Canadian Canal Society | Société des Canaux du Canada

CANALS CANADA/CANAUX DU CANADA

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Société des Canaux du Canada

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Celebrating the Tay Canal

The Tay Canal is celebrating its 175th anniversary this year. There are many events being planned by the Tay 175 Steering Committee. On May 16, 2009 the celebrations will kick off with the official opening ceremony for Tay Canal 175, to be held at the Perth town basin. The week of July 4 to 12 is Tay Canal Week with many activities, including exhibitions, regattas and concerts. Full details about Tay 175 and related events can be found on the web at: www.tayriver.org/tay175/

A Trip Up the Tay Canal

A View of Perth from the Basin

The Tay Canal is connected to the Rideau Canal by the Beveridges Locks, located at the head of Beveridge Bay in Lower Rideau Lake. This is the "second Tay Canal," the original (first) Tay Canal followed the Tay River to its outlet into

Lower Rideau Lake (see History of the Tay Canal on page 2). If you haven't travelled the Tay, then this year will be a good year to do it. And, if you've travelled it before – do it again. Despite what the hydrographic chart shows (4 foot water depth), the draught on the Tay Canal is maintained by Park Canada at five feet - the same level as that in the rest of the Rideau system. As in the rest of the Rideau system, any boat with a draught of four feet or more is asked to contact the Rideau Canal Office of Parks Canada before proceeding up the Tay Canal.

The limiting factor for a trip right into Perth is the fixed height of the Craig Street bridge (2.1 metres/7 feet). If your vessel is higher than this, you'll have to dock at Last Duel Park, a short walk from downtown Perth. If your vessel is less than 2.1 metres above the waterline but higher than 1.6 metres (5.2 feet) you'll have to have the Beckwith Street Bridge swung in order to get right into the Perth basin. Mention this to the lock staff at Beveridges who can advise when the bridge will swing.

A trip up the Tay starts at Lower Beveridges Lock, a lock built in the 1880s to the same design specifications as a regular Rideau lock. A few hundred metres upstream is Upper Beveridges Lock. After passing through Upper Beveridges, boaters enter a dredged cut that leads to the Tay River. At the Tay, the route merges with that of the original Tay Canal.

If you're travelling in a shallow draught boat (or paddling a canoe or kayak) consider following the original route of the Tay River for the best wildlife viewing. At marker buoy NT12, turn left (southwest) to follow the meander of the river (the main channel proceeds straight via a dredge cut). The marsh lands surrounding the Tay are home to a variety of wildlife, including ospreys, herons and the reclusive Pied-billed Grebe (a small diving duck).

The remains of Lock 5 of the original Tay Canal can be found at the entrance to a small side channel located just upstream of the confluence of the Tay Canal with Jebbs Creek (marker NT34). This side channel is part of the original Tay Canal.

As you approach the Craig St. bridge in Perth, where you go will be determined, as previously noted, by the height of your boat. Boats higher than 2.1 metres (7 feet) will have to dock at Last Duel Park. Other boats can proceed into the Perth Basin.

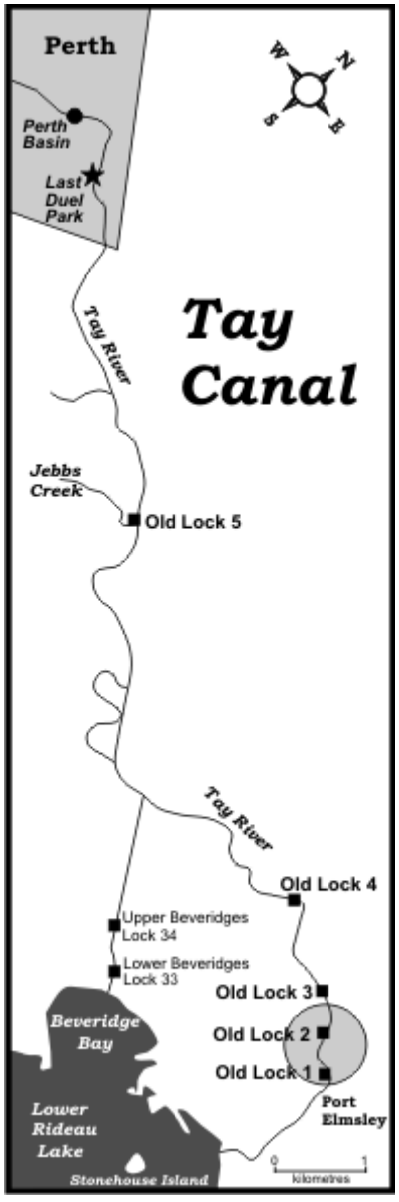
You can overnight at the docks at Last Duel Park for a fee. There are washrooms and shore power is available. You can also camp in Last Duel Park. The Perth Basin has lots of free docking available. If you're travelling by canoe or kayak, you'll be pleased to hear that, in 2008, volunteers from Friends of the Tay Watershed installed a canoe/kayak dock. This makes getting in and out of your vessel at the (very high) fixed dock in the Perth Basin much easier.

