

Review of Other Models of Waterway, Waterway Corridor Management and Financing

Presented to:

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TABLE OF CONTENTS

PURPOSE	3
ORIGIN OF THE PROJECT	3
THE CHALLENGE	4
STUDY MODELS	4
SUMMARY OF FINDINGS	5
COMPARISON OF KEY ELEMENTS	9
DETAILED FINDINGS	10
The Okeechobee Waterway	10
The Tennessee-Tombigbee Waterway	17
New York State Canal System	22
Waterways Ireland	29
British Waterways	34
The Gota Canal	43
OBSERVATIONS	48
SOURCES	51

Note: all financial figures in the text are expressed in Canadian dollars.

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PURPOSE

The purpose of the project "Review of Other Models of Waterway, Waterway Corridor Management and Financing" is to provide needed information to the independent panel created by the federal Minister of the Environment to report on significant questions associated with the future of the Trent-Severn Waterway National Historic Site of Canada.

By way of context, discussion papers are being prepared and studies conducted to assist the work of the panel. The discussion papers explore the issues and opportunities that the panel will address. The papers are written to stimulate public discussion and involvement. They provide a summary of key topics that relate to the future of the waterway - natural environment, recreation, economy, cultural resources, water management, and governance. Several studies are being conducted that explore topics where there is currently a lack of information, for instance, knowledge of governance models of waterways with similarities to the Trent-Severn Waterway.

ORIGIN OF THE PROJECT

Since 1833, the dream and reality of a navigable Waterway from Lake Ontario to Georgian Bay has been part of the fabric of central Ontario. The Trent-Severn Waterway was designated a national historic site as early as 1929, and today is appreciated by more than 130,000 boaters each year and more than a million land visitors that visit its 44 lock stations. Hundreds of thousands of people live along the Waterway's shorelines, in towns and villages as well as cottage and rural residential developments. Eighteen generating stations produce green energy and more than 35 species at risk live along its length.

The Trent-Severn Waterway National Historic Site of Canada is managed by Parks Canada. The existing Trent-Severn Waterway Management Plan was completed in 2000. Parks Canada must now review the current management plan.

The challenges in implementing the current management plan have lead to the realization that the Trent-Severn Waterway is at a crossroads. Infrastructure deterioration, changing visitor patterns, the Waterway's presence within a rapidly-growing Greater Golden Horseshoe, competing demands for water, and the quality of the Waterway's natural environment all offer challenges beyond the capacity of a single agency to manage. These challenges have been recognized as impeding the potential associated with the Waterway. In the spring 2006, MP Bruce Stanton introduced the following motion (M-161) in the House of Commons, that the federal government:

That, in the opinion of the House, the government should consider the advisability of evaluating the future of the historic Trent-Severn Waterway, one of Parks Canada's National Historic Sites, and its potential to become:(a)a premier recreational asset;

(b) a world-class destination for recreational boaters; (c) a greater source of clean, renewable electrical power; (d) a facilitator of economic opportunity and renewal in the communities along its 386 km length; and (e) a model of environmental sustainability.

The House passed this motion unanimously on October 18, 2006.

The challenges and opportunities associated with maintaining and enhancing the Waterway as a sustainable contributor to Canada and Central Ontario has lead the federal Minister of the Environment to endorse the creation of an independent panel to report on significant questions associated with the Waterway's future.

THE CHALLENGE

The Trent-Severn Waterway is a nationally significant historic, cultural, ecological and recreational corridor with the potential to serve Canadians more broadly and more effectively than is the present case. The economic and social environment within which the Waterway operates has changed dramatically, however the mandate and associated tools for its management have not.

Providing for navigation was the Waterway's original mandate. As a National Historic Site, the protection and presentation of nationally-significant cultural resources is also an essential obligation. Beyond those goals, the modern Waterway must, in a sustainable manner, contribute to the recreational and lifestyle economy, provide access to water-based enjoyment, support green power generation, protect natural resources and critical community water sources, support economically sustainable communities and tell a compelling story of the evolution of Central Ontario and canal technology.

Determining how best that can be achieved and by whom is the challenge facing the Panel. As a contribution to their process, the Panel would like to review how selected other waterways and/or waterway corridors are managed. This review of other waterway systems will fill an information gap in this area.

STUDY MODELS

The study team has considered six waterway systems, three in the Unites States, and one in each of Ireland, the United Kingdom and Sweden. This array of waterways will provide the panel with information on management and system operation models that will directly assist the members in developing recommendations on the future of the Trent-Severn Waterway National Historic Site of Canada, enhancing the Waterway as a sustainable contributor to Canada and to Central Ontario. The waterways selected are Okeechobee Waterway, Tennessee-Tombigbee Waterway, New York State Canal System, Irish Waterways, British Waterways and the Gota Canal.

The study team identified only the New York State Canal as a provincial or state run operation that was relevant to the type of operational model being reviewed. All others reviewed are operated by federal governments because navigation has traditionally

been a federal responsibility, based on governance responsibilities and operating costs.

SUMMARY OF FINDINGS

Okeechobee Waterway

Mandate: primarily water management and flood control. Navigation is secondary.

- Located in central Florida.
- Built, operated and maintained by the U.S. Army Corps of Engineers.
- Public funding by federal government.
- Both recreation and commercial use.
- Significant role in water management and supply in the state.
- U.S. Army Corps of Engineers flood management system.
- Significant role in protection of natural resources.
- Issues are aging infrastructure and limited funding and the challenge to manage competing and legislated requirements.
- Dealing with endangered species, both flora and fauna, has increased costs and impacted other responsibilities such as repairs to structures and flood control

Tennessee-Tombigbee Waterway

Mandate: commercial navigation.

- Located in Alabama and Mississippi.
- Built, operated and maintained by the U.S. Army Corps of Engineers.
- Public funding by federal government.
- Built in the 1980s as a commercial water transportation link to existing navigation systems.
- Mainly commercial shipping, through traffic by pleasure boats secondary.
- When built was a model for sound environmental practice.
- Property purchased when built to enhance the natural environment of the area and to promote fishing, hunting, boating and opportunities for a healthy lifestyle.
- Issues are the changing use of surrounding lands and how that affects sedimentation, and, changing land use patterns along the waterway.
- During the last two years the area has experienced much interest in industrial development. This is expected to generate a good deal of boat traffic and significant economic impact.
- Development and planned development are resulting in changing land use patterns.
- Huge influx of industry has not yet affected drainage. One silting situation causing strain on overall budget.

New York State Canal System

Mandate: recreational boating. Development of a greenway which focuses on environmental protection and compatible recreational use.

- Located in New York State.

- Built as a commercial water transportation route between the Atlantic and the Great Lakes.
- Was key to enormous social and economic change giving access to land west of the Appalachians.
- Commercial use has given way to recreational boating.
- Operated and maintained by the New York State Thruway Authority.
- The Canal is a stand alone corporation within the Thruway Authority.
- Thruway Authority met the original objectives by upgrading canal infrastructure and initiating significant economic development but current administrative structure and future goals of the Authority are at cross purposes with those of the Canal.
- In 2001, the Canal was designated the 23rd National Heritage Corridor.
- Resulted in creation of greenways, pathways, and community redevelopment funded by federal and municipal governments and the private sector.
- Issues are the uncertainty of the future direction, organization and funding of the canal. Infrastructure is still in need of major recapitalization.
- Serious problem with siltation in many areas require annual dredging.
- It is unclear if there will be continued political support for the canal regeneration projects or the recommendations in the report on the Future of the Canal.

Waterways Ireland

Mandate: recreational boating and maximization of economic, social and environmental contribution to quality of life.

- Established as a cross border Implementation Body by international treaty between the Government of the United Kingdom and the Government of Ireland.
- Unique in that it reports to two sovereign jurisdictions with accountability to both.
- Comprised of seven canal systems on the island.
- Corporate body in its own right. Staff are employees of the body and not civil servants.
- Mission is to provide a high quality recreational environment centered on the inland waterways in their care, for the benefit of their customers.
- Sets direction in three year corporate plans.
- Goals are to manage and maintain a reliable and high quality waterways network, develop and restore the waterways network, promote increased use of the waterways principally for recreational purposes, manage and develop the assets of the organization and develop an organization of excellence.
- Apart from minor income from lock passes and some sales of property, funding is by the two governments.
- Capital works in each jurisdiction, funded by that jurisdiction.
- Administration and maintenance costs are funded 85% south, 15% North to reflect the lengths of navigation in each jurisdiction.
- Issues are the expansion and improvement of facilities along the waterways.

British Waterways

Mandate: recreational boating and protection of national cultural assets.

- Operates 2200 miles of inland waterways in Scotland, England and Wales, with most canals being in England.

- Public crown corporation responsible to the people of the United Kingdom.
- The future goal is to be less reliant on government funding and more commercially or business oriented. Revenues generated are to be reinvested into the waterways.
- Canals were developed by entrepreneurs of the industrial revolution but many were abandoned and left in disrepair with the advent of rail and road transportation.
- Now revitalizing and reopening the canals. Boating is their core activity.
- BW operates a large amount of real property that provides a crucial source of revenue.
- BW staff operate the locks and perform ongoing maintenance.
- Large maintenance and construction projects are contracted out as are payroll and pension administration, maintenance and financial systems and supply of computer equipment.
- Committed to increased customer service, improving facilities, establishing leisure business, creating visitor destinations, championing regeneration to develop waterside properties and restoring water access to the public.
- Committed to protecting heritage and environmental sites and endeavours to engage visitors and communities to enhance the quality of life along the waterways.
- It is planned to grow business income using assets to generate significant income. The strategy is to use the asset or property to leverage capital investment from the private sector which minimizes risk to the corporation.
- Revenue is generated by direct water sales and charges to utility companies for use of lands.
- Sponsorships are being investigated as well as transportation of freight and development of port facilities in Leeds.
- Involved in several ventures to generate income involving marketing operations, operation of marinas, pubs, mobile phone mast network, water supply and treatment.
- Issues for the organization are funding (main issue), asset and network management to ensure public safety and the provision of a safe, usable and fit for purpose network, increasing the number of visitors to the waterways and increasing public benefit of the system through regeneration.

Gota Canal

Mandate: recreational boating, protection of canal as significant national cultural asset.

- Second longest canal in Sweden, runs west from Stockholm area.
- Sweden's largest cultural-historical structure and one of the country's best known tourist attractions.
- Originally built for commercial purposes and safe inland transportation.
- Now mainly used for recreational boat traffic.
- Operated by the AB Gota Canal Company, a company formed in 1810 at the start of canal construction. In 1978 the company was taken over by the Swedish state and converted to an independent subsidiary company in 1992.
- The Gota Canal Company is governed by a board of directors.

- The Swedish government considers it the business of the state to take responsibility for the future operation and repair of the canal.
- The company runs both the canal and a property business.
- Canal business includes the canal operation, laying up boats and shipyard work, external work, bridge maintenance, sales and museum activities.
- The property business includes management of forests and land and property connected to the canal.
- Development work occurs in close cooperation with municipalities, county councils, regions, county administration boards and businesses along the canal.
- The Gota Canal and its corridor is about more than boats. It is active in promoting and restoring facilities for biking, walking, a number of day activities, hostels for overnight accommodation and a unique canal family area at Norrkvarn.
- Canal's foundation for environmental policy is that all are jointly responsible for caring for the environment.

COMPARISON OF KEY ELEMENTS

	Operated by National Government	Operated by State Government	Corporate Body In Own Right	Mandate: Recreation	Mandate: Commercial/Shipping	Mandate: Water Management	Government Funding	Major Revenue Generation	Minor Revenue Generation	National Significance/Impact *	Regional Significance/Impact *	Protect Cultural Resources	Protect Natural Resources
Okeechobee Waterway	•			•	•	•	•				•		•
Tenn-Tom Waterway	•				•	•	•				•		•
NY State Canal System		•	•	•			•				•	•	•
Waterways Ireland	•		•	•			•		•	•		•	•
British Waterways	•		•	•			•	•		•		•	•
Gota Canal	•		•	•			•	•		•		•	•

* National Significance/Impact: these canals and waterways have an influence on the country as a whole in areas such as preservation of historic assets, economic development, national unity, tourism, recreation and preservation of the environment.

