OLD STONE MILL

National Historic Site of Canada
Delta, Ontario

INTERPRETATION MANUAL

Prepared by
Ken W. Watson
for
The Delta Mill Society

3rd Edition

May 2024

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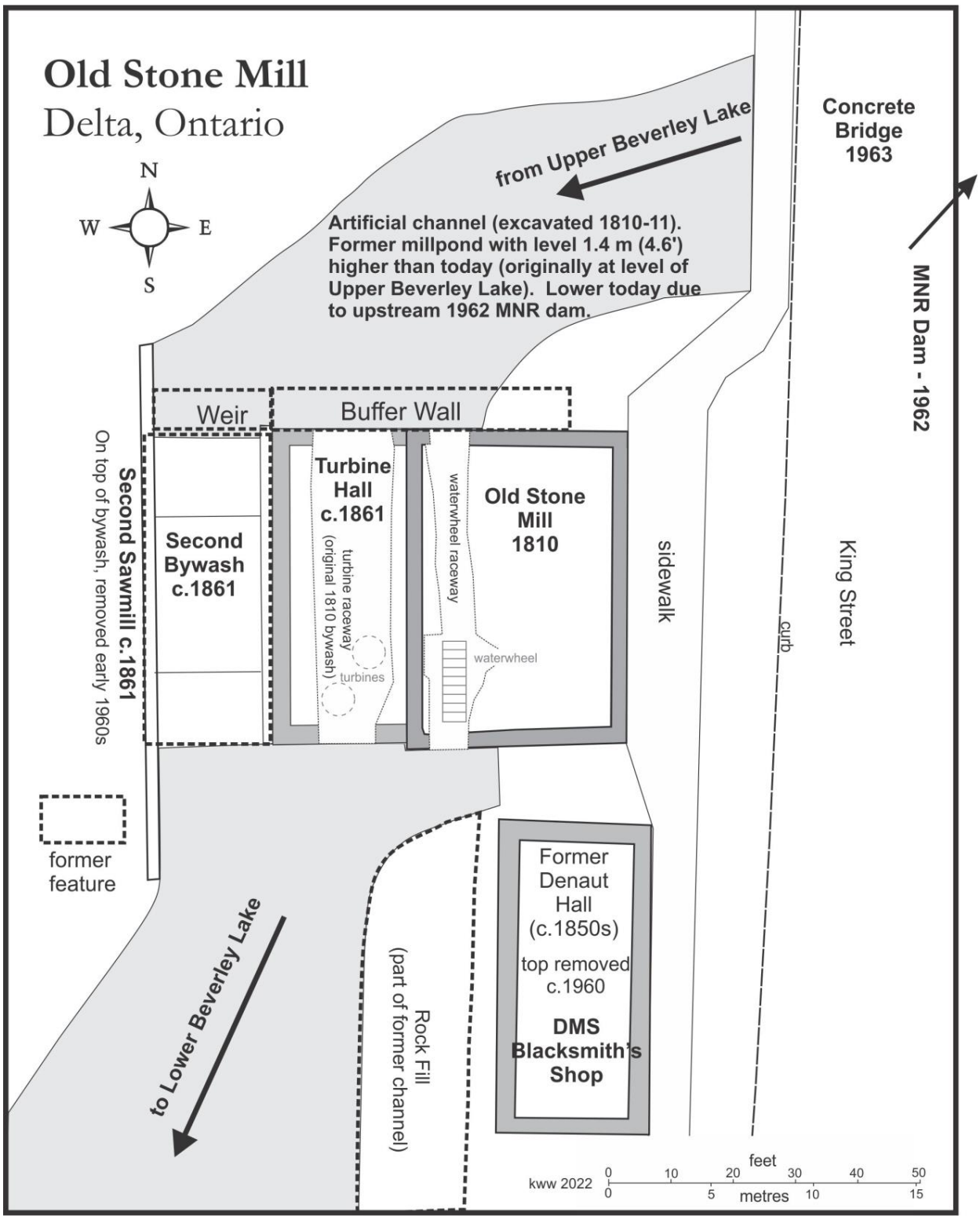
SITE MAP


Old Stone Mill
Delta, Ontario
N
W
E
S
from Upper Beverley Lake
Artificial channel (excavated 1810-11). Former millpond with level 1.4 m (4.6') higher than today (originally at level of Upper Beverley Lake). Lower today due to upstream 1962 MNR dam.
Concrete Bridge 1963
MNR Dam - 1962
Weir
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Second Sawmill c.1861
On top of bywash, removed early 1960s
Second Bywash c.1861
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waterwheel
Old Stone Mill 1810
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curb
King Street
former feature
to Lower Beverley Lake
Rock Fill (part of former channel)
Former Denaut Hall (c.1850s)
top removed c.1960
DMS Blacksmith's Shop
kww 2022
feet
0 10 20 30 40 50
metres
0 5 10 15

PREAMBLE

First Time Tour Guides

DON'T PANIC at the size of this document. Only about 25% of this document directly relates to providing guided tours of the Old Stone Mill. The other 75% is background information that can be absorbed over time. To learn about the mill, start with "A Concise History of the Mill" and work your way into the details from there. We've also provided a simple guided tour primer describing the suggested stops.

INTERPRETIVE AIDS: You'll find interpretive signage throughout the mill. These can be used by interpreters as prompts. Most of our tour stops are related to signage in that area. You can use the signage to help you.

YOU WILL BE MENTORED: Our experienced tour guides will provide training and will be there to mentor you as you learn about the mill and how to conduct a tour.

ADDITIONAL RESOURCES: Our website, www.deltamill.org contains a great deal of historical information about the mill and flour milling in general. This can be used by you and also by our guests to the mill. Feel free to point them to our website to learn more details about the mill.

In addition to this document, there are also books, in particular Wade Ranford's "*A History of Grist Milling in Delta"* (2006) and Ken Watson's *"Building the 1810 Old Stone Mill in Delta Ontario" (2nd edition, 2022)* – we have both available for sale in the mill and both, as well as this guide, are also available in the history section of our website as a free PDF.

THERE IS NO SUCH THING AS A DUMB QUESTION: Feel free to ask any of our experienced tour guides or heritage research people questions about anything that puzzles you.

How We Theme The Mill

CHRONOLOGY: You'll notice that the big signboards on the main floor are chronological. We start in 1790 when Oliver Evans' automatic mill process receives the 3rd US Federal patent and end at 1963 to present with the Delta Mill Society and the extensive work that we've been done to restore the mill and have it open to the public.

NEED FOR A GRIST MILL: Early settlers in this region cut down forests to produce farmland and grew wheat to produce flour as a dietary staple. But wheat kernels are very hard, settlers needed a mill with its millstones to produce flour. Located near available waterpower, early grist mills (flour mills) ground settler's wheat on a barter/custom basis, taking a portion (1/12) of the grain as payment, returning the rest to the farmer as ground flour. As settlers cleared more land and produced more wheat than needed for their family, they then could sell their wheat to the miller in return for cash – wheat became a cash crop for them. Grist mills that bought wheat and sold the flour they made were known as merchant mills. The Old Stone Mill was purpose designed as a merchant mill.

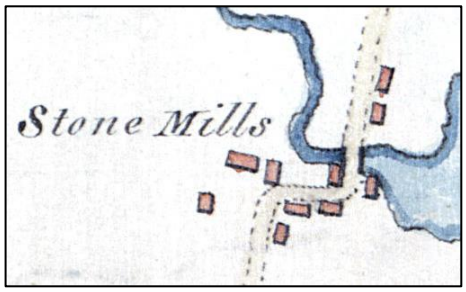
AUTOMATIC MILL: Arguably the greatest significance of the Old Stone Mill is its design as an Oliver Evans automatic flour mill (aka "Improved Merchant Flour Mill"). You'll see signboards throughout the mill that describe various aspects of the Evans' process. While water or wind powered flour mills have been in existence for centuries, it was Evans' inventions of machines and, most importantly, integrating those machines into a continuous process, that revolutionized

the production of flour in the late 1700s. The Old Stone Mill itself speaks directly to that design with a few interesting twists. This is the main layer of interpretation, how the building was designed and used as an Oliver Evans' automatic mill. This also has international significance since there are very few automatic mills that have survived the ravages of time.

ARCHITECTURE: The mill is a visually stunning building. Unlike most modern industrial buildings, the mill was hand-built with appearance in mind. It is an exceptional example of Georgian industrial architecture, recognized as early as 1817 when it was recorded as being "unquestionably the best building of its kind in Upper Canada" (Ontario). It was most recently recognized in 2021 by the Ontario Association of Architects for pretty much the same reasons. We showcase certain aspects of that architecture in the mill.

It is to be pointed out that the spectacular condition of the Old Stone Mill today is due to restoration work done by the Delta Mill Society. The society has invested more than 2 million dollars since 1972 in restoration work, including a massive restoration of the mill from 1999 to 2003.

DEVELOPMENT OF EASTERN ONTARIO: While we are mill centric, we also want to tell the public how important a mill such as the Old Stone Mill was to the development of community in this region. "All roads lead to Delta" was a truism in the early 1800s. The foundation of community and business was due to the mills, first the Stevens' mills and then the Old Stone Mill. Delta was the first inland community in this part of Ontario. Delta became known as "Stone Mills" after the Old Stone Mill was built. The mill provided the foundation for local businesses – merchant shops, inns, taverns, blacksmiths, etc. Delta was a destination for farmers bringing in their grain. They'd leave the mill with cash in hand and then spend some (much) of that at other Delta businesses.



Stone Mills in 1816
Part of Joshua Jebb's 1816 Rideau map showing the mill and "downtown" Delta.

OWNERS/MILLERS: While there have been several owners of the Old Stone Mill, and all are mentioned on our Chronology boards, we only focus on three of them, William Jones, Walter Denaut and Hastings Steele. William Jones since he's the one, along with his partner Ira Schofield, who had the Old Stone Mill built. Walter Denaut since he changed the mill from being a money losing to a money making operation and made significant technological changes with the 1861 introduction of the turbines and changing the mill to a belt & pulley rotational power transfer technology. Hastings Steele since he kept the mill going in the 20th century after most other grist mills in Ontario had shut down, and, most importantly, saved the mill by deeding it in 1963 to the people who would form the Delta Mill Society.

OVERALL FOCUS: Part of the overall concept is to have our visitors "step back in time" when they tour the mill. The mill directly speaks to an early period in Canadian history and although we have modern features (lights, signboards, etc.), we strive to maintain the authentic feel of the 19th century mill. We are an historic site – the original building on its original landscape – which, with proper interpretation and a little bit of imagination, can take a visitor back to the time period when the mill was operating. It's a unique experience for many, not something they get to experience in their daily life in the 21st century.

Tour Size, Timing and Audience

Normally a tour is given to a small group, ideally less than 10 people. We ask any large groups to provide us with advance warning so that we can make specific plans for that group.

A mill tour should take about 45 minutes. This means staying on message and moving the tour along.

We don't have a single type of visitor, in fact, far from it. This is an advantage for our interpreters since it means that interpretation should be geared to a general public level. For many, it's just an interesting old building, one that speaks to the early development of Ontario. We have locals who are interested in this part of the history of the area they live in. We have visitors from afar who have been attracted by the opportunity to see a surviving Oliver Evans' automatic mill with many of its original features still intact. Plus everyone in-between. Most new visitors to the mill just want to learn how flour was made in the mill.

Keeping in mind the general 45 minute limitation and that not everyone is a mill keener, the most important part of interpretation is ***your enthusiasm for the mill*** which will rub off on an audience.

While many will thank you for the tour and then leave, you'll find others staying in the mill, exploring it. This is to be encouraged. It's easy to overwhelm a visitor with the many concepts, your job is to give them the overview – their questions and later exploration can fill in details. It's to be noted that we don't know everything about the mill – there are still mill mysteries to be solved. Don't be afraid to tell a visitor that you don't know the answer to a question.

It Is Complicated

We have several problems when interpreting the original design of the 1810 mill and how it relates to the Oliver Evans' process. We've simplified the Evans' process into 9 steps which you will see detailed in this document and on interpretive signboards in the mill. While the fundamentals of that 9 step process are simple, it is a bit complicated to directly follow that process in the mill. It would involve following the grain up to the top of the mill where it was cleaned, then back down to the millstones, then following the flour back up to the top and finally down again to where it was barrelled on the first floor. So we don't do this, we rely on interpretive diagrams and such to show visitors where they are in the Evans' process wherever they happen to be in the building.

Another problem is that the mill layout has changed over time. The type and location of machinery was changed over the years, support columns relocated and even some of the floor configurations have been changed. This presents a significant interpretation challenge since, while we have the shell and many original features of the 1810 building, it's not the exact internal layout of that 1810 building. Most of those layout changes were made as part of the mill's technological evolution over time, and some were due to the 1999-2003 restoration which required things such as 2 sets of stairways from each floor for reasons of public safety. So, while we can describe the 1810 mill, the mill today is not that exact layout and that presents an interpretation challenge. To help with an understanding of this, new to this edition of the interpretation manual, are floor plans showing the assumed 1810 configuration of each floor of the mill compared to the present day floor configuration.

We have the same change of layout problem outside the mill. On the south side, any talk of the original Stevens' mills and the original rapids requires mental visualization, since that area is now buried and streets and houses sit on top of it. On the north side of the mill, the full height of water of Upper Beverley Lake was right up against the mill. The control dam for that level was a stop-log dam at the head of the bypass channel (a "bywash") adjacent to the mill. Our turbine hall,

built c.1861, sits on top of that original bywash. On that same side, there was also a buffer wall to protect the north face of the mill from damage. When the turbine hall was built c.1861, a new bywash was constructed, the one you can see today beside the mill (with much later cement additions). In 1962, after the Ontario government took over water control, they built a new dam, the one you can see today, upstream of the bridge. What a visitor sees today is not the original water level on the north side of the mill, it used to be 1.4 m / 4.6 feet higher (to the top of the arch on the turbine raceway entrance). A rare (perhaps unique) feature of the mill is that it acted as its own dam – but you cannot see that today – and that's also an interpretation challenge.

You'll see details of this later in this document. Again, given the general 1 hour tour limitation, the actual details of this aren't critical to the general messaging of how flour was made in the 1810 automatic mill. You'll gain that knowledge over time to be better able to answer visitor questions.

Keep in mind that we (Delta Mill Society) don't yet know it all and will likely never know it all. Research continues to this day to refine the story of the mill and present an accurate history of the mill.

Evolution Of Interpretation

There are no records, other than things such as assessment records, of the original mill. While we have many anecdotal tales about the mill, almost all of them have been proven to be incorrect. Unfortunately some (much) of this stuck, so in addition to learning more about the 1810 mill, we're also trying to beat down incorrect history.

For instance, when the mill was taken over by the Delta Mill Society in 1963, the prevailing belief was that is was built in about 1800 and that it was built as a barter/custom mill (more details about this in the "What is a Grist Mill" section). Both those beliefs are incorrect. There was also a belief that it was built on the footprint of the original grist mill in this area, one built by the founder of Delta, Abel Stevens. In fact you'll see that "fact" on a metal plaque on the outside of the mill. But we now know that this "fact" is also incorrect. Even the layout of the mill was misinterpreted with the 4th floor generally just thought of as just an "attic" rather than as a working floor. The general description that the mill is a 3 ½ storey tall building is correct – that "half floor" is the 4th floor where the original grain cleaner was located.

While there was some good early work done by heritage experts in the Delta Mill Society, it was the 1996 Conservation Report by André Scheinman (PDF available on our website) that started our heritage interpretation down the correct path, an evolution in thought about the mill that continues to this day.

This then led to the interpretation work done in the early 2000s by our curatorial staff, using the best available information they had at that time. A milestone is Wade Ranford's research and publication by the DMS of his book in 2006 (PDF available on our website). Wade did an amazing job at sorting out the mill's chronology.

In 2017, the first edition of this manual was written and in 2018 Ken Watson wrote a book about how the mill was built in 1810 (PDF available on our website). At that time we also started taking a critical look at how we interpret the mill itself and, from 2019 to 2021, changes were made to our tour flow, new interpretive signage was added throughout the mill and a new manual written in 2022 as well as a 2nd edition of Building the 1810 mill as more historical information about the mill is discovered and pieced together. The 2nd edition improvement in both documents is the addition of a set of 1810 and 2022 floor plans to better be able to visualize the "then and now" of the mill. This 3rd edition simply updates a few sections, including our first stop (changing from the Human Need for Bread as Dietary Staple to the Need for a Grist Mill for Early Pioneer Settlers).

Stories To Tell

People's interest in history generally falls into two broad categories – "brick & mortar" history (i.e. engineering, technology, architecture) and social history (people). Since we are dealing with a building built for an industrial purpose using technology that is not used today, our main interpretation focus is on this aspect of its history. People do want to learn about how flour was made 200 years ago and our building, when properly interpreted, speaks directly to that. We are also a National Historic Site of Canada. Historic sites are original buildings on their original landscapes, to have one survive the ravages of time is a rarity. Part of our duty as a National Historic Site is to explain the reasons for the mill's NHS designation to the public (shown later in this document).

The mill of course involved people and we do speak directly to that in the mill with our chronology interpretation panels which are generally themed on people, the miller's room, and even some of our exhibits such as the current "Mills & Stills" exhibit on the 3rd floor. The first temperance sermon in Upper Canada was delivered in the Old Stone Mill in 1828 and we often show visitors where we believe Dr. Peter Schofield stood when he delivered his four hour sermon on the many evils of alcohol (which was in fact a major social problem in that time period).

The mill has many stories to tell, many more than we can do during a 1 hour tour. For instance, many local people are interested in the local social history, the development of Delta as a community. The mill played a huge role in that, but it's something we only peripherally touch during interpretation inside the building (we do have lots of information about that on our website). Our primary focus relates to the objects in our 1972 incorporation which are ***"TO preserve as an historic landmark the old stone mill at the village of Delta, in the said United Counties of Leeds and Grenville; to promote interest in the historical development of the Delta mill; to provide a suitable repository for irreplaceable objects marking the historical development of the Delta mill; …".*** We are, by our own legal mandate, mill centric.

Every interpreter has their own personal leanings towards history and this will influence how you deliver your interpretation of the mill. You can emphasise your own interests in the history of the mill, but it is important to deliver the main themes no matter what your personal historic interests are. We do like to hear of ideas for future exhibits which can be themed on specific aspects of the history of the mill and the people who operated it. Our special exhibit area on the 3rd floor is designed to be able to host different types of exhibits, separate from the interpretation of the mill itself.

What Is A Grist Mill?

One of our summer students a few years ago pointed out that we didn't actually define the word "grist" anywhere in the mill. Turns out this is a good thing since we've been misinterpreting what a "Grist Mill" is, and the word "grist" itself, based on several incorrect assumptions. Research into this topic has since shown that the Old Stone Mill was purpose built and operated as a merchant mill, which is a type of grist mill. Our initial interpretation incorrectly had these as two different things. The Old Stone Mill did both merchant and "custom" milling, it's a bit of a complicated subject that is explained later in a section titled "Grist Mill or Merchant Mill – One in the Same".

A "merchant mill", by its original 1700s definition, is a mill that can produce "merchantable" flour – which in that era was fine flour of a quality that could be exported. The grain for this was generally obtained by direct purchase from the farmer. Earlier mills, often known as barter or country mills, milled a farmer's grain, taking a toll, 1/12 of the grain, in payment, returning the rest (minus losses) to him as flour. In the 1700s, these small batches of grain a farmer brought in to be milled became known as "grists". But a Grist Mill at the time of the building of the Old Stone

Mill did not mean a barter/country mill, it was a term used for any flour mill. The word "grist" comes from the Old English word for grinding, so a grist mill is a grinding mill. The Old Stone Mill was then, and is now, a type of grist mill – just not in the way we've previously been interpreting the term "grist mill".

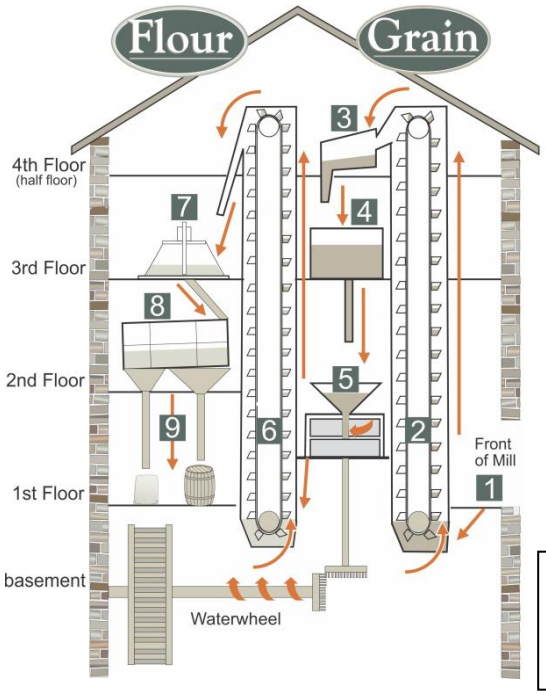
The bottom line is that any flour of mill of the Old Stone Mill's era is a grist mill. See the section "Grist Mill or Merchant Mill – One in the Same" for details about this.

Automatic Mill

Our greatest historical significance, including international significance, is that we are a surviving example of an Oliver Evans Automatic Mill. It is to be pointed out that Evans never used the term automatic or automated mill. That terminology came much later. The Delta Mill Society decided many years ago to use the older term "Automatic" (first used in about 1850 to describe machinery doing work on their own) rather than "Automated" which was a term coined much later (1947). It is unclear when the term "Automatic Mill" was first used to describe the Oliver Evans' process – but it was likely in the mid to late 1800s.

I can hear you asking "so, what did Evans call his mill design?" In 1790, when the U.S. patent office first opened, Evans received a patent for his **"method of manufacturing flour and meal"**. He wasn't patenting a building design, he was patenting a process. In his 1795 book, "The Young Mill-Wright and Miller's Guide," which does show the building design (which is described by both Evans and by millwright Thomas Ellicott who wrote part of Evans' book), he doesn't name the design, but inside his book he does refer to it as a design for a merchant mill. In later edition of his book, a line is added on the title page: **"A Description of an Improved Merchant Flour Mill."** But that wasn't done by Evans, it was added by an editor who must have said "but we have to call it something" and that's when we see what the Evans' design actually is, an "Improved Merchant Flour Mill."

But given the mouthful of "Improved Merchant Flour Mill" – the use of the term "Automatic Mill" is much more understandable to a 21st century audience who will quickly grasp the concept of "automatic" when it comes to the Evans' process, that it was an automatic process as opposed to a manual process.



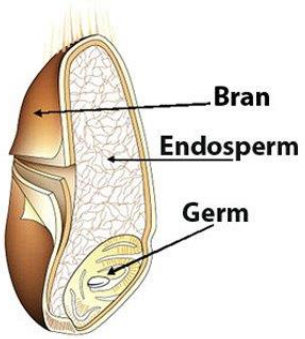
We've simplified the Oliver Evans' automatic mill process into nine steps. You'll find more information about this later in this document

Flour Grades

A bolter is a device with a rotating cylinder covered with screens of various mesh sizes (number of holes to the linear inch, the higher the mesh number, the smaller the holes) which sorts flour based on the size of the particles. Our bolter has 3 sizes of screens, 100, 50 and 30 mesh. When the whole wheat flour enters the bolter, the first particles that fall out are those whose size is less than the openings in the 100 mesh screen. Anything coarser than the 100 mesh size travels along the bolter reel until the 50 mesh screen when those coarse grades (fine/middlings) fall out, and then to the 30 mesh screen when those coarser fractions (middlings/shorts) fall out. What is left is bran that comes out the end of the bolter.

In reality, there is a mixing of grades since some fine flour gets globbed together or stuck with the coarser fractions, so there is a bit of transition (as opposed to a sharp divide) in coarseness as you proceed along the bolter. Back in the 1800s, various flour inspection acts (1801 to 1889) specified up to nine different grades. In 1801 they only had 3 grades: superfine, fine and middlings. But by 1856 we see seven grades specified: Extra Superfine, Fancy Superfine, Superfine 2, Fine, Fine Middlings and Pollards (mostly shorts with bran, known as ship's grade).

Millers of course wanted to maximize the amount of the more saleable fine components of the flour. Oliver Evans describes methods of re-grinding the coarser middlings to produce more fine flour and this practice of regrinding the middlings was common and would have been used in the Old Stone Mill. As technology progressed, there were improved ways of regrinding and screening the flour to maximize the amount of saleable fine flour that could be produced from a bushel of wheat.



But for public messaging, we don't deal with the complications of exactly how flour was graded and sold, we deal with how a kernel of wheat is transformed into flour and how that flour is sorted based on particle size. We also talk about what part of the wheat kernel makes up those grades and how fine flour, the endosperm of the wheat kernel, is naturally white, the darker colour of the coarse grades coming from the colour of outer shell of the wheat, the bran. You'll find a detailed interpretive panel about this at the bolter on the 2nd floor of the mill.

The main term used in terms of saleable flour is "superfine" – which is our fine (100 mesh) component. Walter Denaut, who operated the mill from 1850 to 1889, had a barrel head stencil that showed 196 lbs of "Superfine" flour. We've characterized "Superfine" as more of a marketing term, which is in part true, but it was based on particle size, the finest component of the flour.

For anyone who is interested in the details of this (grades, laws relating to grades, etc.), they can be found in great detail in the book "Grist and Flour Mills in Ontario" by Felicity L. Leung which we have available in the DMS library and also available as a PDF.

Flour Quality

A final note for this section is that in the era of the Old Stone Mill, a "quality factor" was not just the fineness of the flour, it was also the longevity of the flour in a barrel. A barrel of flour destined for export had to survive a long trip, often to England or Europe, without spoiling. At one point, it was defined in the U.S. that the flour had to last a year in barrel without spoiling. The reputation of the North American export flour market relied on producing quality flour.

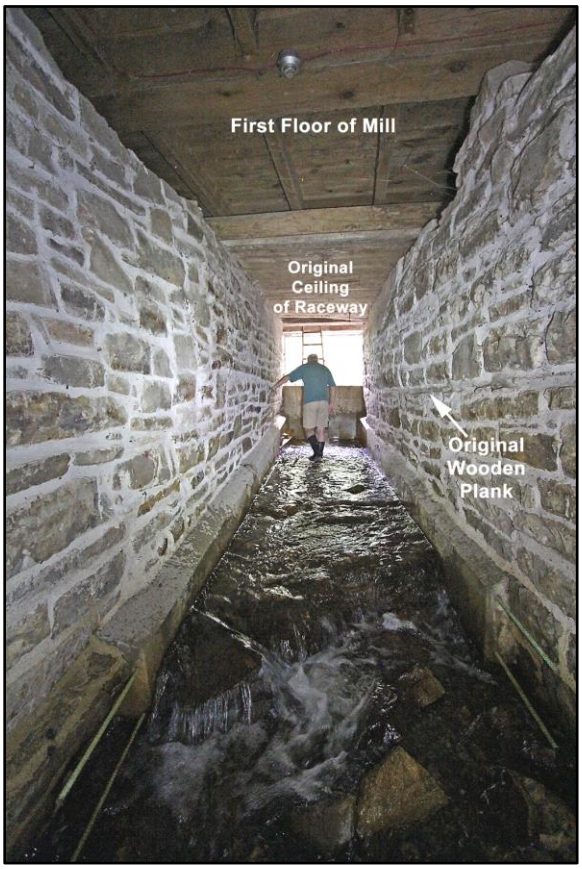
Spoiling generally related to two things, how much of the fat from germ were in the flour and how dry the flour was. Wheat germ contains fat (triglycerides), which can lead to spoiling. This is one reason why "superfine" was the desired product, it was very high in endosperm and very low in germ. But even with some germ, it is still a very low percentage of fat. Germ only makes up 3% of the wheat kernel and only contains 10% fat. So it's not a huge factor.

The largest factor was dryness. Moisture is the main culprit when it came to spoilage. When the newly ground flour dropped from the millstones to the flour elevator it was both hot due to the heat of the stones (friction) and sticky due to the moisture released from the wheat kernel during the grinding process. This is the reason it was raked and cooled, the hopper-boy in the mill mechanizing this process. The flour fell to the outer edge of the 12 to 13 foot arm of the hopper-boy. It slowly rotated (4 rpm), with each sweep brining the flour closer to the centre. This gave time for the flour to dry and by the time it dropped down to the bolter, it was quite dry. The spinning reel of the bolter also served to "aerate" the flour, continuing the drying process.

Oliver Evans' noted a couple of reasons to make sure the flour was dry. "To avoid danger from fermentation, and to prevent insects from depositing their eggs".

Ideally when it dropped down via chutes to the packing area on the 1st floor it was completely dry.

A design feature of the main floor is that it is isolated from water infiltration, the millrace below the floor with its own ceiling, the waterwheel completely enclosed in a waterhouse, and no windows along the wall adjacent to the bywash, the inner wall of that area was the packing area for the flour.



The Waterwheel Raceway

This is the waterwheel raceway, a part of the mill that visitors do not get to see. It was restored (new mortar and cement reinforcement at its base) as part of the 1999-2003 restoration program. It was the first structure built on site, two stone wall founded on bedrock with its own roof. The wooden plank still in place in one wall would have been a nailing board for a wooden sluice that was once inside this structure.

In this photo, DMS volunteer Moel Benoit is at the head of the raceway (north side), which had a cement barrier with headgate installed during restoration. This allows a controlled water flow into the raceway. The ladder visible in the photo goes up to a hatch under the Oliver Evans' signboard on the first floor.

Water continues to flow over the original bedrock floor of the raceway. Today, we use a sump pump in a pool of water ahead of the waterwheel to power the waterwheel today. In the 1810 mill, the water level would have been just over Moel's head, but sent as a controlled flow to the waterwheel via a wooden flume.

ACKNOWLEDGEMENTS

This tome started out as a little project in 2017 initiated by the President of the Delta Mill Society, **Dann Michols**, who compiled information from our summer students and tour guides into what was initially going to be a short tour guide primer.

Your editor, **Ken Watson**, then got involved, initially simply fact checking the historical information and then morphing this document into something much larger, incorporating more of the history of the mill, since, to do even a simple tour, the historical background, one as factually correct as it can be, should be understood. This document has also become a written repository for the full story of the mill – to try to consolidate what we know, and also what we know we don't know about the mill, into a single document, rather than that information being buried in our files.

Two exceptional sources of information have been **Anna Greenhorn** who has a vast knowledge of the mill, leading hundreds (and hundreds) of tours over the years, and **Wade Ranford**, whose extremely well researched book, *A History of Grist Milling in Delta*, has formed the foundation of the history portion of this document.

The interpretation layout of the mill today, the many high quality interpretive panels, the installation of period correct milling equipment, are due to Curator **Paul George**, whose tireless work made the mill the stellar place it is today. He was assisted for part of his tenure by Associate Curator **Natalie Wood**.

We've also benefitted greatly from high quality history research done by the Delta Mill Society, people such as **Paul Fritz**, **Peggy Fry**, **Davis Mess**, **Susan Noakes**, **Art Shaw** and **Susan Warren**.

We're also very lucky to have superb archaeological work and documentation done by the former Cataraqui Archaeological Research Foundation. Those programs were led in 1994 by archaeologist **Sue Bazely** and in 1999 by archaeologist **Jonathan Moore**.

And also by **André Scheinman**, a heritage preservation consultant hired to prepare the 1996 "Delta Mill Conservation Report" which laid the conservation foundation for the massive 1999-2003 restoration of the Old Stone Mill. André's high quality work has given us a far greater understanding of the mill than we ever had before.

Ken Watson has been involved with the mill since 1997 and in recent years (primarily since 2013) has taken on the role of heritage researcher for the Old Stone Mill, continuing to dig into the history of the mill to create a more historically accurate and complete documentation of the mill.

There will be others down the road – each history builds on work done before – gaining greater understanding as more information is located, as more questions are raised and answered.

And last, but not least, the hundreds of people who have volunteered with **The Delta Mill Society** over the years, each contributing in their own way to presenting the fascinating story of the Old Stone Mill.

Ken W. Watson

Editor (heritage research, verbiage and document production)

Feel free to direct questions, updates and information to Ken at rideauken@gmail.com

INTRODUCTION

This document is both a tour guide primer and a history primer for the Old Stone Mill National Historic Site of Canada. It is designed to prepare volunteers and summer staff to guide tours of the Old Stone Mill National Historic Site in Delta and also as a resource document on the history of the mill from 1810 to present. Much of the chronology of the mill has been sourced from Wade Ranford's well researched book *"A History of Grist Milling in Delta"* published by The Delta Mill Society in 2006 – it is well worth a read!

Note 1: primary information in the tour guide section is in **bold,** secondary information is in regular text, advice on how to present this material is contained in boxes as interpretation notes. We've provided both a simplified tour description and a detailed tour description. Both include floor plans showing the location of the tour stops.

Note 2: We don't tell the whole story of Delta, our focus, as per our NHS designation and our Mission (see below), is the Old Stone Mill, and even with its history we are selective in the stories we tell. Not every visitor is as keen on history as we are so keep it simple and to the point. An "average" tour of the mill should last about 45 minutes to an hour*. In some cases you may find someone very interested in the mill and a tour can last until the questions run out.

* There is no such thing as average – but it should be long enough to fully engage the visitors, to get them interested in the history of the mill. Many tours last an hour to an hour and 15 minutes. Two hour tours also happen now and again when someone gets really interested in a certain aspect of the mill.

National Historic Site of Canada

The Old Stone Mill was designated a national historic site in 1970 because:

- it is one of the oldest surviving mills in Ontario;
- it is a fine example of early Canadian architecture;
- it is a reminder of the pioneer industrial development of eastern Ontario.

THE DELTA MILL SOCIETY

Mission Statement

It is the mission of the Delta Mill Society to preserve and present the Old Stone Mill National Historic Site for the education and enjoyment of the community and the visiting public. To accomplish this mission, we collect artefacts and documents related to the Mill's development and we research and interpret its history, design, and evolution as it pertains to the early development of Eastern Ontario.

A CONSISE HISTORY OF THE MILL

Background - Settlement and the First Mills

Abel Stevens (1753-1826), a loyalist from Vermont, explores this area in 1783 and in February 1784 returns with several families and settles on the upper reaches of Plum Hollow Creek (which feeds into Upper Beverley Lake). This area is attractive to Stevens since it has good farmland adjacent to water power, a small set of rapids coming out of the Upper Beverley lakes (originally 2 small lakes before it was dammed to raise the water). In June 1796, Stevens receives his first grants of land, including 3 lots that are today's Delta. This is considered the founding date of Delta. A wooden sawmill is built, followed later by a grist mill. Both are located adjacent to the original path of the creek between Upper and Lower Beverley Lakes. It is to be noted that Abel Stevens is not part of the Old Stone Mill story other than he was the first person to own the land and develop the water power at Delta. But he had nothing to do with the development of the Old Stone Mill other than selling his mills (which were later quite literally buried) and land to William Jones.

Building the Old Stone Mill

In June 1808, Stevens sells his mills and associated land to **William Jones** (1782-1832). Jones and his business partner, **Ira Schofield** (1776-1864), start to plan for an Oliver Evans' automatic mill to be built out of stone and hire a millwright (name presently unknown) to do the design and construction. The mill is constructed in 1810-11 and starts operation in 1812. At the same time, they have a wooden sawmill built adjacent to the mill. Due to the weight of the stone structure, the original location of Stevens' mills in the creek valley is not suitable and the New Stone Mill is positioned about 40 m away on the closest surface bedrock. An artificial channel from Upper Beverley Lake is constructed to bring water to the mill and the original creek valley near the mill is filled in, burying the original location of the Stevens' mills. See "Building the 1810 Old Stone Mill in Delta Ontario" by Ken Watson for the full details of this – available as a PDF on our website.

Operating History

The mill operates, with limited success, under several owners, until **Walter Denaut** (1807-1889) buys the mill in February 1850. At that time the mill is carrying three mortgages and not making money. Denaut starts to heavily invest in the mill, turning it into a money making operation. In the 1850s he also builds a community hall adjacent to the mill, a brick hall on top of a carriage shed. In about 1861, he converts the mill from waterwheel to turbine power, placing the turbines under an addition to the mill, the turbine hall. This is the location of the old 1810 sawmill, so he also builds a new sawmill attached to the turbine hall. It is believed that when he changed from waterwheel to turbine power, he also converted the mill from direct connection wooden gearing to new belt and pulley technology.

Denaut dies in 1889 and ownership goes to his wife Carolyn who keeps it operating until sold in 1893 to George Haskin. Near that time, Haskin changes the mill from millstones to newer roller mill technology. In 1913 the mill is sold to **Hastings Steele** (1879-1964). Steele diversifies the mill, focussing on the production of animal feed, the sawmill and, in the 1930s, electrical equipment. In the early 1920s he makes a big change to the mill, lowering the husk (millstones

foundation) to the level of the 1st floor to facilitate the production of animal feed using his 1923 Champion Grinder. The roller mill is still being used to produce flour, but production of flour stops in about 1940. In 1950, he shuts down both the sawmill and the feed grinder and now operates the mill simply as a feed and flour store, selling commercially produced feed and flour. In 1960 he closes the store and shutters the mill.

The Delta Mill Society - Restoration, Interpretation & Public Access

In 1963 Steele sells the mill for $1 to four trustees that formed the core of the **Delta Mill Society** so that the mill could be preserved and opened to the public as a museum of milling technology. One of the society's early milestones was the designation of the Old Stone Mill as a National Historic Site of Canada in 1970. In 1972, the Delta Mill Society (DMS) was incorporated as a non-profit corporation with charitable status and the trustees deeded the mill to the newly incorporated DMS. The incorporation and subsequent transfer of ownership of the mill allowed the DMS to start preservation work on the mill (1972-74). It was work we characterize today as rescue preservation, to keep the building from, quite literally, falling down.

The mill opened to the public for the first time during the July 1973 NHS plaquing ceremony. At that time only the first floor of the 1810 mill was open (turbine hall and upper floors were off limits). Stabilization work on the mill continued after that as well as work to make the entire mill safe for public access. The Old Stone Mill opened to the public for a full season in 1985. In 1999, after years of fundraising and heritage research, a large restoration program is started to fully preserve the mill for generations to come. That work is completed in early 2004 and the mill re-opened to the public in May 2004. In the period 2004 to 2010, extensive interpretive signage is added to the mill, a water wheel installed (2007) and in 2010, on the 200th anniversary of the mill, working millstones and a bolter are installed. In October 2010, those millstones went into operation, making flour the same way it was done 200 years ago.

In 2017, with an evolution in thought about the mill based on more heritage research, work is started on focussing the mill interpretation to the mill itself, particularly its design as an Oliver Evans' "Improved Merchant Flour Mill". From 2018 to 2021, changes are made to exhibit layout and more interpretive signage is added.

The story continues to this day with the Delta Mill Society continually working to improve our knowledge of the history of the mill, to document that history and to improve the public presentation and heritage interpretation of the mill. While our official motto is "instilling a passion for our heritage" our unofficial motto is "onward and upward" – we always strive to move forward, to continually improve as best as our volunteer base and financial resources allow.

MEETING YOUR GUESTS

Knowing your guests interests in the mill is key to effective interpretation

Your main objective as a mill interpreter is to create genuine interest on the part of visitors to the mill! Your first task is, therefore, to get to know your guests. What you find out about them will guide you on what information to impart.

When visitors enter the mill, greet them by welcoming them to the Old Stone Mill and asking them where they are from and if they've visited the mill before. Tell them your name and that you are their host for the visit. Very briefly explain that the mill is owned and operated by the Delta Mill Society, an all-volunteer group. You can use the before and after panel showing Mill Restoration as a very quick way of showing what the DMS has done over the years.

Then ask them about special interests or if there is anything specific they came to see. Inform them that they can have a guided (assuming that there is a staff member/volunteer available for this) or a self-guided tour (with the self-guided tour brochure). Either way (guided or unguided), take them into the mill to the space in front of the First Settlers painting. This is Stop 1 for everyone.

Use the painting to briefly explain to them why the Old Stone Mill exists, of the pioneer settler need of a grist mill to grind the wheat they were growing into flour. This is detailed in the Stop 1 information.

If they wish to do a self-guided tour, give them the self-guided tour brochure and direct them around the corner to the Automatic Mill Display. If they have children, walk with them to show them how to use the "Moving the Grain" model. Then return to the mill shop for the next visitors.

If a guided tour, then follow the tour procedure described in this manual.

LAUNCHING THE TOUR

In the Preamble section, it is briefly mentioned how we theme the mill. The basics of that are the chronology of the mill, wheat and the need for a mill to grind it into flour, the Oliver Evans' automatic mill design, the importance of the mill to community development, and the architecture of the mill.

First Time Interpreters: First time interpreters should follow the general tour guide and stick tightly to our main themes. As you become more comfortable with providing tours and learn more about the mill you can branch out a bit and modify your presentation to match your audience interests. It does remain very important to stick to the main themes, but you can put your own spin on it.

When giving a tour, it is important to spin a story out of the facts. There are many possible approaches to how you could execute your story, some of this will depend on the interests of your audience, modify your presentation to match what they are interested in. For example, you could:

1) Tell the story from a **mechanical or technological perspective** with a focus on how the mill operates, how it was renovated through the years, the restoration process, the pros and cons of certain technologies, and how they fit within the culture of the given time period; and/or…
2) Tell the story from a **socio-economic perspective,** focusing on the family backgrounds of the different millers throughout the Mill's history. In addition, you could talk about how certain external affairs affected the Mill, for example, temperance societies, the fluctuation of grain prices, and the life as a settler in Delta: and/or…
3) Tell the story from a **historical/political perspective**, focusing on the historical and political aspects of the Mill and on the question "why". WHY was there a need for the Mill in the first place? WHY is the Old Stone Mill in Delta the only designated stone grist mill that is a National Historic Site? WHY was the production of flour important to the population? WHY did local flour milling eventually become a redundant trade? And lastly, WHY does any of this matter??

Avoid a machine-gun delivery of facts — do not spit out facts that do not have a point or bearing to your objective. History isn't merely facts. It is the interpretation of those facts that really matters. Feel free to throw in a few tidbits of information that are interesting but try to tie them into the story you're telling. Also, you are encouraged to mix the different methods of storytelling above, hence creating your own interpretation of the Mill's history.

Remember that the tour guide's job is to paint a picture with words, presenting first the broad outline, and then colouring in the masterpiece in certain sections for more detail.

Be a Hypodermic not a Sponge

A sponge simply absorbs facts and then gushes them out, a hypodermic injects ideas into the audience, allowing them to gain a greater understanding. Make your audience think – ensure that they understand the concepts you are telling them. Many concepts, such as the mechanical distribution of the rotational power of a water wheel, may be foreign to them. Milling and 1800s terminology (see Glossary of Terms) may also be unfamiliar – ensure that your audience actually understands what you are saying.

VISITOR-CENTRIC HISTORIC SITE INTERPRETATION
Essentials for Mill Volunteers

by Anna Greenhorn

A. DESIGNING and SITING the STORY

1. ORIENTING the visitor is critical!

***Where** they are in terms of geography – it is important to make the visitor understand why the Mill was located here**.** What factors made this location a good choice for the mill to be successful. Why is a mill *here*? What water or other power source is there? Is this a grain-growing area, or where does the resource to be milled come from? What kind of transportation is there to bring the resource here for milling, and to ship it out? Where is a nearby port? Where is the mill pond, dam, canal, or other aspects crucial to a mill?

***When** the mill was built and in operation. The visitor should understand the period in history that you are asking them to relate to at any given point in the tour. Mention technology, inventions and the lifestyle of the people at the time. Provide them with cues as to what has already happened at the time of your story or just after, and where we are in terms of technology and inventions – these will help to orient your visitor in time. You will not insult your visitors' knowledge; those who know will just nod knowingly in agreement.

***Who** the key players are—introduce a few relevant people they may know, and then those crucial to the story that it is unlikely they will know. Never assume that all your visitors *know* these people! Don't be a mill snob!

Whenever you *introduce* a new personality or event, don't automatically presume your visitor knows who or what they are – give them a *cue*. But – don't bore folks with excessive or unnecessary amounts of background. Just a *quick cue* to get them with you will do! [Think of good introductions at a party... *and bad ones!*]

All these are important to hand out in a non-insulting way since the historical experience of the visitor will vary amazingly. Visitors aren't stupid or ignorant; they just come into the story you want to tell with differing background knowledge or with that knowledge stored further back in their memories. Most people don't spend their days milling, nor have they spent time in the 18th or 19th century lately. *[Still, visitors say the darndest things!!]*

2. "Picture-painting" seems to be the key to interesting historical interpretation. Don't get so lost in a sea of facts that you forget that the key to history is a good, compelling story—details you can *see, hear, smell, FEEL*. The people need to be able to see, hear, smell, feel that story. Images/words that evoke sensations are crucial, and using the historical environment you are in to emphasize these (the mill buildings, the landscape, the rooms/floors of the mill, the artefacts) is important since your story needs that backdrop to work.

3. A good story flows—logically! It's sort of like telling a good joke—lose the logical flow and nothing makes sense. **An interpretation at a place has to be a story**—not just bits and pieces as in most “tours."

4. On-site interpretation should use the SITE!! Otherwise, why not just read about it at home on the website? Ask yourself— what is it about being there at your mill that makes the *visceral* difference? What are the visual as well as sound and smell cues? Why is it so special to feel the mill shake as the millstones turn? Can they *touch* a millstone to *feel* the grooves and rough surface? Can they see the dust in the air? Hear the water flowing over the waterwheel? Can they touch the wall or floor in the mill office where someone in the past stood? They need to be glad they came to this site! Let them interact with it—*Look! Listen! Touch! Smell! Place a hand against a wall or floor or object, and close the eyes to remember the feel!* NOW—how do you do this at your site? What sensory cues are there and how do they work into your story to make it more real/memorable?

5. Not everyone is a history buff who comes to our site – but they potentially are. Make them understand, too, through your story, through the imagery and provocation of your interpretation, Make them ***care*** too. It is a good idea to ask about everything you throw in *SO WHAT? WHY SHOULD ANYONE CARE?* We often are history snobs writing off the less informed. Remember, interpreters function as salesmen and teachers, provocateurs and pied pipers. Experience shows that the one who gets the most from your tour may be the one you thought was getting the least. *How do YOU* know what the visitors are thinking? Some people *never* smile.

6. Be on the lookout for the quote or account that just makes this site and story come alive, and use it. Be sure to make the quote *pithy* enough, and *short* enough. If you write the quote on *paper*, make it ancient— maybe ratty—for that physical quote becomes a *prop* (always useful to have) and a visual asset to your story.

7. Consider carefully the backdrop/siting you will use to tell each part of your story so that one enhances the other. In a mill, for each part of your unfolding story, consider in which room, on which floor, at which location to tell it—and where the *visitors* will be standing in that room and what they (not you) will see. You may well wish to include that background in your story, but face your audience, not the backdrop, when using it

8. End in moving fashion! Your group should wish there was *more*— do this *where?* End with *what? Think!*

9. What have you reinforced through your story/interpretation? A visit to an historic site is best part revelation, part provocation, part curiosity-invocation, and part *personal growth* experience. *Give this thought!*

B. TELLING the STORY

1. Introduce yourself, your relationship to the site and consider getting to know the audience a bit with a few questions. How many are from Australia? Virginia? Northern Virginia? The North? *Build a bond …*

2. Face your audience, "keep within spittin' distance", and attain and retain eye contact. Avoid the annoying habit of talking with your back to the audience as you point out something! Keep your group *close* to you to maintain control and contact. A group at a distance you have *disengaged*. [Oh—do brush your teeth!]

3. Always position yourself so the visitors focusing on you are also viewing the object which you are discussing. Be aware of the field of view of your audience, it should be you and the object (i.e. interpretation panel, artefact display, etc.).

4. Pull your group in to you before you speak at any stop along the way. Wait until *all* the group has caught up before you begin. Make it clear when you are just being conversational with the first to catch up and when you are actually *interpreting* by a change in voice. Don't be afraid to ask/urge people to move closer.

5. Speak loudly enough! Watch for cues from your audience that they cannot hear you.

6. Speak slowly enough and clearly. Perhaps this is obvious. But—let your speed vary with the story's action. It is also crucial to avoid mumbling certain words or letting sentences trail off to nothingness after a key point

7. Remember that this is a *good* STORY. It should be *told* that way. It's like how you tell a good joke...

8. It is alright in let a *little* of your own feelings and finding about the place/event show. This is a way of conveying why you take the time to volunteer/work here. When was the first time you *saw* this site? When and *why* did it first grab you? Some interpreters accidentally (and *effectively*) let them-selves in to the story—"*In Aldie **WE** were terribly excited that day..."* This effectively shows *ownership!* But strive for *balance* over *bias*.

9. Use your HANDS to *tell* the story. As one interpreter was heard to comment, "If you put your hands in your pockets, they'll wonder what you're up to." Hands are useful for indicating size, direction, emphasis, frustration, speed, etc. Hands attached to a stick can also draw some pretty neat maps in the dirt... Most people are *visual!*

10. Don't let your interpretation go *too long*!. For many of us, this is a challenge—but a story can always be tapered to a close when you become aware that you've strayed and gone on too long. It's a good idea to know of some logical early-ending points in your story. *Not everything* has to be told! Oh–*always have & use* a watch!

11. Remember to avoid what you hate about other guides and interpreters when you visit historic sites. Visiting other historic sites can certainly be useful in making you a better interpreter yourself! Watch, listen, react, and *learn*—both in terms of information *and technique*. Then apply what you've observed to *your* tour.

WHY IS THE HERITAGE OF THE OLD STONE MILL IMPORTANT?

The vision of The Delta Mill Society is "***Instilling a Passion for Our Heritage"*** – which can be expanded to "Instilling a Passion for Our Heritage to all we meet" – so you, as a DMS interpreter, are charged with that "instilling" part. It is your enthusiasm and knowledge that can infect others. As discussed above, there are many and varied reasons why heritage is important and why the "our" part is important, since it's a shared heritage for all. Sheila Fraser perhaps said it best in her 2003 Auditor General of Canada's report, when, in her discussion of why it's important to preserve and protect Canada's built heritage said:

> *These places recall the lives and history of the men and women who built this country, and they foster awareness of how Canadian society evolved. They help us to better understand the present and prepare for the future. They contribute in important ways to Canadians' sense of belonging to their community.*

The Old Stone Mill certainly served that role in spades and remains today, as a tangible reminder of our rich past, of how our country grew. It was there at the very beginning, creating community, helping early pioneers make a living, allowing families to prosper and grow.

OLD STONE MILL and COMMUNITY

Today we see a beautiful old stone building in the middle of a well developed village. But back when it was built, essentially in the middle of a sparsely settled frontier, it would have been a spectacular sight. Rough dirt roads led to and through Delta, roads that allowed the area homesteaders to bring their grain to the mill. With the regular visits by farmers came other services; blacksmiths, merchant shops, taverns – all leading to the growth of the village. By 1816 we see that "downtown" Delta contained about 10 buildings with a total of 20 buildings reported for the area.

Delta was the earliest inland community in this region – founded in 1796 when Abel Stevens received a grant of 3 lots, today's Delta. He had the first wooden mills built, providing the nucleus for a community. There were no other inland communities nearby – local villages such as Athens, Philipsville and Elgin were to come later. Lyndhurst, which had a brief early run with a iron foundry (1801-1811), was fading as Delta was growing with the establishment of the Old Stone Mill.

It was the mill that contributed to regional settlement, the Old Stone Mill providing a product central to everyday life; flour. The adjacent saw mill providing boards for construction of homes and barns. These spurred on the development of community.

NATIONAL HISTORIC SITE MESSAGING

A goal of The Delta Mill Society, and in fact any owner of a **National Historic Site of Canada**, is to convey knowledge and understanding of the site, and why it was commemorated as a National Historic Site, to as many Canadians as possible (we communicate to visitors from around the world, but our main obligation as a NHS is to ensure Canadians understand why the Old Stone Mill is a National Historic Site of Canada).

The background historical information in this document serves to provide a deeper understanding regarding why we are a National Historic Site. You'll find the exact wording of our full NHS designation later in this document.

The following will provide some guidance regarding the three main points of our NHS designation

1) It is one of the earliest surviving mills in Ontario:

- The Old Stone Mill is one of three surviving mills, still in its original location, from the pre-1812 period, out of about 200 built, and the only surviving stone mill;
- Stone mills were quite rare in early Ontario;
- After the American Revolution, early settlement in Ontario was focussed on the St. Lawrence frontier and then gradually moved northward;
- Good mill sites (rapids & waterfalls) were in high demand and were developed very soon after initial settlement;
- The mill has survived because it was well built and its machinery and usage was modified over the years in response to changing market conditions.

2) It is a fine example of early Canadian architecture

- When constructed in 1810, the Old Stone Mill was a large building for its time particularly in the remote backwoods of Canada.
- The quality of the stonework, the strong aesthetic qualities applied to an industrial structure, e.g. the symmetrical arrangement of doors and window openings, fine proportions, and detailing in the design and construction are evidence of a high degree of craftsmanship, and make it a significant architectural achievement for the period.
- The vestiges from the mill's early period provide insight into its original operation.
- The mill was an early application in Canada of the technologically advanced Oliver Evans automatic milling system. The height and scale of the building and the configuration of the roof truss system were designed to accommodate the automatic milling system.
- This system, introduced in 1790, revolutionized milling by improving the movement of grain throughout the building thus greatly increasing production.

3) The mill was associated with the early industrial development of eastern Ontario.

- The mill site (original rapids) at Delta was developed first as a saw mill in support of initial settlement and then as a grist mill as the land was being cleared and farmed (Abel Stevens' original wooden mills).
- The Old Stone Mill played an important role in the early economy of Leeds County by allowing farmers to convert their own wheat to flour and feed thus stimulating more economic activity in the region.
- Water power sites were of critical importance in establishing the settlement pattern and communities.
- Saw and grist mills were critical in fostering agricultural settlement.
- The mill at Delta illustrates the impact of these industrial buildings on their immediate surroundings, in this case the expansion of Upper Beverley Lake as a millpond and the establishment of the village of Delta.

INTERPRETIVE TOUR STOP DESCRIPTIONS

This tour stop section is the suggested flow. With the changes to the mill in the last few years we are continuing to adjust our interpretation to best present the mill. The biggest constraint is the 45 minute to 1 hour "time limit" for the tour – as noted, a 6 hour tour of the mill could easily be done and still not cover everything we know about the mill, so timing and pacing are important, keep the tour moving forward. Note to your guests that they are free to continue to explore the mill on their own after the tour and ask questions of any available interpreter.

This section is broken out into Size of Tours, Introduction, Simplified Tour Flow followed by the Detailed Tour Flow. Diagrams of each floor showing the stop locations are included in each section.

Size of Tours

Ideally the **maximum** size of a tour group is 10 people. We have several tight areas to gather a group, so 10 is the normal maximum. If there are more than 10, then it is best to split up the group and start in different locations in the mill (suggestions for this detailed later).

Large Groups

Ideally we will get advance notice of a large group (i.e. bus tour, etc.) and the tour group committee will plan a tour for this group. If one arrives with no notice, then it should be split into as small an individual tour group as the number of interpreters allows (adapt as best as possible). This is very uncommon, we do ask for advance notice and normally we receive such notice.

Tour Overview

Before we launch into a primer about the suggested tour stops, an overview is warranted to provide an understanding of why we suggest a certain visitor flow.

Our main messaging is how flour was made in the mill. The Oliver Evans' process involves the grain going from the 1st floor to the 4th floor and then back down to the millstones which were located on an elevated husk and then the flour from the millstones going to the 3rd floor for cooling, down to the 2nd floor for bolting and down to the 1st floor to be put into barrels and bags and then out the door for sale. Not every visitor has goat legs, so dragging them up and down the stairs to follow this process is not practical. So we need to fit this story, the nine step process, into a floor by floor tour of the mill.

The exterior of the mill is also very interesting to show them how the mill was positioned on the landscape, where the millpond was, the waterwheel and turbine hall raceways, the artificial channel leading to the mill, the role of the bywash and where the original creek was located and the presumed location of the original Stevens' mills. But that is hard to fit into a 45 minute tour, or to do if it is pouring rain outside – so outside is optional, done if your guests are interested in that information.

In recent years, we've tried to create a one-way interpretation flow in the mill. We start on the 1st floor of the original 1810 mill, describing the pioneer settler's need for a grist mill,our NHS designation, the weighing of the grain, the millstones, the automatic mill, the waterwheel and the placement of the final product into barrels and bags. We talk about William Jones and Ira Schofield, the partners who had the Old Stone Mill built. We sometimes digress and mention the

location of the start of the temperance movement in Upper Canada – a 4 hour long sermon in 1828 (near the Automatic Mill Display). After the view/description of the millstones & waterwheel, we break from following the steps of the Evans' automatic mill process as we lead our tour group into the turbine hall, noting that they are now stepping 50 years ahead in technology with the introduction of turbines and conversion of the mill to belt & pulley transfer of rotational power. We also bring in the story of one of the main owners, Walter Denaut, who bought the mill in 1850 and made many improvements, including the change to turbine power. We also have the roller mills (c.1890s) and the Champion feed grinder (1923) in that location – illustrating the change in focus from flour production to animal feed production. The feed grinder introduces us to another owner, Hastings Steele, ending that discussion with his transfer of the mill to the DMS. We also talk about the importance of the sawmills and where they (2 of them) were located. We then take them up the stairs located in the turbine hall to the 2nd floor.

We're still on a break from the Evans' process as we enter the 2nd floor with a look at the Miller's Office and the agricultural display. At this point we generally ignore the bolter other than to point it out to our visitors for them to look at on their way back down from the 3rd floor and instead lead the visitor up the 3rd floor using the stairs located near the stairs from the turbine hall.

They enter the 3rd floor with the Upper Beverley Lake view (not actually UBL, but similar), the first people (indigenous) in this area and the early surveys of this area. Then we're back to the design of the building, the incredible roof architecture, a description of grain cleaning and storage and then moving over to the grain and flour elevators, the original stairs to the 4th floor, the elevators, the doors in the wall, the belts & pulleys display and finally the hopper-boy. In between we have our special exhibit area which may, or may-not in any given year relate directly to the mill.

