

Willamette Falls Heritage Foundation



*“Preserving and sharing stories of human enterprise
and the power of the great Falls of the Willamette River.”*

The Steamy Aroma of Papermaking

More often than not, whenever a photo of the Willamette Falls paper mills appears on social media, someone will invariably post a comment like the following: “Oh, I remember how that place used to stink...”

But that was yesterday.

It is true that the Oregon City and West Linn mills used to stink — a lot. For many decades both mills made their own pulp derived one of two methods: mechanical grinding or chemical cooking. It was the chemical or sulfite process generated the rotten egg smell.

This pulping process cooked wood chips with sulfuric acid under steam pressure in large, multi-story digesters to break down the fibers. It not only produced an odor but also considerable water pollution, mostly in the form of oxygen-robbing nutrients that killed fish.

In 1962, KGW TV journalist and future Oregon governor Tom McCall even produced a documentary titled ‘Pollution in Paradise’ which included a couple brief shots of the Willamette Falls mills. Ironically, one of the clips showed water pouring from the tailrace beneath the grinder rooms, implying that waste being dumped in the river. However, this water was only used to spin the grinder turbines and contained no mill-generated pollution. Wastewater from the pulping process occurred further downstream.



Crown Zellerbach’s ‘bad old days’ of pollution, circa 1950’s.
photo courtesy of OurFutureRiver.org

In 1968 West Linn’s Crown Zellerbach Co. ceased sulfite pulp production due to the growing environmental concerns from both the public and regulatory agencies. Paper began to be produced solely with pulp from the groundwood sawmill or supplied from outside sources.

Yet even today, when people see what they think is ‘smoke’ billowing out of Willamette Falls Paper Co. they often assume it is filled with odiferous pollutants. But nothing could be further from the truth. The white clouds rising above the mill is merely condensing steam in the form of water vapor emitted from the paper driers, turbine exhaust, or excess steam from the boilers — none of which contains any odor.

All pulp is now imported from outside vendors, including Columbia Pulp Co.’s recycled wheat straw pulp that is used in the manufacture of the mill’s revolutionary reHARVEST paper.

Water pollution has been eliminated as all waste and rainwater on the island is collected for treatment in a clarifier, aeration ponds, and then tested before being released to the river. And the boilers are no longer fired with wood waste but with clean-burning natural gas.

No pollution, no odor!

It’s remarkable that the old mill’s smelly legacy has been replaced with a clean, green facility that manufactures a recyclable product.

Locked Down — For Now

By **Sandy Carter**, Co-Vice Chair
Willamette Falls Locks Commission

The pathway to a legislative solution for the locks is a bit complex and twisted, but well worth tracking. Here's what we know so far.

The 2020 Oregon Legislature ended without closure for the two Willamette Falls Locks bills that were put forward by the Locks Commission. Hopefully, legislative days in late May provide an opportunity to check in with key legislators, such as Representative **Mark Meek** will keep the project alive.

There appears to be a viable path forward as we seek passage of our Public Corporation Authority legislation in the 2021 session. But given COVID-19's effect on State finances, the request for lottery funding for repairs does not look promising.

At the Federal level, the Senate Water Resources Development Act bill does continue to move forward. The Corps of Engineers Locks transfer provision was included but without an allocation of administrative costs to the COE as we requested. It may be possible to include a costs provision in the House version of the bill, but nothing has been drafted/released on the House side yet.

Meanwhile at the Locks Commission, Summit Strategies' contract as the Project Team is extended through June 30, 2020. **Turner O'Dell** (at PSU's Oregon Solutions office), **John Williams** (West Linn), **Trent Wilson** (Clackamas County) and **Andy Shaw** (Metro) will be "staffing" the Commission's effort after June 30. Oregon Solutions funding is in place through June 30 2021 but will be reduced slightly, along with agency budgets. The Leadership Team continues to meet remotely to face the challenges of our new political and financial environment. If we have a Public Corporation in place next year, the COE will be willing to transfer to that entity. For more information, contact Mayor **Russ Axelrod**, Chair of the Commission.

None of this is easy but is a necessary struggle toward the corporate operation of the locks.



On April 26, 1915 the Portland Railway, Power & Light Company turned over ownership of the Willamette Falls Locks to the federal government after the government deposited \$375,000 toward the sale. This would be about \$9.5 million is today's dollars.



Built long before the advent of poured concrete construction, the lock walls were formed with basalt blocks quarried from the Carver area along the Clackamas River. They were hauled onsite by Chinese laborers and then hand-carved by European stonemasons. A testament to their craftsmanship, these walls have remained water tight for over 147 years!

Lots of Business Back in the Day

It was a busy day at the locks in this 1958 photo taken from the utility bridge over the upper end of the canal.

