

From: Joshua Ball [mailto:jball@uppcoco.com]
Sent: Tuesday, February 26, 2019 12:32 PM
To: Gulotty, Elle (DNR) [mailto:elle.gulotty@dnr.state.co.us]; Oun, Amira (DEQ) [mailto:amira.oun@deq.state.co.us]; Scott Hicks [mailto:scott.hicks@fvs.state.co.us]; Gene Mensch [mailto:gmensch@dnr.state.co.us]; Jim Grundstrom [mailto:jgrundstrom@fvs.state.co.us]
Cc: Virgil E. Schlorke [mailto:vschlorke@uppcoco.com]; GenerationAdmin [mailto:generationadmin@uppcoco.com]
Subject: Dead River License Request for Planned Deviation - Dead River Storage Basin Drawdown

Good Afternoon All,

As done in the past, UPPCO has been closely watching the snowpack information surrounding the Dead River Project to best understand how the conditions will impact project sites during spring. As many of you are aware, recent winter storms have significantly increased the amount of snow on the ground throughout the Dead River Watershed. In February alone, the NWS has recorded 87.2 inches of snow, which is 56.5 inches more than average. To date, the 202.2 total inches recorded is 55.0 inches more than average and is almost double the 110.1 inches recorded at the NWS this time last year, and I don't believe we are done receiving snow. The large amounts of snow are great news for the Temporary License Amendment, as current indications show the Silver Lake Storage Basin will fill and provide the water required to perform the bank full flow release downstream of the reservoir. Although discussed during the license amendment process, the extensive amounts of snow have more of an effect on the Dead River Storage Basin, and the ability to control the headwater elevation. Not only is the amount of snow on the ground a concern, but the amount of water contained in that snow.

I have attached the latest snow water equivalent (SWE) forecast from NOAA that depicts 12 to 16 inches of water equivalent in the majority of the Dead River watershed. Looking back in UPPCO records, this amount of SWE has not been recorded in the last 15 years (as long as the records I have go back). The highest was 2005 and 2013, with an average SWE in the 12 to 14 inch range. Additionally, UPPCO also feels the current ground is oversaturated due to the high amounts of rain received in October and quick transition into snow in November. On average the DRSB sees minimum flow conditions though the winter with a slightly declining headwater. So far this year, outflows have been averaging 15-30 cfs above minimum and headwater has been consistent, indicating inflows into the storage basin are greater than normal. With higher amounts of water already in the ground, the spring melt will not be absorbed into the ground, but flow directing into the storage basin resulting in more of the 'snow water' than average entering the system.

Based upon data from historical operations records and utilizing the synthesized model to understand different scenarios, UPPCO is requesting the following proposed planned deviation at the Dead River Storage Basin (DRSB) development of the Dead River License (P-10855):

1. Lower the April Minimum Elevation to 1,333.5 ft NGVD
2. Lower the April Start of Month Target Elevation to 1,334 ft NGVD.

The aforementioned planned deviation will help to reduce the potential of a headwater elevation over 1,344 ft NGVD (spillway crest) at the DRSB during the spring melt. As such, UPPCO believes that this deviation is the best course of action for all interested parties of the DRSB. Reducing the current headwater elevation (drawdown) allows room to capture spring flows when they are higher than the maximum powerhouse releases. This storage area helps to reduce the overall headwater peak elevation and minimize the potential effects of bank erosion outside of the normal operating headwater levels. By

allowing UPPCO to start the drawdown now, the impacts to the aquatic animals will be minimized as the drawdown rates will be less than if requested or approved closer to the spring melt. If approved, UPPCO would release approximately 200 CFS through the Hoist powerhouse until the target of 1334 feet is met (anticipate 30-40 days). The approximate flows should equate to a .010 foot / day drop in headwater elevation.

As a comparative note; Last year the DRSB had an average of 6 to 10 inches of SWE. Prior to spring melt, the headwater level was maintained at 1337.5 feet. At its peak, the DRSB rose to an elevation of 1343.05 feet. This year there is more snow and more water in the snow. Based on our model analysis, without a drawdown the headwater elevation at the DRSB has a 54% chance of exceeding 1343 feet and a 44% chance of exceeding the spillway (the drawdown reduces the numbers to 36% and 29% respectively). UPPCO developed the 1334 foot target by comparing model runs with various drawdown targets. The 1334 target produced the best possible reduction of high headwater events with the fewest impacts to sustaining water levels though the remainder of the summer/fall.

Please provide your comments to UPPCO on the requested planned deviation by the close of business on Monday, March 4, 2019. If UPPCO does not receive any comments by March 4, 2019, it will assume you have none and will proceed as outlined above.

As always, please feel free to reach out with any questions.

Regards,

Josh Ball

Generation Supervisor

Upper Peninsula Power Company

800 Greenwood St.

Ishpeming, MI 49849

Office: 906-485-2419

Mobile: 906-869-1798

jball@upppo.com

www.upppo.com