* Regional Significance/Impact: these canals and waterways have limited influence nationally and are more significant in the context of regions of a country in areas such as preservation of historic assets, economic development, tourism, recreation and preservation of the environment.

DETAILED FINDINGS

The Okeechobee Waterway

Context

The Okeechobee Waterway is located in south Florida U.S.A. The waterway is 152 miles long running from Fort Myers on the Gulf of Mexico to Stuart (north of West Palm Beach) on the Atlantic Ocean. It includes Lake Okeechobee which is the second largest fresh water lake in the U.S.A. It is operated by the U.S. Army Corps of Engineers. The waterway is divided into three sections: the Caloosahatche River, Lake Okeechobee, and the St. Lucie Canal. It is a combination of natural and excavated waterways.

The Corps is responsible for the annual operations, maintenance, and major maintenance of the five locks and dams. The locks are Moorehaven, Ortona, Port Mayaca, W.P. Franklin, and St. Lucie. The Okeechobee Waterway is a vital link in Florida for commercial and recreational water transportation providing nearly 206 miles of travel over open water. The locks each pass between 9,200 and 10,000 vessels annually. Ninety-six percent of the vessel traffic is recreational; the remainder is commercial. Goods moved are manufactured goods, raw materials, agricultural products, equipment/machinery and petroleum products. Commercial tonnage ranges from 10,000 to 18,000 tons at each lock. Most of the commercial traffic is tug and barge and there are some commercial fishing vessels. Lockage time takes approximately 15 to 20 minutes and hours of operation are from 6:00 a.m. to 9:30 p.m. There are no user fees.

The Corps operates 171 structures located beside the locks and mostly around the Lake and the Herbert Hoover Dike. Most of these structures are dams or spillways. There are no bridges. There are 5 recreational areas and one compound and administration building at Clewiston, Florida.

It is estimated that there are over 6 million visitors to the waterway with an economic value of over \$55 million annually. Over one half of Florida's 16 million residents live in the geographical area of the Okeechobee Waterway and the South Florida Water Management project. One third of the population lives in three nearby counties.

The goal of the waterway is to provide a safe, reliable, and efficient water borne transportation system (channels, harbours, and waterways) for the management of commerce, national security needs, recreation, and to provide safe harbours from severe storms.

Lake Okeechobee is a shallow lake approximately 10 feet in depth. It covers over 730 square miles (467,200 acres) and is noted for its fishing. The lake supports a commercial fishing industry and is the site of many professional sport fishing tournaments. It is a source of significant fresh water for the growing south Florida population as well as for agricultural irrigation. Lake Okeechobee has a raised levee named the Herbert Hoover Dike. It is approximately 144 miles long with an average height of 34 feet and is designed for flood protection.

The Federal Government owns only 730 acres of land which is primarily where the structures are located. The lake and river beds are owned by the state and some property that is regulated by the Corps is owned by municipalities.

Water Management

Lake Okeechobee and the Okeechobee Waterway are part of a complex water management system known as the Central and South Florida Flood Control Project. It was designed and constructed by the U.S. Army Corps of Engineers. The flood control project covers more than 16,000 square miles starting just south of Orlando, Florida and extending southward through the Kissimmee River basin to Everglades National Park. There are 171 water control structures, 250 miles of flood control channels and the Herbert Hoover Dike around Lake Okeechobee. The Corps also inspects other works as part of its Completed Works Program. This inspection program involves 1,160 miles of levees, and 300 water control structures operated and maintained by the South West Florida Water Management District and the St. John's Water Management District.

South Florida has a subtropical climate averaging 60 inches of rain annually occurring mostly in the summer. Water is stored in Lake Okeechobee and three water conservation areas located south of the lake. Water level management and flow is maintained by using a regulation schedule that was developed by the South West Florida Water Management District and the U.S. Army Corps of Engineers for Lake Okeechobee. The schedule allows for water level and flow adjustment to account for the needs of navigation, water supply, environmental requirements, flood control and flood damage reduction based on real time data and climatological conditions.

Originally, the waterway was designed primarily for flood control and navigation, but has been expanded to meet the region's changing water needs. Water quality has become a greater concern due to the requirements for fresh water and an awareness that water quality is part of an overall healthy ecosystem. Cities and large agricultural farms are now dependant on Lake Okeechobee water as is the ecosystem of Everglades National Park. In recent years more water has been diverted to the Everglades National Park to maintain the area's abundant and unique fish, wildlife, and flora resources.

Recreational Activities

The U.S. Army Corps of Engineers manages 8 recreational areas and 3 campgrounds at the St. Lucie, Ortona, and W.P. Franklin Locks that include 109 campsites and 16 boater sites. Local day use is also permitted at the above locks for picnicking. Picnic shelters, BBQs, washrooms, and some power and water is supplied. Launch ramps are located at the recreational areas and around Lake Okeechobee and the waterway. The Corps manages 3 ramps at the above lock stations. Fees are charged for these services.

Private campgrounds are located along the waterway and around Lake Okeechobee. There are 22 recreational areas managed by others.

There is a trail system which connects most of the waterway. The U.S. Army Corps of Engineers operates a self-guided trail near the St. Lucie Lock and Visitor Centre. There is

a larger trail, 112 miles long, which utilizes the Herbert Hoover Dike and is part of the Florida National Scenic Trail system. It is half paved, the remainder is compacted gravel.

It is an important area for bird watchers as there are many species and an abundance of migratory and local birds including shore birds, song birds, waterfowl, and birds of prey.

Revenue

There is little revenue generated as there are few fees and no property licences or leases. The revenue collected by the Corps goes directly to Congress for appropriation and is not credited to the Corps budget.

History and Development

The Seminole Indians migrated to the area in the late 1700s from Alabama and Georgia and planted crops on the land. Lake Okeechobee would flood during the rainy season and inundate the land southward to the Everglades. This caused no problem for the Seminoles. Settlers arrived in the 1840s. By 1887, drainage canals were constructed linking the Kissimmee River to the Gulf of Mexico using Lake Okeechobee and the Caloosahatchee River. Over half of the land in the northern and eastern parts of the Everglades was drained and turned into profitable farm land. As settlement grew, flooding became a problem in South Florida.

Two devastating hurricanes hit in 1926 and 1928 which resulted in the loss of 3000 lives and huge property damage. To prevent such flooding, the state of Florida created the Okeechobee Flood Control District which was authorized to co-operate with the U.S. Army Corps of Engineers in flood control undertakings. The Corps was assigned the task of managing South Florida's water resources. The Corps drafted a plan to construct channels, control gates and levees along the shores of Lake Okeechobee for the purpose of flood control. By 1937 the Okeechobee Waterway was completed. This provided a means of releasing water from Lake Okeechobee as well as providing for commercial and recreational vessel traffic. The Corps also constructed the Herbert Hoover Dike.

Environment

The Corps has environmental stewardship for more than 451,000 acres of water, and 50,000 acres of land along Lake Okeechobee and the Okeechobee Waterway. Areas of responsibility include habitat, fire, cultural resources, wildlife, fisheries, aquatic plants, endangered and protected species management. All decisions on water management and development must consider these areas of responsibility.

Birds, fish, reptiles, wildlife, and flora abound and would not exist without the waterway and the three to eight mile strip of land which borders the wetlands on Lake Okeechobee's southern and western shore. Both flora and fauna depend on the managed water levels. There are several threatened and endangered species in the watershed.

Visitor Centres

There are three centres which are located at the W.P. Franklin Lock in Alva, the South Florida Operations Office in Clewiston, and at the St. Lucie Lock near Stuart. The Centres are staffed by Park Rangers and by volunteers who are available to answer questions and to provide assistance to the visiting public. Each has a movie theatre, pamphlets on the waterway and other information. The W.P. Franklin Centre has exhibits with the specific purpose of educating the visitor and creating a greater understanding and awareness of the area's archaeological, cultural, historical, natural, and water resources. There is no charge for entry to the centres.

Volunteers

The Corps uses volunteers to supplement staff. There are approximately 350 volunteers who perform more than 16,500 hours of service annually. They act as visitor centre hosts; manatee watchers who record manatee activity; provide water safety training in local schools; organize the annual Pride in Lake Okeechobee event; fund raise for special projects; construct bird nesting structures; perform trail maintenance; plant native trees and other vegetation; clean up litter; and participate in other educational programs.

Employees

The total number of employees employed at the Okeechobee Waterway is 75.

Administration & Management	5
Navigation and Readiness	10
Lock Operation	25
Engineering & Maintenance	16
Contract Assurance	6
Environmental Stewardship	5
Rangers & Land Management	8

The bulk of the essential services are performed in house. There are contracts for some services such as cleaning and grass mowing. Larger projects are always contracted.

Key Issues

Several key issues face the Okeechobee Waterway. An aging infrastructure with limited funding is the main issue. Obtaining funding is a long and difficult process. While funding is adequate for ongoing maintenance and operation at present, it is dwindling.

Dealing with endangered species, both flora and fauna, has created additional costs and has limited or constrained repairs and the ability to meet other responsibilities such as flood control.

Increased demands have strained financial and human resources mainly due to expanded commercial, agricultural and residential development which requires more water. There is also the need to develop the Everglades while trying to undo the damage development

has already impacted on the Everglades. The Corps is constantly trying to manage all the competing and legislated requirements placed on them to carry out their responsibilities. These competing demands are often at cross purposes and sometimes impossible to accommodate.

South West Florida Water Management District

The U.S. Army Corps of Engineers co-manages the fresh water of South Florida with the South West Florida Water Management District which has been created by the state. The Board sets policy and direction for the agency. The board is made up of members appointed by the state and the municipalities representing 13 counties in south Florida. The District operates and maintains 1900 miles of canals and levees and hundreds of water control structures.

The goal is to minimize damage from flooding, provide fresh water and to protect and restore the environment by optimally operating and maintaining the water system. The Corps has responsibility for flood control and the state has responsibility for water supply. The arrangement seems to work well, although the Corps retains regulatory control of water release. The Corps and the South West Florida Water Management District meet quarterly or as required. Staff meet locally more frequently to discuss issues and carry out daily water management duties. The district works in concert with smaller systems managed by communities and local governments.

Other Agencies

The Corps has working relationships with private individuals, commercial enterprises, recreation groups, interest groups such as the Audubon Society, the Seminole Nation, municipalities, and other agencies both state and federal such as environment, fish and wildlife.

Governance

The mission of the U.S. Army Corps of Engineers is to provide quality responsive engineering services to the nation. This includes planning, designing, building and operating water resources and other civilian works projects for the purpose of navigation, flood control, environmental protection and disaster response. The Corps is a key player in many initiatives in the Central and South Florida Water Management Project and is represented on both the Federal Interagency Task Force for South Florida Ecosystem Restoration and the Governor's Commission on a Sustainable South Florida.

The U.S. Army Corps of Engineers is organized along typical government department lines. The Okeechobee Waterway is managed by a local field office, South Florida Operations Office, located in Clewiston, and reports to the District Office in Jacksonville. It provides administration and other technical support as well as performing some Corps responsibilities in South Florida such as permitting and Everglades Project management. The District reports to the South Atlantic Division office located in Wilmington, South Carolina which ultimately reports to the National Office in Washington D.C. The Corps itself is a unit of the U.S. Army. Funding is primarily not part of the Defence

appropriations. Most of the Corps funding is by the Energy and Water Development appropriations of Congress. Appropriations are rolled up for the military and the Corps into a budget for the Department of Defence which is provided to the President who submits the budget for the entire government to Congress. Congress then appropriates money to the various agencies and departments including the Corps.

The local office feels that the management structure works. It is felt that being federal is a plus as they know their responsibilities and what can or can not be done by the Corps. Another plus is that when the local office lacks expertise or sufficient personnel to undertake a project they can draw on other Corps districts to carry out the function. The cost to the South Florida Operations Office is for travel expenses and the response is quicker than going the contract route and is often less expensive. The other benefit of being part of a larger organization is that the local office has available to it a large number of professionals such as engineers, scientists, technicians, legal, and administrative specialists in the district, division, and national offices.

