

John Gunn's Water Mill

The Story in Five Drawings

JOHNN GUNN'S WATER-POWERED mill, built more than 160 years ago, in 1852-53, was for about a dozen years a significant business in what is now the Lockport area just north of Winnipeg. Like the other seven water and 18 wind mills that served the growing Red River Settlement in the mid-nineteenth century, John Gunn's mill was essential for converting local farmers' wheat to flour, and thus to bread. All of these operations are long gone (a replica of Cuthbert Grant's 1829 mill stands in Winnipeg in the St. James area), with few physical traces of their existence. And there generally are only sketchy written accounts of their operations.

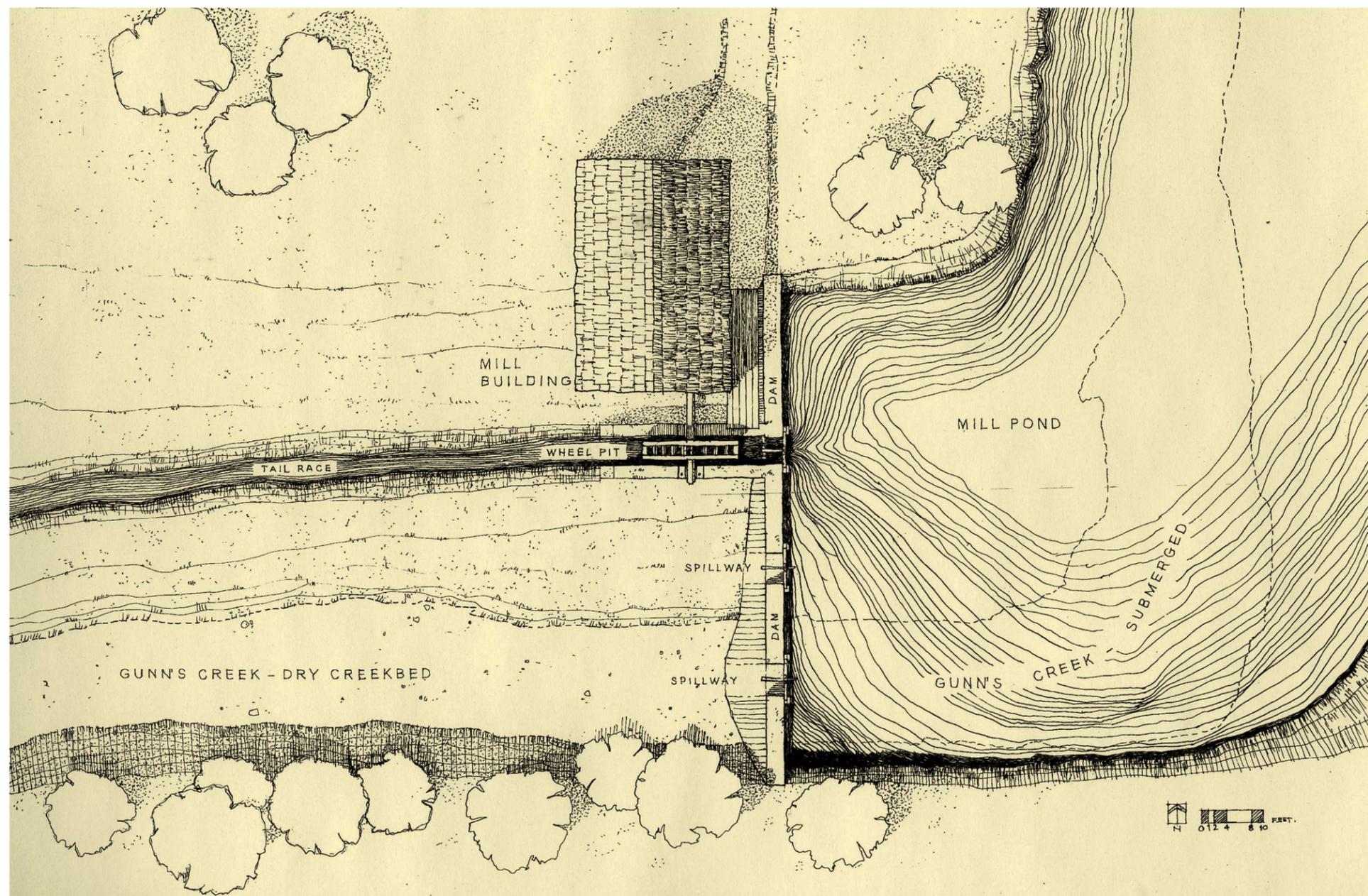
There is, however, one account, of John Gunn's mill, that provides a vivid and useful description that can be used to imaginatively recreate an early Manitoba water-mill operation.

