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August 11, 2023

FERC Project 2572
Article 402

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

Electronically Filed**Subject: Ripogenus Project, FERC No. 2572; Response to Allegations of Flow Deviations**

Dear Secretary Bose:

Great Lakes Hydro America, LLC (GLHA), licensee for the Ripogenus Project located on the West Branch of the Penobscot River in Maine, submits this letter in reply to Commission correspondence dated August 4, 2023, in which the Commission requests that GLHA reply to multiple stakeholder complaints filed between July 9 and August 2, 2023, regarding a low flow event that occurred at the Project on July 7, 2023. The Commission requests that GLHA file a response to these allegations within 15 days (i.e., by August 21st) that includes:

“hourly flow data from July 5 through July 7, 2023. If you are unable to provide hourly data, please provide the highest resolution data available and a summary of your flow monitoring methods. Also, in your July 21, 2023 report, you indicated that you did not observe any adverse environmental effects during your response to the July 8 deviation. Please describe the methods used to check for environmental effects, including the areas surveyed.”

Required Flows

During hours of the day that are outside of the whitewater release time period (i.e., 17:00 to 08:30 hrs), Article 402 requires a minimum flow of 1,000 cfs from June 8th through October 14th. Additionally, Article 402 allows reduced “outage” minimum flows of 400 cfs when generating unit failures occur at McKay Station, *“with scheduled minimum flows to be resumed as quickly and practically as possible by releases from Ripogenus Dam if necessary, but in no event in more than three days following the initial outage”*. Finally, Article 402 states that *“These specified minimum flows shall be the minimum flows for each hourly period (measured on the basis of an hourly average)”*.

July 7, 2023 Low Flow Event

At 17:57 hrs on Friday evening, July 7th, all six of GLHA’s hydro stations on the West Branch and main stem of the Penobscot River tripped offline during a severe thunderstorm. The station trips were caused by a lightning strike to the local utility’s (Versant Power’s) transmission line, which connects these stations to the electrical grid. McKay Station (part of the Ripogenus Project) also tripped offline during this event, and communications to the station were interrupted.

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Despite the station trip and loss of communications, GLHA subsequently verified that the minimum flow system at McKay Station functioned properly¹ by quickly restoring required outage flows (at least 400 cfs) to the West Branch of the Penobscot River. Based on the hourly flow data (attached), GLHA further determined that the event was not reportable to the Commission as an excursion from license requirements, since the hourly average outflow did not drop below the emergency outage flow of 400 cfs. Although not a reportable flow excursion, GLHA provided a courtesy notification to resource agencies regarding the July 7 low flow event at the Ripogenus Project (see attached).

GLHA voluntarily provides flow information to the public for the Ripogenus Project via a website (<https://safewaters.com/home>), which also contains flow information for other Brookfield Renewable U.S. facilities. The flow readings on this website are calculated based on turbine unit wicket gate position, head, and turbine curves for each unit. Due to the loss of communications, data on wicket gate position was not being communicated during the outage, resulting in a calculated station flow of 0 cfs being fed into GLHA's automated data system ("PI"). Thus, the Safe Waters website (which obtains the calculated flow data from the PI data system) was only showing a flow of 100 cfs at the Ripogenus Project during the July 7th outage (the 100 cfs flow reflects a manual entry for fishery flows released from Ripogenus Dam during the months of July, August, and September). The wicket gates on all three units at McKay Station are set to go to 13% gate in the minimum flow mode, which results in an approximate flow of 160 cfs from both unit #1 and unit #2 and a flow of 190 cfs from unit #3, for a total flow of about 510 cfs out of the station. As a result, the attached table shows hourly flows of 610 cfs during the July 7th outage, which approximates outflows during other McKay Station outages that have occurred since the current minimum flow system was implemented in 2018.²

GLHA recognizes the stakeholder confusion and concern that resulted from the 100 cfs flow that was reported on the Safe Waters website during the July 7th outage, and it is investigating potential measures for obtaining and providing more accurate data to the public.

