

September 21, 2021

Ms. Kimberly D. Bose
Secretary Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426



Via online submission to: <http://www.ferc.gov> (cross-filed)

Subject: Maine Council of Trout Unlimited Report of Observed Low Flow Events for the Ripogenus Project (P-2572)

Dear Secretary Bose:

On behalf of its six chapters and over 2,000 members, Maine Council of Trout Unlimited (TU) submits this report of low flow events for the Ripogenus Project (P-2572). The land-locked salmon fishery below Ripogenus Dam is sustained by naturally spawned fish and nationally known for its quality. Project operations directly affect the fishing activities of our members.

On August 30, 2021, an apparent flow excursion was witnessed below Ripogenus Dam by Chewonki Campground staff and who informed TU of the event and provided photos. Such events have been occurring for the last ten years or more, but seem to be on the increase of late. The operator has generally reported them within ten days of their occurrence and we expected that to be case in this instance, but that has yet to occur. On September 13, TU called the FERC hotline and spoke with FERC official Mark Carter who explained that he would pass the information to appropriate FERC staff and that someone would be in contact with us. Hearing nothing back, we called again on September 15, and received the same assurance. On September 16, we were contacted by FERC official Alicia Burtner.¹ She explained how to report the event using FERC Online. Later that day, Chewonki Campground staff reported witnessing another low flow event. Rather than wait and file a separate report, we are including that event in this filing with the August 30 event.

To complicate matters, subsequent to the drafting of this report, Brookfield reported an excursion event that occurred on September 10, 2021.² This event was observed by TU contacts in the area who did not consider it problematic. It does not correlate with either of the flow events contained in this report.

August 30, 2021 Event

On that date, Sarah Sindo, Chewonki Campground Manager, reported that there had been a significant drop in the river similar to previous occurrences. At about noon, the river level dropped to 300-400 cfs and remained that flow until about 3pm. A thunder and lightning storm rolled through the area and there were rumblings that the outage was caused by a lightning strike. The Campground received no notification from the project operator. Prior to the event, flows at been running 1800 cfs. In further correspondence, Sarah reported that Maine Guide Mike McVey had observed both fish and macro-invertebrate strandings near the Cribworks (just downstream of Telos Bridge).

¹ Phone conversation, Stephen Heinz of TU and Alicia Burtner of FERC staff, September 16, 2021.

² Brookfield letter Subject: Ripogenus Project (FERC No. 2572);Whitewater Recreation Minimum Flow Excursion dated September 20, 2021, FERC Accession number 20210920-5168.

Photographs were taken that are provided on the following pages along with the location and photographer. The Big Eddy is a large, deep pool that cannot be fully dewatered because of the height at the outlet. Water levels in the photos are close to the limit of hydraulic controls.

