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April 27, 2022

VIA ELECTRONIC EMAIL

Michael Pentony, Regional Administrator
Greater Atlantic Regional Fisheries Office
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
55 Great Republic Drive
Gloucester, MA 01930

Re: Section 7 Consultation and Biological Opinion (BO), Shawmut Hydroelectric Project, P-2322-069

Dear Mr. Pentony:

On behalf of Sappi North America, Inc. ("Sappi"), this letter responds to portions of the January 24, 2022 memo to you from the Kennebec Coalition and the Conservation Law Foundation, in relation to the Shawmut Hydroelectric Project, FERC Project No. 2322, to assist NOAA Fisheries in completing its Endangered Species Act consultation and its biological opinion. In its memo, the Kennebec Coalition writes that "Removal of all four lower Kennebec dams is the best solution for the restoration of Atlantic salmon and other sea-run species." Sappi strongly disagrees with that statement with respect to the Shawmut Dam, and provides the attached letter to you to demonstrate the critical importance of not removing the Shawmut Dam, and in not making any changes in impoundment elevations that would negatively affect the only water source the mill has for its safety and operation.

As discussed in the attached letter from TRC, removal of the Shawmut Dam – or imposition of uneconomic conditions that would effectively require dam removal through license surrender – would have potentially devastating economic effects on Sappi's Somerset Mill, its employees, and its suppliers, and thus a similarly devastating impact on the surrounding communities whose economies rely to a large extent on the Somerset Mill. Sappi believes reasonable protection, mitigation, and enhancement measures can be fashioned to support the recovery of anadromous and diadromous fish in the basin and still provide for the generation of power, and that dam decommissioning therefore is not necessary or reasonable.

We also note that in his July 21, 2021 letter to Secretary Raimondo, Patagonia CEO Ryan Gellert incorrectly asserted that Maine Governor Janet Mills and Maine's Department of Marine Resources (MDMR) "both support the removal of Brookfield's four dams between Waterville and Skowhegan," including the Shawmut Dam. In fact, neither Governor Mills nor MDMR support removal of the Shawmut Dam, given the adverse impact such removal would have on Sappi's Somerset Mill. In its December 22, 2021 comment letter to FERC, MDMR stated that any "options that accomplish passage goals and efficiency" should also prevent "any impacts to the operations of the SAPPI Somerset Mill." MDMR's December 22, 2021 letter also stated that any alternative options, such as MDMR's proposed nature-like fish passage concept, would need to "meet agreed upon impoundment levels that would

prevent any operational impacts to the Sappi Somerset mill." This is vitally important to Sappi, for the reasons discussed in the attached letter from TRC.

Thank you for your consideration of these comments.

Sincerely,

Matthew D Manahan

Enclosure
cc: FERC Service List
Kimberly Bose, FERC
Matt Cutlip, matt.cutlip@ferc.gov
Kyle Olcott, Maine DEP
Janet Coit, Assistant Administrator, National Marine Fisheries Service, and Acting Assistant Secretary of Commerce for Oceans and Atmosphere, and Deputy NOAA Administrator
Julie Crocker, Endangered Fish Recovery Branch Chief, Greater Atlantic Regional Fisheries Office
Matt Buhyoff, Consultation Biologist/Merrymeeting Bay Salmon Recovery Coordinator Greater Atlantic Regional Fisheries Office
Dan Tierney, Gulf of Maine Salmon Recovery Coordinator Greater Atlantic Regional Fisheries Office
Governor Janet Mills
Patrick Keliher, Commissioner, MDMR
Sean Ledwin, MDMR
Paul Christman, MDMR
John Perry, MDIFW
Jason Seiders, MDIFW
Peter Lamothe, USFWS
Julianne Rossett, USFWS
Bryan Sojkowski, USFWS

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding.

Dated at Portland, Maine this day: April 27, 2022

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April 22, 2022

Mr. James Brooks
Environmental Manager
Sappi Somerset Mill
1329 Waterville Road
Skowhegan, ME 04976

Sent Via Email: james.brooks@sappi.com

Subject: Potential Impacts to Sappi's Somerset Mill of Removal of, or Construction of Nature-Like Fish Passage at, Shawmut Dam
TRC Project No. 429681

Dear Jim:

Sappi North America Inc. (Sappi) has requested that TRC Environmental Corporation (TRC) perform a more detailed analysis of the potential impacts to the Somerset Mill in Skowhegan, Maine of removal of the Shawmut Dam (FERC No. 2322-060) or construction of a nature-like fishway at the Shawmut Dam. This letter supplements TRC's prior comments dated March 11, 2021, and August 18, 2021, included in Attachments 1 and 2, respectively. It is critically important to the Sappi mill that the Shawmut dam is not removed, or any changes in impoundment elevations be made that would negatively affect the only water source the mill has for its safety and operation.

1. Shawmut dam removal would be devastating for the Sappi Somerset mill.

The Sappi mill uses water withdrawn from the Kennebec River for not only process water, but also for cooling and fire protection purposes. The mill's average water demand is approximately 30 million gallons per day (GPD). As will be demonstrated below, removal of the Shawmut dam, or even minor changes to the impoundment water levels, could have significant negative impacts to the mill and its operations.

In order to predict impoundment levels with potential changes to, or removal of, the Shawmut dam, TRC created a HEC-RAS model of the Kennebec River in the vicinity of the Sappi mill. TRC utilized approximate river bottom survey longitudinal profiles and cross section data in the vicinity of the Sappi mill that was provided by the Maine Department of Marine Resources (MDMR). Additional data from publicly available GIS sources were used to supplement the river model inputs, and the river model outputs were checked against other public data, including FEMA 100-year flood plain values. TRC has checked the model results against published FEMA 100-year flood plain data, and we are comfortable that the results are suitable for an initial analysis of Shawmut dam removal and nature-like fishway impacts.[1]

The Shawmut dam has a crest elevation of 108.0 (USGS Datum) and a top of flashboard elevation of 112.0. Using various river flow conditions, TRC's model estimates the impoundment elevation near the Sappi mill to be elevation 112.0, which aligns well with the data provided by Brookfield in its October 15, 2021, water quality certification application to the Maine Department of Environmental Protection (MDEP). TRC's model also estimates that for every one-foot elevation drop in the effective crest height of the Shawmut dam,

[1] While instructive in its current use, this model was created using preliminary, conceptual model and survey data. Additional river bathymetric survey data, river flow estimates, and detailed dam modeling would be necessary for more definitive model outputs.

there would be an approximately one-foot elevation drop in impoundment elevations. As noted in Section 4 below, an impoundment drop of even a few feet has negative consequences for the mill.