After the hopper-boy, we take them to the 2nd floor, to the bolter which is where the cool and dry flour from the hopper-boy was sent. We then got to the 1st floor, showing them the features of the original 1810 door in the mill. At this point they can be "released" – some may wish an exterior tour or do continued exploration inside the mill, or just thank you and leave (hopefully making a donation on the way out).

In visualizing the original 1810 mill, we have a problem in that the floor the bolter (and the agricultural display) sits on today was open space in the 1810 mill, there was no second floor in the area of the north wall (the 2nd floor started about 12 to 17 feet back from the north wall). The original bolter was in the area of the stairs that now come up from the turbine hall. This is in a location above the area on the 1st floor where we see our flour barrel & bag display, which was in fact likely the original barrelling location. This problem is in part because we didn't have that period bolter when the mill was restored in 1999-2003 and the original bolter spot is now, by necessity, a stair area. So, when we got a bolter in 2008 and installed it in 2010, the only spot it would fit is where you see it now. This location also allowed us to much more easily integrate this working bolter into the mill, used at times in our current milling process. On the 3rd floor you'll see a little wooden switch on the flour elevator that will direct the flour either back to the 1st floor for bagging as whole wheat flour, or to the bolter on the 2nd floor when we have enough volunteers available to operate it.

We do have enough signage and information that a visitor could in fact follow and understand the original design of the 1810 mill, it's just that some mental visualization is required. But, in a 1 hour tour, we're already packing in a huge amount of information. At the end, we really want to have a visitor appreciate what an amazing set of stories the Old Stone Mill represents.

None of this is cast in stone – we continue to think about how to best present the mill. How to best get our main messages across. How to create an enjoyable and informative experience for every visitor that arrives at the mill.

Which way to go?

The tour starts by introducing yourself, explain who the DMS are, explain that while the building is original to 1810, that the great condition of the mill they will be touring is a result of extensive restoration work done by the DMS (use the Mill Restoration, 1970 and today, in illustration). Then solicit your guests for their interests to gauge how to adapt the tour to their interests. Then take them out of the mill shop and into the mill in front of the First Settler's painting. This is to be done whether they wish a guided or self-guided tour. In this area explain (briefly) to them of the pioneer settlers' need for a grist mill to grind their wheat. This is the reason for the Old Stone Mill.

Once done with that, then start the tour if they wish a guided tour or give them the self-guided tour brochure so that they can do a self-guided tour. If they wish to do a self-guided tour, then direct them around the corner to the Automatic Mill Panel display. If they have children, go with them to show the use of our Moving the Grain interactive display.

If a guided tour, there are two divergent thoughts. One, our main tour route, is that the next stop on the tour is the description of how our mill worked – the Oliver Evans' Automatic Mill display. After that we show the visitor all the features of the mill. An alternate method is to start at the water wheel to show how mills were sited (located) and powered – a set of rapids with a head of water that could power a water wheel. Then take the visitor to the Automatic Mill display to start talking about the layout and the Oliver Evans automatic method of making flour.

This can also happen if we're busy, with one group in front of the Automatic Mill display with a another group by the waterwheel, the waterwheel group going to the Automatic Mill display once that group has left that area.

A third option is to start a tour outside, with a focus on how the mill was sited and how it was built using local materials way back in 1810.

The main inside tour flow is as follows:

1. Exhibits on the main floor of the original 1810 mill.
2. Exhibits in the turbine hall.
3. The miller's room and agricultural display on the 2nd floor (the bolter on that floor is done later).
4. Indigenous use and early surveys on the 3rd floor.
5. Architecture (roof structure, accordion lath, tapered floorboards) on the 3rd floor.
6. Grain cleaning, garner bins, the flour & grain elevators, changing technology (belts & pulleys) and the hopper-boy (3rd floor).
7. Bolter on the 2nd floor then back down to the 1st floor to the original front door and the mill shop

We do the outside of the mill if they are very keen. This includes the location of the mill in relation to Upper Beverley Lake and the original Stevens' mills, the artificial channel, the millrace entrances, the bywash and how the millpond, 1.4 m / 4.6 feet higher than the water level today, was adjacent to the mill. All those are important parts of our story – but they are hard to fit into a regular 45 minute tour.

SIMPLIED TOUR DESCRIPTION

Old Stone Mill Guided Tour Stops (General Tour 1 aka Anna's Tour)

These are not absolute, tours can and should be adjusted based on the interests of your audience and how busy the mill is. If the mill is busy a tour and a tour is already started, a second tour can be started outside, show them the main exterior features, the mill's location on the landscape and then bring them inside.

Always start with the First Settlers painting (Stop 1), to provide them with the basic concepts of what a grist mill is and why the Old Stone Mill was built. You can also point out the significance of the Olds Stone Mill as a National Historic Site of Canada and its role in developing community (all roads led to Delta in the early 1800s).

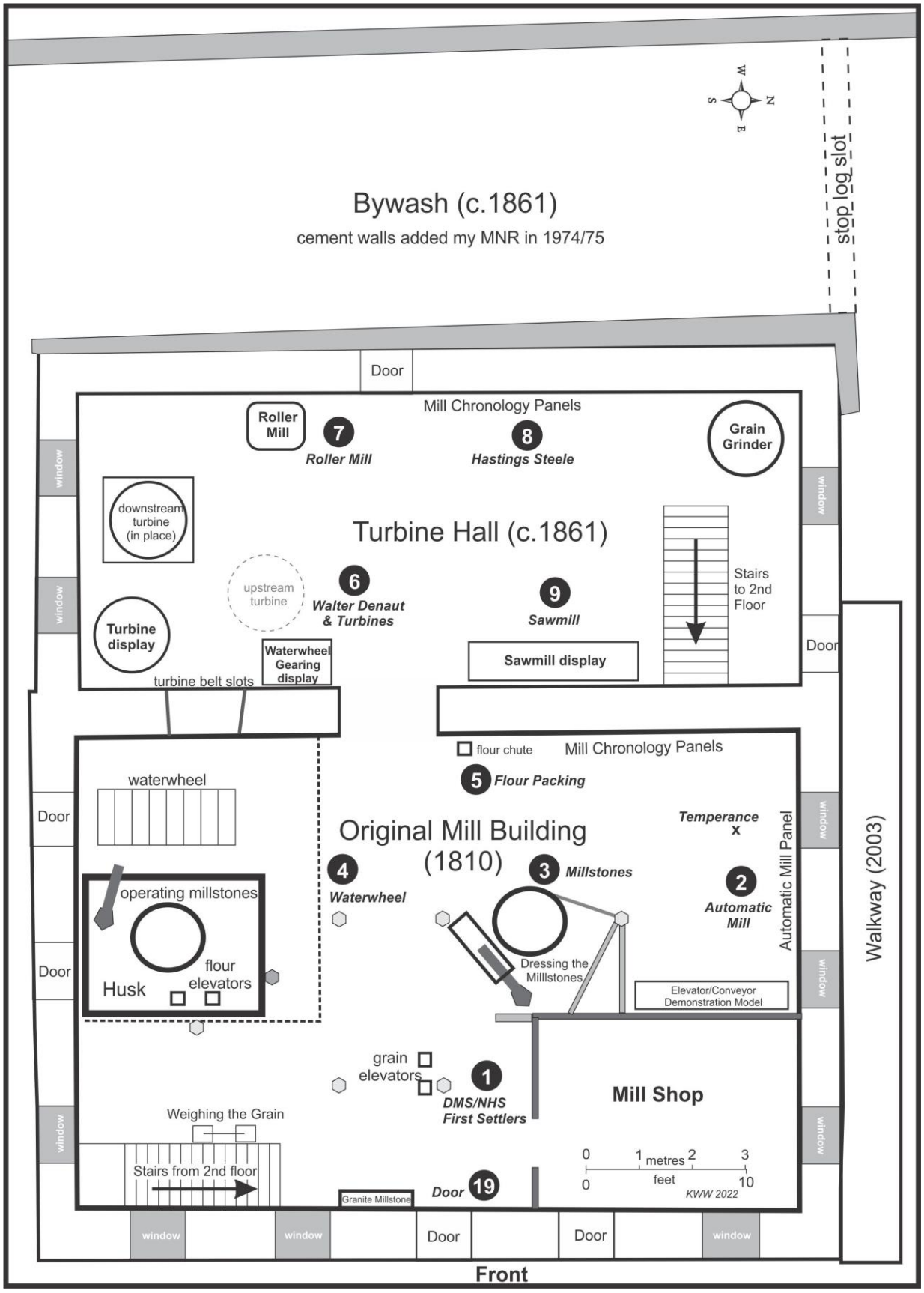
Tour stops (order of stops) can be adjusted based on how busy the mill is and the interests of your tour group. For instance, you could do the waterwheel as the second stop rather than the automatic mill board (so instead of stops 2, 3, 4, do 4, 3, 2).

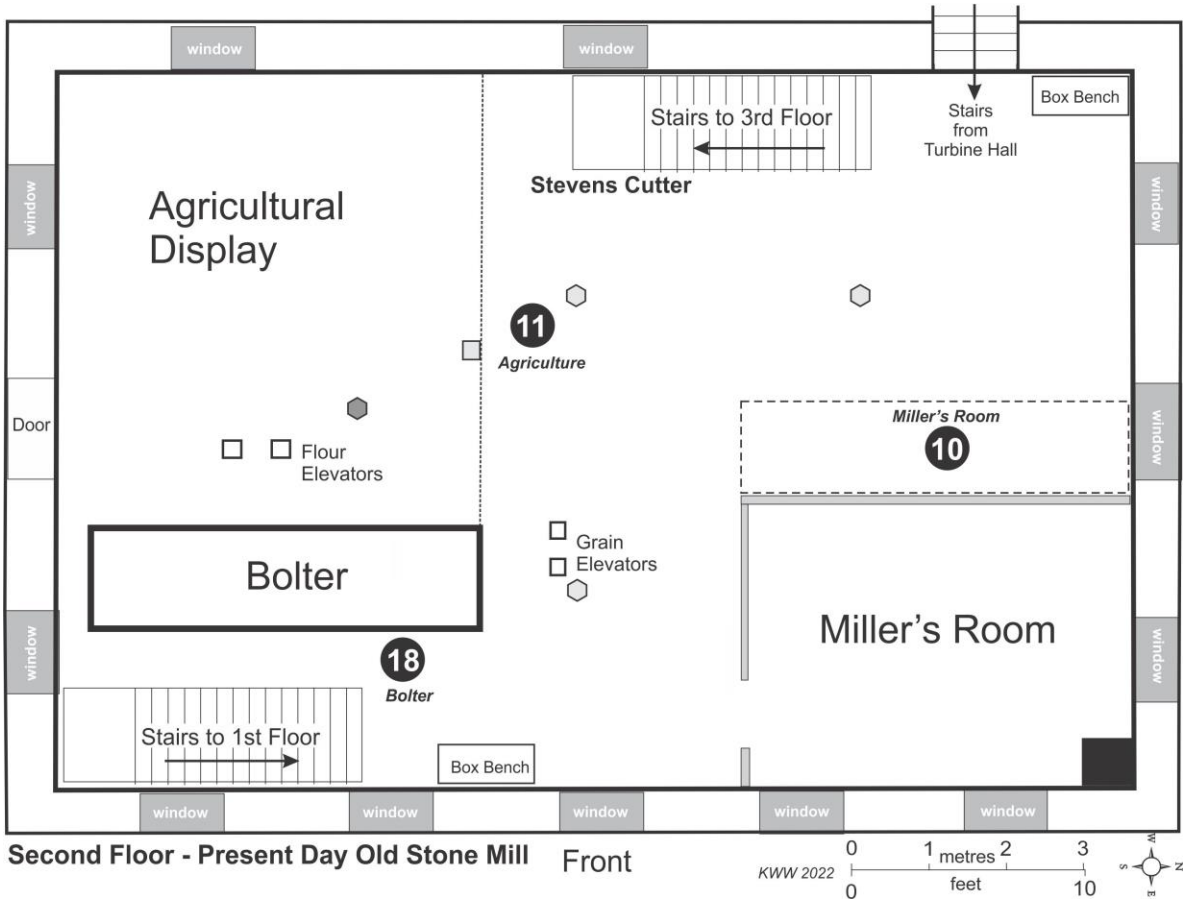
See floor plans in the detailed tour description for tour stop locations.

PRE TOUR

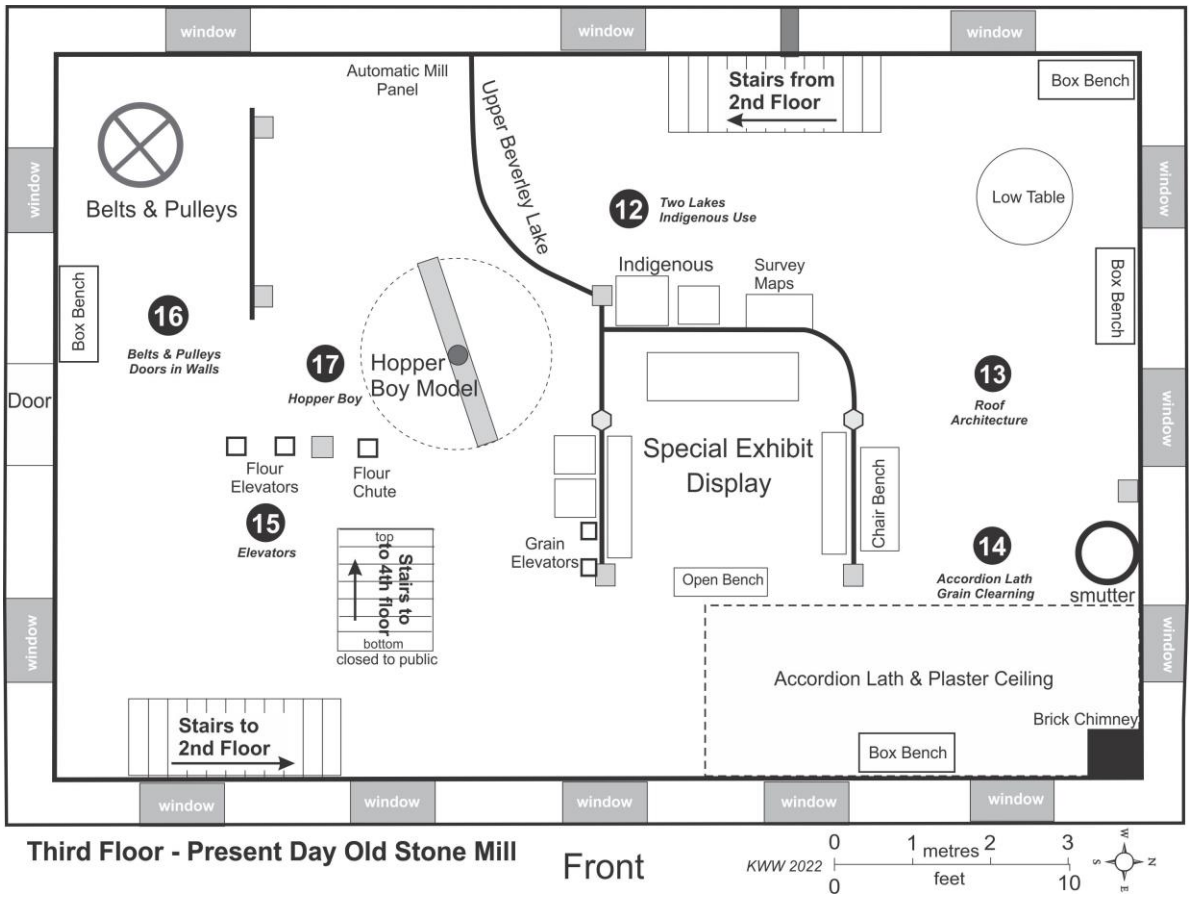
Meet and greet your visitors – welcome them to the mill. Tell them that they can tour the mill on their own or be given a free guided tour. Explain that the mill is owned and operated by the Delta Mill Society, a non-profit, all volunteer organization who have been working to protect and present the mill since 1963. Also explain that while the building is the original 1810 building, that the spectacular condition of the mill is due to extensive restoration work done by the DMS. Show them the Mill Restoration panel in illustration.

With all of our guests, take them to the space in front of the First Settler's sign. Do brief spiel using the painting and the mortar and pestle in illustration of pioneer need for a grist mill to grind their wheat. If they wish to tour on their own, then give them the self-guided tour brochure and direct them to start at the Automatic Mill Display around the corner. If they wish a guided tour, then solicit their interest(s) in the mill to gauge how to best focus the tour to their interests.


Bywash (c.1861)
cement walls added my MNR in 1974/75
stop log slot
W
N
S
E
Door
Mill Chronology Panels
Roller Mill
7
Roller Mill
8
Hastings Steele
Grain Grinder
window
downstream turbine (in place)
Turbine Hall (c.1861)
upstream turbine
6
Walter Denaut & Turbines
9
Sawmill
Stairs to 2nd Floor
Turbine display
Waterwheel Gearing display
Sawmill display
Door
turbine belt slots
flour chute
Mill Chronology Panels
5
Flour Packing
waterwheel
Door
Temperance
x
Original Mill Building (1810)
4
Waterwheel
3
Millstones
2
Automatic Mill
Automatic Mill Panel
operating millstones
flour elevators
Husk
Door
Dressing the Millstones
Elevator/Conveyor Demonstration Model
Walkway (2003)
grain elevators
1
DMS/NHS First Settlers
Mill Shop
Weighing the Grain
Stairs from 2nd floor
0
1
metres
2
3
0
feet
10
KWW 2022
Granite Millstone
Door
19
window
Door
Front



Second Floor - Present Day Old Stone Mill



Third Floor - Present Day Old Stone Mill

First Floor Stations

1 – First Settlers & Need for a Grist Mill: First settlers clearing forests to create farmland and their need for a grist mill grind their wheat into flour. The hard shell of the wheat (bran) requires millstones. Use of a mortal and pestle (stump mill) can only create meal, not flour. The basic principle of grinding grain into flour in the Old Stone Mill (use of hard French burrstones). Also, our NHS designation, the heritage importance of the Old Stone Mill to Canada.

2 – Automatic Mill Display: show them the diagram and take them through the process. Note that they can come back and look at this in detail (the diagram mostly speaks for itself). Speak about who Oliver Evans was and how William Jones used his design for an automatic mill to the Old Stone Mill.

- *Optional but when finished with the display, point to the spot in the floor where Dr. Schofield is presumed to have stood when he delivered his 4 hour temperance sermon in 1828.*

Note: *between stops 2 and 3 to ignore the big history board on the back wall. That is way too much information at this point in the tour – you can simply reference the board as something they can come back and read in detail later – proceed to millstones*

3 – Millstones in Dressing Position Display: tell them that these are French burrstones, the best kind of millstone due to its hardness. It's a constructed stone, small pieces bound together. Furrows cut into the stone provide an edge that cuts rather than crushes the grain, resulting in better quality white flour. Note that the furrow orientation between those on the runner stone and those on the bedstone provides a scissor (shearing) action, cutting the grain. Once this explanation is done show them the working stones (hidden under vat) and briefly explain how that works.

- *On your way from the Dressing the Stones to the husk, point out the grain and flour elevators. They'll have an idea of the Oliver Evans process at this point, and this will just orient them to where those elevators are located. Our grain elevator has a little door that can be opened to show the belt and buckets. Point out our "Weighing the Grain" display, but don't spend time at it – just note that grain was first weighed (to make payment to the farmer) and then sent to the top of the mill for cleaning via the grain elevator.*

4 – Waterwheel: the story here is how the power of water, harnessed by the waterwheel, powered everything in the mill. Keep in mind that many people are not familiar with waterwheels and how its rotational power was transferred to equipment throughout the building by means of physical connections (shafts and gears). Note the raceway and how the water power comes from the higher level of Upper Beverley Lake (the "millpond"). Note that the mill originally had a 12 foot diameter waterwheel with about 7 feet of "head" (height of water from where it hit the wheel). Our current demonstration wheel is 10 feet in diameter.

5 – Chute from 2nd Floor (smooth inside with rubber rodent). This is where one type of flour from the bolter on the 2nd floor came down to be barrelled. Note that only fine flour could be exported and that it was the main saleable product – with 196 lbs of fine flour being placed in a standard sized flour barrel – we have two of that size barrel on display. Show the opening, how smooth the inside is, how it allowed the miller to check his product. Note that there would be separates chutes for each grade of flour. Do the rodent check.

Note *when walking through the archway between the mill and the turbine hall that we are now stepping 50 years ahead in history – from 1810 to the 1860s. This jumps us both to new technology and the story of the Denaut era.*

6 – Walter Denaut and Turbines: Take the visitors into the turbine hall noting that they are now stepping ahead 50 years in history. This is the Walter Denaut story – he's the owner than introduced the new technology of turbines (note the interpretation boards that they can return to later for details). Denaut restored the mill to profitability, built the turbine hall and re-built the sawmill (c1861) and built a community hall adjacent to the mill in the 1850s (what remains is now our Blacksmith's Shop). Also note that the turbines also marked a change in how rotation power was distributed in the mill, the change from direct wooden shafts and gears to metal shafts with belts and pulleys. The slits in the wall were for a looping belt from the turbines (not the main power transfer which was a shaft under the husk – this belt was to power a portion of the equipment).

7 – Roller Mill: a major technology change in milling, faster and less expensive than millstones. We think the roller mill may have been installed in the 1890s by a new mill owner, George Haskin. Roller mills created pure white flour as a result of complete separation of the endosperm, but also stripped that white flour of nutrients. Stone ground flour retains more of the vitamins and minerals since even the bolted white fine flour include some of the germ and bran.

8 – Hastings Steele: Note Steele's focus on the manufacturing of animal feed (point out the Champion grinder) and the sawmill. Note that during Steele's time (1913-1963) the mill eventually stopped making flour (c.1940), then stopped producing animal feed (1950), and turned into just a flour and feed store (logos on the wall). Note his most important legacy, his decision in 1963 to sell the mill for $1 to four trustees with the intent that the mill be preserved and opened to the public as a museum. Those trustees formed the Delta Mill Society and here we are today, fulfilling Steele's wish.

9 – Sawmill: an attached wooded building housing a sawmill has been part of the Old Stone Mill from the beginning. Note that it was always close to the mill, the first sawmill a separate building very close to the mill and the second sawmill (c.1861), was attached to the turbine hall wall, directly on top of the bywash they can see today. Note two reasons for the proximity, one was to derive power from the mill (we know for certain that the lower turbine, the one still in place, powered the 2nd sawmill) and a second reason is that the sawmill waste was dumped into the bywash to be carried away into Lower Beverley Lake. Note that the original 1810 sawmill also contained a carding machine (for wool). Note that the circular blade they see in the display is later mid-1800s technology, that the original sawmill had a large vertical blade. Point out the broadaxe with the offset handle in the display, noting that the big timber supports in the mill were squared using this type of axe. The sawmill was removed in the early 1960s by the Ontario government (MNR) who took over water control in about 1961.

Second Floor Stations

10 – Miller's Room: Walter Denaut had this built as his private office likely in the 1850s. Briefly point out the various items in the office.

11 – Early Agricultural Equipment: the type of equipment used by the settlers of this area – some are local innovations – point out the grain cradle invented by the Alford family of Harlem who obtained over 200 patents for various types of equipment. Show them the tally and have them guess its purpose.

Note: *simply point out the bolter and let them know that they will be seeing that on the way down after touring the 3rd floor.*

Go to the 3rd floor use the back wall stairs – enter into Beverley lakes display

Third Floor Stations

12 – **Story of Two Lakes and of Indigenous Use**: point out the indigenous artefact display. Point out the 4000 year old sinker and ask them to guess what it is. Note the early surveys and the location of the original mills.

Not much time needs to be spent here since they can come back and fully read the interpretive panels.

13 – **Roof support architecture** – look at the roof, what do you see? (have them describe the ridge pole). All made from locally sourced wood, beams are single pieces. Note the blending of the Dutch ridgepole design, the English wind supports, the German queen beam supports – all working together in harmony. The stunning architecture of the building is one of the reasons for the NHS designation.

14a – Accordion Lath and Plaster – point out methodology, a pre-cursor to sawn lath. Point out that it extended the width of the 3rd floor in this area and that the extent of it is reflected in the replacement beams – beams above the plastered ceiling rotted more that beams that weren't (the other side of the 3rd floor which is all original beams). Note this was done during the 1999-2003 restoration and note the care in trying to preserve as much of the original beams as possible (the merge between the new and old). Note that it is believed this was the grain storage area (point out the slits in the floor for bin wall supports) and that a likely reason for this ceiling was related to the grain cleaner above this area on the 4th floor which generated a lot of dust and debris which you didn't want in the cleaned grain.

14b – **Grain Cleaning –** standing by the smutter and Grain Cleaning interpretive panel. Note that the original 1810 grain cleaner was on the 4th floor above this area and that it was simple rotating cylinder with holes (a type of trommel) with a fan designed to remove dirt and chaff from the grain, with the cleaned grain dropped to this floor for storage or sent directly to the millstones for milling. Note the rectangular opening in the east wall (turbine hall side) which was used to exhaust the dirt and chaff into the bywash below. Note that the smutter is a type of grain cleaner invented in the mid-1800s. We date ours to about 1870. It works by using rotating central cylinder and air currents through the wooden top portion to separate dirt and chaff from the grain. It's called a Smutter since part of the dirt is smut, a grain fungus that needed to be cleaned off the grain prior to milling.

Note: *just point out our special exhibit display (presently Mills & Stills) on your way to the area of the elevators, belts & pulleys and hopper-boy.*

15 – **Grain and Flour Elevators –** look up, way up. Point out the grain elevators and the flour elevators and the tops of those where the endless belt loops around. The farmer's grain, that was first weighed on the 1st floor, ended up on the 4th floor, directed into the grain cleaner at the south (open) end of that floor. Note the stairs, which are original to 1810 mill, that allowed the miller easy access to the grain cleaners as well as doing elevator maintenance. Point out the blackened area and have the guess the reason (fat was used for lubrication and the heat from the gears blackened the fat).

16 – **Belts & Pulleys – Doors in the Wall** – Point out the belts and pulleys that were introduced into the mill in about 1860 with the introduction of the turbines. These replaced the previous direct connection wooden gearing from the waterwheel. Note the door in the wall, put there in order to be able to lift equipment in and out of the mill using a block & tackle rope lifting system supported by a beam out of the upper window.

17 – Hopper-boy – show them the hopper-boy, explaining its role in cooling and drying the flour than came up the flour elevators from the millstones. Explain that the millstones would heat up, making the flour hot and sticky and that it needed to be cooled, dried and separated for bolting. The slowly rotating rake of the mechanical hopper-boy replaced a boy in earlier manual mills that had to rake the flour until it was dry. Note how the hopper-boy worked, by moving the flour from the outer edge toward the centre where it would fall into a hole with a chute leading to the bolter on the 2nd floor.

Second Floor Station

18 – Bolter: returning to the second floor at the bolter, explain how the bolter worked to take the flour from the hopper-boy and separate it out into degrees of fineness due to the angled rotating cylinder (the bolter reel), covered with screens inside the bolter. In 1810, the finest screen was usually made of French silk with the coarser screens either cloth or metal. Show them how the finest component of the flour is naturally white with the coarser grades progressively darker (due to the dark bran shell of the wheat).

First Floor Station

19 – H. Steele & Son Front Door: come down the stairs from the bolter on the 2nd floor and bring the group to the front door. This is the original door, point out the name "William" written near the top of the door – this was done by William Jones, the original owner of the mill. Show them the beautiful Norfolk hinge and other original features such as the lock.

This ends the formal tour. At this point let your visitors go. Invite them to stay in the mill should they wish, to carry out further explorations on their own. Otherwise direct them to the Mill Shop and invite them to sign the guest register if they have not already done so. This is conveniently placed by the donation jar. We don't get "pushy" on donations, the jar and signage should make them aware.

Exterior Area

Exterior tours are not normally given – usually just to those expressing that specific interest or with a large group tour (which sometimes starts outside – talking about the building and NHS designation).

A map is helpful as an interpretive aid. An illustration package that can help with exterior interpretation is planned for 2022.

Several outside elements can be pointed out.

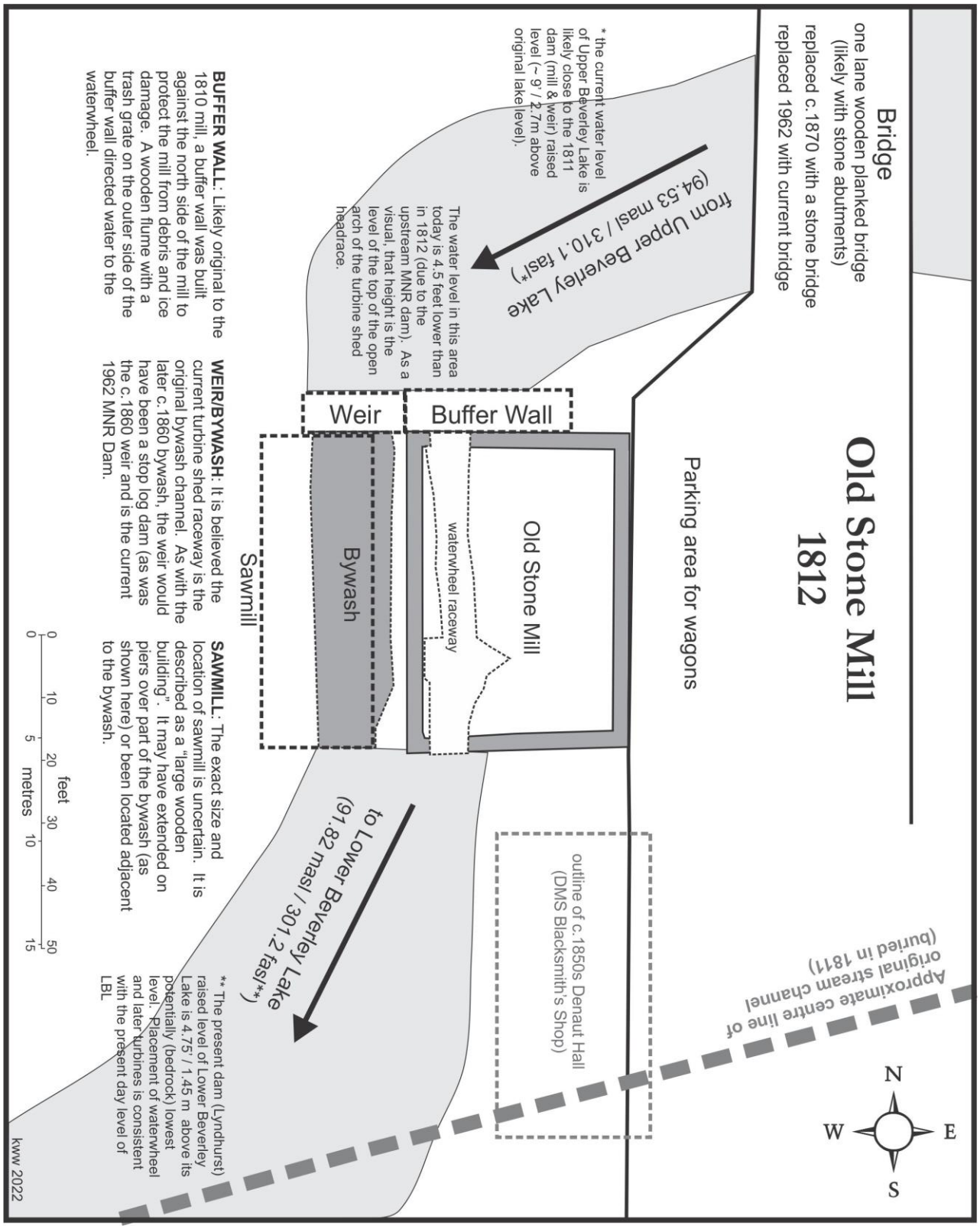
- **Position on Landscape** – point out Upper & Lower Beverley lakes, indicate original channel (dip in topography at the DMS Blacksmith's Shop) where the rapids between the two lakes used to be. Note the topographic difference that created the water flow used to power waterwheels.

- **Mill Stonework** – note that each course of stone is different in height since the masons were working with natural sandstone layers which are of different thicknesses (they made use of what was available locally). Point out the initials on the cornerstone (long ago by one of the stone masons?)
- **Raceways and Dam** – For those interested in how the mill was powered, a view of the north wall (at the bridge) and the MNR dam are required elements. Key points are that the mill sits in a constructed channel, that it acted as its own dam, that the water level of Upper Beverley Lake today used to be up against the mill (up to the top of the arch of the turbine raceway). You can point out part of the base of a buffer wall that once extended along the entire north wall and was used to keep debris and ice out of the mill (forcing it around to the bywash). The c.1870s photo by R.E. Denaut can be used as a visual.
- **Tailraces and Wildlife** – Take them between the mill and the drive shed to look at the tailraces. If you're lucky, there may be some local wildlife to see (heron, mink or some other animal).

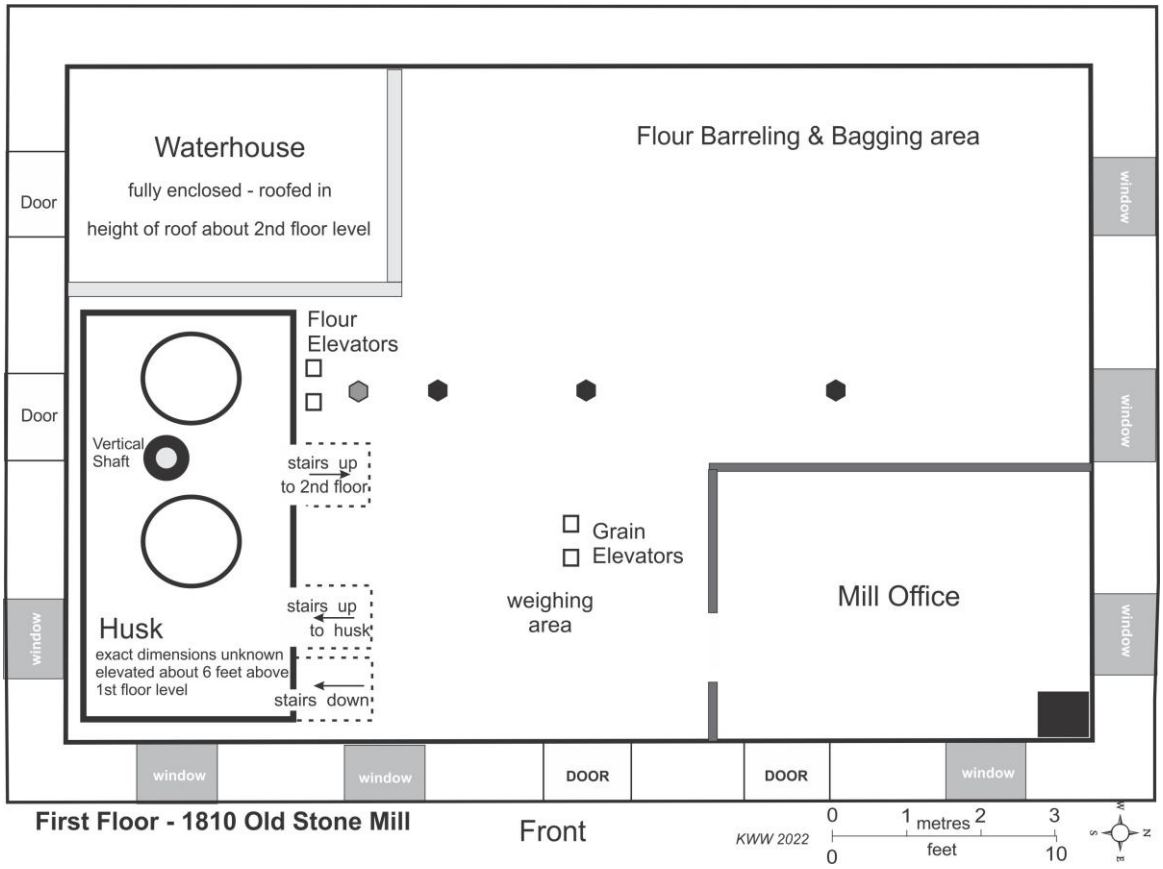
DETAILED TOUR DESCRIPTION

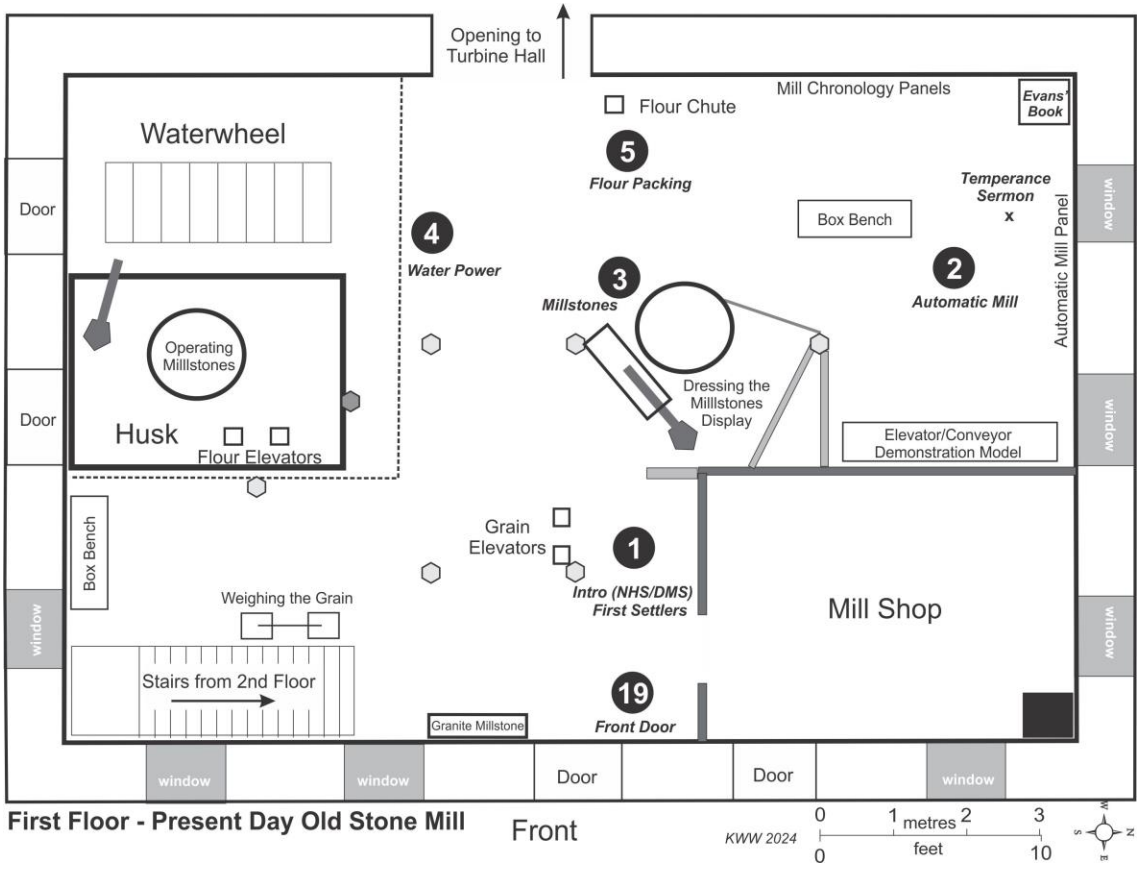
On the following pages you'll find a detailed, stop by stop, description. New for this 2nd edition are floor plans showing our current educated assumptions regarding the 1810 layout of the mill compared to the present day layout. These have been added to help you visually see the changes from 1810 to today.

On the next page, you'll find a plan view of the 1810 mill and surrounding layout (millpond, bywash, sawmill, etc.). This will help to orient you to descriptions of the 1810 mill that you'll find in the write-up.


Old Stone Mill
1812
Bridge
one lane wooden planked bridge
(likely with stone abutments)
replaced c.1870 with a stone bridge
replaced 1962 with current bridge
Parking area for wagons
outline of c.1850s Denaut Hall
(DMS Blacksmith's Shop)
Approximate centre line of
original stream channel
(buried in 1811)
from Upper Beverley Lake
(94.53 masl / 310.1 fasl*)
to Lower Beverley Lake
(91.82 masl / 301.2 fasl**)
* the current water level of Upper Beverley Lake is likely close to the 1811 dam (mill & weir) raised level (~ 9' / 2.7m above original lake level).
The water level in this area today is 4.5 feet lower than in 1812 (due to the upstream MNR dam). As a visual, that height is the level of the top of the open arch of the turbine shed headrace.
Weir
Buffer Wall
Old Stone Mill
waterwheel raceway
Bywash
Sawmill
BUFFER WALL: Likely original to the 1810 mill, a buffer wall was built against the north side of the mill to protect the mill from debris and ice damage. A wooden flume with a trash grate on the outer side of the buffer wall directed water to the waterwheel.
WEIR/BYWASH: It is believed the current turbine shed raceway is the original bywash channel. As with the later c.1860 bywash, the weir would have been a stop log dam (as was the c.1860 weir and is the current 1962 MNR Dam.
SAWMILL: The exact size and location of sawmill is uncertain. It is described as a "large wooden building". It may have extended on piers over part of the bywash (as shown here) or been located adjacent to the bywash.
** The present dam (Lyndhurst) raised level of Lower Beverley Lake is 4.75' / 1.45 m above its potentially (bedrock) lowest level. Placement of waterwheel and later turbines is consistent with the present day level of LBL
0 10 20 30 40 50 feet
0 5 10 15 metres
N
W
E
S
kww 2022

First Floor


Waterhouse
fully enclosed - roofed in
height of roof about 2nd floor level
Flour Barreling & Bagging area
Door
Door
window
window
window
window
Flour
Elevators
Vertical
Shaft
stairs up
to 2nd floor
Grain
Elevators
weighing
area
Mill Office
stairs up
to husk
Husk
exact dimensions unknown
elevated about 6 feet above
1st floor level
stairs down
window
window
DOOR
DOOR
window
First Floor - 1810 Old Stone Mill
Front
KWW 2022
0
1
metres
2
3
0
feet
10


Opening to
Turbine Hall
Mill Chronology Panels
Evans'
Book
Flour Chute
Waterwheel
5
Flour Packing
Temperance
Sermon
x
Door
Box Bench
4
Water Power
2
Automatic Mill
Automatic Mill Panel
3
Millstones
Operating
Millstones
Dressing the
Millstones
Display
Door
Husk
Flour Elevators
Elevator/Conveyor
Demonstration Model
Box Bench
Grain
Elevators
1
Intro (NHS/DMS)
First Settlers
Weighing the Grain
Mill Shop
window
window
window
window
Stairs from 2nd Floor
19
Granite Millstone
Front Door
window
window
Door
Door
window
First Floor - Present Day Old Stone Mill
Front
KWW 2024
0
1
metres
2
3
0
feet
10

NOTE – Main messaging is shown in bold text, with secondary and/or explanations in non-bold.

First Settlers & Mill's NHS Designation (Station 1)

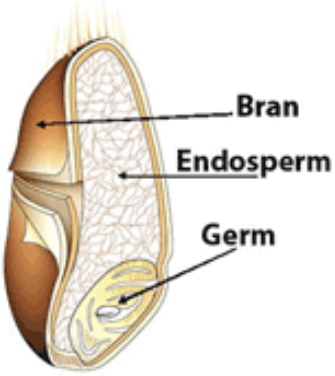
1

STATION 1 – **Our First Settlers display**: early settlers need for a grist mill to grind the wheat they were growing in their newly created fields, made by axe clearing the forest. The hard shell of wheat (bran) necessitates the need for millstones.

INTERPRETATION NOTE: You should have already introduced yourself and the DMS in the mill shop before bringing them to Station 1. The painting is an accurate depiction of what the first settlers in this region (Abel Stevens' group in 1794) would have done, clearing the forest with axes and planting wheat and potatoes between the stumps. Our mortar and pestle (stump mill) could only make meal (crushed wheat), it couldn't make flour. Millstones were needed for that. By the time the Old Stone Mill was built (1810-11), settlers in Bastard and adjacent Kitley townships were producing wheat beyond their personal needs, it was a cash crop for them. The Old Stone Mill, as a merchant mill, catered to those farmers.

- **Wheat along with potatoes were the first crops planted in newly cleared forests. Flour was a dietary staple, initially a settler was only able to grow enough for his family's use. As fields expanded and matured, it then became a cash crop for the farmer.**

- **The objective of grinding is to grind the wheat grain to create flour.** This grinding process separates the components of grain, the endosperm (food for the seed – about 83% of the seed), germ (the fatty root of the seed – 3%) and bran (outer shell of the seed – 14%). Screens (i.e. in a bolter) can be used to separate these components of the flour. The endosperm produces light coloured fine flour; a mix of coarser endosperm, germ and fine ground bran produces middlings and shorts; and the remaining coarser parts of the outer layer form bran. If not bolted, the flour is pure whole wheat flour.



INTERPRETATION NOTE: Stand in front of the storyboard telling of the mill's NHS designation. This is where you can note why the Old Stone Mill is different that other mills – its importance to this area of Ontario (development of community), a rare surviving example of an early Oliver Evans' design automatic mill. You can note the fact that the Old Stone Mill is the oldest surviving pre-1812 stone grist mill in Ontario and the only grist mill in Ontario designated as a National Historic Site of Canada.

Mention to adults that when we are grinding we use organic Red Fife wheat from heritage seeds that have not been genetically altered. Red Fife, a type of wheat that originated in Ukraine, was developed in 1842 by David Fife at his farm near Peterborough Ontario, and became the milling standard wheat through to the early 1900s.

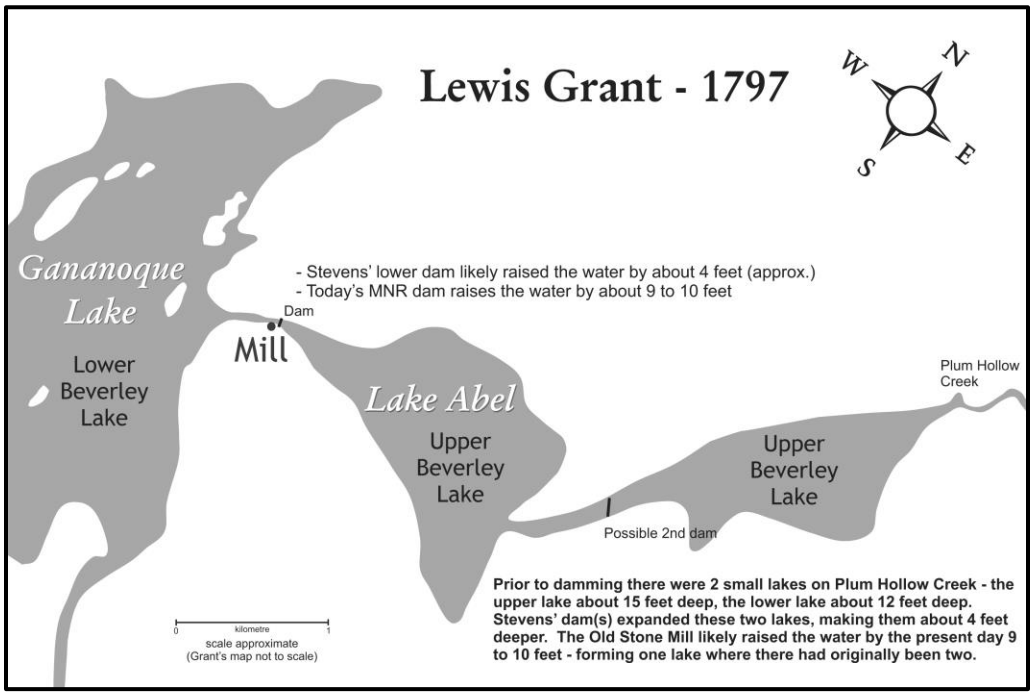
Abel Stevens – The First Mill in Delta – Development of Community

INTERPRETATION NOTE: Abel Stevens is part of the History Board near Station 2. Normally we skip the Abel Stevens story unless someone is specifically interested. While he was the founder of Delta, he didn't have anything directly to do with building the Old Stone Mill other than selling the land it sits on to William Jones in 1808.

- **Abel Stevens, a United Empire Loyalist, arrived in this area with his family and five others in February 1794 and squatted on land to the east of present day Delta.**
- **Abel Stevens had the first mill built in Delta (a wooden sawmill). It was in 1796 after he'd been granted land and it was located on the original watercourse of Plum Hollow Creek (today's Delta Creek), near the foot of the original rapids.** That location today is likely somewhere near the corner of the Jubilee Building, the intersection of King St. and Mathew St. (see map in Appendix A).
- As a United Empire Loyalist, loyal to the British Crown during the American Revolution, Stevens was eligible to obtain land in Upper Canada. He explored this area in 1793 and decided to come and settle this area with the original intent of forming a Baptist community.
- In February 1794, Stevens journeyed from Vermont to the Delta area with six families (his own and 5 others). They came via Brockville, building a rough road to the area of Delta for their ox drawn wagons. The six families settled on the upper reaches of Plum Hollow Creek and Stevens petitioned for land around present day Delta.
- The area was unsurveyed, Stevens and the families were squatting. A prominent local loyalist family, that of Justus and Thomas Sherwood, claimed the land as their own. Nothing could be settled without surveying in lots and concessions.
- In January 1794, surveyor William Fortune left Montreal to survey the boundaries for 6 new townships (Montague, Wolford, Russell (Elmsley), Kitley, Burgess and Bastard). He started in the east and headed west, arriving in the area of Bastard township in July 1794. The southern boundary line he established is still today known as "Fortune's Line". Fortune did not survey in lots and concessions, that was to come later (Lewis Grant).
- By September of 1794, Stevens has learned of the iron deposits near Lyndhurst and in a petition that month requests the land and rights to mine the iron near Lyndhurst. This becomes a bit of a driving focus for Stevens for the next seven years (until those rights were granted to someone else – that story is detailed in the article "Delta and Lyndhurst Forged Together" on the History Page of our website).
- By March 1795 Stevens listed the names of 24 heads of families that he had settled in what was to become Bastard Township. Surveyor Lewis Grant was now busy surveying the region and in 1796 sufficient surveying had been done to establish Bastard Township and grant Stevens and families land in the area (on June 2, 1796). The full survey of the township was completed by Grant in 1797.

Story: An interesting, but untrue tale of the naming of Bastard Township is that Abel Stevens was summoned to York to report on his township. When he was asked what it was called, he was overcome with shyness and hesitated to say "Stevenstown", whereupon a flippant clerk remarked, "As it has no father, it must be a bastard", and henceforth, the township was called Bastard. The factual explanation is that it was named after John Pollexfen Bastard, a British MP for Devon. He lived in Kitley house, so it's no coincidence that the neighbouring township to Bastard is Kitley. What's his association with this area? None directly. But he seems to have been a friend of John Graves Simcoe, the first Lt. Governor of Upper Canada (1791-1796).

- **After Abel Stevens received his land grant in June 1796, he (or his cousin William) had a wooden sawmill built on the rapids between the Upper Beverley lakes (then 2 small lakes) and Lower Beverley Lake.** Grant's 1797 survey notes show it as "Wm. Stevens mill." To gain a greater head of water, and to impound more water, Stevens dammed the outlet of the Upper Beverley lakes, flooding the area to enlarge the lakes, the lower lake is shown on a Grant's 1797 survey map as Lake Abel (today's MNR dam raises the water higher than Stevens' dam did). He later added a grist mill to serve the local homesteaders, who were now starting to grow wheat. It was noted in 1805 that Stevens also had a 70 gallon still (legal).
- **Stevens' mill became the nucleus for the small community of Stevenstown*** (later changed to Stone Mills c.1812, then to Beverley in 1827 and then to Delta in 1857). ***It is likely that Stevens' original (1794/95) petition references to Stevenstown was in reference to the township (Bastard) and not to a village. A nearby township is called "Elizabethtown". So, while we think the name "town" must mean exactly that, a reference to a town was commonly to a "township". The town was only established after Stevens received his land grant.



Story: An interesting anecdotal tale is that in 1827, Sir John Beverley Robinson offered to donate a bell for St. Paul's Anglican Church. Originally a Baptist church started in 1811, the building was purchased by the Anglicans in 1827 with construction then done to complete the church. John Beverley Robinson was a staunch Anglican and the story goes that he donated the bell on the condition that village of Stone Mills be re-named Beverley. The village was so renamed and the church got its bell. When a new post office (which required a unique name) was applied for in 1857, it turned out there already was a Beverley in Ontario, so a new name, Delta (for the shape of its geographic location, the Greek letter Delta which is shaped like a triangle), was chosen.

- In 1816 the village had about 20 buildings, a letter by Col. Cockburn in March 1816 stated that he stayed overnight with "a Mr. Jones who lives in the village which consists of about 20 houses, where is an inn, a saw and grist mill (both excellent) and a distillery." A July 1816 map shows 10 buildings in the core of Delta (Appendix A). An 1828 map notes "Beverley is composed of abt. 30 houses." By 1851 the population was 250, by 1897 it was 500, and in 1976 it was 310.
- The location of the Stevens' mill is presumed to have been on the southeast side of the original creek which ran along today's Recreation Drive and through or near the present location of the Mill Drive Shed (it's shown on that side on Grant's 1797 map). That location today is dry land near the intersection of Mathew Street and King Street (approximate, not actually known – see Appendix A). The water going into the Old Stone Mill is on an excavated channel diversion of the original creek.
- Stevens leased his mill to Nicholas Mattice from 1803 to 1808. It was both a sawmill and a grist mill, with 2 runs (sets) of stones, likely operated from a single waterwheel.

Story: At this point, you could tell the visitors an amusing anecdote: In 2008, a young couple asked to be married in the Mill. The bride was a direct descendant of William Jones, the groom a direct descendant of Nicolas Mattice who leased Able Steven's grist mill from 1803 until it was sold to Jones in 1808. This was the first wedding held in the Mill. They were invited back for the Mill's 200th Anniversary in 2010. However, their first child decided to arrive then, so they had to miss the party.

- In June 1808 Stevens sold his mills and the property around them to William Jones for £375 (a very large sum in those days).
- Abel Stevens' wooden grist mill burned down twice according to the memoir of Niel Sliter, an early pioneer in the area. There is some speculation that it burned down the second time after William Jones had purchased it (1808), sparking Jones to build a new mill, the Old Stone Mill. This may have happened in late 1809 since in that year Ira Schofield (Jones' business partner) is shown operating Stevens old grist mill. However, in 1810, neither Jones or Schofield are shown as having a mill (or a still), hence the implication that it might have burned down and not been rebuilt.

STATION 2 – **Automatic Mill Display & Building the Mill**: show them the panel with the cutaway view of the mill* and take them through the process. Note that they can come back and look at this in detail (the panel mostly speaks for itself). This same panel is also located on the 3rd floor. Note who Oliver Evans was (large signboard) and how William Jones & Ira Schofield used his design for an automatic mill when they had the Old Stone Mill built.

***INTERPRETATION NOTE 1:** The cutaway view is a bit incorrect in that, since it was done in the mid-2000s, we've now determined that the original grain cleaner was in the "attic" (4th floor). It also doesn't show the elevated millstones foundation (husk). The schematic on the interpretation panel below the cutaway view is a bit more correct in that regard. But both are meant to show the process, rather than a 100% accurate layout of the 1810 mill – so focus on the process, not the layout. The layout can be described to visitors at those locations in the mill.

INTERPRETATION NOTE 2: This is an opportunity to have visitors fall for the romance of the history of the Mill. Explain the concept of Oliver Evans' automatic mill: point out the 1832 edition of his book in the showcase and the model of a grain elevator and conveyor (a type of screw). Taking the visitor through the 9 step Evans' process is all that is generally required – don't get into detailed specifics unless asked. You can crank the handle on the model to work the elevator and explain that one water wheel ran the whole show in the mill.

Oliver Evans and the Automatic Mill (Station 2)

- **In the 1780s, an inventor named Oliver Evans, from Delaware, worked out machines and methods to automate a flour mill on his family's property. In 1790 he obtained a U.S. federal patent for his new process. In 1795 he wrote a book, *"The Young Mill-Wright & Miller's Guide,"* laying out how a mill could be run with only one or two people, with no manual labour from the time that the wheat came into the door to the time it was barrelled for sale. His process later became known as the Automatic Mill. By the early 1800s, everyone was adopting his process and a Canadian, William Jones, from a milling family, hired a millwright to build a mill based on the Evans' process.**
- Oliver Evans' developed his process in the 1780s at a family mill on Red Clay Creek near Newport in Delaware. Known as the "Watt of America," Evans was an inventor and engineer, a man ahead of his time. Evans invented many other things such as first known self-propelled amphibious vehicle, a high pressure steam-powered wheeled dredging barge (although it is disputed whether it actually was able to move under its own steam power). While he is sometimes better known for his work on developing high pressure steam engines, it was his invention of the automatic mill that had the greatest impact, revolutionizing the flour industry.

William Jones and Ira Schofield – Building the Old Stone Mill

- **In 1808, William Jones buys Abel Stevens mills and the surrounding property. Jones and his business partner Ira Schofield, plan for an automatic mill and hire a millwright to design one to be built out of stone. The decision to build a heavy stone mill meant it couldn't be placed where the old Stevens mills were located, it needed to be built on bedrock, the only exposure of which was located to the north of the original stream channel.** The original Stevens mills were likely located near the middle of King Street in line with its intersection with Recreation Drive – about 30 to 40 m south of the Old Stone Mill. That was the original stream channel, later buried with material excavated from the new water channel excavated to the Old Stone Mill.
- **Construction of the Old Stone Mill started in March 1810 and was completed sometime in 1811** (it's referenced in March 1812 as "the Stone Grist Mill" indicating it's built plus we have assessment records showing Ira Schofield was the miller in 1812). It is unclear who paid for the construction. William Jones owned the land (purchased from Stevens in 1808) so a likely assumption is that it was Jones, but the mill is shown subsequently to be operated by Schofield (1812), Jones & Schofield (1813-1815), Jones (1816), Jones & Schofield (1817) – a bit confusing. While usually attributed solely to William Jones, Ira Schofield was also clearly involved, likely as a business partner in the venture. A c.1815 map for instance shows location as "Jones & Schofield". Schofield moved away from Delta in 1818.
- **Jones and Schofield didn't do the construction, they would have hired an expert millwright for the design and construction of the mill. A millwright was generally an expert carpenter. He may have also been skilled in masonry, if not, an expert mason would have also been hired.**
- **The Old Stone Mill's height, scale, and roof truss configuration were designed to accommodate Oliver Evans' automatic milling system. The Mill is a Georgian style building, 50 x 35 feet (15.4 x 10.8 m) in size, 3½ storeys high plus basement. Virgin timber for the framing was cut on the spot and the stone was quarried likely a few kilometres north of Delta.**

INTERPRETATION NOTE: When discussing the size and shape of the original mill – note that the wall between the mill and the turbine shed is the original back wall of the 1810 mill. Point out that it lacks windows at this level because of the bywash which was adjacent to it. No windows adjacent to the bywash ensured that the inside of the mill stayed dry. If they ask about the exposed waterwheel, note that it was originally totally enclosed in a waterhouse.