Photos by Julie Puleio



Big Eddy Pool looking downstream from Big Eddy Campground

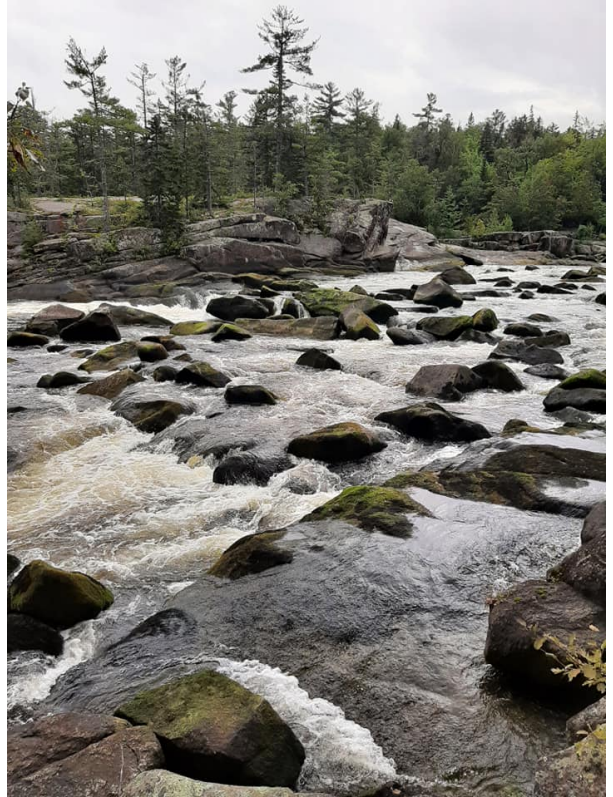


Big Eddy Pool looking upstream toward the Cribworks from Big Eddy Campground

Photos by Mike McVey



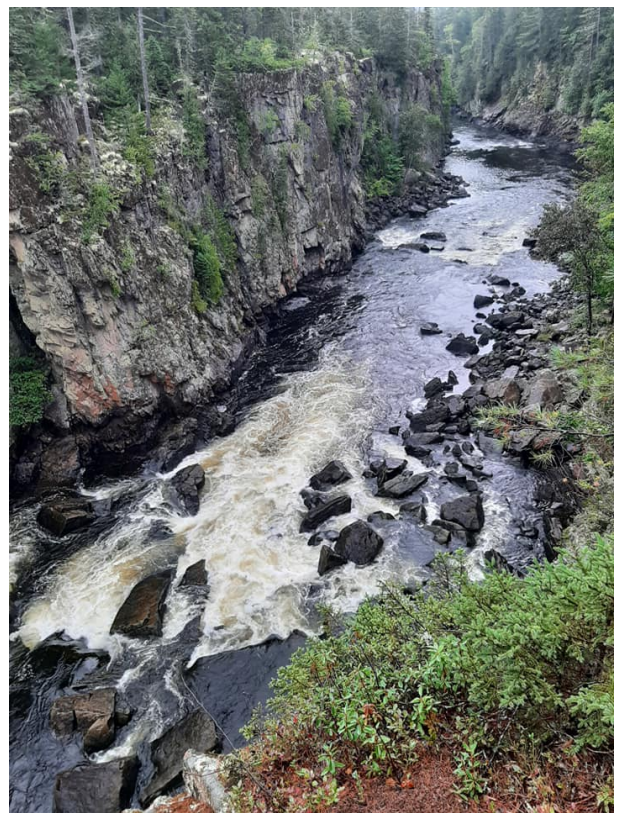
Downstream from Telos Bridge



Downstream from the Cribworks



Downstream from the Cribworks



Downstream into Ripogenus Gorge

September 16, 2021 Event

On this date, Sarah Sindo, Chewonki Campground Manager, reported that there had been another significant flow event that morning around 8 a.m. when she noticed the river was way down and not rising to the scheduled 1800 cfs. She looked at the Brookfield water flow website and it read 400 cfs. When Maine Guide Mike McKenzie asked her about flows, she replied that she wasn't sure what was going on. Before she shuttled him down to the Little A (base of Amberjackwockamus Falls) takeout, she looked at the website again and it read 600 cfs. She then emailed Mike Osborne of Brookfield asking what the flow was scheduled to be today because there wasn't anything specific listed. He responded: "The hydro stations all tripped offline due to a problem at the utility tie. McKay station is running on the min flow system at the moment. Not sure how long it is going to be before we can normalize. Sorry I don't have more information, but we're dealing with this as quickly as possible." Low flows persisted until 12:30 or 1:00.

Here is a picture that Maine Guide Kevin McKay took at the Little A takeout documenting the low flow event.



Other Information

The flow regime for the Ripogenus Project is complex, minimum flows are 1000 cfs³ - for your convenience we are providing them as Attachment A as they appear in the Pre-application Document (PAD) for the project's relicensing currently in progress.