The weakness is not being able to react quickly enough to emergencies due to the size and number of bureaucratic requirements to get funds. Although generally the system works, the other weakness in funding is that priority for projects goes to water control and environmental projects before navigation and recreation projects. This means that major maintenance items such as sandblasting and painting of lock gates are put off beyond the preventative maintenance requirements of the asset. This delay in performing normal major preventative maintenance may result in more expensive major repair or breakdown of the asset in the future.

The Corps has undertaken what they call a High Performance Organizational Review of how they operate to review these organizational weaknesses. This study is not expected to be completed until the end of this year.

Legislation

The Corps was created by President Washington and the Congress in 1779 to undertake works of a civil nature. In 1826, an Act of Congress gave the Corps responsibilities for surveys and projects to improve rivers and harbours including navigation. Commerce and navigation in the United States is a federal responsibility.

The Navigable Rivers and Harbours Acts of 1890 and 1899 expanded the Corps responsibility to regulate obstructions placed in water which could interfere with navigation and includes dredge and fill permitting. It also allowed the Corps to take on responsibilities for multi-purpose development such as irrigation, hydro, and flood control. The General Dam Act of 1906 provided the federal government with regulatory authority over all dams.

The 1928 and 1936 Flood Control Acts, following disastrous flooding in Florida and elsewhere in the U.S., provided full authority to the Corps for this responsibility including the building of reservoirs. The Corps since the 1960s and in particular the latter part of the 20th century has become more responsible for the protection of wildlife, wetlands, the environment and clean water by a series of Acts such as the Clean Water Act (1977),

memoranda, and executive orders with other agencies such as fish and wildlife.

Budget

The Corps is currently working on their 2009 budget. For expenditure purposes they use a five year average. The last five year average expenditures for the Okeechobee Waterway are:

Navigation (maintenance & operation of locks)	\$1.9 million
Flood Control (all spillway operation & maintenance)*	12.0 million
Recreation (rangers, operations & maintenance of recreation areas)	1.7 million
Environmental (mainly exotic species control- aquatic vegetation)	1.0 million

*Other capital repairs such as the Herbert Hoover Dike are included with the flood control expenditure. This expenditure also includes approximately \$0.3 million spent annually on dam inspections including those operated by the state and municipalities.

The Everglades regeneration project is the largest capital expenditure. It was funded at \$28.6 million in 2005.

It should be noted that appropriations and accounting of expenditures is by purpose or function, e.g. flood control, environmental, navigation and recreation. It makes it difficult to sort out direct costs as some locks are purely navigation and others are navigation and flood control. The above financial data was extracted from a 2005 budget document and personal conversations with a knowledgeable individual.

The above expenditures are all from the general appropriations provided by Congress and not from other sources, although some projects such as the Herbert Hoover Dike are cost shared with the state. Often the construction of cost shared assets end with the asset being turned over to the partner. The Corps has received emergency additional funding to effect repairs following natural disasters such as severe hurricanes in the last two to three years. Last year there was minimal hurricane damage and no additional funds were received by the Corps.

The Tennessee-Tombigbee Waterway

Context

The Tennessee-Tombigbee Waterway is a connection between established water transportation routes on the Tennessee River and the Warrior-Tombigbee navigation system in the states of Tennessee, Mississippi and Alabama. The Tenn-Tom Waterway project was designed and constructed by the U.S. Army Corps of Engineers with annual appropriations from congress.

The Tennessee-Tombigbee (Tenn-Tom) Waterway is operated by the Army Corps of Engineers and is the largest water resource project ever built in the United States. It is comprised of 234 miles of navigation channel and 10 locks and dams. The 10 dams on the waterway are those associated with the locks. The system, a combination of natural and excavated waterways, raises or lowers boats 341 feet over its length. The lock chambers are 110 feet by 600 feet. There is some 50 miles of levee to prevent destruction of prime wildlife habitat. The bridges associated with the waterway are operated and maintained by the state departments of transportation and railroad companies.

The Waterway operates seven days a week, 24 hours a day. The Army Corps of Engineers has established a locking through priority:

1. U.S. military craft
2. Commercial passenger craft
3. Commercial tows
4. Commercial fishermen
5. Pleasure boats

About 8 million tons of commodities are moved on the waterway and some 2200 pleasure craft transit the waterway each year.

History

The history of the Tennessee-Tombigbee Waterway is relatively recent. The canal link to join the Tennessee and Tombigbee Rivers was envisioned in the early 1800s and the first engineering investigation was conducted in 1874-75. Further investigation of the project from 1913 to 1945 led to congressional approval of the waterway in 1946. There was significant opposition to the building of the waterway from key members of congress from other regions and from the railway industry. Construction started in 1972 and the canal was completed 12 years later in 1984. The project was selected by the Carter Administration as a national demonstration program of how large public works projects can favourably impact rural America. Special programs were implemented during construction, e.g. local hiring preference clauses in construction contracts, to help increase the regional economic benefit as the region was one of the most economically depressed sections of the United States at the time.

Water Management

The Tenn-Tom Waterway is part of a large water management system in the states of the region. Water management is carried out by the Army Corps of Engineers by river basins of which there are five: Apalachicola-Chattahoochee-Flint, Alabama-Coosa-Tallapoosa, Black Warrior-Tombigbee, Tennessee-Tombigbee and other river basins (Pascagoula, Escambia).

In the Army Corps of Engineers Mobile District the water management section meets every Wednesday with representatives from the various areas for which the river systems are operated – hydropower, recreation, navigation, environmental, public affairs, etc. to exchange information about the operation of the rivers and lakes. Water management decisions for the upcoming week are determined using the information obtained at the weekly meeting. A weekly District River System Status Report is prepared that summarizes the conditions in each river basin. Operations of the lakes on the system are also guided by use of action zones which provide guidelines on meeting the project purposes of each lake.

Information on the management of water levels on the Tenn-Tom is on an up-to-date Corps website. The website for the Tenn-Tom gives data at the ten dams on the system including rainfall. In addition data from seven gauges along the system are available. Three groups of data are provided – today's data, Tenn-Tom river level forecasts (5 day) and Tenn-Tom historical data.

Most of the big lakes have hydro power generating facilities and most of the power generated is for peak power. Hydropower from Corps lakes is sold to a number of cooperative and municipal retail suppliers of power.

Much of the water supply in the southeastern United States comes from streams, rivers and lakes. Stored water is used to assure a dependable water supply. Storage lakes, dams and rivers are also important for flood control. Many dams also have obligations for minimum releases for environmental protection.

In its water management system, the Corps recognizes the importance of keeping a healthy population of fish in the lakes. Each year in conjunction with the state fisheries officials, the Corps works to hold lake levels stable during the bass spawn. At other times of the year they cooperate by manipulating water releases and lake levels to enhance fisheries.

Recreation at Corps lakes is an important resource with economic implications. In order to maximize the potential recreational use of the water, the reservoirs are operated as a system, keeping the drawdown levels and rates balanced among the reservoirs. These considerations are given greater attention during the primary recreation season of May to September.

Environmental Enhancement

The Tenn-Tom was the first large water resource project in the United States designed and constructed to meet the provisions of the National Environmental Act. Many of the engineering and construction techniques first used on the project to minimize environmental effects later became common practice for public works projects.

Attention was paid to preserving the natural beauty along the waterway corridor. In addition to the project's lands, some 88,000 acres were purchased to provide prime habitat for wildlife. The Alabama and Mississippi conservation departments intensively manage these lands which are open to the public.

The Corps notes that the economic growth generated by the waterway has not degraded the region's natural environment or quality of life. Both state and federal environmental departments are important regulators.

Commerce

The Tenn-Tom Waterway has a huge impact on the region through which it flows in terms of the economy, including industry, commerce and tourism and recreation. It is an important part of the United States transportation system, impacting on 14 states.

Commercial traffic has steadily grown since the waterway opened in 1985. About 8 million tons of commodities a year are moved, primarily forest products, coal, construction materials, chemicals and steel. The waterway can save waterborne transport as much as 800 miles in distance traveled between mid-America and the eastern Gulf of Mexico. This transportation route is important enough to affect rail and truck shipping rates, keeping them in check in the region.

The opening of the Tenn-Tom Waterway attracted new and expanded industrial development to the area. An advantage the Tenn-Tom corridor has over other regions is the availability of prime waterfront property with affordable development costs.

Recreation

Tourism and recreation, linked to the existence of the Waterway, are important to the economy and quality of life of the area. Recreation facilities were built as part of the waterway construction, providing access to some 40,000 acres of lakes that comprise the waterway.

Recreation focuses on the outdoors, with fishing, camping, boating and hunting being the main recreational activities. Area facilities including marinas, boat launches and campgrounds support these activities. Land along the waterway devoted to public hunting, requires both Army Corps of Engineers and state permits. Camping is available in eight major recreation areas along the waterway where some 837 campsites operated by the Army Corps of Engineers. Boat launch facilities are often included.

The Tenn-Tom is an important boating area for local people as well as transient boaters or those on extended cruises. It is part of America's Great Loop route, providing a link between mid-America and the Gulf of Mexico. It is the shortest, safest and most scenic route. There are 18 private marinas listed on the Tenn-Tom.

Retirement

The Tenn-Tom corridor promotes itself as a prime retirement area providing opportunities for both active rural and urban lifestyles.

Visitor Centres

There are two visitor centres on the Tenn-Tom Waterway. The Tom Bevill Visitor Centre is located near Pickensville, Alabama and the James L. Whitten Historical Centre is at Fulton, Mississippi. In addition, two environmental education centers were built in conjunction with the waterway to help future generations appreciate the importance of protecting the environment.

Employees

The Tenn-Tom employs about 35 government employees as lock operators and rangers. A new initiative has been initiated that contracts out the maintenance functions such as maintenance repairs, painting and grounds keeping. Good savings have been realized.

Volunteers

The Mobile District had some 7800 volunteers in 2006 who contributed about 314,000 hours of service. Activities included trail maintenance, distribution of water safety information, Eagle Scout projects, blue bird and bat box maintenance, fishing programs for children and individuals with disabilities, booth attendants at boat shows, fairs and other community events, office tasks, web design and programming, park hosts, bulletin board design and maintenance and lake and park cleanup. To put this in perspective for the Tenn-Tom for which separate data is not available, the Tenn-Tom is one of twelve projects in the Mobile District where people can volunteer.

Key Issues

The key issue for the Tenn-Tom is the changing use of surrounding lands and how that affects sedimentation and land use patterns along the waterway.

During the last couple of years the area has experienced much interest in industrial development such as the building of a steel mill, an automobile manufacturing plant and an ethanol plant. This is expected to generate a good deal of boat traffic when they are built and the economic impact will be significant. Development and planned development along the waterway is taking place in areas that were once remote, resulting in changing land use patterns. This huge influx of industry has not yet affected drainage.

A regular dredging program is in place with accompanying funds, adequate for the norm. The waterway is, however, experiencing a much larger and unanticipated inflow of silt from one stream and this is putting a strain on the waterway budget to cope with the situation.

Governance

The Waterway is owned and operated by the federal government through the Army Corps of Engineers. It is part of the Mobile District of the Corps in the South Atlantic Division. The Corps provides the management, technical and engineering expertise for the Tenn-Tom. The Corps exercises regulatory authority along the Tenn-Tom in the areas of dredge and fill and regulation of use on its lands.

The presence of the Tenn-Tom Waterway has resulted in the creation of organizations that formally involve the state, public and private interests. The Tennessee-Tombigbee Waterway Development Authority is an interstate compact ratified by the U.S. Congress to promote the development of the waterway and its economic and trade potential. The compact consists of Alabama, Kentucky, Mississippi and Tennessee. It is funded solely by appropriations from these member states. Membership is limited to the four governors and five gubernatorial appointees from each state. In addition, the authority is the waterway's regional sponsor to ensure its funding and to address policies and issues that may deter its development.

