an integrated way that ensures the long-term ecological, economic, and social sustainability of the waterway.

The broad array of stakeholders consulted for this project universally expressed support for the importance of the Waterway and the need for it to be maintained. The future management of the Waterway must embrace the broad ecological, economic, and social realities of this vast and diverse system.

2.2 Legislative Context

The key legislation governing the Waterway is the *Department of Transport Act* and the Historic Canals Regulations. The Parks Canada Guiding Principles and Operating Policies are the over-riding policy guidance on the Waterway. The Legislative Review showed that some parts of the waterway are clearly vested with the Federal government but that there remains some uncertainty over portions of the system. This uncertainty should be clarified through appropriate legislation as was done for the Rideau Canal.

Issue #2 – Jurisdiction
Jurisdictional ownership is not clear and should be clarified through an exchange of legislation or reference to the courts.

2.3 Position within Parks Canada

The TSW appears to be an orphan within the Parks Canada Agency. In Parks Canada, the high profile field units are either national parks (e.g. Banff National Park) with strong ecological integrity mandates, or national historic sites (e.g. the Fortress of Louisbourg National Historic Site) with strong cultural heritage mandates.

Issue #3 – Lack of Fit
The TSW's status as a National Historic Site does not adequately reflect the complexity of the challenges and expectations with which it must deal.

Arguably, of all field units within Parks Canada, the TSW:

- Has an influence over an expanse of geography that rivals all but the largest national parks (Parks Canada 1998);
- Is one of the most jurisdictionally complex; and
- Has the largest number of hydro-electric power generation facilities or opportunities.

Although the Waterway has significant natural resources, it does not have the ecological integrity mandate or conservation policy support of a national park. Rather, the TSW's connection to the Parks Canada Agency is by virtue of its two commemorated historic sites, which are lost in what is essentially a recreational landscape. What appears to be needed is a governance structure that better links the cultural resource management policies of Parks Canada, the natural resource conservation and management policies of provincial agencies and conservation authorities, and the water management polices of both Parks Canada and the Provincial government.

The TSW does not appear to have an appropriate level of resources needed to deliver on even its most basic mandated obligations. Interestingly, the water management staff on the Rideau Canal stated that they had sufficient resources to operate their water management system – a much smaller and less complex system.

2.4 Mandate and Resources

The ecological, social and economic benefits of the Waterway appear to be undervalued and not supported by the organizational mandate or current operating practices. The current operating practices optimize water levels and flows for navigation but not for ecological or energy production purposes.

Issue #4 – Mandate & Resources
The TSW has neither the mandate nor the resources to meet the challenges and expectations beyond those strictly related to navigation and the two nationally significant features.

Trent-Severn Waterway managers have an astonishingly large and diverse array of stakeholders with whom they interact on a daily basis. They are inundated with requests to address a multitude of issues that fall outside their stated mandate. They tend to respond in a reactive way when and where they can but most water management efforts are focused on the challenges of maintaining safe navigation.

The TSW management and staff are in an untenable position. Stakeholders expect the organization to manage the Waterway to achieve multiple expectations, many of which are ecologically based, while the TSW has neither the mandate nor the resources to meet these expectations. Although management and staff understand and are often sympathetic to these various concerns, there seems to be limited Corporate technical and policy support, understanding and empathy for the management challenges they face.

In addition to addressing water navigation obligations, there are a number of formal and informal obligations that generate a variety of expectations. Failure to meet these expectations has varying degrees of consequences. Some, such as navigation depths and dam integrity have public safety and liability implications. Others, such as compliance with federal statutes (SARA, CEAA, FFA, Historic Canals Regulations), are legal obligations with statutory implications for non-compliance. Other stakeholder expectations are rooted in historical water management practices.

Given the paucity of resources dedicated to the key functions of water management, public communications, active natural and cultural resource management, and infrastructure maintenance and recapitalization, existing staff are trying hard to cope with the overwhelming challenges. Clearly, the TSW managers are unable to fulfill all expectations and must manage for the greater public good; however, failure to meet expectations results in stakeholder frustration and anger.

2.5 Multi-jurisdictional Challenges & Partnering

The physical Waterway encompasses interests and responsibilities of a number of federal, provincial and municipal government organizations. Many of these interests and responsibilities overlap and if not properly coordinated can be confusing, conflicting, inefficient, wasteful, and frustrating to the public and private enterprises trying to live, play or do business along the Waterway.