A number of flow excursions have occurred at the Ripogenus Project over the years prior to these most recent ones. For your convenience, we have listed them in the following table:

Filed	Docket(s)	Description	Remarks
7/15/11	P-2572-119	Report Minimum Flow Excursion Event at the Ripogenus Development P-2572 Dated 20110715.	Failed to open sluice gate by July 1 to provide 100 cfs through upper gorge. FERC ruled this a violation
6/23/15	P-2572-121	20150623 Flow Excursion due to McKay Station Outage Ripogenus Project; Compliance Article 402 under under P-2572.	100 cfs for 63 minutes FERC took action
8/24/15	P-2458-211 P-2572-122	20150824 Ripogenus Project 2572; Article 402; Penobscot Mills P-2458; Article 403 Compliance; Flow Excursion due to Transmission Line Trip and Station Outages	Have photos. All three generators tripped due to cross arm failure Flows below 400 cfs for 2 hours 18 minutes
6/19/17 (actual event date)	N/A	Flow excursion without corresponding report	Have photos
12/18/18	P-2572-125	20181218 Ripogenus Project 2572-ME; Minimum Flow Excursion	933 cfs plus leakage flow for 2 hours 5 minutes during spawning flow period. No photos.
4/24/19	P-2458-229 P-2572-126	20190424 Penobscot Mills P-2458; Ripogenus Project P-2572; Minimum Flow Excursions due to Suspected Lightning Strike	906 cfs for 2 hours 55 minutes during spawning flow period on April 14, 2019 No photos.
3/12/21	P-2572-129	Great Lakes Hydro America, LLC submits Minimum Flow Excursion for the Ripogenus Project under P-2572.	All three generators tripped due to cross arm failure Flows below 900 cfs for 5 hours 44 minutes on March 2, 2021 No photos

³ Brookfield Pre-application Document for Ripogenus Project (FERC No. 2572) dated June 11, 2021, Section 4.

From information provided in response to TU questions at the scoping meeting for agencies and NGOs held September 9, repair crews must come from Millinocket to restore required flows after an excursion. Manual operations are required. TU believes that based on past outages, over two hours is the minimum time required to restore flows.

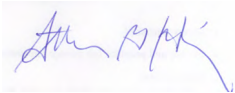
Conclusions and Request

TU finds it troubling that these flow events continue to occur - even more so when they are not reported as remains the case for the August 30 and September 16 events and apparently for the June 19, 2017 event noted above. Since the campground is not manned and use is minimal during the winter months, we wonder how many unreported excursions have occurred over the years. Of additional note: the Commission required follow-up on the June 13, 2015 excursion that was reported by Brookfield's letter that we have included as Attachment B.⁴ While this action may have corrected problems with the minimum flow system, low flow events continue to be a problem for the Ripogenus Project and the minimum time need to restore target flows appears to be over two hours with adverse consequences to fish and other aquatic organisms as well as to the fishing and whitewater rafting activities.

TU requests that the Commission investigate these unreported flow events; determine magnitude, timing, and cause; require the operator to provide any required reports; and take appropriate follow-up action. License conditions exist to balance project harms and benefits. In the absence of compliance with project terms and conditions, it must be assumed that project operations do more harm than good.

Maine TU Council appreciates the Commission's attention to this matter.

Sincerely and respectfully,



Stephen G. Heinz
Maine TU Council FERC Coordinator

Attachments:

- A. Description of Project Operations from PAD
- B. Brookfield letter reporting correction of problems with the Minimum flow system

E-mail Courtesy Copies:

Mark Carter, Alicia Burtner, Sarah Sindo, John Spain, Mike McKenzie, Stephen McVey, Julie Puleio

⁴ Brookfield letter RE: Ripogenus Project 2572, Article 402 Compliance; Follow-up to June 13, 2015 Flow Excursion due to McKay Station Outage

4.4 Project Operations

The Ripogenus and Penobscot Mills Projects are operated as a combined system. A diagram depicting the current operational requirements for the Projects and the associated flow of water through the system is provided as Figure 4.4-1.

4.4.1 Ripogenus Project

As established through the previous relicensing, the Ripogenus Project operates as a store-and-release development with an annual seasonal drawdown that allows for management of water levels and flows downstream of the Ripogenus Project, including the downstream reaches of the West Branch and the mainstem of the Penobscot River. As recognized by the stakeholders involved in the previous relicensing, the operations of the Ripogenus Project serve as a re-regulating impoundment that works in coordination with the upstream Storage Project (FERC No. 2634) and the downstream North Twin and Millinocket Lake Developments (of the Penobscot Mills Project) to maximize the balancing of downstream flows and water levels in support of flood control, public safety, dam safety, supplemental flows during seasonal low flow periods, fish spawning and migration, recreation, whitewater boating, water quality, local electrical grid stability, and baseload renewable energy generation. In particular, the size of the Ripogenus impoundment in combination with the Project's operational flexibility provides the storage resource that minimizes the detrimental effects of natural high and low water periods within the larger Penobscot River basin.

