United States Department of the Interior

FISH AND WILDLIFE SERVICE
Mid-Atlantic Fish and Wildlife Conservation Office
177 Admiral Cochrane Drive
Annapolis, MD 21401

October 24, 2019

Tom O'Connor
Mid-Atlantic Regional Operations Manager
York Haven / Lake Lynn / PE Hydro

RE: 2019 Inspection of York Haven Fish Passage Facilities

Mr. O'Connor,

Attached is the report of the U.S. Fish and Wildlife Service's (Service) inspection of the fish passage facility at York Haven Dam. Based on the attached report, the Service makes the following recommendations:

1. Upwelling in the Entrance Channel - Please reduce the amount of flow going through the diffuser system to ensure visible upwelling is not occurring in the fishway.
2. Downstream Control Weir and Access to the Energy Dissipation Pool - This possible issue is noted in this report, but the Service is not recommending corrective action at this time.
3. Counting Window Cleaning - Per the Fishway Operational Plan, this window will be cleaned as needed if counting commences at the site. No corrective action is recommended at this time.
4. Debris Accumulation at the Fishway Exit Trash Rack - Per the FOP, the trash rack at the fishway exit is checked and cleaned daily during the shad passage season, but frequency of cleaning during the resident fish passage season is not specified in the FOP. During the resident fish passage season, general inspections, including debris removal at this rack, should occur at least twice per week. Additional inspections of the fishway during the resident fish passage season may also be needed after storms or high flow events to ensure debris is not accumulating at the fishway exit.

Thank you for your attention to these items during the resident and migratory fish passage seasons. Please contact me if you have any questions or need further clarification of these items.

Sincerely,

Sheila Eyler
Project Leader
Mid-Atlantic Fish & Wildlife Conservation Office
U.S. Fish and Wildlife Service

United States Department of the Interior

FISH AND WILDLIFE SERVICE

300 Westgate Center Drive
Hadley, MA 01035-9589

October 24, 2019

MEMORANDUM

To: Susquehanna River Coordinator, Mid-Atlantic Fish & Wildlife Conservation Office

From: Jesus Morales, Hydraulic Engineer, Fish Passage Engineering

Subject: Fishway Inspection at the York Haven Hydroelectric Project (FERC #1888) on May 21, 2019

A seasonal inspection of the fish passage facilities at the York Haven Hydroelectric Project (Project) was performed at 1:00 pm on Tuesday, 05/21/2019. The Project is owned by the York Haven Power Company, LLC, which is a subsidiary of Cube Hydro Partners, LLC (Cube). The USFWS (Service) review team was led by Jesus Morales and Jessica Pica. Consultants from Kleinschmidt Associates, Inc., and personnel from Pennsylvania Fish & Boat Commission, as well as the Susquehanna River Basin Commission, were also present during the visit. On the day of the site inspection the Susquehanna River flow was around 70,000 cfs, as measured by the Marietta USGS water gage.

The site review focused on the inspection of the upstream fish passage facility, a vertical slot fish ladder located on the right bank of the York Haven East Channel. On the day of the site inspection, the York Haven Fish Ladder had not yet initiated its American shad upstream passage operating season because the fish passed by Safe Harbor, the nearest downstream fishway, had not reached 1,000 American shad at the time. The intent of this inspection report is to address operational deficiencies observed at the time of the site inspection.

Based on this review, the salient passage issues appear to center on the following:

Entrance channel

- Upwelling probably caused by discharge from the AWS floor diffuser - During the site visit, Service staff identified a location within the fish ladder entrance channel that showed indications of excessive hydraulic turbulence. A hydraulic upwelling (i.e., vertically oriented flow velocity vectors) was visible from the walking platform where visitors were standing (Figure 1). The force of this upwelling was clearly extending all the way up to the top of the water column, in the area of the entrance channel right over a floor diffuser. Floor diffusers are designed to discharge attraction flow from an auxiliary water supply (AWS) system to be combined with the internal fish ladder flows. The Service suspects that for whatever reason (e.g., pushing too much flow through the floor diffuser, or debris issues causing the diffuser to be partially blocked), flow velocities coming out of this floor diffuser are too high for this particular entrance channel. This unwanted upwelling could result in an interruption of the zone of passage inside the fishway.

Generally, a hydraulic upwelling should never be visible within the entire longitudinal profile of a well-maintained zone of passage for migratory fish. The Licensee should consider reducing the amount of flow going through the floor diffuser system to ensure visible upwelling is not occurring in the fishway.

Figure 1 - Visible upwelling within the fish ladder's entrance channel

Energy dissipation pool downstream control weir

- The energy dissipation pool is accessible for upstream migrants - The hydraulic control weir at the downstream boundary of the energy dissipation pool (Figure 2) is frequently submerged by the water surface elevation of the tailrace. This submerged condition produces a control weir that is technically passable to some target species, making the energy dissipation pool accessible for potential upstream migrants. Once inside the energy dissipation pool, these migrants do not have a safe or effective way to continue their upstream migration. No corrective action is recommended at this time to address this particular issue.

Figure 2 – Energy dissipation pool downstream control weir is submerged by tailrace pool

Additional observations made during this review:

- At the time of site inspection, fish counting was still not required because the trigger to initiate the American shad upstream passage operating season (i.e., 1,000 American shad passed by the Safe Harbor Dam Fishway) had not been reached. For this reason, the fish counting window had not yet been cleaned for the season. No corrective action is recommended at this time to address this particular issue.
- During the time of the site inspection, debris accumulation against the upstream face of the fish ladder's exit channel trash rack was creating a head differential of approximately 3 inches between the upstream headpond and the water surface elevation inside the fish ladder channel (Figure 3).

Figure 3 - Head differential at the exit channel trash rack caused by debris accumulation

Thank you for the opportunity to participate in this review. For questions please contact Jesus Morales at 413-253-8206.