Perth is a fascinating place to explore. It features many interesting shops and restaurants and makes for a great day tour or weekend outing.

A Boat Passing Under the Craig Street Bridge

History of the Tay Canal

The story of the Tay Canal starts with the founding of Perth in 1816. After the War of 1812, the British wanted to establish settlements intensely loyal to the Crown in the interior regions of the province. A location along the Rideau would have been a logical spot, but the entire Rideau was already taken up with grants to United Empire Loyalists and no land was available. The lands around present day Port Elmsley would have been a very good spot, but the Arnold and Weatherhead families owned all the land in that area. So, somewhat by default, a location about 16 km (10 mi) upstream from the mouth of the Tay River was chosen. Originally a spot on Jebbs Creek near Otty Lake was to be the location for the new settlement, but Surveyor Reuben Sherwood ended up locating the townsite on the Pike (today's Tay) River and Perth was born.



In March 1816, a government storehouse was the first building constructed on the new townsite, to hold shipments of goods and supplies needed for the settlement. By April 1816, settlers were arriving, many disbanded members of the British military (including members of two Swiss regiments) and Scottish immigrants who had travelled to Canada in late 1815. It wasn't long before a thriving town sprang into existence.

By early 1826, the plans to build the Rideau Canal were known to the people of Perth. It was initially thought that navigation along the Tay might be part of the Rideau undertaking. But the Rideau had a very specific military purpose, Lt.-Colonel John By had no mandate to build any branch canals (there was also a proposal to run a canal up the Jock River to Richmond). When the Weatherhead family erected a mill dam across the Tay River in 1829, at the present day location of Port Elmsley, Perth business interests started to panic with the realization that they might lose the Tay as a navigable waterway. They started to float the idea of constructing a private canal linking Perth with the Rideau Canal.

William Morris was the main driving force behind the idea to make the Tay navigable (he'd lobbied for this as far back as 1824). On March 16, 1831, he saw the first part of his vision come to fruition when legislation to form the Tay Navigation Company was passed.

Tenders for the construction of the canal were released in June 1831 and the task of building the canal was awarded to John Jackson, an ex-Sergeant in the army and a miller in Perth. From Perth to the mouth of the Tay River, the Tay River dropped almost 28 feet (8.5 m). The actual change in elevation to be overcome would be less than this since the Rideau Canal dam at Poonamalie, when completed in late 1831, would raise the level of Lower Rideau Lake by about 4 feet (1.2 m).

Going up the Tay in the pre-canal era, a traveller would first encounter Fishing Falls, as set of rapids about 2.4 km/1.5 mi in length with a vertical drop of 5.8 m/19 ft. This is the location of present day Port Elmsley. Less than a mile (1.6 km) above Fishing Falls were M'Vittie's Rapids that extended for almost 1.6 km/1 mi with a drop of 2.1 m/7 ft. over that distance, to the foot of M'Vittie's Still Water. At the head of M'Vittie's Still Water, located at the confluence with Jebbs Creek, were the Upper Rapids, about a 100 m/300 ft. in length with a drop of about 0.4 m/1.5 ft. These were the main navigation impediments that had to be overcome to make the Tay navigable. The Tay, downstream of Perth and outside of the rapids, averaged about 0.9 m/3 ft. in depth. The banks were swampy and the river was choked with sedge-grass, bulrushes, and wild rice. The river near Perth flowed over flat ledges of limestone.