The Ripogenus Project impoundment, in combination with the upstream Storage Project and the downstream North Twin and Millinocket Lake developments, provide stakeholders of the larger Penobscot River basin with a valuable re-regulating tool to manage river flows in support of stakeholder interests. Without the existing storage capacity and operational flexibility developed by the stakeholders through the previous relicensings, the basin and downstream river users would be routinely subject to higher variable flows throughout the system – including flooding, public safety, dam safety and environmental impacts throughout the downstream reaches.

The Project's impoundment is managed on an annual cycle to dampen the variability and occasional extremes of seasonal precipitation and runoff through storage within the impoundment.

This storage allows for continuous flows to downstream aquatic habitat and spawning areas within the West Branch and the mainstem of the Penobscot River during times of lower inflows to the system. In addition, the storage allows flows from the West Branch to be reduced during higher seasonal flow periods when the combined flows from the East and West Branches have the potential to adversely impact human life, property, and environmental resources downstream along the mainstem Penobscot River.

Normal full pond elevation of the Ripogenus impoundment is 941.6 feet with a maximum drawdown of 44 feet (based on operational limitations of the Project). During normal operations, the Ripogenus impoundment is maintained between normal full pond elevation (941.6 feet) following seasonal inflow to the impoundment and a target elevation of 913.6 feet prior to the seasonal inflow, which equates to a target seasonal drawdown range of 28 feet.

During normal operations and normal inflow years, the Ripogenus impoundment elevation is held relatively stable during the summer months and is gradually drawn down starting in the fall with a target low elevation by late winter in anticipation for the spring thaw and freshet. In the spring, the Ripogenus impoundment elevation rises based on inflows from the upstream Storage Project, spring thaw, and precipitation with the goal to reach normal full pond elevation by late spring. In this capacity, as compared to allowing these inflows to be released to the downstream reaches and potentially causing flooding, public safety, and dam safety impacts, the Project acts as a re-regulating impoundment in support of providing a more constant flow for downstream resources and impacts.