This booklet, which focuses on the building and site through five drawings, is extracted from a larger report developed for the St. Clements Heritage and Tourism Committee, and which provides a great deal more information on the history and context of the site, and of the history and development of water mill in Manitoba. It is recommended that anyone interested in this fascinating subject, and the individual story of John Gunn and his water mill, consult that report for more in-depth material.

The following images and support texts are a conjectural imagining of John Gunn's mill, which likely ceased operations in the late 1860s, when steam power made water and wind mills obsolete. It relies on a close reading of George Henry Gunn's ca. 1930 account of his father's mill,

from its construction to its operation; that account is reproduced as an appendix to this document.

The captions that accompany each of the following images contain specific recollections of George Henry Gunn with some additional reasoning based on an exploration of the site and of research undertaken on water mill operations. There are occasional instances where George Henry Gunn's information is slightly contradictory or where the absence of a key detail has required some interpolations to determine likely features and details. But for the most part, these drawings provide a reasonably faithful recreation of a Red River Settlement-era water mill – and serve as a reminder of the kind of ingenuity, skill and determination that attended Manitoba's earliest attempts at industry and manufacturing.

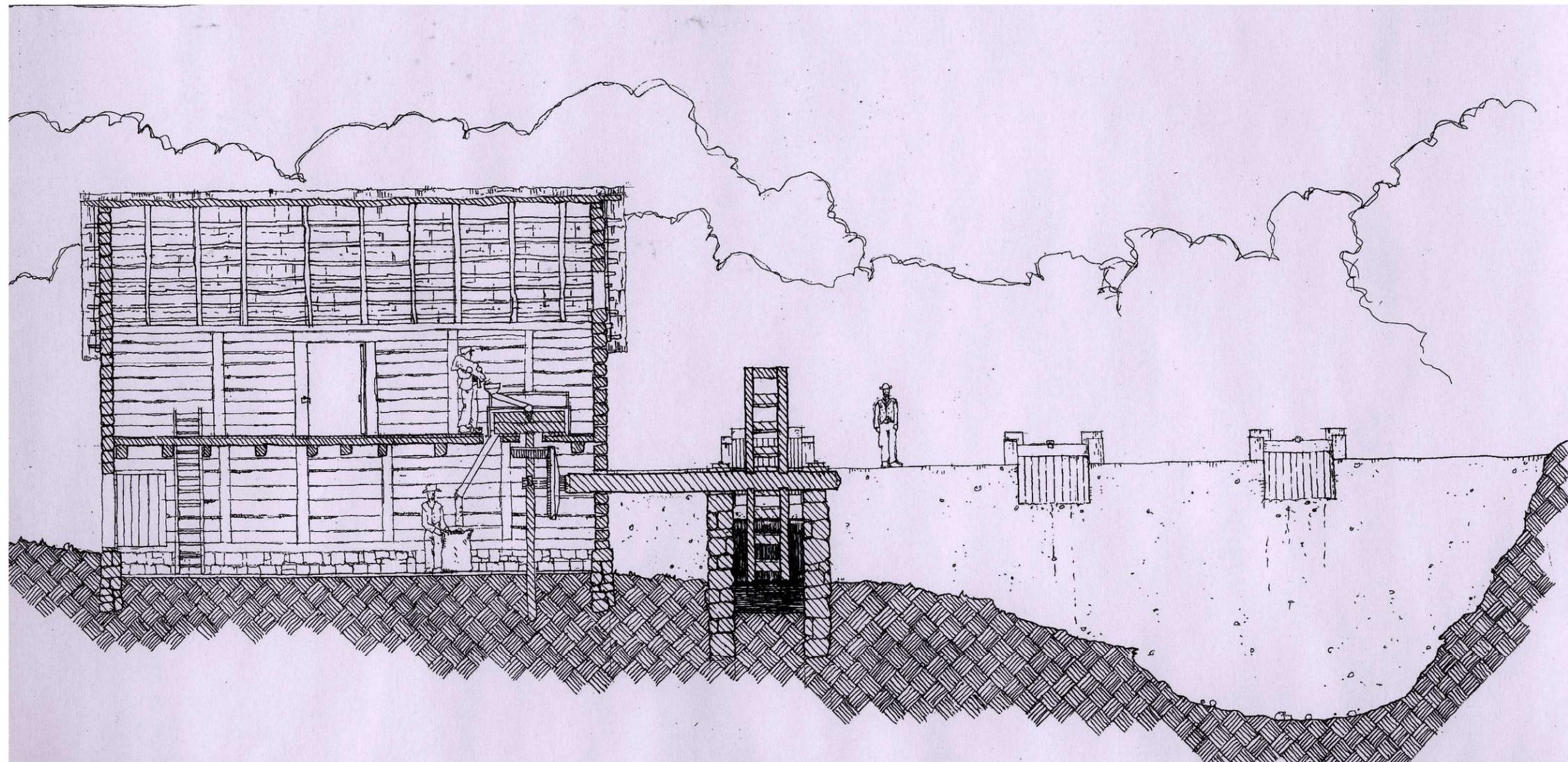


Gunn's Mill Site Plan