The bottom of Sappi's water intake pump station is at elevation 102.0. If the Shawmut dam were to be removed or fully breached to allow for fish passage, TRC's river model estimates that impoundment levels near the mill could be in the range of elevation 94.0 to 98.0, depending on river flows. With water levels approximately four to eight feet below the bottom of the mill's intake pump station, the pump station would be inoperable, and the mill would be unable to function. The river model proves that these low water levels would be devastating for the mill because its existing water intake pump station and its wastewater diffuser systems would need to be completely replaced.

As stated previously in TRC's comment letter in Attachment 1, total removal and replacement of the water intake pump station would be required if the Shawmut dam were removed. Similarly, the wastewater diffuser system from the mill would be above the river levels and would need to be completely replaced. As noted in our March 11, 2021, letter, TRC's conceptual opinion of cost to replace the water intake and outfall systems would be on the order of $52 to $55 million.

TRC has obtained information about a smaller paper mill in Maine that relies on an adjacent river for its freshwater intake. The ND Paper Mill in Old Town, Maine is located on the Penobscot River, and that mill withdraws approximately 10 to 11 MGD for the mill's water uses. In 2011 the mill owners installed a shallow water trench intake system on the bottom of an unimpounded section of the Penobscot River. The mill has experienced significant operational and maintenance issues with this system, including icing, sediment, and debris impeding the water intake flow, leading to interruptions in water supply to the mill, which negatively impacts the mill's operations. TRC studied a similar type of water intake option for the Sappi mill in our March 11, 2021, letter. While these operational issues were considered by TRC in our analysis, the experience of the ND Paper Mill demonstrates the difficulty in designing, constructing, and operating shallow water trench intake systems in Maine rivers. It appears extremely unlikely that a shallow water intake system for the Sappi mill, which would be three times larger than the ND Paper mill's system, could be developed to serve Sappi's water needs. Without a reliable source of water, the Sappi mill would have to close.

2. There are no other water sources sufficient to satisfy the mill's water demands other than the impoundment of the Kennebec River.

Sappi has no other alternatives for water supply sources other than surface water withdrawal from the impounded Kennebec River. TRC examined the public water systems that provide water to the towns of Skowhegan and Fairfield, the towns closest to the mill. The Town of Skowhegan is served by the Maine Water Company, Skowhegan division, which provides approximately 600,000 gallons per day (0.6 MGD) to about 2,450 water connections. The Town of Fairfield (plus four other towns) is served by the Kennebec Water District and has an average daily demand of 3 MGD (to about 8,700 water connections). Neither of those public water systems is adequately sized, or could be upgraded, to provide the extra 30 MGD of water demand needed for the mill, rendering this option infeasible. For comparison purposes of the Sappi mill's water usage, the Portland Water District provides water to 16 percent of Maine's population, with an average daily demand of 24 MGD, and its water source is Sebago Lake, Maine's second largest lake.

Based on available information, it is highly improbable that a system of on-site groundwater wells could be used as the mill's water supply. The mill's daily average demand is 30 MGD, which equates to 20,833 gallons per minute (GPM). Maine Geological Survey data show that well yields in the mill's vicinity range from less than 3 to 100 GPM. Consequently, even a network of groundwater wells would not come close to providing an adequate source of water for the mill. Additionally, those extremely high withdrawal rates (even if they were possible to locate on Sappi's property) would very likely cause significant groundwater impacts to existing wells on surrounding properties and those negative impacts would not be approved by state permitting agencies. Therefore, Sappi requires a surface waterbody to withdraw the water required for operations.

Maine Geological Survey (MGS) has developed Significant Sand and Gravel Aquifer maps that indicate areas where there is a greater potential for high yield groundwater wells (e.g., greater than 10 GPM). Based on the Maine Significant Sand and Gravel Aquifer Map, Hinckley Quadrangle (Open File No. 00-27, 2000) the area around the mill is mapped as having less favorable aquifer characteristics, where there is moderate to low potential for well yields of greater than 10 GPM. The closest mapped aquifer, located north of the mill, is estimated to have moderate to good potential of wells yielding more than 10 GPM, but even that small potential is orders of magnitude less than the yields needed to supply the mill. The available MGS data show that groundwater wells are not a viable option for the Sappi mill.

3. Nature-like fishway options are unproven technologies that could cause impoundment elevation drops, which are detrimental to the mill.

MDMR provided comments, dated August 13, 2021, to the Federal Energy Regulatory Commission (FERC) on the Draft Environmental Assessment for the Shawmut dam. In those comments, MDMR included a preliminary design of a nature-like fishway (NLF) as a potential option for fish passage at the Shawmut dam. That design was summarized in a memorandum dated July 20, 2021, from Michael Burke, PE at Inter-fluve to Sean Ledwin at MDMR.

Inter-fluve summarized a conceptual NLF configuration, based on the constraints of the site. A trapezoidal-shaped channel approximately 1,250 feet long could be considered along the west bank of the Kennebec River, with bottom channel options of either 80 or 100 feet wide. The channel bed slope was listed as 1.7%. Inter-fluve identified the NLF at the Howland dam on the Penobscot River as an example.

There are serious physical space constraints regarding an NLF at the Shawmut dam, including a Central Maine Power substation, an active railroad line, and a residence in very close proximity to the proposed NLF. Additionally, two new bridges would be needed to span the NLF and provide access to the Shawmut dam. These physical constraints add uncertainty as to whether a suitable NLF could be built in this location.