The Tennessee-Tombigbee Waterway Development Council was established in 1984 by a resolution of the Tennessee-Tombigbee Development Authority. It was formed to provide a forum for the many public and private interests in the operation and use of the waterway. The non-profit organization is governed by an independent board of directors and officers elected by its membership. It has more than 200 members from 12 states. The council represents commercial users in the operation and maintenance of the waterway and addresses research needs and technical matters that may impact its potential benefits.

Funding and Budget

The Mobile District, U.S. Army Corps of Engineers, develops an annual budget for the operations and maintenance of the waterway. That proposal is vetted through the South Atlantic Division Office and then it goes to the Corps headquarters in Washington. The Tenn-Tom budget becomes part of the budget submission for the Corps to the Administration, which is included in the President's budget to Congress. The annual budget for the Tenn-Tom comes from a congressional appropriations bill that funds the Army Corps of Engineers.

The annual budget for the Tennessee-Tombigbee Waterway is typically around \$23.3 million for operations and maintenance. In addition there is an additional \$1.6 to \$2.1 million for wildlife mitigation activities.

This level of funding is seen to be appropriate to carry out the mandate of the Waterway.

New York State Canal System

Context

The New York State Canals is a very large system of natural rivers, lakes and man-made structures. The modern system consists of 57 locks, 26 guard gates, 19 movable bridges, 79 fixed dams, 11 Mohawk movable dams and 9 taintor gate dams. The canal is 524 miles long and is broken down into four separate sections or branches. The Erie Canal runs from east of Buffalo on Lake Erie to Waterford on the Hudson River. The Cayuga-Seneca Canal joins the Finger Lakes to the Erie Canal. The Oswego Canal joins the Erie Canal to Lake Ontario. The Champlain Canal runs from Lake Champlain to Waterford near Albany on the Hudson River. The canal is open from April 1 to December 1, depending on weather.

The Canal Corporation had 542 employees in 2006. By function, this breaks down to 50 in administration, 192 permanent lock operators, 192 maintenance and 108 seasonals, mostly in operations. These employees operate the structures, maintain the assets, maintain the aids to navigation system, dredge the channels, perform environmental work, operate floating and land based equipment. They also provide major rehabilitation including contracted work, maintain an inventory of records for structures and land, inspect facilities, collect tolls, perform engineering services and provide administrative services to the Canal Corporation. The canal performs most of its own work for ongoing operations and maintenance with only larger construction projects being tendered to private companies.

In 1994 the canal began collecting tolls or fees as required under the 1992 Thruway 2000 legislation. Vessel traffic dropped dramatically. The tolls generated approximately \$250,000 annually and cost about the same amount to collect. In 2006 and 2007 the tolls have been suspended.

The canal owns 22,000 acres of land. Some of it is critical to the ongoing operation of the canal. In 1992, with the Thruway Authority 2000 legislation, surplus lands and lands that were potentially economically feasible to be developed to generate funds for ongoing canal operations were identified. Buffer lands along the canal can be leased by individuals for 10% of appraised market value. Lands less than 1 acre are leased for a flat fee of \$50.

Leases to municipalities are at no cost unless the lease generates a profit. Surplus lands to canal needs are sold at fair market value. In 2004, a new Real Property Management Policy was adopted. The canal must identify and categorize all lands. All surplus land transactions must first consider the interest of local municipalities and state agencies prior to disposal. As a result, 720 acres of land in Oneida County and 719 acres in the Adirondacks have been transferred to the state parks. The canal issues permits for docks all along the canal route.

Volunteers

Volunteers are not extensively used directly by the canal. Most volunteers are used by

other organizations such as a few friends groups and local information centres. The canal hires a group of volunteers called the Green Thumb Organization that provides some landscaping, grass cutting and flower bed maintenance at the lock stations. A number of the trail organizations use volunteers to help maintain the trail system along the canal route. Over the last two years the canal has organized a spring weekend clean up program to coincide with Earth Day, which utilizes volunteers for trash pickup along the canal route, at the lock stations and in the parks. The canal promotes and manages this effort at the macro level while the work at the ground level is left for local organizers to recruit and coordinate the volunteers. The canal has no recorded number of volunteers.

Visitor Centres

The New York State Canal System does not operate any visitor centres. They leave this function to other groups such as local chambers of commerce, private business, municipalities or local tourism agencies. Some are located on canal lands while others are located just off canal property in the local community. Some canal and other state funds have been provided to local groups to support their efforts. The National Park Service operates one visitor centre on land near the canal as part of the National Heritage Corridor. There is a canal component in this centre.

History

At the beginning of the 19th century the Allegheny Mountains were the Western Frontier and a barrier to the resources of Illinois, Ohio, Indiana and Michigan. Governor Dewitt Clinton envisioned a canal as a means of transporting goods and people to and from the frontier to New York City. Canal construction began in 1817 and it opened in 1825. In the 1820s lateral canals were opened- the Champlain, the Oswego and the Cayuga-Seneca. The 363 miles of canal was excavated by the use of human labour and horses. The Erie Canal unlocked enormous social and economic changes by spurring westward movement of settlers and gave access to the resources west of the Appalachians. This made New York City within 15 years of the canal's opening, the busiest port in the nation. With the exception of Binghamton and Elmira, every major city in New York falls along the trade route established by the Erie Canal. Eighty percent of upstate New York's population lives within 25 miles of the Erie Canal.

Between 1835 and 1900 this network of canals was enlarged twice to accommodate the increased and larger traffic. Between 1905 and 1918, the canals were enlarged for the last time. This time it was decided to abandon the original excavated channel and to use the new techniques of canalization of the rivers by dredging channels and building dams and locks. The present canal was opened in 1918 and was renamed the New York State Barge Canal. There is little of the original canal left under the ownership of the state. With the growth of railroads, highways and the opening of the St. Lawrence Seaway in 1959, commercial traffic on the canal declined dramatically. Commercial traffic peaked in 1951 at 5 million tons (half of the original design). By 1980 commercial shipping had declined to 1.1 million tons. Today vessel traffic is primarily pleasure boats.

The canal was also aging and in need of major repairs. In 1989, a study was completed which outlined several steps to revitalise the canal. Recreational use of the system was

the goal. In 1992, the Thruway 2000 legislation transferred the control of the canal from the New York Department of Transportation to the Thruway Authority. The Thruway Authority operates the toll roads and required new legislation to continue to exist. The new legislation accomplished this and provided a cash infusion to the Canal.

The legislation created the New York State Canal Corporation and a commitment that the Thruway would provide substantial funding to undertake capital rehabilitation, to introduce tolls and to implement a plan of making the canal self supporting in the future. The legislation also recognized that to do this required a renewal along the corridor for recreation. A Canal Recreation Way Commission was established composed of canal appointees from various communities and interest groups. A revitalization plan was developed. Governor Pataki reinforced this initiative with the launch of a 5 year \$32 million revitalization plan for the canal in 1996. In 2001 the Governor continued with his dedication to this plan by creating a \$50 million plan called the Revitalization Plan II.

In 2001, the canal was designated the nation's 23rd National Heritage Corridor. These plans and initiatives, along with funding from the private sector, the federal government and municipal governments, has resulted in the creation of greenways, pathways, and the redevelopment of many communities along the canal.

Governance

The Thruway 2000 legislation created the New York State Canal Corporation and transferred all responsibilities for the canal from the Department of Transportation to the Thruway. The canal is a stand alone organization within the Thruway Authority. The Thruway reports to a Board of Directors which has a Chairman. The Board and the Chairman are appointed by the Governor and are ratified by the New York State Senate. The same Board and Chairman exist for the Canal Corporation. This arrangement allows the canal to access Thruway funds and to share staff, assume liability, raise bonds, assume debt and to lease property. The Chairman and Board are directly accountable to the Governor and the State Legislature. The Director of the New York State Canal reports to the Board and is accountable for the day to day operation of the canal as well as carrying out policy. Funding for the operation and maintenance of the canal is from the Thruway Authority accounts which are derived from the tolls collected on their highway system. This fund has a surplus of several billion dollars.

The canal budget is developed by the Director and presented to the Board which then decides what funds are allocated to the canal and to the highways. The Thruway has its own audit section both for financial control as well as internal audit of operations. This is separate from the State and the State Controller. The canal corporation liaises with the State Controller General and can be audited at any time by the state, mainly for the expenditure of state funds. The canal is subject to other state laws such as ethics, financial disclosure, and general laws covering all state employees.

The canal managers believe that the system works. The transfer to the Thruway has been positive as it has resulted in more money for infrastructure recapitalization. Both the toll roads and the canal are transportation corridors and there is some logic in the two being together. However, as the Board of Directors must balance the needs of both entities,

there is a concern among the managers that the highways will be a greater priority in the next few years which could jeopardize allocations to the canal for capital improvements. This would be detrimental to the future of the canal.

It is currently felt that the Thruway Authority has met the original objectives. In 2005, Governor Pataki asked the Canal Corporation to form an Interagency Task Force to develop proposals on recent greenway initiatives and to review existing Canal Corporation duties and functions. There was extensive public consultation which has resulted in a number of recommendations for the future of the canal published in "A Report On The Future of New York State Canals", dated December 21, 2005.

The report provided twelve key recommendations. They are: make the canal a stand alone public corporation, abolish the Canal Recreationway Commission, create an Empire State Greenway Alliance, establish an Erie Canal Greenway, complete the Erie Canal Trailway, encourage public use of canal owned land, create canal interpretive and education centres, eliminate canal tolls and extend hours of operation, designate the canal as a no discharge zone, transfer the federal lock at Troy to the canal, enhance marketing and public relations and create a canal commercial shipping task force.

Key Issues

There are several key issues facing the New York State Canal System.

There is uncertainty of the future direction and organization of the canal including funding. Current funding is adequate. Future funding will decline as competition for funds between the toll roads and the canal increases. There is a fear that the highways will become a greater priority than the canal.

The infrastructure is still in need of major recapitalization over the next decade.

The canal has had serious problems in many areas with siltation which requires annual dredging. Due to antiquated equipment, new problems with disposal and permitting, this activity can not keep up with siltation. As result some areas are experiencing draught limitations for deep draught vessels like sail boats and commercial barges. This will work against efforts to increase commercial and recreational traffic.

Governor George Pataki (a Republican) and his administration did not run for re-election in November 2006. A new Governor, Elliott Spitzer (a Democrat), has been elected and took office in January 2007. It is unclear, at present, if there will be continued support for Canal regeneration projects or for the recommendations contained in the report on the future of the Canal. The Director of the Canal is a political appointment and may be replaced. The answer to this issue may not be known until later this year. However, canal staff are optimistic that there will be continued support for the future of the canal as the executive and legislative branch have expressed support for the need of economic development in upstate New York and the canal is a key economic component. Legislation to create the canal as a stand alone corporation was introduced in the legislature last fall but was not passed. It has been reintroduced in the new legislature this year.

Land management is an issue. During the 1940s to the 1960s, use of canal property was permitted by cottagers and others for no charge or for a nominal fee. Until the Thruway 2000 legislation, the canal could not enter into leases but could only permit. These lands are very valuable. The canal is trying to bring all who occupy canal lands under some form of agreement and at fair market value. This means that people who have used lands for little or no rental are facing large increases for the right to occupy canal lands. This is being met with strong opposition and complaints to the politicians. The canal is also just now getting a good grasp on what lands are owned by them through research and digitalization of properties.

Water management is another issue as it relates to frequent closures especially in some sections of the canal. There are competing and often opposing demands for water from land owners, for power generation and for other uses. There needs to be a balancing act of these competing demands. As well, the canal has to work with others to coordinate the release of water as other agencies operate water systems that impact the canal. The structures were not designed to prevent flooding and have physical limitations during periods of high water inflow into the system. Canal management is currently trying to be more efficient by coordinating their water management activities with others and by improving data collection for decision making with the objective of minimizing closures.