In the foreground is a tug and two barge tow unloading various materials for the mill; including what appears to be limerock or sulphur for the pulping process.

Next in line, a log raft that seems to be tying off to one side to get out of the way as they wait to continue.

Further down Western Transportation paper barge 24 makes its way up to the dock alongside the warehouse for a load of finished paper.

(photo courtesy of historicplaces.net)





Troy Bowers,
President WFHF

President's Message: *Saving the Future of Our Past*

Willamette Falls Locks remain one of the jewels of Oregon and the Willamette Valley. We were hopeful that the State of Oregon would approve funding to support the transfer of the Locks from the US Army Corps of Engineers to a new Corporation to be established by the State at the same time. Unfortunately, when the Spring Legislative session ended with the political walkout, our hopes were dashed temporarily.

With the State budget looking extremely impacted due to economic impacts as exasperated by the Global Pandemic, we anticipate that the funding may well be delayed beyond the upcoming Legislative session. As such, we need to keep this interest alive and well until we can fund, transfer and save this invaluable resource that remains vital to our past, present and future.

We also look to do our part to save Historic City Hall at the Falls. More on that in the near future...

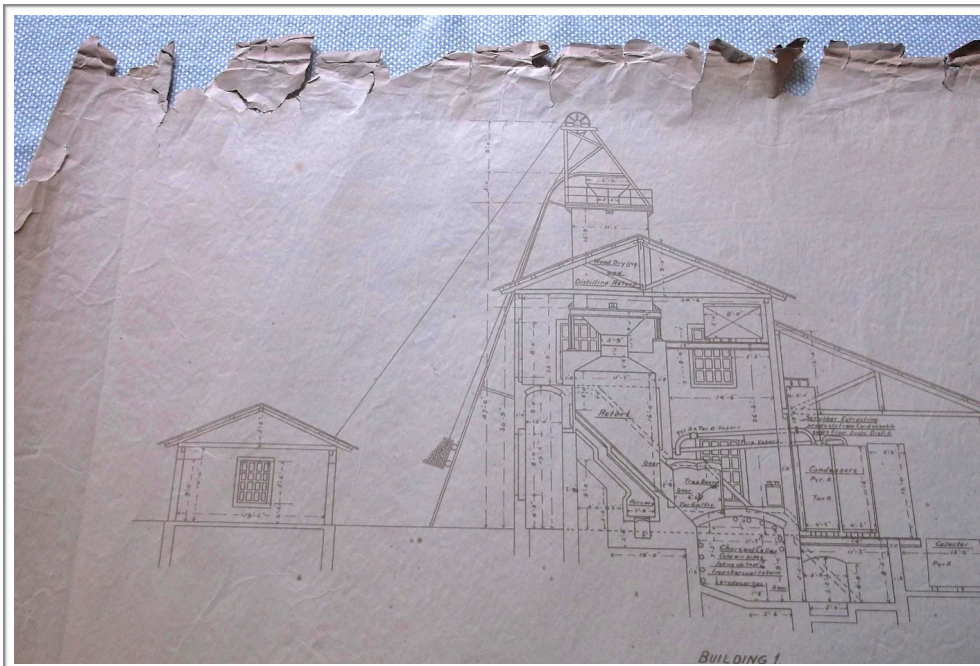
Thank you again for your moral and financial support as we work to save the future of our past! Together, we do make a very important difference.

WFHF Collections Update

Earlier this year, Board member and photographer **Peter Schwarz** brought his lighting equipment, tripods, easels, and cameras to our office space in the McLean House. Once set up, he launched into the task of digitally photographing the historic, oversize mill drawings that are part of the 1907 Theiss collection from Prague.

In March, paper conservator **Elizabeth Chambers** also completed stabilization repairs on seven of the Foundation's century-old sulfite mill drawings. The previous condition of these plans is shown in the 'before' photo below. Her preservation work will allow for safe handling and long-term storage of these important documents.

Fortunately, much progress on both projects was made prior to the Governor's 'stay at home' order.



Where On the Island Is It?

Looking like a scene from an Indiana Jones movie, this 10-foot diameter pipe or penstock (*right photo*) lurks in a dark basement beneath an unused part of the mill on Moore's Island. There are sixteen such penstocks that at one time directed water from the dam's headwall into turbines, twelve of which were for pulp grinding and four that produced electricity for the mill.

With less expensive, more fish-friendly sources of electrical power available, Simpson Paper Company determined that rebuilding the old hydropower generation machinery was not a viable option.

In 1996 openings were cut into the penstocks so that a concrete plug could be installed, forever sealing the fate of these and the other twelve grinder turbines.



(*left*) The four generators sit in a watertight vault connected to their corresponding turbines by shafts that extend through concrete walls.