If your visitors are from the USA, you can throw in a comment about hands across the border, or neighbours working together. 'Here is a Canadian, in a settlement in the backwoods of Canada, using an American inventor's process.'

- **William Jones was fortunate in choosing Delta for his Mill. A boundary between the contorted hard rocks of the Frontenac Arch and younger flat lying sedimentary rocks goes through Delta.** The area around Upper Beverley Lake and Plum Hollow Creek is flat lying sandstone with fertile soil cover, good for the growing of wheat. That the reason the first settlers occupied the upper parts of Plum Hollow Creek. The area around Lower Beverley Lake is mostly crystalline limestone with thinner soil cover, not as good for farming (of any kind). See Geology section in Appendix A.

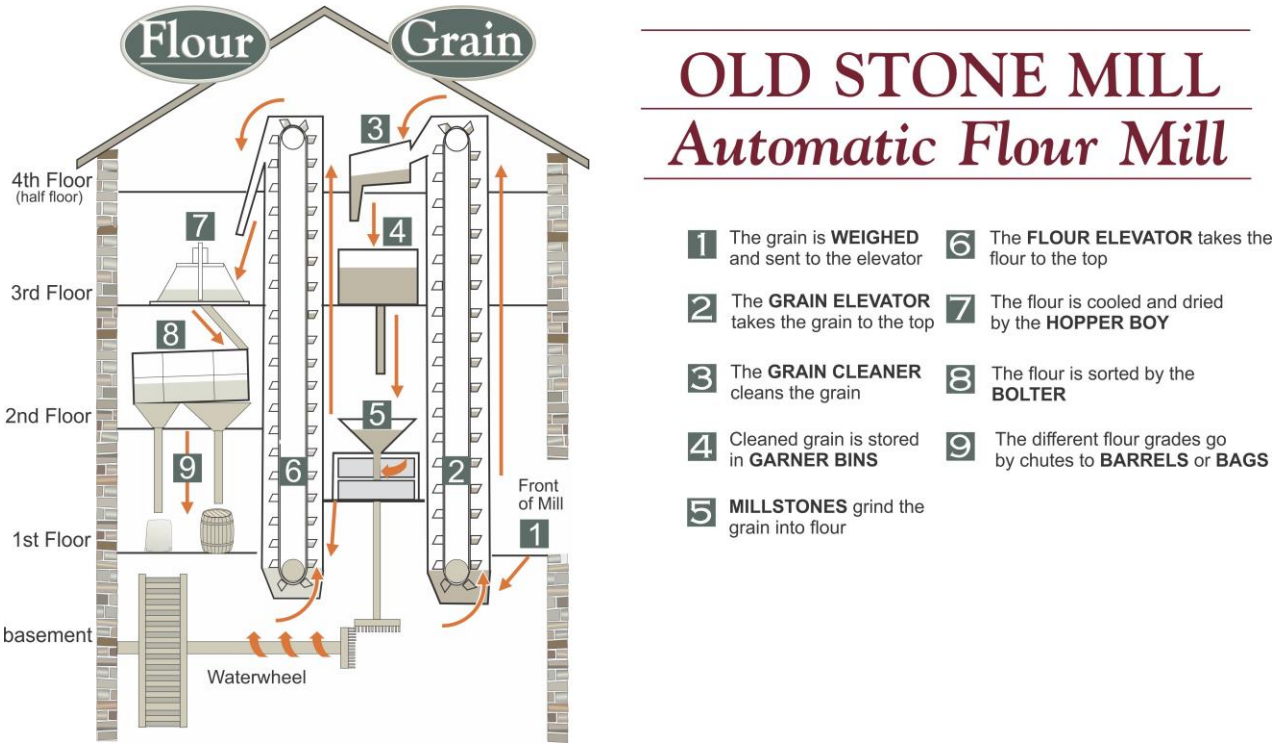
  Geology Note: Most of the stones that make up the walls of the Old Stone Mill are Potsdam sandstone. It was valued as a building material in the early 1800s due to its high compressive strength, attractive reddish coloring, and resistance to weathering. Local marble (crystalline limestone) was also used (i.e. some of the corner stones of the mill). While there is lots of Potsdam sandstone in the region, only some is of building stone quality and we don't know the location of the quarry or quarries. One educated guess is perhaps about 3 km north of the mill (off Cliff Road, between Delta and Philipsville), but that has not been verified. The mill sits on crystalline limestone, so it would have been locally quarried. (See Geology Section in Appendix C.)

- **The mill was built on solid bedrock on the northwest side of the original creek (different location than the original Stevens' mill). Once the mill was built the creek was diverted to the mill which acted as its own dam. The main water control was a stop-log dam at the head of a bywash, a water bypass channel adjacent to the mill.** A bywash is a water bypass channel to control the millpond level, similar to what we have today. It channels excess water around the outside of the mill. The original 1810 bywash is now under the floor of the turbine hall, it was used as the turbine raceway when turbines were installed in 1861.
- **The mill raised the level of the Upper Beverley lakes higher than Stevens' original dams, forming one lake where there originally had been two.**
- **All the power for the mill came from a single water wheel which was connected to a main vertical shaft that went right to the top of the building. The shaft was connected to every machine in the building by a series of wooden shafts and gears. When the water wheel started, everything started at once.**
- **William Jones' dream did come true: he did go down in history for having built* an innovative automatic flour mill in a beautiful Georgian architecture building.**

  * Technically Jones didn't build the mill, he was not a millwright. He would have hired an experienced millwright, one well versed in the design of an automatic mill. We have no records of who that person might have been – an avenue for future research.

The Automatic Milling Process *(still at Station 2)*

INTERPRETATION NOTE: We've reduced the Evans automatic mill process to nine steps and this messaging is now consistent throughout the mill. There are interpretation panels on every floor with a description of what was on that floor in the 1810 mill.



The automatic milling process was as follows:

1. **A farmer's grain was first weighed.** Note that a bushel of wheat is a measure of weight (60 pounds of wheat = 1 bushel) not volume.
2. **The weighed grain is dumped into the grain elevator (a continuous loop belt with tin buckets) which took it up to the grain cleaner on the fourth floor;**
3. **The grain cleaner removed dirt and chaff from the grain;**
4. **The cleaned grained was stored in garner bins until it could be milled;**
5. **The millstones, a rotating runner stone on top of a fixed bedstone, ground the grain into flour;**
6. **The newly ground flour falls into the flour elevator which takes it up to the hopper-boy on the 3rd floor;**
7. **The slowly rotating rake of the hopper-boy cools and dries the hot and sticky flour.** Previously the hot flour was manually raked, usually by a young boy, hence the term hopper-boy for the machine that replaced this manual job;

8. **The cool and dry flour then went by a chute to the bolter on the second floor. The bolter contained an open cylinder set on an angle. The outside of the cylinder was covered with cloths of varying fineness. Flour was fed into the upper end of the cylinder. As the cylinder spun, the flour moved along, the first cloth, an expensive fine bolting silk, sifted out the light coloured flour, the superfines and fines. The next cloths were coarser, allowing the middling and shorts to fall out. Bran continued to the end of the bolter.** Visitors can see the bolter on the 2nd floor. Of note, the bolter we have is not original to our mill, it came from an old manual mill in Québec. It's designed as a manual mill bolter, it has its own bins – flour has to be manually scooped out of it. A bolter in an automatic mill had chutes leading down to the packing area on the 1st floor, not bins.
9. **Each separate grade of flour fell down its own chute into its own barrel (fine grades) or bags (coarse grades) on the first floor. From grain to sorted flour with no manual labour.**

INTERPRETATION NOTE 1: Our explanation of grain and flour movement through the mill is highly simplified to just include the vertical (elevators and chutes). But grain was also moved horizontally in the mill. Oliver Evans' 1795 innovations were to add five machines to the existing milling equipment of the era. Those five innovations were the **Elevator**, wood or tin buckets on a leather belt moving vertically; the **Conveyor**, a wooden auger set in a trough to move material horizontally; the **Hopper-Boy**, a slowly spinning rake for cooling and drying the newly ground flour; the **Drill**, a horizontal elevator with flaps instead of buckets (similar to the use of a conveyor but easier to build); and the **Descender**, an endless strap (leather or flannel) in a trough that is angled downward, the strap helps to move the ground flour in the trough.

In addition to elevators and the hopper-boy, conveyors would have been used for grain in the 1810 mill and possibly descenders for flour. Our "Moving the Grain" interpretive model allows people to see elevators and conveyors in action.

INTERPRETATION NOTE 2: In the early years of the mill, the middlings were most likely re-ground to produce more fine flour. This is described by Oliver Evans and it was a common practice. While we note this on the interpretation panel for the mill cut-away view, we don't normally interpret this aspect unless asked. And if asked, then yes, there was most likely a system that captured the middling and sent them back for regrinding to extract more fine flour – but we haven't researched the details of how that would have been done in the OSM.

Later technology (mid-1800s) of "high grinding" the wheat to extract more fine flour eliminated the need to regrind middlings (again, not a point of interpretation).

Mills, Stills & Temperance *(still at Station 2)*

INTERPRETATION NOTE: Adjacent to Station 2 is the spot where it is presumed Dr. Schofield gave his temperance lecture. Mention that early pioneer mills usually distilled liquor (they had the raw materials) and then bring up the temperance movement and Dr. Schofield's lecture.

- **Where there were mills, there were stills.** Although the Old Stone Mill likely never had a still*, if we go back to earlier Delta we do see stills in mills. In the 1805 assessment, Abel Stevens is shown as having a 70 gallon still. In 1806, William Jones is shown with a 150 gallon still. Of course, there would be others throughout the new settlement as it continued to grow. By 1828 there was only one licensed still in Bastard Township (in Harlem). However this didn't slow down alcohol consumption by the populace in that time period leading to the start of the temperance movement in Canada.

INTERPRETATION NOTE: The main message here is Dr. Schofield's sermon and the start of the Upper Canada temperance movement. That's the key messaging.

- **Given the amount of liquor being produced and consumed in Upper Canada it was a significant social problem in the 1800s.** On June 10, 1828, Dr. Peter Schofield, an eminent medical doctor, distressed by the impact of drunkenness on society, delivered in this Mill the very first temperance sermon preached in Canada. The sermon lasted for 4 hours.

Story:

- *A highlight of the sermon is Dr. Schofield's rather vivid description of death by "spontaneous combustion." He noted that "it is well authenticated, that many habitual drinkers of ardent spirits are brought to their end by what is called spontaneous combustion" and then went on to describe in some detail an event he'd witnessed. (Leavitt, p.32)*
- *Visitors love to have their picture taken on the spot of the first temperance sermon!*

INTERPRETATION NOTE: Skip the big history board (Stevens, millers, etc.) at this point – way too much information – you can simply reference it as something they can come back to. Move on to the millstones.

* While earlier mills in Delta had stills, the Old Stone Mill likely never had one. We believe this for two reasons. One is that a still was never assessed for the Old Stone Mill. Mills ran legal stills which were assessed. The second is that stills used sprouting grain to create the mash used for alcohol production. Early mills used lower quality wet grain for this purpose, not the type of grain the OSM was accepting. An 1816 account did note that Delta had a distillery, just not in the Old Stone Mill.

The Millstones– In Dressing Position (Station 3)

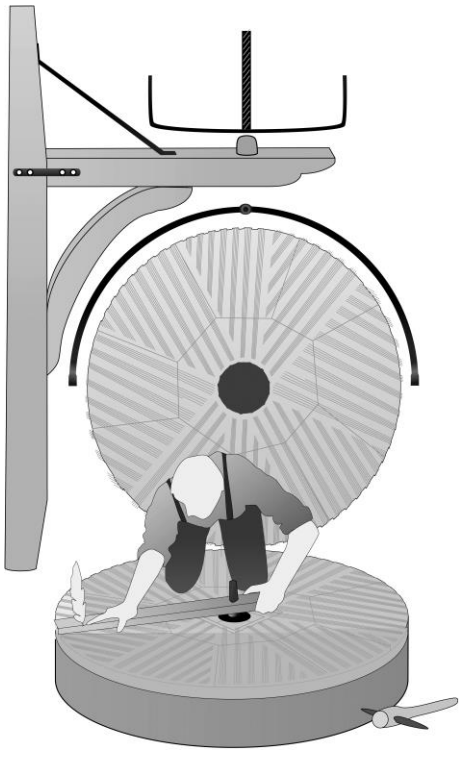
3

STATION 3 – **Millstones in dressing position display**: how this type of millstone, a French burrstone, is made. How the grooves cut the grain and the lands (raised flat sections) grind the cut grain. Relationship between the bedstone and the runner stone. About the need to dress (sharpen) stones.

INTERPRETATION NOTE: start at the display of the millstones in dressing position then move onto the operating millstones which are hidden under the vat. A detailed description may not be required (judge your audience). One principle to emphasize is that the grooves in the hard burrstone cut rather than crush the wheat kernels (the scissor action of the furrows in the runner stone against those of the bedstone), producing a cleaner extraction of the endosperm, the component that makes white flour.

INTERPRETATION NOTE 2: the outer shell of wheat, the bran, is very hard, harder than most other grains (i.e. oats, barley, corn). So, the best stones for grinding wheat were the hardest available stones, and the hardest was French burrstone. We also have granite stones on display. While some mills used these for wheat due to their lower cost of acquisition, in the Old Stone Mill we believe the granite stones were used much later, for grinding softer grains into animal feed. But some mills did use locally available stones (called “country stones”), due to their lower cost. But they had higher maintenance (needed more sharpening due to wear) and produced a lower quality product, abrading rather than cutting the grain.

- **Now on to the millstones. The best millstones are made of French burrstone – a type of quartz rich rock (a silicified limestone). This particular burrstone is found in the Marne Valley of north central France. French burrstone came in small pieces which were cemented together with plaster and then bound with a red-hot iron band to create the finished millstone. Grooves (called furrows) were cut into the stone to form sharp grinding edges. This type of hard stone is preferred for flour mills since it is less abrasive than softer stones, cutting rather than abrading the grain, resulting in whiter coloured flour (due to better separation of the endosperm).**
- **The French burrstones used in the Old Stone Mill weigh about 1,200 lbs (550 kg) each.**



INTERPRETATION NOTE 1: For children, tell them each stone weighs as much as a cow! You can also ask them what happens as the red-hot iron band placed around the constructed millstone cooled*. Adults and children enjoy thinking together for solutions. (* it contracts – tightening the band).

INTERPRETATION NOTE 2: The runner stone is balanced to avoid wobble. Pieces of burrstone are chosen to ensure even weight distribution and then lead weights are added in the back to achieve the required balance. This is exactly like balancing the wheel on a car where a weight is added to achieve perfect balance.

- **When a millstone wore down or became uneven, the stone would be dressed (sharpened). The runner (top) stone would be lifted away from the bedstone, exposing the grooved surfaces of both stones. The wooden Miller's Staff, coated with red ochre, would be moved over the stone, leaving red marks highlighting raised areas. These would be chipped down using a pick (a millbill) to form an even surface, and the furrows (grooves) in the stone deepened to re-establish sharp cutting edges. This process, known as dressing the stone, took many hours to complete.**

INTERPRETATION NOTE: for those interested, you can mention that we have a video of the dressing of our millstones (the ones under the vat) on our website: www.deltamill.org (that's worth a view by any person interpreting the stones to better explain what dressing the stones is all about – you can see a video of it actually being done with our stones).

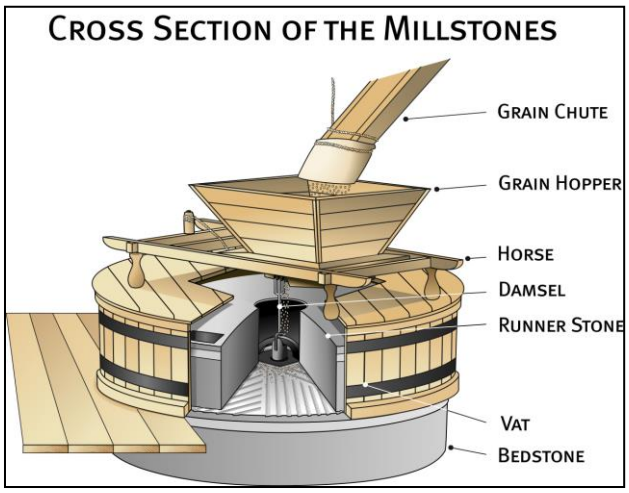
- **The millstone on view as one walks into the Mill is composed of local granite, softer and with a different purpose than the French burrstones.** It may have been introduced in the mid-1800s replacing the 2nd run of burrstones when the mill started grinding softer grains such as oats and corn for animal feed. These granite stones would last about 60 years whereas the quartz rich burrstones, if maintained properly, lasted over 100 years. We do have a description of a granite stone being used as a runner stone on top of a French burrstone bedstone in the mill – likely for making animal feed at that time with flour being made by the roller mills introduced in the early 1890s.

INTERPRETATION NOTE: when you finish describing the millstones you can then bring them to the working stones which are hidden by the vat, describing how that works (they'll already have a basic understanding now that they've had the visible stones described to them. This can be kept brief since they already have the concept for the description of the automatic mill and will have seen the relationship between the runner and bedstone in the dressing the stones display.

The Millstones – Working Stones under Vat

- **The heavy millstones sit on a robust timber foundation known as the husk. It has to be strong enough to take the weight and vibrations from the operating stones. The husk stands on bedrock, isolating much of the vibration (to prevent the building from being shaken apart). A shaft from the water wheel led to gearing that controlled the speed of rotation of the runner stone**. The original mill had 2 runs of stones, but in 1836 owner James Macdonell rebuilt the husk to allow for 3 runs of stones – however by 1840 he was back to operating only 2 runs of stones. Today we have one run of stones, sitting on a rebuilt (2010) husk and operated by an electric motor.

- **The bottom millstone is known as a bedstone. It remains fixed in place, it doesn't move. The top stone is known as the runner stone. It sits just above the bedstone and we rotate it today when making flour at about 92 rpm. The thickness of the gap between the stones determines the fineness of the flour. The miller can control the gap by adjusting the spindle on which the runner stone rotates.** Note the control wheel (the "tentering screw") on waterwheel side of the millstones which controls the gap between the stone. Historically the stones rotated a bit faster, up to 125 rpm for a 4 foot stone. We operate them at a slower speed today to prevent overheating the flour (to preserve nutrients).



INTERPRETATION NOTE: we have an interpretation panel describing what's under the vat and how it works on the far side of the husk (so not in the way of visitors at the front). This can be pointed out to visitors to look at on their later explorations of the mill.

- **The grain is fed from a hopper into a "shoe", a wooden trough that controls the flow of grain into the hole in the centre of the runner (top) stone. The grain hits the bedstone and fans out, the rotation of the runner stone forcing the grain outward, between the small gap in the stones. It is here that the grinding takes place, the whole kernel of the wheat ground into flour by the cutting action of the furrows in the stones and the grinding action of the lands (flat parts) of the stone.**

- **The flour emerges on the outer rim of the stones and is contained by the vat (wooden covering). The miller, who can control the gap between the stones, ensures that the stones are maintaining a constant grind. The flour is swept by the rotating runner stone into a hole leading down to an flour elevator, which today carries the flour up to third floor (originally to the hopper-boy) and then**

down to either the flour grade sorter, known as a bolter, on the 2nd floor or directly to the bagging chute on the 1st floor (for unsorted whole wheat flour).

- **Our milling rate today is about 150 lbs (2.5 bushels) of wheat per hour with our single set of stones.** The milling rate in the past was more, the stones moving at higher rpm and 2 sets of stones being used at once except when one set was being dressed. Milling rates from 5 to 10 bushels per hour, per set of stones, are reported. That would produce 1 to 2 barrels of fine flour, per set of stones, per hour.
- **The miller uses his senses to ensure a high quality product.** Some of the phrases describing this have come into everyday English language use**.**
  - **Listening**: **for a consistent gentle rhythmic rumble of the millstones**. Listening for the sounds of the elevator and the bolter to make sure they are accepting and processing the flour.
  - **Smelling: for a magnesium / sulphur odour** (like when you hit stone with a hammer) indicating that the stones are too close together (that they might be touching). The phrase ***"Nose to the Grindstone"*** comes from this practice.
  - **Feeling: the flour coming from the millstones between index finger and thumb.** With experience a miller can feel when it's just right. Not too coarse and not too silky. The phrase ***"The Miller's Touch"*** comes from this practice. Although likely of another origin (to do with beer), the phrase ***"The Rule of Thumb"*** also applies.
  - **Sensing: the heat of the flour coming out.** Too much heat decreases the flour quality. Our millers today lower the heat by reducing the amount of grain flowing into the stones. As one of our millers noted, as a volunteer, time is not money, so a slight drop in production in order to maintain top quality is not an issue.

  - The French burrstones we use today to grind grain come from Québec (we bought them in 2008 and installed them in the mill in 2010). They are real French burrstones, but not original to our mill. Same for our dressing the stones display, those are real burrstones but not original to the mill, we purchased them from Upper Canada Village many years ago. Most of the mill's original French burrstone millstones were sold by owner George Haskin after he changed to roller mills in the 1890s.

The Water Wheel (Station 4)

STATION 4 – **Waterwheel:** the main story here is the water wheel, how it powered everything in the mill, how it obtained its water power (mill acting as dam with a bypass) and how that rotational power was transferred to all parts of the mill.

INTERPRETATION NOTE: direct the audience attention to the waterwheel interpretation board. Keep in mind that many will be unfamiliar with how "power" was generated before electricity – that a physical connection to the spinning wheel was required (wooden shafts and gears in 1810). The term "rotational power" and "rotational power transfer" are preferred to "power transmission" or other terms that will bring electricity to mind.

Note that the waterwheel and all the shafts and gearing was hand built on site.

- **Archaeology at the mill has indicated that the original waterwheel was about 12 feet (3.7 m) in diameter. The present day waterwheel is a 10 foot (3 m) diameter wheel which spins just above the present day "floor" of the wheel pit. But the original pit floor was deeper – over the years the wheel pit has become filled with debris**. The Delta Mill Society installed the smaller 10-foot wheel in 2007 so as not to disturb the base of the wheel pit (allowing for a proper archaeological investigation in the future).
- **Based on archaeological work, the original waterwheel was a "breastshot" wheel, water arriving near the middle of the wheel.** The most efficient wheel is an "overshot" wheel, where water is introduced to the top of the wheel. An overshot wheel is about 60% efficient in capturing the energy of the flowing water. A breastshot wheel is about 45% efficient and an undershot wheel is about 30% efficient. Topography and water levels of the mill pond dictate what type of wheel can be installed. Since we don't have the rights to use the water flowing past the mill, our current wheel is a "no-shot" wheel, with a sump pump providing water to the wheel.
- **The net head for the waterwheel was likely about 7 feet (2.1 m).**
- **Wooden water wheels require a lot of maintenance and the average lifespan was about 15 years before the wheel needed replacing.**
- **The Mill was operational during the winter**. It had the huge advantage of having the wheel inside the building, which allowed much easier winter maintenance. There are records of casualties in other mills while men were breaking ice around the waterwheels during the winter.
- **It likely was inside a waterhouse.** Related to the above, the wheel was likely in its own enclosure called a waterhouse. The original Oliver Evans' Automatic mill design had a

waterhouse. The door through the south wall adjacent to the water wheel may have been the outside entrance into the enclosed waterhouse. We think it likely that there was a waterhouse but we don't know for sure.

- **A wooden flume inside the millrace, the manmade tunnel leading from the mill pond to the waterwheel, carried the water to the centre of the wheel. A control gate (headgate) at the head of the flume controlled the flow of water to the waterwheel.** We have present day photos of the inside of the millrace and of our present day waterwheel on our website

INTERPRETATION NOTE: our waterwheel interpretive panel is a little bit incorrect in that it does not show the wooden flume that was originally located inside the waterwheel millrace (manmade tunnel leading to the waterwheel). Knowledge about the flume was developed later. The flume inside the millrace directed water to the middle of the wheel.

5 **STATION 5** – **Flour Packing Area:** originally one of several chutes from bolter

Flour Packing Area (Station 5)

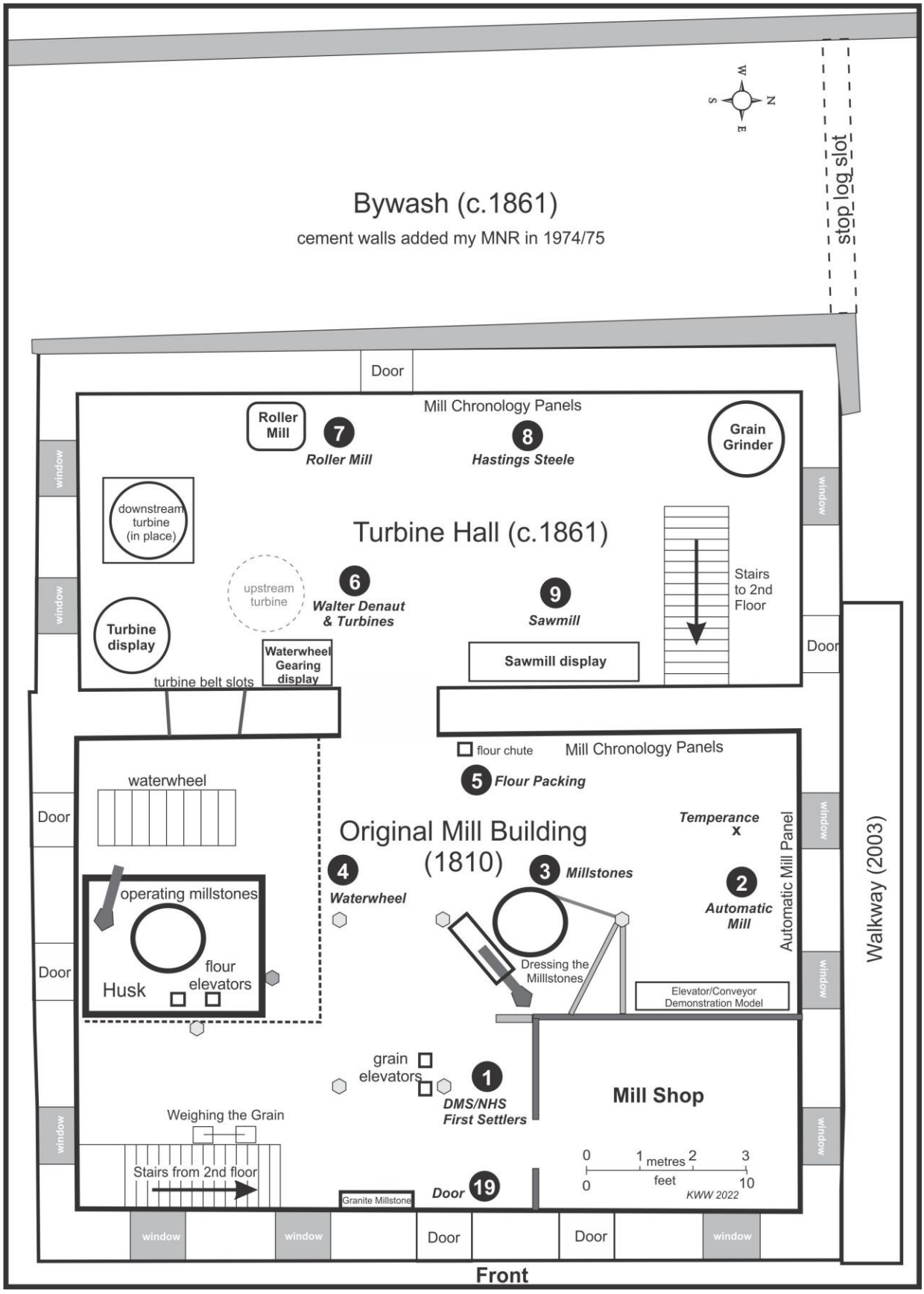
- **Chute leading down from bolter to barreling area**. There would have originally been several chutes, one for each grade of flour. The fine component of the flour went into to barrels destined for sale or export. Middlings may have been reground (as recommended by Oliver Evans to produce more merchantable fine/superfine flour). Shorts and bran went into bags for use as animal feed.
- **Only fine flour could be exported.** The legal weight was 196 pounds of "superfine" flour placed in a standard sized flour barrel. It takes 5 bushels of wheat (300 lbs) to produce 1 barrel (196 lbs) of fine flour.

INTERPRETATION NOTE1: note that this was a large open space back in 1810 with room to store empty and full barrels and bags.

INTERPRETATION NOTE2: open up the inspection hatch and have the visitors feel how smooth the inside is. Do the rodent check.

INTERPRETATION NOTE3: a flour barrel that holds 196 lbs of flour has a very specific size: the length of its staves are 28½ inches and the diameter of its head is 17⅛ inches. We have two of those in the mill, one presently under the chute and one in the flour barrel wheel barrow. If someone asks where 196 lbs come from – think 14 – 14 pounds to the stone (a measure of weight) and 14 stones (196 lbs) to the barrel. As to why they chose that number – that remains a mystery.

Turbine Hall



6 **STATION 6** – **Walter Denaut and the Turbine Hall:** about the new technology of the turbines and of how Walter Denaut returned the mill to profitability.

Walter Denaut and the Turbine Hall (Station 6)

INTERPRETATION NOTE1: when taking visitors through the arch between the mill and turbine hall tell them that they are now stepping forward 50 years in history, from 1810 to 1860. We have an interpretation panel in that area describing the changes in technology.

INTERPRETATION NOTE2: we've gone back to using the original name, "Turbine Hall" which is what Hastings Steele called it. It was named turbine "shed" by the DMS in the 1960s/70s – likely to reflect its use at that time as a storage area (the "junkyard"). While "hall" is preferred as more historically accurate, either term is fine.

- William Jones died in 1831, leaving no will, so the building passed to his brother, Charles Jones. Charles sold the mill for a nominal sum (4 shillings) to William's widow Amelia who then sold it to Henry Jones. Amelia re-married, to James Macdonell, and they purchased the mill back from Henry Jones in 1836. James Macdonell died in 1847 (at the age of 53) and Amelia continued to operate the mill. The mill ran into financial difficulties during Macdonell's ownership and it became heavily mortgaged.
- **In 1850, the mill's poor fortune was to be reversed by a new owner, Walter Denaut, who was about to make profound changes.** Born in Prescott, Denaut worked in Delta (then Stone Mills) from 1825 to c.1828 when he moved to Brockville. But he returned permanently to Delta (the Beverley) in 1839, opening up a general store. In 1849 Denaut built himself a very impressive family home in Delta, today's Denaut Mansion. In 1850 he bought the Old Stone Mill from the previous owner, Amelia Macdonell. The mill in 1850 was shown as having 2 runs of stones and a sawmill. Denaut paid off the mortgages and invested heavily in mill renovations, the 1851 census noting that the mill was "under repair" at an expected cost of £2,600 (~$400,000 today).

Story: Another bit of local history: tell your guests that the records of one stagecoach driver show that on one occasion Denaut had both Sir John A. MacDonald and Thomas Darcy McGee together as passengers from Westport to Delta and they stayed overnight at Denaut's mansion. It has been rumoured that every Prime Minister from Sir John A. MacDonald to Pierre E. Trudeau has visited or stayed at that mansion.

- **Denaut's contributions to the mill and Delta were many, but the most important in terms of the mill was the construction, c. 1861, of the turbine hall and the**

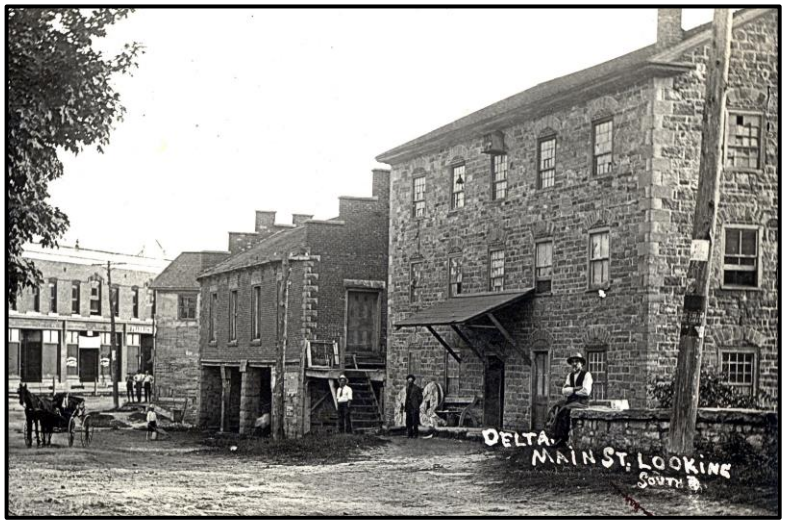
installation of two 48 inch Swain turbines. This particular style of turbine was designed by A.M. Swain in 1855. Turbines had many advantages over water wheels. They were much more efficient, the Swain turbines in the order of 70+% compared to the 45% or less of our breastshot water wheel. They rotated horizontally and so required much less water to operate. They were made of metal and were much more durable than a wooden water wheel and required less maintenance. The DMS has used the date 1861 since the census of that year shows that Denaut spent $20,000 (~$700,000 today) in improvements. A likely assumption is that this represents the building of the Turbine Hall and the installation of the turbines.

- **The sawmill, a wooden structure, likely originally located where the turbine hall is today, was rebuilt by Denaut adjacent to his new turbine hall.** It remained in operation up until 1949 (and perhaps sporadically after that). The main part of the building was removed by MNR in the early 1960s. The floor (over the bywash) started to collapse in 1968 and was removed by MNR who own the bywash (and, at that time, also the turbine hall).

INTERPRETATION NOTE: the sawmill is Stop 9, the last discussion point in the turbine hall prior to heading up to the 2nd floor. So the full sawmill discussion should be left until then.

INTERPRETATION NOTE: the turbines don't need much explanation – show your visitors the interpretation boards that they can return to later. It is worth noting that the original water level inside the turbine raceway (channel) was 1.4 m (4.5 feet) higher when the turbines (and previous waterwheel) were in operation. The present day government dam, just upstream of the bridge, was built in 1962, dropping the downstream water level (against the mill) by that amount. If outside, a visual is that, on the upstream (north) side, the water level was to the top of the turbine raceway arch.

Denaut also built a community hall, a brick hall with stone quoins and stepped gable parapets on top of a stone wall supported carriage shed. That upper floor of the building served as a town hall, theatre, and courthouse – roles later served by the Old Town Hall (which was built 1879/80). Its design is very similar to later community halls built out of wood in the township (a hall on top of a carriage shed). The second brick storey was removed c.1960 and replaced with a smaller metal clad



Mill and adjacent hall c. early 1900s
(we have a nice enlargement of this photo in the Old Town Hall)

wooded framed structure. The DMS purchased this building in 1992 and today it houses our blacksmith's shop and our collection of large artefacts.

- One item not in the storyboards is that Walter Denaut installed a French window in the turbine hall (as opposed to the sash windows in the rest of the mill). Local lore has it that this was done to match the French windows in his mansion, but a likelier explanation is that it may simply have been an extra window left over from the building of his home in 1849, or a window removed when the brick addition was made to the mansion, and then repurposed for use in the turbine hall. A bigger mystery of the turbine hall is what did it originally look like? (see the mysteries section).

- **Denaut's timing was good since by the 1860s wheat production from Bastard Township had reached an all-time high** – from 32,269 bushels in 1851 to 57,787 in 1861, declining to 28,000 by 1871 as yields per acre decreased with soil depletion and farmers moved to animal (i.e. cows) farming. In 1861 Denaut produced 6,000 barrels of fine flour (from milling ~30,000 bushels of wheat).

> **Interesting statistics** for kids (and parents) is that bushel of wheat contains about 1 million kernels of wheat. A bushel is a measure of weight, not volume, defined as 60 lbs (27 kg) in the case of wheat. Our Weights interpretive panel show the weights of bushels of wheat and various other grains. The origin of the defined weight was volume (the volume of 8 imperial gallons = 1.28 cu ft), so a bushel of less dense grain ended up with lighter defined weights – a bushel of barley is defined as 48 lbs, while a bushel of lighter and bulkier oats is defined as 32 lbs. The change from volume to weight was done since weight is far easier and faster to measure.

- **Denaut was doing both feed and merchant milling**. While the coarser grades of the flour were used for animal feed dating back to the start of the mill, the specific use of feed for animals to increase their growth rate and to make cows to produce more milk, started to become a purpose activity for millers by the mid-1800s. It was likely Denaut who introducted granite stones into the mill for use in grinding softer grains into animal feed.
- **Denaut may have had a personal interest in making animal feed since he owned a farm with several animals, including 17 horses.** The 1851 census shows that Denaut owned a 320 acre farm with 60 acres under cultivation; 30 for crops, 30 as pasture land. He only had 2 acres of that under wheat cultivation - he was more into animal husbandry, particularly horses. The census shows he owned 3 milk cows, 2 calves, 17 horses, 9 sheep and 14 pigs.

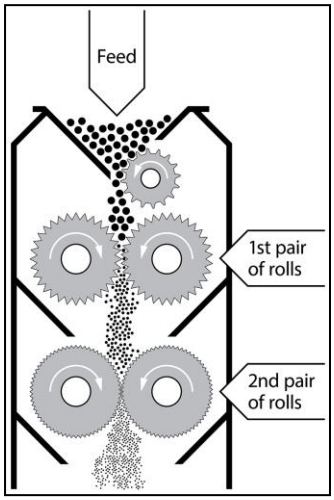
- During Denaut's time the Old Stone Mill was knows as "Denaut's Mills".
- **Walter Denaut goes down in history for having resuscitated the mill, taking it from a money losing operation to a money making one through the use of good business practices and innovative technology. He changed the power for the mill to more efficient turbine technology and rebuilt the sawmill to maximize financial gain from his new power source (turbines).** We can also thank Denaut for

his decision to put the turbines in a separate building which preserved much of the original 1810 building. We don't know the exact reason for this, but the waterwheel area was too small for the size of the turbines and it was logistically easier for him to place the turbines in their own raceway. This also allowed Denaut to continue to operate the mill with the waterwheel while he was in the process of converting to turbine technology.

Interesting fact: On an elevator on the 1st floor is an impression of a barrel head logo for 196 Superfine Fall Wheat – the 196 is the weight, in pounds, of the flour in a barrel. As noted in the preamble, this was the standard net weight (the weight of the flour) of a barrel of wheat flour, mandated into law in Upper Canada in 1820 (already present in U.S. law at that time.

7 **STATION 7** – **Roller Mill:** new technology – faster, less expensive. Most flour mills abandoned millstones in favour of roller mills towards the end of the 1800s.

George Haskin and the Roller Mill (Station 7)



- **In 1893, George Haskin became owner of the Mill. Haskin invested in a more advanced milling technology, installing a roller mill to replace the millstones.**
- **This technology had the advantage of being both faster than millstones and requiring much less power to run. They didn't heat up the flour as much as millstones and required much less maintenance – so many mills converted from millstones to roller mills.**
- **A problem with roller mills it that nutrients were lacking in the white flour it produced.** A perceived advantage of the roller mill at the time is that it stripped both the bran and the wheat germ from the kernel, leaving just endosperm to be ground into flour. It is the oils (fat) in the germ that can make flour go rancid and, because of the lack of germ, the pure white flour product from a roller mill had a much longer shelf life. However, what also got stripped away with the germ were nutrients and vitamins. The role of vitamins in maintaining human health was discovered in the 1920s. In the late 1930s, the FDA in the US ordered that vitamins (Niacin, Thiamin and Riboflavin) and Iron be added back to roller mill white flour (creating "enriched" white flour). In Canada, a different approach was taken in the early 1940s with the government helping to develop better methods of milling to retain the main vitamin loss, that of B1 (thiamin). Later, Canada followed the U.S. in mandating the enrichment of flour with essential vitamins which today normally include Ascorbic acid (Vitamin C), Niacin (B3), Thiamin (B1), Riboflavin (B2), Folic acid (B9) and Iron.

Steam Engine

- **In c.1899, Haskin installed a steam engine in the northern end of the Turbine Hall. It operated until c.1903 after which it was removed** (for reasons unknown), the mill returning to water power. The stack (chimney) for the steam engine can be seen in some c.1900 photos of the mill. Steam engines were popular since they didn't require moving water (just water for the boiler) and so were not dependant on the season (amount of available flowing water).

> **INTERPRETATION NOTE**: the steam engine is not a major story for the mill, so can be omitted.

8

STATION 8 – **Hastings Steele**. Final miller. Note Steele's involvement in the electrical equipment business, also when flour milling stopped (c.1940), feed and saw milling stopped (1950), mill closure (1960), transfer to the four trustees that formed the DMS (1963).

Hastings Steele (Station 8)

- **Hasting Steele, another innovative man, bought the Mill from Haskin in 1913. For a brief time, in 1929, he had a dynamo running from the turbines, generating electricity for some houses in Delta.** In c.1913 electricity had just (or was about to) come to Delta by way of transmission lines from a power plant in Lyndhurst (est. late 1911 in the mill of George Roddick). In 1929 Ontario Hydro bought out the Lyndhurst plant and shut it down as they worked to connect this area to their grid. At that time Steele installed a small dynamo in the Old Stone Mill, powered by the turbines, to restore power to several houses in Delta and possibly Lyndhurst. By 1930 Ontario Hydro had connected the community to their grid and electrical power generation from the mill ceased (except perhaps for some internal lighting – it is presently unclear how long Steele kept the dynamo in operation after Ontario Hydro powered up all of Delta).
- Electricity provided a new source of revenue for Steele, not by generating it, but as an electrical contractor, wiring homes so that they could get connected**.** By September 1929 Steele was selling and installing electrical equipment to area homes, allowing them to get hooked to the grid. From 1938 to 1952 he also operated an electrical supply store from the mill.
- **Steele had taken over the Old Stone Mill in a period of decline for small local mills. Flour production in the mill ceased sometime between 1939 and 1944.** There is a gap in the records – still producing flour in 1939, no longer in 1944 so we sometimes use 1942. But it could have been 1940, 41, or 43. We often just use 1940 for sake of simplicity.

Electricity Anecdotes (likely a bit fanciful)

Each household in Delta was allowed one light bulb. One lady's house was beautifully lit, giving the illusion that she had several light bulbs in her house. The miller marched up to her house to verify but was quickly put in his place when he discovered that instead of multiple light bulbs she had many mirrors set-up around her house to best reflect the light.

Not everyone was a fan of electricity. Before electricity, changing the height of a courting candle would determine the amount of time a young man could stay at his beloved's house. With the advent of electricity, a young man could stay only until the lights were turned off at the dynamo circuit. This ruined the courtships of many young men working on rural farms. By the time these men finished their chores, got cleaned up, and rode into Delta, there was little-to-no time left for courting. The introduction of electricity resulted in an era of bachelordom for many in the surrounding area.

When electric irons were invented, Delta women were ecstatic – especially on those hot summer days, no more firing up the wood stove to heat the irons. However, power was not plentiful enough to run everyone's irons. The women drew up a timetable so that Mrs B. could iron Monday morning, Mrs. D. Monday afternoon, etc. and no one else would use electricity while the neighbour was ironing. It worked!

- **Steele continued to operate a feed mill (grinder) and the sawmill up until 1950 when they were both shut down.** Last operating year on record for grinding animal feed and for the sawmill is 1949. It's possible that those could have operated sporadically after that time, but overall, the main use of the mill became that of a feed store.
- **Steele continued with a feed store until 1960 when he shut the doors on the mill for good.**
- **In 1963 Hastings Steele made one of the most momentous decisions in the history of the mill – he deeded it for the sum of $1 to four trustees, the nucleus of what was to become The Delta Mill Society, charged with the preservation of the mill and opening it to the public.**

INTERPRETATION NOTE1 : for ease interpretation you can use **1940** = end of flour milling, **1950** = end feed milling and the sawmill and **1960** = closure of the feed store & mill. **1963** remains a key date with the transfer to what was to become the Delta Mill Society.

INTERPRETATION NOTE2 : the Delta Mill Society signboard is an opportunity to remind your audience of the major amount of work the DMS has done to restore the building and make it into the showcase the visitors see today. How a little all volunteer group of heritage enthusiast has worked tirelessly over years t o preserve and present the Old Stone Mill.

The Feed Grinder

- **In c.1923, Hastings Steele purchased a Champion Grinder to grind chicken and horse feed and calf meal for local farmers.** The feed grinder was the last machine used in the mill (1949) and either turbines or electricity could run it (it was last run using the turbines).

STATION 9 – **Sawmill:** an adjacent wooden building that has always been part of the mill. It's an important part of the overall mill story. There have been two sawmills over the life of the Old Stone Mill: 1812-1860 & 1861-1960s (torn down).

Sawmill (Station 9)

- **A sawmill has been part of the Old Stone Mill, as a separate or attached wooden building, from the very beginning.** An 1835 sale notice for the Old Stone Mill described the sawmill as "a large wooden building in which there is a Saw Mill, a Mill for cutting and polishing marble, and a Carding Machine." Initially there was just the sawmill likely with the carding machine (for wool). The marble cutter was installed much later (c.1830).
- We know an approximate but not exact location of the original sawmill. We know the second sawmill, the one built by Walter Denaut, was built directly over the bywash and attached to the mill. But the first sawmill was a separate wooden building, likely either adjacent to, or perhaps even overhanging the west side of the first bywash which was about 13 feet wide.
- We don't know if the first sawmill took power from the waterwheel inside the mill, or from its own waterwheel placed in the bywash (it could have been done either way). We do know that the second sawmill, the one Denaut built c.1861, was attached to the west wall of the mill. It was powered by the downstream turbine (the one still in place in the turbine hall). The sawmill superstructure was torn down by MNR in the early 1960s and the floor removed after it started to collapse in 1968.
- **The carding machine that was located in the first sawmill and also likely the second sawmill speaks to the needs of settlers –** a carding machine was used to straighten wool fibres into a uniform mass so that it could be used for spinning (spinning created wool for clothes making) or into batting for quilts. A mechanized machine was relatively new invention (1794). It was likely put in the sawmill when that went into operation in 1812. We know it was in place in 1817 since the statistical account for Upper Canada shows that Delta had, in addition to a "large grist mill" (Old Stone Mill), Delta had "one carding machine, one saw-mill, three stores, and one blacksmith's shop." When the mill was put up for sale in 1835, it stated that there was a carding machine located in the sawmill.

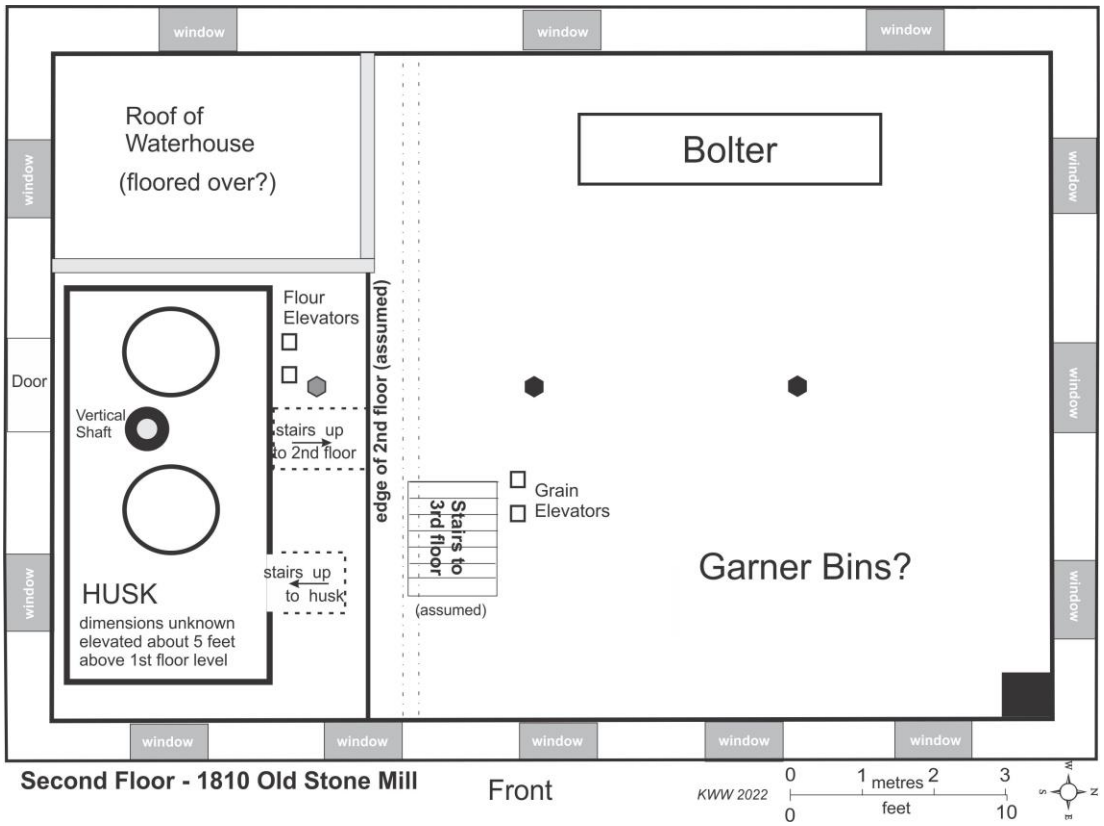
  Settlers in the region were raising sheep, primarily for their wool. We even see Walter Denaut with sheep in the 1851 census (9 of them). The 1857-58 Canadian directory shows that Denaut still had a carding machine at that time.

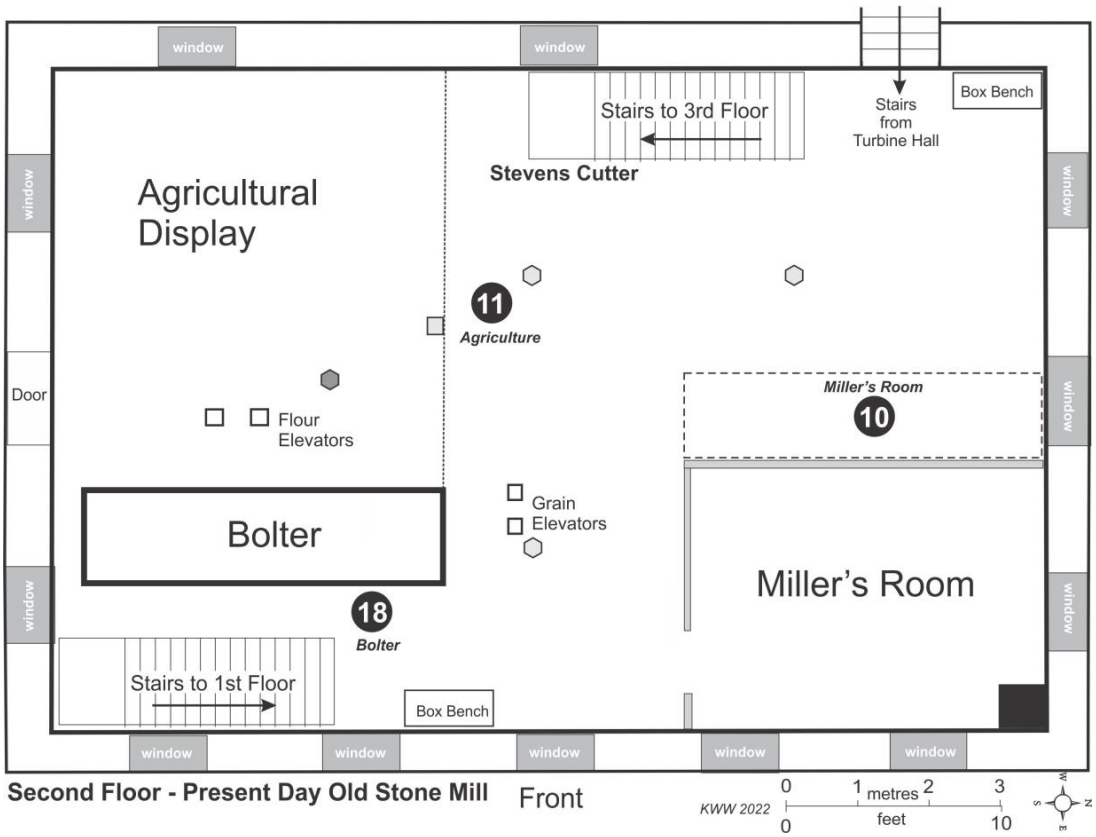
INTERPRETATION NOTE 1: the sawmill is an important part of the overall story – it was an economic engine for much of the life of the mill. The big circular blade in the display case was introduced later (mid-1800s), the original 1810 sawmill had a linear vertical blade (up and down), similar but much bigger than the two person hand blade, the pit-saw blade, that we also have on display. This also ties to the story of accordion lath on the 3rd floor since early sawmills with the big vertical blade couldn't saw strips of lath – that came later with the introduction of circular blades into sawmills allowing them to do much finer work.

INTERPRETATION NOTE 2: the big beams in the mill were not sawn, they were squared with a broad axe. We have an offset handle broad axe in the sawmill display case. A characteristic of it, other than the broad head, is the offset handle, allowing the worker to square a log without hitting his knuckles. Timber was axe squared where the tree fell and then that squared piece was hauled to the building site. Of note, trees were cut down using a felling axe, the use of saws to cut down trees came much later (late 1800s). Finer woodwork in the mill, such as columns, would have had their shapes refined using an adze.

INTERPRETATION NOTE 3: the sawmill, for a short period, also had a marble cutter and polisher for making monuments (i.e. headstones). In about 1830, Christopher Allyn arrived in Delta and set up a marble cutting & polishing operation in the sawmill building. We see it listed in an 1835 sale ad for mill and sawmill. Allyn later set up his own marble cutting shop in Delta with the help of his son.

Second Floor





Second Floor Note: In the 1810 mill, the bolter was located on the second floor and flour from the hopper-boy on the 3rd floor was sent by chutes down to the bolters to be sorted. Prior to c.1922 there was no second floor in the south end of the mill (it was an open area over the millstones which sat on an elevated husk). This is where our current bolter sits since that was the only spot it would fit (when installed in 2010). But the original configuration is a bit complex to explain since the layout has significantly changed. So we focus at this point simply on the miller's office and the agricultural display. We'll interpret the bolter on our return from the 3rd floor.

INTERPRETATION NOTE: since our guests enter the 2nd floor using the stairs from the turbine hall, the first thing they see is the Miller's Office. So that's the first stop. We then show them the agricultural display (how wheat was grown and harvested) and then simply point out the bolter and tell them we'll come back to that after doing the 3rd floor. The bolter is then described after our guests visit the hopper-boy display on the 3rd floor (flour from the hopper-boy went directly to the bolter).

10 **STATION 10** – **Miller's Room :** built for Walter Denaut –various period features.

Miller's Room (Station 10)

- Built for Walter Denaut. The miller's public business office was on the 1st floor (our current mill shop), but Denaut wanted a private office (no public access) so he had this office built at some point after he took over the mill in 1850, perhaps part of his extensive 1851 "repairs" to the mill.
- It's a bit misnamed since Denaut wasn't the miller, he had William Bush as the miller for much of his time. So it's more accurately the "Owner's Private Office" – but that's too detailed for the general visitor. So we theme it as being a private office for the miller.
- Note the beautiful woodwork and trim. The plaster was restored by heritage workers in the 1970s, not renovated with modern methods. There was no water "on tap'. During the restoration, volunteers spent months scrubbing and cleaning after constantly trekking up the stairs carrying tools, plaster, etc.
- We are now trying to theme the room to the period it was built (1850s/60s) – specific details of what is in the room are being worked out – those details will be part of visitor guide orientation.
- You can see from the floor diagram that this was likely empty space in 1850. We speculate it may have been used for some grain storage up to that time or perhaps for storage of things such as empty barrels and bags. Denaut clearly regarded it as a spot where he could build his own internal office without impacting the operation of the mill.

STATION 11 – **Early Agricultural Equipment:** several examples of agricultural equipment used in the early days of settlement of the area.

Wheat Production – Early Agricultural Equipment (Station 11)

- The equipment and tools behind the bolter show some of the technology developed over time to harvest grain.
- **The sickle, flail, winnowing basket, and tally all relate to wheat production**.

> **INTERPRETATION NOTE**: Ask visitors to guess what the tally is used for before explaining it. Be sure the door is closed, so they do not see the counter.

- The other items were later improvements, especially the **grain cradle**. It is very heavy, and usually 2 men would work together, taking turns. One would swing it, the other grab the wheat stalks and make a sheaf. Several sheaves were stood upright, leaning against each other to make a stook which finished drying in the field before going to be threshed (beating the wheat to remove the grain). The Alford family, who patented over 200 agriculture inventions in the Ottawa Patent Office, invented the grain cradle we have on display in the nearby hamlet of Harlem.