Expectations among locals that the canal can be all to everyone is very high and not achievable. It is very difficult to get the message across to the population that the canal can not meet all expectations and needs.

Regulatory requirements, such as dredging and disposal of dredgeate, is creating difficulties in being able to meet canal operational needs and is requiring more expenditure of funds. It also causes delays in projects.

Funding and Budget 2006

Operating (Federal Funds - varies annually)	\$6.2 million
Operating (Thruway Authority Funds)	40.5 million
Capital (Thruway Authority Funds)	10.0 million
Total	85.0 million

Operating Breakdown	
Operations and Maintenance	24.5 million
Canal Support	3.5 million
Undistributed Fringe Benefits	12.4 million
Equipment not capitalized	0.2 million
Projects not capitalized	4.2 million
Canal Development Fund	1.9 million
Total	46.6 million

Capital Breakdown

Equipment (includes dredging)	\$9.4 million
Construction Materials	0.5 million
Allocations to Engineering	5.4 million
Contracts	14.5 million
Trail Project	8.3 million
Total	38.3 million

Capital funding for 2007 is expected to decrease due to the completion of the Governor's Revitalization II Program.

Federal funding varies annually depending on congressional allocations. This money is allocated for trail maintenance and for general lock operations. Some moneys are allocated for specific projects and can not be used for other purposes. They may also be one time only. Other funds come from the Water Environmental Resources Act for water projects. This is not an annual appropriation and can vary year to year, depending on the priorities of Congress.

The canal feels that funding is adequate but will decline given the competing demands. They do not feel that revenue can ever come close to offsetting appropriations. There is a debate about this aspect of their funding. The general feeling, mainly as it relates to collecting lockage fees, is that the canal is for the overall public benefit and should be funded directly and fully by the state. There is a general belief that growth in boating and tourism will generate more money to the state from indirect sources such as sales tax, than could ever be generated from direct canal tolls.

Revenue

Revenue in 2006 totalled \$2.1 million. This was raised primarily from hydro generation and land fees. There are efforts to increase this amount as lands are being assessed at fair market value and the fee for power generation is low compared to what other jurisdictions charge.

Legislation

The governing legislation is called Canal Law. It created the canal under the Department of Transportation in 1903 and covers all authorities to operate, maintain and own the lands. The Thruway 2000 legislation in 1992 transferred this authority to the New York State Thruway Authority.

Interaction with other Agencies

The Thruway 2000 legislation created the Canal Recreationway Commission. It is composed of local interest groups, some elected officials and users of the canal. They are appointed by the canal and are to provide advice on the implementation of the Canal Recreation Plan and related issues such as the transfer of land. They meet about 6 times a year.

The canal meets and works with many other federal, municipal and state agencies on an ongoing basis. This covers many areas such as tourism, water management and property planning. These contacts are formal and informal. Many federal and state laws, such as environmental laws, require that the canal consults and coordinates activities with the agencies accountable for these laws.

The National Parks Service has its own advisory board for the National Heritage Corridor and activities. This board is made up of many of the same canal interest groups and agencies as those outlined above. The New York State Canal has a membership on that board.

Waterways Ireland

Context

Waterways Ireland was set up as a cross border Implementation Body by international treaty between the Government of the United Kingdom and the Government of Ireland. It, therefore, operates in a unique situation reporting to two sovereign jurisdictions and with accountability to both. It is the largest of the six North/South Implementation Bodies.

Waterways Ireland manages approximately 1000 kilometers of waterways, including major river/lake navigations – the Erne System, Shannon-Erne Waterway, Canals Royal and Grand, Lower Bann Navigation, Barrow Navigation and the Shannon Navigation. They are the only organization with responsibility for the navigation on the waterways under their control. There is no competing authority on the island of Ireland.

The waterways vary in size and number of locks:

Erne System – 84 km, 1 lock.

Shannon-Erne – 63km, 16 locks. Locks, pump-outs, restrooms operated by smart card.

Grand Canal Navigation – 180 km, 3 sections, 57 locks. Manually operated locks.

Barrow Navigation – 65 km, 23 locks. Manually operated locks.

Lower Bann Navigation – 52 km, 5 locks. Operated by lock keepers.

Royal Canal Navigation – 154 km, 46 locks. Manually operated locks.

Shannon Navigation – 238 km, 11 locks. Shannon section operated by lock keepers.

There are over 500 bridges on the waterways but only one bridge, at present, is a moveable bridge. One visitor centre in Dublin, which is closed for refurbishment at the moment, is operated.

Approved allocation of staff is 381 of which 124 are professional, technical and administrative and 257 are operational staff. There are approximately 360 staff on the books at present. This includes all maintenance staff, lock keepers and management staff. A review of the organization is currently under way.

Most capital development works is carried out by the Waterways Ireland workforce – there is a wide range of people with construction skills and the organization has a large number of excavating plants, work boats and road vehicles. There is also an inspectorial staff checking navigation and enforcing the by-laws related to navigation. There are some voluntary groups associated with parts of the waterways but in general there is no formal volunteer system. Volunteers are not used as part of the maintenance or operational system.

The headquarters for Waterways Ireland is in Enniskillen, County Fermanagh. The system is divided into three regions with regional offices in Carrick-on-Shannon, County Leitrim, for the Northern Region, Scarriff, County Clare, for the Western Region and Dublin, for the Eastern Region. A number of works depots are located around the system.

The inland waterways of Ireland are of regional and international significance because of

their size and geographical extent. They are recognized to have intrinsic value as areas of ecological, archaeological, architectural, engineering and historic value. The success of Waterway Ireland's activities depends upon quality waterway environments. The organization recognizes the need to conserve and manage its designated network of waterways as resources of environmental and heritage significance and to promote the value of this significance. Waterways Ireland is in the process of developing environmental and heritage policy and codes of practice to protect the inland waterways and to ensure they are developed and managed in an environmentally sustainable fashion.

Corporate Plan

The 2005-2007 corporate plan for Waterways Ireland sets the direction for the work of the organization for that period. It builds on the foundation of Waterways Ireland's first corporate plan for the period 2002-2004. The corporate plan outlines Waterways Ireland's aims and the programs to deliver these and it also enunciates the statutory function of the organization, its mission statement and core values and standards that guides their work.

Mission

The mission of Waterways Ireland is to provide a high quality recreational environment centered on the inland waterways in their care, for the benefit of their customers.

Core Values

Waterways Ireland has core values and standards that guide all their work. To deliver their mission, Waterways Ireland is committed to achieving excellence in all their activities, in their internal and external stakeholder relationships and in staff development.

Standards

Seven standards support the core values:

- Focus services and facilities on customers.

- Commitment to a culture of excellence.

- Open, accessible, accountable.

- Work to the highest levels of integrity, impartiality and business equity.

- Promote fairness, equality of opportunity, mutual respect and good relations.

- Ensure value for money.

- Regard the waterways heritage and natural environment in all activities.

Role of Waterways Ireland

It is the role of Waterways Ireland to maximize the economic, social and environmental contribution the waterways make to the quality of urban and rural life. Investment in the waterways contributes to a wide range of areas including tourism, provision of recreational facilities, regeneration in terms of acting as a catalyst for economic and social renewal, health of the natural environment and protection of heritage assets.

Goals

During the period 2005-2007, the focus of Waterways Ireland is on achieving five key goals:

- Manage and maintain a reliable and high quality waterways network.
- Develop and restore the waterways network.
- Promote increased use of the waterways principally for recreational purposes.
- Manage and develop the assets of the organization.
- Develop an organization of excellence.

Waterways Ireland recognizes that the core of their work is the reliability, standard and quality of the waterways network. They believe that public safety and confidence in the waterways are essential if they are to attract partners for regeneration or the development of new products and service. Waterways Ireland plans to continue to pursue partnership opportunities to earn income for reinvestment in the waterways from its property and assets.

Waterways Ireland identifies as a core responsibility the care of the built and natural heritage under its protection and delivery of effective conservation measures. It is also planned to extend use of the waterways as an educational resource.

Key Issues

The key issues for Waterways Ireland are the expansion and improvement of facilities along the waterways. Feasibility studies on possible extensions to navigation will be carried out. The importance and approach to these are key components of the current corporate plan.

Governance

Waterways Ireland was set up as a cross border Implementation Body by international treaty between the Government of the United Kingdom and the Government of Ireland. Legislation was enacted in both parliaments to give effect to this treaty. Waterways Ireland reports to Ministers from Ireland and Ministers from the Northern Ireland assembly who act jointly in relation to cross border Bodies. All the previous Acts in relation to navigation on both sides of the border still apply.

Waterways Ireland has a Chief Executive who has full responsibility for the running of the organization and is answerable to the North South Ministerial Council (comprised of Ministers from both jurisdictions acting together). Waterways Ireland's Corporate Plans, Business Plans, etc. are approved by the North South Ministerial Council and the Chief Executive reports regularly to Ministers in formal session. The accounts of Waterways Ireland are audited by the Comptrollers and Auditors General of both jurisdictions. Waterways Ireland, however, acts as an independent body in relation to the management of the organization. Waterways Ireland is a body corporate in its own right and staff are employees of the body and not civil servants.

The Ministers in the North South Ministerial Council for the Waterways Sector are the Minister for Culture, Arts and Leisure in Northern Ireland and the Minister for Community, Rural and Gaeltacht Affairs in Ireland. On an ongoing basis, Waterways Ireland works through the departments of both Ministers. The departments have regular contact in relation to waterways and have put in place resources and processes to deal with this. Waterways Ireland meets department representatives monthly to report on progress and discuss relevant matters.

Funding is practically all received from the two governments who allocate their funds through normal estimate processes in both jurisdictions. As such the Ministers are answerable to the respective parliaments for the moneys they grant to Waterways Ireland. The Chief Executive is the Accounting Officer for the organization and is therefore responsible for the proper use of the funds received. The Chief Executive may be called in front of Public Accounts Committees and other committees of the Irish and Northern Ireland parliaments.

Waterways Ireland is organized with five directors reporting to the Chief Executive. There is a Director of Operations, responsible for the three operational regions, inspection/patrol and asset management; a Director of Technical Services responsible for civil design, structural design, mechanical, environmental services, building services and health and safety; a Director of Finance and Personnel, responsible for finances, procurement, cost accounting, IT, personnel, organization, accommodation and training; a Director of Marketing and Communication, responsible for marketing and promotions, advertising, publications, correspondence, press office, website development, visitor services and customer relations; and a Director of Corporate Services, responsible for strategy/policy, corporate plans, annual reports, EU, business planning, legal/accident claims, legislation, by-laws, licences/wayleaves, property valuations and planning issues.

The governance structure is considered by the organization as being effective. They refer to robust systems with formal reporting mechanisms and review by the Ministers and Comptrollers and Auditors General. This is set out in a financial memorandum which formally establishes the responsibilities of the organization, the delegated sanctions, etc. and the accountability position that has been agreed to formally by Ministers and Finance Ministers in both jurisdictions.

Budget

The approved Budget for 2007 is approximately \$72.7 million, broken down as follows.

Capital works	\$14.8 million
Maintenance	23.7 million
Buildings	11.9 million
Administration*	11.9 million
Other recurring costs	10.4 million

*includes salaries of all professional, technical and administration staff – these are not charged to maintenance and capital works.

Apart from some minor income from lock passages and sale of plots of ground (approx \$0.59 million) funding is provided by the two governments.

Capital works in each jurisdiction is funded 100% by that jurisdiction. Maintenance and Administration costs are funded on a ratio of 85% South to 15% North to reflect the lengths of navigation in each jurisdiction (850 kilometers / 150 kilometers).

Waterways Ireland agrees to the funding requirement annually with the departments and this is approved by Ministers. It forms part of the normal estimates procedures in both jurisdictions.

The Chief Executive notes that they have been very successful with their programs to date and have been given a commitment for their capital program in the South of funding to 2013 for further developments.