The canal was designed with locks 90 feet long by 20 feet wide (27 x 6.1 m) and a depth in the channel of 3.5 feet (1.1 m). This would accommodate any type of Durham boat and even some small steamers. It was an economic decision not to make the locks the larger size of the Rideau locks. It was felt that this size would accommodate most of the commercial traffic of the day.

Construction proceeded at a slow pace, limited by the amount of funding that could be raised each year. Originally four locks were planned, but it was soon realized that a fifth lock would be required in order to reduce the amount of

flooding (which in turn would have meant compensation to the owners of the flooded land). In the end, 5 locks, 6 dams (with timber slides), two swing bridges and several embankments were built.

Location of Old Lock 1 on the First Tay Canal

Although the Tay Canal was opened to commercial traffic in 1834, it wasn't yet finished. Jackson was having a major problem trying to install the lower gates of Lock 1. He apparently hadn't fully appreciated the rise of the water caused by the Rideau Canal dam at Poonamalie, and the depth of water at the site of the lower lock hampered the installation of the gates. The gates were finally hung, with assistance provided by Rideau Canal engineers, in late 1834.

Another initiative of the Tay Navigation Company was to build a new steamship for the Tay Canal. Constructed in Perth and named the Enterprise, it proved too large for the size of the Tay and never saw service on the canal (a tale reminiscent of Robert Drummond's steamship the John By that proved to be too large for the Rideau Canal).

The Tay Canal encountered problems from the beginning. The Royal Engineers described the Tay as "rough in construction and composed of not very durable materials." The water supply of the Tay was unpredictable and the navigation channel suffered from build-ups of weeds and silt. One of the biggest problems was that many of the goods destined for Perth had to be transhipped, offloaded from Rideau barges and re-loaded onto Tay barges. The Tay Navigation Company set up a depot on Stonehouse Island (Perth Landing), which, while it bordered the Rideau Canal, was in a poor location to be properly serviced.

The Tay never generated sufficient revenues to ensure proper maintenance. As the years went by, the condition of the canal deteriorated. In 1865 several of

the locks were destroyed by logs and the canal was shut down.

In the mid-1880s, another canal was built to connect Perth with the Rideau, the one we can travel on today, but that's another story.

- ***Ken Watson***

The main sources for the history section of this article were Larry Turner's 1992 book *"Perth, Tradition and Style in Eastern Ontario"* and his 1984 manuscript report, *"The First Tay Canal in the Rideau Corridor, 1830 – 1850."*

Boats Locking Through at Lower Beveridges Lock after a pleasant day on the Tay

(Thanks are due to Ken Watson our webmaster, who originally published this in Rideau Ripples the newsletter of the Friends of the Rideau. Editor)

Secretary's Report

The Annual General Meeting was held at the St Catharines Museum on 19 April 2009. The amendments to the Constitution, previously mailed to members, were passed.

The Executive for 2009-2010 is:

President	Tom Whitelaw
Past-President	Bobbie Styran
Vice-President	Bruce Timms
Secretary	George Hume
Treasurer	Steve Hinchliffe

George Hume, Secretary

Membership

Welcome to: Dr Lynette Fast, 3208 King Street, Vineland, ON L0R 2C0
lynettefast@sympatico.ca

World Canals Conference 2009
Serbia – 23 – 25 September

The conference dates have changed from a Monday to Wednesday format, to Wednesday to Friday. This allows for a better fit of the pre and post-conference tours.

The overall theme of the conference will be raising awareness and improving the economic performance of waterways, especially in Eastern Europe and Asia, two world regions which have not previously been covered by World Canals Conferences.