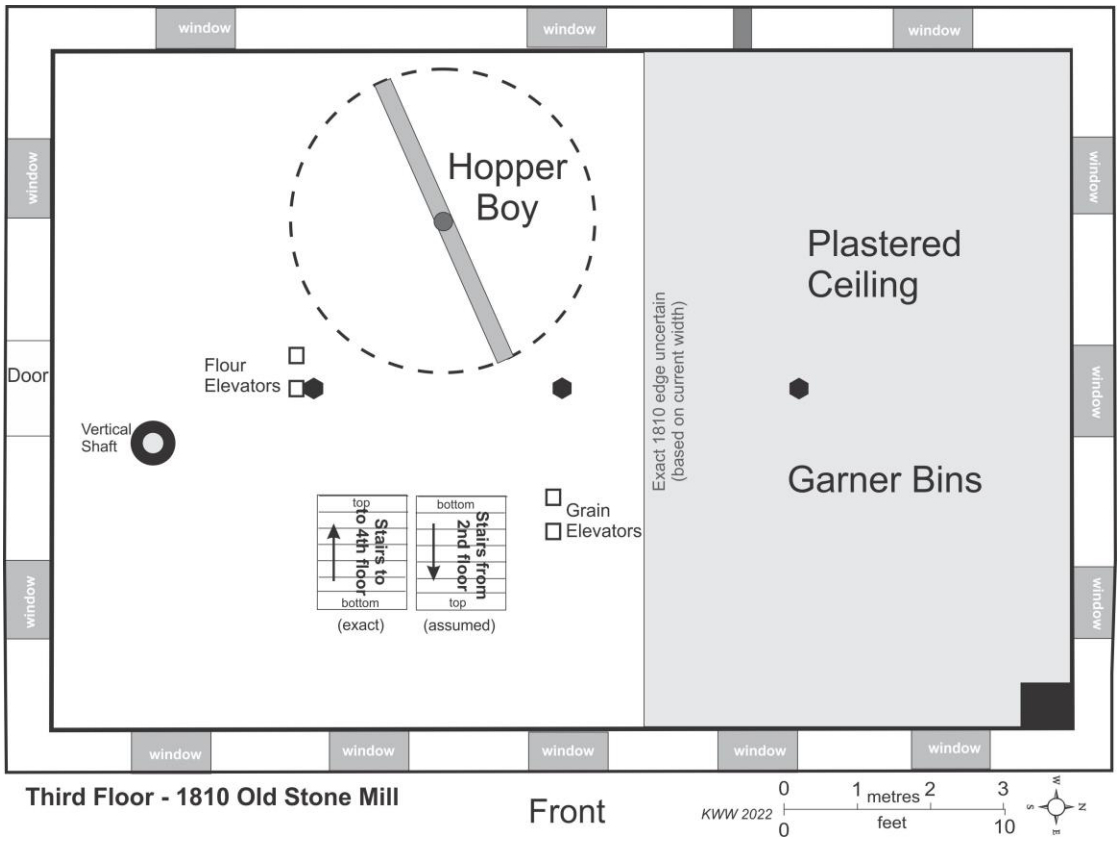
- **The plough on display is a Percival Plough**, manufactured in Merrickville, the first in that particular line. **The mower is a Cossit #4 Mower**, donated by Jennifer Cossit (her husband was a former M.P., as was Jennifer after his death). She took great interest in the Mill, and chose it over the Museum of Science and Technology in Ottawa to receive this artefact.

Story: More local colour: One time, when a group of Dutch tourists visited the Mill, a local Dutch lady translated. One old gentleman was nearly bouncing up and down with excitement when he saw the flail. After the German invasion during the Second World War, people in Holland were soon stripped of all food.

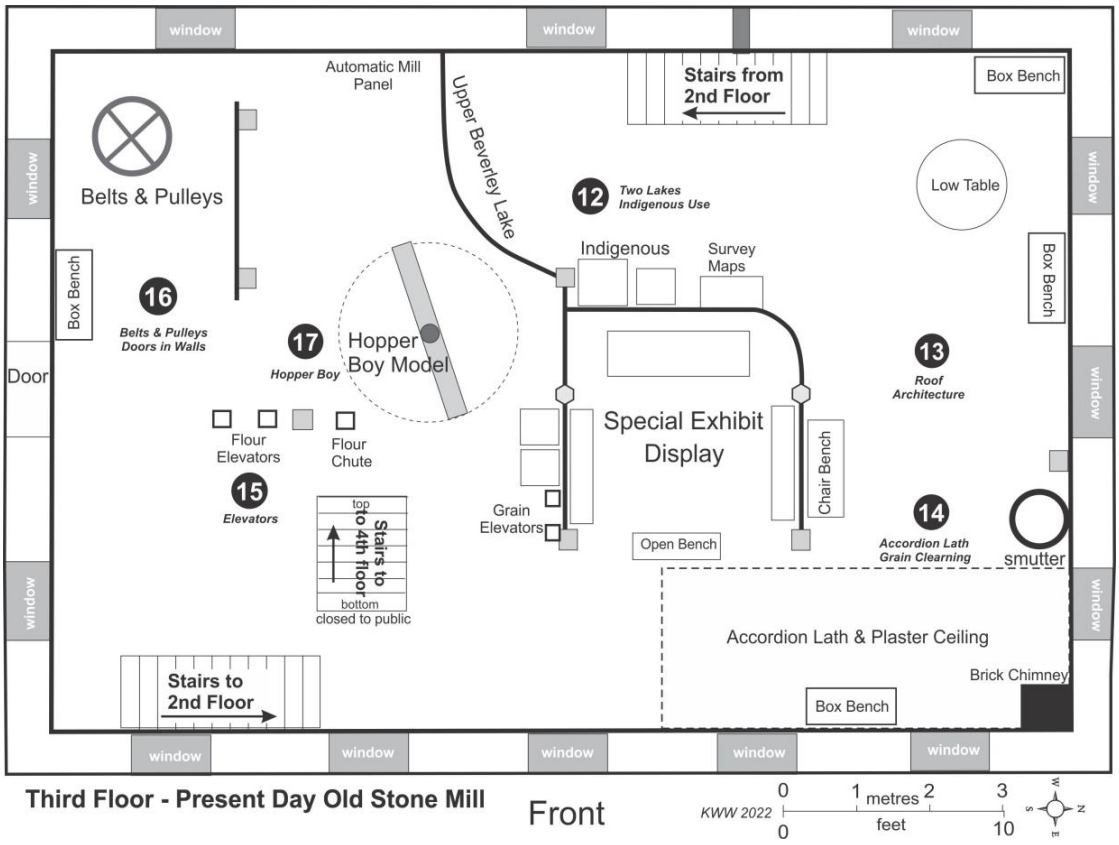
The German Watch marched through the village every 20 minutes. As a young lad, his job was to leap out of bed as soon as they had passed and flail anything they had managed to scrounge. 20 minutes later, when the Watch marched back, he was once again quietly in bed. This continued until they had enough seed for his mother to pound between 2 stones and make flat bread. His family survived, while thousands around them died of starvation. He felt he owed his survival to the flail.

> **INTERPRETATION NOTE**: When finished with the agricultural display, simply point out the bolter, noting that you'll be describing that after touring the 3rd floor.

Third Floor



Third Floor - 1810 Old Stone Mill



Third Floor - Present Day Old Stone Mill

Take visitors up the stairs on the turbine hall side so that they arrive at the impressive scene of Upper Beverley Lake (not actually UBL, but similar). This will lead them to the indigenous and early survey display and then we're back to describing the design and use of the Old Stone Mill as an Oliver Evans' Automatic Mill.'

INTERPRETATION NOTE: bypass the animal sounds display if you can otherwise you'll have your visitors stuck there for the next 10 minutes.

Indigenous Use and Early Surveys (Station 12)

STATION 12 – **Indigenous Use and early surveys:** two exhibits about the pre-mills period.

The two exhibit panels mostly speak for themselves, so you can keep interpretation short in this section. For background information see the Indigenous and early surveys section of this document.

- **Note the Indigenous artefacts, and draw attention to the artefact in the middle. It dates back to 2000 BC. Let them guess what it is: a fishing weight.**

INTERPRETATION NOTE: leaving this area you now return to interpreting the mill as an Oliver Evans' automatic mill. The next stop is to showcase the roof architecture of the mill and the architecture of this area of mill in terms of the accordion lath & plaster ceiling, tapered floor boards and the slots for the creation of garner bins. This then leads to grain cleaning (4th floor above this area) and the later type of grain cleaner, a smutter. We've also created a little sit-down area with two box benches and a table for any guest to the mill that might want a bit of rest after hiking up the stairs.

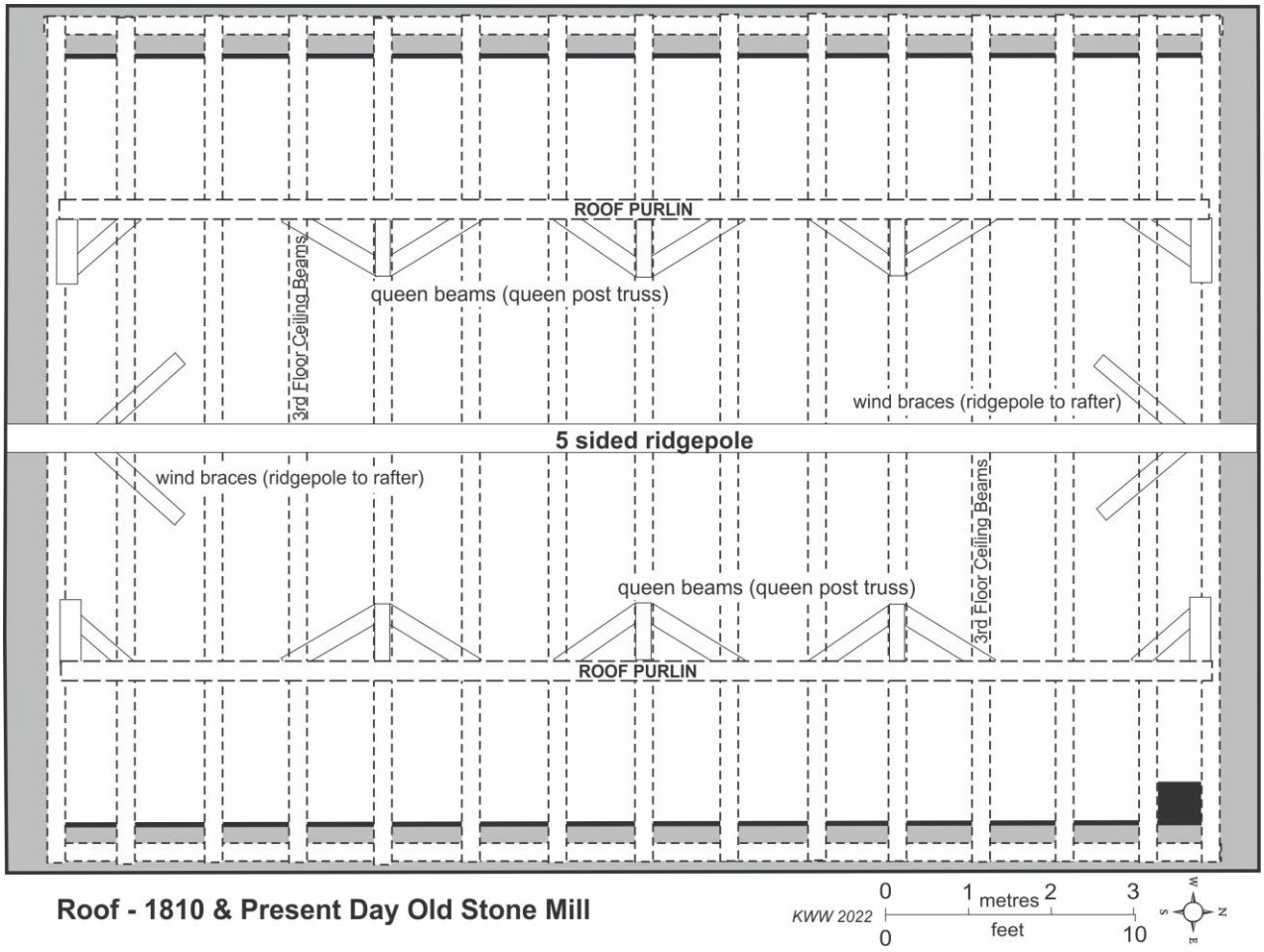
Roof Support Architecture (Station 13)

STATION 13 – **Roof Support Architecture:** the various styles of architecture that can be clearly seen while looking up at the roof ceiling.

- **Here one can see examples of architecture from three different countries: the Netherlands, Germany, and England**. As settlers came to "the new world" from all over Europe, they brought their different architectural styles with them.
- The **ridgepole** is made from a single virgin pine, cut and hand-hewn on the spot in 1810. It is 50 feet long, hand planed. The unusual, 5-sided shape derives from a Dutch architectural style for this type of ridgepole. The roof supports and beam are fastened together with "treenails", wooden dowels with a pointed end. In some spots you can see the pointed ends protruding from the sides of the pole. Yes, it is the original pole!
- The **wind-supports** (aka wind braces) at each end kept the roof from swaying which is probably one reason the Mill has stood for so long. This is English architecture; rare in Canada, especially at the time it was built.
- Next, one sees the **Queen Beams** (aka Queen Post Truss). This German architectural feature called roof seats or roof stools support the large horizontal roof beams (purlines) that support the rafters. The short, slanting spine beams form triangles. Queen beams sit on every third crossbeam on each side of the roof.

Left: Wind supports (diagonal bracing) on either side of the ridgepole. **Right:** Queen beam (angled post support of the purlin (horizontal roof support beam)

INTERPRETATION NOTE: one of the messages with three styles of architecture from different countries is how well they work together and complement each other. You can also point out the extreme care taken in our 1999-2003 restoration, new wood blended with old (we saved as much of the original fabric as we could). Also see interpretation note for Station 14 for more details



Roof - 1810 & Present Day Old Stone Mill

Grain Storage (Station 14a)

14

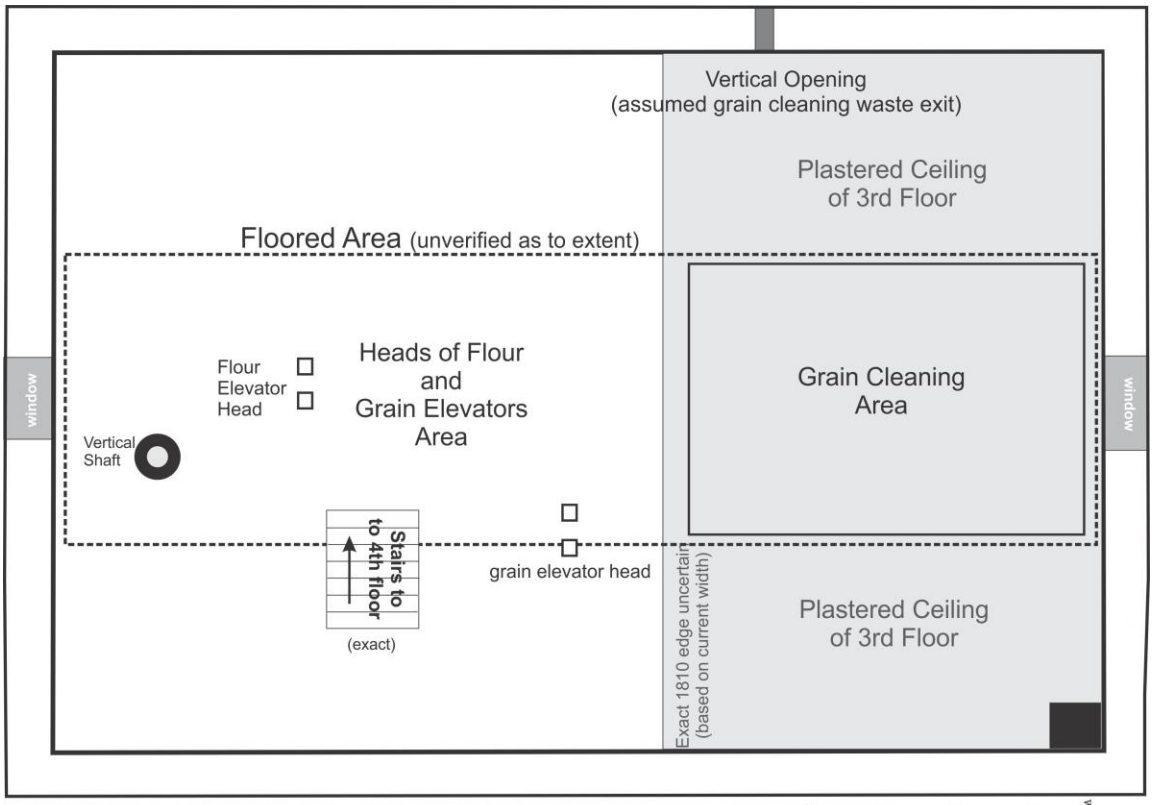
STATION 14 a & b – Grain Cleaning and Grain Storage: example of accordion lath and plaster. Tapered floorboards and slits in floor (partitions for bins). The original grain cleaner was above this area on the 4th floor. Our smutter, located in this area, is a much later form of grain cleaner (1870s or so). It too was likely located on the 4th floor.

- Many people know about old **lath and plaster** through renovating or gutting of an old building. But this is not ordinary lath, it's an earlier form known as **accordion lath**. A wide green piece of hemlock board was axe split (as opposed to sawn) on alternate sides into lath widths until it could be opened up like an accordion. It was then nailed to the studs and the open cracks in the board were then plastered. The plaster in the cracks provided the anchor points for the plaster. Once dry a finishing smooth coat of plaster was put over the ceiling. This is a form of lath & plastering prior to the introduction of circular saws in sawmills allowing the production of sawn lath. Since the date of its use is tied to the introduction of circular saw blades, in general, in the U.S., accordion lath dates a building c.1830 or earlier, probably closer to c.1850 or earlier in Canada.

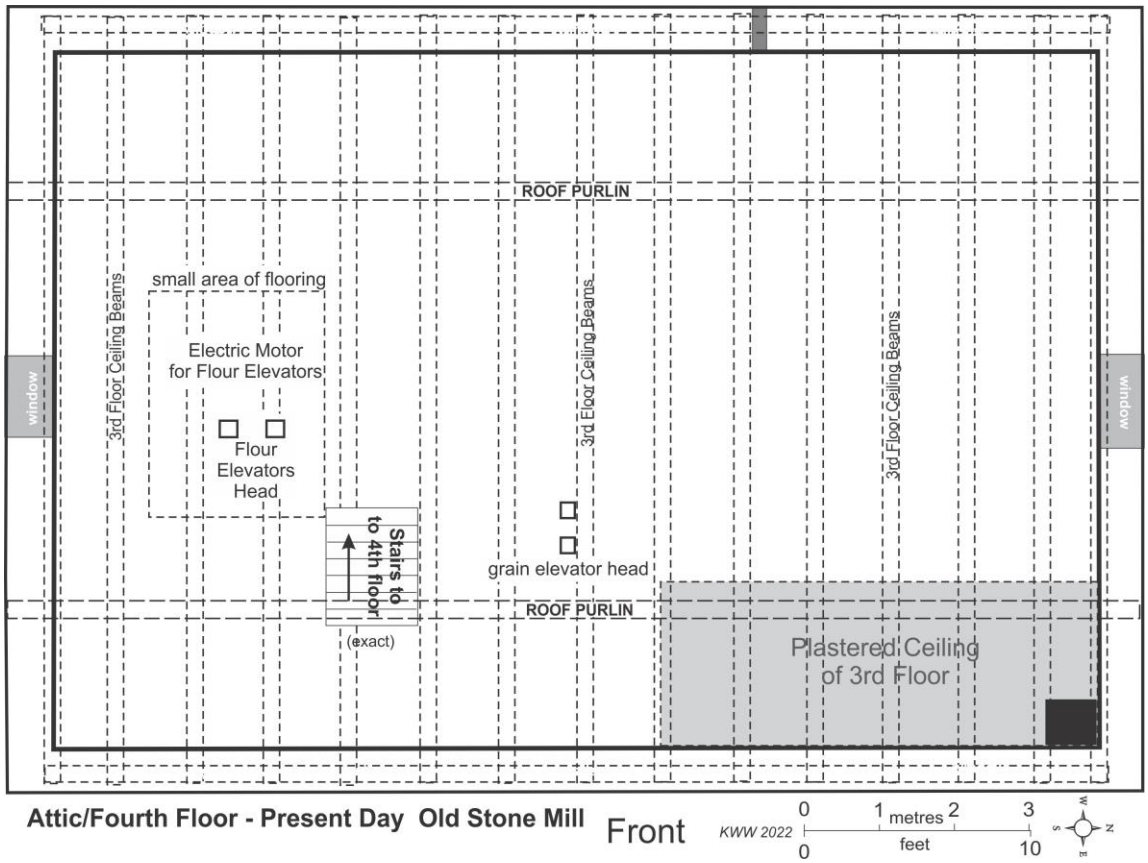
INTERPRETATION NOTE 1: point out that in the 1810 mill the entire width of the 3rd floor had a plastered ceiling. Because of moisture trapped by the ceiling, the beams above the ceiling were subject to more insect damage and rot. You can see this today with the restoration work – almost all the beams in this area (south end) had to be replaced. The north end of the mill has all of its original beams still in good shape. This is worth pointing out to our guests. Also worth pointing out is the care taken in the 1999-2003 restoration to keep as much of the original beams as possible (the fit between old and new with some of the beams)

INTERPRETATION NOTE 3: the Plexiglas support was installed in the fall of 2019. During the 1999-2003 restoration, the ceiling was stabilized with the addition of extra plaster on top of the ceiling, but this started to fail in about 2016 (ceiling started to sag and crack). We did some temporary stabilization and then researched a way to do a long term fix – coming up with the Plexiglas solution (a see through method of full long-term stabilization)

- The purpose of the plastered ceiling is most likely related to the grain cleaners located directly above on the 4th floor of mill, the ceiling plastered as a method of preventing dust and debris on the cleaned grain. The plaster ceiling was originally interpreted as a method to make the area vermin proof, but unless the entire area was sealed in (and it wasn't) then this would not have been the reason. It is a unique feature and we're still not 100% clear on its purpose.
- While the plaster ceiling likely doesn't relate to vermin, vermin (mice, rats, etc.) were in the mill (they still are today). It's unclear how much of a problem they were or how the miller dealt with them. Vermin control in the form of cats might have been used. But the historic record seems to be mostly silent on the topic of vermin control in early flour mills (no mention of it in Evans' book).
- The **tapered floorboards** are another European method. The wood was cut the length of the tree, not squared first, so nothing was wasted. Then the boards were alternated or arranged so that one ended up with a square floor.
- Someone may ask about the little **filled-in slits on the floor**. Old barns used a similar idea. One could put in temporary partitions to make wider or narrower bins to store different grains, according to the yield that year: perhaps lots of wheat, but only a small amount of oats.



Attic/Fourth Floor - 1810 Old Stone Mill



Attic/Fourth Floor - Present Day Old Stone Mill

Grain Cleaning (Station 14b)

- Point out that we are now back to the Oliver Evans automatic mill process. The grain that was weighed on the first floor was elevated to the 4th floor, the "attic" area above us. It once had a 2 inch floor and in the 1810 mill had a **grain cleaner** on that floor
- The grain cleaner consisted of an angled rotating cylinder with holes (a trommel) and a fan. One descriptions shows that it was two cylinders, an inner cylinder with coarse holes that allowed the wheat kernels, but not larger things (i.e. wheat stems) to fall through. The outer cylinder had fine holes, allowing dust and small particles to fall through. The grain exited the cylinder in front of a fan that would blow away all the lighter material, leaving the clean grain to drop into a bin.
- Point out the **vertical opening** in the west wall. This once had a chute leading to it, used blow out the waste from the grain cleaning into the bywash below. It's a little difficult to visualize today since the turbine hall roof (c.1861) is now directly below this area, but in 1810 the bywash was directly below this area.
- The cleaned grain may have been moved by a conveyor affixed to the ceiling of the 3rd floor to move the grain to various garner bins (this system is shown in Evans' book).
- The **smutter** in this location is a later form of grain cleaner which used a fan below a rotating cylinder in the centre to drive air currents through the upper wooden part. The spinning cylinder and air flow separated the dirt from the grain. It's called a smutter due to a black fungus, called smut, that was removed as part of the cleaning process. Invented in the mid-1800s, these replaced the earlier Evans' style grain cleaners in the 1860s and 1870s. It too may have been located on the 4th floor.

Special Exhibit Display

- Only a short stop to point it out. Presently a "Mills & Stills" exhibit, this display is self contained in terms of theme and interpretation. Note that this is something they can come back to once the tour is complete.

Grain and Flour Elevators (Station 15)

STATION 15 – **Grain and Flour Elevators:** the grain and flour elevators from the first floor which extend up to their heads in above the 4th floor (attic).

- Take the group past the stairs and stand by our current flour elevator. Point out the **grain and flour elevators** and their enclosed heads and gearing which operates them. .

- Point out **the switch** on our current flour elevator that sends the newly milled flour to either the bolter on the 2nd floor or all the way back down to the first floor to be bagged as whole wheat flour. Note that in 1810, all the flour was bolted since only fine flour was desired for human consumption.
- Note **blackened areas** on the wood – ask them to guess the reason. In 1810, animal fat was used for lubrication and it blackened with the heat generated by the friction of the gearing.

Belts & Pulleys + Doors in the Wall (Station 16)

16

STATION 16 – **Belts & Pulleys, Doors in the Wall:** the grain and flour elevators from the first floor which extend up to their heads in above the 4th floor (attic).

- Note that the **doors in the wall** were put there in order to take heavy machinery in and out of the mill. A beam with a block and tackle rope mechanism out the 4th floor window was the most likely method of lifting this machinery.
- Point out our **belts and pulleys** display. Note that the original mill had direct connection wooden gearing and that the belt and pulley rotational power transfer system was a later technology, likely introduced into the mill in about 1861 when the turbines were installed.

Hopper-boy (Station 16)

17

STATION 17 – **the Hopper-boy:** an Oliver Evans' invention to cool and dry the hot and sticky flour that came from the millstones.

INTERPRETATION NOTE: as of this writing the hopper-boy replica is still being built but should be in place for the 2022 season. A new interpretation sign has been placed near the replica hopper-boy with details of its use. It is to be pointed out that the builder of this replica followed Oliver Evans' specifications – it is a very accurate replica of a late 1700s hopper-boy. The main difference is that the original hopper-boy in the Old Stone Mill would have been about 12 to 13 feet long, this one is 8 feet long to fit into the available space in this area.

- Note that in the 1810 mill, the millstones were run for long periods at high rpm (~120 rpm). The stones heated up and the resulting **flour was hot and sticky**. In order to be bolted, it needed to be **cool and dry**. Originally a man or a boy with a rake did this job. They were known as hopper boys. The hopper-boy machine was an Evans' invention to mechanize this process.

- Flour dropped from the flour elevator to the outer edge of the hopper-boy. It slowly rotated (no more than 4 rpm), with the flights (paddles) on the hopper-boy bringing the flour one paddle spacing closer to the centre with each rotation. By the time the flour arrived near the centre, it was cool and dry. That flour then dropped into a hole in the floor leading to the bolter.
- While it looks modern, our hopper-boy is a period correct replica done by Dustin Smith as part of the heritage carpentry course at Algonquin College. Dustin followed the exact Oliver Evans' design in building the model. He was helped by a member of the DMS, Art Shaw, who did the metal work and helped with the installation.
- The original hopper-boy would have been a bit larger – about 12 to 13 feet in diameter, with a placement closer to the west wall (the area of the wall and stairs coming up from the 3rd floor). That would have placed it over the original bolter area on the 2nd floor. See the 1810 3rd floor plan.
- On the internet you'll see pictures of a hopper-boy inside a vat enclosure. This was a later improvement, Evans' original hopper-boy had no vat enclosure.

The Hopper-Boy

One of the hardest things to visualize is the hopper-boy, but we are fortunate that George Washington's Mt. Vernon mills, which converted to the Evans' process in 1791 after President George Washington saw Evans' 1790 federal patent, has an operating hopper-boy. The Mt. Vernon Estate, including Washington's grist mill, has been restored and is now a Living Museum, owned and operated by the Mount Vernon Ladies' Association of the Union. It provides a good idea of what the hopper-boy in the Old Stone Mill would have looked like. This is a video still from a YouTube video showing the Mt. Vernon mills – it's mesmerizing to watch the slowly spinning arms **moving the flour slowly to the centre** of the hopper boy. www.youtube.com/watch?v=T6VFoPf301A

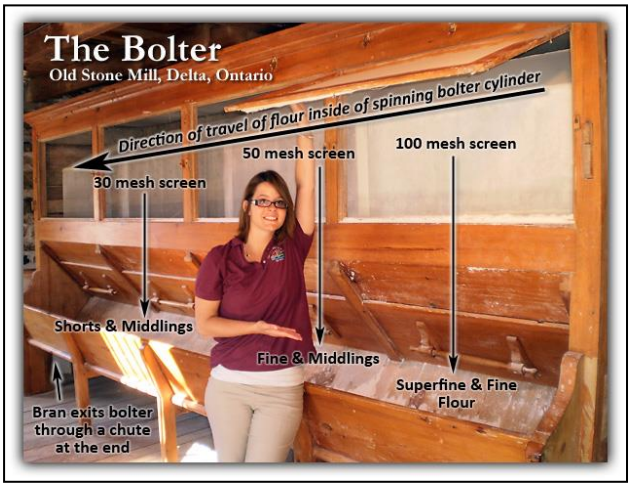
Second Floor (On The Way Down)

18

STATION 18 – **the Bolter:** an important innovation, allowed the separation of flour, particularly the white flour component). Not an Evans' invention, it pre-dates Evans.

The Bolter (Station 18)

- **The bolter is the machine used to sort the flour into different grades. It was powered by the waterwheel and later by the turbines.**
- Point out the **original location** of the bolter(s) in the 1810 mill (area of the west wall stairs coming up from the turbine hall and then up to the 3rd floor). Note that we purchased this bolter in 2008 and that it likely pre-dates the age of the mill and that it comes from a non-automatic mill (manual bins to scoop out the flour rather than set up for chutes).
- Remind them that flour from the **hopper-boy** on the floor above dropped via a chute to the cylinder entrance of the hopper-boy.
- Explain **how the bolter works** by using a rotating cylinder with screens of various fineness use to sift the flour. The interpretation panel in the bolter, as well as the bolter itself can be used.



Bolter on 2nd Floor
The bolter in the mill today is not the original – it dates to the late 1700s and was installed in the mill in 2010.

- **Show** the first screen, the bolting cloth at the beginning of the cylinder was very fine, allowing only the finest flour out. The following screens were coarser, the holes growing bigger as the flour progressed, sifting it into different grades along the way. Typically, from right to left, the different grades were as following: superfine/fine, middlings, shorts, bran. Superfine and fine are made up mostly of endosperm, naturally light in colour. This produces the best flour for things like cakes, pies, cookies and fluffy white bread. Bran and coarser flour (shorts and middlings) were often used for animal feed. Today we value the nutrient value of whole wheat flour, but back in the 1800s, white (superfine & fine) was the most sought after flour product. Oliver Evans recommended re-grinding the middlings into fine flour and we suspect that was done in the Old Stone Mill (it seemed to be common practise at that time).
- **Show** the samples of fine, middlings, short and bran noting the colour differences (white to brown).

First Floor (Concluding The Tour)

STATION 19 – **Hastings Steele & Son Front Door:** the original 1810 door with the name "William" (for William Jones) written on the inside top.

Original Front Door (Station 19)

- This is the last stop. Point out the name **William** written on the top of the door, written there by the original owner of the mill, William Jones.
- Note the beautiful wrought iron hinges, hand made by a local blacksmith back in 1810-11.
- The exterior handle is also hand made. It is a fabulous example of extremely early Suffolk latch. The interior half of the latch is handmade as well but it is a Norfolk pattern and was probably not the original mate to the exterior handle.
- The keyed lock box is very old, likely original although it has been moved from its original position (moved slightly up the door), likely during early 1970s preservation work (it covers some graffiti on the door that was written in the late 1950s.)

INTERPRETATION NOTE: tell the group that this ends the tour. Invite them to tour the mill on their own should they wish, or exit via the Mill Shop. Invite them to sign the guest book.

EXTERIOR TOURS

(see map at end of this section for outside layout)

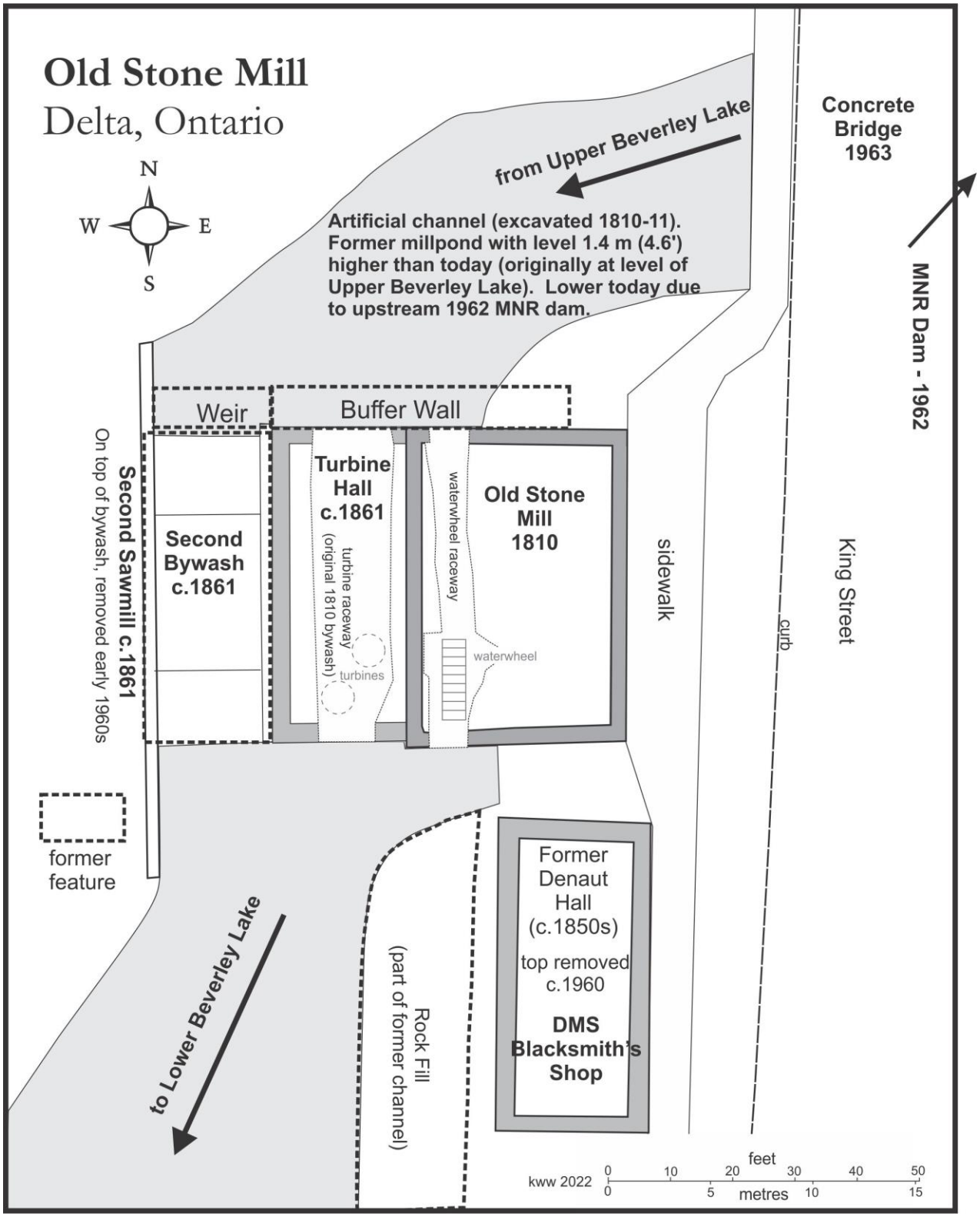
Exterior tours are usually just given for those expressing that specific interest or with a large group tour (which sometimes starts outside – talking about the building and NHS designation). The mills position on the landscape and how it harnessed water (artificial channel) is an important part of the Old Stone Mill's story. Interpreters should read ***"Building the 1810 Old Stone Mill in Delta Ontario"*** for a full understanding of the mill's placement on the landscape and the various exterior features (several now gone – imagination has to be used).

Several outside elements can be pointed out.

- **Geographic Location** – the mill's location on the landscape, Upper Beverley Lake above, Lower Beverley Lake below. Point out where original rapids were located, note that mill is located in a constructed (blasted out) channel.

- **Topographic Location** – point out that it's the difference in water levels of the incoming water (Upper Beverley Lake) and the receiving water (Mill Creek/Lower Beverley Lake), known as the "head of water," that provided the power to turn the waterwheel and later, the turbines. The net head was about 7 feet.
- **Mill Stonework** – note that each course of stone is different in height because the masons were working with natural sandstone layers which were of different thicknesses (they made use of what was available locally). Note that the main stones are sandstone while some of the corner stones are marble – all locally sourced.
- **Raceways and Dam** – For those interested in how the mill was powered, a view of the north wall (at the bridge) and the MNR dam are required elements. Note that the dam is a much later (1962) addition, built after the mill closed. That the height of water against that dam used to be against the mill. Key points are that that the mill sits in an artificial channel, that it acted as its own dam with a bypass channel, that the water level of Upper Beverley today used to be up against the mill.
- **Buffer Wall** – An important flood protection feature of the mill (now gone), required because of bringing the full head of water up against the mill. You can point out part of the base of a buffer wall that was used to keep debris and ice out of the mill (forcing it around to the bywash). The c.1870s photo by R.E. Denaut (which shows the buffer wall and the height of water against it) can be used as a visual.
- **Bywash** – the channel that allows water to go around the mill was always a feature of the mill, originally with a stop-log dam at its head. Today's bywash, which was built at the same time as the turbine hall (c.early 1860s) was sealed with cement in 1974-75) – the floor of the original bywash was bedrock. It provides a good visual of a flood protection feature of the mill.
- **Tailraces and Wildlife** – Take them between the mill and the drive shed to look at the tailraces. If you're lucky, there may be some local wildlife to see (heron, mink or some other animal).

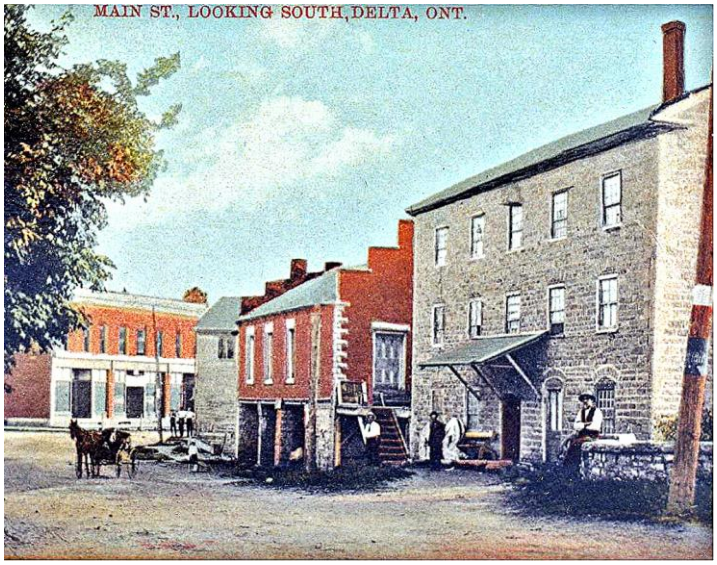
INTERPRETATION NOTE: we're presently putting together a binder with some outside visuals (maps & old photos) which can be used to help with outside interpretation.


Old Stone Mill
Delta, Ontario
N
W
E
S
from Upper Beverley Lake
Artificial channel (excavated 1810-11). Former millpond with level 1.4 m (4.6') higher than today (originally at level of Upper Beverley Lake). Lower today due to upstream 1962 MNR dam.
Concrete Bridge 1963
MNR Dam - 1962
Weir
Buffer Wall
Second Sawmill c.1861
On top of bywash, removed early 1960s
Second Bywash c.1861
Turbine Hall c.1861
turbine raceway (original 1810 bywash)
turbines
waterwheel raceway
waterwheel
Old Stone Mill 1810
sidewalk
curb
King Street
former feature
to Lower Beverley Lake
Rock Fill (part of former channel)
Former Denaut Hall (c.1850s)
top removed c.1960
DMS Blacksmith's Shop
kww 2022
feet
0 10 20 30 40 50
metres
0 5 10 15

BLACKSMITH'S SHOP

INTERPRETATION NOTE: We have not done tours of the blacksmith's shop in the past but with the rehabilitation of the shop in 2022 we are considering whether any "on-demand" tours should be given outside of times when the shop itself is open with a blacksmith.

There are no records of the original construction of the building. It was built as a community hall by Walter Denaut, likely in the 1850s. We date it to this period since it shows up as a "Hall" on Walling's 1861-62 map of Delta. The puzzling thing is the design which was so different from top to bottom that it has been misinterpreted over the years to represent two different time periods, an earlier carriage shed for the mill and then a later brick upper hall. That assumption turns out to be incorrect. The overall design of the building was as a community hall and the stone carriage shed (for the hall) was purpose designed as a foundation to support the heavy brick upper storey. It was built that way.



Denaut Hall c.1905

This colourized (hand painted) postcard of a c.1905 photograph clearly shows the upper brick hall on top of the hall's carriage shed.

While the design as a community hall on top of a carriage shed is very typical, the fact that it is made from stone and brick rather than just wood is not. Similar to William Jones using his wealth to build an imposing stone mill, Denaut used his wealth to build an imposing community hall, the architectural design was quite stunning.

Denaut Hall c.1930

The carriage shed portion has been walled in and turned into a garage.

The building then saw use as a community hall, hosting meetings, dances and it was even used as a courthouse, all the things a hall was used for in that era. When the Old Town Hall was built in 1879/80, it took over the role in Delta of a municipal hall and courthouse. Denaut Hall would have seen continued use as a general community hall likely into the early 1900s. A change in the Old Town Hall to a full community hall / theatre (date uncertain, likely sometime between 1900 and 1920) probably ended the significant use of the old Denaut Hall.

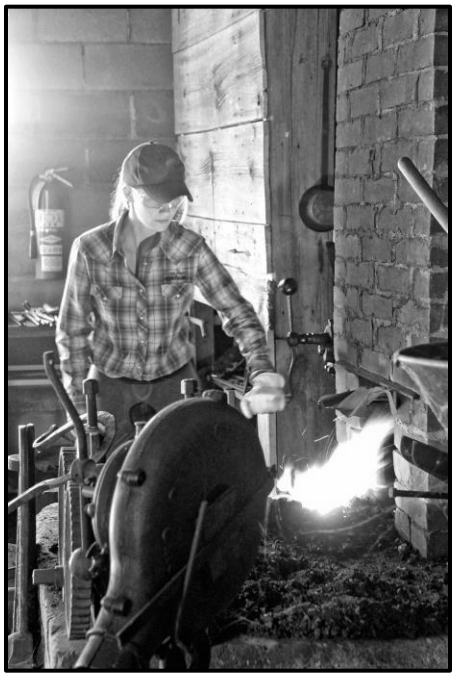
At some point, likely between 1922 and 1930 (still working on finding a date), Hasting Steele sold the hall. The new owner (name unknown), then repurposed the building as a garage, adding a full cement floor, walling in the front bays of the previous carriage shed, and adding a forge. A garage of that era involved blacksmithing hence the reason for the forge. In the c.1930 photo, the sign above the door does contain the words "BLACK SMITH" (other words can't be made out). It operated that way under

one or more owners, the name Warren Henderson has been mentioned as an owner, with the last owner being Gordon Gray. In the early 1960s, with the brick upper storey becoming structurally unstable, Gray had it torn down, replacing it with the half storey that is present today and roofing and facing the upper storey with galvanized steel.

In 1992, the building was sold to the Delta Mill Society, for $22,000 by Fred and Jane Gray. The name “Drive Shed” was coined by the DMS at some point after the purchase to reflect its new use. The name “Drive Shed” is an Ontario term meaning “a building used for storing farm machinery, vehicles, etc.” This reflected its use by the DMS as building containing an eclectic mix of agricultural and cheese making equipment, in addition to a few items related to the mill.

The DMS started to use the forge in the building for blacksmithing demonstrations during special events. At a strategic planning session in the early 2000s, a long-range goal of converting part of the building into a full blacksmith’s shop was set. It took some time with the DMS getting a cost estimate for the required work in 2017. In 2021, the DMS received a $20,000 grant from the 5B Foundation and work started on planning the conversion of the building, with one half to be converted into a public friendly blacksmith’s shop and the other half with continued use as large artefact storage. Bids received for the work went well over $20,000. The budget was raised to $40,000 after a $20,000 designated donation to the DMS was received. This allowed the project to move forward with the work completed in 2022.

Up until 2020, when we closed our buildings to the public due to the COVID-19 pandemic, we had the blacksmiths shop open, under the direction of our Blacksmith Co-ordinator Art Shaw, on special occasions and for a period, on weekends. We now also have local blacksmiths, Megan Carter and Mike Armstrong of Armstrong & Carter Ironworks volunteering with us, opening the shop to the public on a few Saturdays. They also offer blacksmithing training in our shop.



Our operation of the Blacksmith Shop with coal fired forges continues a long tradition since a blacksmith was a necessity of 19th century life – everything from horseshoes to many types of iron implements. A blacksmith was also a necessity for the mill – all sorts of iron parts would have been made, repaired or modified by the local blacksmith(s). A blacksmith also sharpened and hardened metal, such as the picks used to dress millstones. Delta had a blacksmith from the very beginning.

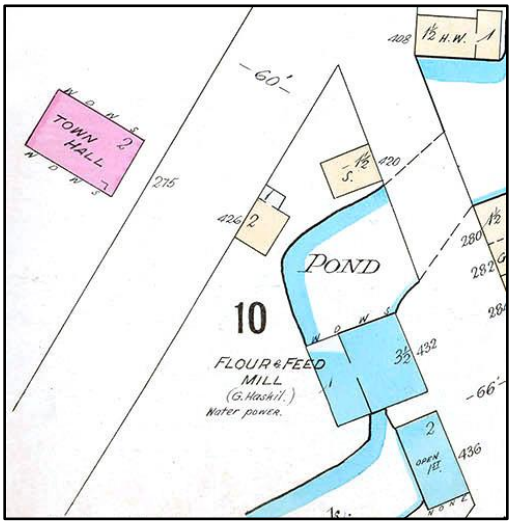
Blacksmithing Demonstration

This photo shows Blacksmith Amanda Van Bruggen working the forge during the Delta Harvest Festival. A common perception of a blacksmith is that of a burly bearded man – and while we do have lots of those ☺, Amanda provides a modern take on this heritage art.

OLD TOWN HALL

INTERPRETATION NOTE: We don't do tours of the Old Town Hall but have a set of washrooms open to the public during the operating hours of the mill. If your tour group is outside, or if it comes up in conversation, you can mention our ownership and the history of the OTH. We also rent out the hall (we have established rates and a rental form)

The Old Town Hall (OTH) was built in 1879/80 on a spot that formerly hosted a stone school. It's likely that some of the stones used for the OTH foundation were from that school. It was built as a joint venture between the local township (Bastard & South Burgess) and the local Masonic Lodge (Harmony Lodge #370). The exact arrangement is unknown; some indications show it as joint ownership, some show that Harmony Lodge received a 99-year lease. We do know that in 1888 it was co-insured, but that doesn't confirm ownership vs lease.



OTH & OSM in 1897

The 1897 fire insurance map of Delta shows what the Old Town Hall looked like at that time, a simple rectangular 2 story building. The OSM, shown as a "Flour & Feed" water powered mill is also shown as is Denaut Hall.

The bricks for the building were made locally by Jasper Russell who charged $4 per thousand. The lodge occupied the 2nd floor and the main floor served as the municipal and court offices and as a courthouse. It is presently unclear how much of the building was devoted to being a "hall" – the public courthouse part. In a report about the 1888 fire it was stated that the fire broke out in the "Division Court's office in one of the **rooms in the lower flat** of the town hall." So the main floor at that time had multiple rooms – but we don't know as yet how much of the floor space was devoted to rooms and how much to hall.

A newspaper account about the 1888 fire can be found at the end of this article. The interior of the building was severely damaged (the reporter uses the word "gutted") by that fire. Evidence of that fire can still be found in the building today.

At some point between 1897 and c.1920 (likely closer to 1897), an expansion was done to add brick clad offices to the east side of the building. A vault was built into a corner of the original hall.

Old Town Hall c.1920

The later side office addition is present in this photo, built with the same brick used for the main building.

It is presumed that after the external offices were added that the main hall became a full theatre hall. It is again unclear whether it was re-built that way, with the present day sloping floor, or whether the floor is original to the 1888 interior rebuild. With the side additions, the building continued to serve as court offices (with a jail in the basement) and as the local (Bastard and South Burgess) municipal office.

At some point (date unknown), a concrete cinder block addition was added which included indoor plumbing. This is the area of today's washrooms and kitchen.

In 1979, the municipality and lodge both vacated the building (this may have coincided with the expiry of the lodge's 99 year lease which would have started in 1880) and it was used for a time by the Delta Lion's Club (under lease/rent).

In 1994 (Dec), it was purchased by The Delta Mill Society (DMS) from the Township of Bastard & South Burgess. The initial use of the building was for office space and for our heritage collection (artefacts & documents) storage. The main hall area was converted into a Museum of Industrial Technology in 1999 when the Old Stone Mill was closed for restoration. At that time, the exhibits in the mill were moved to the OTH. It operated as a museum until closed to that function in the fall of 2011 since it was too expensive for us to keep both the mill and OTH open as museums, and the mill is our main focus.

In 2010 the DMS added a roof over the front porch (to improve the façade and protect the front brickwork) and in 2013 the DMS extensively renovated the building ($104,000 – with support from an Ontario Trillium Grant) including new front steps, adding a platform lift (adjacent to the front porch), a commercial kitchen and an accessible washroom. The hall itself had a face lift with a new coat of paint on the tin ceilings and on the plaster walls. The wooden floor of the hall was refinished. These renovations allowed the DMS to return the hall to its original use, that of a town hall, able to host events that serve as fundraisers for The Delta Mill Society.

The areas adjacent to the hall area on the 1st floor remain as the DMS office. There is also an open area for meetings, a commercial kitchen for events, and two washrooms. We maintain the washrooms as public washrooms when we are open as a public service. The second storey remains our artefact and document storage area.

In early 2019, we received $20,000 from the Township of Rideau Lakes, part of a $100,000 "small halls" grant they received from the 5B foundation. As of this writing, some of that has been used for hall improvement, but the COVID-19 pandemic, which started in March 2020, postponed work.

The Renovated Hall

A stage-eye view of the hall interior after renovations showing the open space and the 14 foot (4.3m) high ceiling.

The Fire of Friday, February 24, 1888

Farmersville Report Delta February 28,1888

> "Shortly after the hour of noon today* fire broke out in the Division Court's office in one of the rooms in the lower flat of the town hall. As soon as the alarm was given there was a general movement towards the scene of the fire but the building was filled with such dense smoke that any attempt to save its contents seemed to be impossible and the fire had such a hold on the building that attempts to extinguish it looked like madness in the absence of any modern apparatus for putting out fire. But the people of Delta are not easily driven to despair and in a few minutes, everyone was at work with

organized attacks upon the fire in which Walter Beatty took the lead and direction.

The hall was a large two-storey brick building and the fire was found to be raging under the first floor among scraps of lumber and rubbish left by the builders. Two lines were formed to the creek and the men and women pulled up pails of water while children passed them back to be refilled. In this way, a perfect deluge of water was directed at the fire and the effort was soon apparent in a decrease of the volume of smoke making ingress into the building possible. Willing hands were soon engaged in the work of salvage and nearly all the contents of the lower storey as well as furniture and paraphernalia of the Masonic Lodge in the upper flat were removed. A great deal of it however was damaged by water.

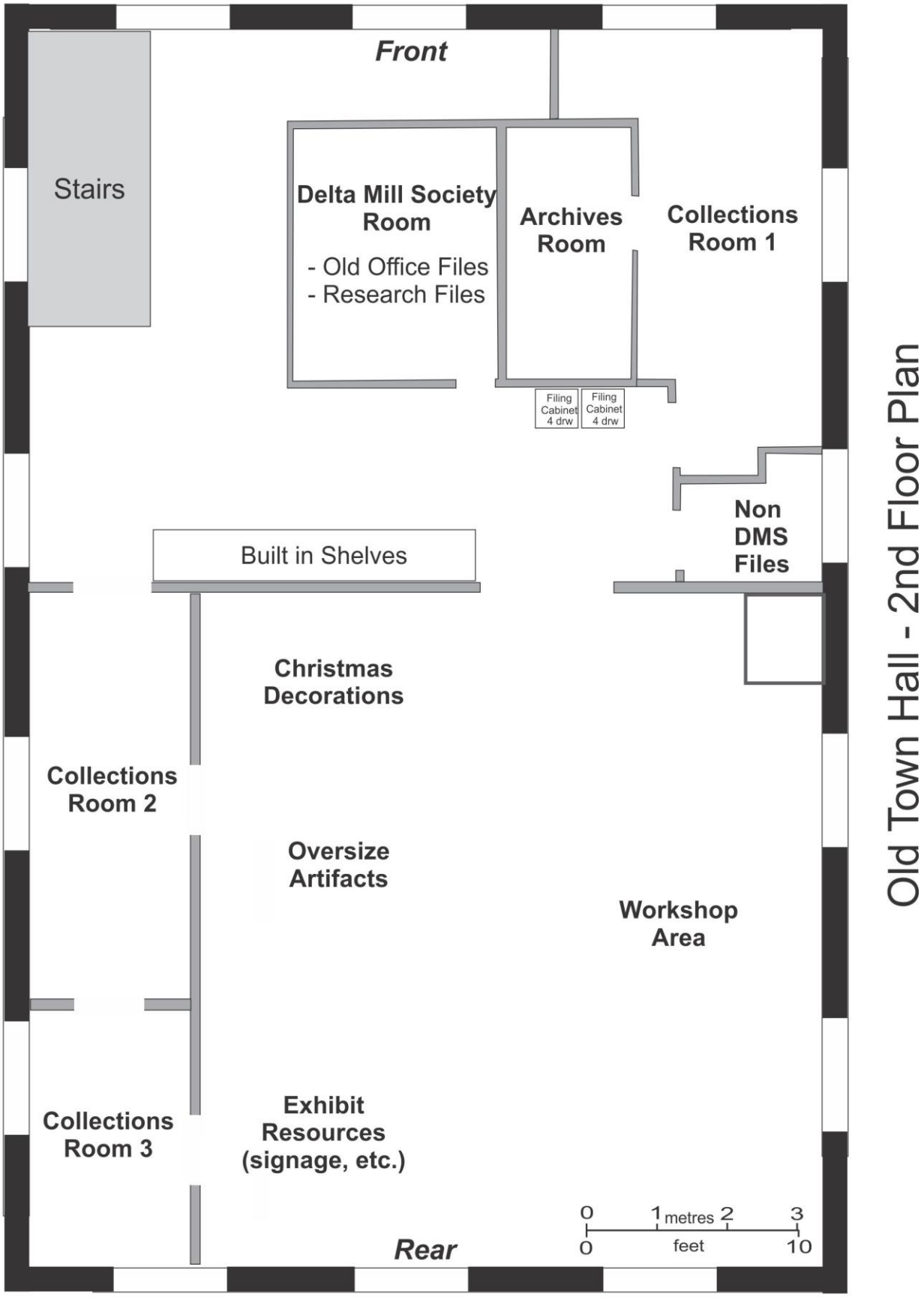
In the meantime, the fire had been creeping up the walls and spreading to all parts of the building and the determination of many had given place to a willingness to be beaten and we believe that shortly after two o'clock every man in the crowd began to relax his effort and wanted to quit. Then the women exhibited the stuff they were made of by counselling a continuance of the fight and a redoubling of their own efforts. Thus, the men were shamed into a display of renewed energy and by half past 4 the fire was extinguished leaving the building gutted but with walls standing and roof intact.

The building is owned jointly by the municipality and the Masonic Lodge and the losses will be covered by insurance from Watertown Mutual $1300 from the township and $1300 by the lodge. The citizens of Delta and especially the ladies deserve the highest praise for their pluck and perseverance in fighting the fire."

* As often happened in that era (just to confuse future historians) the paper simply printed a previously written article so the "today" reference is to the date the article was written, not the date of the paper. We have it from another paper, which, on February 27, 1888, printed a short article about the fire, that the fire occurred on the previous Friday (February 24, 1888).

Thanks to Sue Warren for providing this transcript of this 1888 report of the fire.

Old Town Hall - Main Floor


Front
Stairs
Delta Mill Society Room
- Old Office Files
- Research Files
Archives Room
Collections Room 1
Filing Cabinet 4 drw
Filing Cabinet 4 drw
Non DMS Files
Built in Shelves
Christmas Decorations
Collections Room 2
Oversize Artifacts
Workshop Area
Collections Room 3
Exhibit Resources (signage, etc.)
Rear
0 1 metres 2 3
0 feet 10
Old Town Hall - 2nd Floor Plan

DELTA

INTERPRETATION NOTE: while we don't specifically interpret Delta, the story of the mill is intertwined with the history of Delta. We have a Walking Tour of Delta brochure available which will allow visitors to explore the community on their own, plus there are a number of interpretive signboards located throughout the community.

The story of Abel Stevens is the story of the founding of Delta. The story of the Old Stone Mill is the story of the growth of Delta as a regional service centre. So, in essence, as we talk about the mill, we are also talking about Delta and its growth as a community. The owners of the mill, such as Walter Denaut, played significant roles in the community.

The Jubilee Block, Main Street, c.1930s

Although Delta has been struggling in recent years, the empty buildings speaking to that struggle, it has been the keenness of volunteer groups, such as the Delta Mill Society, that have kept the community alive. In addition to the DMS there is the very active Delta Agricultural Society, the Delta Community Improvement Committee, the various church groups and others that all help to keep the sense of community alive.

The mill of course speaks to its broader heritage, that of Ontario and Canada – in fact for many years, many of the volunteers with The Delta Mill Society were people from outside Delta who fell in love with the beautiful old building and the role it played in the early development of Canada. Presently we have a nice mix, people who live in Delta and those who live outside, bonded together by a common love of the Old Stone Mill.

We (DMS) speak to the early development of Delta and to its continued relevance. Our work in restoring the mill and keeping it open year after year to the public, draws thousands of visitors to Delta, helping to keep Delta on the map and helping the economic viability of the Township of Rideau Lakes.