Of significant importance to Sappi is what impact to impoundment levels would occur with the construction of an NLF. This NLF is envisioned to be a passive system with an inlet control structure that regulates flows into the NLF over a wide variety of river flows. The conceptual design notes that the inlet control structure could be set at elevation 107, which is one foot below the crest of the Shawmut dam, but five feet below the normal impoundment elevation and top of flashboards elevation of 112.0. No design details of this inlet control structure have been proposed, nor have any predictions been made with respect to the NLF's effects on impoundment levels. A passive flow inlet to the NLF would risk the reliable operation of Sappi's intake year-round. The NLF is reported to having a flow range up to 2000 to 2400 cubic feet per second (cfs). Low

river flow conditions during the summer fall below this value and are exceeded only 70 percent of the time in August. As river flow drops below the NLF capacity (2000 to 2400 cfs), the head pond level would drop and risk falling below acceptable water levels for reliable operation of the Somerset mill intake. (See discussion in Section 4 below). This is of serious concern to Sappi.

Another weakness of the proposed NLF is that fish passage efficiencies are not predicted or well-known at other NLFs. No passage efficiency data have been reported yet for the Howland NLF, and other NLFs across the U.S. report widely variable passage efficiencies.

Absent the removal of the Shawmut dam, MDMR has advocated for fish passage alternatives like adding NLF to Brookfield's proposed fish lift. MDMR is advocating for 99% fish passage efficiency for the Shawmut dam, yet it is unknown if the proposed NLF would be able to deliver those types of efficiencies. Those levels of passage efficiencies are very difficult to achieve, and if that level of efficiency were required for the Shawmut dam by state and federal agencies, failure to meet those passage efficiencies could ultimately lead to the removal of the dam. The conceptual length and vertical rise of the NLF are longer and higher than the Howland NLF and other NLF examples, raising questions about its feasibility as a fish passage option. An upstream passage performance standard for Atlantic salmon more stringent than NMFS's Section 18 prescription of 96% is unwarranted and likely unachievable. However, the proposed fish lift design for Shawmut could meet the 96% prescription goal based on the estimated passage efficiency of the Milford fish lift on the Penobscot River (95-100% for salmon; Izzo et al. 2016). The only issue noted for Milford has been passage delays, which may not be an issue for a fish lift installed at Shawmut.

Alden Research Laboratory (Alden) conducted a review of the proposed NLF design developed by Inter-fluve for the MDMR (Alden 2021). Based on that review, Alden concluded that the preferred approach for fish passage at Shawmut is to maintain the dam and power generating facilities with the installation of a fish lift between the upstream end of the original powerhouse and the spillway. A NLF installed in combination with the proposed fish lift design, or without a fish lift and with or without dam decommissioning, were considered less effective alternatives based on available passage efficiency information for target species (herring, shad, and salmon) and the proposed location of the NLF (i.e., about 650 feet downstream of the Shawmut dam). Alden concluded that internal passage efficiencies for a NLF may be greater than about 70% for shad, 80% for herring, and 90% for salmon. The relatively long length and unprecedented scale proposed for a NLF at Shawmut may have negative consequences with respect to passage efficiency because both either exceed existing designs or what is considered appropriate for one or more of the target species. Additionally, it is highly unlikely a fish lift or a NLF (alone or in combination) could achieve the MDMR passage efficiency goal of 99%. Internal efficiency may approach this level for Atlantic salmon, but external (attraction) efficiency would likely reduce total efficiency to below 99% and for a NLF could produce longer passage delays for all species compared to a fish lift.

4. Even small fluctuations in impoundment levels negatively affect mill operations / equipment.

Sappi currently utilizes five vertical turbine pumps at the edge of the Kennebec River to withdraw the 30 MGD of water needed for mill operations. These pumps require a minimum submergence below certain water levels in order for the pumps to operate efficiently and to prevent cavitation damage. Cavitation is caused when pumps do not maintain enough pressure at the pump inlet, and air bubbles will form. The formation and collapse of these bubbles is both rapid and violent and can lead to decreased pumping capacity and to pump impeller or casing damage. Sappi has experienced water intake pump failures in the

past, when dam maintenance has resulted in water levels going below historic levels, which negatively affects the operation of the mill.

Sappi provided elevation data from 1979 to 1981 where the river impoundment levels at the water intake pump house fluctuated from 106.5 to 110.5 feet up to 102 days per year. These reduced impoundment levels were caused by the operation of the Shawmut dam. With a normal impoundment elevation of 112.0, Sappi experienced cavitation problems when elevations dropped below 107.5, and predicted that cavitation could occur when elevations were at or below elevation 110.5 under certain river flow and mill water demand conditions. Sappi installed pump upgrades in the early 2000's, but the need for impoundment levels as close to elevation 112.0 still remains a critical operational issue, to avoid pump damage and inability to operate the mill due to lack of sufficient water supply. This prior drop in water levels demonstrates that impoundment level fluctuations of even two feet greatly increases the risk of pump damage or failure due to cavitation, causing significant negative impacts to the mill's equipment and operations. Therefore, if any changes occurred to the Shawmut dam due to operational or NLF installation that lower impoundment levels, Sappi's operations would be negatively affected.

5. Summary

Removal of the Shawmut dam would have devastating effects on the Sappi mill. Dam removal would eliminate the deep impounded waters that the mill relies on for water supply, and without a reliable source of water the mill would have to close. Designing and developing a suitable shallow water intake system appears very unlikely, and on-site groundwater wells would very likely be insufficient due to the underlying bedrock and soils conditions. The mill has no access to alternate public water supply sources, so it is imperative that the impoundment remains. Even without dam removal, small fluctuations in impoundment elevations resulting from construction of a NLF could damage mill operations or equipment. The suggested NLF option is an unproven technology with unknown fish passage efficiencies.

TRC urges federal and state permitting agencies to consider the evidence provided in this letter and our previous letters and we advocate strongly against the removal of the Shawmut dam or the installation of a NLF passage, and to allow for the continued operation of the dam so as to preserve the impoundment that is necessary for the continued operation of the Sappi mill.

If you have any questions regarding this information, please do not hesitate to contact me at 207-313-3675 or mbergeron@trccompanies.com.

Sincerely,

Mark Bergeron, P.E.
Environmental Operations Leader – Maine

Attachments:
Attachment 1: TRC comment letter dated March 11, 2021
Attachment 2: TRC comment letter dated August 18, 2021

Mr. James Brooks
April 22, 2022

C: James Brook, Sappi
Gregory Allen, P.E., Alden Research Laboratory
Matt Manahan, Pierce Atwood

Literature Cited

Alden Research Laboratory. 2021. Review of Maine Department of Marine Resources' Nature-like Fishway Concepts for the Shawmut Hydroelectric Project (FERC Project No. 2322). Prepared for Brookfield Renewable.