¹ During an outage, the minimum flow system consists of automatic wicket gate settings of 13% on all three units at McKay Station, totalling approximately 510 cfs. Although there was a loss of communications, GLHA was able to verify that all three units at McKay Station had properly gone into minimum flow mode during the outage based on both unit speed readings and observations by the first responding technician that the wicket gates and dow valves were open and passing flow.

² GLHA also notes that outflows from the Project during the July 7th outage approximated the outflows studied during a simulated trip of McKay Station in October 2022, the results of which were reported to the Commission on April 24, 2023 as part of an Initial Study Report that was prepared in support of relicensing the Project.

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July 8, 2023 Whitewater Excursion

As indicated in the July 21, 2023, report to the Commission, an emergency shutdown of two units was undertaken at McKay Station on July 8th after a local technician (who had been dispatched to the station to investigate a high bearing temperature alarm) found hot (smoking) bearings, flooded wheel pits, and energized motors that had become submerged. This in turn resulted in an excursion from whitewater recreation flows being released to the West Branch of the Penobscot River. The responding technicians did not conduct any river surveys for environmental effects, as they were focused on the emergency conditions found at the station and then on getting a gate open at Ripogenus Dam to resume whitewater flows. However, GLHA did not receive any reports from whitewater outfitters or other boaters regarding any effects on whitewater recreation activities that resulted from the July 8th excursion. Regarding environmental effects, the lowest hourly flow reported during the whitewater flow excursion was 1,369 cfs, which is over three times the required minimum flow during station outages, so significant environmental effects would not be expected. The two units at McKay Station remain out of operation due to bearing damage that resulted from this incident.

In summary, the July 7th station outage and low flow event at the Ripogenus Project was created by unforeseeable events beyond GLHA's control; however, the minimum flow system at McKay Station worked as designed, thereby avoiding a minimum flow excursion. Thus, the event was not a reportable excursion, but GLHA nonetheless reported the event as a courtesy to the relevant resource agencies.

Please e-mail me at kevin.bernier@brookfieldrenewable.com or call me at (207) 951-5006 if you have any questions or need additional information.

Sincerely,



Kevin Bernier
Senior Compliance Specialist

Cc: N. Stevens, J. Cole, K. Maloney, D. Heidrich, S. Michaud, S. Farrington, R. Dill, M. Osborne, T. Mapletoft, R. Dorman, L. Macomber, P. McNelis, P. Wainwright, S. Hill, R. Smith; GLHA
A. Burtner: FERC DHAC – Washington

GLHA HSSE File: 19(a)(iii)(Penobscot)

McKay Station / Ripogenus Dam (Hourly Averages)

7/5/23 - 7/9/23

Date & Time		
	Flow from Dam (cfs)	Total Flow (cfs)
05-Jul-23 01:00:00	100	3,211
05-Jul-23 02:00:00	100	3,210
05-Jul-23 03:00:00	100	3,213
05-Jul-23 04:00:00	100	3,212
05-Jul-23 05:00:00	100	3,215
05-Jul-23 06:00:00	100	3,216
05-Jul-23 07:00:00	100	3,220
05-Jul-23 08:00:00	100	3,211
05-Jul-23 09:00:00	100	3,147
05-Jul-23 10:00:00	100	3,147
05-Jul-23 11:00:00	100	3,151
05-Jul-23 12:00:00	100	3,147
05-Jul-23 13:00:00	100	3,146
05-Jul-23 14:00:00	100	3,140
05-Jul-23 15:00:00	100	3,143
05-Jul-23 16:00:00	100	3,141
05-Jul-23 17:00:00	100	3,387
05-Jul-23 18:00:00	100	3,454
05-Jul-23 19:00:00	100	3,308
05-Jul-23 20:00:00	100	3,489
05-Jul-23 21:00:00	100	3,485
05-Jul-23 22:00:00	100	3,464
05-Jul-23 23:00:00	100	3,193
06-Jul-23 00:00:00	100	3,163
06-Jul-23 01:00:00	100	3,172
06-Jul-23 02:00:00	100	3,176
06-Jul-23 03:00:00	100	3,173
06-Jul-23 04:00:00	100	3,169
06-Jul-23 05:00:00	100	3,170
06-Jul-23 06:00:00	100	3,174
06-Jul-23 07:00:00	100	3,172
06-Jul-23 08:00:00	100	3,177
06-Jul-23 09:00:00	100	3,172
06-Jul-23 10:00:00	100	3,175
06-Jul-23 11:00:00	100	3,177
06-Jul-23 12:00:00	100	3,178
06-Jul-23 13:00:00	100	3,169
06-Jul-23 14:00:00	100	3,254
06-Jul-23 15:00:00	100	3,486