Legislation and Positioning

Waterways Ireland is one of six North/South Implementation Bodies, each of which operates on an all-island basis. They operate under the overall policy direction of the North/South Ministerial Council, with clear accountability lines to the Council and to the Oireachtas and the Northern Ireland Assembly. As provided for in the Belfast/Good Friday Agreement, the Bodies were formally established by means of a supplementary International Agreement between the British and Irish Governments signed in 1999. This Agreement was given domestic effect by means of the North/South Cooperation (Implementation Bodies) (Northern Ireland) Order, 1999, and the British–Irish Agreement Act, 1999.

To better understand the positioning of Waterways Ireland, the following are the Bodies and their main function:

Waterways Ireland – responsibility for specified navigable inland waterways on the island, chiefly recreational.

Food Safety Promotion Board – promotion of food safety awareness on an all-island basis.

Trade and Business Development Body – promotion of trade and business on an all-island and cross-border basis.

Special European Union Programmes Body – significant managerial and oversight functions in relation to various EU programs and the Common Chapter in the National Development Plan for Ireland and the Northern Ireland Structural Funds Plan.

The Language Body/An Foras Teanga/North-South Body o Leid – two agencies responsible for the promotion of the Irish language and for promoting a greater awareness and use of Ullans and of Ulster-Scots culture.

Foyle, Carlingford and Irish Lights Commission – consists of the Loughs Agency and Lights Agency and their responsibilities (light houses)

British Waterways

Context

British Waterways operates a 200 year old canal system in Scotland, England and Wales. Most of the canals are located in England. The canals were developed by the entrepreneurs of the industrial revolution and were used as a means of transporting goods cheaply and efficiently throughout Britain. They linked mines, and quarries with factories, mills, markets and deep water ports. With the advent of rail and road transportation many of these canals were abandoned and most were left in disrepair. British Waterways is now revitalizing and reopening the canals.

British Waterways operate and maintain 2,200 miles of inland waterways. Most locks are small, but some such as those on the Caledonian Canal in Scotland, are larger and more comparable to locks on the Trent-Severn Waterway and Rideau Canal. The system is used by 29,000 licenced vessels with over 4 million lock operations performed annually. Over 300 million people visit the canals. There are a large number of historic assets of which 2,739 are listed buildings and 42 are scheduled monuments. Assets include 4,763 bridges, 397 aqueducts, 1,657 locks, 96 safety and flood gates, 45 reservoirs, 80 water pumping stations, 1,036 lock cottages, 60 tunnels, 300 miles of conservation areas, 65 sites of special scientific interest and thousands of archaeological sites. The waterway network adjoins or bisects 5 world heritage sites, 8 historic battlefields and 12 registered historic parks.

British Waterways is also responsible for managing a large amount of real property valued at over \$1024.6 million. This property provides a crucial source of revenue.

British Waterways employed 1,950 employees in 2006. This number includes 200 seasonal workers mainly employed between spring and autumn. Operations and maintenance accounted for 800 employees while administration, all office based workers, totalled 950.

British Waterways primarily operates and maintains the canals with their own staff, with many small locks being self-operated by the boater. Large projects are usually contracted out. There is a cadre of in-house professionals such as lawyers and engineers. Payroll and pension administration, maintenance of financial systems and the supply of computer equipment are contracted out. There are small contracts for a variety of services such as waste services. British Waterways has a single major contractor who delivers \$65 million of construction works each year. The contract has a framework based on tendered rates, but paid on actual cost, plus a management percentage and with a pain/gain sharing arrangement.

Visitor Centres

British Waterways operates and maintains 3 major visitor centres. They are located at the Falkirk Wheel in Scotland (near Edinburgh), the Anderton Lift in Cheshire (near Liverpool), and the Standedge Tunnel in the Pennines. The Visitor Centres are directly managed by the waterways staff. Falkirk and Anderton have exhibits, a shop and a café. Standedge

has exhibits and a shop and there is a leased café adjacent to the tunnel. There are also 12 smaller interpretive centres. British Waterways also uses some static displays throughout the waterway network to inform, provide direction and educate the visitor. The objectives of the Centres are to attract visitors to the canals and to operate as commercially as possible with the objective of being self sustained.

Volunteers

British Waterways relies on volunteers for a number of tasks. They are hosts at visitor centres and provide outreach and educational programs in schools. Last year, over 700 volunteers were enlisted for a waterway-wide cleanup of litter in the spring. They perform physical work on projects such as lock restoration. Volunteers are also used for recording of heritage assets, customer service and professional advice. In 2006, British Waterways appointed a senior manager to manage the full potential of volunteers. The Waterways also works with volunteers from other agencies such as the Waterways Trust and the British Trust.

There is no formal recording of volunteer efforts by British Waterways. They estimate that there were over 18,000 volunteer days in 2005/2006. After costs, the value of these days is estimated to be around \$2.2 million. British Waterways is working to increase the number of volunteers through engaging more organized groups, tapping external funds for volunteers such as the Big Lottery and the European Social Fund and hiring volunteer coordinators. It is hoped that volunteer activity will increase by 50%.

Vision

The vision, as outlined in their current 5 year plan, is to create by 2012 an expanded waterway that is largely self sufficient, used by twice as many people and is regarded and known as one of the nation's most valued collection of assets. Visitor satisfaction will be the number one job and will result in an enjoyable quality experience. To achieve this vision British Waterways is committed to increasing customer service, improving facilities, establishing leisure businesses, creating visitor destinations, championing regeneration to develop waterside properties and restoring water access to the public. A customer is anyone who uses the waterways and includes boaters, towpath visitors, marina operators, other business organizations, local and central governments.

Implementation of the Vision

Corporate Social Responsibility

British Waterways owns a large number of historical assets and sites of special scientific interest. Management statements, an Environmental Management System and Local Biodiversity Action Plans are being developed for each site. The organization is committed to protecting the heritage and environmental sites when developing properties and repairing assets. Skills and knowledge are being developed by training employees.

British Waterways is endeavouring to engage visitors and communities to enhance the quality of life along the waterways. Much of this is in providing safe access, encouraging

use of waterway property and education. British Waterways also works with a number of voluntary sector partners to find new ways to fund the waterways and to generate interest and support. These groups include The Waterway Trust, Inland Waterways Association, The Wildlife Trusts and local canal, community, environment and heritage organizations.

Customer Focused Organization

British Waterways has implemented plans and programs to improve customer satisfaction by providing excellent service. There is a program to improve facilities and services to meet customer needs. Feedback is encouraged through surveys, meetings and a complaints procedure. The British Waterways Advisory Forum made up of representatives of various interest groups was formed to provide feed back. They meet at least twice a year. The Forum advises on strategic issues such as restoration strategy, congestion, visitor standards and national consultation mechanisms. There is a similar group in Scotland. Strategic policy advice about the waterways is also provided by the Inland Waterways Amenity Advisory Council. It has published reports on topics such as restoration, social inclusion and planning.

Growing Boats and Boating

Boating is seen as the core activity at British Waterways. The plan is to grow boating by 2% per annum. Lock usage met this goal in 2006. This goal is being pursued through focus on key customer issues which are increased vegetation control, dredging, increased amenities at locks, new services, adding and improving mooring and standardizing service charges. New mooring sites are being developed by encouraging private sector investment. There were 6,158 mooring licences issued in 2006. In 10 years, 10,000 new mooring spaces will be required. British Waterways has developed an Inland Marina Investment Guide to encourage and assist private entrepreneurs to meet this need.

British Waterways plans on licensing every vessel using the waterways by making the cost affordable, through increased compliance and by making licences easily obtainable over the web. Over 29,000 licences are sold annually. Commercial licences totalled 2,110. 1,724 of these licences covered vessels catering to leisure traffic, e.g. hire boats, while 386 licences were issued to freighters and other work boats.

More Restoration

Preserving the historical assets is the single biggest commitment. \$55.8 million was spent in 2005/2006. There is still a deficit of \$259.4 million needed to meet the 2012 goal of having no asset requiring critical maintenance.

By 2000, British Waterways secured \$418.6 million for restoration projects from their partners such as the Millennium Commission, the National Heritage Lottery Fund, National Trust, Living Landmark Fund, European Union Regional Development Fund, Landfill Tax Credits, local authorities and regional development agencies. Over 200 miles of canals were reopened and critical maintenance of many other structural assets was addressed. There are plans to spend about half of that in the next 20 years on 9 projects to reopen non-navigable canals. In 2005, a Regeneration Directorate was created to focus on

raising public funds for restoration projects.

Business Operations

The business is segmented into waterway management, leisure, restoration, property, ventures, fixed and operating costs. British Waterways plans to grow their business income over the next 5 years by using their valuable assets to generate significant income which will be used to sustain the waterways for the long term. In 2005/2006 income was \$62.8 million.

a. Rentals

Income is being raised through direct water sales and by charging utility companies such as British Telecoms, gas and electricity utilities for the use of waterway lands for cable and pipe crossings. There are charges for surface water discharges into the canals.

b. Sponsorships

British Waterways is exploring sponsorships with local organizations and others to promote activities and attract visitors. They see a potential to generate income, bring more market visibility and foster greater public understanding of British Waterways values by entering into sponsorships. One initiative is to advertise football near the waterways and at key visitor destinations

c. Freight

There is an effort to double freight transportation by 2010. Most of the freight carried today is in the transportation of aggregates, fuel, and biomass to power stations and the suppliers are being encouraged to transport more product. Commercial mineral deposits have been mapped and potential customers identified along the canals. The transportation of waste and recyclables is another potential source of income. The adaptation and use of containers as a means of transporting goods is being actively investigated. British Waterways is also looking at developing a port facility in Leeds with partners. Freight needs substantial investment and poses a high risk for British Waterways.

d. Property

British Waterways owns 32,161 acres of land. 2,858 acres are required for navigation (locks), 200 acres are under leasehold and 29,107 acres are freehold. Of these acreages 26,654 acres are classified as being required for all core navigation business requirements including reservoirs and rivers. 2,124 acres are classified as lands required to generate income. 798 acres are classified as development which is being held either to be sold or converted to investment. The remainder of the lands are unclassified. Property not required for the operation of the waterways or essential for revenue generation is being sold. Money from sales is to be used for reinvestment purposes.

There is a plan to increase property income through active property management. British Waterways is going to increase the number of development acquisitions, continue to trade

and assemble land prior to offering it to developers, develop property through partnerships, engage in direct development themselves and work with government to enable the waterways to use their property and regeneration expertise on other waterways.

e. Ventures

Waterscape.com is the dedicated marketing arm of British Waterways. It is a solely owned internet based business set up to promote the waterways and provide canal travel services to consumers.

British Waterways Marinas Ltd. was established as a subsidiary to improve the performance of British Waterways owned marinas, to develop and acquire new marinas and to create a business separate from the role of British Waterways as a waterway operator. Its goal is to compete fairly with the private sector and it is not subsidized by government grants.

The Waterside Pub partnership was formed as a joint venture with Scottish and Newcastle Pub Enterprises (Management) Limited to develop a nationwide chain of more than 100 waterside pubs. Currently there are 30 pubs under lease with an option on 20 more sites over the next 3 years.

ISIS is their waterside property joint development partnership with the private sector, one of which is the Morley Fund Management. ISIS is named after the Egyptian goddess of rebirth and regeneration. There are currently 11 sites under this portfolio with an option on 5 additional sites. One of the more well known sites is Wood Wharf which is a 20 acre site in the north east corner of the Isle of Dogs just east of Canary Wharf in London.

British Waterways has created a mobile phone mast network with their partner New Edge Communications Ltd. Six sites have been built with 24 more under construction.

Watergrid is a water supply and treatment partnership formed with Bristol Water Holdings and Partnerships in 2002 but it will now become a wholly owned subsidiary. This venture was not very successful and does not appear to have potential growth in the medium term. As a result, Watergrid will now concentrate on the selling of raw water to other water utilities, waterside industries and users.

f. Reducing Fixed and Operating Costs

British Waterways is proposing to grow their business without increasing costs. To achieve this, fixed costs must be reduced. In 2004, they created a Shared Service Centre which centralized finance and administration with the objective of reducing overhead costs by \$1.1 million per year. They are currently reviewing office space. Other savings are being realized through group buying power for goods and services and by developing an electronic procurement process to reduce transaction costs. They are also reducing and reusing material where ever possible. An energy reduction program has reduced consumption by 10% in 2006 with a goal of 30% by 2008.