The site plan opposite has been developed using George Henry Gunn's account, supplemented with information about the operation of undershot water mills. The plan shows the mill on the north side of Gunn's Creek – this is not explicitly stated by George Henry Gunn, but is surmised by various details he provides. The site has been selected to correspond to the known stone debris field still visible at Gunn's Creek, presumed to be the remnants of the dam (it is thought that the larger stones from the dam and building were recycled in other building projects). The building is oriented north-south, with access on the east side and via a planked "bridge" situated between the building and the northern edge of the dam. George Henry Gunn observes that there were three spillways (and sluice gates), shown here, but does not describe a major—and critical—feature of the operation – the wheel pit. This has been determined to be in the position noted on the plan, to give adequate access to the mill building but also sufficient depth for the wheel to turn. George Henry does not describe the trench that must have been excavated to house the wheel and the tail race feature that would allow water to exit the wheel pit, and make its way back to the existing channel of Gunn's Creek.

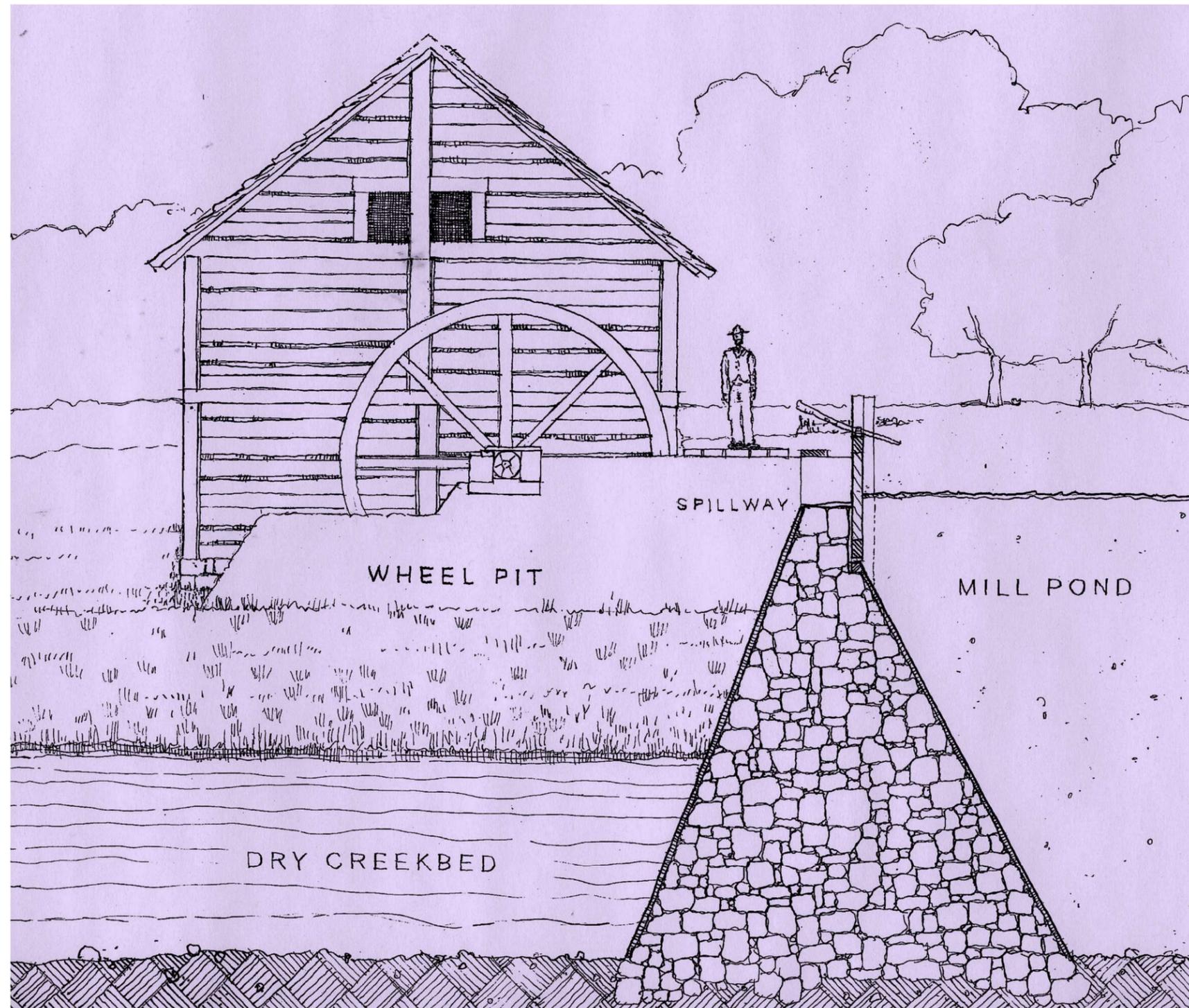
The key features to note on this plan then are: the dam that interrupts the flow of Gunn's Creek and creates the mill pond; the main sluice gate, wheel, wheel pit and tail race that form the main features developed to convert water to power; and the mill building, in which all grain-grinding and production aspects were concentrated. The heavy graphic treatment of the building's roof describes that feature's material construction – grass thatch.