We don't do this in isolation, we help and support other activities in town such as the Delta Maple Syrup Festival and the Delta Agricultural Fair (one of the oldest in Ontario), both sponsored by the Delta Agricultural Society, and Celebrating the Season on weekends leading up to Christmas, sponsored by the Lower Beverley Lake Park Board. And of course they support us in our activities, including the Delta Harvest Festival (formerly the Thanksgiving Festival). Many of our volunteers work with these and other local groups.

Bottom line is we are part of the local community of Delta and that community is part of us.

AGRICULTURE

The story of the mill is directly tied to the story of agriculture in the region (mostly Bastard and Kitley townships with the early mill). Our second floor agricultural display speaks to that.

We don't have specific information on early farming in terms of production, but we know a number of generalities. This area was forested when the first settlers arrived, to create farmland the forest had to be chopped down. That was all done by hand by a settler using a felling axe (saws didn't come into use for felling trees until the late 1800s). A settler could clear about 3 acres (+/-) per year. It was backbreaking work. In some cases, a patent for land was conditional on the settler first clearing 5 acres of land. A period reference (1840 quoted in Lockwood's Rear of Leeds & Landsdowne) optimistically states that 5 acres a year could be cleared – that likely reflects the very top end of what a single settler could do.

Farmers also got together in felling bees and with the Stevens' 1794 settlement group, this was likely common, neighbour helping neighbour. We also know the Stevens settlers arrived in ox drawn wagons and those oxen as well as horses would have been used to help clear the land, hauling away downed trees. So the change in this area from forest to farmland likely went faster in Bastard and Kitley townships than in areas with individual remote settlers.

A soil map of the area (shown in "Building the 1810 Old Stone Mill") tells the agricultural settlement story. To the north and east of Delta is good soil (loam), to the south is poor soil (a soil unit appropriatlely called Rockland). This is due to the underlying geology which defines topography and soil development, poor soil on top of the rocks of the Frontenac Axis, much better soil on top of the sedimentary rocks flanking the Frontenac Axis. This is why the first settlers were in the Plum Hollow area, the land around Plum Hollow had very good soil. So we see early settlement in that area and also into the Irish Lake area (Kitley).

The first crop was usually potatoes. They were very easy to grow, could be put in pretty rough land (only digging, not tilling, required) and they provided immediate food (no processing required) and could be easily stored. Once sufficient land had been cleared, wheat was often the next crop since it was needed for a daily essential, bread. Intially a settler could only produce enough wheat for his own family's needs. That's why early grist mills were barter/country mills, taking a toll (1/12) of the grain and returning the rest to the farmer (minus losses) as flour. Merchant mills such as the Old Stone Mill required a region where farmers were producing a surplus of wheat beyong their own family's needs.

It was noted in a period (1840) reference that after the first crop of wheat the land would be planted with grass to produce pasture and then left that way for six years to allow time for the stumps in the field to rot to a point where they could be removed. After that the land could be properly plowed and wheat planted again. If this cycle held true, then in year 7 the settler had his first full 5 acres of wheat (as opposed to wheat planted among stumps), in year 8 he'd have 10 acres and so on.

Wheat had the best potential in that era to be a cash crop, so as more land was cleared, more wheat was planted. Yields were low, the first numbers seen for this area come from the 1851 census. Yields shown for Bastard are about 13 bushels of wheat per acres, with 10.8 bushels per acre for Kitley. Yields actually decreased after that due to soil depletion. The 1840 reference indicates 15 bushels per acre but that appears to be an optimistic high end (as with the 5 acres a year of land clearance in that same reference). The 1851 yields are very low by modern measure, yields with current cultivated wheat non-organic farming are in the order of 100 bushels of wheat per acre. Our miller, Chris Wooding, who does 100% organic farming using a heritage wheat (Red Fife, developed in 1842) gets 18 to 23 bushels per acre.

In 1851, about 25% of tillable land was dedicated to wheat. Glenn J Lockwood in his book, "Kitley, 1795-1975" provides a full breakdown of what was grown in 1851. Bastard was a bit more populated, but the figures would likely be similar:

> Of 43,425 acres of land held in the township in 1851,17,553 acres were under cultivation with 10,856 acres devoted to growing crops, 6,621 acres devoted to pasture, 76 acres devoted to garden, and 25,872 acres composed of woods and wild lands.
>
> Following are figures for the amounts of crops produced in Kitley for the year 1851:
>
> Wheat, 3027 acres, 32,781 bushels; Barley, 16 acres, 245 bushels; Rye, 79 acres, 928 bushels; Peas, 643 acres, 8,400 bushels; Oats, 2126 acres, 43,994 bushels; Buckwheat, 349 acres, 4,284 bushels; Indian Corn, 344 acres, 7,038 bushels; Turnips, 24 acres, 2,715 bushels; Clover, Timothy and other grass seed, 60 bushels; Carrots, 188 bushels; Mangel Wurtzel, 8 bushels; Beans, 197 bushels.*
>
> In 1851, 64 pounds of hops were produced, 3,734 tons of hay, six pounds of flax or hemp, 14,431 pounds of wool, 17,256 pounds of maple sugar, 570 gallons of cider, 3,518 yards of fulled cloth, and 9,369 yards of flannel.
>
> There were 924 bulls, oxen, and steers; 1,783 milk cows; 1,812 calves or heifers; 1,141 horses; 5,166 sheep, and 2,066 pigs in Kitley in 1851. That year 121,746 pounds of butter were produced as were 8,933 pounds of cheese, 299 barrels of beef, and 1,596 barrels of pork.
>
> - *From Kitley 1795-1975 by Glenn J Lockwood, p.55.*

* Potatoes aren't listed, but later (on page 56) it's mentioned that 10.5 bushels of potatoes were grown per person. Population was 3,525 at the time, indicating 37,000 bushels of potatoes.

We have no early records for the mill, so it is uncertain what the ratio of custom to merchant milling might have been. Also uncertain is when grinding for animal feed might have started. Those all relate to the type of farming being done in the region, an area that was growing in population and evolving in the type of farming it was doing. We can see that in 1851 that animal husbandry was quite extensive. For instance, new OSM owner Walter Denaut had a farm in addition to his mansion. He owned 320 acres - 60 of those were under cultivation, 30 for crops, 30 as pasture land. He only had 2 acres of that under wheat cultivation - he was more into animal husbandry, particularly horses. The census shows he owned 3 milk cows, 2 calves, 17 horses, 9 sheep and 14 pigs (info from 1851 census).

Animal husbandry as a "science" was not the case in the early years. Abel Stevens is recorded as arriving in 1794 with a yolk of oxen, a milk cow and a horse (and likely some chickens). The purpose grinding of grains for livestock didn't start until the early-mid 1800s. Initially it was just the "waste" product of the mill, (referred to as offal), the coarse middlings, shorts and bran, that was sold to farmers for use as animal feed (often horses). There was no purpose feed milling. That developed in the mid-1800s, with crops such as oats being purpose grown for animals. Walter Denaut may have had some good business making animal feed, but that wouldn't have been the case for William Jones. The feed industry took off in the late 1800s when the benefits of animal nutrition became better known and we see the Old Stone Mill transitioning in the 20th century to concentrate on the feed business.

The mill evolved as agriculture evolved in the region. We see granite stones associated with the mill for the milling of softer materials such as oats and corn (uncertain as to when these were introduced). In terms of wheat, the Old Stone Mill was a small mill by mid-1800s standards. Its peak recorded year in 1861 of 6,000 barrels of fine flour represented the milling of about 30,000 bushels of wheat (assuming a 63% return of fine flour). But production in Bastard Township

alone for that period was 57,787 bushels of wheat (1861 figure, from Ranford). There was likely just a much grown in Kitley at that time, plus other local (i.e. S. Crosby) wheat farming areas. The Old Stone Mill was in competition by the 1820s & 30s with much larger mills. There were people in the area that were buying wheat for large mills located as far away as Montreal. Benjamin Tett of Newboro for instance was a wheat broker, who in the 1830s/40s, was buying wheat for the McKay mill in Bytown.

THE DELTA MILL SOCIETY

In 1963, the last owner of the mill, Hastings Steele, deeded the mill, for the sum of $1, to four trustees: **Mildred Sweet**, **Albert Frye**, **Elizabeth Robinson**, and **Robert Tuck**. Steele's wish was that the mill be preserved and become open to the public as a museum of milling technology.

The trustees found others with a similar heritage interest in the Old Stone Mill, forming an informal Delta Mill Society. Work in the 1960s focussed on what was needed to save the building from falling down, including fund raising the needed dollars for that endeavour. The group was also working towards getting the mill designated as a National Historic Site of Canada – that designation was obtained in 1970 (see the National Historic Site of Canada section).

Before any physical work could be done, the society needed to be incorporated (to have an incorporated entity look after details such as financing and insurance) and also actually own the building, which, in 1972, was still owned by the original four trustees. Accordingly, on **August 17, 1972**, "THE DELTA MILL SOCIETY" was incorporated as a non-profit corporation with charitable status.

To quote from our Letters of Patent:

> Mildred Sweet, Married Woman, Harold Russell and Richard Davy Ussher, Gentlemen, and Howard Knowlton Jones and Ronald James White, Farmers, all of the Township of Bastard and South Burgess, in the United Counties of Leeds and Grenville in the Province of Ontario; Elizabeth Louise Robinson, of the Borough of Scarborough, in the Municipality of Metropolitan Toronto, in the Province of Ontario, Married Woman; Albert William Frye, Farmer, and Myrla Ann Elizabeth Saunders, Married Woman, both of the Township of the Front of Leeds and Lansdowne, in the said United Counties of Leeds and Grenville, and Robert Franklin Tuck, of the City of Chicago, in the State of Illinois, one of the United States of America, Dentist: constituting them and any others who become members of the Corporation hereby created a corporation without share capital under the name of
>
> THE DELTA MILL SOCIETY
>
> For the following objects, that is to say:
>
> **TO preserve as an historic landmark the old stone mill at the village of Delta, in the said United Counties of Leeds and Grenville; to promote interest in the historical development of the Delta mill; to provide a suitable repository for irreplaceable objects marking the historical development of the Delta mill; and subject to the Mortmain and Charitable Uses Act and the Charitable Gifts Act, to accept donations, gifts, grants, legacies and bequests;** …
>
> THE FIRST DIRECTORS of the Corporation to be Mildred Sweet, Elizabeth Louise Robinson, Harold Russell, Albert William Frye, Robert Franklin Tuck, Myrla Ann Elizabeth Saunders, Richard Davy Ussher, Howard Knowlton Jones and Ronald James White, hereinbefore mentions; …

On **September 5, 1972**, the original trustees (Elizabeth Robinson, Mildred Sweet, Albert Frye and Robert Tuck) deeded the mill for the sum of $1 to The Delta Mill Society.

The incorporation of The Delta Mill Society and the transfer of the mill to that corporation allowed work to start on rescue preservation of the mill. The work started shortly after the building was deeded to the newly incorporated Delta Mill Society. See Appendix B-1 for information about the 1972-74 restoration.

The story of the mill being saved by a group of dedicated people has been documented in the book ***"From Mill to Museum, the Grassroots Preservation Effort for the Gristmill in Delta, Ontario, Canada"*** by Thomas Jared Hayes (2022).

The first phase of restoration work allowed the main floor of the mill to open to the public in July 1973, at a celebration marking the plaquing of our 1970 NHS designation. At that time the turbine hall and upper floors were off limits to the public. More restoration work was done and various exibits were designed, and, in 1985, the building was opened to the public, with tours of the building, for a full summer season. However, several sections of the mill were still cordoned off due to unsafe flooring and other issues. The mill at that time was primarily being used as an museum hosting exhibits of artifacts, most of those located on the 1st floor.

There were still many structural issues with the mill and a need to fully restore it in a heritage appropriate manner. After many years of fundraising and the required archaeological and heritage conservation planning work, a mammoth professional restoration was done from 1999 to 2003. That story is detailed in Appendix B-2. During closure, from 1999 to 2003, the various exhibits in the mill were moved to the Old Town Hall which was opened as a museum.

When the mill re-opened to the public in May 2004, it did so with a different focus, to showcase the building itself as an historic site. The bulk of the original exhibits, which were not mill related, stayed in the Old Town Hall which was rebranded as the Museum of Industrial Technology. Work then started to interpret the many remarkable aspects of the mill itelf, particularly it's historical significance as an Oliver Evans' automatic mill. The DMS continued to operate the Old Town Hall as a Museum of Industrial Technology until 2011, when funding wells ran dry, and the DMS was forced to close it down as a museum. It's role in housing our offices, archives and artifact collection, and hosting fundraising events remains.

The Delta Mill Society has evolved over time in its focus, first to stabilize the mill building, then to open it to the public, then do completely restore the mill, then to have it as an operating mill. Of course that's glossing over the tens (hundreds) of thousands of hours of volunteer time that have gone into preserving and presenting the mill.

We've done a number of strategic plans over the years. In 2015 we sat down to re-look at our mission and to come up with a vision statement for the Delta Mill Society and an updated mission.

> **Vision** - Instilling a passion for our heritage.
>
> **Mission** - It is the mission of the Delta Mill Society to preserve and present the Old Stone Mill National Historic Site for the education and enjoyment of the community and the visiting public. To accomplish this mission, we collect artifacts and documents related to the Mill's development and we research and interpret its history, design, and evolution as it pertains to the early development of Eastern Ontario.

The vision statement took much discussion to come up with – it is based on a commonality with everyone who volunteers with the Delta Mill Society – we are all passionate about various aspects of heritage, in this case "our" heritage which references what the Old Stone Mill represents – grist milling, pioneer development of Eastern Ontario, agriculture and even the history of Delta (as it pertains to the mill) – these are all tied together. Most of our work is geared towards the public understanding and appreciation of the mill – hence the "instilling" part. In hindsight, our vision statement might be better expressed as *"Instilling a passion for our heritage in all we meet."*

The biggest challenge to the Delta Mill Society is financing. Contrary to what many people think, as a privately held National Historic Site of Canada, we get no special support from the government (unlike government held National Historic Sites). As the owner of three heritage buildings we have a high level of fixed costs just to keep these buildings open – that includes insurance costs (Old Stone Mill, Old Town Hall and Drive Shed), heating/cooling (Old Town Hall),

accessibility costs (lift at Old Town Hall), fire monitoring (alarm) costs (Old Stone Mill) and the on-going maintance these old heritage buildings require.

At a municipal level we get a modest bit of support. Museums and heritage sites in most other communities receive sustainable grant funding (often enough to hire staff and conduct programming), this is not the case with the Delta Mill Society which receives a small grant from the Township of Rideau Lakes (subject to a yearly council vote) for our administration of the Old Stone Mill and the Old Town Hall (Delta's community hall). That grant generally covers about 80% of our cost to insure these buildings. This compares to grants to community museums for tiny Westport ($22,000 in 2016), Gananoque ($61,500 for 2016) and Perth ($197,000 for 2016).

Our biggest source of revenue used to be charity Bingo. The Delta Mill Society participated in charity bingo (in Brockville) for over 21 years. It was bingo that paid for much of our share (over $600,000) of the restoration of the mill in 1999-2003. The Bingo Team was a dedicated group of volunteers – people such as Peggy Bond, Mary Byrd, Mary Freiday, Anna Greenhorn, Evelyn Saunders, Bronte Smith, Carmel Watt, and Lyall Whaley. But changes in Ontario legislation, including the introduction of casinos, killed charity bingo in the mid-2000s. The casino model for Ontario does not help rural communities such as the Township of Rideau Lakes.

We've made good use Trillium funding (Ontario program funded by lottery tickets), but Trillium is for projects only (you have to have a "project") it doesn't provide sustainable funding. That funding opportunity dried up in 2013 (last year we received a Trillium grant). We used to get a CMOG (Community Museum Operating Grant) grant from Ontario but they changed their criteria (introduced requirements for climate controlled storage of artefacts), something we couldn't do in our old heritage buildings, so we lost that. It did allow us to switch to a HODG (Heritage Outreach Development Grant) for Ontario (you cant get both CMOG and HODG). HODG is a much more modest grant that helps with our outreach efforts (i.e. newsletter, website).

There are no federal grant programs that support heritage. The "Department of Canadian Heritage" (aka "Heritage Canada") is a misnamed department since its role is to support "arts, culture, media, communications networks, official languages, status of women, sports, and multiculturalism" – it deals with contemporary cultural issues and doesn't support heritage as we define it. Parks Canada, which looks after National Historic Sites that it owns, does not have funding programs for privately held National Historic Sites other than its Cost Sharing Program (which is project specific, it is not sustainable funding) – that's the program we used to help with the 1999-2003 restoration of the Old Stone Mill.

So we rely to a large degree on memberships, donations, mill shop sales and fundraising events. We also seek grants, using the Canada Summer Jobs program and the Young Canada Works program to partially fund summer student mill interpreters. We also seek foundation grants for specific purposes. However, without sustainable grants, we remain a volunteer only organization (no staff), people who contribute hundreds of hours of their own time to helping the Delta Mill Society.

We keep the mill admission free for two reasons. The main reason is that we don't want to restrict access to the public – the main goal of the Delta Mill Society is the public understanding of the heritage that the mill represents. The second reason is that it's actually a better business model for a small heritage site than charging admission. For example, the Kingston Historical Society, who operate the Murney Tower Museum, changed from admission to no admission in 2017. That year they made more money from donations only than previous revenues of admissions and donations. We've also had the same experience with our yearly Giant Book Sale held during the maple syrup festival. We used to charge by the book – but a few years ago switched to donation only and our return went way up.

Within the mill we like to keep our requests for donations balanced between subtle and aware. We don't want to be demanding in any way – but visitors should be aware that they can make a donation (so the "make a donation" in the Mill Shop should always be front and centre). Most do,

particularly those who receive a tour – they appreciate the value they've received from our tour guides and the work we've put into mill to make it an interesting place for visitors – old and young alike. That's what the Delta Mill Society is all about.

Just as a bit of encouragement, here is a review we received on TripAdvisor.

A tour for all ages!

Saw a sign for the Old Stone Mill & decided to check it out. Wow! This was one of the most informative & intriguing tours we have been on in a long time. The Mill itself is beautiful. The guides are very knowledgable & passionate about the history of this Mill (Anna was our guide through the mill). They make you want to hear more. We didn't have children with us. However, if we did, I know the guides would have had them just as excited to hear more. There isn't a fee to tour. However, they do accept donations which I hope everyone who tours is generous enough to donate. I would hate if they ever had to close such a beautiful place. I hope to come back again!

Posted by dphoto5, Baldwinsville, NY – August 2017

FREQUENTLY ASKED QUESTIONS:

We don't just interpret the mill, we are also ambassadors to this area, to Delta, to the Township of Rideau Lakes and to the surrounding region. We get visitors from all over, they will ask you questions about the mill and about the surrounding region. So you should be prepared to answer these. In addition to the many mill specific questions, other questions can range from "where is the washroom to where I can eat". The following are just a few – please add any more that you've frequently heard so that we can be better prepared. Plus, if you find issues with any answer (need for more clarity or any errors) – please let us know so that we can improve this list.

Mill Questions

Q. Does the mill still operate?

A: Not as a commercial mill, but yes, we operate it on special occasions. Explain that our miller grows his own grain and that we mill a few times during the summer (make sure you have the milling schedule handy).

Q. Does the mill still operate by water power?

A: No, it last used water power (the turbines) in 1949. Note that the Ontario government took control of the water in 1961 and moved the dam upstream in 1962, so there is no millpond left to power a waterwheel or turbine. Today we power the water wheel using an electric sump pump and the millwheels using an electric motor.

Q. Is the equipment original?

A: Yes and no – certain equipment such as Champion Grain Grinder is original to the Old Stone Mill as are our turbines and much of the gearing and some of our chutes. Other equipment, such as our operating millstones and bolter, are not, but they correct to the period (very old). Our waterwheel is a replica, built in 2007. Our Collections Committee maintains provenance records (such as we have) for all our artefacts, including those in the mill.

Q. Are the French burrstone millstones original to the mill?

A: No – but they are real French Burrstones, the same kind that were used in the mill. The original burrstones were sold after the mill converted to using a roller mill. The millstones in our "Dressing the Stones" display were purchased from Upper Canada Village and our operating millstones were purchased from an old demonstration mill near Quebec City.

Q. Is the ridgepole original and what type of tree is it made from?

A: Yes, the 50 foot ridgepole is original to the mill. It is made from a single piece of local Eastern White Pine.

Q. Why does some of the wood in the mill look new?

A: Because it is new wood – replacement sections of wood installed during conservation restoration in 1999-2003. The conservators preserved as much of the original wood as they could but some sections needed to be replaced due to problems such as dry rot and insect infestation.

Q. How dusty was milling?

A. Very dusty – fine flour settling over everything. Millers were described as "forever sweeping" and there were many cures offered for "miller's asthma."

Q. What are the doors on each floor for?

A. To bring equipment up to each level of the mill. It was easier to hoist heavy equipment from the outside of the mill and than to try to move it up from inside the mill. We have an interpretive sign about this by the door on the third floor.

Q. How did the mill make money in the early days, barter or cash?

A. Mostly cash in the case of the Old Stone Mill– the mill was purpose built as a merchant mill (the Oliver Evans' design is that of a merchant mill), a mill capable of producing fine flour for sale or export (by law whole wheat flour could not be exported, only fine flour). The miller would be paid in cash for this. It also means that the miller purchased the grain from the farmer and then could do what he wanted with the finished product. Earlier mills were custom mills where the miller took a toll of 1/12 of the grain in payment and returned the rest to the miller as ground flour. This 1/12 was mandated by law in Upper Canada (in 1793) - the miller couldn't change those terms. However, by the time of the Old Stone Mill, merchant milling was becoming more common in this area since there was now a surplus of wheat beyond simple sustenance levels. The mill would have done some custom milling, but its main source of revenue was fine flour that could be sold for cash.

Q. What is a bolter and why was it used?

A. The flour from the millstones is 100% whole wheat, containing every element of the grain. But for many baking applications lighter, finer flour is preferred (rises better, less "heavy"). At the time of the Old Stone Mill, only fine flour could be legally exported and it was the only type of flour desired by the population. The bolter separates out the various fineness grades of flour, including the sought after lighter (white) superfine and fine flour. The coarser parts, middlings*, shorts and bran were often used for animal feed. So a bolter was always used (until roller mills came along which did a similar separation) to produce the marketable finer grade of flour. Bolters were an original feature of the 1795 Oliver Evans design for an automatic mill – it allowed for merchant milling.

*Evans recommended regrinding the middlings to produce more fine flour – this was likely a procedure used in the Old Stone Mill.

Q. What is the building located beside the mill?

A. It started off as a hall built by Walter Denaut sometime in the 1850s. It had a 1st floor carriage shed with a heavy stone walls of sufficient strength to support a brick upper storey hall on top of it. This is a typical design of a community hall of the era, although these were commonly built solely of wood. Denaut was a wealthy man (he built his house, the Denaut Mansion, in 1849), his hall was a bit of a showcase in the village. In the 1920s it was sold and repurposed as a garage with a cement floor and a blacksmith's forge. The brick hall upper storey was torn down in the 1960s and replaced with the metal clad top we see today. We use it today as our Blackmith's Shop and for large artefact storage.

Flour Questions

Q. Is the flour for sale ground here?

A. Yes, it is ground using the millstones under the wooden vat (show them the vat).

Q. Where does the wheat come from?

A. Our miller, Chris Wooding, operates a farm called Ironwood Organics, located south of the mill, where he grows his own organically certified Red Fife wheat – a heritage wheat that was very popular as a bread making flour in the mid-late 1800s.

Q. What is Red Fife Wheat?

A. Red Fife is a variety of wheat well adapted to cooler climates. It was developed in 1842 by David Fife at his farm near Peterborough Ontario. Fife got the seeds from Scotland, but those seeds appear to have originated in Ukraine. Fife bred it for Canadian conditions and it became the milling standard wheat through to the early 1900s. It was superseded by higher yield and more disease resistant wheats but still has the reputation as being one of the finest bread wheats.

Season/Hours

Q. What are the hours when you are open?

A. We open each day at 10:00 am and close at 5:00 pm.

Q. When are you open?

A. In the summer we are open from Victoria Day to Labour Day, from 10 am to 5 pm each day.

Q. Are you ever open outside of the summer season?

A. Yes, we are open for special events in Delta. These include the Delta Maple Syrup Festival, held on the third weekend in April, the Delta Harvest Festival which is held on the Saturday prior to Thanksgiving (usually the first Saturday of October, but can be the last Saturday of September in some years) and we are open during the evenings (Fridays and Saturdays) of Celebrating the Season in Delta, in late November and December, where visitors can enjoy the thousands of lights in Beverley Lake Park.

Local Services Questions

Q. Is there a washroom?

A. We have washrooms available in the Old Town Hall (show them where the OTH is located and how to get to it).

Q. Where can I eat?

A. (update this as needed). Find out where they are headed and advise accordingly: There is usually a chip truck open in Delta, there are restaurants in Athens (several), Chaffeys Lock (Opinicon – requires reservations) and Westport (the Cove and several others).

Q. Are there other Heritage Sites in this area?

A. Find out what kind of heritage sites they are interested in. Hand them the Heritage map of the Township of Rideau Lakes which can be used as a guide to several heritage locations. Two local National Historic Sites are the Lansdowne Iron Works in Lyndhurst (just a sign – but the old bridge is interesting) and the Rideau Canal (ideal spots are Jones Falls for the flight of locks, great arch dam, blacksmith's shop and Sweeney house, and Chaffey's Lock – the lock plus the Lockmaster's House Museum). We also have several heritage walking tours of local villages.

Q. When can I stay in Delta?

A. Delta has camping available at Lower Beverley Lake Park (note their respective websites). There is also at least one Airbnb listing in Delta (and others located nearby).

Q. How long will it take me to get to …?

A. The contemporary map of Leeds & Grenville in Appendix A has the distances and times to various communities listed.

Funding / Society Questions

Q. Can I join the Delta Mill Society?

A. Yes – membership is only $20 for an individual, $30 for a family (give them a membership form).

Q. Can I make a donation to the Delta Mill Society?

A. Yes – we welcome donations – we are registered charity and can issue a tax receipt for the amount of your donation if you leave your name and mailing address (have them fill in a membership/donation card to properly record this information – make sure we can read the name and address – that it is legible).

Q. Is there admission to the mill?

A. No – but if you like your tour of the mill, we welcome donations (point out the donation jar – best to (gently) solicit a donation at the end – once they get excited about the mill, its history and the work the DMS is doing to preserve and present the mill). If they want elaboration, note that we don't charge admission in order to maximize public access (our main goal is to present the mill and its history, not make money from it, but then note that we are self funded).

Q. Is the mill run by the government (federal or provincial)?

A. No – it is owned and operated by The Delta Mill Society, a group of volunteers.

Q. Does the government support the mill because it's a National Historic Site?

A. No – our National Historic Site designation does not bring along any funding. The DMS is a self funded group of volunteers. The Ontario Government does have a small grant available because we are a heritage organization. The federal government does not have an equivalent program – their available support grants are for summer students.

Q. Do you get any government support?

A. Yes and No. We do not get any sustainable support; we have to seek yearly grants. The Township of Rideau Lakes provides us with a small grant, the amount varies based on a yearly council decision. The township recognizes both the heritage and economic value of the Old Stone Mill to the community (we attract visitors to the township who then spend money here). The current amount of that grant doesn't quite cover the cost of our insurance for the mill. We use the HODG (Heritage Organization Development Grant) program from Ontario which provides a modest grant. In the past we've used Trillium Grant Funding (from the Ontario lotteries), but that is only available on a project specific basis (and we haven't had any luck with that in recent years). We also use Federal Government student grant programs which varies from year to year (never 100% of what we need).

Q. Who pays the students?

A. The Delta Mill Society pays the students – we do take advantage of federal government student support grants that cover a portion of those costs – those amounts vary year by year (but never cover 100%).

Q. How can I help support the mill?

A. As a self-funded volunteer group we accept any type of help we can get – volunteering (various types of jobs depending on the interest of the volunteer), donating in-kind services, taking out a membership and/or making a donation.

OTHER QUESTIONS?

Are there any other common questions you hear from visitors? List them here – we can add them to our FAQ.

THE MILL BUILDING – Changes over Time

The mill we have today is a snapshot of several time periods. At various times in the mill's history, portions of its physical configuration changed. About the only constant is the original 3 ½ storey 50' x 35' stone building.

New to the 2nd edition of this document are floor plans showing the 1810 mill compared to the layout of today's mill, those can be found in the tour description section. We have no records of what the original mill looked like, so these are assumption based using all the information we do have. Much is based on research done for the book "Building the 1810 Old Stone Mill in Delta, Ontario", now also into a 2nd edition.

The most obvious building change is the c. 1861 addition of the turbine hall, but internally in the mill many changes have occurred over the years. One of the biggest changes is the location of the husk. It was originally was much higher, about 6 feet above the level of the 1st floor. In the original mill there was no second floor over the area of the husk. That elevation was in order to make room for the large wooden gearing below the millstones that took power from the 12 foot waterwheel. The husk may have been expanded in the late 1830s when a 3rd run of stones was added. It may have been extended to the west wall (over the waterwheel area) when the switch was made to turbines and the waterwheel removed. It was lowered (to the level of the main floor) in the 1920s when a feed mill was installed. Original timbers were re-used, but new timbers were also added.

These changes of the husk position are reflected in the rest of the building. Doors turned into windows. Chutes and pulleys moved with holes cut in floors and even beams to accommodate those changes. Stairs added and removed. In one case one of the main support beams had a large section removed, presumably to accommodate a new use for that area (see if you can find that location).

There is no historic documentation for these changes to the inside of the building, it is the physical evidence found in the mill, notches in timbers, holes in floors and walls, newer timbers and fastening methods in some locations, all serve to provide clues to prior configurations. But they don't provide detailed information to what the mill looked like at any given point of time (other than a few exterior photographs dating to the late 1800s). Several of the support columns you can see today date to the Denaut era, their design and location different than the original support columns. Some of this is detailed in "Building the 1810 Stone Old Mill, 2nd edition" (Watson, 2022) and also in the Delta Mill Conservation Report (Scheinman, 1996).

The waterwheel raceway, which has a bit of an odd angle to it, would have contained a wooden chute (flume) to control the flow and direction of water, delivering that water directly to the waterwheel. Evidence of such a chute is gone but there are remains of a support structure at the upstream end of the wheel-pit.

A significant part of the planning for the 1999-2003 restoration (Appendix B-2) was what exactly to restore, what configuration of floors, stairs, windows and doors to choose? What periods to represent? One obvious choice was to expose the wheelpit so that we (DMS) could illustrate both the waterwheel period and the turbine period. It is very fortunate for us in Walter Denaut's re-design of the mill that he chose to create a new raceway for the turbines, perhaps simply to keep the waterwheel in operation while he installed and tested this new technology. So the original mill wasn't disturbed and many elements of the waterwheel era, including its own raceway, were preserved.

We're also very lucky with the building which, unlike many small local mills, was never abandoned; it continued to operate as a mill up until 1940 and continued as a feed store up until 1960. On the flip side, Delta was never in a good enough location – either for transport or for water power, to have the mill expanded or rebuilt (as did happen in places such as Merrickville) other than the addition of the turbine hall. So many of the elements of the original mill have been preserved.

Many of the changes to the 1810 mill have been external – the c. 1861 addition of the turbine hall, the c.1960 removal of the salt shed, the c.1960 removal of the 2nd (brick) storey of the Blacksmith's Shop, the 1962 construction of a new upstream dam by MNR, the 1963 construction of a new road bridge, the 1960s removal of the sawmill (top c.1961, floor in 1968), the 1974-75 walling of the bywash with concrete and the 1999 removal of the buffer wall. All of these have had some impact on the visual character of the area, arguably the biggest being the MNR dam which changed the water configuration (the mill no longer its own dam), lowering the mill pond in front of the mill by 1.4 m (4.6 feet).

The 1999-2003 restoration work necessitated the DMS to make several difficult decisions that impacted on the original heritage character of the building. For reasons of public safety, 2 flights of stairs were built from each level, something the original mill never had. There was a decision made not to rebuild an elevated husk and to floor over that area of the 2nd second floor. This decision was likely due to the practicalities of showing the mill to the public. The need for an exit from the turbine hall necessitated the galvanized steel walkway on the north wall of the mill. A major visual change was the full removal of the buffer wall. It had already been partially removed by MNR prior to DMS ownership of the mill and it needed to be fully removed to do structural work on the north side of the mill, including the waterwheel headrace. It was decided not to rebuild it in order to provide a clear view of the turbine and waterwheel headraces (archways).

The bottom line is that today's restored mill is based on very detailed research by the conservators, carefully choosing which elements to preserve or restore. It's not the exact 1810 mill, nor the exact 1860s mill nor any other specific period – but a combination of those time periods with a few required additions (such as 2 safety exits from each floor).

Further Reading

To get a sense of what the original mill looked like – read ***"Building the 1810 Old Stone Mill in Delta, Ontario, 2nd Edition"*** by Ken W. Watson, 2022 for a lengthy discussion of the original mill. This is available as a PDF on the History page of our website.

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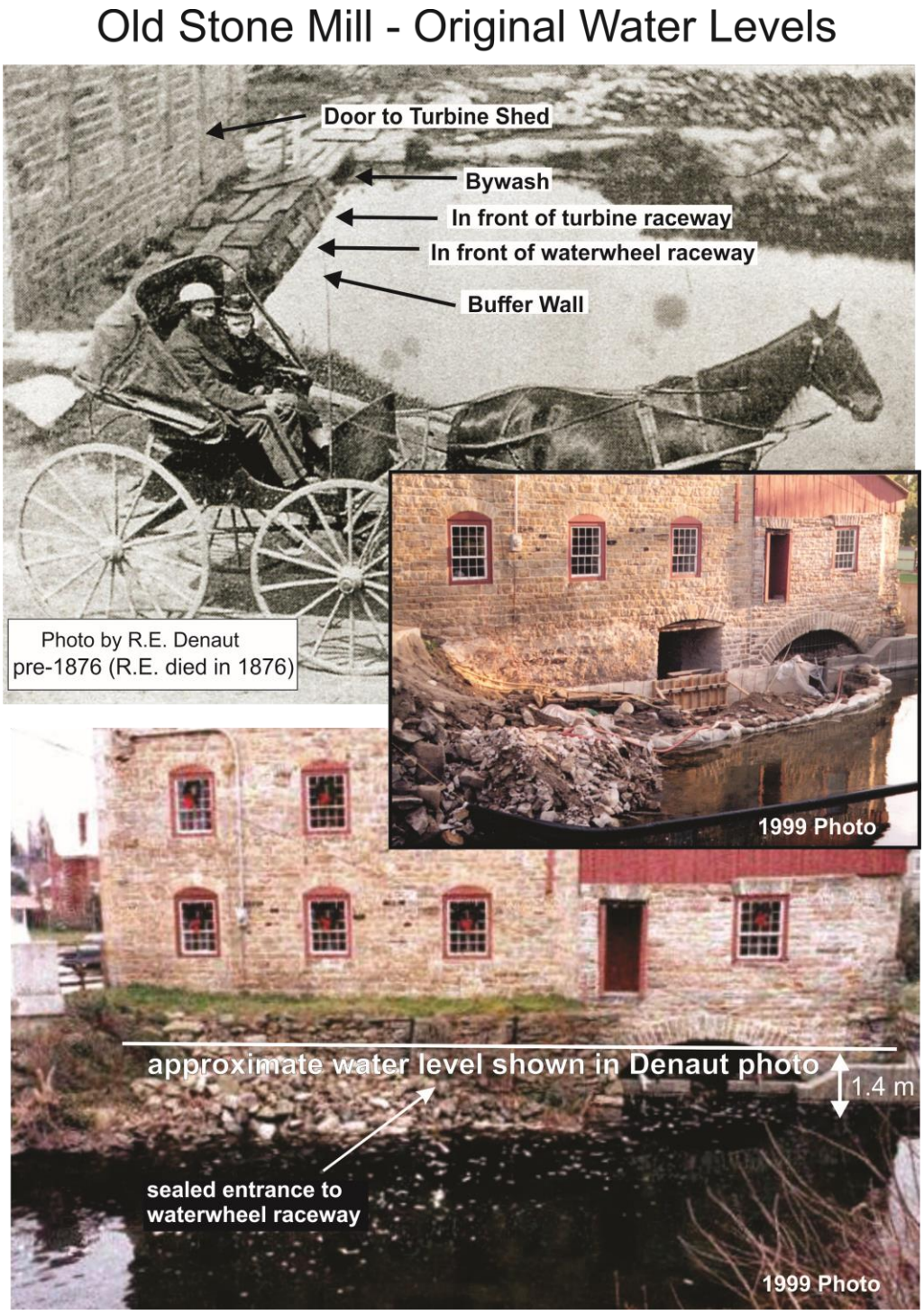
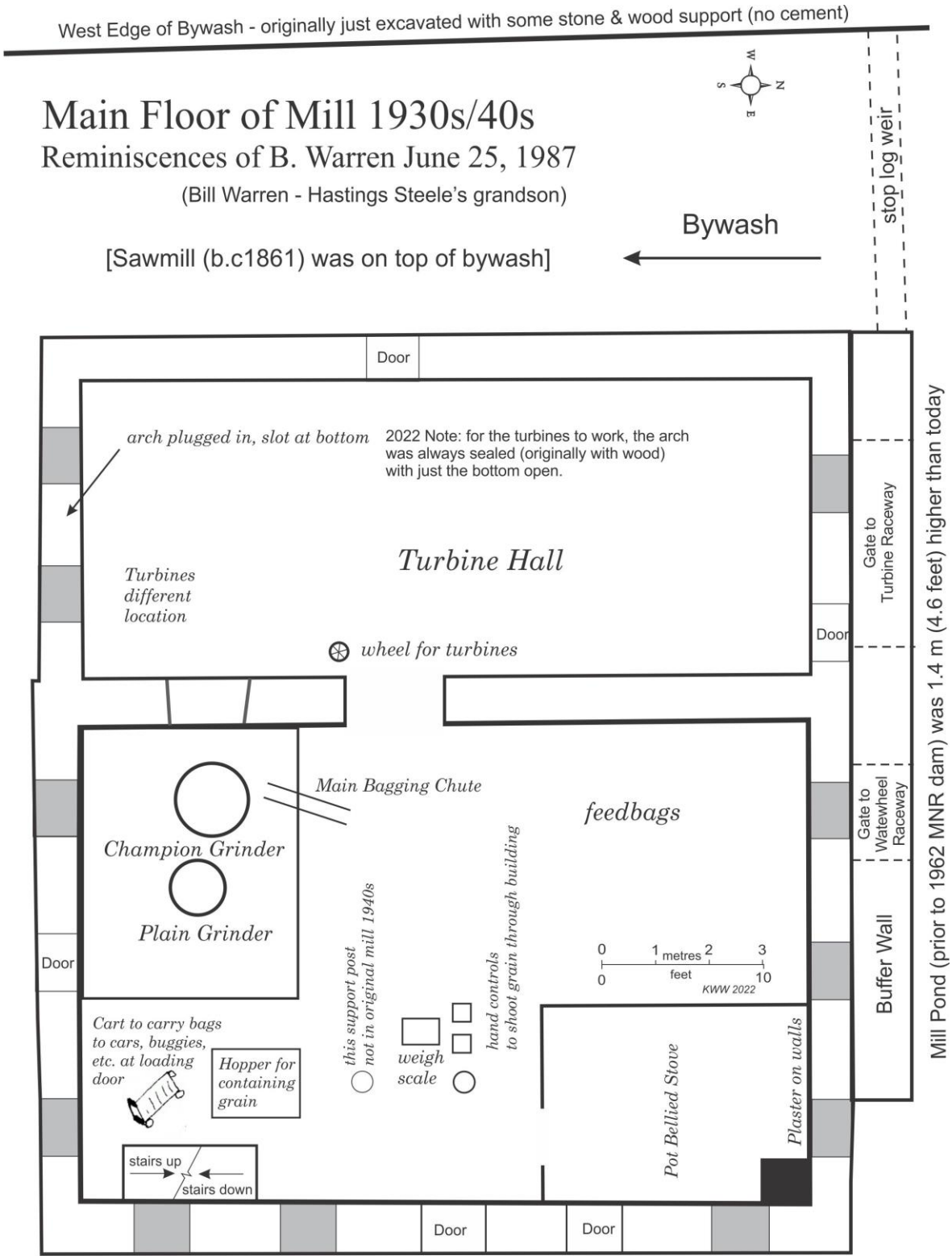
The Mill in the 1870s



The top pre-1876 photo (scanned from Paul Fritz's book) is the earliest known 19th century view of the mill showing the water level of the mill pond against the mill. The buffer wall sits against the north wall, a foundation to hold a trash grate for the waterwheel raceway, and also for the turbine raceway. The water level shown is close to that of Upper Beverley Lake today. The level was controlled by stoplogs at the head of the bywash. The lake level is controlled today by the MNR dam (also using stoplogs) by the road bridge, not the mill.

The Mill in the 1930s



This is based on a diagram sketched by Bill Warren, Hastings Steele's grandson. Text in italics is the original writing. The diagram shows the husk lowered to the level of the main floor (in the 1920s) to facilitate the manufacture of animal feed which was the main use of the mill at that time.

GRIST MILL or MERCHANT MILL – One in the Same

Since we've interpreted the mill for many years as having a significant role as a barter mill, a mill that processed "grists", this section has been added to provide a reasoned evidence based argument as to why this was likely never a significant part of the mill's business. Part of this reasoning relies on the definition terms, barter, custom and merchant, which is interpreted differently by various people. This information is more for historical interest, our main interpretation for the Old Stone Mill is in relation to merchant milling, that is our prime focus since that was the design and primary use of the mill.

In the Preamble, under "What is a Grist Mill" it is noted that we've misinterpreted the mill for many years as a mill that processed "grists" in the manner that early mills in a pioneering area would likely have processed grain. That it was a mill where a farmer brought in his grain which the miller made into flour, returning the flour made from that farmer's grain, back to the farmer. The payment to the miller for this was a portion of the grain, mandated by law at the time to be 1/12 of the farmer's grain. The general terms used for this type of mill is a barter or country mill. The term "custom" mill has also been used for this and also for a later meaning of that term. It is the later meaning that applies to the Old Stone Mill.

Our error in this seems to be rooted in the varying definitions of grist (we picked the wrong definition) and an unfounded belief that farming in the area of 1810 Delta was still be done at a simple sustenance level. There also seems to be some confusion that arose from reading Felicity Leung's "Grist and Flour Mills in Ontario" which does discuss various types of mills and from my read, does sow some confusion between the two, leading us to some erroneous conclusions about the Old Stone Mill.

There are a number of reasons why it is now believed the Old Stone Mill was operated primarily as a merchant mill with some custom milling.

Some definitions:

Grist – original form (pre-1700s) – The word "grist" is derived from the Old English word grīst meaning the action of grinding (from Old English grindan, meaning to grind). So, in its original form, a grist mill means a grinding mill.

Grist or grists (1700s) – the term changed to become a catch-all term for the small batches of grain a farmer would bring to the mill to be ground by the miller, and then returned to the farmer as flour (flour that was milled using his own, not someone else's grain). Also called a barter mill, the miller would take a percentage of the wheat as payment. In Upper Canada it was enacted into law that this percentage the miller could take was fixed at 1/12 – the remaining 11/12 (minus wastage) returned to the farmer as flour. Of note, this definition includes the fact that it is the flour from that farmer's grain that is returned to him. That is part of the definition in that period of grists.

Grist Mill (early 1800s onward) – back to the original meaning, any small flour mill with grist generally thought of as any material the mill processes. The saying "all is grist for the mill" comes from this definition of grist. Both barter/custom and merchant mills were called "Grist Mills". For instance, the statistical account of Upper Canada, written in 1821, used the term "Grist Mill" for every mill in Ontario with no distinction made between barter and merchant flour mills. Today the terms "Grist Mill" carries a similar meaning – referring to any older style flour mill, as opposed to a factory flour mill (late 1800s to present day). The Old Stone Mill is a grist mill by a definition of the term in use since it was built.

Merchant Mill (original) – it's unclear when that term first came into use, but it was certainly in use by the late 1700s since Oliver Evans' specifically references "merchant-mill" and "merchant milling" in his 1795 book, "The Young Mill-wright and Miller's Guide". While Evans' doesn't use the term barter or toll he does use the terms "Country Mill" to mean the same thing. The term merchant mill at that time meant a mill capable of creating "merchantable flour" – meaning fine flour of a quality suitable for export. That meant the mill had to have a bolter as part of the process.

Merchant Mill (evolved) – the way we use it today is to describe a mill capable of producing merchantable flour and where the miller bought the grain rather than taking a percentage. This is different in operation than a mill that processed "grists", returning flour to the farmer made from the grain that farmer brought to

the mill. In fact we can go back to see documentation of this in Evans' 1795 book where he talks about an adaptation to the mill for the sequential milling of grists and noting that a mill so adapted could do grist work during the day and merchant work at night. The reason he makes that distinction is that, if milling "grists", then the farmer would be waiting for it to be returned to him as flour (daytime). But an Oliver Evans' mill is not purpose designed to mill "grists."

Barter/Country/Toll Mill – an early mill, generally without a bolter, which operated simply on the basis of milling a farmer's grain and returning a portion of that grain to him as whole flour. In 1793, it was mandated into law in Upper Canada that the toll a miller was allowed to take was 1/12 of the grain with the remaining 11/12 (minus losses), returned to the farmer as flour.

Custom Mill – the early form of this term is as a toll mill, but it later came into use for merchant mills with the farmer exchanging grain for fine flour, not necessarily his own. It's presently unclear exactly when the change happened. We do have an account from Charles Jones in 1836, owner of Yonge's Mill, that he was custom milling, providing the farmer with 1 bushel of fine flour for every 5 bushels of wheat the farmer brought in. This is still a type of toll, except that now the miller gets to keep a lot more since 5 bushels of wheat produces close to 196 lbs of flour – so he's getting 70% of the merchantable flour in payment. .

Bottom line is that all merchant mills are Grist Mills but not all Grist Mills are merchant mills.

Evidence for the Old Stone Mill operating as a barter mill

This will be short since there is no actual evidence for this. It is a conclusion based solely on assumptions, several of which are incorrect. One is that farmers in this area were still working at a sustenance level and not raising cash crops. Another appears to be that this is how mills such as the Old Stone Mill operated in that era, as a combination of merchant and barter mill. That assumption also now appears to be incorrect. Bottom line is that we have no factual evidence in support of the Old Stone Mill being used as a barter mill. Could it have been used in part as a barter mill? Yes, that cannot be discounted

Evidence for the Old Stone Mill operating as a custom mill

While we have no direct evidence for this, it most likely was. In this case the miller either paid the farmer for his grain and the farmer bought flour he wanted for his family from the miller, or the farmer exchanging grain for flour, as noted with the system used by the 1830s of 1 bushel of flour for 5 bushels of grain. The latter is an evolved form of a barter mill. An interesting story from Leavitt shows that in the late 1790s in Brockville, grain was valued as cash. The story has a sustenance farmer exchanging grain for goods at a merchant shop. The only reason this would happen is if the merchant could convert that grain into cash.

Evidence for the Old Stone Mill operating as a merchant mill

We know the mill is purpose designed as a merchant mill in terms of making merchantable flour. That's what an Oliver Evans' Automatic Mill is, it is defined as an "improved merchant flour mill". We also know that some mills in the area were already operating on a cash purchase of the grain basis – that seems to be common. We see evidence in the mill, such as the plastered ceiling on the 3rd floor, showing that the mill was set up for grain storage which is a merchant mill feature. Barter milling didn't use grain storage, that term is defined as having the farmer's own grain returned to him as flour.

The scale and magnitude of construction of the Old Stone Mill also speaks to its purpose as a merchant mill. As a miller in the Niagara area in 1805 noted, there was no money to be made by barter (toll) milling. You don't spend the money to build a mill of the Old Stone Mill's magnitude, using the Oliver Evans design, for anything other than merchant milling. This is the most compelling argument. The Old Stone Mill is not designed to be a barter mill and the magnitude of its construction (massive stone building) speaks directly to Jones' plan to use it as a merchant mill. There is no business case for building a mill such as the Old Stone Mill if it was to be used, even partially, for barter milling.

Was Grain valued as cash?

A key difference between a merchant mill and a barter/toll mill is that the miller paid cash for all the grain brought to the mill rather than taking a percentage of the grain in payment. For example, we have clear indications that, in late 1700s Brockville, grain was being accepted a payment to a merchant in lieu of cash.

The merchants in Brockville considered grain to be a cash equivalent, meaning that it could be turned into cash by taking it to a mill that paid cash for grain, which all mills in that area did.

The other point to make with cash is that it was scarce in Upper Canada, right through to the late 1830s. It was a combination of an actual cash shortage and limited ways an individual could get paid in cash. As an aside, an example is the building of the Rideau Canal (1826-1832). It was a rule set by the British military, who were in charge of construction, most of which was done by independent contractors, that the workers be paid in cash. But there was not enough coinage available in Upper Canada to do this, so they had to import barrels of American half-dollar coins in order to pay the workers. The irony of paying the workers who were building a military canal for the defence of Canada against invading Americans, in coins that showed the American Eagle and Lady Liberty, was noted at the time.

Bottom line is that cash was desirable. For a farmer, his best avenue for cash was to grow a cash crop and do animal husbandry such as raising sheep for the wool. Mills designed as merchant mills were competing with each other for the acquisition of grain and to do that they had to pay cash. Of course as a merchant mill, their main product, fine flour, was a desirable product that they got paid in cash for.

Was Whole Wheat Flour a desirable product in 1810?

No. The product of a straight barter mill was whole wheat flour. This is the basis for the law in Upper Canada, developed in the 1700s, that a miller in a barter mill could only take 1/12 of the grain as payment, returning 11/12 (minus wastage) to the miller.

But by 1810 (and in fact much earlier) nobody wanted whole wheat flour, they only wanted fine flour. Fine flour was the best for all baking purposes, plus, in pioneer areas, the ability to get and use fine flour meant you'd moved into civilized society – nobody used whole wheat flour unless there was no other choice. Now, in early pioneer areas there was often no choice, if you ground the grain yourself (i.e. a stump mill), or just had a small barter mill (no bolter or equivalent), then you had whole wheat flour. But as soon as there was a choice, a mill that could produce fine flour within walking, horseback or wagon distance, then that's where the farmer took his grain.

To get fine flour meant a mill had to incorporate a bolter. Part of the definition of a merchant mill is that it had a bolter, a machine that produced fine flour. In 1801 for instance, Upper Canada introduced a legal grading system which defined the quality of the flour which was two grades of fine flour and one for the middlings.

If you wanted someone to buy your flour it had to be fine flour – both from a market point of view (no market for whole wheat flour) and also from a legal point of view – only fine flour could be exported (which is where the "big money" was).

Part of the story of the Old Stone Mill is that as a mill still in the "backwoods" – it had a secondary market of local farmers to be able to make a bit of money on the waste product from the mill, the coarser fractions of flour – coarse middlings, short and bran, which were sold to farmers for animal feed since it wasn't considered suitable for human consumption. In Gananoque for instance, where there was a limited secondary market, most of this "waste" was simply dumped in the St. Lawrence River.

The Situation in 1810 Delta

Moving ahead to 1810 Delta, the area was past the early pioneering stage – that existed in the late 1700s in this area but had ended by the early 1800s. Wagon roads and horse paths from the wheat farming areas led to Delta. Delta in 1810 had a good road system leading to both Kingston and Brockville (the "Kingston Back Road"), providing access to the export market with barrels of flour shipped to the Port of Montreal for overseas export (mostly to Britain), or shipped south to U.S. markets.

This clearly factored into Jones' (or Jones & Schofield's) decision to build an expensive stone merchant mill. They obviously believed that they would get a return on this investment. The only way that could happen was by merchant milling – so that was quite clearly the plan all along.

Conclusion

It is most likely that the Old Stone Mill did primarily merchant milling with some custom milling.

HISTORY – A Cautionary Tale

Arguing Semantics

Something to be aware of when debating history (and there are lots of debates), is whether in fact you are arguing about the same thing, or whether you are simply arguing semantics, the meaning of the terms you are using. English is not a static language, the meaning of words evolve and change over time. Some of the discussion in the previous section is founded on the changing meanings of grist, custom and merchant mills over time.

In any "argument" about history, the first thing to establish is whether in fact you are talking about the same thing as the person you're having a discussion with. Keep this in mind as well when talking with our visitors – are you both on the same page, are you talking about the same thing? Ask them for a clarification of their question if you don't seem to be on the same page.

Assumptions

A second thing to be aware of is the foundational base for any statement about history. Is it based on facts or is it based on assumptions (and the various shades of grey between those two). Since we have a limited set of facts about the Old Stone Mill, much of our history and interpretation is based on assumptions. Building a story on assumptions is like a building a house of cards. If an assumption is found to be incorrect, then part or even the whole story can fall apart. So think about whether a statement of "historical fact" is it based on fact or assumptions and, with the latter, what assumptions have been made.

Anecdotal History / Local Lore

As with any area, there is a lot of local lore associated with the Old Stone Mill and Delta. A problem with anecdotal history is that most of it is wrong and there are fundamental reasons for this relating to the human brain. Firstly, we all love a good story, facts are less important that the story. Secondly our brains want to complete a story and will fill in any gaps with invented connections (assumptions). Often that assumption story ends up as a real memory. Thirdly, memory is always faulty – in part because of the way we store and retrieve memories – so even "first hand" accounts will contain errors, particularly if the time gap between the event and the recounting of that event is large.

The best way to approach anecdotal history is to assume there are errors in it and try to find actual facts related to the story. There certainly can be truth within the lore, but starting off with that assumption will generally lead to erroneous conclusions. Lore should never be treated as fact. Two examples have been provided below, but there are many more.

It's Difficult to "unlearn" things

Another human trait is that once a belief is put in our heads, it's difficult to unlearn that belief even when facts show that belief to be incorrect. Humans are much more adapted to accepting something new as fact than discounting something we once thought of a fact to be untrue when the actual facts are discovered. You'll see this here where much more effort has to go into to showing a belief about the mill to be wrong, than to introduce a new fact about the mill. It's much easier to prove something right than it is to prove something wrong and that goes to how the human brain works. We all have this problem to one degree or another, an immediate resistance to something that counters our beliefs on a topic. There is a lot we've had to "unlearn" about the mill and that process continues as new facts are found and the story is refined based on facts.

Old Books/Documents Contain Errors of History

Similar to all human knowledge, it gets improved over time as we learn more things. This is how science works, we continue to learn new things which provides building blocks to advance our knowledge of whatever subject matter is being investigated. This is the same with history, the professional approach to history is a fairly recent thing, going from simple story telling to fact based history, now incorporating science (i.e. archaeology, medicine, etc.) as part of the process.

The story of the Old Stone Mill is a good case example of this. The cautionary note here is that there are errors, some significant, in everything that has been previously written about the mill, even what was written by good heritage researchers. We continue to refine the story of the mill, so our early books all contain errors. Even this document contains errors that will be discovered as more research is done about the mill. So it's always best to start with the most recent history accounting of the mill and work backwards. Learn the facts as we know them today (this document) – that will provide you with the knowledge base to better understand what was said before (what they got right and what they got wrong).

Do we know it all? – no. There is still much that we don't know about the history of the mill.

Have we got it all right? – no. There are undoubtedly errors of history in this document – we just don't know what they are … yet. Research into the mill is an on-going process.

That errors of history exist is an absolute concerning the history of the Old Stone Mill (and pretty much any other history you might read). Since there is so little of the history documented during each period, and since many things have changed, it makes much of our history consist of educated guesses. The examples below are mentioned not just as examples, but also because some of that information lives today on the Internet and in previously published books, so you may come across some of these while browsing the web or reading a previous history of the mill. For example, as recently as 2019, we seen a new book that presents what can only be characterized as a fictional early history of Delta, including a statement that the mill was built in 1815, a date debunked decades ago. Where did the author get that information? It was from a book written in 1985. Our knowledge of history is not static, it continues to evolve as more information is discovered.

We are also biased in our history (again, this is common with all histories), based on our own personal interests and also on what information is available. History has many gaps, what survives the ravages of time doesn't present a well balanced picture – it's easier to talk about what we know (what is well

documented) versus aspects of history for which little information exists today. So be aware of those biases when trying to present a balanced view.

In terms of historical accuracy, in some cases in our past interpretation we've made a few too many assumptions or put too much faith in anecdotal history. A general rule with anecdotal history is not to initially believe it – most contain errors of fact. Keep in mind that no one alive today (or even for most of the 20th century) has heard a first hand account of what went on in the mill's early period. Humans are notoriously poor at remembering things correctly, even societies with oral traditions. The most common problems are mixing of facts from different time periods, selective memory, and the embellished/changed memories that are passed from one generation to the next. Stories about the Old Stone Mill have not been immune to these altered "memories." So when you hear a story, try to source facts that support it. Unlike the old newspaper adage "don't let the facts get in the way of a good story" we do want to make sure we have facts that support our stories – we have lots of very interesting factual history to tell without resorting to fiction, make sure what you're saying is as correct as it can be.

Example 1 – Power Generation: one example erroneous history is our original interpretation of electrical power generation. You'll see documented in some histories that the Old Stone Mill started to supply power to Delta in 1911 – and that it represented a major function of the mill. The fact is that a dynamo in a mill in the area was installed in 1911, not in Delta but in Lyndhurst, in the mill of George Roddick. By 1914 Roddick was also supplying power to Delta. In a 1925 list of Roddick's Delta customers we see H. Steele, charged at a rate of $1.25 per month. If Steele was generating power in the mill at that time he wouldn't have been paying Roddick for it. In 1929 Ontario Hydro bought out the powerplant (owned by the A.C. Brown Granite Company at the time, Roddick died in 1924 and his widow later sold the powerplant) and shut his generator down. Ontario Hydro was busy at the time hooking up communities to the regional grid. As best as we can determine (and this is an assumption and so could be incorrect), that is when Hastings Steele installed a dynamo in the Old Stone Mill. Steele, who was also in the electrical installation business, reconnected several people to power being generated from his dynamo. This lasted until Ontario Hydro hooked the area up to the grid (1929/30).