Izzo, L. K., G. A. Maynard, and J. Zydlewski. 2016. Upstream Movements of Atlantic Salmon in the Lower Penobscot River, Maine Following Two Dam Removals and Fish Passage Modifications. Marine and Coastal Fisheries: Dynamics, Management, and Ecosystem Science 8:448-461.

Mr. James Brooks
April 22, 2022

ATTACHMENT 1: March 11, 2021 TRC Letter

14 Gabriel Dr.
Augusta, ME 04330

T 207.620.3800
TRCcompanies.com

March 11, 2021

Mr. James Brooks
Environmental Manager
Sappi Somerset Mill
1329 Waterville Road
Skowhegan, ME 04976

Sent Via Email: james.brooks@sappi.com

Subject: Kennebec River Study at Sappi Somerset Mill
TRC Project No. 429681

Dear Jim:

TRC Environmental Corporation (TRC) is pleased to submit this conceptual study of potential alterations to the Sappi Somerset Mill in Skowhegan that would be required if the Kennebec River levels were to drop as a result of the removal of the Shawmut hydropower dam. We have listed potential modifications required to address impacts to the mill's water intake system, outfall diffuser, and foam tank system, and associated conceptual costs for design, permitting, and construction.

If you have any questions regarding this information, please do not hesitate to contact me at 207-313-3675 or mbergeron@trccompanies.com.

Sincerely,

Mark Bergeron, P.E.
Environmental Operations Leader - Maine

Attachments:
Attachment 1: Site Location Map
Attachment 2: Environmental Permitting Matrix

cc: Ray Topazio, TRC

AUN/429681

Introduction

Sappi retained TRC to provide high-level, conceptual cost estimates for mill infrastructure improvements that would be required if the Kennebec River levels were lowered as a result of the removal of the downstream Shawmut hydropower dam. In consultation with Sappi, TRC has determined that significant alterations to the mill's water intake system and wastewater discharge outfall and diffuser would be required, as described below.

TRC had very limited time to review site information and prepare these recommended modifications to the intake/discharge systems, so they should be considered conceptual in nature, and subject to change pending full design, permitting, and construction considerations. Additional surveys, data, and engineering design are required to further refine these costs. However, these cost estimates are instructional as to the order of magnitude of potential modifications that would be required to maintain the operations of the Somerset mill. The recommended modifications herein would only to maintain the existing operations at the mill and would not increase capacity or otherwise upgrade the system in any way.

See Attachment 1 for a site location map of the mill and associated facilities.

Potential Infrastructure Modifications

1. MDMR dam removal recommendations

   i. The Maine Department of Marine Resources (MDMR) released a recent report entitled "Kennebec River Management Plan, Diadromous Resources Amendment", dated December 2020. In that report, MDMR recommends that the Shawmut dam and Lockwood dam be decommissioned and removed and that the Hydro-Kennebec and the Weston projects also be considered for decommissioning and removal as MDMR's preferred method to provide upstream fish passage.

   ii. The Shawmut dam is downstream of the Sappi Somerset Mill and removal of that dam is estimated to drop the Kennebec River levels in front of the mill by approximately 15 to 20 feet.

2. Existing mill operations

   i. The Somerset mill currently draws an average of 28 million gallons per day (mgd) of water from the Kennebec River as part of its pulp and paper making operations. The Kennebec River is the mill's only water supply.

   ii. There is an existing pump house on the west bank of the Kennebec River with four vertical turbine pumps that draws river water from a submerged vault that feeds a 36-inch diameter intake water supply line that supplies the mill. The current normal river elevation is approximately 112 feet and the bottom of the existing pump house is at an elevation of 102 feet. The riverbed elevation is approximately 90 feet at this location.

   iii. The mill is licensed to discharge up to 46.5 mgd of wastewater and process water to the impounded Kennebec River upstream of the Shawmut dam. There is an existing buried 40-inch diameter outfall pipe from the mill extending to the middle of the Kennebec River. There are

approximately 69 vertical diffuser pipes protruding up from the top of 40-inch diameter outfall pipe to disperse flow to the river. The current outfall pipe and vertical diffusers are approximately 21 feet below the normal high-water elevation of 112 feet.

iv. The mill cannot operate without intake water to supply its operations, and it must regularly discharge wastewater and process water to the Kennebec River.

3. Potential Impacts to Water Intake and Outfall Systems

i. If the Kennebec River water levels in this area were to drop 15 to 20 feet, the existing pump house vault would be above the new normal water level of the river and would be non-functional. If the mill could not obtain water to supply its operations, the mill would have to shut down.

ii. Upon dam removal, the normal pool water surface elevation of the river near the outfall pipe is expected to be approximately elevation 88 feet. The top of the diffuser pipes varies from approximately elevation 87 feet to 90 feet. Therefore, the lower water levels would result in the diffuser pipes being just above or just below the river's surface, which is unsafe and insufficient for proper discharge of the mill's process waters.

iii. A drop in Kennebec River levels of 15 to 20 feet will require structural modifications to the mill's water intake and water discharge outfall systems because the intake and outfall pipes would be located above the new river level. The proposed changes to the intake and outfall pipes are described below.

4. Potential Modifications to Pump House and Water Intake System

a. Because the mill cannot operate without intake water to supply its operations, and because it must regularly discharge wastewater and process water to the Kennebec River, any proposed modifications to the intake and outfall systems must be constructed before the Kennebec River water levels are lowered. Because of the downtime involved with modifying the existing pump house, financially and operationally it would make more sense to build a new pump house downstream of the existing one. Simply extending a new intake pipe into the river would not be an option because there would be insufficient depth of water in the river following dam removal. Similarly, the existing pump house vault would need to be replaced with a different water intake system (described in Option 2 below) due to the lower water levels.

b. Cofferdams will be needed in the river for construction of the new water intake system options listed below. The water intake system modifications will need to be constructed prior to dam removal to avoid interruption of the mill's operations. It is assumed the cofferdam will consist of braced sheet piling. Because the available geotechnical information is limited, it is assumed bedrock is at a relatively shallow depth and will require the sheet piles to be pinned to the bedrock. If bedrock depths are very deep, the sheet piling lengths will be longer, and the cofferdam cost estimates may be on the low side. Upon installation of the sheet piles the interior of the cofferdam will be dredged, sealed, and dewatered to facilitate construction.