The drawing also shows the slightly steeper bank of the south side, and the situation of Gunn's Creek – submerged under the mill pond on the right and as a dry creek bed on the left.



Gunn's Mill Longitudinal Sectional Drawing

The technical drawing above shows the mill building, dam and land as if all were sliced vertically north to south to reveal their internal workings or construction. This kind of drawing is especially useful for showing how buildings are put together. In this instance the drawing also shows how the wheel pit was configured, how the axle attached to the wheel entered the building, and also how various other internal functions were organized and developed in the mill building. The dark hatching at the bottom of the drawing shows the slope of the land, including the dry creek bed of Gunn's Creek at the lower right. The dam is shown stretching from left to right, with sluice gates and spillways as per George Henry Gunn's account. Figures are used to give a sense of scale, and also within the building to suggest milling activities – on the upper level pouring a bag of grain into the grinding-stone hopper and in the lower level collecting in a bag the resulting ground flour distributed from the hopper by a chute. A key feature of the drawing is the wheel, wheel pit and sluice gate. The drawing shows how water from the main sluice gate would flow down into the wheel pit and through its force turn the wheel, which then would turn the large axle connected to the wheel and thence engage the wheels and gears within the mill building. The drawing also shows the main entrance into the second floor, the postern door on the north side used to access the ground floor, as well as a ladder that must have been used to move between ground and second floors – presumably through an opening in the floor of the second storey.



Gunn's Mill Transverse Sectional / Elevational Drawing

The focus of the technical drawing opposite is on the dam, sluice gate, creek bed and mill pond, which are shown via a section drawn from west to east. The ground beneath the creek bed and mill pond is suggested by dark hatching at the bottom edge of the image.

This drawing is especially useful to gain a sense of the dam construction. George Henry Gunn's account does not include a height, so it has been necessary to examine the actual presumed mill site in order to speculate on this detail; it is thought that the dam must have been at least 12 feet high—from the lowest level of the creek bed—in order to develop a sufficiently large mill pond. George Henry Gunn does note a large dam, coated on both sides with heavy clay, presumably to control water leaks. In this drawing the mill pond height is slightly above the spillway height, suggesting how the pond was actually used – that is, that it was of a high enough level to pour through the main spillway in the dam when required to operate the water wheel. This section drawing is through the middle spillway and sluice gate, in the closed position, with the control levers (of stout oak saplings) shown in a relaxed position.

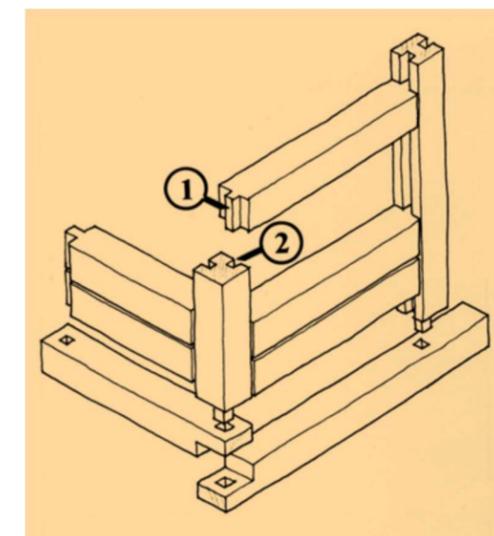
In the background are seen the mill building and the great water wheel in its wheel pit. The figure placed at the southern edge of the plank bridge provides a sense of scale.