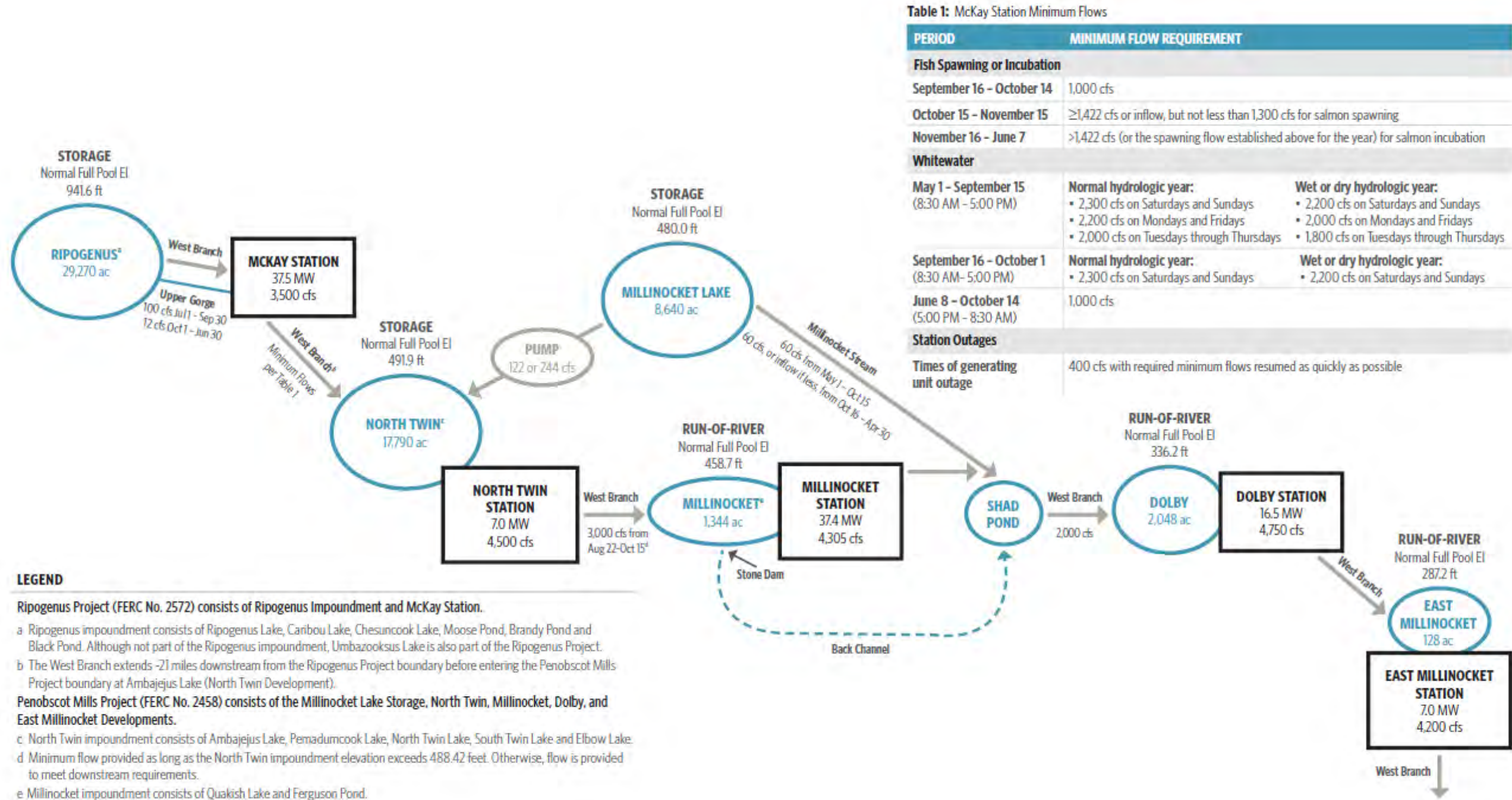
In support of managing the impoundment levels and downstream flows, GLHA tracks seasonal inflows to the impoundment (e.g., through snow surveys). As recognized by Project stakeholders, even with significant efforts to estimate inflows to the impoundment, the system is subject to natural variability in regional precipitation, which results in events such as 10-year and 100-year storm events, as well as low inflow or drought events (e.g., 2002 and 2020-2021).

Under the Project's existing license, GLHA is provided the flexibility to provide the required minimum flows in support of aquatic and riverine resources, while providing the tools to help

reduce the potential impacts (e.g., flooding, public safety, and dam safety) resulting from higher water years.

Pursuant to Article 401 of the existing license, a minimum flow of 100 cfs is released from Ripogenus Dam into the bypassed reach (Upper Gorge) from July 1 through September 30 annually. Consistent with the August 19, 1997 FERC order approving and modifying the Water Management Plan, the minimum flows into the Upper Gorge are released through the sluice gates at the north end of the dam. During the remainder of the year, a minimum flow of 12 cfs is provided through leakage from Ripogenus Dam into the Upper Gorge. Releases from the Ripogenus Project enter the West Branch and flow 21 miles downstream (from McKay Station) into Ambajejus Lake, which is part of the North Twin Development of the Penobscot Mills Project.

Figure 4.4-1
Operational Requirements for the Ripogenus and Penobscot Mills Projects



Article 402 of the existing license requires minimum flows downstream of McKay Station into the West Branch as specified in Table 4.4-1. These flows may be temporarily modified if required by operating emergencies beyond the control of the Licensee and for short periods upon agreement between the Licensee and the Maine Department of Environmental Protection (MDEP) and Land Use Planning Commission (LUPC). Minimum flows may also be modified (to outflow approximates inflow) if required by hydrologic conditions beyond the control of the Licensee upon mutual agreement between the Licensee, USFWS, MDEP, LUPC, and MDIFW. Consistent with the August 19, 1997 FERC order approving and modifying the Water Management Plan, changes in flows below McKay Station are accomplished through the turbines; however, if necessary, GLHA will open a gate at Ripogenus Dam to augment flows.