c. TRC has identified two options for modifications to the water intake system, more fully described below:

Option 1 – In-River Basin

i. Construct a new pump house adjacent to the downstream side of the existing pump house.

ii. Construct a new water intake piping system into the middle of the river that would generally include:

   a) Install a new coffer dam around the proposed in-river basin.

   b) Due to the expected low water level of approximately 4 feet at operating conditions and distance from the existing riverbank (too low for in-stream water withdrawal), install an engineered in-river basin consisting of approximately 16,000 linear feet of perforated pipe below a bed of engineered fill. The assumed footprint of this basin in the river would be 500 feet by 500 feet, to provide a sufficient volume of water to supply the mill.

iii. Connect the new pump house piping to the existing water intake line approximately 200 feet west of the Kennebec River.

iv. Demolish the old pump house once the new pump house is operational and remove the cofferdam from the river.

Option 2 - Vertical Well Caissons

i. Construct a new water intake piping system that would generally include:

   a) Due to the expected low water level of approximately 4 feet at operating conditions and distance from the existing riverbank (too low for in-stream water withdrawal), construct vertical well shafts to serve as the water intake system. These vertical wells would minimize environmental impacts and could simplify operation and maintenance activities.

   b) Central shaft “caissons” 8 to 10-feet in diameter would be excavated 60 to 80 feet deep on the existing riverbank at five to six locations. These five to six new wells would contain the necessary pump equipment and controls so that a new pump house would not be needed.

   c) Lateral pipes would be micro-tunneled horizontally out below the riverbed through the radial collector to install perforated pipe below the surface of the riverbed.

   d) During pumping, water would be induced to flow through the riverbed into the perforated piping laterals to the vertical shafts. Riverbank filtration is the process where water can be induced to infiltrate into local groundwater aquifers from a surface water source where favorable hydrogeologic conditions exist near rivers and streams.

ii. Connect the five to six new wells’ discharge pipes to the existing water intake line.

iii. Demolish the old pump house once the new wells are operational and remove the cofferdam from the river.

5. Potential modifications to the mill's outfall pipe, diffuser, and foam tank (Note: The conceptual design presented here for the outfall pipe, diffuser, and foam tank is the same for both water intake options discussed above.)

    a. The following modifications to the outfall pipe system would be required to allow continued operation of the mill:

        i. Installation of a cofferdam to allow for installation of a new outfall pipe. The new outfall pipe would be constructed prior to dam removal to avoid interruption of the mill's operations. The current normal river elevation is approximately 112 feet and the riverbed elevation is expected to be about elevation 88 feet at the proposed outfall pipe. It is expected the cofferdam will consist of braced sheet piling. Because the available geotechnical information is limited, it is assumed bedrock is at a relatively shallow depth and will require the sheet piles to be pinned to the bedrock. If bedrock depths are very deep, the sheet piling lengths will be longer, and the cofferdam cost estimates may be on the low side. Upon installation of the sheet piles, the interior of the cofferdam will be dredged, sealed, and dewatered to facilitate construction of the proposed outfall pipe.

        ii. Construction of a new outfall pipe near the existing outfall pipe, with a new diffuser system consisting of an outfall pipe with vertical diffuser pipes. The new outfall pipe would need to be installed at a lower elevation to accommodate the lower river levels. The new vertical diffusers would be surrounded with large riprap that would protect the pipes and facilitate diffusion of the mill's process water. Cleanouts would be incorporated along the length and at the end of the outfall pipe for maintenance.

        iii. Removal of the existing outfall pipe once the new outfall pipe is operational, and removal of the cofferdam from the river.

    b. Further, there is a 'foam tank' at the southeast corner of the mill site that helps to prevent foam from discharging into the Kennebec River. Since the outfall pipe will need to be lowered, the foam tank likely will need to be replaced to assure proper operation of the discharge process.

    c. Consequently, the following conceptual modifications to the foam tank would be required to allow continued operation of the mill:

        i. Construct a new foam tank near the existing foam tank. The new foam tank is assumed to be a new vault with a weir protruding from the ceiling to capture floating foam.

        ii. Install 1,400 feet of new 42-inch diameter outfall pipe from the new foam tank to the river. This new outfall pipe will be installed parallel to the existing pipe, and approximately 700 feet of the pipe will be directionally drilled under the Pan Am railroad tracks and the Route 201 roadway to avoid interruptions in railroad and vehicular traffic, respectively.

        iii. Connect the new foam tank to the existing discharge pipe.

        iv. Demolish the existing foam tank once the new tank is operational.

6. Potential environmental permits needed

There are a number of federal, state, and local environmental permits and approvals that would be needed for the pump house, outfall piping, and foam tank alterations described above. Since no agencies or permitting authorities have been contacted regarding this proposal, these approvals should be considered the preliminary list and subject to change, and other approvals may also be required. Further, permitting requirements by these authorities having jurisdiction may alter the conceptual design modifications presented here, which could lead to additional cost impacts.

TRC has assembled a conceptual environmental permitting matrix describing the assumed level of permitting required for the proposed project alterations. See the Attachment 2 for the environmental permitting matrix. A brief summary of the permits is described below.

i. Federal permits: TRC assumes that a new Pre-Construction Notice (PCN) permit from the US Army Corps of Engineers (ACOE) will be required for river and wetland impacts. The PCN will trigger consultation with the US Fish and Wildlife Service for possible effects on endangered species, and consultation with the Maine Historic Preservation Commission for impacts to cultural resources.

ii. State permits: The following new or amended permits are assumed to be required from state agencies:

   i. The Somerset mill has an existing Site Location of Development (Site Law) permit (#L-902-20-A-X, last updated September 26, 2019 #L-902-20-Z-M) from the Maine Department of Environmental Protection (MDEP). TRC assumes a major amendment of the Site Law permit will be required for the proposed alterations.

   ii. For impacts to the Kennebec River and wetlands, TRC assumes a new Tier 2 Natural Resources Protection Act permit will be required from MDEP. TRC has included an estimated In-Lieu Fee payment for potential mitigation costs for temporary and permanent river bottom impacts. This final mitigation costs will be determined by the MDEP and ACOE.