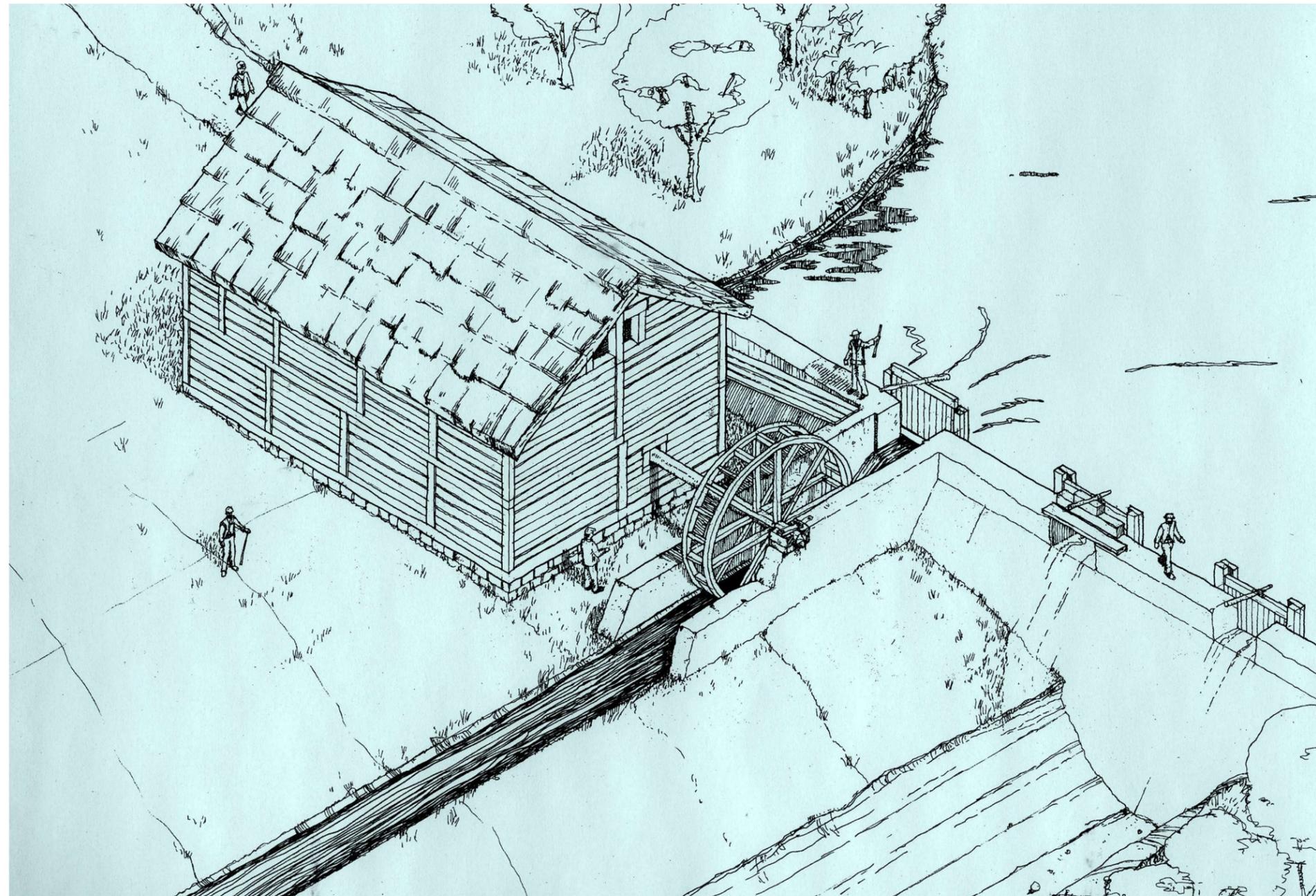
Gunn's Mill Transverse Sectional / Elevational Drawing

This second section drawing takes a vertical cut from west to east along a line passing through the wheel pit, wheel, dam at its northern edge and the main sluice gate. In the drawing the sluice gate is slightly opened to allow a flow of water from the mill pond to enter the wheel pit and turn the wheel. When the mill was not in operation the gate would be in a closed position. It is worth comparing this section drawing to the previous one to get a sense of the dam's actual formation – given the slope of the land away from the creek the dam would have been higher at the middle and much lower at its northern edge – as shown here only about five feet high.

It is worth noting here the distinct log construction techniques likely used for the mill building, and shown in this drawing. Before 1870, Red River frame was the building construction method used by most inhabitants of the Red River Settlement. The procedure was used primarily for houses, but also found favour for public, commercial and religious structures. The technology was introduced to the Canadian West by Hudson's Bay Company employees from Quebec, where a similar technology was popular. The Quebec buildings were derived from French structures of the seventeenth century. In Manitoba, few Red River frame buildings remain. The most distinctive feature of Red River frame structures is the log construction procedure, in which short logs were squared and set between upright squared logs. A detail of this procedure is featured opposite.



The distinctive quality of Red River frame is presented in this detailed cutaway view of a typical corner connection. The tongue (1) on the horizontal log is slipped into the groove (2) chiselled into the vertical log.



Gunn's Mill Isomeric Drawing

This final drawing is the ultimate purpose of this project, showing John Gunn's water mill from a bird's-eye view looking from the southwest to the northeast. All the features, elements and details identified in the documentary materials collected for the project are featured here in this graphic representation – the mill building with its thatched roof and rough log walls, the sturdy dam built up of limestone blocks and sheathed with a thick layer of river clay, the great water wheel, and the actual topography of the immediate vicinity.

The drawing has been rendered to suggest the mill's operation in the late 1850s, and in late June or early July, when it would have been most active – and most successful.

To further imaginatively animate the image, it helps to recall one of George Henry Gunn's recollections: "They came in squeaking Red River carts, in skiffs in dugouts and York boats, from all over the Settlement. They were there from the hand-to-mouth yokel of the neighborhood with a single bag on his back, to the York boat brigades of the Hudson Bay Company with hundreds of bushels."