06-Jul-23 16:00:00	100	3,275
06-Jul-23 17:00:00	100	3,182
06-Jul-23 18:00:00	100	3,487
06-Jul-23 19:00:00	100	3,490
06-Jul-23 20:00:00	100	3,496
06-Jul-23 21:00:00	100	3,194
06-Jul-23 22:00:00	100	3,141
06-Jul-23 23:00:00	100	3,140
07-Jul-23 00:00:00	100	3,138
07-Jul-23 01:00:00	100	3,141
07-Jul-23 02:00:00	100	3,145
07-Jul-23 03:00:00	100	3,137
07-Jul-23 04:00:00	100	3,138
07-Jul-23 05:00:00	100	3,137
07-Jul-23 06:00:00	100	3,139
07-Jul-23 07:00:00	100	3,136
07-Jul-23 08:00:00	100	3,139
07-Jul-23 09:00:00	100	3,137
07-Jul-23 10:00:00	100	3,142
07-Jul-23 11:00:00	100	3,150
07-Jul-23 12:00:00	100	3,147
07-Jul-23 13:00:00	100	3,146
07-Jul-23 14:00:00	100	3,142
07-Jul-23 15:00:00	100	3,146
07-Jul-23 16:00:00	100	3,142
07-Jul-23 17:00:00	100	3,140
07-Jul-23 18:00:00	100	3,094
07-Jul-23 19:00:00	100	610
07-Jul-23 20:00:00	100	610
07-Jul-23 21:00:00	100	610
07-Jul-23 22:00:00	100	610
07-Jul-23 23:00:00	100	610
08-Jul-23 00:00:00	100	1,077
08-Jul-23 01:00:00	100	1,358
08-Jul-23 02:00:00	100	1,749
08-Jul-23 03:00:00	100	2,370
08-Jul-23 04:00:00	100	2,382
08-Jul-23 05:00:00	100	2,383
08-Jul-23 06:00:00	100	2,471
08-Jul-23 07:00:00	100	2,476
08-Jul-23 08:00:00	100	2,477
08-Jul-23 09:00:00	100	2,451
08-Jul-23 10:00:00	100	1,369
08-Jul-23 11:00:00	1,474	1,893
08-Jul-23 12:00:00	2,624	2,624
08-Jul-23 13:00:00	2,624	2,624
08-Jul-23 14:00:00	2,624	3,625

08-Jul-23 15:00:00	1,290	2,662
08-Jul-23 16:00:00	1,150	2,447
08-Jul-23 17:00:00	1,150	2,447
08-Jul-23 18:00:00	1,150	2,447
08-Jul-23 19:00:00	1,150	2,447
08-Jul-23 20:00:00	1,150	2,447
08-Jul-23 21:00:00	1,150	2,447
08-Jul-23 22:00:00	1,150	2,447
08-Jul-23 23:00:00	1,150	2,447
09-Jul-23 00:00:00	1,150	2,447

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Cc:
Subject: Penobscot flow interruptions due to station trips, lightning storm
Date: Monday, July 10, 2023 12:37:00 PM
Attachments: [image001.gif](#)