   iii. The Somerset Mill has an existing MDEP Maine Pollutant Discharge Elimination System (MEPDES) permit (#W000385-5N-L-R, last dated December 2, 2015) for wastewater discharges that will need to be amended based on the new river characteristics.

   iv. For the new outfall pipe installed under the Maine Department of Transportation (MDOT) Route 201 right-of-way, a Utility Location Permit will be required, along with a Private Facility Exception License.

iii. Local permits: Two sets of town approvals will be needed since the pump house is located in the Town of Skowhegan, and the outfall pipe and foam tank are in the Town of Fairfield. Both towns are anticipated to require Site Plan approval from their respective Planning Boards. Also, since work would occur in or near the floodplain and shoreland zone of the Kennebec River, additional approvals will be required to demonstrate compliance with those ordinances for both towns.

iv. Estimated Environmental Permitting Costs: TRC has estimated potential costs to obtain the necessary environmental permits and approvals listed above. The estimated permitting costs listed in Tables 1 and 2 also include the following survey and data gathering needed for the design and permitting of these project alterations:

i. Topographic and bathymetric survey

ii. Wetlands and natural resources surveys

iii. Cultural and archaeological surveys

iv. High Intensity Soil Survey

v. Groundwater impact study

vi. Tribal consultation

The environmental permitting costs are estimated to be the same for both design options listed above. However, the two conceptual water intake design options have significantly different environmental footprints in the Kennebec River. Option 1 with the in-river basin is estimated to impact approximately 6.4 acres of the bottom of the Kennebec River, while Option 2 with the vertical well caissons is estimated to impact approximately 0.88 acre of river bottom. The estimated environmental mitigation costs are assumed to utilize the In-Lieu Fee compensation fees administered by the MDEP and the ACOE.

Assumptions

Given the high level, conceptual nature of this analysis, TRC notes the following important assumptions:

1. This analysis was conducted as a desktop review of information provided by Sappi and other publicly available data. No site surveys or site visits have been conducted. The conceptual design and cost estimates provided herein are based on TRC's professional judgment based on the information provided within the allotted time constraints.

2. All the conceptual design, construction, and permitting costs are non-binding and subject to change based on further surveys, information gathering, full design and engineering, permitting agency coordination, and construction cost estimation.

3. The conceptual alterations to the pump house, water intake system, outfall pipe and diffusers, and foam tank have not been fully vetted through a full design and engineering process and are subject to change.

4. Conceptual cost estimates have been assumed based on common site conditions and construction practices. If differing site conditions are discovered later during design, these conceptual cost estimates will change.

5. If the Shawmut dam is removed, the area in the vicinity of the mill will change from an impoundment to a free-flowing riverine system. TRC assumes that this change in river condition

will not negatively impact the mill from being able to discharge existing flows at the same rates as current conditions, and the mill will still be able to meet state and federal water quality requirements with just a new outfall pipe system. Additional examination of this topic is needed to determine if any additional costs may be needed to meet state and federal water quality requirements. This analysis was beyond the scope of this report.

6. All costs included were calculated in 2021 dollars with no markups for inflation.

7. TRC assumes that the existing main electrical power feed to the project location is sufficient and no changes are needed for the proposed alterations.

8. The wastewater outfall pipe is assumed to remain a gravity feed system.

9. TRC assumes that the existing outfall pipe is not located in the Town of Clinton, so no local approvals will be needed from the Town of Clinton.

10. Due to the expected low operating water depth of approximately 4 feet, surface water only intake methods in the river will become unsuitable. The two below riverbed options listed above were considered to eliminate sucking air into the pumps and to reduce silt accumulation.

11. TRC concluded that extending a public water supply line to the site as an alternate to a river water intake is not a feasible option. The daily water use requirements of the mill are much greater than the nearby water districts in Fairfield and Skowhegan, so modifying those infrastructure systems would be cost prohibitive.

12. The dam removal would be completed in a phased approach by 'notching' the dam structure such that the rate of lowering the water level will not create rapid drawdown or unstable conditions of the riverbank, or cause excessive settlement of nearby structure, utilities, or other infrastructure.