John Gunn's water mill, along with the other seven Red River Settlement-area water mills (and the 18 or so windmills) were major grain-grinding operations that ultimately ensured the success of the settlement. They were also important examples of Victorian-era industrial inventiveness. It is of course unfortunate that they are all long gone. But it is hoped that this project, and the drawings developed here, give a clear and persuasive sense of one pioneer Manitoba water mill operation. It is also hoped that the project illuminates the remarkable characters who created these significant and fascinating early Manitoba industries.

AN ACCOUNT OF JOHN GUNN'S WATERMILL

The following article, developed by George Henry Gunn, the son of John Gunn, provides the most useful observations about the actual form and layout of the mill and its site infrastructure. Some modest biographical information about John and George Henry Gunn will make the account even more vivid.

John Gunn was born in 1827, the third child of Donald Gunn and Margaret Swain; there were a total of 12 children in the family. Donald Gunn (1797-1878) was a major figure of the Red River Settlement, a celebrated educator, scientist, historian and politician. When John began to contemplate the construction of his water mill, in the early 1850s, he would have been a young man – perhaps 23 years of age. He was not yet married – that would not transpire until 1855, when he was 28, and engaged to Emma Garrioch. John and other family members (likely brothers Alexander, George and Donald Jr.) as well as hired men operated the mill around this time, and until at least the mid-1860s, when he would have been in his late 30s. John died in 1898, aged 71.

George Henry Gunn, the seventh child of John Gunn and Emma Garrioch, was born in 1865 or 1866, at a time when the water and wind mills of the Red River Settlement were mostly obsolete, as steam-powered operations took over. It is thus either that the Gunn mill was still occasionally operating into the late 1860s or early 1870s, which would allow for George Henry's vivid first-person descriptions, or that the piece is more of a recollection derived from family memories. In any event, the following piece is so lively and the details so compellingly real, that we are assuming the information is mostly reliable.

Among the earliest and most vivid of my childhood recollections are those of my father's old watermill. And, while this ancient and primitive institution was by no means unique among its fellows, nor the first of its kind in the Red River settlement, I think it sufficiently typical and the facts connected with its construction and operation sufficiently interesting to warrant my setting down a few of them here, for the benefit of those "moderns" who were not privileged, like a few of the rest of us, to live through such scenes of "history in the making."

This primitive but ambitious enterprise was conceived and carried out in the early 1850s. My father was then a young man, newly married, and possessed of little of this world's goods save an abundance of health and strength, unconquerable optimism and the will to succeed. He had no monied capital; but, some time prior to this his father, Donald Gunn, the historian, had deeded over to him his original homestead, lot 163, Parish of St. Andrew's, on the east side of the Red River, where the big traffic bridge over the St. Andrew's lock and dam now is; and on this farm was a creek—or rather, a small part of one—still known locally as "Gunn's Creek." This little stream, now kept at a uniform summer level by the backwater of the Lockport dam, today forms a picturesque beauty spot well known to travellers approaching the St. Andrew's lock from Winnipeg by the Henderson Highway.

Winding sleepily in and out through beautiful groves of oak and elm, and always still as a mirror, it has little to suggest to the casual observer, of the bustle of industry or the stirring activities of commercial enterprise. But sixty years ago, it presented a very different aspect. In those days, before our ubiquitous drainage system had despoiled the marshes of their moisture and desiccated the fair face of Mother Earth, Gunn's Creek was accustomed to go on periodic rampages that attracted the attention of even the dullest observer. Taking its rise in those deep and extensive morasses that form the drainage basin of the hill country to the east and south, it galloped down its tortuous, pebbly channel, in the spring of the year or during rainy seasons, like a veritable young "Kicking Horse" – a phenomenon not long lost upon the new proprietor of the Gunn homestead.



John Gunn, ca. 1890 and thus about 65 years old.
John was in his mid-20s when he began work on the watermill at Gunn's Creek. (Photograph Courtesy Archives of Manitoba)

DECIDE TO USE POWER

Here was water power—limited and intermittent it is true—but sufficient for the purpose. And there was wheat to be ground, being produced in ever increasing quantities in the neighborhood. What more logical, in the premises, than a watermill? So a watermill it was to be. And a watermill it was. This watermill, however, was not built on the original homestead. A suitable site was purchased a little farther down the stream (on Lot 167), not far from its junction with the Red River, and on this spot building operations were soon under way.

The “log” of the actual building of this old mill would be too long to give here; although I have it, in brief and fragmentary form, in the original account book kept by my father at the time. Many names figure in the record of men now long gone to their rest. They were all men of the neighborhood, all equally “to fortune and to fame unknown,” and blissfully innocent of the seductive blandishments of the “walking delegate.” Their wages, for the unabbreviated days of labor unrelieved by modern machinery that they contributed to its construction, ranged from 25 cents a day, for the ordinary laborer, to 45 cents or 50 cents a day for the skilled artisan, their food, presumably, being furnished in addition. “A starvation wage,” according to the sophisticated “living wage” standard of today.