Issue #5 – Partnerships
The current Management Plan and the expectations of stakeholders cannot be met without the commitment and cooperation of all levels of government.

The TSW's current Management Plan (Parks Canada 2000a) has a Vision statement that espouses the principles of integrated watershed management and shows a good understanding of the needs of the organization and the expectations of the partners and stakeholders. The Management Plan lists 22 policy areas and 157 major actions to address these policies.

TSW staff suggests that most of the actions identified in the Management Plan cannot be implemented because all but one of them is dependent upon cooperative efforts of a large number of other federal and provincial organizations. **There is only one of the 157 actions in the Plan that is the sole domain of Parks Canada.** To achieve the overall goals, partnerships, alliances or cooperation is required of at least 4 federal departments, 6 First Nations, 7 provincial

departments or agencies, 6 conservation authorities, as many as 46 municipal jurisdictions, and countless individuals, interest groups, businesses, Chambers of Commerce, etc.

An integrated management plan can only be achieved in a collaborative structure that ensures that policy and regulatory overlaps are minimized and that government decision-making at all levels is focused in a common direction. Greater coordination and cooperation amongst all levels of government will reduce duplication, be more cost-effective for all levels of government, and reduce frustration for people living and working along the Waterway and maximize social, economic, and environmental opportunities for the Waterway. The framework for this cooperation is not in place nor subscribed to by the many organizations and agencies that must be at the table and discharging their responsibilities.

For example:

- Property owners' associations have a responsibility to liaise with the TSW and, in turn, inform their membership;
- The Real Estate Industry has a responsibility to advocate full disclosure such that prospective property purchasers understand the nature of the Waterway and are not surprised by what are normal drawdown practices;
- Municipalities have a responsibility to implement land use planning that is sensitive to the environment of the Waterway;
- Other Federal and Provincial departments and agencies have a responsibility to come to the decision-making table and deliver their mandated responsibilities;
- Individual property owners and water-oriented businesses have a responsibility to keep themselves informed and to plan their affairs recognizing the character of the Waterway; and
- Conservation Authorities have a responsibility to work cooperatively to manage water quantities in their watersheds.

The TSW, like many government resource agencies, has insufficient funds to carry out their stated mandates let alone the expanded mandate that is expected of them. In this fiscal climate, it is important that the TSW seek out and actively foster partnerships with other organizations to share in the cost of mutually beneficial programs. It may be possible to partner with other interests to cost share some improvements. The greatest opportunity for such partnering appears to be with the water power industry. This industry may be willing to take on some or all of the responsibility for the maintenance of a water control structure where they get water power generation rights. The TSW can negotiate the terms of these agreements so as to have a win-win arrangement without compromising its water management objectives. Other water management authorities have similar arrangements. Other partnership possibilities include Conservation Authorities and the Ministry of Natural Resources. Coordinated permitting opportunities should be investigated with municipal and provincial agencies.

Jurisdictional jealousies and resistance to off-loading of responsibilities can be significant barriers to developing workable partnership arrangements. The first step is to develop trusting and respectful relationships and a willingness to work together to achieve common objectives. Other water management organizations such as the Rideau Canal and the Lake of the Woods Control Board have achieved this to a greater extent.

2.6 Decision-making Framework

The TSW's current water management structure is small. Water management decisions are currently made by water management staff using historical practices and data gathered from a series of automatic and manual gauges and manual snow surveys. Stakeholder comments are considered but not actively sought.

Issue #6 – Decision-making Structure
Decision-making is too centralized with little or no involvement of stakeholders. It is also not sufficiently responsive to non-navigation issues.

The Water Control Engineer (WCE), singularly makes critical water flow and level decisions, maintains gauges and snow courses, deals with public enquiries and complaints, provides public policy interpretation, and provides what limited public communications exist. This is an overwhelming responsibility that clearly should be examined. Water level management on a system as complex as the TSW is a full-time job. It should not be burdened by all the other duties currently handled by the WCE. Technical and public policy support to the WCE is needed.

Other organizations have separated the technical water management arm from the policy/decision-making arm and the communications arm. They all work together as an integrated unit but have their own duties and responsibilities. This frees up the water management staff to manage the system within directions and guidelines provided by the policy/decision-making group. The TSW needs to integrate its resource management goals and objectives with its water management objectives.