The conference will be centred on Novi Sad, the capital of the Province, and will include tours in Serbia to the spectacular Iron Gate section of the Danube including the hydropower scheme at Djerdap I, shared with Romania, then to the most important sites on the canal system of Vojvodina – Middle Danube.

Further information and registration details may be found at http://www.euromapping.com/en/category/6

(CCS Secretary George Hume will be attending and we look forward to a report from him on the conference. Editor)

World Canals Conference 2010
Rochester – 19 – 22 September

World Canals Conferences 2011 and 2012

The venues for these years have not been finalized, however, Holland has expressed an interest in hosting in 2011. China is seeking World Heritage Site status for the Grand Canal and is considering hosting the conference in 2012.

From the Fossa Carolina (793 AD) to the Main-Donau-Kanal (1992), Three Canals and Waterways of Southern Germany

Uniting the Black Sea with the North Sea, In the Footsteps of Karl der Grosse (Charlemagne) and King Ludwig the First

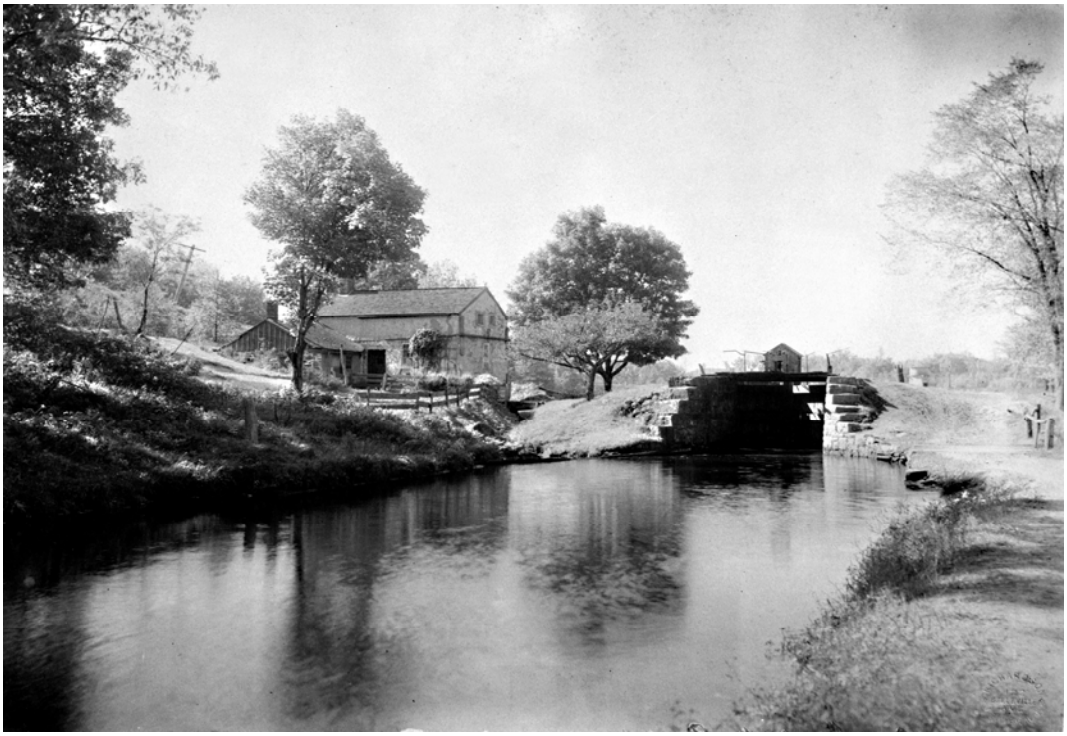
Led by Thomas X. Grasso, President, Canal Society of NYS &
Vice-President Inland Waterways International

The tour was scheduled for this fall, but has been rescheduled due to insufficient registrants. Further details in the Spring 2010 Canals Canada.