WORK DURING THE SUMMER

The work of constructing the dam and building to house the machinery was carried on principally during the summer, this being the most convenient reason. During the later summer it was especially convenient to work at the dam, as the spring freshness and rainy season being past, the bed of the creek became quite dry, thus doing away with the difficulties attendant upon the harnessing of a living stream. The dam was first constructed as a wall, or dyke, of limestone, a plentiful supply of which was quarried from the adjacent river bank; this being subsequently reinforced by a heavy, sloped bank of clay, well packed in on either side. This dam was pierced, at equal intervals along its length, by three spillways about five feet wide, constructed of heavy oak posts and planking, and controlled by strong oaken gates, with oaken levers for raising and lowering them.

These levers were just a stout oak sapling from the woods, about the size of an ordinary fence post, passed over a raised beam across the top of the spillway a few feet back; the business end of it being securely fastened to the top of the gate by shaganappi thongs passed through an auger hole in the framework, the handle-end of it being easily manipulated from the top of the dam in the rear. The lever controlling the “grinding gate” was an exception to this, being passed forward through the end wall of the building, thus providing for the control of the power from within the mill.

The mill building itself was of log-frame construction, about 24 by 34 feet, and two storeys high, the floor of the second storey being just above the level of the top of the dam, behind the most northerly end of which the building stood. A gap of some six or eight feet between the front of this building and the sustaining wall of the dam was bridged by a planked approach to the main entrance of the mill, which was in the second storey, about midway of its length. In this second storey were the stones that ground the flour, the sundry bins for the storage of wheat, all grists being received into the mill over the planked bridge aforesaid. In the lower storey were housed the bolting machinery and the great spindles and wheels that distributed the power to the various working parts. Here the finished product was bagged and delivered to its waiting claimants through a postern door in the north end of the building.

NO GLAZED WINDOWS

The mill building was quite innocent of glazed windows, sufficient light for operation by day being admitted through the open door and a couple of small square apertures in the centre of the south gable. When necessary to grind at night, some sort of fish-oil lamps, suspended at convenient points, were used. By day, also considerable light was admitted between the unchinked logs; for, from very shortly after its completion to the day of its final demolition, the building remained quite destitute of the chinking and plaster that usually form the finishing touches to structures of this kind. The roof, of course, was of thatch, which was always kept in repair with difficulty, for the same reason that the walls went unchinked – a reason that will appear later.

It may be truly said, that this old mill was “fearfully” and wonderfully made. Nearly all the machinery housed in the structure above described was, a year or so prior to the first turning on of the water, growing in the forest or reposing peacefully in its native habitat in the ages old strata of the earth. With the exception of a few small metal gear wheels, brought by Mississippi Steamer and Red River Cart from St. Louis, Missouri and some brass bolting cloth from England, every wheel and spindle and every other working part, was manufactured from local materials by local artisans. All the wheels in it, with the exception already mentioned, were constructed out of native oak from adjacent woods. These were made in the seclusion of his workshop, during the winter, by my father, who, though self-taught, was a skilled wheelwright and joiner.

MARVELS OF MACHINERY

I can well remember the marvels of these ponderous and skillfully constructed wheels. The largest was, of course, the great water wheel that furnished power. This must have been, at least 16 feet across, with a three-foot face. It was built entirely of native oak, with the exception of the buckets which were of fir or some similar wood. The spindle that it turned, on which it was built, was a great oaken timber 14 inches in diameter. On the other end of this protruding into the lower storey of the mill, was the largest of several wooden gears, similarly constructed. This one, if my memory serves me rightly, was about six feet across, and into it was geared a succession of others, of similar material and construction, which finally connected with the imported metal wheels above mentioned.

These great oaken gears were, as has already been said, marvels of the wheelwright and joiner’s art. They were built up of thoroughly seasoned native oak; the jointing of the great spokes and felloes being so perfect as to almost defy detection. Every cog of these wheels was made and mortised in separately. And some idea maybe had of the strength and accuracy of construction when, it is said, that at the time of the final dismantling of the mill, after twenty years of continuous use, they showed but little trace of wear or deterioration.

The bolting apparatus, with its revolving brushes and other parts, was also made in its entirety in my father’s workshop; as were also the hoppers and casings housing and stones; and the lumber for all these things, and for that matter, every other thing about the mill where lumber was needed, being whipsawed out of trees felled in the vicinity. The mill was equipped with two run of stones – also of purely native material and manufacture. These were ponderous affairs, five feet in diameter and eight inches thick. They were chiseled out of the native granite on the east side of Lake Winnipeg, opposite Grindstone Point, and transported by York Boat to the site of the mill; the pattern on the grinding surfaces and other finishing touches being put on by local stone cutters there.