The stakeholders universally reported a desire for a water management regime that is understandable, predictable, responsive to climatic changes, responsive to stakeholder inquiries, and accommodating of multiple interests. To provide such a regime, the TSW needs to be more inclusive but still must be able to make management decisions. Stakeholders must also realize that predictability is not easily achieved and may be more uncertain as the effects of climate change take hold.

The Lake of the Woods Control Board allows non-government stakeholders to attend Board Meetings where decisions are made and provide their input to the Board before decisions are made. Most other water management organizations interviewed for this project have an open dialogue with stakeholders. They still maintain control of water management decisions but ensure that stakeholders have a vehicle for expressing their views and obtaining information.

Many TSW stakeholders reported a desire to have a voice at the decision-making table but not necessarily wanting to be part of the decision-making body with the associated liability.

The TSW has a practice of laying field staff off in the fall simply because it does not have the financial resources to keep staff on strength longer. This means that drawdown must occur earlier than desired to coincide with the layoff notices and that there is insufficient staff to make fine tuning adjustments later in the fall and over the winter. Other organizations maintain sufficient year-round staff to properly manage their systems. Allocations to water management must be increased particularly in the fall and winter season to provide a more incremental draw down system and to maintain winter levels that address to a greater degree stakeholder needs. Sufficient capacity is also needed in the late winter to respond to early needs to capture water.

2.7 Condition of Infrastructure

The TSW manages and maintains 151 dam and associated structures. The water management infrastructure that is maintained by the TSW is critical to the long-term sustainability of the current landscape. Most of the reservoir lakes would not be the size they are without the dams. If these dams were abandoned or decommissioned the lakes would revert to their pre-dam condition. The impacts on property owners would be enormous.

Issue #7 – Asset Preservation
The Federal Government through Parks Canada is obligated to protect public safety and maintain the integrity of the Waterway by maintaining the water management structures, yet infrastructure repairs are undercapitalized.

Many stakeholders expressed concern over the condition and maintenance of these structures from both a safety and water leakage perspective. The federal government has a legal obligation to maintain these dams.

Anecdotal reporting by stakeholders and the TSW suggests that several dams are leaking. The amount of water either being wasted from the system or unavailable for local power generation by these leaks is significant. It has been suggested that reducing or eliminating this wastage would allow for the retention of more water in the system and help in better accommodating stakeholder interests. For example, the 10 cms leakage that is reported at Dam 1 spills an amount of water equivalent to 2,592 hectare meters of water per month. To understand what this number means, it leaks an amount equivalent to 6 percent of the available water in the reservoir lakes in one month or 24 percent in 4 months. It has also been suggested that reducing or eliminating leakage at other dams in the system could make more water available for power production, thus raising more revenues for the TSW.

A 2006 dam asset condition assessment determined the condition and urgency ratings for the structures. The overall urgency rating is given in Table 2-1. A total of 42 assets fall within the 1-2 year (8.6%) and 3-5 year (19.2%) urgency categories (Table 2-2). Public Works and Government Services Canada estimate the capital cost of these repairs at $32.2 million for civil

construction work, exclusive of investigation, design, procurement, project management and project supervision costs.

Table 2-1 Trent-Severn Waterway Dam Asset Condition List 2006

Trent-Severn Waterway Dam Assets Condition List 2006						
Sector	**Urgency Rating**					**Total**
	1-2 Years	**3-5 Years**	**6-10 Years**	**10 + Years**	**Unspecified**	
1 - Trenton	0	2	1	1	6	**10**
2 - Campbellford	2	3	7	2	9	**23**
3 - Kawartha	1	6	3	4	15	**29**
4 - Kirkfield	2	2	3	1	8	**16**
5 - Severn	3	6	8	1	11	**29**
6 - Haliburton	5	10	12	0	17	**44**
Totals	**13**	**29**	**34**	**9**	**66**	**151**

(Source: Parks Canada)

Table 2-2 Summary of Urgency Ratings

Urgency Rating	Number	% of Total
1-2 Years	13	8.6
3-5 Years	29	19.2
6-10 Years	34	22.5
10 + Years	9	6
Unspecified	66	43.7
	151	**100**

(Source: Parks Canada)

Parks Canada has a legal obligation to maintain these dams and must put in place and fund an ongoing recapitalalization program. The TSW lacks a proper management information system that would support proactive asset management. This should be implemented.