The Old Stone Mill's dynamo would not have been large (the OSM had nowhere near the excess generating capacity of Roddick's Lyndhurst mill) and likely only served some of the general public for the period between Roddick's power being shut down and Ontario Hydro connecting this area to the grid. It may have seen continued use in lighting the mill – history is so far silent in that regard. Our original tale contained all the elements: a dynamo in a local mill in 1911, power coming to Delta from a mill, Hastings Steele being in the electrical hookup and supply business. Those are facts, just put together the wrong way. So while electrical power makes for some interesting stories (i.e. courting candle), it's actually a minor point in the history of the mill. The main story of electricity is not power to Delta, but the illustration of the evolution of water power, from mechanically transferred power to electrically transferred power that we are used to today – both coming from the same source (moving water).

Example 2 - The Abel Stevens story: This also provides an illustration of errors of fact. A book about the Stevens family, written by a descendent, has been used by the DMS for Stevens' information. However that book has a number of errors and today we know a much more complete story of Stevens in relation to area settlement and milling than was known in the past. We do know the early Stevens story and it is interesting in relation to the settlement of Delta and the harnessing of water power. But he has no direct relationship to the Old Stone Mill. This is detailed in the next example.

Example 3 – The Old Stone Mill is a rebuild of the Stevens' mill: this false anecdotal history is pervasive; it is printed in a 1985 book about buildings in this area (which also incorrectly has the mill built c.1815), it shows up on our National Historic Site plaque and even initially biased the 1994 archaeology for the mill. It is a deep seated local lore that is completely false. You'll even see in our Statement of Significance for the Canadian Register of Historic Places that *"Construction of the mill began shortly after the first settlers arrived in the Delta area in 1796. Between the late 1790s and completion of the mill in 1810, a number of businesses and services in Delta were well underway."* Outside of getting the date the first settlers arrived in the area (1794, not 1796), whoever wrote that statement mixed up the original Stevens' wooden mill(s), c.1796 and the later Old Stone Mill (1810-11) – two separate buildings, two separate locations.

Today, we know for a fact the two mills were in separate locations due to more extensive and accurate historical research, plus direct evidence from the site itself. For anyone that knows water powered mills and how they are sited (placed on the landscape), it's immediately obvious that the Old Stone Mill is not in

the location of the original Stevens' mills. The original location of the Stevens mills was buried, most likely in 1811. The water channel leading to the mill is a constructed channel, not the original stream channel. Your author wrote "Building the 1810 Old Stone Mill in Delta, Ontario" in part to properly document how exactly the mill was sited and how there is absolutely no way this was the location of Stevens' mills. That is now factually documented.

A major problem in dealing with local lore is the attempt to fit facts to the story rather than fitting the story to facts. For many years, it was an attempt to rationalize the local lore that the Old Stone Mill is built on the site of the original Stevens' mill – that false local lore that will likely never be completely beaten down.

Another way we get into trouble with history is taking what is said in a period piece or even recently written history at face value even when there are facts that can be easily verified starting us in the face. Three examples of this are the anecdotal history of the flooding of the Upper Beverley lakes, the dimensions of the mill and possible names of the masons who helped to build the mill.

Example 4 – Upper Beverley Lake: Anecdotal history has the mill dam flooding 2,000 acres of farmland (you'll see that number in some older write-ups). But a quick fact check shows that the current "footprint" of Upper Beverley Lake, which is flooded today to the same level as it was during the mill's operation (or even higher – MNR raised the level in the 1990s), is only 1,350 acres in total area, so clearly the 2,000 acre number is completely bogus. The original two lakes (9 feet (+/-) lower than they are today) occupied about 400 acres. With the flooding presumed to have been caused by Stevens' mill dam, c.1796, which is prior to any farming in the area of the lakes, an additional 300 acres (+/-) of lake was added. So the flooding from the higher dam (the level the bywash dam for the Old Stone Mill), done in 1810-11, was in the order of 700 acres, much of that low lying swampy land (as indicated on Lewis Grant's 1797 survey map which shows the level of Stevens' flooding), not farmland. To be sure there may have been farmers in the area that got ticked off at the mill in 1810-11 when more land was flooded – perhaps it was their descendants that embellished the historical record with an inflated number.

Example 5 – Size of the Mill: the best example of "facts staring us in the face" are the dimensions of the mill. Up until 2017 we've been using 60 feet x 40 feet as the building dimension (original building) in our interpretation material. This was presumably based on the 1835 sale ad for the building which stated those dimensions. But the actual measurements of the outside dimensions of the building are about 50' x 35' (50.4' x 35.5' – 15.4m x 10.8m). The inside dimensions (the working size of the building) is even less, 47' x 31' (14.3 x 9.4 m). Outside of it being a good example of lack of truth in advertising – it is an illustration of why it's worth checking what appears to be a solid fact (particularly when it's very easy to check). Of note, detailed heritage work such as the 1996 Conservation Report do present the accurate dimensions, but this never carried over into our general interpretation. Today we do properly interpret the original 1810 building as being 50' x 35' in size – 3 ½ storeys tall (3 ½ working floors).

Example 6 – mill masons: in various histories of the mill, the names Isaac Whaley and Jasper Russell pop up as masons who helped to build the mill. This is local lore which was repeated in a 1960 newspaper article as fact. It only took a couple of hours of research to completely debunk that bit of local mythology, done by looking up the birth dates of Isaac Whaley (born 1809/1810) and Jasper Russell (1815). We do however know the root of that story, it's related to the building of the stone bridge in Delta, where they may well have been masons on that project. The creation of the mythology is due to a false assumption that the stone bridge was built at the same time as the Old Stone Mill (another bit of local lore). It wasn't. It dates to the late 1860s or the early 1870s. So people, as often happens, merged information from two separate time periods to create an incorrect story.

These examples may seem like belabouring a point, but it is a very critical point. Be aware when you're making assumptions (or when a statement of historical "fact" is clearly making assumptions) or taking something written about the mill (even in this document) at face value. **Think**! **Question!** If something doesn't seem quite right – question the "facts" – are they really facts or are they assumptions? We don't have it all right and we have much more to learn

The next section deals with Mysteries of the Mill. For the most part these are mysteries of factual detail. When researching history you have to ask the right questions – these mysteries pose some of those questions.

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MYSTERIES – Solved and Unsolved

There are many mysteries still remaining to be solved. We have a reasonably coherent history of the mill but there are a number of things that we (or at least your author) are still not 100% certain about. It is mysteries that drives historical research, questions that can direct avenues of research. To learn more about the mill we have to know what we don't know and then try to make those unknowns into knowns.

And, since your author doesn't like simply stating "this is the way it was" without providing the facts, assumptions and rational that went into that conclusion, the mystery section also included solved mysteries to show how they were solved.

A number of the mysteries listed below are related to details, not the overall facts. For instance, with the first one, we know that an experienced millwright would have been required to have designed and built the mill – that's not the mystery. The name of that person and his background is the mystery. Same with the waterwheel – we have no documentation of the original size but have narrowed it down about "about 12 feet" based on factual evidence – so the size and type of waterwheel is essentially a solved mystery based on observable factual evidence.

Who Designed and Built the Mill? – while we credit William Jones, with or without Ira Schofield, with the building of the mill, neither of those men likely took a direct design/build role – rather they would have hired an expert millwright to do the design and carpentry work. Millwrights were generally master carpenters. Some had masonry skills, but a master mason may have also been involved. Clearly Jones & Schofield knew what they wanted, an Oliver Evans Automatic Mill, and that's what they got. To build the mill would have required a millwright with lots of direct experience with the Evans' process and how to build such a mill. So, while we know that it would have been an experienced millwright, completely familiar with building an Oliver Evans' Automatic Mill – we don't (yet) know the name of that person.

When exactly was the Mill Built? – we use the date range of March 1810 to March 1812 based on detailed research done by Wade Randford in the early 2000s. Wade dug deep into the history of milling in this area using tools not previously used such as a year by year look at the assessment records for Delta. His research provides a factual base that narrowed down the dates. For instance, the stone mill is used as a boundary reference in a deed of sale from Abel Stevens Jr. to Curtis Smith dated March 12, 1812, so it existed at that point in time. Ira Schofield, in 1812, is assessed for a grist mill with 1 additional run of stones (so 2 runs of stones), a sawmill and a merchant shop. That would indicate that the Old Stone Mill was clearly in operation with 2 runs of stones along with the adjacent sawmill in 1812. But we don't have a documented "first stone laid" date or a "millstones first started turning" date. While we think that the dates we use are pretty close based on the available factual evidence, we don't have the exact start sequence. Planning for the mill likely started earlier, perhaps as early as 1808 when William Jones purchased the land from Abel Stevens. That's the crux of this mystery. When did Jones start to actually plan for a stone mill? When was the millwright hired? When was the "sod first turned"?

Waterwheel – there is no documentation regarding the original size or exact elevation of the waterwheel. However we do have scientific information based on archaeology. That suggests that it may have been a 12 foot (3.7m) wheel with the centre of the wheel located at a bit below 94.53 metres above sea level (masl), the present level of Upper Beverley Lake. There are three reasons for that supposition.

1. One is that the maximum head of water was less than 9 feet, most likely in the order of a 7 foot net head (based on actual area topography/geography). That supports the idea of a breastshot water wheel, which with a 7 foot net head could have been from 10 to 14 feet in size (based on how waterwheels were designed in that period).
2. Portions of timbers were found in the 1999 archaeology that have been interpreted to be the downstream support for a flume and/or portions of a gate support. Those supports sit 13.2 feet from the back (south) wall, leaving that as the maximum room for a waterwheel.*
3. The axle position for the wheel has been estimated to be a maximum of 94.52 MASL (Scheinman), which is the level of Upper Beverley Lake. Based on bedrock elevation, the lowest possible mounting position was 93.70 (Moore). Lower Beverley Lake today is 91.82 MASL. If that was the

level in 1810 (uncertain – depends on the elevation of a dam at Lyndhurst at that time), then that sets what would be the lowest desired level of the waterwheel**. The bedrock elevation under the tailrace arch is 91.30 MASL. Assuming that the bottom of the wheel to be above the receiving water level (91.82 MASL), that produces a range of a maximum radius of 6.2 to 8.9 feet – so a maximum diameter of 12.4 to 17.8 feet.

Putting those three elements together produces our current estimate, a 12 foot wheel with the centre of the axle positioned below the current level of Upper Beverley Lake, very approximately 94 MASL.

* There is an alternate explanation for this gate structure. While it appears to be an original structure, it could have been built as late as the turbine hall. One of the timbers had wire nails in it, those nails date to the mid-1800s. This doesn't mean the structure dated to that period, just that someone put in nails of that period into the wood. If you remove that structure from the equation then a larger wheel could have been used. But current thought is that it dates to 1810-11, and that limits the size of the waterwheel to less than 13 feet.

** Normally you don't want the bottom of a waterwheel in standing water since the water provides resistance to the wheel, slowing it down and if too much, stopping it. A breastshot (and undershot) wheel is slightly tolerant of this (backwater) since the bottom of the wheel moves in the direction of the water flow. But ideally, the bottom of a waterwheel should never be in standing water since it reduces the power the wheel can produce.

North-South orientation of the mill – a mystery of the mill is its exact north-south orientation, something that appears to have been very deliberately done by the builder of the mill (presumably the millwright). That orientation actually skews the mill by about 5 degrees from the orientation of the waterwheel raceway which was the first thing to be built (the mill walls and the raceway should be parallel to each other, but they are not). Why? The answer may be in freemasonry beliefs since it faces the entrance door to the mill due east. This goes back to a belief that the tabernacle which housed the Ark of the Covenant had one entrance door which always face due east (original tabernacle was a big tent). It was noted in a memoriam to Ira Schofield that he was "a most zealous freemason" – it is likely that William Jones and the millwright who designed and built the mill were too.

Waterwheel Flume: The flume leading to the waterwheel was not originally known or interpreted. This is part since the early research into the mill was not done by people familiar with how early mills worked. Our current waterwheel interpretation sign shows this error, showing water filling the raceway leading to the waterwheel. This is not how the waterwheel raceway would have worked. All well designed mills used a wooden flume leading to the waterwheel. This was done to be able to control the amount and direction of water to the waterwheel. Excess water was not let into the mill, it was sent around the side of the mill (through the bywash).

Now, outside of the fact that a flume was an integral component of any waterwheel powered mill, we do have physical evidence that a flume once existed in the form of a downstream wooden support for a flume. In the 1994 archaeology report it states "The post [for the water control structure] may also have been used as support for some sort of raised wooden sluice way along the mill race or a wooden wall along the east side of the wheelpit where the bedrock is very irregular." We also have evidence in the form of a nailing board that is integrated into the wall of the millrace (one visible today, but originally there would have been two, one on either side of the raceway) and evidence from the buffer wall archaeology that it likely incorporated a head gate.

That's all we need to conclude that there clearly was a wooden flume, but we in fact have one more piece of factual evidence, the wonky orientation of the millrace, which is not parallel to the orientation of the waterwheel and its tailrace. The reasons for that are explained in "Building the 1810 Mill" – but the only way to correct that was to use a properly oriented flume. So, while even with a properly oriented millrace, a flume would have been used, the wonky orientation is just another confirmation since it would have needed a flume – or, more correctly, that the millwright wasn't concerned about that issue since he knew the flume would provide the needed correction.

So, no mystery that a flume was in the mill, the remaining mystery is the exact details of its design.

Wheel-Pit – a puzzling feature discovered during archaeology is that there is a hole below the waterwheel, referred to as the wheel-pit. It's puzzling since there is no logical explanation for its existence. The bottom isn't definitively known (it was never fully excavated), but it is at least as deep as 90.46 MASL, making it 0.84 m (2.76 ft) below the bedrock level of the tailrace (4.5 feet below the present level of Lower Beverley Lake). The waterwheel couldn't have been sitting in it for the reasons described in the previous section (standing water). Plus with our assumed size and position of wheel, the bottom of a 12 foot wheel would be well above this area. Outside of a useful, presently unknown reason for the pit, there are a few speculative explanations. It could have been a design error, excavating to the low (no dam) level of Lower Beverley Lake (90.37 MASL) before it was realized that Lower Beverley was normally a lot higher. This supposition is based on the fact that they didn't excavate the entire tailrace to that depth which they would have if the normal 1810 level of Lower Beverley Lake was closer to 90.37 MASL than its current 91.82 MASL. Alternatively it could be simply a blasting error, or the overeager excavation of loose material (we see evidence of that on the east side of the waterhouse area), or some other reason. Another possible explanation is that it has nothing to do with the waterwheel, but maybe for the placement of a turbine in the waterwheel raceway (either as a third turbine or before a decision was made to put in 2 turbines in a purpose built area). The seating of the turbines in the turbine hall are not that low, so it's a less likely explanation.

A second puzzling feature of the wheel-pit is that it contains a lot of 20th century fill, discovered during the 1994 archaeology – specifically "Large pieces of asphalt were uncovered in this lot along with chunks of water deposited clay, wire nails, coffee cup lids and pieces of plywood". The 1994 archaeology associated those items with the demolition of the stone bridge (and presumably asphalt deck) in 1963. How or why that material ended up in the wheel-pit inside the mill is a mystery – particularly since the headrace entrance was assumed to be sealed with concrete at that time (it now seems likely that that assumption was incorrect). That's not a "how the mill was built and works" mystery – just a general mystery.

Buffer Wall – we know that a buffer wall extended along the entire north side of the mill (we have photos showing this). Archaeological evidence points to a buffer wall being against the north face of the mill for most of its operating life (extending out from the mill wall by about 2.2m / 7.2 ft – that figure derived from the documented position of the base of a trash grate which was located at the front face of the buffer wall). But when exactly was it first installed? One thought based on the way some of the bottom stones were keyed to the mill foundation is that it was original to the 1810 mill. But it could have been installed later. The archaeological evidence points to a buffer wall being in place prior to the turbine hall being built. It may have been done to incorporate the trash grate, to prevent debris from entering the head gate – perhaps to solve a problem of the headgate getting jammed with trash. A trash grate at the front of the buffer wall did exist (the base of it was found during archaeology in 1999 and the grates can be seen in early photos of the mill). A head gate at the top end of the headrace (entrance into the mill) appears to have existed based on archaeology. There are several possible configurations but the most likely appears to be a buffer wall with a trash grate in front of a wooden chute through the buffer wall leading to the headgate of a flume in the mill's raceway. It seems most likely that the buffer wall was original to the mill, but it could have been added later – so, while it's existence, design and size are not mysteries, the chronology of its installation is not yet 100% defined.

Waterhouse – was there an enclosed waterhouse for the water wheel? It's a feature of an Oliver Evans' automated mill and archaeology suggests that there was originally a door on the outside (south) wall adjacent to the wheelpit, very similar to one show in Evans' design as leading into the waterhouse. It was a window prior to restoration, but it was put back to its original door configuration. This door may have led into an enclosed space, the waterhouse. So while a waterhouse is speculated, it is uncertain if one actually existed in the Old Stone Mill – there is little directly supporting archaeology. However, given how closely the mill follows the Oliver Evans design, it is very likely there was one. It would have been made of wood (most likely white oak) and would have sealed off the waterwheel area from the rest of the mill (one of the reasons there is a door leading into it from the back wall). Some period references indicate that there would have been a fireplace, or fire area inside the waterhouse to keep it heated although no evidence of that exists today.

Note that the bottom of the waterhouse door is higher (by about 3 feet) than the central door on the 1st floor level. That's because the waterhouse door would have led to a platform above the waterwheel, while the

main door would have led to the area below the husk. Both were there for the same reason, to be able to access the gearing – the waterwheel bearings needed maintenance and lubrication as did the gearing under the husk. These outside doors provided that access. Also note that the waterhouse door is located above the waterwheel raceway, there would have been a wooden landing with stairs leading to that door on the outside of the mill.

All photos of the mill post-date the building of the turbine hall. Those show the door converted into a window since, once the waterwheel was no longer needed, the waterhouse would have been removed. That removal would have also allowed the husk to be extended to west wall.

Husk – the heavy wooden foundation on which the millstones sit was much higher than our present husk, likely about 6 feet above the level of the first floor. This allowed for clearance for the shafts and gearing from the waterwheel as shown in Oliver Evans' guide. The husk may have been changed in 1837-38 when a 3rd run of stones was added. It may have been changed again in c.1861 when the turbines were installed (allowing for an expansion of the husk into the area formerly occupied by the waterwheel) and then lowered in 1922 (evidence for this date shown in Scheinmann), down to 1st floor level to make it easier for the main use of the mill at that time, the production of animal feed (the Champion Grinder was purchased for that purpose in 1923).

Research evidence and the Oliver Evans design point to the original husk elevated to just below the 2nd floor (there was originally no floor over the area of the original husk – we can see that from the 2 storey high support column and the positioning of the floor beams). However we have no direct archaeological evidence of the exact positioning of the original husk (other than the apparent lack of a 2nd floor in that area), but it would have been 5 to 6 feet or so above the present first floor level (Evans' shows three steps going from the husk up to the level of 2nd floor). With the axle of the waterwheel at about 94.0 MASL and the bottom of the present 1st floor at about 94.8 or so, there would have been no room for the required gearing if the husk was at first floor level. So not a mystery that it was elevated (it must have been), just a little bit of a mystery regarding its exact elevated position.

Turbines: we (DMS) have used a date of c.1861 for the building of the turbine hall and the installation of turbines. Some people have suggested they may have been installed later. The date is based on the 1861 census which shows a large amount of work done on the mill - $20,000 which is in the order of $700,000 today. So a build date of the turbine hall and installation of the turbines is assumed to be 1861.

We do know that the particular Swain turbine design that we have was invented in 1855 and the conservation report notes that the early 1860s would have been an early installation date for those. Although there is reasonable evidence based on a very large expenditure by Denaut on the mill in 1861, we cannot be 100% sure, so c.1861 is generally used.

Of note, one of the few known errors in Wade Ranford's book is that he included the building of the turbine hall and the installation of the turbines as part of the £2,600 1851 work, which is impossible.

Turbine Tailrace: William Trick (Conservation Report) questioned the open archway for the turbine tailrace – according to Trick it's a configuration better suited for a waterwheel than it is for a turbine. He suggested that the turbine hall might have originally been built for a waterwheel with the turbines added later. An internet search shows that an arched tailrace was common in old turbine stone mills, usually partially sealed with wood. The reason for this was to create a secure opening in the stone wall, masons of the period appeared to be most comfortable building arched opening to prevent the collapse of the opening. Later steel supports became more common, allowing for a wide low horizontal opening without an arch.

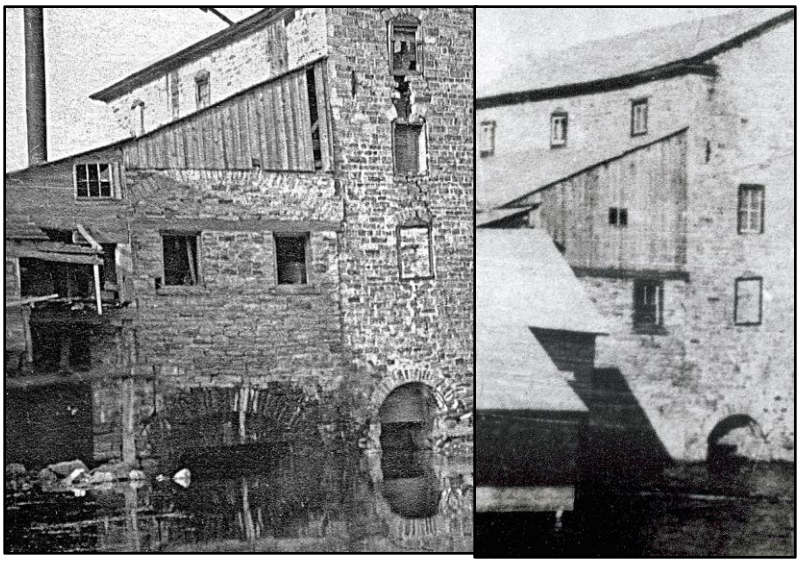
Waterwheel to Turbines: How was the switch made? Something that is currently niggling your author is that the two earliest photos we have of the mill, the R.E. Denaut early 1870s photo and the c.1880 photo, both appear to show an open trash grate in front of the waterwheel raceway (in addition to the turbine raceway). These are time periods when the flow of water should only have been through the turbine hall. So why is there still a trash grate in front of the waterwheel raceway, 20 years or more (in the c.1880 photo) after the mill switched to turbine power. It implies the waterwheel raceway was still open. There may be a

perfectly reasonable explanation for this (including misinterpretation of the photos) – but none jump to mind at the moment.

Turbine Hall Design: a review of the small collection of heritage photos we have shows that the upper walls of the turbine shed were changed in the early 20th century. What we see today is not exactly what Walter Denaut built.

The reference point for the change is the wooden lintel above the two windows. Originally there was stonework extending above lintel that which incorporated an arch into the design.

From what can be seen in the photo it doesn't appear to be a supporting arch, but rather a decorative arch, perhaps designed to mirror the turbine arch below.



Turbine Hall South Wall – c.1900 & c.1930

The photo on the left, taken about 1900 (you can see the steam boiler stack in the photo), shows a stone arch design in the stonework above the wooden lintel. In the photo on the right, c.1930s, you can see that this stonework has been removed the wooden side of the roof dropped down to the lintel. This is the way it remains today.

We often contrast the quality of the stonework between the mill and the turbine hall and while that is quite true, the mill exhibits better quality stones, it does appear that Denaut did put some effort into making the turbine hall look attractive as well as functional. The roofing woodwork in the c.1900 photo may date to later, since it comes down to cover part of that decorative arch – something that would not have been done in c.1861.

So, the mystery is what did the original turbine hall look like?

Waterwheel and turbine raceways: We assume that when Walter Denaut switched to turbine power c.1861 that he removed both the waterwheel and waterhouse and extended the husk over the area previously occupied by the waterwheel and waterhouse. While those assumptions are likely true, a bit of a mystery is with regard to the waterwheel raceway, which appears to have been left open. Even in the photos above, we can see that the tailrace of the waterwheel raceway has been partially blocked, in fact to the same level as the turbine raceway. With the turbine tailrace, this blocking up the upper half was to force the water down through the turbines rather than just flowing over the turbines. It is likely that there was an opening between the wall of the turbine raceway and the waterwheel raceway which water could have passed through, but why not just block the entire waterwheel tailrace to force the water through the turbine hall (more power to the turbines). A logical reason for having the waterwheel raceway and tailrace open, assuming the absence of a turbine in the waterwheel raceway, is unknown.

Wrought Iron Shaft: We have 4 inch square wrought iron shaft that was found at the base of the turbine tailrace arch. It has been speculated in the past that this might have been the original waterwheel shaft, possibly made at the Lyndhurst Ironworks, and then later repurposed for use in the turbine tailrace. This speculation is incorrect, the 1810 mill would not have used such a shaft, certainly not for the waterwheel which had a large wooden central shaft. The most likely explanation is that it was acquired by Walter Denaut at the time of building the turbine hall. Wrought iron was manufactured throughout the 19th century. So, while the origin of the shaft itself is a bit of a mystery, it does appear to be related to the c.1861 turbine hall, not something that was ever in the 1810 mill.

Internal Building Configuration: As noted in the Mill Building section, the internal configuration of the mill has undergone many changes. Different floor configurations, changes to the husk elevation, changes in support column positions, many different chute configurations – it was a dynamic building as it was adapted to different systems. The conservation reports note some of these with speculation on why certain changes might have been done – but for the most part we don't know the exact sequence or extent of these changes – just that many changes were made over the years. You'll see lots of evidence of that in the support beams, spots that clearly show where former columns, now long gone, were mortised into the beams. In one spot we even see a large section of support beam removed, presumably to provide room for some new equipment (see if you can find that location in the mill). We have some problems though, during early, undocumented rescue conservation (1972-75) a large part of the first floor was repaired/replaced, obscuring evidence of the location of original chutes and equipment.

We have some speculation by André Scheinman (1996 conservation report) about some configurations, but we don't have a well documented chronology of all the changes that have taken place inside the mill. An attempt was made for this 2nd edition of the interpretation manual to reconstruct the floor plans for the 1810 mill. But much of this is based on applying the Oliver Evans' design to each floor of the mill. There are likely specific details (such as stair locations) that could be in error.

Original Process Flow: we have a pretty good idea of the general process flow from grain to flour since the mill was designed to follow the Evans' process. But, as noted in this guide, we only concentrate on the general vertical process flow. In reality there would have been conveyors and even descenders in the mill to move the grain and flour to specific locations. For instance, on the 3rd floor, conveyors were most likely used to move the cleaned grain into various garner (storage) bins. In addition, it is likely the original mill reground the middlings since that was common practise in that era. That would have involved some system to feed the middlings back into the grinding process. But how was the mill set up to do that?

In the creation of the 1810 floor plans, certain decisions were made based on the Evans process, but which go counter to what was seen later in the mill. An example is a single set of flour elevators since that was in the Evans design.He used conveyors below the millstones to bring the flour to a single elevator to take it to the hopper boy. However, later we see that there were two sets of elevators, one for each set of millstones. Was that a later change or original to the mill? We simply don't know.

How exactly did the 1810 mill work, how was it all connected (all the power to those machines was the direct connection of wooden shafts and wooden gears). We know the general configuration but the exact configuration of the early mill remains a mystery.

Production: How many barrels of flour a day did/could the mill produce? No records of early production have been found. Of the known records, peak production was in 1861 with the production of 6,000 barrels of flour. But even that doesn't tell us daily production capacity since we don't know how many operating days that represented. You'll find speculation about this in *"Building the 1810 Old Stone Mill in Delta, Ontario"* but as noted there, there are too many variables to make any kind of firm determination. It is worth considering though and may well be a question that is asked. It can be broken down into several components, all relating to how grist mills work:

1) How many days a year did the mill operate? There are two main variables, the availability of water and the availability of grain. There is no definitive answer for this, as a guess it would be some number under 200 days a year.

> **Grain:** The wheat harvest was in the fall, it's unclear exactly when in this area the planting of winter wheat (harvested in early summer) started (allowing for two crop harvests) – most likely much later in the 1800s. The 1810 mill would only have benefited from a single harvest period. Grain, if cleaned and dried, could be stored for some time, so the main determination is how much grain was available overall. We have no figures for early grain production in the region, the first full numbers come with the 1851 census. Early settlers in this area were able to clear their land at a rate of 2 to 5 acres per year (basically one guy with a felling axe). By 1812 the area had been settled for a maximum of 18 years, so it wasn't a huge amount of acreage under tillage. And only some of that was for wheat (although at the time, it one of the main crops). 1812 Kitley had 57 heads of families (~250 people). The population of Bastard was a bit higher.

> **Water:** the other issue is water, when the water was low, the mill couldn't operate. In some years that could have gone from mid-summer to mid-fall. The early 1880s photo we have shows the mill not operating, the water is too low. In low water, the mill would shut down until the millpond came back to a level in which the mill could operate. The miller would wait until there was sufficient water to run for at least a few days – he'd have experience with his millpond (in this case, Upper Beverley Lake), knowing the season and how fast the lake would replenish.

2) How many hours in a day did the mill operate? We generally assume that mill operated with a 10 hour day. Evans' describes an automatic mill working 24 hours a day (with a miller always on shift), but the Old Stone Mill didn't have the need for that. Plus operating during daylight hours was preferred since it was fairly bright in most of the mill (light into the mill is the main reason for all the windows in the mill) – candles and lanterns didn't produce a lot of light and could be problematic in some areas of the mill (fire risk due to grain and flour dust). It also likely operated 6 days a week (taking Sunday off).

3) How much flour could the millstones produce: This has several variables including how much wheat per hour could the stones grind and what percentage of fine flour was produced. We actually have a good answer for the latter question – it's a number in the 63% range. Our miller, Chris Wooding, has done this calculation. When he mills hard red spring Red Fife wheat (15.8% protein) he gets 62.5% fine flour, 25% middlings/shorts and 12.5% bran. Oliver Evans also did this calculation for various types of wheat (white and red). His numbers for fine flour ranged from 59% to 67% with an average of 63.3% - almost exactly what Chris gets with his Red Fife. To throw a monkey wrench into this is that Evans recommended regrinding the middlings, if that was done, part of the 25% middlings/shorts would be converted to fine flour. So that might up our 63% to 70% or more.

If we assume 63%, then 5.2 bushels of wheat would be required to produce 1 barrel (196 lbs) of fine flour. If we assumed 70%, then only 4.7 bushels of wheat would be required per barrel of fine flour.

So then we have to look at how much can be ground per hour. Chris Wooding has our current numbers. With our stones rotating at about 92 rpm, he can process 150 lbs (2.5 bushels) of wheat per hour. Keep in mind that Chris' main aim is to produce top quality flour, he wants a proper grind without heating the flour, hence a slow rotation rate and slow rate of feed. When we look at period (1812) mills, the stones rotated faster, but we don't know the exact number. A common number for 4 foot stones is 120 rpm (Evans used 97 rpm for a 5 foot stone, 4 foot stones could be rotated faster since they didn't weigh as much). It was up to the miller, it depended on the type of wheat he had (how hard), the type of millstone, the dressing condition (how sharp) of the millstone and the quality of flour being produced. The few numbers seen in the literature range all over the place, from 5 bushels per hour to 10 bushels per hour. If we assume 7.5 bushels per hour, then with a 63% percent return, each set of stones would make about 1.5 barrels of flour per hour. With 2 stones in operation we'd get, 3 barrels per hour, or 30 barrels in a 10 hour day. But it's a lot of assumptions (hourly production, hours in a day, were both sets of stones always operating together - ??)

Production Answer: As seen from the above, there is no definitive answer. We know the mill operated with 2 runs of stones (assessed for 2 runs), and if both of those were used at the same time, we might assume a production rate in the 20 barrel per day range with a likely maximum of 30 barrels per day. Those would be the ballpark numbers.

People: we have the basic information about the mill ownership (see Mill Owners in the Chronology section), but there are still many outstanding questions. What was the business relationship between William Jones and Ira Schofield as it related to the mill? Who were the actual people that built the mill? These and many other people questions have been lost to history. The one name that may have a bit of credibility is "the great-grandfather of L. Hill" who worked as a mason in building the mill – we don't have his name (yet), but we know that L. Hill is Leonard Hill, born in 1877 (and right now it's leaning to a great-grandfather on his maternal side).

William Jones and Ira Schofield – as noted previously, we don't know the exact relationship between the two, or their exact involvement in building the mill. At the top of the main door there appears "William &" with the remainder painted or washed out. Maybe William & Ira? – with Ira removed when the partnership dissolved in about 1818? Another mystery.

Iron in the mill – are there any iron items in the mill that were forged at Lyndhurst? In a letter (c.1815) William Jones wrote about the furnace at Lyndhurst and noted "Likewise the Wrought Iron Works were made to produce 4 [hundredweight] per Day consisting of bar Iron, Mill Irons, Plow Irons &c." (Lockwood, p.66). Note the reference to mill irons, although a caveat with those is that "mill irons" generally referred to ironwork required for a sawmill, not for a grist mill. The foundry burnt down in 1811 which was the same time the Old Stone Mill was being built. They could have sourced iron items for the mill from the foundry in 1810. So there is a likelihood that some of the iron in the original mill, perhaps some of the original nails that still exist today, or even the fittings for the main door, could have come from the Lyndhurst foundry. But at the moment that is purely speculative.

Quarries – where were the stones for the Old Stone Mill quarried? There are lots of anecdotal stories regarding this, it's uncertain which, if any, are true. What we do know is that stones that make up the mill are predominantly Potsdam sandstone, plus some local "marble" (crystalline limestone) used as corner pieces. Potsdam is defined as a geological age, generally mid to late Cambrian, the rocks in this area about 485 million years old. They lie uncomfortably on much older pre-cambrian rocks, that is, they were deposited (as shallow marine sediments, beach sands and such) on top of much older rocks that had undergone hundreds of millions of years of erosion. They are made up of many depositional layers, some of those layers are better than others at forming building stones. So while there is lots (and lots) of local Potsdam sandstone, layers that contain stone of building quality are much rarer.

We can see that the masons were not overly selective, although the stones in the original Old Stone Mill are of better quality than those used for the turbine hall. We do have a bit of clue, many of the stones contain trace fossils, or more correctly traces of the tubes left behind by worm like creatures. A geological tour guide describes these as "the best array of Potsdam trace fossils available anywhere" There are vertical tubes known as Skolithus and U-shaped burrows known as Diplocraterion visible in many of the stones. Since you can tell the orientation by the shape of the tubes it was noted that many of the stones in the mill are upside down in terms of their original orientation. So the original quarry (or quarries) would have contained abundant stones with these fossil traces.

One previously suggested location is Willow Mountain, at the north end of Lower Beverley Lake. The lake is surrounded by older pre-cambrian rocks which also make up Willow "mountain", so while that could have been a location for some of the marble, it could not have been a location for Podsdam sandstone.

One suggestion, which may well hold truth, is that it was near Philipsville, specifically in the exposures of Potsdam sandstone along Cliff Road. That location is only 3 km away from the mill and the main road (CR 42) existed at that time. So that's a real possibility. But it hasn't been confirmed (ground truthed).

Millstones: What type of millstones were first used in the mill? Were they French burrstones? Did Jones and Schofield re-use the 2 sets of stones that were in Abel Steven's mill (bought by Jones in 1808)? Even if the Stevens' mill burned, the millstones might have survived. Millstones were often reused (they were very valuable). It seems likely that given the scale of the stone mill and it purpose as a merchant mill (requiring high quality flour), that French burrstones were used. We know that granite stones were also used, but they may have come later when grinding softer materials (corn, oats) for animal feed became common (burrstones are the best for wheat).

Were the millstones completely abandoned after the roller mills were installed? We do see photos taken in the 1900-1905 period that show millstones sitting outside the mill (presumably no longer in use). Gord Grey, who worked for Hastings Steele, in an oral interview in the 1970s (transcribed by Kim Proud) said that he remembers the last set of stones to be in place, he describes as solid rock bedstone (a granite stone) with a sectioned banded stone (French burrstone) as a runner stone. He then goes on to say that "they never ground any in my time there with the stones." In the same interview, Grey says that he remembers Hastings Steele selling a French burrstone (an iron banded stone) to someone in Newboro.

Blacksmith's Shop (former Drive Shed): there have been mysteries here, several solved, several remain.

The original mystery here is the construction of the original hall, what we are now calling “Denaut Hall”. A mystery remains as to its exact date, but not to the sequence of construction. All evidence points to it being purpose built in one go with a strong stone foundation built to support the upper brick hall. So, while the two types of construction look different, they are in fact purpose designed to work together. We see the exact same design, but made from wood, in later community halls in the township, a hall above an open carriage shed. The carriage shed was primarily for guests to the hall.

We also know that Denaut liked to use brick. He replaced the original wooden spacers between the top (lintel) of the windows and base of the arch (voussoir) in the Old Stone Mill with brick (visible in all period photos of the mill). The addition to his home, Denaut Mansion, was done in brick.

As far as date goes, it shows up as a “hall” on Walling’s 1861-62 map of Delta, so it existed when that map was originally created (late 1850s or 1860). But when in the 1850s did Denaut build that hall. That remains a mystery.

The other mystery is what happened with this building in the 20th century? What we know has been detailed in the Blacksmith’s Shop write-up of this interpretation guide. Our best guess at the moment is that Steele sold the building in the 1920s at which time it was repurposed as a Garage and Blacksmith’s shop with the addition of a full thick cement floor and forge. We see this in photos, with c.1900 photos showing a solid stone foundation (no windows) and then photos that date to the 1930s showing that windows have been put into the back of the stone carriage shed portion of the hall. Unfortunately we don’t have an exact date on the photos – some are attributed to 1930. So it remains that the sale by Steele and the conversion into a garage and blacksmith’s shop happened in the 1920s.

We also don’t have an exact date to when then owner Gordon Gray tore down the brick hall upper storey of the building, replacing it with a half upper storey that exists today. We peg that as “the early 1960s”, but don’t have a specific demolition and rebuild date.

If you know the answer (full or partial) to any of these mysteries, please let us know so that they can be incorporated into the next version of this manual.

Feel free to list your own mysteries and don’t hesitate to ask questions to any of the DMS history “experts” – we won’t be offended. These might be avenues for future research.

List your history mysteries here:

A FEW GOOD NUMBERS

Location	**MASL***	**FASL***
Upper Beverley Lake	94.53	310.1
Current Mill Pond	93.12	305.4
Lower Beverley Lake – post-Lyndhurst dam (current level)	91.82	301.2
Lower Beverley Lake – pre-dam minimum (bedrock above rapids)	90.50	296.9
Waterwheel Headrace bedrock high	92.26	302.6
Waterwheel Tailrace bedrock high	91.30	299.5
Turbine Headrace bedrock high	92.90	304.8
Turbine Tailrace bedrock high	91.20	299.2
Bedrock south of mill tailraces (about 2 m south)	90.00	295.3
Wheel-pit depression (bottom)	90.46	296.8
Wheel-pit length (from gate/support timbers in raceway to south wall)	4.03m	13.2ft

* MASL=metres above sea level. FASL = feet above sea level

A few more numbers:

Upper Beverley Lake level to current millpond level: 1.41 m (4.62 ft)
Upper Beverley to Headrace Bedrock: 3.13 m (10.27 ft)
Headrace to Tailrace difference in elevation: 0.96 m (3.15 ft)

Historic Lower Beverley water level at base of mill: 90.50 masl low to 91.85 masl high

Postulated water wheel axle = 94.53 masl - Lowest possible = 93.70 masl (Moore, p.29)

Head of Water – the maximum head which is the level of Upper Beverley Lake (94.53) to the bedrock in the tailrace (91.30) is 3.23 m (10.6 ft). But that maximum head is unlikely, the depth of water over the tailrace is presently 0.52 m (1.7 ft) and that would be the case as long as a dam at Lyndhurst was present. Today there is a 2.7 m (8.9 ft) difference between the two lakes. A “best guess” of a net head of about 2.1 m (7 ft) is generally assumed. A 1949 letter to Steele about new turbines used a net head of 7 feet. The placement of turbines (c. early 1860s) is consistent with the current tailwater level (the current level of Lower Beverley Lake)

Size of the Old Stone Mill (numbers from conservation reports and direct measurements)

Location	**MASL***	**FASL***
Floor – Turbine Hall	95.33	312.76
First Floor Mill	95.36	312.85
Second Floor	98.29	322.48
Third Floor	101.0	331.35
Attic Level (approx)	103.8	340.55
Eaves - bottom	103.5	339.57
Peak of Roof	106.5	349.41
SW Corner – base near tailrace exit	91.80	301.18
NW Corner – base near waterwheel headrace	92.26	302.69
	metres	**feet**
Front of mill – horizontal - exterior	15.40	50.40
SE Corner (front left) – height to eaves	8.24	27.03
NE Corner (front right) – height to eaves	8.00	26.24
South side of mill – horizontal – exterior	10.87	35.66
North side of mill – horizontal – exterior	10.77	35.28
SW Corner (rear left) – height to eaves	11.70	38.39
Height of Building – front face – S Corner (from sidewalk)	11.65	38.22
Height of Building – front face – N Corner (from sidewalk)	11.08	36.34
Height of Building – 1st floor to peak of roof	11.14	36.55
Height of Building – back of building – foundation base to peak	14.70	48.23

* MASL=metres above sea level. FASL = feet above sea level

OUR NATIONAL HISTORIC SITE DESIGNATION

In 1970 (listed as January 1, 1970) the Old Stone Mill, including the turbine hall, was designated a National Historic Site of Canada (NHS). We received our NHS plaque, affixed to the front of the mill, in 1973. The NHS designation means that the site is considered to be of national historic significance.

It should be noted that this is simply a designation, recognition of the heritage value of the site to Canada. Contrary to popular belief, our NHS designation doesn't come with any government support, the Delta Mill Society has to self-fund the preservation, protection and presentation of the Old Stone Mill. There are many NHS sites owned by the Federal government, managed Parks Canada (supported by our tax dollars), but most of the NHS sites in Canada are not. As of 2016, 171 sites were administered by Parks Canada, 976 were in the hands of other levels of government (i.e. municipalities) or privately held (i.e. Delta Mill Society). With the privately held NHSs, it is the keenness and hard work of the volunteers in the organizations that own these sites that keep them protected and presented. The Delta Mill Society is a shining example of such a private organization (see "Commemorative Integrity" following this section).

The following is our official NHS designation:

Description of Historic Place

The Old Stone Mill National Historic Site of Canada is a three-storey high stone, grist mill comprised of an 1810 mill and an attached turbine shed, built in the 1860s. The Old Stone Mill is a water mill located on Delta Creek in the small village of Delta, nestled between Upper and Lower Beverley lakes, in the Rideau Lakes area north of Kingston. The formal recognition refers to the mill structure including the turbine shed.

Heritage Value

The Old Stone Mill was designated a national historic site of Canada in 1970 because:

- it is one of the oldest surviving mills in Ontario;
- it is a fine example of early Canadian architecture;
- it is a reminder of the pioneer industrial development of eastern Ontario.

Built in 1810 by William Jones, the Old Stone Mill in Delta is the earliest surviving stone mill in Ontario. The mill features high-quality stonework and was technologically advanced for its time. The building's height, scale, and roof truss configuration were designed to accommodate the Oliver Evans automatic milling system, a late-18th-century innovation that improved the movement of grain through mill buildings.

Typical of early-19th-century mills in eastern Ontario, the Old Stone Mill played an important role in the settlement and economic development of Leeds County. The existence of the mill encouraged agricultural settlement in the area and led to the development of the village of Delta. The mill was in continuous use from 1810 to 1949. The replacement of the original waterwheel with cast-iron turbines in 1860 (housed in a new turbine shed), and the instalment of roller-milling machinery in 1893, showed the mill's attempts to remain commercially viable in the late-19th century.

Sources: Historic Sites and Monuments Board of Canada, Minutes, February 1970; Commemorative Integrity Statement, January 1999.

Character-Defining Elements

Key elements contributing to the heritage value of this historic site include:

- its location;
- its three-storey, rectangular massing [we're not sure why three-storeys is used, the "attic" was floored and used, so it is in fact a 3 ½ storey high building]
- its composition of five-bay façades with three-bay end elevations;
- the industrial design elements related to the automatic milling process, including the three-storey height of the building, the raceway, window arches, and the scale and configuration of the floor;
- the surviving original structural and ornamental details, interior fittings, and finishes;
- the elements of its layout which relate to the early industrial use of the building, including its open spaces, and circulation patterns;
- its masonry construction with exterior walls of uneven coursed local stone with heavy stone corner quoins;
- its neo-classical, exterior detailing, including its bays trimmed with graceful, segmentally arched, stone voussoirs, and the return eaves at gable ends;
- its roof truss system;
- its virtually intact upper floor;
- the remaining mill workings and machinery including the 1869 [should be 1860 – presumably a typo] turbine drive system;
- any archaeological remains, including the basement, raceways and areas adjacent to the foundation of the structure relating to the early 19th-century occupation and operation of the mill;
- any vestiges of and signs of wear from 19th-century milling machinery.

COMMEMORATIVE INTEGRITY

A concept, developed for Parks Canada's administration its National Historic Sites, is Commemorative Integrity (CI). It's a bit of an ethereal concept relating to the health, wholeness and honesty of the commemorative elements of the site. Those would include the heritage values and character defining elements of the site.

A national historic site possesses commemorative integrity when:

- the resources directly related to the reasons for designation as a national historic site are not impaired or under threat;
- the reasons for designation as a national historic site are effectively communicated to the public, and;
- the site's heritage values (including those not related to the reasons for designation as a national historic site) are respected in all decisions and actions affecting the site.

The heritage values and character defining elements include both the built heritage (i.e. buildings) and the landscape those buildings are positioned on – both speak to the heritage of the site – why the building is where it is and why it looks like it does. Part of your job as a tour guide is to communicate that to the public and by doing so you're helping to maintain the Old Stone Mill's commemorative integrity.

What counts when it comes to CI is not what is written but what actually gets done and this is where the Delta Mill Society has always shined brightly, its volunteers following CI principles even if they've never heard the term. We've been presenting the Old Stone Mill to the public since 1985 (except for the time it was closed for restoration). We've raised hundreds of thousands of dollars in order to do restoration, purchase equipment and develop interpretive signage and exhibits. We maintain a collection of artefacts and document following proper curatorial principles.

Bottom line with all these wonderful words and heritage concepts as they relate to the OSM is that it's not what you say, it's what you do, and the DMS have always been, and will continue to be, a group of doers – preserving, protecting and presenting the Old Stone Mill NHS.

OLD STONE MILL – Statement of Significance

Note: this was written a few years ago and contains several errors of historical fact (see if you can find them all) and is too building architecture centric when it comes to character defining elements (our NHS designation has a much better list). Do NOT use this for interpretation - kww

A requirement for having the Old Stone Mill listed in the Canadian Register of Historic Places is to have a Statement of Significance, and the following is what was written for the Old Stone Mill:

DESCRIPTION OF HISTORIC PLACE

The Old Stone Mill is a three and a half-storey rectangular stone structure with classical proportions and a long facade, located on Main Street in the Village of Delta. Currently owned and operated by the Delta Mill Society which has conducted a number of restoration projects and sponsored a series of public exhibitions.

The Township of Bastard and South Burgess recognizes the heritage values of the Old Stone Mill in Delta in By-law No. 477.

HERITAGE VALUE

This stone mill was constructed by 1810 under the ownership of William Jones. It stands as one of the oldest remaining mills in Ontario and is a lasting reminder of early settlement and pioneer architecture in Delta. Serving as the focal point for economic development in Delta in the early 19th century, the mill employed the most advanced mill technology of the time, using Oliver Evans' book on automatic milling, published in 1795, as a guiding source for operations. The mill soon became the centre for local industry in the Village of Delta and surrounding areas.

Construction of the mill began shortly after the first settlers arrived in the Delta area in 1796. Between the late 1790s and completion of the mill in 1810, a number of businesses and services in Delta were well underway. During this time pioneer trades and crafts, general stores, a variety of smiths, hotels, a tannery, distillery, foundry, brickyard, cheese factory and even a hospital emerged. This development was centered around the Old Stone Mill and its accompanying dam on Upper Beverley Lake. The technological innovation used at the Old Stone Mill and its resulting economic stimulation served and impacted the nearby villages and communities such as Chantry, Elgin, Forfar, Harlem, Jones Falls, Lyndhurst, Morton, Philipsville, Plum Hollow, and Portland. The Old Stone Mill also spurred the development of a local distillery in the Village of Delta, which produced 15,000 gallons of whiskey and subsequently became the site for the first temperance sermon in Canada.

The Old Stone Mill embodies social and cultural values as it has been documented as a place that cultivated community congregation through the adjacent horse shed and concert hall. The adjacent horse shed served to house the horses of patrons while they shopped at the mill. A second-storey room in the shed was used as a courthouse, school, and meeting room. This meeting place allowed patrons an opportunity to discuss the affairs of the day, both local and global. The concert hall located adjacent to the mill also served as a courtroom and a meeting place for the township council. This concert hall is now operated as the Museum of Industrial Technology.

A landmark for pioneer architecture, the Old Stone Mill is a fine example of an early Georgian Industrial architectural style and is reputed to be the second oldest building of its type in Ontario.

Sources: Township of Bastard and South Burgess By-law No. 601; Diane Haskins, My Own Four Walls: Heritage Buildings in Bastard and South Burgess Township, Council of Bastard and South Burgess Township (1984); Rideau Lakes L.A.C.A.C, "Heritage Tour of Delta" (2002)

CHARACTER-DEFINING ELEMENTS

Character defining elements include the:

- stone exterior
- low-pitched, gabled roof covered with wood shingles
- projecting eaves and verges along the roofline
- segmental, double-hung windows with a twelve-over eight panes
- stone voussoirs above the windows and doors
- plain wood trim around the windows and doors
- recessed doorway in the centre of the front facade
- segmental structural opening on the doorways on the front facade

A CHRONOLOGY OF DELTA and the OLD STONE MILL

- **1793** – Abel Stevens journeyed from Vermont to Canada and explores the area around Plum Hollow Creek in June. He petitions the government for land in that area in December 1793. He might have known about the area from his older brother, Roger Stevens, who settled on the Rideau River near Merrickville in 1790 and built the first mill there.
- **February 1794** – Abel Stevens together with six families (his own and 5 others) journey from Vermont to the Delta area. They build a rough road from Brockville to the Plum Hollow area for their oxen drawn wagons. Stevens is said to have had a yoke of oxen, a cow and a horse along with his family and household possessions. He also brought in mill irons. The families settled on the upper parts of Plum Hollow Creek. Stevens petitions for all the land around Delta. They are squatters, surveys have yet to be done, no land has been granted. Stevens is after both the land around Delta, including the water power of the rapids, plus, by his 3rd 1794 petition, the Great Falls at Lyndhurst and the iron deposits in the area.
- **Summer 1794** – surveyor William Fortune runs first survey lines into area what was to become Bastard Township.
- **March 1795** – Stevens lists names of 24 heads of families who he has settled in the area (to reinforce his petitions for land grants). His is identifying his location as Stevenstown in these petitions (in reference to the township, not a village). He notes in some petitions that he has brought in “mill irons” and is ready to erect a mill.
- **1795** – surveyor Lewis Grant does initial surveys in the area (from Gananoque up to Sand Lake on the Rideau).
- **1796** – lot and concession surveying of Bastard Township complete enough to allow land grants to be issued.
- **1796** –Stevens is granted land on June 2, 1796 which includes the rapids between Upper and Lower Beverley lakes (he was granted 5 lots; 3 in area of Delta, 2 over the upper portion of Upper Beverley Lake, which nominally would have been 200 acres each, 1000 acres in total – but the land grant shows 700 acres due to some of the land being covered with water). At some point after this, Abel Stevens, or his cousin William Stevens, build a wooden sawmill at the rapids. The mill is noted in Grant’s 1797 survey as “Wm. Stevens Mill”.
- **1796 to 1798** – at some point in this time period Stevens has a road built from Delta to Lyndhurst (he’s still after the rights to the Great Falls and iron deposits near Lyndhurst).
- **1797** – Lewis Grant completes his survey of Bastard Township and produces a map – it is the first known map that shows a mill in Delta.
- **1797 to 1803** – at some point Stevens adds a grist mill to his sawmill. A 1799 deed references “Abel Stevens & Nicholas Mattice mills” (plural mills). Mattice was either a business partner or lease holder with Stevens.
- **1798** – Abel Stevens and Mathew Howard have a road built from Lyndhurst to Kingston Mills (to the front road leading to Kingston Mills). This is part of Stevens’ continued effort to get the rights from the government to establish a foundry at Lyndhurst.
- **1803 to 1808** – Stevens’ mill is leased to Nicholas Mattice. Shows as a grist mill with 2 runs of stones and a sawmill.
- **1808** – there are now two separate mills operating in Stevenstown. The second is owned by Abel Stevens Jr., on property his father sold to him in 1799 – likely located near Hicock pond on Foundry Creek (aka Cowans Creek, aka Robertson Creek).
- **June 1808** – Abel Stevens sells his wooden mill(s) and surrounding property to William Jones for £375.
- **1809** – Stevens’ old grist mill, now Jones’ grist mill, is shown being operated by Ira Schofield.

- **1810** – neither Jones or Schofield are shown operating a mill – however they are shown as operating a Merchant Shop & Storehouse. Speculation is that the old Stevens' wooden mill burned down sometime prior (maybe late 1809) and this "sparked" the building of the Old Stone Mill. Anecdotal history (Hiel Sliter) has the Stevens' wooden mill burning down twice.
- **March 1810** – **construction of the Old Stone Mill begins.**
- **1811 –** construction of the stone mill is likely completed sometime this year**.**
- **1812** – the newly constructed stone mill opens – it has 2 runs of stones and a sawmill (wooden structure behind the mill – needed to be adjacent to get power from the waterwheel in the mill). Ira Schofield is listed as the miller (Jones served with the militia and may have been involved with the war that year – he also got married that year).
- **1812 - 1817** – millers show as either Ira Schofield (1812), William Jones and Ira Schofield (1813-15 & 1817) or William Jones (1816).
- **c.1815** – a map shows the mill's location as "Jones & Schofield"
- **1816** – Stone Mills is referenced in a letter as having about 20 houses – an 1816 map shows 10 buildings in the "village," including the Old Stone Mill.
- **1817** – in the Statistical Account of Upper Canada with data for Bastard Township in 1817, the mill is described as *"unquestionably the best building of the kind in Upper Canada"* That same account shows, that in addition to the stone mill, the village of Stone Mills had "one carding machine, one saw-mill, three stores, and one blacksmith's shop".
- **1818 - 1819** – miller shown as James Schofield Jr.
- **1820 - 1825** – miller shown as William Jones.
- **1826** – not operating.
- **1827 - 1828** – J.K. Hartwell & Schofield (James Jr.?) millers.
- **1828** – a map shows that "Beverly is composed of abt. 30 houses".
- **1829** – ? (no info).
- **1830** – not operating.
- **1830** – marble cutting may have started near this time by Christopher Allyn who moved to Beverley c.1830. The cutter cut marble blanks for use as tombstones. The marble cutter was located in the wooden building housing the sawmill (see note for 1835).
- **1831** – William Jones dies. Mill & property goes to his brother Charles Jones who then sells it (4 shilling) to William Jones' widow, Amelia. Amelia sells it to **Henry Jones** (deed for that, £500, not done until January 1836).
- **1832 - 1834** – mill leased to Edward Matson by Henry Jones. Shown only as grist mill (no sawmill listed for Matson – the sawmill was likely leased separately as the 1835 sale notice indicates).
- **1835** – mill put up for sale by Henry Jones – a sale notice dated Sept 17, 1835 states in part *"The mills consist of a Stone Grist Mill, 60 by 40 feet, three stories high, with one run of Stones in operation, and sufficient room to place one or two run more;- a large wooden building in which there is a Saw Mill, a Mill for cutting, and polishing marble, and a Carding Machine:- with Mill Yard and out Buildings; the last mentioned Mills are rented at £50 per annum, the lease expires on 5th March 1837; the Grist Mill is not at present leased or occupied; …"* It is presumed that this is origin of the incorrect dimensions of the mill unless they were including the width of the buffer wall (~7') – the stone building is 50' x 35'.
- **1836** – mill purchased by **James and Amelia Macdonell** (Amelia was the widow of William Jones). Not operating that year.
- **1837 – 1847** – operated by **James Macdonell** with 2 runs of stones, except for 1838 & 1839 when he had 3 runs of stones. Sawmill reappears in the records in 1844 (likely leased to someone else prior to that).