Conclusion

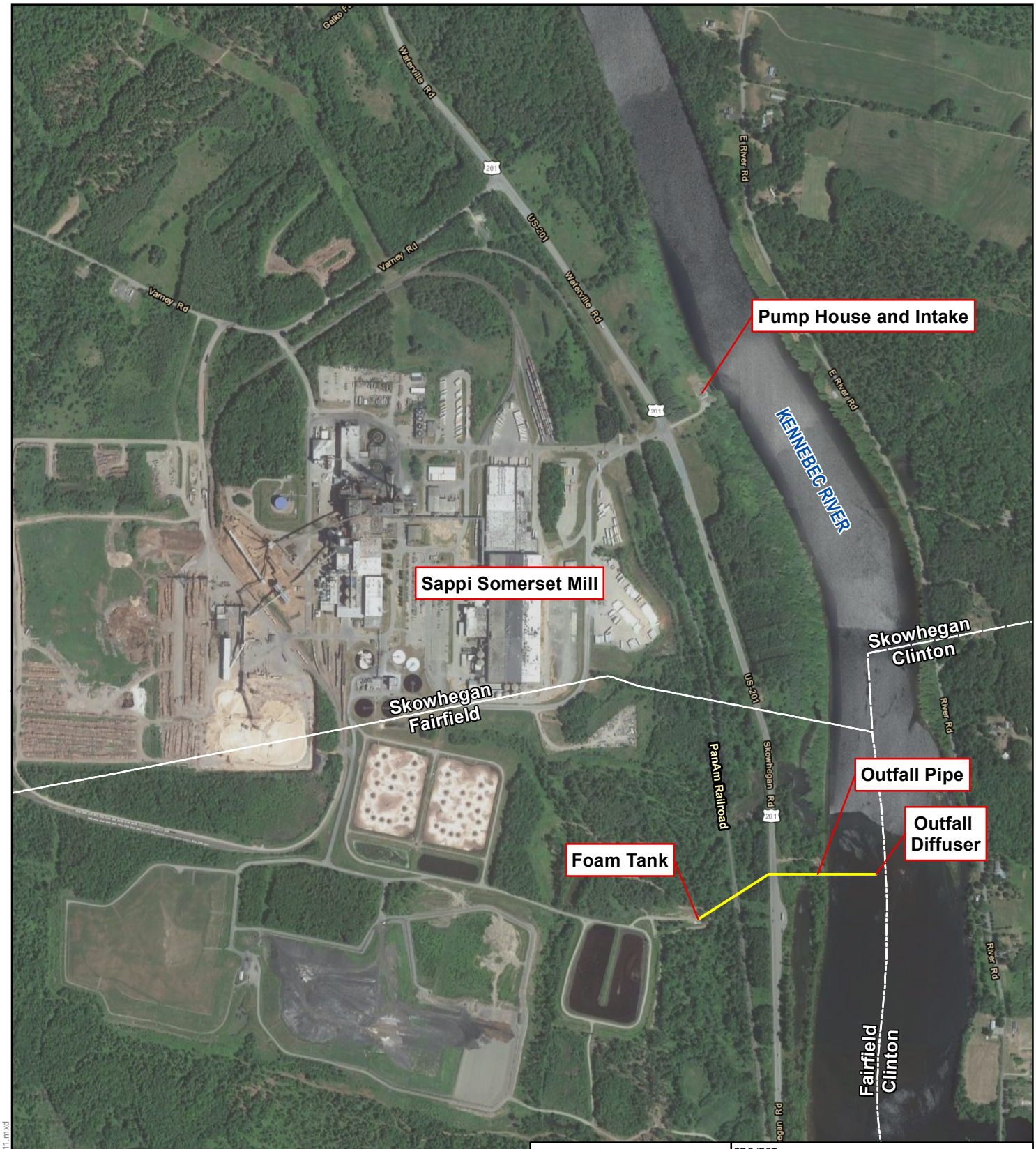
Removal of the Shawmut dam would have significant impacts to the mill's water intake and outfall system and substantial, costly modifications to those systems would be required. As noted in Table 1 below, a new pump house and water intake system, and a new foam tank with outfall pipe and diffuser system, likely would cost in the range of $52 to $55 million.

Table 1: Conceptual Costs for Option 1 – In-River Basin for Water Intake			
	Design/Engineering	**Construction**	**Total**
Water Intake Cofferdam	$2,000,000	$13,400,000	$15,400,000
Pump House and Intake System	$206,000	$19,400,000	$19,606,000
Outfall Cofferdam and Diffuser	$1,600,000	$10,800,000	$12,400,000*
Outfall Pipe and Foam Tank	$110,000	$1,200,000	$1,310,000*
Environmental Permitting Costs			$750,000
Environmental Mitigation Costs			$2,800,000
Estimated Option 1 Total Cost			**$52,266,000**

Table 2: Conceptual Costs for Option 2 – Vertical Well Caissons for Water Intake			
	Design/Engineering	**Construction**	**Total**
Water Intake Cofferdam	$325,000	$2,200,000	$2,525,000
Pump House and Intake System	$206,000	$37,700,000	$37,906,000
Outfall Cofferdam and Diffuser	$1,600,000	$10,800,000	$12,400,000*
Outfall Pipe and Foam Tank	$110,000	$1,200,000	$1,310,000*
Environmental Permitting Costs			$750,000
Environmental Mitigation Costs			$384,000
Estimated Option 2 Total Cost			**$55,275,000**

* The outfall modifications are the same in both Options 1 and 2.

Attachment 1: Site Location Map



0 500 1,000
Feet
1:12,000
1 " = 1,000 '

N

ME
VT
NH

PROJECT:
SAPPI SOMERSET MILL
Skowhegan, Maine

TITLE:
SITE LOCATION MAP

DRAWN BY:	M. STEVENSON	PROJ. NO.:	429681
CHECKED BY:	R. JORDAN		
APPROVED BY:	M. BERGERON		**FIGURE 1**
DATE:	February 2021		

TRC
14 Gabriel Drive
Augusta, ME 04330

Data Sources: ESRI, MEGIS, SAPPI Base Map: GOOGLE

Path: S:\1-PROJECTS\SAPPI\SappiLocationFigure_8x11.mxd

Attachment 2: Environmental Permitting Matrix

Conceptual Environmental Permitting Matrix for Sappi Somerset Mill, Skowhegan, Maine