British Waterways has invested in training employees in personal job satisfaction, safety and job improvements. They are offering employee incentive rewards. The goal is to increase productivity, reduce sick days and reduce accidents. In 2006, employee satisfaction with their jobs increased to 80% from 71% in 2004. There was a 25.8% reduction in reportable accidents. Absenteeism fell to 7.25 days in 2006 compared to 7.3 days in 2005.

Key Issues

Funding is the most important issue. The government grant is falling, requiring growing revenue and entering into third party funding arrangements to cover the cost of operations, maintenance, regeneration and restoration.

Asset and Network Management are key issues to ensure public safety and the provision of a safe, usable and fit for purpose network. They have developed a management model called Steady State which uses the assets and characteristics of each canal. The model assumes no backlogs of maintenance. The model predicts that they require \$270 million per year to properly maintain the Waterways. Current funding allows an allocation of \$218 million to this part of the core business. Clearly there is a shortfall in funding. To manage this shortfall, they must focus on management and delivery of service, the key aspects of public safety and meeting customer standards. They have developed customer Minimum Standards which are mostly related to safety and they have Target Standards which due to funding, can not yet be achieved. Management is challenging their business units to meet these standards, even if it is only as a percentage of their budgets. Efficiency is an ongoing objective to reduce costs and increase output to meet or minimize the funding shortfall.

Increasing the number of visitors to the Waterways is a challenge. There is a need to improve standards and service to increase customer satisfaction while not increasing costs.

There is an ongoing challenge to increase revenue through large scale regeneration along the canals. British Waterways is currently involved in \$13 billion of regeneration.

Governance

British Waterways is a public crown corporation responsible to the people of the United Kingdom. The sponsoring departments are the Department of Environment, Food and Rural Affairs (DEFRA) in England and Wales and in Scotland, the Scottish Executive (The Enterprise, Transport and Lifelong Learning Department). British Waterways also liaises closely with the Department for Economic Development and Transport in Wales (the Welsh Assembly) and Regional Assemblies.

The Westminster Government set out its objective for British Waterways in the "Framework Document for British Waterways" published in 1999. The objective is to operate it "as a public corporation which runs its affairs on a commercial basis consistent with its statutory powers and obligations for navigation and the environment; and its objectives agreed by the government. It is expected to promote the use of its waterways

for leisure and recreation, tourism, regeneration, and transport while conserving their built and natural heritage". The Scottish Executive, in 2002, published its expectations of Scottish Canals in a document titled "Scotland's Canals-An Asset for the Future". The Scottish Executive views the Scottish Canals as an asset which can enhance the future quality of life in Scotland.

The future goal is to be less reliant on government funding and more commercially or business oriented. All revenues generated are to be reinvested into the waterways and not to be used for a profit dividend. However, with the large number of assets requiring recapitalization and future repair, it is recognized that there will always be a need for some government funding. The Corporation's objective is to reduce the Government Grant from 40% to 25% of expenditures by 2012.

British Waterways applies the standards of corporate governance applicable to public limited companies in the U.K. and which exceeds the requirements of government legislation.

There is a Board of Directors responsible to DEFRA and the Scottish Executive. The Board has a Chairman, a Vice Chairman, seven other non-executive members appointed by the Secretary of State for DEFRA and two members appointed by the Scottish Executive. The Board meets regularly six times a year and brings an independent judgement and oversight of direction, strategy and corporate objectives to British Waterways. Reporting to the Board are Executive Directors who manage the Waterway on a daily basis. The Executive is also responsible for developing business strategy and policies, subject to Board approval. The Board is briefed by the Executive who usually attend Board meetings.

The Board submits three year rolling business plans and detailed annual budgets with performance indicators. The Executive provides detailed expenditure analysis to the Board. The Board produces an annual audit report to the Ministries. British Waterways is subject additionally to public sector controls and Parliamentary scrutiny.

The Executive Directors include the Chief Executive Officer, Finance, Technical Services, London (operations, re-generation, and property), Regeneration, Director Scotland (operations), Commercial, Legal Director and Secretary to the Board, Managing Director England and Wales (operations), Customer Operations, Marketing and Customer Service. The Chief Executive is responsible for the day to day operation of the corporation, for implementing Board policies, plans and objectives and for proposing business priorities and targets to the Board as part of the Strategic Plan. The Chief Executive must ensure that British Waterways meets the requirements of government accounting and observes any guidance issued by the Central Government. The position is also the main point of contact for the Corporation with the Department of Environment, Food, and Rural Affairs and the Scottish Executive.

Engaging Other Agencies and Public Authorities

Under the Town and Country Planning System in England and Wales, local planning authorities consult with British Waterways on proposed development near their facilities.

Local authorities legally only have to contact British Waterways on questions of safety, however, the process does allow for comment on wider aspects of development as it may impact the canals.

Water resources are increasingly being governed by European legislation. This requires British Waterways to work with the Environment Agency in England and Wales, and with the Scottish Environmental Protection Agency in Scotland. Issues, such as the taking of water and works affecting a watercourse, require licences or permissions from these agencies.

British Waterways maintains partnerships with various stakeholders across the U.K. These relationships are sometimes in the form of a formal agreement or informal consultations, depending on the project or the issue.

In Scotland, the Scottish Executive has created the Scottish Canals Development Committee with two subsidiary groups covering the Highlands and the Lowlands. The purpose of these groups is to encourage co-operation between public bodies to maximize the public policy objectives of the Scottish Executive in relation to the canals. The participants are local councils, the regeneration/development agencies, Scottish Heritage, Historic Scotland, Scottish Environmental Protection Agency, Forestry Commission, canal user groups, British Waterways and tourism groups. There are no similar arrangements in England and Wales.

The British Waterways Executive holds an annual meeting in England and Wales and one in Scotland. This is similar to the annual Board meeting held with shareholders.

In response to devolution in Scotland, a group has been set up called the British Waterways Scotland Group. This group is made up of the British Waterways Board, the Executive and external members. The purpose is to champion British Waterways' interests in Scotland and provide advice as to differences due to devolution that need to be considered by the organization.

Expenditures and Income 2005/06

Trading Income (Revenue)	\$217.8 million
Restoration and third party funding (National Trust)	31.6 million
Government Grants (DEFRA 139.67, Scottish Exec. 26.23)	165.9 million
Total Revenue	415.3 million
Total Expenditure	(414.4) million
Operating Profit	0.9 million
Share of Operating Profits	16.8 million
Profit on sale of property	25.1 million
Profit on sale of other fixed assets	7.6 million
Net interest payable	(4.6) million
Other finance expense	(1.5) million
Profit for year before taxes	44.3 million
Taxes	(14.8) million
Profit after taxes	29.4 million

Revenue (Trading Income Non Grants)

Trading Income

Property Rentals	\$62.8 million
Utility Income and water sales	45.6 million
Property Way leaves (Annual rent) and premiums	38.2 million
Vessel Licences	24.9 million
Maintenance and other income	17.7 million
BWML (Marinas)	12.4 million
Mooring Permits	10.0 million
Retail Sales	6.3 million
TOTAL	217.8 million

Third Party Contributions 31.6 million

TOTAL 249.4 million

(Source Annual Audit Report 2005-2006)

(Figures rounded, totals do not balance)

Legislation - Statutory and Financial Framework

British Waterways is a public corporation which was established by the Transport Act of 1962 to manage the inland waterways. The Transport Act of 1968 classified the waterways into three categories: multi-use canals, for commercial and leisure; the cruising waterways, principally for recreational activities; and the remainder which were mainly non-operating and were to be dealt with in the most economical manner possible. The British Waterways Act of 1995 provides direction to the Waterways to take into account the desirability of protecting the non-operating canals for future use as cruising waterways or for other public use. The 1962 Act provides the government with the authority to give general direction to British Waterways. In 1999 the government issued a framework document that requires British Waterways to operate and maintain its waterways to standards that reflect use and prospects of use. The document also outlines the relationship of the government, with the Board, the Board with the Chief Executive Officer, as well as setting out relations with users of the Waterways, the Ombudsman, and the Inland Waterways Amenity Advisory Council.

Grants from Government

Grants are received on a monthly basis. The payment of grants to British Waterways as a public corporation is outlined in Financial Memoranda issued by the government. British Waterways is precluded from drawing the grant in advance of need. The grant can not be used for investment purposes but must go to operations or capital expenditures. There is a mechanism which allows them to borrow money from the government in times of no cash flow but the loan is to be paid back when the cash flow is restored. There is no provision for the Waterways to undertake long term public debt.

The Gota Canal

Context

The Gota Canal connects Sjotorp on Lake Vanern to Mem on the Baltic Sea running via Lake Vattern. It is one of eight canals in Sweden and at 190 kilometers in length, second in overall length. It is Sweden's largest cultural-historical structure and one of Sweden's best known tourist attractions. There are some 4500 pleasure craft on the canal and about 2.5 million persons visit the canal annually. The Swedish canals are linked through the Association of Swedish Canals.

The system of canals in Sweden reflects both their original purpose, commercial use for industry, and for some of the system, the evolution of use from industry related to recreational use. To the west of the Gota Canal, the Trollhatte Canal and the river Gota alv connect Lake Vanern, Sweden's largest lake, to the Kattegat Sea on the west coast. This canal completes the navigation link from east to west across the country and is an important western transportation route for commercial traffic. The Dalslands Canal, to the west also, passes through an area with many lakes and provides a connection to Norway for pleasure boaters. The Hjalmare Canal, Sweden's oldest canal dating to the early 17th century, is a 13 kilometer link between Lakes Hjalmaren and Malaren. The Kinda Canal, an 80 kilometer link south from the Gota Canal to Lake Asunde, once important to the industry of the country 200 years ago, is today one of Sweden's most popular waterways for pleasure boats and small passenger vessels. The Sodertalje Canal, six kilometers in length and near Stockholm, links the Baltic Sea and Lake Malaren. It is an important route for commercial shipping. The Stronmsholms Canal, Saffle Canal and Bergslagskanalen were for many years essential to the industrial activities in their respective parts of the country but today are frequented by pleasure boats.

History and Significance of the Gota Canal

The building of the Gota Canal across the middle of Sweden provided a quicker transportation system than the salt water route and avoided tolls and closure of navigation when traveling through Danish controlled waters. The canal was envisioned as early as 1516 and was finally built between 1810 and 1832. Factories and smelting works were established in the vicinity of the canal to supply the necessary building materials over the 22 year construction period.

The rise of modern manufacturing industry in Sweden is probably the most significant consequence that the Canal has had for the country. The Motala workshop, established in 1822, was where developing engineers and foremen received their training in the new production methods. A large body of knowledge in the casting of iron was developed and Motala eventually grew to be a modern industrial town. This knowledge was significant at the national level for the country.

Karlsborg Fortress is seen as a direct outcome from the building of the canal. When Sweden lost Finland in 1809, it was generally felt that Stockholm was too unprotected, situated as it was close to enemy territory. The fortress was built as a central defence in the country, intended to house the Swedish Parliament, the royal family, the crown jewels

and the nation's gold reserves. The Gota Canal transportation route was a key factor in its location.

Physical Assets

The Gota Canal is 190 kilometers in length, of which 87 kilometers is excavated canal. It has 58 locks which raise and lower boats 91.8 meters. There are also 21 remote controlled bridges along the canal. Boats 30 meters in length with a 7 meter beam and draught of 2.82 meters can be accommodated. Overhead clearance is 22 meters. Four to seven days is the recommended travel time to traverse the canal.

Operation

In 2007, the Gota Canal is open from May 2 to September 23. The peak season is June 11 to August 20. During the peak season the hours of operation are 9:00 a.m. to 6:00 p.m. daily. In July the canal is open until 8:00 p.m. at some locations with reduced service, e.g. the Mem lock to the guest harbour in Mem, the flight of locks in Borensult-Motala harbour for west bound traffic, Sjotorp on Lake Vanern to the upper guest harbour in the shipyard basin.