2.8 Outreach and Communications

Stakeholders, while expressing strong support for the Waterway also expressed a desire to understand the system and the rationale behind decisions being made. Much stakeholder frustration stems from unfulfilled expectations. These expectations fall into the following categories:

1. Expectations that government agencies will work together towards common goals;
2. Expectations that the water flows and levels will be managed in a predictable way (i.e., how they were managed in the past) and, therefore, stakeholders can

Issue #8 – Open and Timely Communications
An open, timely, and responsive electronically-based communications program is essential but cannot be effectively delivered within the current organizational structure because of a lack of resources and the Federal Government's communications rules.

confidently make plans and operating decisions;

3. Expectations that their personal or local concerns will be heard and addressed in a timely fashion; and
4. Expectations that they will be kept aware of what is happening on their part of the waterway.

Many expectations are unrealistic and come from a lack of understanding of how the waterway functions and what reasonably can be done by the TSW. Others are beyond the mandate of the TSW and are the responsibility of other agencies. Regardless, the issues are real to the stakeholders and all frustrations are directed at the TSW, even when the concern is outside of their mandate. The issue of partnerships has been addressed previously.

A comprehensive communications program would help to keep stakeholders aware of what is happening on the Waterway and allow them to plan their activities. It would also help to inform stakeholders about the system and bring expectations more inline with the realities of what is possible. The Eels Lake dam repair is a case in point (see Eels Lake Dam Repair).

Eels Lake Dam Repair

An example of where better communications would have helped stakeholder understanding and relations is the 2006 dam repairs on Eels Lake. Property owners and commercial operators believed that the repair program was the reason that the lake levels were drawn down so early and to such a significant level. The resulting drawdown had significant operational and business consequences. The Waterway staff says that the water was drawn off to maintain the Kawarthas for navigation. The 'hard' draw affected all of the lakes during the month of August because of dry weather. The water manager said that he was, in fact, able to maintain Eels Lake at levels higher than those experienced in 2001 until late November. The work done on the dam was completed with the installation of a coffer dam upstream of the work area, so there was no need to draw the lake down any more than normal for the repairs. With no change in the operation of the lake it was felt the public need not be informed of the work, a practice commonly undertaken with other dam projects competed in recent years.

Clearly, relationships with the Eels Lake property owners would have benefited from more proactive communication. The property owners would have been more accurately informed and would have had advanced notice of the repair plans the prior year. The onus then would have been on the commercial operators and property owners to plan accordingly.

The TSW would significantly improve stakeholder relations by having a communications philosophy of building positive and proactive dialogue with stakeholders and sharing information in an open and timely way. Conflicts will still arise and not all stakeholder concerns will be able to be addressed but better relationships and less conflict should result.

Currently, resources have not been allocated to a strategic communication and outreach program. Some form of stakeholder conflict resolution mechanism or ombudsman should be explored. Every other water management organization consulted espoused the importance of good and ongoing consultation.

The TSW has been trying to launch an improved website that provides timely information to

stakeholder but is hampered by rules governing federal government websites. These rules do not foster the timely communication framework needed by the TSW and expected by stakeholders.

2.9 Tools

The TSW is a complex system that is managed using a combination of science and art. The computer model currently used by the TSW does not cover the entire system and its capabilities are limited. In addition, the decision-making process relies on data that are gathered by a combination of automatic data loggers and manual readings. The ability of the water managers to fine tune the system and minimize wastage of water would be greatly enhanced by having a complete network of automatic water level gauges, stream gauges, and automatic gates at all dams that can be adjusted remotely.

Issue #9 – Modernize Decision-making Tools

A system as complex as the TSW requires modern water management tools including:

- Automated gauges
- Automated gates
- Modern models
- Dedicated weather forecasting
- Management information system

A fully automated system is costly but would significantly improve the efficiency of the system. These costs could be recovered through increased hydroelectric revenues, cost sharing arrangements with other water management and emergency response organizations (e.g., Conservation Authorities, municipalities, MNR), and reduced staffing needs during off season. Although other authorities welcome the data gathered by the TSW to help them make decisions, these other authorities are reluctant to share in the cost of gathering these data. This is a source of frustration for the TSW.

Many stakeholders suggested that smaller diameter logs be used in dams to provide finer adjustments in water flow. In fact, all dams in the reservoir lakes, except the dam at Coboconk, have at least one half log. Others have suggested that automatic gates should replace the stop log system. This latter improvement is costly.