Restoration of Lock 2E, Morris Canal, Borough of Wharton

(This article was written by Denis McMullan, PE of McMullan and Associates, for American Canals, the Bulletin of the American Canal Society)

The Morris Canal was constructed between 1825 and 1831 between Newark and Phillipsburg New Jersey. Lock 2E, "Bird's Lock," was constructed to overcome an elevation change of eight feet and was the second lock located east of Lake Hoptacong. It was one of twenty-three locks along the canal and is located in the Borough of Wharton in the north central region of the state. In 1929, the lock was filled in by the State of New Jersey and the upper four feet of the lock was removed as part of the Canal decommissioning. It was later purchased by the Borough of Wharton and is currently a part of Hugh Force Park which provides recreation to the area residents.



Photograph 1 – Historic Photograph of Lock 2E of the Morris Canal. This view is of the eastern entrance to the lock with the lock tender's house just south of the lock. (The Canal Society of New Jersey)

In 2008, a Historic Site Master Plan was completed by HGJA Consulting and provided a recommendation to "restore and reconstruct the lock to an operable condition…" The borough has retained the consulting engineering firm of McMullan & Associates to provide the design for the restoration of the lock. The design team consists of Denis McMullan P.E and Doug Bond P.E., with invaluable advice from Abba Lichtenstein P.E. The local firm of Medina

Consultants is providing critical civil engineering services, including valuable assistance in coordinating with DEP and with the numerous permit applications. The first priority for McMullan was to determine the construction details and condition of the lock walls.

According to a drawing of a typical lock for the Morris Canal obtained from the Canal Society of New Jersey, the typical lock walls were built as gravity retaining walls with buttresses 8'-6" apart. The typical lock walls were to be constructed of coursed rubble stone masonry and founded on wood timbers approximately 10 inches x 12 inches at 24 inches on center and covered by a layer of 2-inch wood planking. Both the timbers and the planking were to extend across the lock under both stone walls.

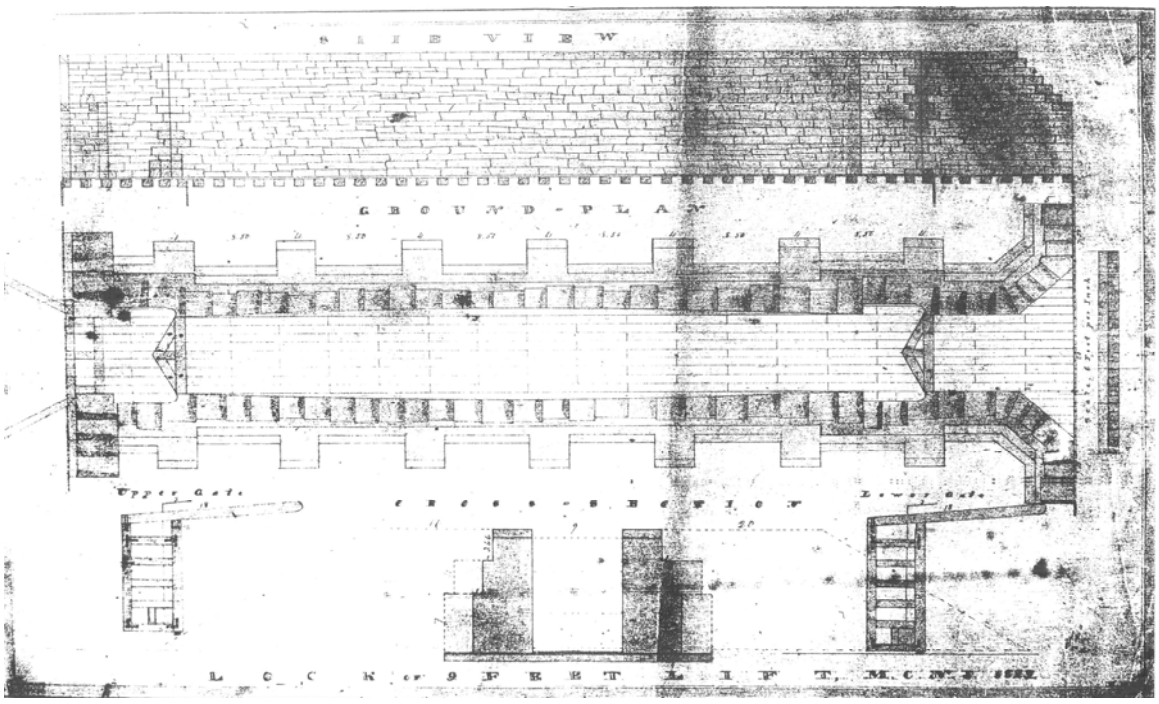


Figure 1 – 1823 Plan, Elevation, and Sectional Diagram of Original Typical Lock Construction. (The Canal Society of New Jersey)