During the low season there are two alternatives for traversing the canal – the entire canal or part of it in five days, or, the entire canal in three days. For the five day trip, movement is coordinated with other boats, there are joint stops and reservations are required three weekdays in advance. For the Gota Canal Express, where the route is completed in three days, the fee is doubled and reservations are required three weekdays in advance.

Pleasure boat permits are sold by length category and are categorized as single ticket per lock, return and season. There is a reduced rate for the low-season.

The permits are personal and apply to the same captain and boat. A decal is affixed to the boat and permits are not refundable once the trip has begun. Permits are purchased with a credit card on the Internet or upon arrival at a lock, the preference being to avoid cash.

Business Concept

The Gota Canal Company runs both the canal and a property business. Activities directly related to the canal business include laying up boats and shipyard work, external work, bridge maintenance, sales and museum activities. The property business includes management of forests, land and property connected to the canal for both historical and practical purposes.

Development work occurs in close cooperation with municipalities, county councils, regions, county administration boards and businesses along the canal. The counties have significant input into the restoration and use of historic buildings. The canal company and the counties work closely together and the counties have formal veto power in this area.

The Company operates comprehensive maintenance and repair activities to maintain the canal assets for navigation, land-based uses and safety.

The Company operates dry docks and boat storage facilities at Soderkoping, Motala and Sjotorp. Typically expected services are provided – land storage, sail boat mast removal and re-fitting, hull wash, covering and launching – as well as engine maintenance and services.

With regard to the licensing the operation of a facility, the Company will phase in the return on investment to the Crown over four years (2%, 4%, 6%, 7%) to assist the operator in establishing the viability of a new business.

Boater Accommodation

The Gota Canal Company operates 20 guest harbours. They typically include guest berths with electrical hook-ups, toilets, showers, laundry facilities, septic tank emptying, launch ramps, and fuel. Two harbours offer wireless Internet connection for a fee. A ticket purchased to transit the Canal (lake to lake or entire canal) entitles a boat to stay up to five days in each guest harbour free of charge.

The Gota Canal Card

The Gota Canal Card is a smart card that gives canal travelers, whether traveling by boat or land, access to all guest harbour facilities. It also gives free admittance to the Gota Canal exhibition in Motala and sauna houses along the canal in Sjotorp, Hajstorp and Jonsboda. The card originated as a season card (May 2 – September 23) and in 2007 a weekly card is being introduced.

For Gota Canal boaters using the Lake-to-Lake ticket or traveling the entire canal, the Gota Canal Card is included in the canal fee, two cards per boat.

Recreation

The Gota Canal and its corridor is about more than boats. Land-based activities are popular and a good deal of development effort is being made in this area.

Biking

The Gota Canal Trail that uses the old tow path is one of the most popular bike trails in Sweden. As well as individual activities, 3 and 4 day package bicycle tours along the canal are available with hostel and hotel accommodation. A special bicycle ferry service takes cyclists and their equipment across Lakes Viken and Roxen. The popularity of these tours necessitates a three week advance booking. Bike rentals are readily available.

Walking

The Gota Canal Company also promotes use of the canal trail for walkers and hikers. The canal trail is easily accessible for casual walkers and the more serious hikers. A Nordic Walking Centre is now being started up along the Canal. It gives access for all that people need for a Nordic walking tour – instruction, equipment and excellent trails. On its website, the canal gives fitness tips for this user group, called the Gota Canal Nordic Walking School.

Day Activities

Opportunities for fishing, canoeing, kayaking, swimming and golf are also promoted. One day and several day trips on passenger boats cater to those who want to travel the canal and appreciate its setting without using their own boat.

Hostels

There are several hostels along the Gota Canal offering affordable and basic overnight accommodation. The Gota Canal Company promotes this activity and its best known hostel is at Norrkvarn.

Norrkvarn

The area around the Norrkvarn locks near Lyrestad is unique to the canal. A facility for the entire family has been developed. Featured is the mini canal for children, which is a miniature of the Vastergotland section of the Gota Canal. It contains working locks and bridges on a canal that is 80 centimeters wide and 10 centimeters deep.

A wide range of accommodation owned by the Gota Canal Company is available – the Baltzar von Platen Lodge which is both a hotel and hostel with a total of 70 beds, the Enchanted Tree Stumps which are small cottage like rooms finished to look like tree stumps and a canal guest harbour for boaters. There is a restaurant and pub and in summer there is also live theatre for families and several children's activities.

Environmental Policy

The foundation for the environmental policy of the Gota Canal is that all jointly are responsible for caring for the environment – the Canal can never 'pass the buck'. The Gota Canal Company has therefore drawn up a number of regulations that apply to pleasure boat users. The Swedish Boating Union provides information on environmental regulations that applies to all Swedish canals.

The Gota Canal has installed eight pump stations along the canal for emptying septic tanks on pleasure boats. Toilet waste must not be emptied in excavated sections of the canal or in guest harbours and can only in exceptional circumstances be emptied in lakes that form part of the canal system. Use of the eight pump stations is free of charge.

Staff

The average number of employees is 49 with a peak of about 165 in the high season.

Volunteers

The Friends of the Gota Canal Association has over 500 members. The goal of the Association is to document and inform people about the Gota Canal. One project undertaken by the Association is working in cooperation with the Gota Canal Company to plant trees along a portion of the canal where the trees that now form a boulevard are infected by Dutch Elm disease and are dying.

Governance

The Gota Canal is owned by the Swedish government, the Ministry of Industry, Employment and Communications, and is operated by the AB Gota Canal Company. The Company was formed in 1810 at the start of canal construction. The canal was in private ownership until 1978 when the company was taken over by the Swedish state. It was converted to an independent subsidiary company in 1992. At that time, the parliament of Sweden considered that it is the business of the state to take responsibility for the future operation and repair of the Gota Canal so that its value as a cultural-historical structure and as a tourist attraction could be maintained.

The state will continue to own the company into the future and responsibility for repair of the canal will be ensured by the government. The canal property and the company's forests will continue to be a coherent unit.

The AB Gota Canal Company is governed by a board of directors including employee representatives. Of the ten board members, there are two employee representatives and two substitute employee representatives. The Managing Director of the company reports to the board.

Financial

From the annual report for 2005:

Turnover: \$7.49 million (\$2.63 million renovation grants)

Profit and net financial items: 0

Result divided into areas of operation:

Canal:	\$-0.79 million
Forest and property:	0.65 million
Balance sheet total:	7.88 million
Renovation costs:	2.63 million

OBSERVATIONS

Okeechobee Waterway

The waterway appears to be operated efficiently for the purpose of flood prevention and the supply of water to South Florida. While there is good co-operation between the Army Corps of Engineers and the South West Florida Water Management District, it appears that the Corps is the final decision maker. Navigation is secondary or even lower on the list of priorities that the Corps has in South Florida.

Tennessee-Tombigbee Waterway

The Tenn-Tom is the newest of the waterways researched. Its prime navigation focus is on commercial traffic. Pleasure boaters are down the list of priorities but its use as a safer and shorter route between mid-America and the Gulf of Mexico is very attractive to these non-commercial users, as opposed to using the lower Mississippi River.

The many interests in the corridor seem to live in harmony. There is a concerted effort by state and local governments, private industry and non-government organizations to capitalize on the presence of the Waterway and its tremendous potential for a positive impact on the quality of life and economy of the corridor.

New York State Canal Corporation

The New York State Canals appear to be at a crossroad. Capital funding from the Thruway Authority has resulted in considerable rehabilitation work being completed on the assets. Additional funding to revitalize the canal corridor and private buildings has resulted in the renovation and restoration of people friendly and rejuvenated canal communities along the canal route. This has also created more expenditure and investment in the communities by the private sector and the local municipalities themselves. With a change in administration in Albany last January, it is not known if this support will continue. It is therefore, not certain if the recommended future operation of the canals will be as a stand alone corporation dependent more on direct state government appropriations as opposed to using the reserves of the Thruway Authority and on revenue generating projects.

However, legislation to make the canal a stand alone public benefit corporation has been reintroduced into the State legislature. The legislature and the executive are committed to the revitalization of upstate New York. The canal is seen as a vital part of the economy of upstate New York.

Management and many local leaders do not see the canal as being a viable entity on its own. There is a debate as to whether the canal is a public benefit like a park, which needs to be funded completely by the state or as a more business oriented organization that relies less on public funding. There appears to be a consensus that the canal will never be a large money generator.

Waterways Ireland

The role of Waterways Ireland as a cross border Implementation Body is very unique and it moves the organization to a very high profile position. It is interesting to note that the organization is a corporate body in its own right and is successfully funded by two national governments working in close cooperation.

Waterways Ireland is a very customer focused organization and it is striving to further improve in this area. It appears to be successful in balancing recreational use with protection of the natural and historic environment.

Waterways Ireland was very forthcoming with information.

British Waterways

The British Waterways financial model appears to work. It is built on the objective of increasing service and rehabilitation of assets on the canals by increasing revenue over government grants. They have been successful by entering into business ventures by commercially developing with the private sector the valuable property owned by the Waterways and in being able to access alternate sources of financing such as European Union Funding. In addition, the government has permitted the Corporation to act like a commercial enterprise.

British Waterways is also a very open and engaging corporation that strives to satisfy its customers and the shareholders of the U.K. By increasing public satisfaction the corporation is building support for its objectives. British Waterways appears to provide excellent service and value for money spent. They strive to consult and communicate with their shareholders and customers on a regular basis. They respond quickly to complaints. The British Waterways website provides a large amount of information to the public from general information to its annual financial report. They are very responsive to answering questions compared to the other canals studied in this report.

British Waterways also appears to actively pursue its mission and values of preserving heritage, protecting the environment and environmental sustainability. They engage these principles not only in their daily operations but by entering into charters or agreements with their contractors and business partners that requires them to operate in a similar manner as a condition of the contract or agreement.

Gota Canal

The Gota Canal is operated by the AB Gota Canal Company that is an independent subsidiary company of the Swedish government. In 1992, the government formalized its position that it is the business of the state to take responsibility for the future operation and repair of the canal.

A non-canals private sector business person was hired as Managing Director to expand the canal operation by implementing business ventures that complimented the traditional boat moving operation. The focus of these is building the array of visitor experiences

available in the canal corridor. The operation is business oriented but not as aggressively so as British Waterways. Both seem to meet the needs of their situation and the positioning of their respective organizations in their countries.

The use of technology is forefront in the operation of the canal, eg. smart cards and remote controlled bridges.

SOURCES

Okeechobee Waterway

U.S. Army Corps of Engineers web site- www.usace.army.mil
South Florida Water Management District: www.sfwmd.gov
Lake Okeechobee & Okeechobee Waterway Brochure
Personal conversation with a knowledgeable manager
Personal on-site observation

Tenn-Tom Waterway

U.S. Army Corps of Engineers Website: www.usace.army.mil
Tennessee-Tombigbee Waterway website: www.tenntom.org
Personal conversation and correspondence with a knowledgeable manager
Personal conversation with Tenn-Tom Development Authority staff
Personal on-site observation

Waterways Ireland

Waterways Ireland website: www.waterwaysireland.org
Website: www.northsouthministerialcouncil.org
Waterways Ireland Corporate Plan 2005-2007
Direct contact with the Chief Executive

New York State Canal System

New York State Canal web site: www.nyscanals.gov
A Report on the Future of New York State Canals, dated December 21, 2005
The Cruising Guide to the New York State Canal System
Personal conversation with several managers of the New York State Canal Corporation
Personal on-site observation

British Waterways

British Waterways web site: www.britishwaterways.co.uk
Our Plan for the Future 2005-2009
Public Benefits from Historic Waterways Annual Report & Accounts 2005/06
Personal conversation and correspondence with a knowledgeable manager
Personal on-site observation

Gota Canal

Gota Canal web site: www.gotakanal.se
Personal conversation with the Director
Personal on-site observation