A task that was originally included in the statement of work for this project was to provide an analysis of expenditures related to water management. It was not possible to address this concern because the expenditure tracking system used by Parks Canada could not differentiate water management expenditures. Efforts are needed to revise the management information system to track water management expenditures against budget allocations. This would provide better information that would allow for more effective management of the system.

3.0 Lessons from Other Water Management Organizations

Several other water management organizations in North America were examined for governance structures and best practices that could be applied to the TSW. The following highlights the key lessons from this consultation.

3.1 Legislative Context, Jurisdiction and Mandate

Successful water management organizations have clearly articulated and documented mandates that are tied to legislation, supported and promoted by senior management, and publicly available. The policy framework is clearly articulated by a senior, multi-interest entity that is accountable to the stakeholders through some political or legislative framework. The policy framework needs to be flexible and adjusted for changing needs and circumstances. Any such changes, however, must take into account the implications for the system as a whole. Most organizations embrace an integrated watershed management approach that sets operating policies developed in consultation with stakeholders, while still making public safety issues (e.g., navigation safety and flood mitigation) paramount. These policies are multi-focused and inclusive to the extent possible. All issues were addressed in a proactive rather than reactive way. The more complicated the watershed and complex the stakeholder interests, the greater the importance of a clearly articulated legislative and policy framework.

3.2 Position within Government

Two Canadian examples incorporate federal and provincial interests through a separate Board that is established in legislation with clear mandates, policies, operating and funding procedures set out in legislation. This allows them to operate within established bounds but in a way that accommodates federal, provincial, and in some cases, municipal interests. As well, the mandate can be more broadly defined than having to fit into an existing structure that does not suit the principles of integrated watershed management within a complex jurisdictional landscape. It also allows the organization to have a more open and responsive communications program.

3.3 Organizational Structure

The organizations that were reviewed had a variety of structures, with the water management decision-making ranging from a single decision-maker (e.g., OPG), to a technical group (e.g., Lake of the Woods Control Board), to a consensus body (e.g., Ottawa River Regulation Control Board). The following key elements were present in the structure:

- The policy decision-making, technical analysis and decision-making, and public conflict resolution functions were separated. This makes senior management accountable and responsible for policy decisions and frees technical staff to do their work;
- It is easier to keep the water management decision-making with a single person or unit within the organization. Most organizations have a technical arm that runs the models and either makes or proposes water management adjustments;
- Have a mechanism for keeping in touch with the client groups (i.e., stakeholders), for receiving comments from stakeholders and factoring these into decisions. The decisions should be taken within a clear policy framework; and
- Where responsibilities lie with a variety of jurisdictions, involve each of the responsible jurisdictions in the organizational structure to ensure they buy into the plan and participate by delivering those elements of the plan that fall within their jurisdiction.

3.4 Managing Stakeholder Interests and Expectations

The water management organizations that are experiencing minimal conflicts have a strong partnership attitude towards stakeholders. Every water manager recognizes that their systems are complex and at the mercy of Mother Nature. Those that reach out to their stakeholders and make the effort to include and educate them, find that most people will also understand the challenges of operating a system that is influenced by climate, weather and seasons. Knowledge builds understanding and partnerships help to share the responsibility for the effects of water management decisions.

There were a number of concerns that were raised by the water management organizations interviewed. They mostly relate to water levels. The most common concerns raised were:

- ***Navigation*** –Where required navigation was the number one consideration with other issues being accommodated to the extent possible.
- ***Access*** - Sufficient depths are needed to permit access to commercial operations and access to the water system from the shoreline properties.
- ***Flood mitigation*** – This is a public safety issue. One concern that was raised by water managers was the problem of land use planning decisions allowing people to build within the floodplain.
- ***Fisheries*** – The most significant aquatic habitat that most water managers are asked to consider is fish spawning windows and migration routes. Many organizations work with fishery interests to identify local water management objectives to address fisheries requirements.
- ***Wildlife*** – Although not a common theme, two wildlife-related aspects were raised relating to water levels. The first is the flooding of loon nests in the spring. The second is the potential for freezing out or flooding out beaver and muskrat houses during the winter. Both are a matter of establishing and maintaining stable levels during critical periods.
- ***Water power generation*** – All water management organizations have water power generation as a consideration. Water power generation never took precedence over public safety issues such as flooding and safe navigation. In most cases, water management for power generation factors in ecological considerations, such as fisheries, using an integrated water management approach.
- ***Water quality*** – This objective did not have a significant affect on most water management regimes. Some, such as the TVA, provide water pulsing to maintain water quality in the system. Others simply maintain sufficient flow to provide for cleansing of the system.