Table 4.4-1
Minimum Flow Requirements downstream of McKay Station for the Ripogenus Project¹

Date Range	Minimum Flow Requirement
<i>Fish Spawning or Incubation</i>	
September 16 – October 14	1,000 cfs to facilitate drawdown of the North Twin impoundment (part of the Penobscot Mills Project)
October 15 – November 15	At least 1,422 cfs or inflow, but not less than 1,300 cfs ² for salmon spawning
November 16 – June 7	Greater than 1,422 cfs (or the spawning flow established above for the year) ² for salmon incubation
<i>Whitewater</i>	
May 1 – September 15 (8:30 AM – 5:00 PM)	Normal hydrologic year ³ : • 2,300 cfs on Saturdays and Sundays • 2,200 cfs on Mondays and Fridays • 2,000 cfs on Tuesdays through Thursdays Wet or dry hydrologic year ³ : • 2,200 cfs on Saturdays and Sundays • 2,000 cfs on Mondays and Fridays • 1,800 cfs on Tuesdays through Thursdays
September 16 – October 1 (8:30 AM – 5:00 PM)	Normal hydrologic year ³ : • 2,300 cfs on Saturdays and Sundays Wet or dry hydrologic year ³ : • 2,200 cfs on Saturdays and Sundays
June 8 – October 14 (5:00 PM – 8:30 AM)	1,000 cfs
<i>Station Outages</i>	
Times of generating unit outage	400 cfs with scheduled minimum flows identified above in table to be resumed as quickly as possible by releases from Ripogenus Dam if necessary but in no event in more than three days following the initial outage

¹ Minimum flows shall be the minimum flows for each hourly period measured on the basis of an hourly average.

² Flows to be established each year in consultation with the USFWS and MDIFW.

³ The whitewater flow for each month from May through September is determined on the first day of each month based on an analysis of Total Available Water as described in the Water Use Plan in the application for new license filed with the Commission on December 17, 1991. The determination of “wet,” “normal,” or “dry” shall remain constant during the month based on the first day of the month classification. The range of “normal” available water

represents the expected available water during normal hydrologic conditions. It is defined as the range between $x-s$ and $x+s$, where “ x ” is the mean value and “ s ” is the standard deviation. Based on a statistical analysis, total available water would be expected to be within this “normal” range two-thirds of the time and outside of this range (“wet” or “dry” years) one-third of the time.

Pursuant to the February 20, 2003 FERC order approving the Habitat Improvement Plan under Article 406 of the existing license, GLHA manages flows from the West Branch into the “Holbrook Side Channel.” The Holbrook Side Channel is a 1,400-foot-long channel located approximately 1.7 RM downstream from the Ripogenus Dam in which flow is diverted from the West Branch for landlocked salmon and brook trout spawning and rearing. Flow from the channel re-enters the West Branch approximately 1,000 feet downstream. Flows into the channel are controlled through two pipes, one of which is equipped with a valve that can be opened or closed to increase or reduce flow from the West Branch into the channel. Flows into the channel range from between approximately 35 and 65 cfs during normal operating conditions, depending on the amount of flow in the West Branch. Around June 1, GLHA closes the valve to reduce flow into the channel (for landlocked salmon and brook trout fry emergence and production). Around October 15, GLHA opens the valve to increase flow into the channel (for landlocked salmon and brook trout spawning).

4.4.2 Penobscot Mills Project

The five developments that comprise the Penobscot Mills Project are operated as an integrated system, primarily based on flows received from the Ripogenus Project. The two store-and-release developments (Millinocket Lake Storage and North Twin) are located upstream of the run-of-river developments (Millinocket, Dolby, and East Millinocket). The North Twin impoundment receives flow from the Ripogenus Project. The Millinocket Lake Storage Development is located on Millinocket Stream, which enters the West Branch downstream of the Millinocket Development. Water from Millinocket Lake is either pumped into Ambajejus Lake (part of the North Twin Development), which subsequently passes through the North Twin and Millinocket powerhouses, or it is released into Millinocket Stream, which enters the West Branch downstream of the Millinocket Development.