At 17:57 hrs on Friday evening, July 7th, all of the Great Lakes Hydro America, LLC's (GLHA's) hydro stations on the Penobscot (McKay, North Twin, Millinocket, Dolby, East Millinocket, and Weldon) tripped offline during a severe thunderstorm causing disruptions in run-of-river flows at the Millinocket, Dolby and East Millinocket Developments (Penobscot Mills Project, FERC No. 2458) and a disruption in minimum flows at Millinocket and at Weldon (Mattaceunk Project, FERC No. 2520). The station trips were caused by a lightning strike to the local utility's (Versant Power's) transmission line, which connects these stations to the electrical grid. Although McKay Station (part of the Ripogenus Project, FERC No. 2572) also tripped offline during this event, the minimum flow system at the Station functioned properly by quickly restoring the required outage flows (at least 400 cfs) to the West Branch of the Penobscot River, thus initially avoiding a minimum flow excursion at the Project. (Please note though that due to communication interruptions during the storm event, Brookfield's Safewaters website (<https://safewaters.com/home>) only displayed the 100 cfs minimum flow from Ripogenus Dam during the outage, which is released during the months of July, August, and September to enhance fishing opportunity). After public safety checks were made downstream and warning alarm systems were activated, gates were opened at the other GLHA stations to restore river flow as soon as practicable; maintenance crews were then able to bring the McKay, Dolby, East Millinocket, and Weldon stations back online later that night.

During GLHA's efforts to resume normal operations, it was subsequently determined that the storm and station trips had caused additional damage to GLHA equipment, including damage to lightning arrestors at a Millinocket substation (which is connected to the North Twin and Millinocket Stations), and potential bearing damage to two hydro units at McKay Station. The lightning arrestors were repaired on Saturday, July 8th, which allowed the North Twin and Millinocket Stations to both be put back online. However, an emergency shutdown of the two McKay Station units was implemented as a precaution on Saturday morning, July 8th, which resulted in a brief interruption of whitewater boating flows before a deep gate could be opened at Ripogenus Dam. These two units remain out of service pending additional investigation, and minimum flows at the Ripogenus Project are currently being provided via Unit #3 at McKay Station and a deep gate at Ripogenus Dam.

Article 403 of the Penobscot Mills license requires that the Millinocket, Dolby, and East Millinocket Developments be operated in a run-of-river mode while providing an instantaneous minimum flow of 2,000 cubic feet per second (cfs) to the West Branch of the Penobscot River at Millinocket. Run-of-river operation or minimum flows may be temporarily modified if required by operating emergencies beyond the control of the licensee, and for short periods upon mutual agreement between the licensee, the U.S. Fish and Wildlife Service, and the Maine DEP.

Article 403 of the Mattaceunk Project license, through Condition B of the Maine DEP's water quality

certification for the Project, requires a total minimum flow discharge of 1,674 cfs, or inflow, whichever is less, throughout the year, along with daily average minimum flow discharges of 2,392 cfs from July 1 through September 30 and 2,000 cfs from October 1 through June 30 (unless inflow is less than the stated daily average minimum flow). Article 403 also requires that the Project be operated in a run-of-river mode with year round use of the 4-foot-high flashboards, such that average daily outflow approximates average daily inflow. And finally, Article 403 states that, *“For unplanned deviations lasting 3 hours or less that do not result in visible environmental effects, the licensee must file an annual report, by March 1, describing each incident that occurred during the prior January 1 through December 31 time period.”*

Article 402 of the Ripogenus Project license requires whitewater recreation flows in part as follows:

“Minimum flows shall be from May 1 to September 15 between the hours of 0830 and 1700 local time according to the following schedule: In a “wet” or “dry” hydrologic year, 2,200 cfs on Saturdays and Sundays”

GLHA is still investigating and collecting information on these events, which will be detailed in reports to FERC within 10 days (for Ripogenus and Penobscot Mills) and by March 1, 2024 for Mattaceunk. I will copy everybody on these reports, but in the meantime, please let me know if you have any comments or questions.

Kevin Bernier

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Document Content(s)

20230811 To FERC Reply Ripogenus low flow complaints.pdf1