In all cases, successful water management organizations take a proactive and inclusive approach to dealing with stakeholder interests.

3.5 Communications and Outreach

Successful organizations minimize conflict by communicating with stakeholders through formal and informal outreach programs. The types of outreach/communications programs include:

- Well maintained websites;
- Regular meetings with partners and stakeholders;
- Engaging of ENGOs;
- Internal ombudsman;
- Advance notice;
- Early warnings; and
- Receptive attitudes.

3.6 Water Flow/level Decision-making

The following principles are embodied in the more successful water management organizations:

- Comprehensive and integrated
- Proactive and predictable
- Responsive, flexible, and adaptive
- Consultative
- Fair
- Knowledge-based and science-based
- Timely and results oriented
- Accountable
- Clear and understandable
- Ecologically grounded
- Jurisdictionally integrated

To live up to these principles, organizations must have strong senior management commitment to the principles and an organizational structure that can deliver on the principles. There must be sufficiently trained staff to carry out the technical work as well as the communications/outreach program. Finally, there has to be sufficient human and financial resources to ensure that the program is delivered effectively and efficiently. This means enough manpower to make the necessary adjustments to the system throughout the year and be able to respond quickly to unforeseen events.

There needs to be partners in the decision-making process. Other responsible organizations must embrace and deliver their components of the water management program.

3.7 Dealing with Conflict

Increased stakeholder participation will reduce conflicts. It is not reasonable, however, to expect that all conflicts can be avoided. There will always be people who have different agendas and objectives.

Those organizations that have stakeholder advisory groups and effective outreach programs, also have minimal conflicts. Many of these organizations, when asked what they would do to improve their operations said they would have more communications and outreach. There needs to be a formal and understood mechanism for raising concerns and having them addressed.

Successful water management organizations have managers who are qualified in dispute resolutions techniques dealing with the concerned public and resolving conflicts. It is

inappropriate to leave this task to over-worked, under-trained personnel who are so removed from the decision-making process that they cannot make the necessary changes to resolve the conflict.

3.8 Decision Support Tools

"We can't manage what we don't measure." Successful water management organizations have real-time data at their fingertips and sufficiently sophisticated computer models that are fine tuned on an ongoing basis to help make decisions. They run "what if" scenarios to test out system changes or possible climatic conditions to help in forecasting and planning future water management tactics.

Many organizations partner with other agencies that also need flow and level data to cost share the data gathering and distribution network.

These data are often shared through a website where the public can also see the data and make their own decisions about infrastructure adjustments at their properties.

There are also information needs that come from other agencies. For example water managers need to know when certain fish species have moved into spawning areas in order to know when to set levels or begin holding water levels for spawning windows.

4.0 Conclusions

The Trent-Severn Waterway is a world class transportation, recreation, ecological, and economic resource, the existence of which depends on the water management activities of Parks Canada.

Sustainability of the Trent-Severn Waterway requires an integrated management approach that has each partner fulfilling its responsibilities within a commonly accepted policy framework.

Parks Canada does a credible job managing water levels given its resource challenges. The TSW, however, is neither able to fulfill its mandate nor meet the needs and expectations of its client groups for the following reasons:

1. The mandate is too narrowly defined;
2. Many areas of stakeholder concern are the responsibility of other agencies (provincial and municipal) which are not part of the decision-making and implementation process;
3. Decision-making responsibilities are too narrowly focused;
4. Water management personnel are overly burdened with analytical, policy, decision-making, communication, water management and conflict resolution responsibilities;
5. The TSW has insufficient resources to fulfill its current mandate let alone an expanded one.

To meet an expanded mandate, the future management direction for the Waterway must be premised on a clear vision and mandate that takes into consideration all aspects of the broad environment – social, economic and environmental. There needs to be a passionate commitment to this Vision fostered within the organization and amongst the stakeholders. The leadership for the organization must champion this Vision and create an organizational culture and structure to effectively deliver on the Vision. This leader must integrate the various interests rather than be singularly focused on one goal to the exclusion of all other goals. There needs to be vibrancy within the TSW that lives and sends the message *"We are entrusted with a world class resource, and we will work with all partners to maximize its potential for present and future generations"*.