In the background, beyond the arched opening, is one of two units in the original Generator Room which was built in 1907.

This space in the foreground was first constructed to house pulp grinders in what was then called Grinder Room 3. The room became the Generator Room Annex when it was converted to power generation in about 1920 when the new Grinder Room 3 was built.

The last hydroelectric power produced in this room was from turbine #17 in 1992.

Today this impressive machinery lies hidden but intact as a legacy to an earlier era of industrial power generation.

**Help WFHF Keep History Alive:
Donate Now!**

*Please send your tax deductible contributions to:
The Willamette Falls Heritage Foundation
at the address shown below.*

P.O. Box 635
West Linn, OR 97068
email: willamettefalls@msn.com
phone: 503-650-9570
Newsletter editor: Dan Butler
dtb17@me.com

(All photos by the editor unless otherwise noted)



Standing in stark contrast to the active parts of the mill, these abandoned stacks and boilers are remnants of Crown-Willamette's old steam plant dating from the early 1920's.

To learn more about the history of past pulping operations in Mill B, please check out our expanded digital newsletter on our webpage at:
www.willamettefalls.org



Hiding in Plain Sight: Mill B

A quick peek inside



One end of the rotating sulfur burner.

Towering above Willamette Falls Paper Company's other buildings, Mill B is kind of like 'the elephant in the room' – or island in this case. One of the site's tallest but least known structures, its history is all but forgotten since sulfite pulping operations ceased there in 1968.

Built in 1924, Mill B played a vital role in producing high-quality pulp, which supplemented the groundwood pulp coming from Mill A. It was also the source of the foul odors described on page 1.

Crowded between the steam plant and Mill C's paper machine building (*as seen above*), the Mill B contained chippers, an acid plant, five digesters, blow pits, and screening rooms. The purpose of the mill was to convert wood into pulp by chemically cooking it to separate lignin from individual fibers. The noisy, smelly process went something like this...

Blocks of wood, delivered via conveyor from Mill A's sawmill, were chopped into small chips by a chipper. An elevator carried them to the top of the building where they were stored large bins above the digesters. When ready to cook a batch, the chips were dumped into the top of the digesters.

Meanwhile, the acid plant was making another key ingredient for the cook. First, sulfur was melted in a rotating kiln or sulfur burner to produce a gas. After cooling the gas was piped into the bottom of two, brick-lined silos or Jenssen towers that were filled with blocks of limestone. As water flowed down from the top of the tower and over the limestone, the rising gas caused a reaction that produced sulfuric acid, which was then stored in large wooden tanks.

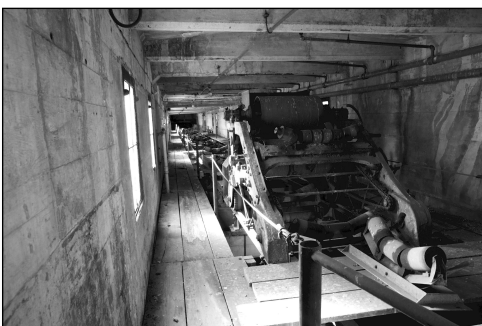
Back at the digester, this acid was added to the chips, the lid sealed, and steam admitted. After six to eight hours of pressurized cooking, the batch became pulp and was then forcibly blown out the bottom and into the blow pits. Passing through a series of screens and washers, the pulp was stored in stock prep tanks, ready for use at the paper machines.

Mill B saw continued use after the sulfite operations ceased when another type of mechanical pulp grinder was used. The wistfully named 'Peanut Butter Machine' consisted of two closely spaced, serrated discs that turned in opposite directions, grinding chips into pulp.

Today, Mill B looms over the island as a silent reminder of the mill's productive, albeit stinky, pulp making past.



The Jenssen acid towers.



(left) At the very top of the digester building, a conveyor deposits wood chips into bins below.

(right) About half way down the building is the loading floor and top of the digesters. Chips from the bins above were dumped into digester's hatch. Once filled a massive lid was placed over the opening and 'dogged down', sealing it for the cook.



Digesters: Top to Bottom



Often described as a giant thermos, the top of the digester is one level below the loading floor and fill hatch shown above.



The middle section of the multi-story digester. This riveted pressure vessel is lined with brick to protect the steel shell from the highly corrosive acid.



The bottom portion was used to both admit steam and to blow out the pulp after the cook.



A word of caution!



The upper portion of the blow chamber. Filled with steamy, cooked pulp in the blow pits below, this brick-lined space collected the gases and vented them up a stack. The circular opening is where the stack once stood.



The Peanut Butter Machine. Enclosed when in use, this housing contains two discs, each with its own motor spinning in opposite directions. The serrated discs (*below*) grind the wood chips into pulp.



(Above photos courtesy of Peter Schwarz)