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January 7, 2016

**FERC Project No. 2572
Article 402**

Secretary Kimberly S. Bose
Federal Energy Regulatory Commission
Mail Code: DLC, HL-11.2
888 First Street, N.E.
Washington, D.C. 20426

Dear Secretary Bose:

**RE: Ripogenus Project 2572, Article 402 Compliance;
Follow-up to June 13, 2015 Flow Excursion due to McKay Station Outage**

On June 23, 2015, Great Lakes Hydro America, LLC (GLHA), licensee for FERC Project No. 2572-ME (Ripogenus) in Maine, submitted an excursion report to the Commission to report an approximately one-hour reduction in outflow from the Project's McKay Station to the West Branch of the Penobscot River. As explained in the letter, the excursion occurred on June 13, 2015, due to a transmission line pole cross arm failure and a subsequent malfunction of the Station's minimum flow system (which is designed to ensure an outflow of 400 cfs during a station outage). GLHA committed in the letter to investigating and troubleshooting the cause of the minimum flow system malfunction and to update the Commission with any additional corrective measures after the malfunction is fully identified and rectified. The June 23 letter further stated that a sluice gate at Ripogenus Dam would be left open until GLHA is confident that the minimum flow system will function properly and provide the required 400 cfs flow during any subsequent station outages.

In its August 11, 2015 response, the Commission indicated that the June 13 minimum flow deviation would not be considered a violation of Article 402 of the Ripogenus Project license. However, in regards to the minimum flow system malfunction, the Commission also requested:

"Once you identify the cause(s) of the system malfunction and rectify the problem, you will update the Commission with the results of any additional corrective measures".

On December 28, 2015, GLHA notified the Commission (by voice mail to Mr. Raymond James) that the issues with the minimum flow system malfunction had been fully rectified and verified through testing. As a result, the open sluice gate at Ripogenus Dam was shut on December 22. In his December 31 reply, Mr. James requested that GLHA submit a written verification e-filing to the Commission that the McKay Station minimum flow system malfunction issues have been addressed.

Following the investigation of the minimum flow system malfunction, GLHA undertook several corrective measures:

1. All of the minimum flow brake pads on Units 1 & 2 at McKay Station were replaced, and the brake system components on all three generating units were cleaned and lubricated.
2. Limit switches on Units 1 and 2, which were found to intermittently malfunction, were adjusted.



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3. Several air leaks in the minimum flow system were sealed.
4. A consultant was retained to verify that all PLCs (Programmable Logic Controllers) were correctly set up to ensure that the minimum flow system operates as intended.
5. Air pressures to the minimum flow system were adjusted to the correct operating pressures.
6. A preventative maintenance sheet was developed for annual minimum flow system testing and verification.

On December 22, 2015, following these corrective measures, the minimum flow system was thoroughly tested during a mock station outage, and it performed properly and as intended. Units 1 & 2 held at 13% wicket gate opening and Unit 3 held at a 7% opening during the outage (as intended with the minimum flow braking system), which provided a flow of ~390 cfs through the turbines. This flow, together with the 12 cfs estimated leakage flow from Ripogenus Dam, resulted in a flow of just over 400 cfs from the Project.

Following this testing and verification that the minimum flow system works properly, the sluice gate was closed later in the day on December 22, 2015.

Please feel free to contact me at (207-723-4341, x118) if you have any questions or comments.

Sincerely,

A handwritten signature in blue ink that reads "Kevin Bernier".

Kevin Bernier
Senior Compliance Specialist

cc: A. Zarrella, K. Maloney, J. Seyfried, K. Murphy, M. Osborne, T. Maplettoft, J. Cole,
M. Craig, M. Stanley, J. Clere, T. Wynn; GLHA
K. Howatt; MDEP
S. Shepard, A. Bentivoglio; F&WS
D. Kane, J. Perry, T. Obrey; MDIFW

GLHA File: 2572/1