The Morris Canal began an improvement program in 1841 that included enlarging the locks to 95 feet long by 11 feet wide. The enlarged lock walls were to be constructed with coursed rubble stone masonry as a continuous stepped retaining wall and faced with two layers of wood planks that were fastened to a timber embedded into the face of the wall.

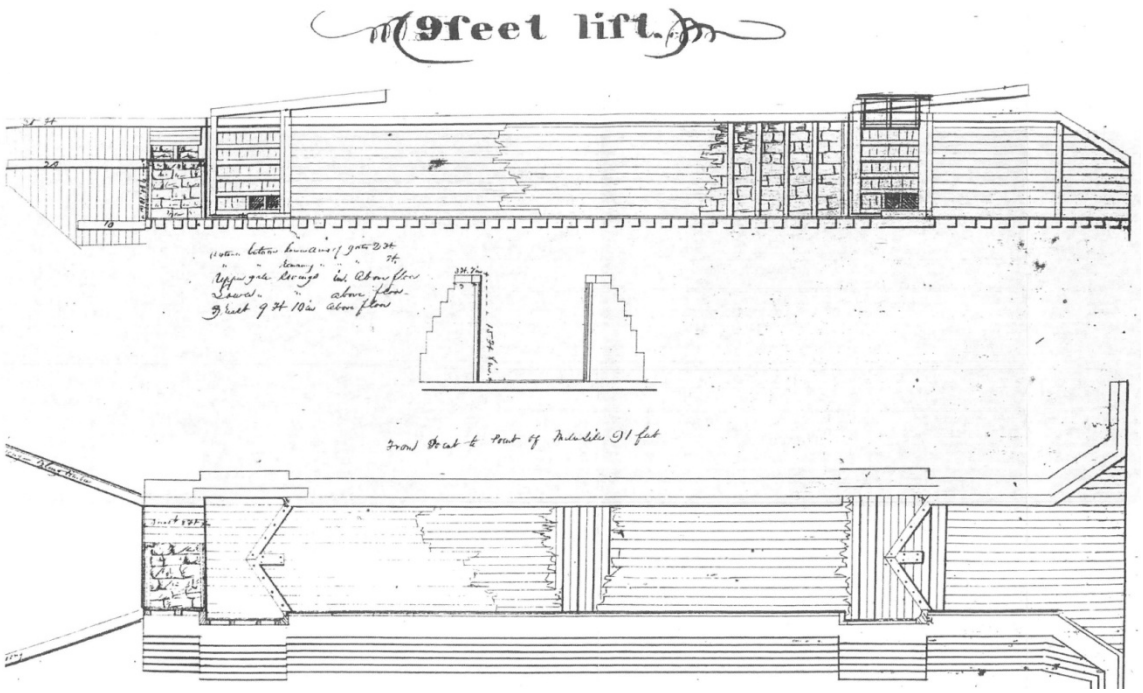


Figure 2 – 1845 Plan, Section and Elevation of Typical Lock Construction
(The Canal Society of New Jersey)

Both the 1823 and 1845 drawings indicate that mitre-type lock gates were to be used with the mitre gates being operated by a balance wood beam; however, historic photographs of the lock taken near the turn of the century show that the downstream gate was a lever gate mechanically operated with a ratchet mechanism and the upstream gate was a mechanically operated drop gate.

As part of the design effort, McMullan with the assistance of the borough's Department of Public Works excavated a test pit to investigate the condition of the lock walls and floor beams and to determine if Lock 2E was constructed in accordance with the historical data.