- **1848 – 1849** – James dies in 1847 and his wife **Amelia Macdonell** continues to operate the mill.
- **1850** – **Walter Denaut** purchased the mill in February 1850. He pays of the mortgages on the mill and starts extensive repairs. The mill in 1850 is shown with 2 runs of stones and a sawmill.
- **c.1850s** – Denaut creates Miller's Room on 2nd Floor.
- **1850s** – Denaut builds a **community hall**, a brick hall on top of a stone carriage shed foundation. No exact date, but it shows as a "hall" on Walling's 1861-62 map of Delta.
- **c. 1861** – Denaut builds the **turbine hall**, installs **two 48" Swain turbines** (first designed in 1855) and rebuilds the **wooden sawmill** onto the back side of the turbine hall (on top of the bywash). The sawmill is powered by the downstream turbine. We use the 1861 date since the census that year shows Denaut spending $20,000 on the mill – a great deal of money in those days.
- **c.1870s** – a **smutter** may have been added to the mill during the Denaut era (uncertain).
- **1889** – **Walter Denaut dies** (March) and the mill goes to his wife Carolyn. His son, **James L.S. Denaut** operates the mill.
- **1893** – **George Haskin** buys the mill for $6,000 on October 5, 1893.
- **1893 - 1899** – likely at some point in this time period, George Haskin installs the **Roller Mill**. The NHS designation uses 1893 as the installation date.
- **1899 - 1903** – Haskin installs and operates the mill with a **steam boiler** (located in the north end of the turbine hall). It was likely supplemental power to the turbines (i.e. in times of low water).
- **1904** – for reasons unknown the **steam boiler is removed** at about this time.
- **1913** – **Hastings Steele** and **James Huffman** (brother-in-law) purchase the mill for $8,000 on March 14, 1913.
- **1914** – Steele's partnership with Huffman is **dissolved** (apparently Steele bought out Huffman).
- **1914 - 1921** – Steele is in partnership with **Omer P. Arnold**
- **c.1922 –** the husk is lowered, rebuilt at the level of the first floor to facilitate the production of animal feed.
- **c.1923 – a chopper** ("Champion Grinder") to make animal feed is installed. This may have been a second grinder since a sketch of the 1930s mill shows a "plain grinder" and the "champion grinder."
- **c.1920s –** old **Denaut Hall** (then being used as a garage) is sold and a forge subsequently installed in it.
- **c.1920s – Salt shed** (to store salt for livestock) built between mill and drive shed.
- **1929** – Steele installs a **dynamo** in the mill when the Lyndhurst power plant is shut down by Ontario Hydro. Likely only lasted until Delta and Lyndhurst were connected to the Ontario Hydro grid (c. late 1929).
- **1939 - 1944** – **flour production ceased** in this period. The mill was producing flour in 1939, but no longer in 1944. Some use a date of **1942** (splitting the difference) as the end of flour production, but the exact year is presently uncertain.
- **1949** – **last year the feed mill and sawmill are operated**. Of note both were powered by the turbines which were still in operation. Steele continues to operate a feed store.
- **1960** – the **feed store is closed** and the **mill shuttered**.
- **c.1960** – **brick second storey of the old Denaut Hall is demolished** by owner Gordon Grey and replaced with smaller wooden frame second storey.
- **c.1960** – **salt shed** (between mill and blacksmith's shop) removed.
- **1962** – **new dam** built upstream of mill by MNR. Mill no longer used as a dam.
- **1963** – the old stone road bridge is demolished and replaced by current **concrete road bridge**.

- **1963** – **Hastings Steele deeds the mill, for the sum of $1, to four trustees**: Mildred Sweet, Albert Frye, Elizabeth Robinson, and Robert Tuck. Steele's wish was that the mill be preserved and become open to the public as a museum of milling technology.
- **1963 - 1972** – the four trustees remain owners but form an informal **Delta Mill Society**.
- **1968** – floor of **wooden sawmill** collapses – the superstructure of the sawmill appears to have been previously removed in the early 1960s.
- **1970** – The Old Stone Mill in Delta is designated a **National Historic Site of Canada.**
- **1972** – **"The Delta Mill Society" is incorporated** in Ontario as a non-profit organization and given charitable status on August 17, 1972.
- **1972** – on September 5, 1972, the **mill is deeded** from the original 4 trustees to the newly incorporated **"The Delta Mill Society"**. The incorporation allows work to start on rescue preservation.
- **1972-1975 – essential structural repairs (rescue preservation)** were carried out on the Mill - this project included general masonry repair, re-roofing with new cedar shakes, jacking of floors to level, replacement of windows, sash and glazing, and structural framing stabilization. Work on this started just after incorporation (Sept 1972).
- **1973** – The Old Stone Mill receives its **National Historic Site Plaque**. The mill is also opened to the public for the first time (1st floor of 1810 mill only) on that day.
- **1974-75** – MNR seals the old bywash with **concrete**. Part of buffer wall (in front of the turbine raceway) and all elements of original bywash (i.e. stop-log dam) are removed.
- **1978** – The Old Stone Mill is **designated under the Ontario Heritage Act**.
- **1985** – The Old Stone Mill NHS opened to the public as a museum of milling technology and industrial heritage.
- **1992** – The DMS purchases the **old garage** (formerly Denaut Hall) adjacent to the mill from Fred and Jane Gray for $22,000. The DMS renames this building the "**Drive Shed**" to reflect its purpose in storing agricultural machinery.
- **1994-1999** – **Extensive archaeology and research** is done in preparation for a large scale restoration program. Two archaeology reports and a conservation report are produced.
- **1994 (Dec)** – The DMS purchases the **Old Town Hall** from the Corporation of the Township of Bastard and South Burgess, for $12,000.
- **1999-2003** – **an extensive restoration program** is done on the Old Stone Mill costing $1,171,920 with Parks Canada contributing $466,000, the Province of Ontario $100,000 and the remaining $605,920 coming from the Delta Mill Society. Entire building stabilized, stonework redone, new timbers and flooring where required. Restoration work done based on 1996 conservation report.
- **1999** – The **Old Town Hall is turned into a museum** (Museum of Industrial Technology) while the mill is closed for restoration (exhibits in mill moved to hall).
- **2000** – The Delta Mill Society publishes a book ***"A History of the Old Stone Mill, Delta, Ontario"***, by Paul S. Fritz.
- **2004-2007** – extensive **interpretive signage** is added to the interior of the mill.
- **2006** – The Delta Mill Society published a book ***"A History of Grist Milling in Delta"***, by Wade Ranford.
- **2007** – a **wooden waterwheel** (electric sump pump powered) is installed in the mill (cost ~$13,000).
- **2008** – **period milling equipment** (a pair of burr millstones, vat and grain hopper, grain cleaner (Vac-A-Way seed cleaner), smutter and 14 foot long bolter) are purchased by the DMS from Rene Proulx in St. Sylvere, Québec (cost $35,000). DMS launches a "let's get grinding" fundraising campaign to get these installed in the mill by our 200th anniversary in 2010.
- **2009-2010 –** a new exhibit for the 3rd floor is designed and installed.

- **2010** – **a new husk is built** and **the millstones and bolter** (both electric powered) are installed. In October 2010 the mill makes its first stone ground flour in over 100 years.
- **2013 – The Old Town Hall** undergoes renovations ($104,000: accessible platform elevator, new washroom, commercial-grade kitchen and hall ceiling and floor renovations).
- **2017 –** The Delta Mill Society produces the document **"Tour Guide Manual and History of the Old Stone Mill NHS"** edited by Ken W. Watson and makes it available to the public as a free PDF (via website). 2nd Edition 2022.
- **2018** – The Delta Mill Society publishes a document ***"Building the 1810 Old Stone Mill in Delta, Ontario"***, by Ken W. Watson (as a book and a free PDF on website). 2nd Edition 2022.
- **2020** – **Stabilized the Accordion Lath & Plaster Ceiling** and **re-roofed the Turbine Shed**.
- **2020-2021** – the OSM, OTH and Blacksmith's Shop are **closed to the public due to the COVID-19** pandemic. DMS takes advantage of this to do maintenance work on the OSM, collections work (archives & artefacts) in the OTH and adding new interpretive signage and displays to the OSM.
- **2021-2022** – the DMS receives a $20,000 grant from the 5B Foundation (via the Township) for our project to convert the Drive Shed into a **public friendly Blacksmith's Shop**. The grant is topped up by a $20,000 donation to allow the project to proceed in 2022.
- **2022** – **a replica hopper-boy** is installed on the third floor of the mill near where the original hopper-boy was located.

THE MILL OWNERS

As previously noted, in some cases it's hard to distinguish an owner from a miller (sometimes one in the same, sometimes different) in the historic records. Thanks again to Wade Ranford for figuring this out. The section after this lists presently known owners and millers.

1810-1818: **William Jones** possibly with Ira Schofield. The business/owner relationship between Jones and Schofield is uncertain. Likely that Jones was owner with a business relationship with Schofield – but records are unclear. Schofield left Delta (moved to London, Ontario area) in 1818.

1818-1831: **William Jones.** Leased in 1827-28 to J.K. Hartwell and James Schofield Jr.

1831: **Charles Jones**, then to **Amelia Jones** then to **Henry Jones**

1832-1836 **Henry Jones**. Leased to Edward Matson from 1832-1834

1836-1847: **James and Amelia Macdonell** (Amelia is William Jones' widow – shown as Amelia Jones above)

1847-1850: **Amelia Macdonell** (a widow again)

1850-1889: **Walter H. Denaut**

1889-1893: **Carolyn Denaut** (Walter's wife) or **James L.S. Denaut** (Walter's son – appears that he was operating the mill in this period but it was likely owned by his mother)

1893-1913: **George Haskin**

1913-1914: **Hastings Steele** and **James Huffman**

1915-1921: **Hastings Steele** and **Omer P. Arnold**

1921-1963: **Hastings Steele**. He was assisted by his son, **W.R. Steele** in the 1920s & 30s.

1963-1972: **Mildred Sweet, Albert Frye, Elizabeth Robinson, and Robert Tuck** (as trustees)

1972-present: **The Delta Mill Society**

Owners and Millers

research by Wade Ranford, listing compiled by Ken Watson

Owner	Miller*	Dates	Notes
William Jones 1808-1811	--	--	Jones purchases land from Abel Stevens, construction of mill started in 1810, completed by March 1812
William Jones 1812-1831	Ira Schofield	1812	Jones got married that year.
--	Jones & Schofield	1813-1815	Mill operated under the partnership of Jones & Schofield (details and exact timelines unclear)
--	William Jones	1816	
--	Jones & Schofield	1817	
--	James Schofield Jr.	1818-1819	In 1818, Ira Schofield leaves the Delta area. In 1819 Jones mortaged the mill for £1,358 to his brothers Charles and Jonas Jones
--	William Jones	1820-1825	
--	none	1826	Mill idle that year
--	J.K. Hartwell & James Schofield Jr.	1827-28	Leased to James Schofield Jr. and later to J.K. Hartwell & Schofield
--	none	1829-31	mill appears to have been idle. Jones dies in 1831
Charles Jones Amelia Jones Henry Jones 1831	--	--	Mill goes to William's brother Charles. He sells it for a nominal sum to William's widow, Amelia. She sells it to Henry Jones for £500
Henry Jones 1831-1835	Edward Matson	1832-1834	Mill leased to Edward Matson
--	none	1835	mill dormant - put up for sale
James & Amelia Macdonell 1836-1847	James Macdonell	1837-1847	Macdonells purchase mill for £500. They immediately mortgage it for that amount to Alexander Grant. Amelia was William Jones widow. They add 2 additional runs of stones (later removed)
Amelia Macdonell 1848-1849	Amelia Macdonell	1848-1849	Amelia continues to run the mill after the death of James. Uncertain what help she had in operating the mill.
Walter H. Denaut 1850-1889	William Bush Charlie VanLuven	?	Denaut discharged three existing mortgages on the mill and in 1851, invests £ 2,600 (~$400,000 2022$)in repairs. It's unclear if Bush was the miller for the entire time of Denaut's ownership In 1861 Denaut invests $20,000 (~$700,000 2022$) builds the turbine shed and installs 2 turbines. Denaut

			generally had 3 to 4 employees in the mill. Bush may have been an earlier miller for Denaut with Charlie VanLuven as a later miller (uncertain). Millwrights Chester and Solomon Haskin are mentioned as employees.
Caroline Denaut 1889-1893	James L.S. Denaut	1889-1893	James was the son of Walter & Caroline
George Haskin 1894-1912	?		Purchases the mill for $6,000 on October 5, 1893. Haskin had a steam engine installed in 1899. It was removed in about 1904.
Hastings Steele 1913-1962	?		Original purchase for $8,000 on March 14, 1913 done in partnership with James Huffman. In 1914, Steele took full control and entered into a new partnership with Omer P. Arnold which lasted until 1921. In the 1920s & 30s, Steele was assisted by his son W.R. Steele. Flour milling ceases c.1942. Feed milling and sawmilling continue to 1949. Mill just used as a feed and electrical equipment store after that.
The Delta Mill Society 1963 to present	--	--	DMS preserves the mill (1972-74) and then restores the mill (1999-2003) and in 2010, the DMS restored a pair of working millstones to the mill and grinds wheat on a demonstration basis.

* Only in a few instances is a specific miller known (i.e. William Bush), in other instances it is simply inferred since owners (except for Walter Denaut) were mostly hands-on operators. References to specific employees are rare.

GLOSSARY OF TERMS

A list of some of the terms specific to mills and milling used in this document. Feel free to add to this list with terms you're not familiar with, or that you've found a visitor is not familiar with.

Barrel of Flour: The standard net weight of a barrel of flour (the weight of the flour in the barrel) was set in the U.S. as 196 pounds (sometime in the 1700s). This legal weight for a barrel of flour was mandated into law in Canada in 1820. Origins of that are unclear but it is directly equivalent to a weight of 14 stone (14 pounds to the stone, 14 stone to the barrel). A barrel was always referenced as containing "superfine" flour.

Bedstone: The bottom stone of a pair of millstones. The bedstone remains stationary during the grinding process.

Bolter: A machine which separated flour into different grades of fineness. The word comes from the Old English word bulten, meaning to sift flour.

Bran: The hard outer layer of a wheat kernel.

Burr Stone (Burrstone, Buhrstone): A type of siliceous sedimentary rock (quartz-flooded limestone), locally known as "pierre meulière," quarried at Ferte-sous-Jouarre near Paris, France, and used to make millstones. The millstones constructed of this very hard stone were of the highest quality. The first reference is in 1614 to "Burrs of Millstones" – the use of the spelling buhr starts in the early 1800s. It's unclear if "burr" refers to the roughness of the stone – it was this original roughness, due to cavities in the stone, that did the grinding before the idea of cutting grooves in the stones came along – or whether it referred to the individual pieces of stone used to make up the millstone, as later usage of the term suggests.

Bywash: a by-pass channel to control excess water flow. A weir (water control structure) is often located at the head of a bywash – usually using "stoplogs" (horizontal timbers stacked on each other that can be lifted in or out of the weir) to control water level.

Chop Mill (aka Feed Mill): using a grinder to chop up dried whole ears of corn, wheat, or rye, including the unhulled grains, some stems, and the husks, to create animal feed (horses, chickens, calves, etc.).

Conveyor: The conveyor was an Oliver Evans invention designed to move grain or flour horizontally from one place to the next. It was essentially a large wooden screw (auger) set in a trough. That type of conveyor is still in use today in the grain and other industries (today called a screw conveyor). As it turned the grain or flour was moved along the trough to the desired location.

Custom Milling: milling flour for the farmer who supplied the wheat. Early on this was milling for a toll percentage (1/12) with the remaining flour (11/12 minus losses) returned to the farmer as whole wheat flour. Later on it was a term used simply for exchange of wheat for fine flour (either on a toll basis or on a cash equivalent basis).

Damsel: an agitator on the spindle holding the runner stone which shakes the shoe (grain feeder). This controls the rate of feed to the stone based on the rotation speed of the runner stone. The story of the name is that the sound of this agitator shaking the shoe was like a damsel singing her song.

Descender: an Oliver Evans invention of a wide belt that moved the flour in a downward direction. The belt was moved by the weight of the flour (gravity), and carried the flour along with it.

Distillery: equipment used to make alcohol, usually from fermented grain. Many early mills had distillation equipment since they had a ready supply of grain.

Drill: an Oliver Evans' invention of an endless belt with rakes attached. The rakes swept the flour or grain along in a horizontal trough.

Elevator: an Oliver Evans' invention, the elevator was an endless leather belt with small wooden or tin buckets attached. The belt was attached to pulleys at the top and bottom and was used to lift grain and flour in the buckets attached to the belt. The elevator moves the grain or flour from one floor to the next.

Feed Mill (aka Chop Mill): milling grains (i.e. corn, oats) for animal feed.

Flume: A wooden trough to carry water from the source (i.e. dam) to the waterwheel or turbines. See also Sluice.

Furrows: The grooves that were cut into the millstone to cut the grain. The geometry and spacing of these in the runner stone and bedstone created a cutting action.

Grist: from the Old English grindan, meaning grinding. In the 1700s the term referenced the small batches of grain a farmer would bring to the mill to be returned as flour (minus a toll). By 1800, the common usage was simply any flour mill. The term grist was generally defined as any material brought to the mill for grinding (as in the saying "all is grist for the mill."). Today it means any old style flour mill (as opposed to modern factory flour mills).

Head Gate: a water control gate at the head (start) of the raceway.

Head race: the part of the raceway ahead (upstream) of the waterwheel or turbine.

Head of Water: the difference in elevation between the level of the mill pond at the headrace of the mill and the level of water in the tailrace. Determines (along with volume of water) how much power a waterwheel or turbine can provide.

Hopper-boy: an Oliver Evans' invention for cooling and drying flour. It consisted of a shaft with large arms, on which paddles (flights) were attached. As the arms rotated, the paddles moved the flour towards the centre. Flour from the millstones was introduced on the outer edge of the hopper-boy and the dried flour fell via a chute in the floor near the centre of the hopper-boy to the bolter on the floor below.

Husk (hurst or hursting): the robust timber framework on which the millstones sit. It is built independent of the mill building to isolate the vibration of the stones from the building (to prevent shaking the building apart). It was also designed to keep the millstones perfectly level.

Lands: the flat high area between the furrows (grooves) of a millstone. The lands grind the grain after the furrows have cut it.

Mason: a person who works with stone as a building material.

Merchant Milling: milling to produce a merchantable product, which in the 1800s was fine dry flour of a quality suitable for export. This type of mill required a bolter. The Oliver Evans' design for a mill is that of an "Improved Merchant Flour Mill". In some definitions, it is also referenced as a mill that purchases grain rather than engaging in toll milling.

Middlings: the coarse starchy particles of wheat and the fine bran. The 50 mesh component from our bolter. Oliver Evans recommended that these be reground to produce more fine flour.

Millbill (aka Miller's Pick): A steel adze fixed in a wooden handle, used for dressing millstones.

Mill Irons: the parts of a sawmill that cannot be made from wood, for example the saw blade, the bull wheel (winch used to haul in the logs), gig wheel (used to drive the vertical blade up and down and gudgeons. These heavy items were transported into a site (i.e. rapids in virgin forest) by a miller looking to build a new mill. Abel Stevens mentions that he had mill irons in his possession several times in his petitions to government.

Millpond: water, usually impounded by a dam, used to power a waterwheel or turbine for a mill. The level (height) of the millpond compared to the water level exiting the mill (after going through the waterwheel or turbine), together with volume and rate of flow, determines the available power. Upper Beverley Lake is the millpond for the Old Stone Mill.

Millwright: a person who designs and builds mills and maintains milling machinery. A millwright is generally an expert in carpentry in addition to his knowledge of mill design and operation.

Raceway: the channel in which water flows to and from the power generating device – a waterwheel or turbine.

Runner Stone: The top stone in a set of millstones. It rotated over the stationary bedstone. Oliver Evans recommended a rotation rate of about 97 rpm for a five foot stone. We use a rotation rate of about 92 rpm for our four foot stone so that we don't overheat the flour. Merchant mills used a higher rpm rate, 120 rpm was common for a 4 foot stone.

Run of Stones: A run is a single set (runner and bedstone) of millstones.

Sluice or Sluiceway: an artificial channel (excavated) for directing water to the waterwheel or turbines. The amount of water in the sluiceway usually controlled by a sluice gate. See also Flume.

Stoplogs – squared timbers stacked on top of each other in a holding mechanism (weir) to dam water and control the level (timbers put in lifted out to raise or lower the water level ahead of the weir (the MNR dam by the bridge in Delta has stoplogs).

Tail Race: the part of the raceway below the waterwheel or turbine

Trash Grate or Trash Rack: a grate placed in front of a raceway or bywash entrance to keep out debris.

Treenail – essentially a dowel – a wooden peg used to join two pieces of wood – used in place of iron spikes. You can see the ends of "treenails" sticking out of the ridgepole of the Old Stone Mill.

Turbines: a metal device with horizontal impellers used to capture the force of running water. More efficient than a wooden waterwheel and less expensive to operate.

Waterhouse (aka Wheel House, Water Room): an enclosed room in which the waterwheel was located – a feature of Oliver Evans Automatic Mill (spelled as "water-house" in his guide). It kept the waterwheel area separate from the rest of the mill in order to keep the mill dry. It allowed the area to be heated (the rest of mill generally was not) and in the event of flooding kept the area sealed from the interior of the mill.

Waterwheel: a wheel usually constructed of wood that turns with the force of water pushing against the blades or buckets of the wheel. The turning motion is used to power equipment such as millstones or saw blades. There are three general types, an **overshot** wheel is when the water arrives at the top of the wheel, a **breastshot** wheel is when the water arrives near the middle of the wheel and an **undershot** wheel where the water arrives at the bottom of the wheel. The type of wheel is determined by the available head of water.

Weir: a water control structure at the head of a bywash. Incorporates a method to control how much water is let into the bywash (i.e. horizontal squared timbers known as "stoplogs"). Usually operates as an overflow system (the height of the top log set to desired height of mill pond).

SELECTED REFERENCES

The following are a few of the documents used in the preparation of this guide. All of these books are held in the Delta Mill Society reference collection. Some of the research reports may also be available in digital form (PDF) – see notes below.

Bazely, Susan M., and Susan Noakes, ***The Delta Mill Wheelpit Excavation, BdGa-34, Public Archaeology Program***, Cataraqui Archaeological Research Foundation & The Delta Mill Society, 1994. (**PDF** available).

Fritz, Paul S., ***A History of the Old Stone Mill, Delta, Ontario***, The Delta Mill Society, 2000.

Lockwood, Glenn J, ***The Rear of Leeds & Lansdowne, The Making of Community on the Gananoque River Frontier, 1796-1996***, The Corporation of the Township of Rear of Leeds and Lansdowne, 1996. (**PDF** available).

Moore, Jonathan, ***Archaeology at the Delta Mill National Historic Site, BdGa-34, 1999, Delta, Ontario***, Cataraqui Archaeological Research Foundation, 1999. (**PDF** available).

Scheinman, Andre, William Trick and M.D. Smith, ***Delta Mill Conservation Report***, May 6, 1996 (**PDF** available).

Ranford, Wade, ***A History of Grist Milling in Delta,*** The Delta Mill Society, 2006 (**PDF** available).

Watson, Ken W., ***Building the 1810 Stone Mill in Delta, Ontario***, 2nd Edition, The Delta Mill Society, 2022 (**PDF** available).

Suggested further reading.

In addition to these above, you might wish to read:

Hayes, Thomas Jared, ***From Mill to Museum, the Grassroots Preservation Effort for the Gristmill in Delta, Ontario, Canada***, 2022. (**PDF** available).

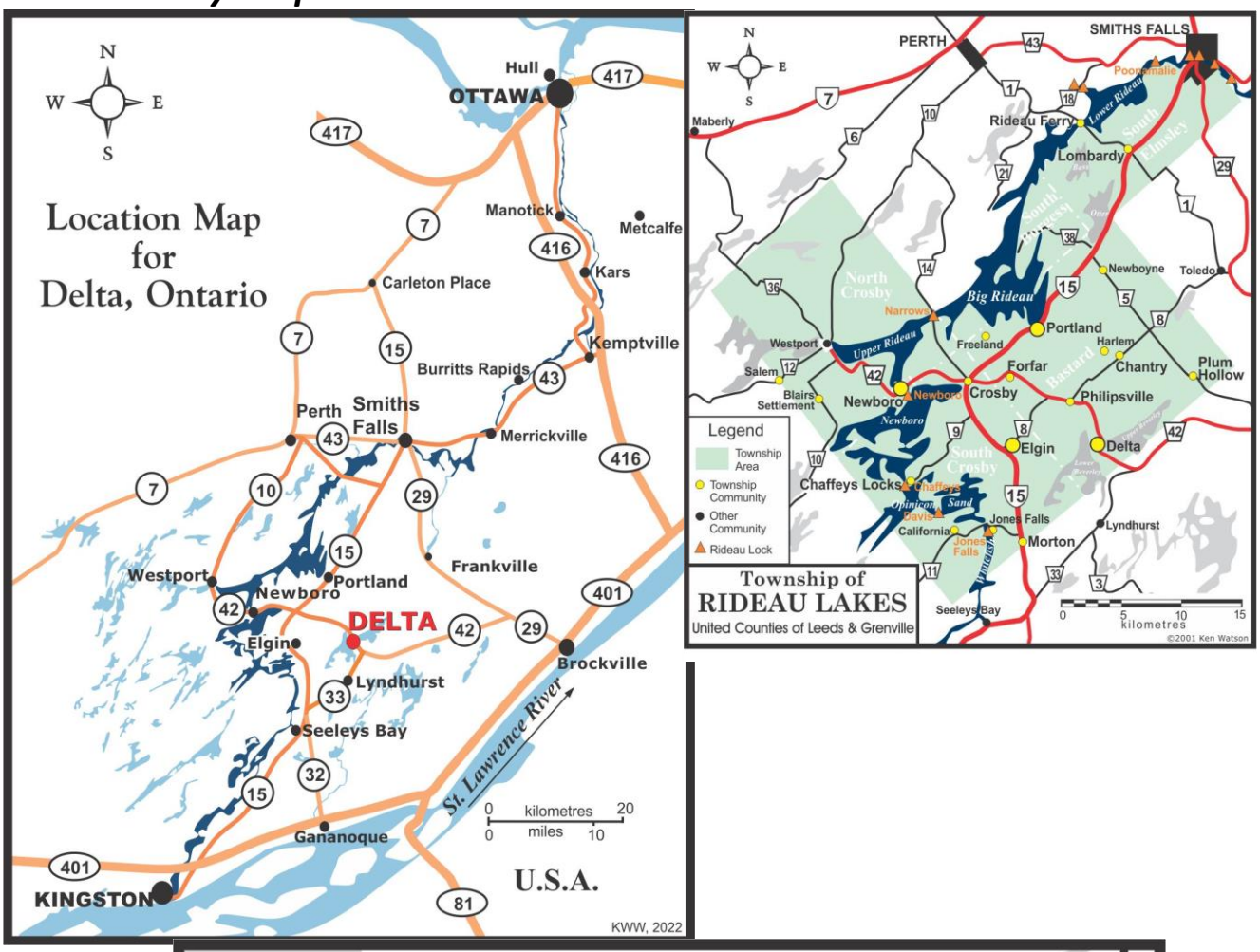
Leung, Felicity L., ***Grist and Flour Mills of Ontario, from Millstones to Rollers, 1780s-1880s*****.** History and Archaeology 53, Parks Canada, 1981 – reprinted by the Society for the Preservation of Old Mills, 1997. An excellent general book about flour mills and milling.

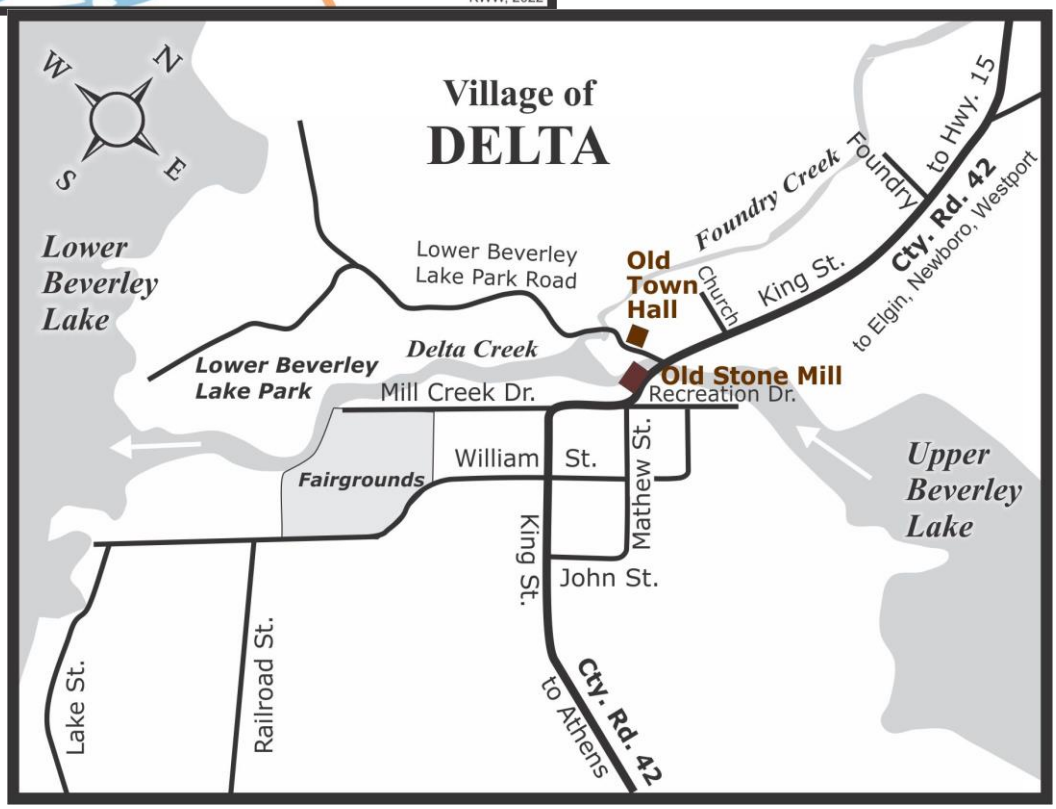
Watson, Ken W. (ed), ***The Sweeney Diary: The 1839 to 1850 Journal of Rideau Lockmaster Peter Sweeney,*** Friends of the Rideau, Smiths Falls, Ontario, 2008. Contains several direct references to Delta ("Beverly") plus an excellent section by Susan Warren on the life and times of Peter Sweeney which provides a fascinating glimpse into life in this area during that time period.

Evans, Oliver, ***The Young Mill-Wright and Miller's Guide***. We have a digital copy of the original 1795 edition, the fourth edition (1821) and the twelfth edition (updates and corrections by Thomas P. Jones), 1848. A bit of a slog to read, but this is the book that started it all. (**PDF** available).

APPENDIX A: Maps, Diagrams and Photos

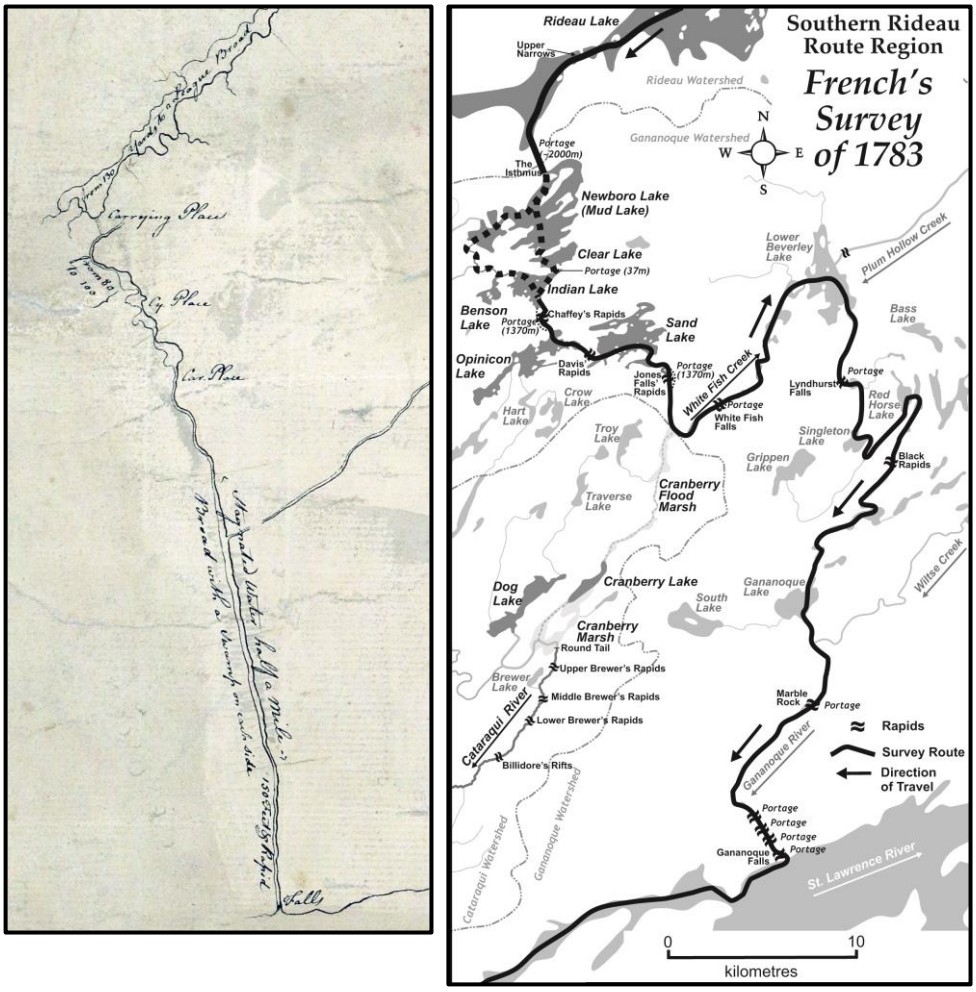
Present Day Maps





Some Early Maps

Lt. Gershom French, 1783



Map on left is a 1794 drawing of the southern portion of French's 1783 survey: "Communication with the St. Lawrence & Ottawa Rivers by the Rivers Petite Nation & Rideau", William Chewitt, 1794. Archives of Ontario, AO 1336" The map on the right is French's route mapped onto a present day accurate map (map by Ken Watson, done for The Rideau Route, Exploring the Pre-Canal Waterway, 2007)

The first map of the area is one based on Lt. Gershom French's 1783 survey which started at Carillon on the Ottawa River and ended at Gananoque on the St. Lawrence River. The map on the right is a modern day map showing the actual geography of the route. French's map presents us with a bit of a mystery (keep reading – we'll get to that mystery).

At the time there was no settlement, French had a indigenous guide showing him the canoe route from the Ottawa River, which took them up the Rideau River, into the Rideau lakes and from there into Lower Beverley Lake (which is where that water flowed to at the time, the former White Fish River (now drowned except for the Morton Creek remnant) connecting Sand Lake on the Rideau with Lower Beverley Lake. From Lower Beverley Lake he continued down to Gananoque. He was doing a survey in preparation for settlement (not for navigation), looking at the quality of land. Every so often he would stop and send a survey party a league (3 miles) inland to check out forest and soil conditions

On the evening of October 11, 1783, French and his party camped on Lower Beverley Lake – likely in Oak Bay at the west end of the lake. He describes his journey the next day as:

[October] 12th. – Steered South 12 Degrees, E. about 4 miles where the Gananoncui received a River from the East. We continued in the same direction 8 miles further in Dead Water with large Marshes on each side, and Ledges of Rocks behind, from whence I sent out a Party on the East and went myself on the West, but did not Discover any good Lands.

From there we continued about Ten Miles in the same course nearly meeting with nothing but Swamps, Rocks and Stagnated Water.

An interpretation of this (kww) is that the "River from the East" is Plum Hollow Creek. While some arguments could be made that it's Wiltse Creek (from Charleston Lake) the better fit based on French's description is Plum Hollow Creek. Starting from Oak Bay, 4 miles would take him to about Plum Hollow Creek (the lower end of that today called "Delta Creek"). The "Dead Water" in his description is Lower Beverley Lake (a pretty dismal description of what was then, and is now, a beautiful lake). Now to the map mystery.

If you look at section of French's map shown on the previous page, you'll see that that he shows three portages, called "Carrying Places." The three he shows are those for the Isthmus (today's Newboro), a portage around Chaffey's Rapids and a portage around Jones Falls Rapids. After that nothing, even though he would have had to do several other portages: White Fish Falls [Morton], Great Falls [Lyndhurst], Marble Rock and some of rapids above Gananoque. If we jump ahead to 1795, we see Surveyor Lewis Grant noting portages at all these places. You can see the actual looping, sinuous route that French would have followed, yet his map simply shows a straight line to the falls at Gananoque. His description of this section is not favourable:

From our Entrance into the River Gananoncoui to its fall into the St. Lawrence, I did not discover as much good land conveniently situated as would serve one Farmer.

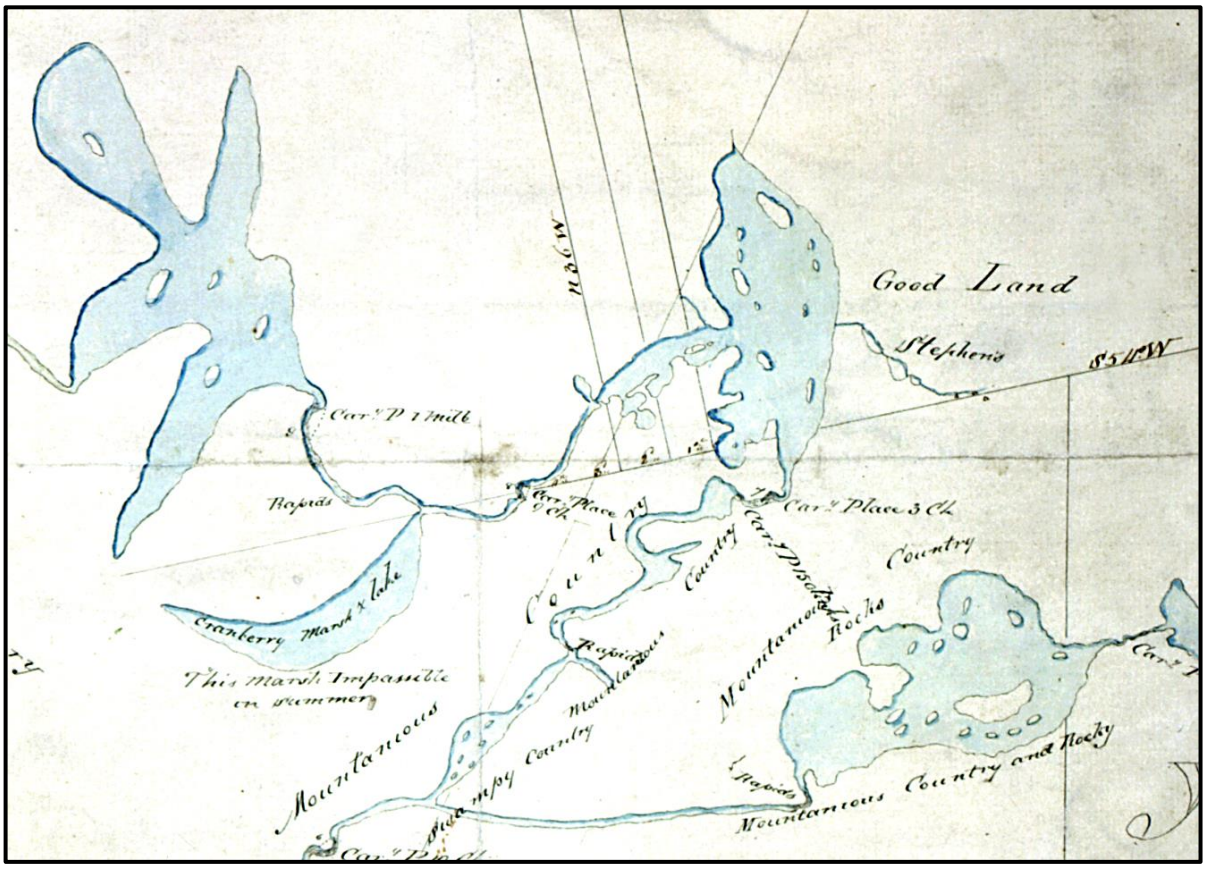
On his map it show this section as the "River Gannanocui" with the description: "Stagnated water half a mile" and "Broad with a swamp on either side" – not very inviting.

So why does he have reasonably accurate mapping and description from Ottawa to Jones Falls and then a distinct lack of information and inaccurate mapping from Jones Falls to Gananoque? Clearly he would have known about the "Great Falls" at Lyndhurst (he had to portage around them). A few months later, in 1784, his former army commander, Major Edward Jessup (French was a Lieutenant with the King's Loyal Rangers also known as "Jessop's Rangers") expresses an interest in the mineral and water rights in the area of Lyndhurst. How did he know about the iron and the "Great Falls" at Lyndhurst? It's possible that French's party discovered both, or it's possible that Jessup found the iron while scouting the falls. Neither are are mentioned in French's report or shown on his map. We don't know if French discovered the iron but he certainly knew about the Great Falls.

In fairness to French, he never took advantage of any of this knowledge himself, he had just moved to Quebec City that year and after his survey he returned there. The straight line on his map and lack of information about the rapids and waterfalls in that section remains a mystery.

While Abel Stevens originally came into this area to set up a Baptist Community, once he became aware of the iron and waterpower in the Lyndhurst area, this became this main interest until he lost out to another entrepreneur in 1800.

You will find the full story of the Lyndhurst Ironworks, including Stevens' involvement, on the History page of our website. See the article "Delta and Lyndhurst – Forged Together".

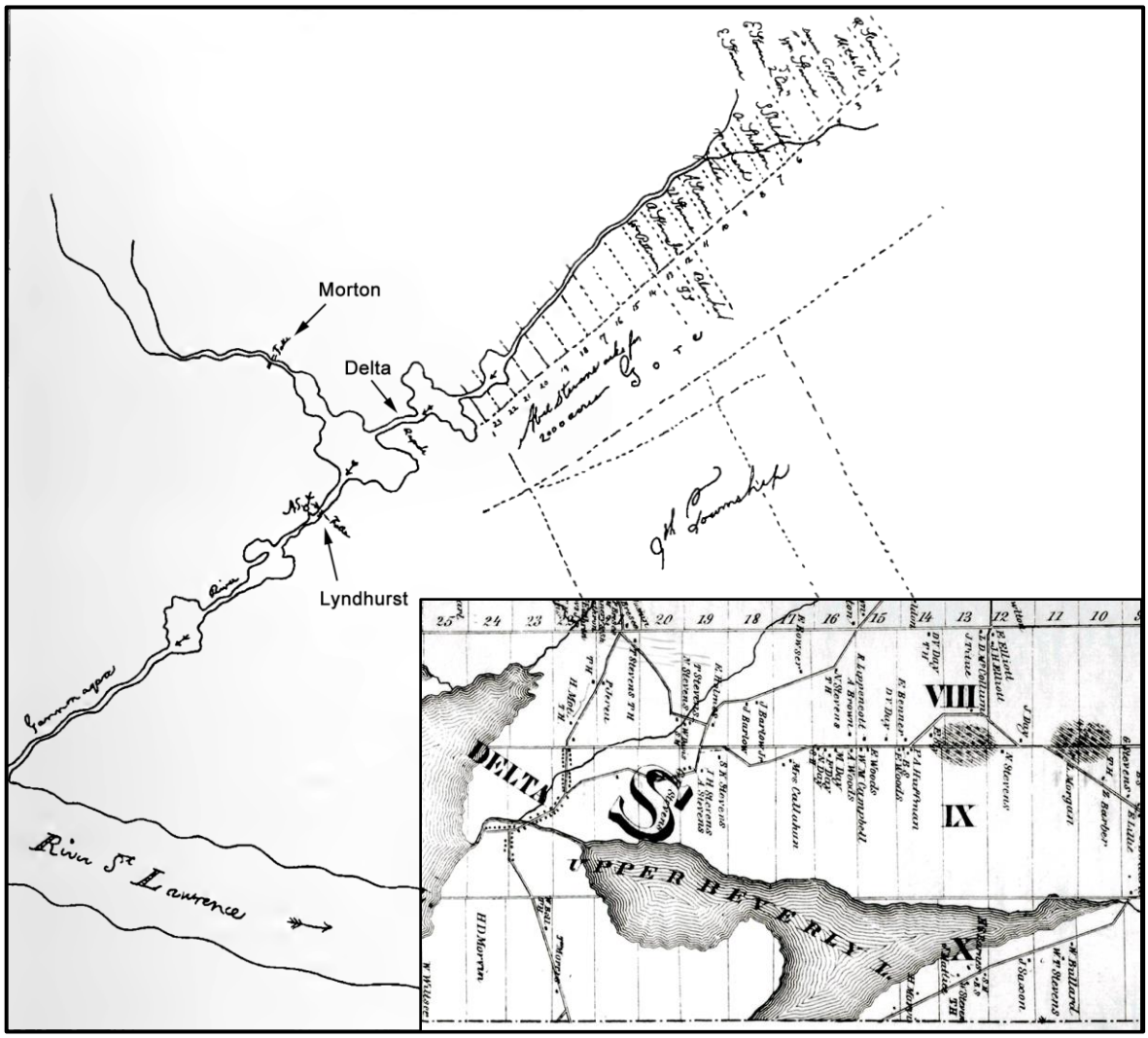


Delta & Region in 1795.

This map, by surveyor Lewis Grant, is from Grant's initial survey in 1795. You can see the word "Stephen's" located in the area of Plum Hollow Creek and the Upper Beverley lakes. Above that, the notation Good Land is on the good soils overlying the local sandstone. Elsewhere on the map you see "Mountanous Country and Rocky" which is the topography of the Frontenac Axis. It's a good illustration of the prime location of Delta for early settlers, water power adjacent to good farmland.

Grant in this survey is tying into William Fortune's earlier survey lines. This was new country to Grant, when he first went up the Gananoque River he made a wrong turn and ended up in Charleston Lake (shown on the lower right) by mistake. He then had to backtrack to the Gananoque River and head up into Lower Beverley Lake. He then continued up the White Fish River into Sand Lake.

"Sketch of the Ganonoque" by Lewis Grant, 17th June 1795, Archives of Ontario, AO 1532



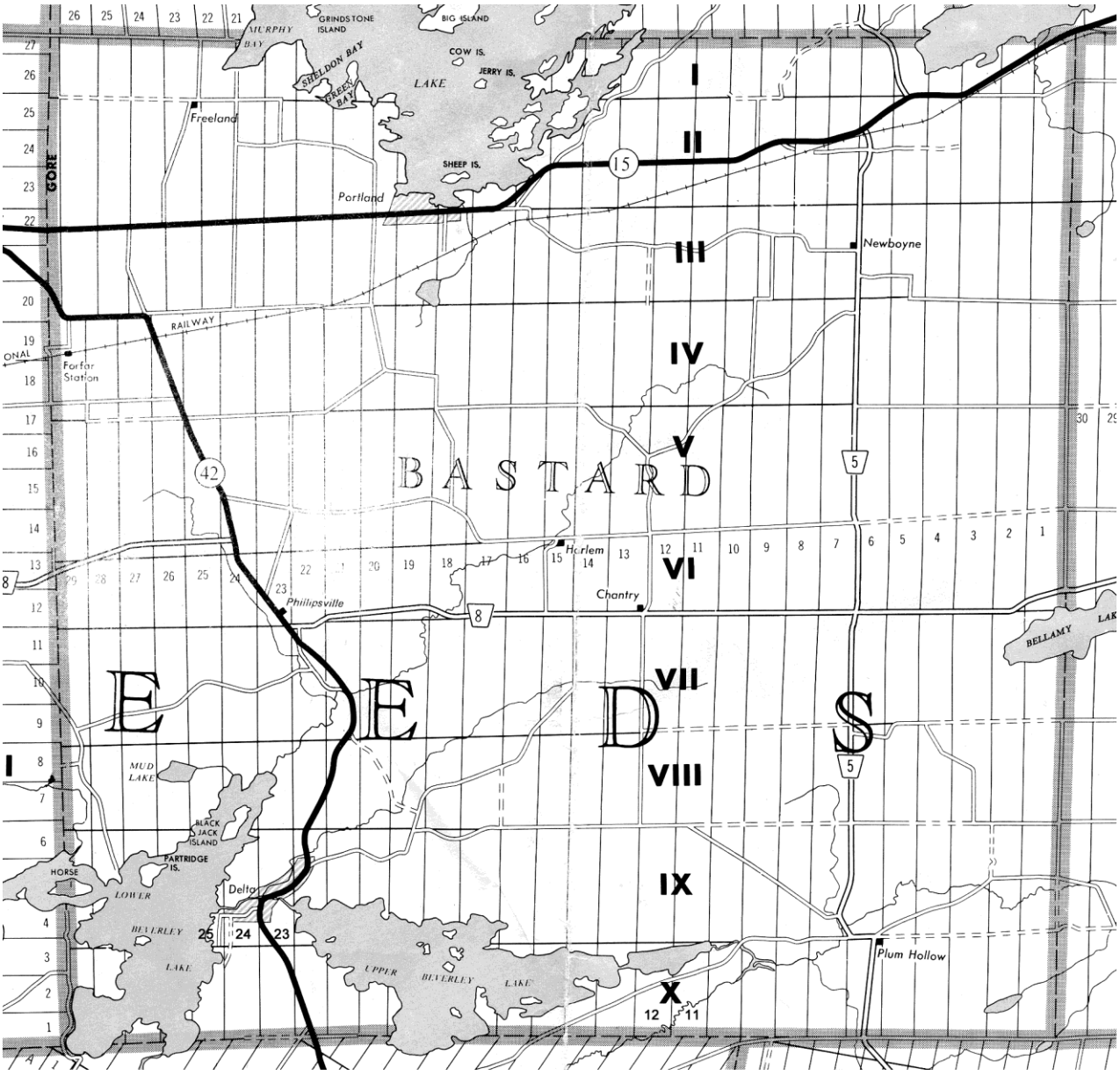
Delta Area, c.1795

This annotated c.1795 map (community names added), attributed to Lewis Grant, shows the Stevens' settlers located on the upper reaches of Plum Hollow Creek. The numbering appears to be lots on Concession X of Bastard Township, but not exactly what it is today (map is not very accurate and not to scale). For instance, the mill today sits on Lot 23 of Concession IX meaning that Lot 23 (Conc. X) shown on this map should be near the word "rapids." Today's hamlet of Plum Hollow is located on Lot 6 of Conc. IX and X (at the boundary), so presumably somewhere near the Lot 6 shown on this early map.

On the map it says for the lower section "Abel Stevens asks for 2000 acres" – presumably the 10 blank lots shown on this maps (lots are nominally 200 acres in size). In the end, June 2, 1796) he was granted got 5 lots – Lots 23, 24, & 25 of the 9th concession and Lots 11 & 12 of the 10th.

Also note Abel's initials, AS are shown beside the Great Falls at Lyndhurst, indicating Abel's desire to be granted that spot for a foundry.

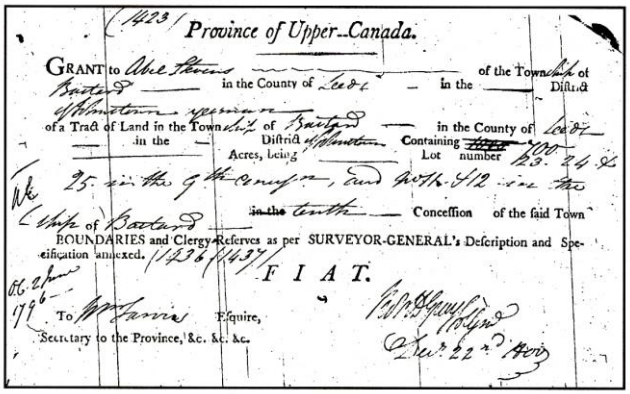
The inset map is Walling's 1861-62 map – not 100% accurate but you can see the lots and concessions around Delta.



Bastard Township – Lot and Concession Map

A lot and concession map (MNR, 1993) of the former Bastard Township. The lots granted to Abel Stevens, Lots 23, 24 and 25 of the 9th concession (present day Delta) and Lots 11 and 12 of the 10th concession have been added for clarity. While nominally totalling 1000 acres, you can see how water occupies part of the lots, hence the revision to 700 acres (of land). Water levels in the lakes would have been lower in 1796, but still enough to remove 300 acres from Abel's 1000.

A bit later Stevens also got Lot 22 (Conc. 9) and Lot 10 (Conc. 10).



(1423) *Province of Upper Canada.*

GRANT to Abel Stevens of the Town[illegible] of Bastard in the County of Leeds — In the — District of Johnstown yeoman — of a Tract of Land in the Township of Bastard — in the County of Leeds — in the — District of Johnstown — Containing ~~1000~~ 700 Acres, being — Lot number 23. 24 & 25 in the 9th Concession, and both 11 & 12 in the 10th Concession of the said Township of Bastard — BOUNDARIES and Clergy Reserves as per SURVEYOR-GENERAL's Description and Specification annexed. 1423 (1437)

F I A T.

6th June 1796

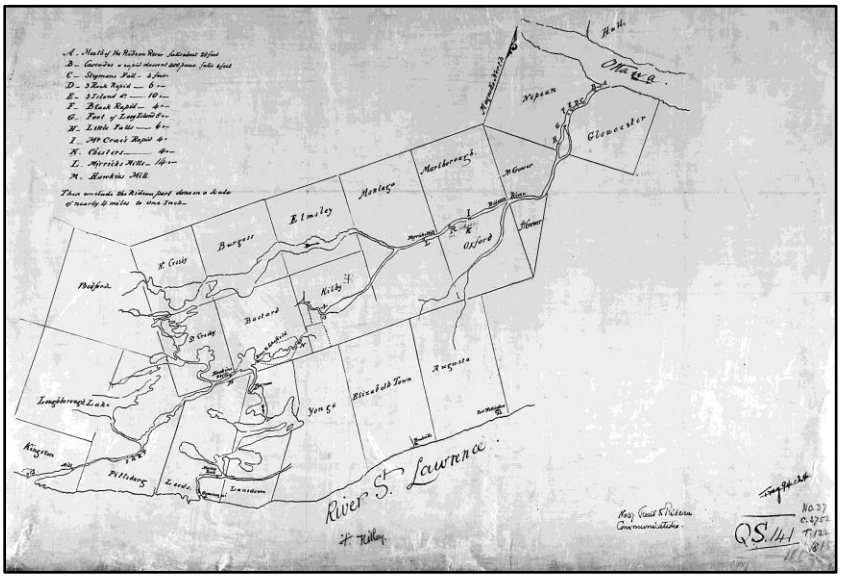
To Mr Jarvis Esquire, Secretary to the Province, &c. &c. &c.

Land Grant to Abel Stevens Sr. in Bastard Township, 2 June, 1796.

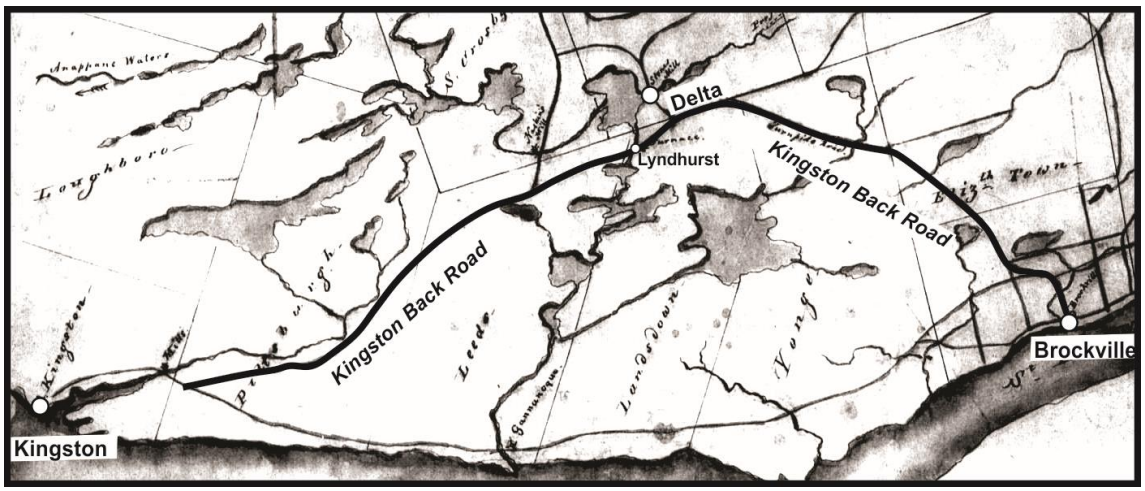
Delta Area – c.1815

This may be the earliest map that shows the Old Stone Mill, labelled as "Jones and Schofield." The reference to "Hawkins Mill" should be "Haskins Mill," today's Morton, and Furnace is today's Lyndhurst, dormant after the furnace burned down in 1811.

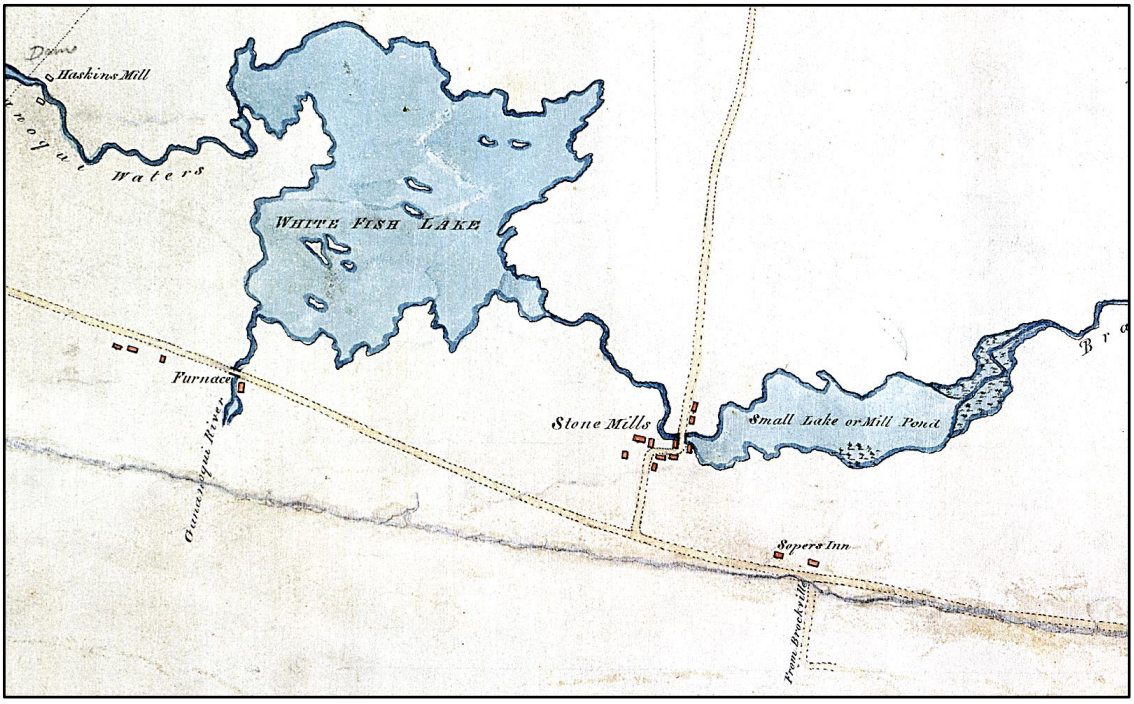
It only shows a few of the local roads (see the 1816 maps on the next page for more roads), but the roads it shows are telling, up along Plum Hollow Creek and over to Irish Creek and Lake – some of the early farm development in this area.