PLASTER SHAKEN LOOSE

Only one pair, however, of these giant stones was ever run at a time after the first experiment of trying to run them both simultaneously. Upon this occasion, as I have often heard it told, it was as if a young earthquake had broken loose. The plaster and chinking of the log walls came down in showers and the entire plant was threatened with destruction. Needless to say, the experiment was never repeated. Nor was any attempt ever made to replace the plaster and chinking; it being found that the continuous vibration of the machinery—even with only one set of the stones running—made it impossible to make them stay put.

The task of installing the machinery and of giving the finishing touches to the various parts of this ingeniously-constructed flour manufacturing plant was carried out during the winter so that by the end of March it was ready for the water. At least that was the fond belief indulged by its builder. But the water came a little sooner, and in much greater volume than was anticipated. The winter's snow had been exceptionally heavy; and early in April a sudden thaw set in, accompanied by rain, which precipitated the accumulated water into its natural channels with unprecedented dispatch and violence. It came down Gunn's Creek with a roar of triumphant freedom that was not to be lightly checked; and, when it reached the newly constructed dam, there were things doing.

At this time there was only one spillway provided for the passage of the surplus water, the inadequacy of which for this purpose was very soon apparent. Weak points and undetected crevices, too, were soon sought out by the insidious and insistent element; so that, between what was threatening to go over and what was threatening to go through or under, it soon began to look as if the whole dam, mill and all, would be carried into the Red River. In such a crisis, immediate emergency measures had to be taken to save the situation.

RECRUIT VOLUNTEER HELPERS

Gangs of men with barrows and shovels were quickly mustered and put to work, some wrestling with the leaks in the dam, others cutting a ditch around it to let the surplus water away. It was a strenuous days battle extending far into the night; but when morning dawned the situation had been mastered and the mill saved.

An additional spillway was afterwards put in, thus effectually guarding against any similar menace in the future. Despite such early aberrations, however, the mill proved to be unqualified success. Having "sowed its wild oats" and demonstrated its frolicsome moods in a number of such escapades it settled down to the serious business of producing "the staff of life" for all and sundry who might bring their grist to its hoppers. I am not prepared to pronounce any judgement on the quality of the flour produced, although I consumed my good share of it.

According to the uncritical standards of the time, however, it was considered good--frozen wheat and bin-heating misadventures, of course, being allowed for. The quality suffered too, sometimes no doubt, through the inexperience of the miller. I have often heard it said, for example, that all the flour turned out for a considerable time at the beginning of its operation, was produced with the stones running backwards. I don't remember whether this original output was labelled "New Process" or not. But I don't remember anyone dying of "flour barrel consumption" or any gastric malady through its use so that it could not have been too bad, even at that. At any rate, there was soon no lack of grists. They came in squeaking Red River carts, in skiffs in dugouts and York boats, from all over the Settlement. They were there from the hand-to-mouth yokel of the neighborhood with a single bag on his back, to the York boat brigades of the Hudson Bay Company with hundreds of bushels.

In fact, in the palmy days of this old mill, it was more often the water than the grists that was lacking. In the spring of the year it came down in floods, as described above; and grinding had to be kept up by night as well as by day, in order to get the waiting grists ground, and not to lose any of the available power of its precious volume. In a dry time the grists accumulated and waited on the miller; the miller waited on the capricious favor of the "weather man". My father had a stake driven in one edge of the dam, near the shore, in the top part of which were sawed notches to measure height of the water—this primitive water-gauge being known among us as "the sawed stake" and I can well remember being

sent by him, on various occasions, to consult this "sawed stake" oracle, in order to acquaint him with the level of the water; the difference of an inch more or less, registered by those fateful notches, always determining the momentous question, "to grind or not to grind?" In a period of stubborn drought, with no Elijah to intervene, the only recourse for the flour-hungry householder was a resort once more to the "querns" or the "beating block," an alternative that not infrequently presented itself.

From a financial point of view, while not producing dividends comparable to those of our great flouring mills of the present day, I would judge that the venture was fairly satisfactory to its enterprising proprietor. Ordinarily, the system of payment was by moult, this instance, pronounced "mooter" that is, a certain percentage of each bushel of wheat was taken by the miller as his remuneration for grinding the balance. I very clearly remember the old "mooter measure". It was a miniature wooden tub made with staves, one of which was left standing a few inches above the others to form a hand-hold. It would probably hold about a gallon. Pound notes and gold sovereigns were also considerably in evidence; such patrons as the Hudson's Bay Company and other wealthier residents of the community probably preferring to pay in those media. Upon the introduction into the country, however, of steam flouring mills, with improved machinery and methods, the patronage of the "old mill" naturally fell off, making its continued operation unprofitable. It was accordingly closed down, and a number of years later, dismantled.