The test pit, excavated near the middle of the lock, revealed much about the construction of the walls. The south wall was constructed in a manner similar to that indicated on the 1823 drawing. There was a continuous stone masonry wall four feet thick reinforced with stone masonry buttresses along its length that extend back from the wall another 3 feet 4 inches. The buttresses were nine feet apart. The stones of the rubble coursed stone masonry were generally large stones, with a surface profile about 16 x 36 inches. The joints between large stones were filled with smaller stones or mortar. On the surface of the wall, a hard mortar was smeared along many of the joints. The interior mortar was much softer and was easily scraped with a metal tool. There were several large voids between the stones. These may be related to the lock water washing

out the mortar. There was no indication of wood planking on the interior face of the wall.

Photograph 2 - The outside face of the south lock wall has stone buttresses that protrude from the face of the wall. These allow a thinner wall between the buttresses.

At the north wall, the stones on the inside face of the wall were smaller, about 12 x6 inches, and the mortar between the stones was much stiffer. The stones on the back of the wall were larger, more similar to the south wall. To avoid digging in the towpath, ground-penetrating radar was used to confirm that the base of the north wall was at least eight feet thick. The back of the wall had a series of steps in the wall thickness at the back of the wall as the depth increases. About three feet down, the remains of wood timbers were found in the recesses along with the ends of iron bars bent into the recess. These bars were embedded into the masonry and appeared to have held the recessed timbers in place. About six feet below the ground surface, remains of a single layer of horizontal 2-inch thick wood planking was found. As the excavation extended below the ground water line, the quality of the wood planking and recessed timbers improved.

Photograph 3 - Inside face of the north lock wall. There are recesses in the wall for embedded timbers and the remains of horizontal wood planking near the bottom of the wall.

Using continual pumping, the water level was drawn down enough to access the interior of the lock and a steel digging bar was used to probe through the muddy water. Wood planking was found at the base of the lock and although the top ½-inch of wood was soft, the remaining thickness of planking was firm. Based on this finding, the timbers below the planking are believed to be in good condition.

Many large stones were pulled from the excavation between the lock walls. Some of the stones appear to have been the original wall cap stones. Apparently when the lock was filled in, the upper portion of the lock wall and the soil behind it was used as the fill.

It appears that the south wall of the lock was built similar to the 1823 typical lock drawing and may be part of the original 1831 lock wall construction. The north wall of the lock appears to be constructed similar to the 1845 lock wall drawing with the timber planking on the lock face of the wall.

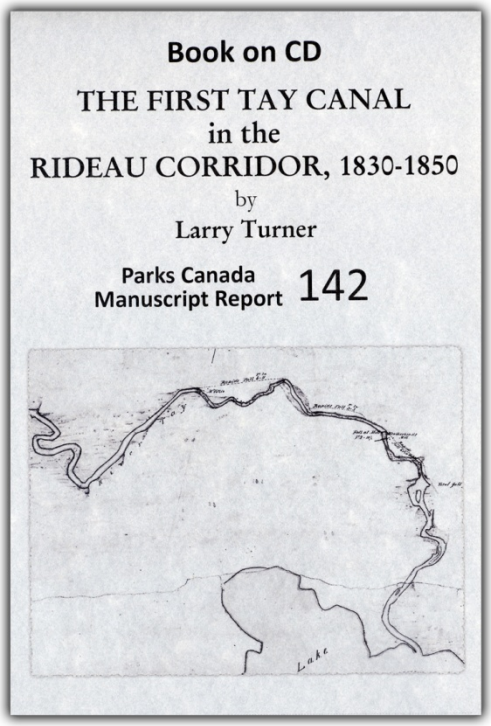
Once the results findings from the test pits are fully evaluated, the next steps will be for McMullan to develop a schematic design for the lock restoration and a cost estimate for review and approval of the Borough of Wharton. Final

design and construction start date has not yet been decided, but assuming sufficient funding, it is hoped to start work in 2010.