No. 37 Trent & Rideau Communications" by unknown, [1815], Library and Archives Canada, NMC 44765.



Delta Area – March 1816



Delta Area – July 1816

Two different maps views from 1816. The annotated top map shows the "Kingston Back Road" highlighted – those roads were constructed under the direction of Abel Stevens. The lower map shows 10 building in Stone Mills, including the Old Stone Mill. A March 1816 letter indicated about 20 building in all – perhaps including other smaller buildings (i.e. log cabins) that weren't noted by Joshua Jebb in his 1816 survey. "White Fish Lake" is Lower Beverley Lake and "Small Lake or Mill Pond is Upper Beverley Lake, shown at or near the size it is today. Furnace is Lyndhurst. Haskins Mill is Morton.

Top Map: untitled map, Upper Canada Sundries, RG 5, A1 vol. 27, p.12288.

Bottom Map: *Plan of the Water Communication from Kingston to the Grand River* by Lt. J. Jebb, July 8, 1816, National Archives of Canada, NMC 21941

Map of Delta, c.1861-62

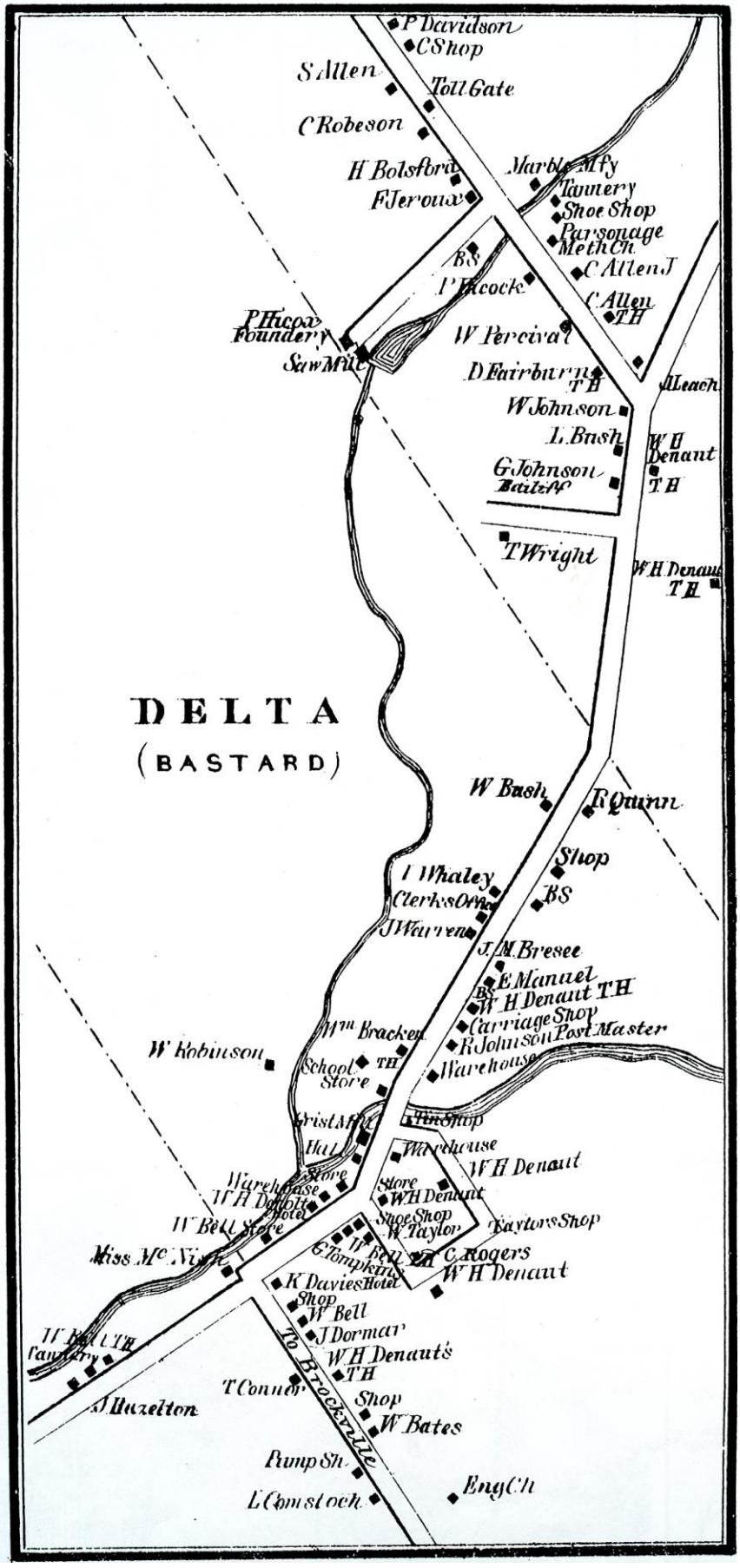
From H.F. Walling's Illustrated historical atlas of the Historical Atlas of Leeds and Grenville, Canada West. 1861-62

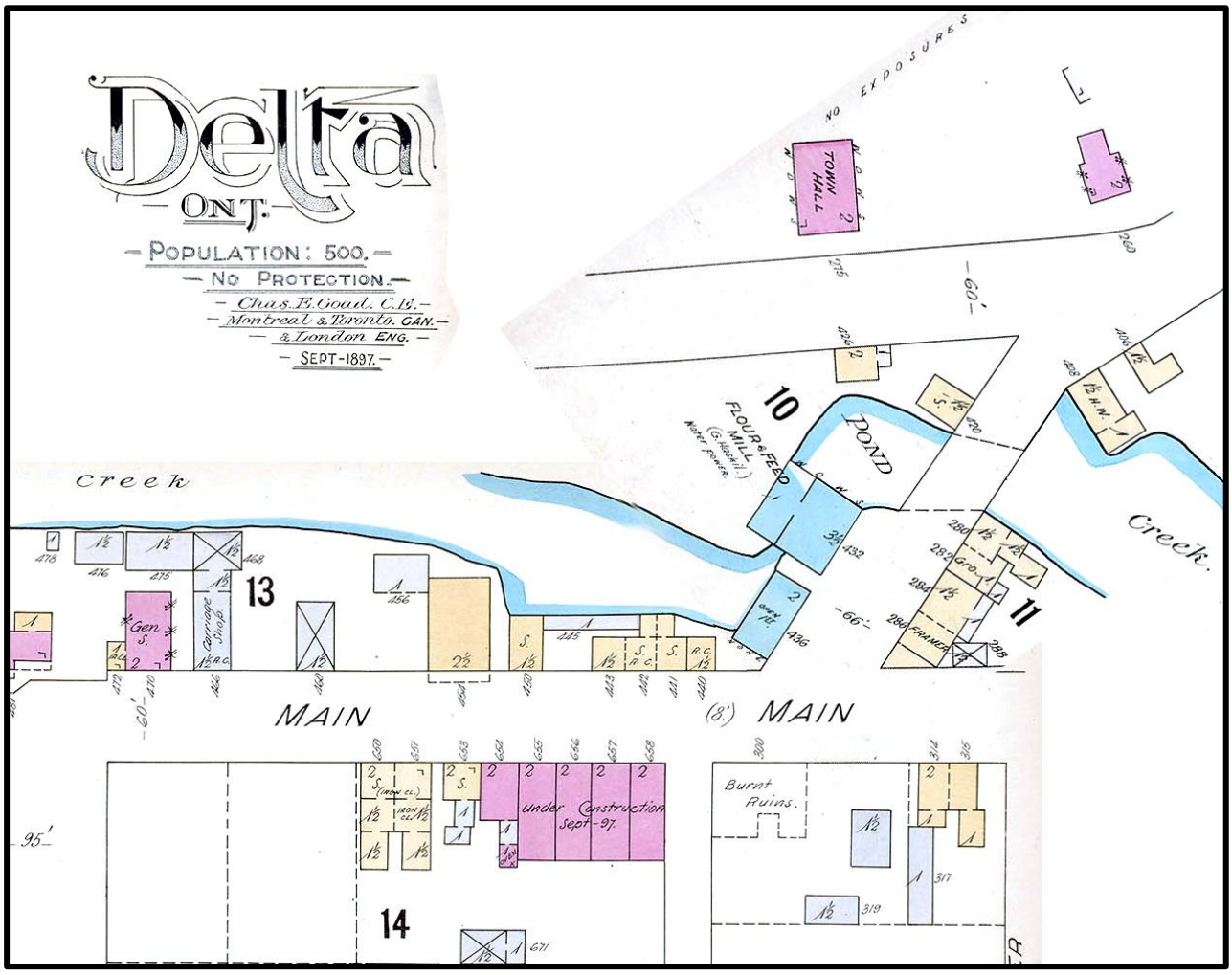
On this map you can see "Grist Mill" shown for the Old Stone Mill. Our Blacksmith's Shop is shown as a "Hall" which is Denaut's Hall.

Also of interest is the sawmill on Hicock pond – likely the same location as Abel Stevens Jr's earlier mill. The foundry in that location was built by Philo Hicock in 1841.

Note the toll gate at the north end of town (many roads were toll roads in the era).

You can also see the extent of Walter Denaut's holdings (count the number of times W.H. Denaut is listed).

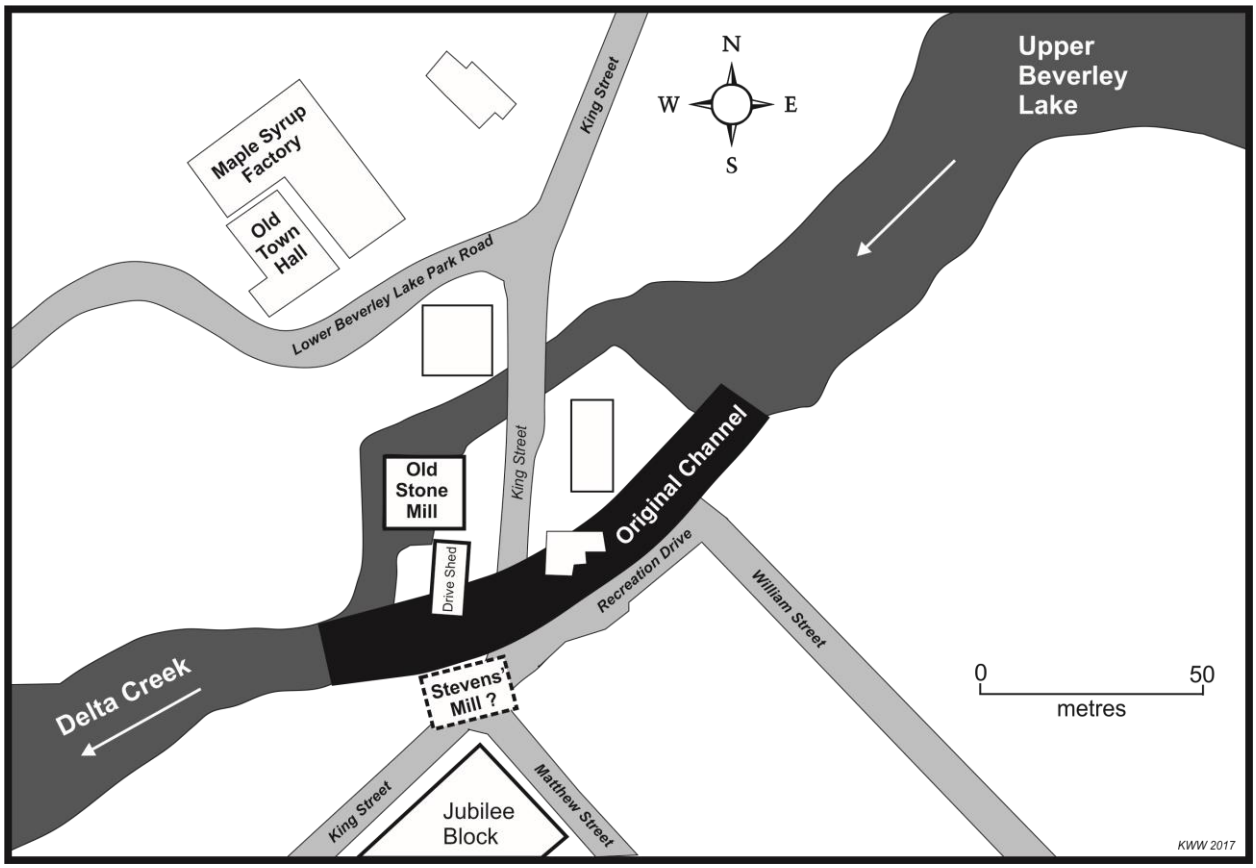




Portion of an 1897 Fire Insurance Map for Delta

Of note on this map is that the mill (located by the 10) is shown as a Flour and Feed Mill operated with water power (indicates that the steam boiler not yet installed). The Jubilee business block is just under construction at this time. An earlier 3 storey high brick business block, built in c.1885, burned down in 1896. It was replaced by the 2 storey high Jubilee block built in 1897. It was named the Jubilee block in celebration of Queen Victoria's diamond jubilee (60 years on the throne).

Stevens' Original Mill

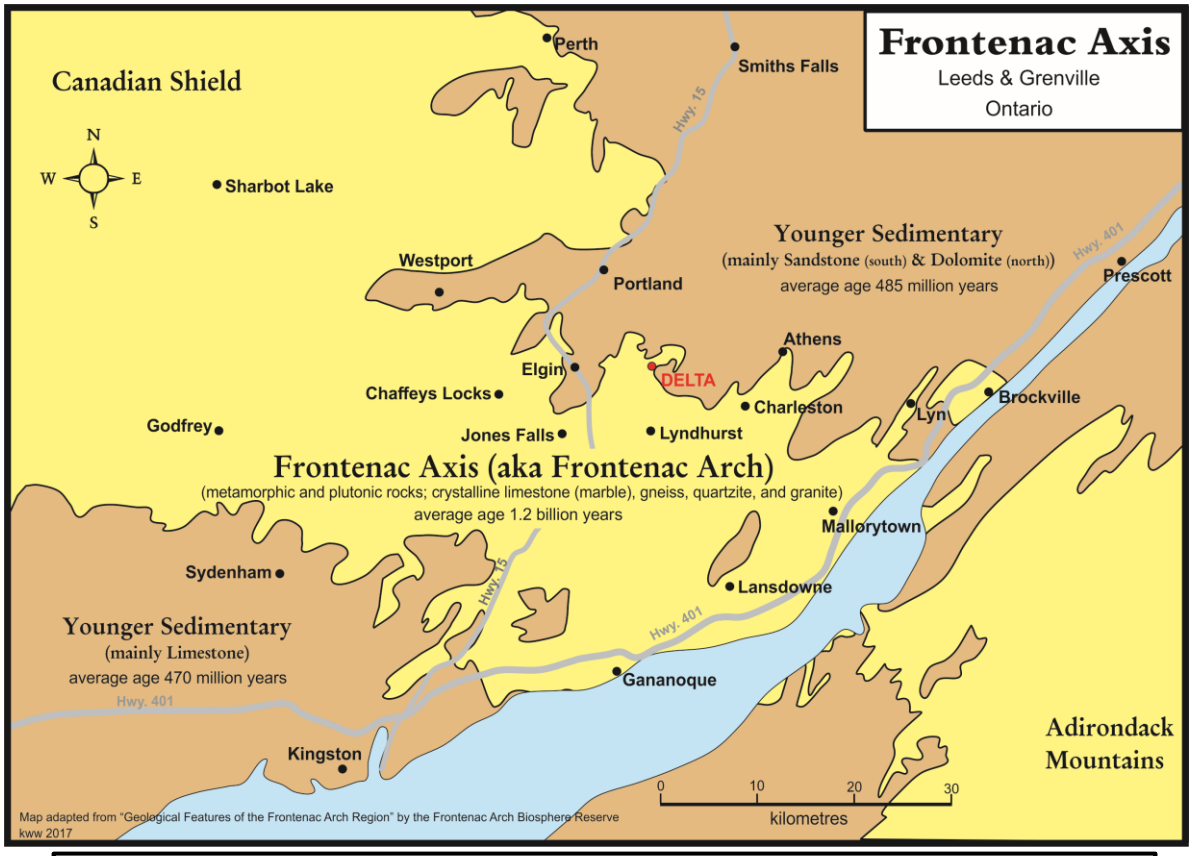


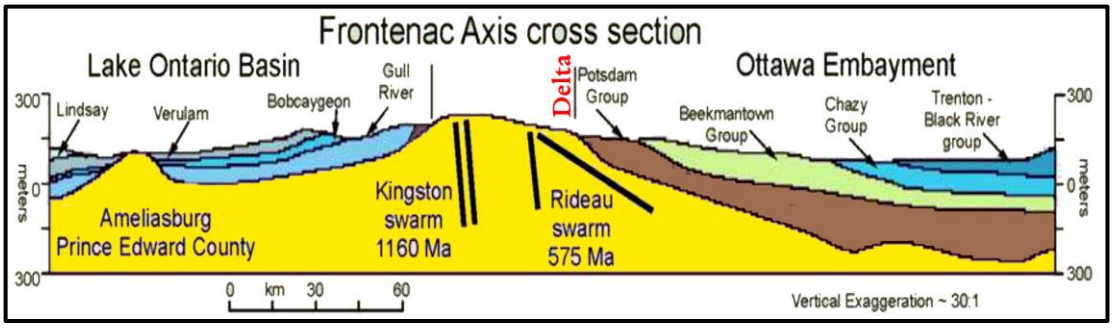
Where was the first mill in Delta? We don't know exactly. What we do know is that it would have at or below the foot of the rapids between Upper and Lower Beverley lakes. Lower Beverley was not dammed at Lyndhurst prior to 1801, so it would have been up to 1.4 m / 4.7 feet lower than it is today (that number based on the bedrock elevation ahead of the current dam at Lyndhurst). Upper Beverley was two lakes, with a water level about 2.7 m / 9 feet lower than today. That would indicate the original rapids had a drop of about 1.4 m / 4.6 feet. If Stevens erected a 5 foot dam (approximate number based on the rise of "Lake Abel" shown on Grant's 1797 survey map of Bastard Township), he would have had maximum 9.5 foot head. Given that Lower Beverley Lake was a bit higher than the bedrock level at Lyndhurst, something in the order of a 7 foot net head (same as the OSM) is likely.

A section of Grant's 1797 survey map of Bastard Township showing the dot of the mill on the south side of the creek representing the location of the mill.

Geology of the Delta Region

Delta lies at the northern edge of the Frontenac Axis, an exposure of very old rocks (avg. age 1.2 billion years), the eroded remains of a portion of a mountain range (the Canadian Shield and Adirondack Mountains are also rocks of this mountain range). The mountain building happened some 900 million years ago when continents collided, bending and metamorphosing the original rocks (just like the Rockies, Andes and Himalaya mountain ranges today). With mountain building done, erosion began, the mountains wearing down over hundreds of million years. With continental drift, the now well eroded mountain range ended up near the Caribbean, with beach and shallow marine sediments being deposited on top of it (520 to 460 million years ago). Over many millions of years continental drift brought this old mountain to where it is today, being exposed again as the overlying sedimentary rocks are eroded away from it – an erosion process that is still taking place today.





From "Fall Geology/Ecology Boat Tour, St. Lawrence River – 1000 Islands" by Al Donaldson, Dave Forsyth, Chris Findlay & Bud Andress, 2010.

Delta lies in the Leeds Knobs and Flats physiographic region. The knobs are large exposures of granite which are a feature of the Frontenac Axis. Those include the Lyndhurst granite pluton, the best known exposure of that being Rock Dunder on Morton Bay.

The harder rocks of the Frontenac Axis, metamorphic rocks such as crystalline limestone (marble), gneiss, schists, and quartzite, and plutonic rocks such as granite, form greater topographic expression (hills & valleys) and it is this region that hosts most of the area's lakes and rapids. It is the latter, drops of water over a short distance that attracted millers, providing power for their water wheels.

On either side of the Frontenac Axis are younger sedimentary rocks, mostly sandstone in the vicinity of Delta. It was those relatively flat lying sedimentary rocks and the thick soil development on top of them that attracted the early homesteaders, providing rich land on which to grow crops. Locally, those rocks (Potsdam sandstone) also provided the building blocks for the Old Stone Mill and many other stone buildings in the region.

Delta owes its start to the iron deposits on Lower Beverley Lake and the fall of water at Lyndhurst. The iron may have been discovered in 1783 during the first documented survey of the Rideau route done by Lt. Gershom French. It was certainly known by 1784 when Major Edward Jessup expressed an interest in acquiring the rights to the iron and the fall of water at Lyndhurst.

It was the iron and water power at Lyndhurst that attracted Abel Stevens to this area, he applied for the mining rights to the iron deposits and for the water power at Lyndhurst at the same time he squatted in the Delta area and applied for land around the rapids there. Lyndhurst offered the Great Falls, an 11 foot (+/-) waterfall*, in contrast to Delta's 5 foot (+/-) set of rapids. But the Lyndhurst site had the added complexity of a mineral resource grant (reserved to the British Crown) plus the fact that he wasn't the only one after the iron and Great Falls, the Sherwood family was after those as well. So nothing happened for a number of years.

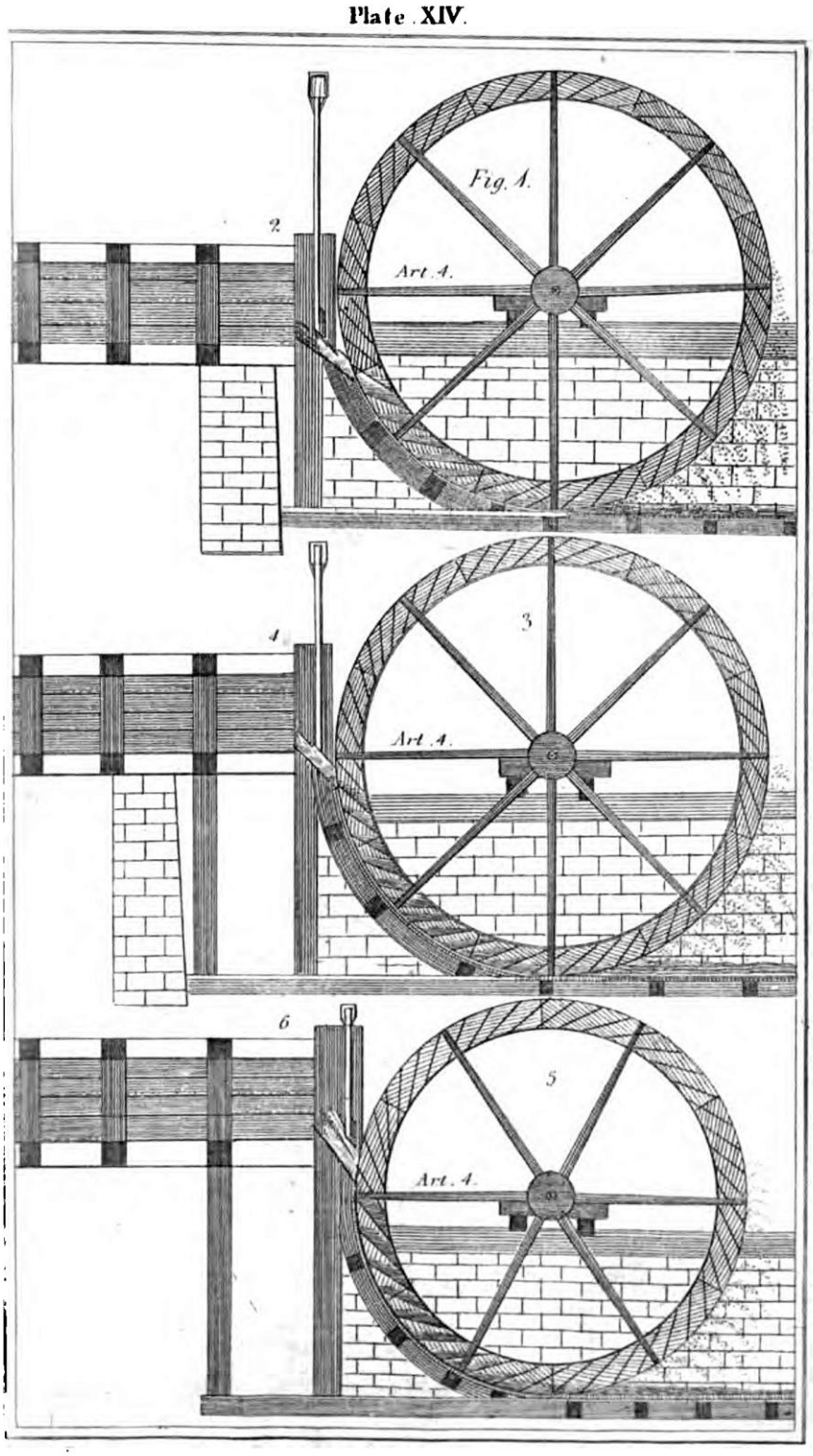
The iron deposits and foundry site were eventually awarded to Wallis Sunderlin in 1801, Stevens never got them. But it left a legacy for Delta since many of Steven's efforts that were directed at obtaining the Lyndhurst site, such as having a road built from Lyndhurst to the Kingston Front Road in 1798, also benefitted Delta. Not the least was the fact that these deposits attracted Stevens here in the first place and that led to the founding of Delta.

The local geology was used to build the mill – the stones for the magnificent 3 ½ storey building locally quarried, mostly from layers of Podsdam sandstone. The soils overlying the sedimentary rocks were used to grow the grain that fed the mill. The underlying geology, the depressions formed by the erosion of softer crystalline limestone, host the area's lakes. The set of rapids between two of those lakes, Upper and Lower Beverley, creating water power for a mill.

Eighteen thousand years ago this area was under a kilometre and a half of ice, part of a continental ice sheet. The weight of that ice depressed the entire landscape by about 175 m (575 feet) below the elevations it is today. Under the ice, rock was being ground into boulders, pebbles and rock flour. Then, 14,000 years ago, as the climate warmed up, the glaciers started to retreat. As they did so, they left behind large deposits of till (gravel). Melt waters were filling up what is today Lake Ontario, but back then, with the glaciers blocking the outflow of the St. Lawrence valley, a very large lake formed, one that extended as far north as Perth and Smith Falls. Known as glacial Lake Iroquois, it left lake bottom deposits (clay and silt) over the drowned topography. Then, about 13,350 years ago, the ice dam broke near Rome, N.Y. and the lake drained down to its present day size.

With the weight of ice removed, the land rose, a process called isostatic rebound. Vegetation, animals and man followed the retreating glaciers. This set the stage for the eventual arrival of Abel Stevens, the building of the first mills, and then the building of the Old Stone Mill.

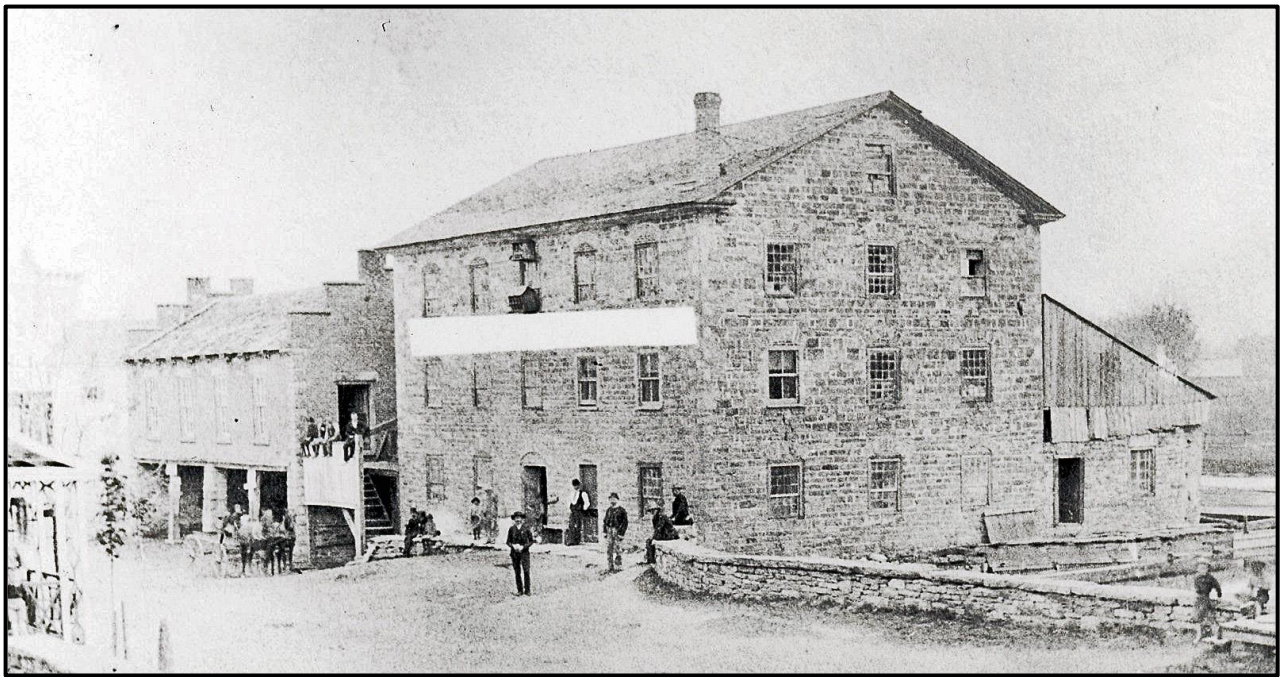
* the overall drop at Lyndhurst is reported as ~ 7 m (unverified), which would be over the 0.9 km length of Lyndhurst Creek below the bridge, the initial drop which powered the foundry & upper mills was much less.



Oliver Evans illustrations of a breastshot waterwheel (Plate XIV, Young Mill-Wright's Guide). In it he shows the water arriving at various points on the wheel and has tables calculating the resulting efficiency.

A Few Heritage Photos

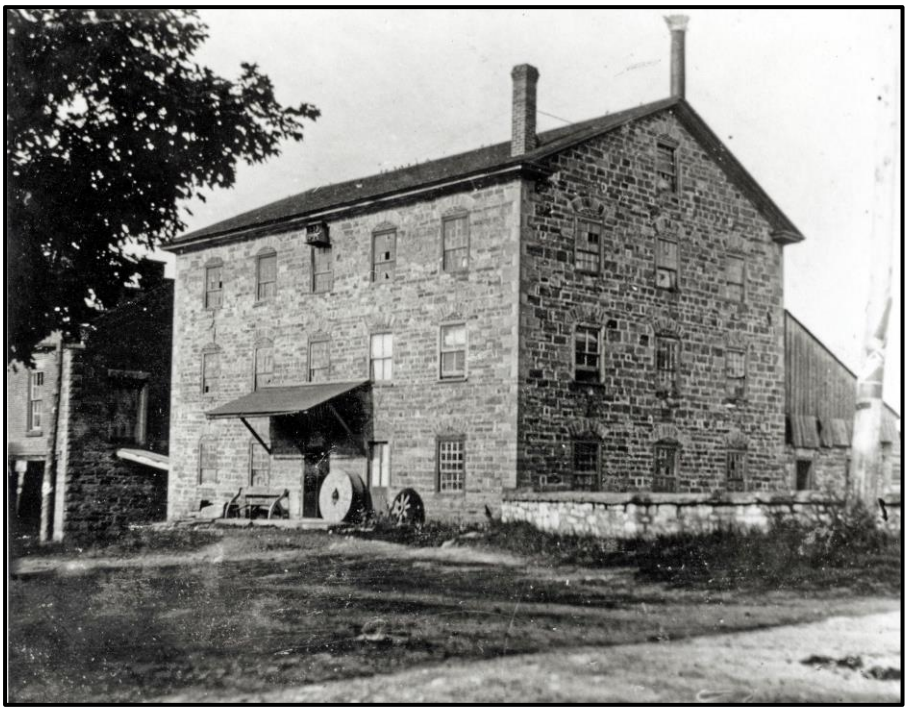
You can go on-line to our website for many contemporary photos of the mill, these are just a few older photos.



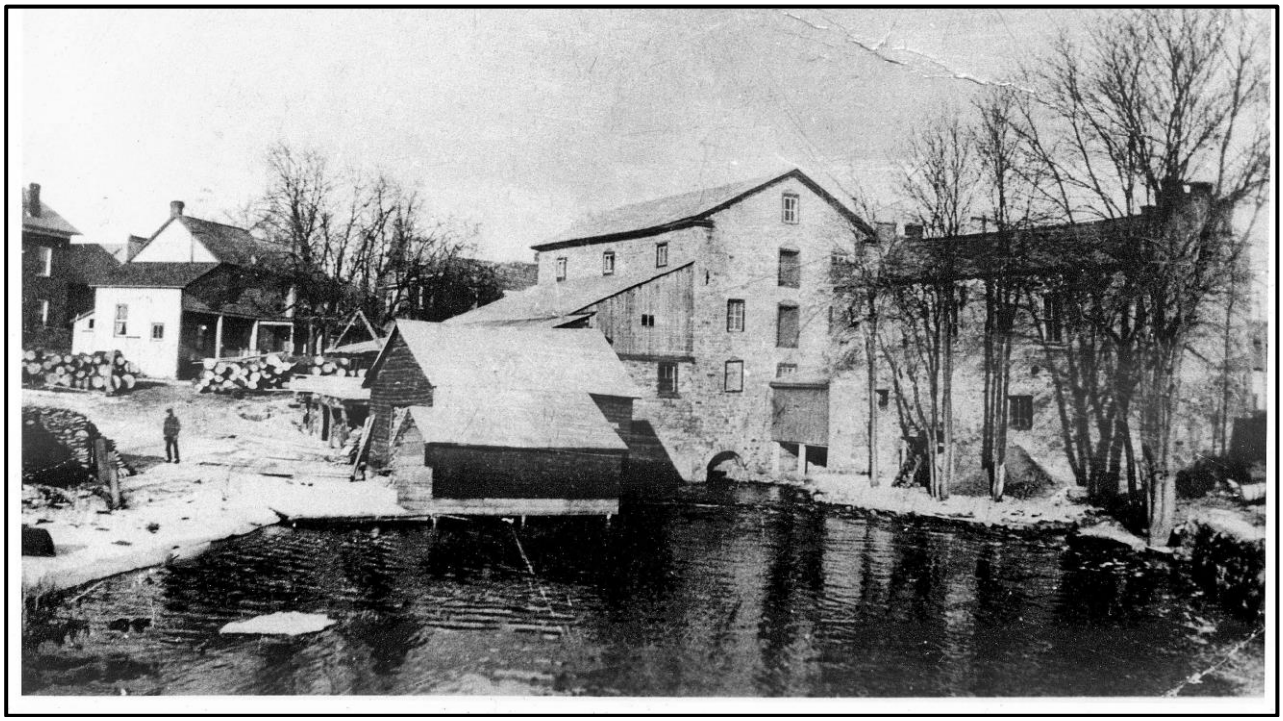
Mill in the 1880s

This is likely the 2nd oldest photo we have of the mill (next to the 1870s R.E. Denaut image which only shows part of the north wall of the mill – see the Mill Building section). You can see the carriage shed with second floor brick hall on the left. Of note is a view of the buffer wall against the north face of the mill and on the far right of that the stop-log dam in front of the bywash (at the very edge of the photo). The white strip is in the original copy we have of this photo – perhaps put there as a caption space.

The photo on the right is c.1900, you can see the stack for the steam boiler. Note that an awning has been added over the front door – the reason for that might be the birdhouse that sits just under the eaves (and/or perhaps to keep water dripping from the roof off customers as they enter the mill). Also note the millstones sitting in front of the mill – likely now superfluous with the c.1893 installation roller mills.

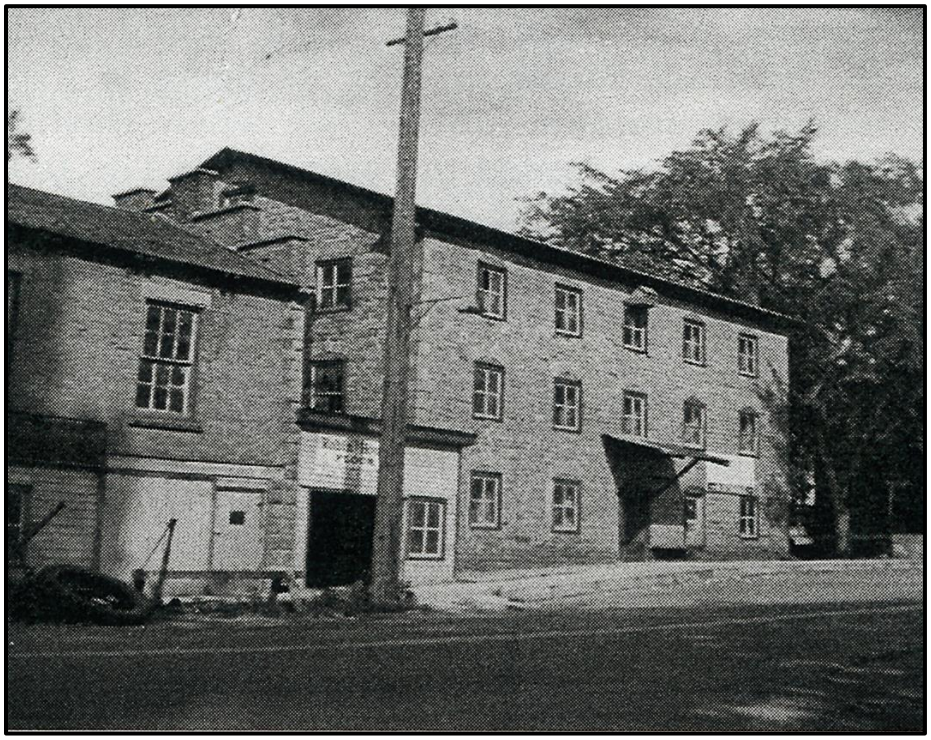


Old Stone Mill c.1900

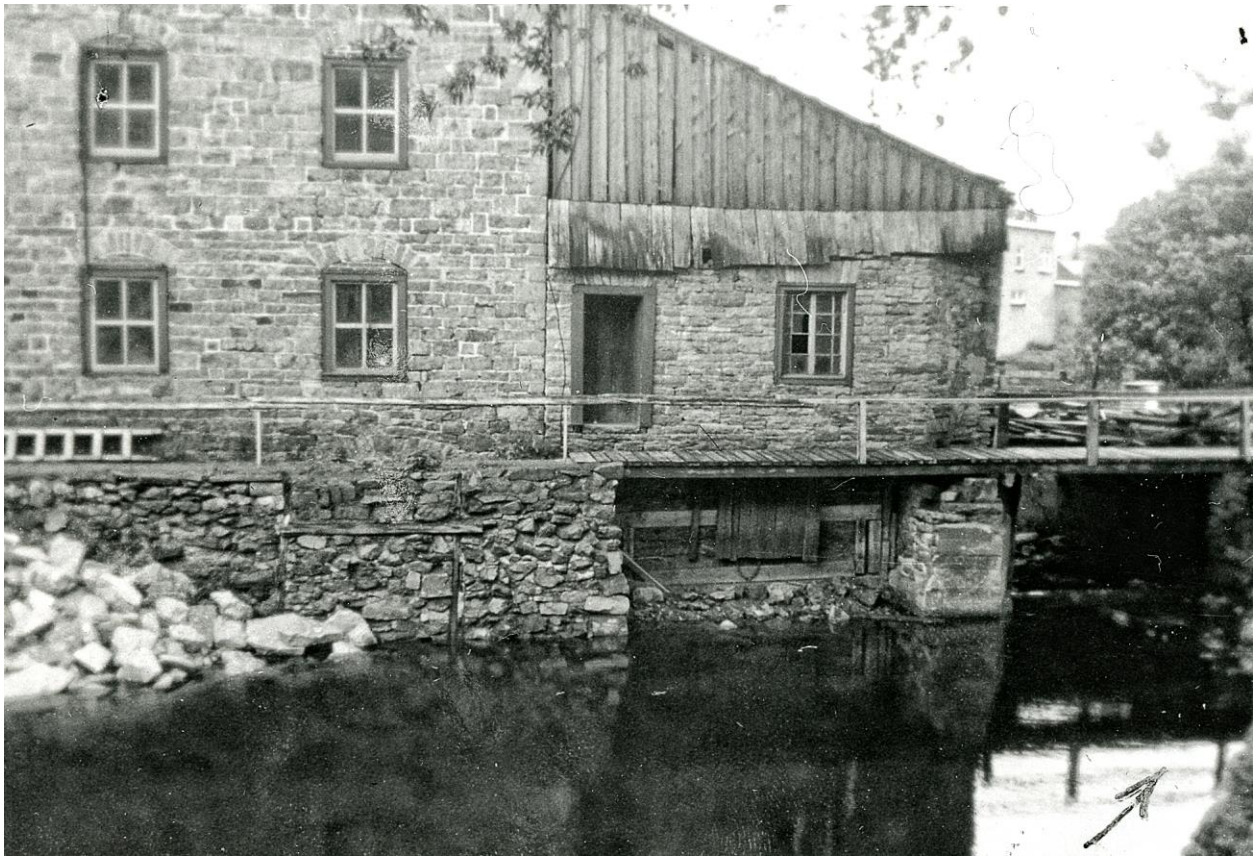


Mill in the 1930s or 40s

This photo shows the sawmill (hidden behind the out buildings in the foreground) in full operation (note the logs). Repairs have been done to the building, an upper window which had a crack through it in a c.1900 photo (see Restoration page) has been sealed. You can also see the back of the salt shed located between the mill and the hall/drive shed (on the right)



The mill in 1957 – the last photo we have before the mill was closed in 1960. You can see the advertisements for Robin Hood Flour.



North Wall – Old Stone Mill – c.mid-1960s

Photo assumed to be pre-1968 since it appears to show a portion of the floor of the sawmill intact (it collapsed in 1968). The portion of the buffer wall in front of the turbine raceway has been removed (by MNR). MNR took ownership of the turbine hall and bywash in about 1961. They deeded the turbine hall to the DMS in the 1970s but still retain ownership of the mill creek channel and bywash.

APPENDIX B1 – 1972-74 Rescue Preservation

The Old Stone Mill c.1970

This photo shows what the mill looked like prior to restoration – first the "rescue" preservation of the mill in 1972-74 and then the full restoration of the mill in 1999-2003.

Shortly after September 5, 1972, when the 4 original trustees deeded the mill to the newly incorporated Delta Mill Society, rescue preservation started to stabilize and preserve the building. Plans for this date back to 1964. At that time, the DMS went to Douglas R. Hough, Curator of Buildings and Machinery, Upper Canada Village to suggest a restoration plan. Hugh's plan, dated 26 October 1964, contained the following:

PHASE I

Section 1. Reinforce foundation walls using concrete poured into wooden forms with the use of a cement vibrator to insure maximum strength.

Section 2. Steel rods and plates to strengthen the foundation and to prevent buckling of the walls.

Section 3. Construction of reinforced concrete arches under the (a) main building and (b) stone foundation of wooden leanto rear building, for the water exiting from Upper to Lower Beverly Lakes, via Provincial built dam.

Section 4. The urgent need for a new roof using heavy duty cedar shingles to meet restoration specifications and prevent further interior deterioration.

Section 5. Repairs to all (a) exterior and (b) interior stone walls including pointing and finishing of mortar joints.

Section 6. Replacement of necessary window frames, sash and glass.

Section 7. Strengthening of all necessary floor supporting structures and flooring planks.

Section 8. Restoration of necessary exterior and interior wooden trim.

It was noted in an undated progress report (likely October 1972) that Section 1 and 3(a) of Hough's plan had been completed and that Section 2, 5(a) and 7 were in progress.

By July 1973, sufficient work had been done to be able to open the first floor of the mill to the public. However the turbine hall and upper floors initially remained off-limits to the public due to structural issues, including missing pieces of floor. While this initial work served to keep the building standing, it wasn't a full, or in some cases, a heritage appropriate restoration. The society was doing its best, with the limited resources it had, to save this remarkable example of Canadian heritage.

1972 Rescue Preservation
In this photo the central door sills are being repaired.

In total, $35,000 (about $225,000 today) was spent on preserving the mill. It appears that most if not all of Phase I shown on the previous page was done (we have no detailed documentation of the work). This included changing all the windows back to their original 12 over 8 configuration and replacing the brick spacers (tympanums) above the window lintels with wooden ones. The roof, which was covered with "modern" corrugated steel, was replaced with cedar shingles.

Preservation vs Restoration

While a certain amount of restoration was done, we characterize the 1972-74 work as "preservation" with the 1999-2003 work as "restoration". You can see the difference in the reconstruction of the turbine tailrace arch. The left is as it originally looked in 1900, top right is the 1972-74 rescue work, bottom right is the heritage correct restoration done in 1999-2003.

It is to be noted that preservation/restoration continued but we don't have a listing of what was done. The 1972-74 period captures the main initial preservation work on the mill. But work didn't stop, the photo on this page shows the replacement of the turbine shed roof structure in early 1975.

In 1976 it was estimated that $10,000 of work still needed to be done (about $50,000 2022$).

In 1978 it was noted that mill borrowed money (~$2,000) to pay for needed stonework safety repairs.

These are just snapshots of some of the work that was done. Work continued inside the mill (floor repairs, etc.) to make the mill safe for the public so that tours of the entire mill could be conducted. We have a date of 1985 when we first see summer students and a full open season. Lots of work went into getting the mill repaired and ready for the public.

APPENDIX B2 – 1999-2003 Restoration

1999-2003 Restoration

This was a full heritage restoration of the mill. In the upper right photo for instance, shows a large portion of the south wall, which had bulged out by 2 feet, completely removed and was in the process of being rebuilt. Inside the mill, much of the roof support structure was repaired or replaced as well. The total cost of restoration is equivalent to about 1.7 million dollars today.

In 1986, Parks Canada announced a new Cost Sharing Program by which privately owned National Historic Sites could get 50% funding to cover "eligible costs" of restoration. The list of prerequisites was long and very expensive. The Delta Mill Society formed a restoration committee to study the matter and in 1987 decided to move ahead with a major restoration program.

It took 12 years for us to work our way through the system, to satisfy both Federal and Provincial requirements. At the same time we were building a restoration fund, using fundraising vehicles such as charity bingos (our most lucrative fundraising activity which ceased in the late 2000s as Ontario focused on casinos which unfortunately does not help places such as Delta).

In 1992 we engaged the support of the Cataraqui Archaeology Research Foundation to start the required scientific work that was a pre-requisite to any restoration. Some 13 volunteers donated 544 hours in the field and 55 hours in lab. It was a joint effort between the CARF and the DMS. It was the first serious archaeology done on the mill and in 1994 a report was produced by Susan Bazely of CARF and Susan Noakes of the DMS titled: ***The Delta Mill Wheelpit Excavation, BdGa-34, Public Archaeology Program.***

The ball was now rolling and in 1995 we put up $25,000 of our own money to have a conservation report written. That research was led by André Scheinman, a heritage conservation consultant (a heritage architect). He called on the expertise of William T. Trick an engineering consultant, McNeeley Engineering Consultants and M.D. Smith. He was assisted by the restoration committee of the DMS; Peggy Fry, David Mess and Art Shaw and also by Anna Greenhorn and Myrla Saunders. He benefitted greatly from the historical files of the DMS that had been compiled by Sue Warren. Manuel Stevens, the regional planner for Parks Canada, helped André identify what would be required on the part of Parks Canada in order for the DMS to get funding. In May 1996 André produced the **Delta Mill Conservation Report** which estimated the cost of restoration at $800,000 (about 1.3 million today).

The proposed work was divided into phases, Stantec Consulting Ltd. of Kingston was hired in 1998 by the DMS (our own funds) to prepare and evaluate the tenders. The winning tender for Phase I was A. Santin Mason Contractor Ltd. with a bid of $399,331.49 – most of this was foundation and stonework repair and stabilization. This was a bit higher than expected and we shifted some work from Phase I to Phases II and II. Total project cost was now estimated at a little over $1,000,000 and we arrived at a cost split with Parks Canada for $466,000 from them and $540,000 coming from the Delta Mill Society. In February 2000 we were pleasantly surprised by a $100,000 grant from the Province of Ontario – this funding was able to be used for our required $540,000 contribution (bringing it down to a mere $440,000).

In 1999 we again engaged the Cataraqui Archaeology Research Foundation ($10,000) and a team led by archaeologist Jonathan Moore did archaeology on the newly exposed areas around the north wall (dewatered in preparation for the masonry work) and inside the raceways. Their team was supported by the DMS including Art Shaw, Tony Barlow, David Mess, Wendy Gillespie and Peggy Fry. Moore produced the final archaeology report that we have – ***Archaeology at the Delta Mill National Historic Site, BdGa-34, 1999, Delta, Ontario.***

Phase I ended up costing $454,020. Phase II, done in 2000, consisted of masonry and carpentry work. The original Phase I group did the work with the addition of sub-contractor Sentwood Mercer of Perth (carpentry). It cost $293,600. Phase III was done in 2002 at a cost of $299,225 and Phase IV, done in 2003 cost about $125,075. So the grand total from 1999 to 2004 (when the dust finally settled) was $1,171,920, which expressed as 2022 dollars would be $1,600,000

The high quality of that work and attention to proper heritage detail shows throughout the mill. The extensive masonry work is mostly hidden, but much of the carpentry work is visible, mostly on the 3rd floor. As much of the original fabric of the mill as possible was preserved (you can see new wood spliced into old wood). All repairs were heritage appropriate, the only changes, such as 2 stairs/exits from each floor done for legislated safety reasons.

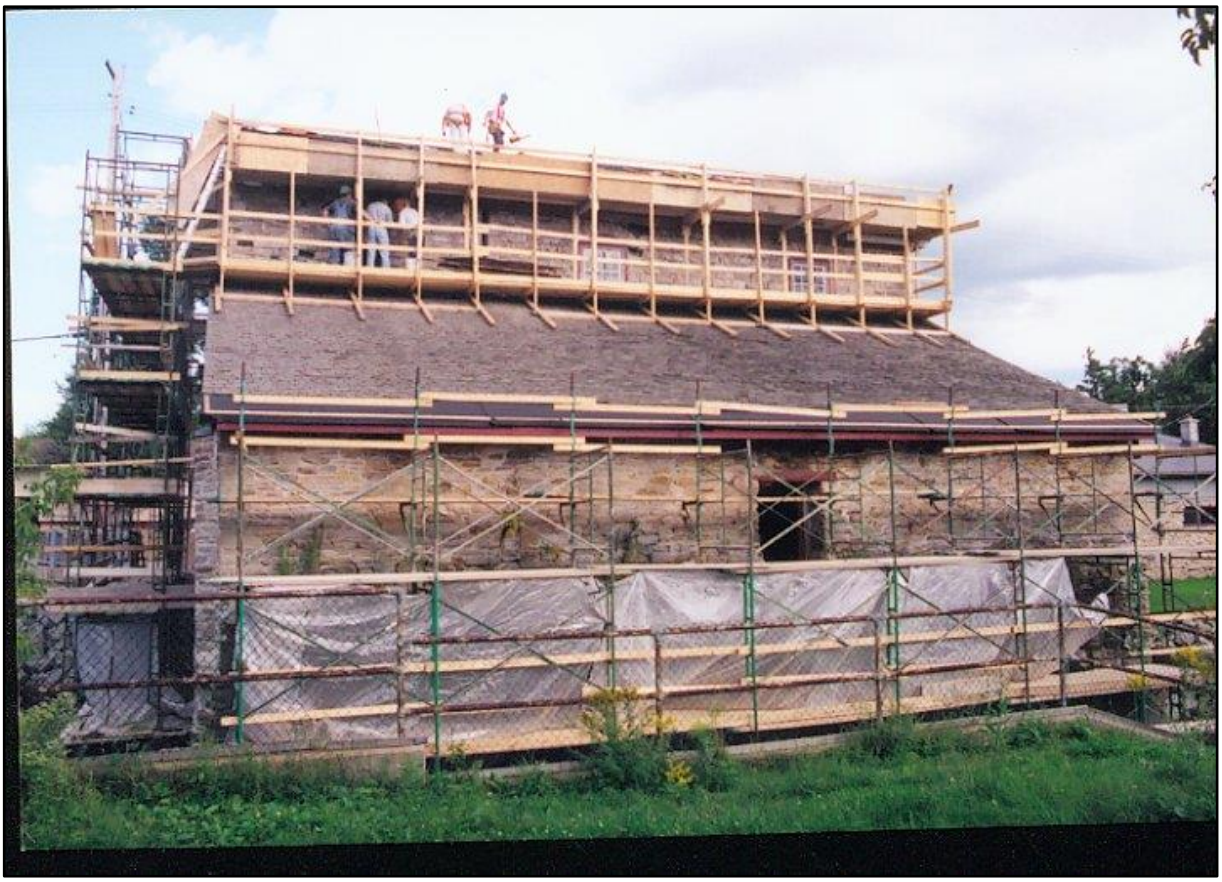
The mill sits on solid bedrock (something the original geotechnical work revealed) and now with the masonry and timbers of the mill properly restored it will stand for at least another 200 years (hopefully forever) if properly maintained.

Booting in a Queen Post Truss

This photo shows part of Phase II restoration (2000), a worker booting in a replacement queen post truss into place against an original purlin.

It also shows what dedicated volunteers can accomplish, people bound together with a common goal, to protect and present this remarkable piece of Canadian heritage. Thousand (and thousands) of volunteer hours went into the restoration – everything from local heritage expertise to our bingo team who provided much of our funding. The Board of Directors of the Delta Mill Society took risks, at times authorizing work in advance of available funding. It was a bold venture for a small volunteer organization; it shows what people dedicated to a cause can do.

It's to be noted that the Delta Mill Society didn't rest on its laurels once the work was done, it was ever "onward and upward" – we sought and got funding for a professional curator (Paul George), who led us on our next series of adventures, developing interpretation and signage inside the mill and then purchasing and installing period correct milling equipment so that we could have the mill operating by its 200th anniversary in 2010. All of that done was done while welcoming thousands of visitors each year to the mill, our prime activity, one that continues to this day.



APPENDIX C – Factoids

Factoids (a brief bit of factual information – 40 words or less)

We use factoids on our donor board – a short bit of information that might of interest to a visitor. The following is a list of those we presently have (not all are included on the donor board). These can also be tossed in at appropriate points in a tour. Feel free to add your own – we can always use more.

1. In 1963, Hastings Steele, the last owner of the mill, sold it for $1 to Albert Frye, Elizabeth Robinson, Mildred Sweet and Robert Tuck. They formed The Delta Mill Society.
2. The Old Stone Mill was built in 1810 as an automatic grist mill (requiring only one person to run it), based on the principles put forward by American mill designer Oliver Evans.
3. In 1970, the Old Stone Mill was designated a National Historic Site as one of the oldest surviving mills in Ontario and a tangible reminder of pioneer industrial development in Ontario.
4. The first mill, a wooden sawmill, was built near here by Abel Stevens after he was granted land in this location in 1796. He later added a wooden grist mill.
5. The community was first known as Stevenstown, after founder Abel Stevens, but the name changed to Stone Mills after the Old Stone Mill was built in 1810.
6. In 1827, Chief Justice John Beverley Robinson offered to present a bell to the Anglican Church if they would name the village after him. Stone Mills was renamed Beverley and the church got its bell.
7. In 1857, the village was officially named Delta due to the shapes of Upper and Lower Beverley lakes, and the village between, which form triangles, the shape of the Greek letter Delta.
8. The ridge post that supports the roof of the mill was hand planed on site from a single tree and is approximately 50 feet long. It is five sided and fastened in place with wooden pegs.
9. The Stone Mill was built by William Jones and Ira Schofield in 1810. It is 3 1/2 storeys tall, built using local Potsdam sandstone, featuring Georgian style architecture.
10. In 1861 the Old Stone Mill was producing 6000 barrels of flour per year.
11. Upper Beverley Lake was originally two smaller lakes. The Stone Mill, which acted as its own dam, raised the water, creating a larger lake, which was used as the mill pond.
12. GRIST – today's use is to mean any material being processed by a flour mill. It originates from the Old English word for grinding, so a grist mill is literally a grinding mill.
13. The Old Stone Mill was the centerpiece of the village, attracting other services such as blacksmith shops, inns, taverns, breweries, distilleries, and general stores.
14. The earliest recorded accounts of the use of a hand quern are those of Cato between 232 and 247 B.C.
15. By 1891, the Old Stone Mill was one of 1,034 mills operating in Ontario.
16. The Old Stone Mill is the only stone grist mill designated a National Historic Site of Canada.
17. A sawmill used to be part of the mill. There have been two – the first was a wooden building located near where the Turbine Hall is today, and the second was a structure built on the side of the Turbine Hall.

18. Built in 1880, the Old Town Hall served several roles, including a Court House (with a jail in the basement). The hall is now owned and operated by The Delta Mill Society.
19. BREASTSHOT WATERWHEEL - a water wheel where the water is delivered to the centre of the wheel. This is most likely the type of wheel originally in the mill.
20. MILLSTONES: The bottom stone, the “bedstone,” doesn’t move while the top stone, the “runner” does. Together, they are known as a “run.”
21. The Old Stone Mill is likely the fourth oldest remaining mill in Ontario after Backus Mill, the mill at Glenora, and Ball’s Grist Mill.
22. HUSK: the substantive timber foundation used to support the heavy millstones and the mechanism used to control the height of the runner (top) stone.
23. BOLTER: a machine used to separate flour into different grades of fineness.
24. ELEVATOR: In the mill, an endless belt with small wood or tin buckets attached, powered by the waterwheel (and later the turbines), that was used to move grain and flour between floors.
25. Delta was the earliest community in this region since, with the only grist mill in the area, all roads literally led to Delta, making it the local centre of commerce.
26. In 1835, a sale ad for the mill stated that there was a separate wooden building that contained a saw mill, a carding machine, and a mill for cutting and polishing marble.
27. The mill was built over 100 years before electricity arrived in Delta.
28. In 1810-11, when the mill was built, the total population of Upper Canada (Ontario) was 77,000 people – it has over 14,000,000 people today.
29. Our operating millstones are French burrstones which come from the Marne Valley in France.
30.

NOTES: (add your own notes)