Any future water management organization for the Waterway must meet the following principles:

1. A senior level of government must continue to provide the oversight and accountability for the management of the system. This can be done through a Board or Commission.
2. An integrated watershed management mandate must be clearly established through legislation.
3. All levels of government need to take responsibility for their mandated areas and participate as partners in the management of the waterway.
4. In making water management decisions, it is important to demonstrate that all stakeholder interests are understood and considered although not all can be accommodated. Stakeholder expectations need to be managed through continual efforts to educate them about the limitations of the system.
5. Sophisticated water management tools are important. Efficiencies should be sought through partnerships with other organizations.
6. A strong communications program is needed.
7. The pace of correcting deficiencies in water management infrastructure must be quickened.
8. The organization must be adequately resourced to allow proper delivery of the program.
9. Opportunities should be sought to leverage funding, perhaps in partnership with the water power industry, for hydro-electric generation improvements and coincidental infrastructure improvements on the system.

5.0 Recommendations

The following recommendations are put forward for consideration.

1. The Trent-Severn Waterway should be formally recognized as a nationally and provincially significant recreational and ecological corridor, and mandated in legislation that binds all levels of government to a common set of goals and objectives. Provincial examples of landscapes that are managed in an integrated way are the Niagara Escarpment and the Oak Ridges Moraine.

2. Clear goals and objectives should be set out in an integrated management plan that is developed through an open consultation process.
3. The Waterway should be managed by a senior government appointed Board or Commission with a mandate to promote and protect the waterway as set out in the legislation and management plan.
4. A governance model similar to the Lake of the Woods Control Board should be adopted. The governance model should have the following key elements:
    a. A government appointed Board/Commission that is responsible and accountable for making water management decisions. The Board/Commission must have a clear mandate set out in both provincial and federal legislation.
    b. The Board/Commission's mandate should be clear and should embrace the philosophy of integrated watershed management.
    c. The governance framework should not duplicate or usurp responsibilities of existing government organizations, but should be the catalyst for focusing the relevant efforts of others to fulfill the Board/Commission's mandate.
    d. The Board/Commission should have representatives appointed by the Government of Canada, the Province of Ontario, First Nations, and Conservation Authorities along the Waterway. Only those willing to accept the liability for the decisions being made should be on the Board/Commission. At the very least joint Canada/Ontario representation is required.
    e. Board/Commission members should be both technically and politically savvy so they can make sound technical decisions and balance the variety of stakeholder interests.
    f. A formal stakeholder advisory committee should be established that allows stakeholders to bring forward their concerns for consideration by the Board/Commission. This advisory committee must have standing before the Board/Commission and be treated as a Partner in the decision-making process. The Advisory Committee should have representation from municipalities, commercial organizations, recreational organizations, ENGOs, and property associations. The Advisory Committee must have responsibility for being the communication conduit between stakeholders and the Board/Commission. The Committee should have the authority to have subcommittees if necessary.
    g. The Board/Commission should have access to government technical specialists to advise on the key issues before the Board/Commission such as natural resource management issues, cultural resource management issues, navigation, land use management, etc. These specialists should be available on an as needed basis.
    h. The decisions of the Board/Commission should be implemented by a Secretariat that is adequately resourced to carry out activities consistent with the Board/Commission's directions. The role and mandate of the Secretariat should be set out in writing and published.

i. The Board/Commission must have adequate funding to carry out its mandate. This funding should come from the federal and provincial governments. There should be a funding regulation under the legislation that identifies how costs will be apportioned. Consideration should be given to providing access to water power revenues as a sustainable funding source.
j. As a general operating practice, all decisions of the Board/Commission and key actions of the Secretariat should be publicly available including how stakeholder requests have been addressed.
k. The Board/Commission should have a comprehensive public communications plan that keeps stakeholders aware of conditions on the waterway, Board/Commission decisions and Secretariat actions. This should be supported by a website that is responsive to the principles of immediate and proactive communication.
l. The Secretariat should work with other water management organizations along the Waterway to develop a data gathering network and level and flow models to facilitate decision-making. All data should be readily available to all water managers and shared with stakeholders.
m. The Secretariat should have sufficient year round staffing to ensure that water management adjustments can be made during the winter.

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