Wharton Borough's vision is to create an outdoor museum at the Lock 2 East site by running mule-drawn boat rides along the canal and by demonstrating lock operations and engineering through a fully functioning Morris Canal lock. In addition to ongoing engineering, the borough will be installing interpretative signage at the site this summer to be available for its annual Canal Day, to be held on August 22, 2009. The Canal Day Festival is an old- time country fair that celebrates the Morris Canal and its contributions to the development of the communities along its banks. The festival is now in its 34th year and will benefit the restoration of Morris Canal Lock 2 East. This year's festival features a juried craft show, food, educational events, and performances from thirteen of New Jersey's best home-grown artists. Please visit http://www.canalday.org/canalday.html for more information.

(With the recent excavation at Lock 1 of the First Welland Canal this seemed like a timely article. Also, it shows the effort being made by other communities to preserve their canal heritage. Thank you to Linda Barth, Editor of American Canals, for passing this item along. Editor)

The First Tay Canal in the Rideau Corridor, 1830-1850



Parks Canada authorized the writing of a number of reports on the Historic Sites it was responsible for. Some of these reports were eventually printed but our now "out-of-print". The Friends of the Rideau has undertaken to publish, in CD format, all the reports on the Rideau Canal Corridor. This past winter I undertook to produce the digitized version of the report on the First Tay Canal. I was able to pass this to **Ken Watson** for publishing/packaging in time to mark the launch of celebrations of the 175th Anniversary of the Tay Canal.

The CD format is an inexpensive means of obtaining a report, in PDF format, which is therefore fully searchable.

Please visit http://www.rideaufriends.com/sales/books.html to see a complete list of the reports available.

AGAINST All DISASTER

The Story of Jess Lanchester

"You would not by chance be the daughter of Owen Lanchester?" asked Lewis Cathcart.

Jess felt the same misgivings she'd had on first observing him.... His intent gaze suggested he'd uncovered a useful secret or won a point in a game.... She would not lie to him, but instinct made her want to. She contented herself with polite monosyllables.

"Yes," she said, "I am."

At this Mr. Cathcart threw back his head and laughed. This was discomfiting, since what she'd said could not possibly have been construed as in any way amusing. Jess vehemently wished herself elsewhere.

The year is 1837. Fifteen-year-old Jess Lanchester seeks help in the search for her missing father from relatives in Toronto. Life among the Family Compact Robinsons is stifling for free-spirited Jess, who finds adventure in secret outings dressed as a boy. She makes friends with Duncan Campbell, young reformer and apprentice typesetter to William Lyon Mackenzie. In the wake of the Rebellion the two flee north, and together take on the search for Jess's father. Numerous hazards, the villainous Lewis Cathcart among these, challenge them as they seek answers to Owen Lanchester's disappearance.

Jess's journey encompasses a variety of settings: a homestead in the bush; an Ojibwa village; the bustle and turmoil of Toronto as rebellion looms; a snow-covered trail through northern forest. Jess must learn to forge her own path, reconciling the wide-ranging influences exerted upon her.

This teen novel might serve as an adjunct to students of 19th century Canadian history.

Anne Hume lives in Toronto. As a teacher of English she has written stories for use in the classroom. Against All Disaster is her first novel. She drew upon some of her Robinson ancestors in the creation of the book. She is the great-granddaughter of Mary Amelia Robinson (Amy).

Available from www.trafford.com

(Though waterways play a very small part in this novel we are pleased to promote this book by long time member **Anne Hume**. I am long past the teen age, but I enjoyed reading this book and appreciated the life lessons set against the historical background of the Upper Canada Rebellion of 1837. Editor)

St Lawrence Seaway and Power Project- 50th Anniversaries

This year marks the 50th Anniversary of the official opening of the St Lawrence Seaway. But, the Power Project portion actually came on-line in 1958. To commemorate the 50th Anniversary of that portion of the project Ontario Power Generation produced a DVD, *From Dream to Reality – Ontario Hydro's Story of the Construction of The St Lawrence Seaway & Power Project.*

I have a limited number of these DVD's available for CCS members. If you would like a copy please contact me, my information is below.

The Canadian Canal Society

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Opinions expressed are those of the authors and do not necessarily reflect the official position of the Society