Agency	Permit/Approval	Reason For Requirement	Comments
FEDERAL			
US Army Corps of Engineers (USACE)	Section 404 Maine General Permit	Construction of intake and outfall facilities that involve dredge or fill to Waters of the US.	Pre-Construction Notice (PCN) permit thresholds are: • <1 acre temporary or permanent impacts, fill, excavation, and/or secondary impacts • Temporary and/or permanent fill or excavation in Submerged Aquatic Vegetation <1,000 square feet (SF) • Permanent fill or excavation in other Special Aquatic Sites <4,300 SF
US Fish and Wildlife Service (USFWS)	Consultation under Section 7 of Endangered Species Act (ESA)	Any federal action will trigger requirement for endangered species consultation.	Preliminary screening of the Project through USFWS's Information, Planning and Conservation System (IPAC). Evaluates if the Project is likely to jeopardize the continued existence of a listed species or adversely modify its designated critical habitat.
USFWS	Migratory Bird Treaty Act (MBTA) Consultation	Any federal action will trigger consultation.	MBTA prohibits harm, possession, or take of migratory bird species, nests, and eggs. Review under MBTA conducted concurrently with Section 7 ESA consultation.
USFWS	Bald and Golden Eagle Protection Act (BGEPA)	Any federal action will trigger consultation.	BGEPA prohibits harm, possession, or take of Bald or Golden Eagles. Review under MBTA conducted concurrently with Section 7 ESA consultation.
Maine Historic Preservation Commission (MHPC)	Consultation under Section 106 of the National Historic Preservation Act	The USACE is required to evaluate the impact of projects requiring federal permits on cultural resources.	Consultation is initiated by the applicant and completed during the USACE permitting process.
STATE			
Maine Department of Environmental Protection (MDEP)	Site Location of Development Act (Site Law)	The Somerset Mill has an existing Site Law license (#L-902-20-A-X, last updated 9/26?19, #L-902-20-Z-M)	Includes review of over 20 variables including stormwater management, cultural resources, wildlife, erosion controls, water quality, and groundwater resources. Public notice and public informational meeting are required.
MDEP	NRPA Chapter 310	Impacts to protected natural resources, like rivers and wetlands	Tier 2 permit limits: 15,000 SF to 1-acre of non-wetlands of special significance impact; Tier 3 permit limits: >1-acre impact. Multiple resource impacts are referred to as an "Individual Permit."
MDEP	Maine Pollutant Discharge Elimination System (MEPDES) and Maine Waste Discharge License (WDL)	The Somerset Mill has an existing MEPDES license (#ME0021521) and an existing WDL (#W000385-5N-L-R)	These permits regulate the authorized discharge of process and waste waters to the Kennebec River.
Maine Department of Transportation (MDOT)	Utility Location Permit	For constructing utilities under the MDOT Route 201 Right-of-Way	Would also need a Private Facility Exception License approval from MDOT.
MUNICIPALITY - Skowhegan			
Shoreland Zone	Planning Board (PB)	Impacts within 250-foot Shoreland Zone	Town Shoreland Zoning standards need to be met along the Kennebec River.
Zoning/Land Use Ordinance	PB	Major Development Site Plan Review	Review of development standards and zoning criteria such as water quality, flooding, and erosion control.
Flood Hazard Development Permit	PB	Impacts in the Flood Plain	Will need to show proposed improvements are in compliance with the Floodplain Management Ordinance
Building Permit	Code Enforcement Officer (CEO)	Needed for general construction	Usually obtained by contractor
MUNICIPALITY – Fairfield			
Shoreland Zone	Planning Board (PB)	Impacts within 250-foot Shoreland Zone	Town Shoreland Zoning standards need to be met along the Kennebec River.
Zoning/Land Use Ordinance	PB	Major Development Site Plan Review	Review of development standards and zoning criteria such as water quality, flooding, and erosion control.
Flood Hazard Development Permit	PB	Impacts in the Flood Plain	Will need to show proposed improvements are in compliance with the Floodplain Management Ordinance
Building Permit	CEO	Needed for general construction	Usually obtained by contractor

Mr. James Brooks
April 22, 2022

ATTACHMENT 2: August 18, 2021 TRC Letter

14 Gabriel Dr.
Augusta, ME 04330

T 207.620.3800
TRCcompanies.com

August 18, 2021

Mr. James Brooks
Environmental Manager
Sappi Somerset Mill
1329 Waterville Road
Skowhegan, ME 04976

Sent Via Email: james.brooks@sappi.com

Subject: Comments on MDEP's Draft Denial of Shawmut Hydroelectric Project
Kennebec River Study at Sappi Somerset Mill
TRC Project No. 429681

Dear Jim:

TRC Environmental Corporation (TRC) is providing this letter to Sappi in conjunction with your comments on the Maine Department of Environmental Protection's (MDEP) August 11, 2021 draft order denying the water quality certification application for the Shawmut Hydroelectric Project, owned by Brookfield White Pine Hydro LLC (Brookfield).

TRC was retained by Sappi in February 2021 to provide a brief conceptual analysis of the potential impacts on the Somerset Mill if the Shawmut dam downstream of the mill were to be removed. On March 11, 2021, TRC provided Sappi with a report of conceptual alterations to the Somerset Mill that could be constructed if the Kennebec River levels were to drop an estimated 15 to 20 feet as a result of the dam removal; the report did not address the actual feasibility of those options. Sappi included this report with its comments to the Maine Department of Marine Resources (MDMR) proposed fisheries management plan amendment for the Kennebec River, and a MDMR public hearing that was scheduled for February 16, 2021.[1] In our March 11 report, TRC provided Sappi with two conceptual options to modify the mill's water intake system:

- Option 1 – In-River Basin: Construct a new pump house with a new in-river basin footprint of approximately 500 feet by 500 feet.

- Option 2 – Vertical Well Caissons: Construct five to six new vertical well shafts (or caissons, each 8 to 10 feet in diameter) on the riverbank, with lateral perforated pipes tunneled horizontally below the Kennebec River.

Additional modifications to the mill's outfall pipe system, diffuser, and foam tank were also described in our report to allow for continued operation of the mill. TRC's conceptual cost opinions for modifications to the Sappi Mill are on the order of $52 to $55 million.

While the options TRC presented in our March 11 report are theoretically viable, much more additional study and design would be required to demonstrate viability for Sappi. For example, subsurface ground and bedrock surveys would need to be conducted to characterize the soils that could be encountered. Detailed engineering design analyses would need to be completed and reviewed by Sappi before proceeding further.

[1] The MDMR public hearing was rescheduled for March 15, 2021 due to inclement weather on February 16.

Mr. James Brooks
Sappi
August 18, 2021

As part of the March 11 report, TRC provided a preliminary environmental permitting matrix of possible local, state, and federal permits that could be required for the conceptual piping modifications based on TRC's expertise. However, no contact has been made with any permitting authority regarding the viability of these options. Importantly, TRC noted that permitting requirements may alter the conceptual design modifications, and additional time and design with permitting authorities is required.

TRC included in our report only the conceptual costs to obtain environmental permits, but we did not comment on the likelihood of obtaining such permits. TRC stands by our report conclusions that the permitting processes may significantly change one or both of the conceptual options, requiring additional design work by Sappi. In fact, one or more of the permitting agencies could deny these proposed options, which would severely limit Sappi's ability to continuing mill operations. If Sappi cannot obtain the necessary water to supply the mill's operation, the mill will have to close.

In conclusion, if a MDEP denial of the Brookfield water quality certification results in the removal of the Shawmut dam, Sappi will be required to design, permit, and construct major modifications to its water intake and diffuser systems, and it is entirely possible that no such system could be designed, permitted, and constructed to provide sufficient water to meet the mill's demand. There are significant technical and permitting hurdles that would need to be crossed by Sappi, and all of these hurdles present significant risk to the continued operation of the Somerset mill.

If you have any questions regarding this information, please do not hesitate to contact me at 207-313-3675 or mbergeron@trccompanies.com.

Sincerely,

Mark Bergeron, P.E.
Environmental Operations Leader - Maine