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November 13, 2015

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

RE: Wilder, Bellows Falls, and Vernon Hydroelectric Projects (FERC P-1892, P-1855, & P-1904)  
Comments on Updated Study Report and Recommendations

Dear Secretary Bose,

The Vermont Agency of Natural Resources (Agency) herein provides comments on the updated study report filed by TransCanada Hydro Northeast, Inc. (TransCanada) for the Wilder (FERC No. 1892), Bellows Falls (FERC No. 1855), and Vernon (FERC No. 1904) hydroelectric projects.

TransCanada filed an updated study report with the Federal Energy Regulatory Commission (FERC) for the lower Connecticut River hydroelectric project on September 13, 2015. This filing was followed by two meetings on October 1 and 2, 2015. A summary of the meetings was filed on October 14, 2015. After review of these materials and participation in the meetings, the Agency offers the following comments on the updated study report. Considering that many of the final study reports have not yet been filed, these comments focus on variances and incomplete study objectives that remain after completion of the 2015 study season. In light of the identified information gaps and inconsistencies with the FERC approved study plan, the Agency recommends actions to provide stakeholders with the information necessary to make future decisions about the operations of the three projects. The Agency considers its recommendations to be consistent with the approved study plan and not amendments to the study plan.

### Study 11 – American Eel Survey

The goal of this study was to provide baseline data relative to the presence of American eel upstream in the project-affected areas and aimed to characterize both the distribution and relative abundance of American eel in the project impoundments, riverine sections, and the project-influenced portions of tributaries upstream of Wilder, Bellows Falls, and Vernon dams.

Sampling consisted of a 500-m electrofish transect and a 24-hr baited eel trap set at 102 mainstem locations and 24 major tributary locations. Although the sampling effort was extensive and covered a wide geographic area, only two eel were captured. The Agency has concerns that the overall goal and objectives of the study have not been met. For example, Study 17 - Upstream Passage of Riverine Fish Species Assessment indicates that there are many more eel present in the system than was observed during the eel survey. As of October 5, 2015 a (net) total of 1554, 60, 45 eels passed upstream at Vernon, Bellows Falls and Wilder, respectively. It should be noted that these numbers represent net passage, meaning eels passing downstream were subtracted from those that passed upstream. If you were to sum only those that passed upstream, there would have been 4921 occurrences of eels passing upstream at Vernon.

While these data were not collected as part of Study 11, they do provide additional insight on eel distribution and abundance within the project area and should be considered in the analysis for this study report. In addition, with the

number of eel passing Vernon this year, it is an open question as to how eel distribution and abundance will change when effective passage is provided.

### **Study 13 – Tributary and Backwater Fish Access and Habitats Study**

The goals of this study were to assess whether water-level fluctuations from project operations impede fish movement into and out of tributaries and backwater areas within the project-affected areas; and affect available fish habitat and water quality in the tributaries and backwater areas within the project-affected areas. Further, the project nexus specifically highlights that these conditions, if present, could limit access to spawning habitat.

During the site selection process, stakeholders requested that smaller tributaries (either intermittent or perennial) be included in the study due to valuable spawning and rearing habitat that these small streams provide, especially during the spring months. The importance of movement in the spring for spawning is also recognized in the updated study report, which states:

“The majority of movement for fish present in the mainstem Connecticut River into tributary and backwater habitats is likely to occur during the spring spawning period (April-June). This includes backwater spawning species such as Northern Pike, Chain Pickerel, Largemouth Bass, and Pumpkinseed, tributary confluence spawners such as White Sucker, Walleye, and Smallmouth Bass, and anadromous migrants such as Sea Lamprey which may move upstream into larger tributaries. Only Rainbow Trout, a nonnative salmonid stocked for recreational purposes, would potentially spawn during the fall. Juvenile American Shad are likely to use backwater habitat as nursery areas prior to fall outmigration. American Eels may move into (mostly larger) tributaries for their freshwater life stage, but can access tributaries in very low water levels.”

Despite the FERC approved revised study plan stating that “water level loggers will be downloaded every few weeks during spring through late fall”, the updated study report only analyzed data from the period between late July and mid-November. While the Agency recognizes that this time period captures the low flow period and may represent a “worst case scenario”, it does not encompass the earlier spring season when most fish species would likely seek access to tributaries and backwaters for spawning and residency. Moreover, Table 6.3-1. (Summary of potential project effects), indicates that potential project effects for some tributaries are attributed to low tributary outflow. It is important for the Agency to understand if there are project related effects during a time when tributary outflow may or may not be a factor.

During consultation with the aquatics working group, stakeholders agreed that a water depths of 0.5 feet or greater would provide adequate fish access to and from the mainstem and tributary and backwater areas. In the updated study report, in order for a site to be evaluated further as a potential access issue, water depths needed to be less than 0.5 feet more than 25% of the time during the period of WSE data record. This second criteria, the percentage of time inadequate access must be present for a site to be evaluated as a potential access issue, was not developed in consultation with stakeholders. As indicated in Table 6.1-1, an additional 14 sites would be included as potentially affected if sites in which access issues were present less than 25% of the time during the period of record were included in the analysis.

#### **Recommendation:**

In order to determine if project operations affect tributary access during a biologically sensitive time period, the Agency requests that access all 37 sites be assessed during the spring period (April-June) consistent with the FERC approved study plan. If this is not possible with existing data, the Agency requests that data for the spring period be collected during the upcoming spring season.

In regards to the selection of sites for the initial assessment of potential access issues, the Agency requests that any location where water depths were less than 0.5 feet for any period of time be examined to determine if project operations were impeding fish access. The Agency believes that sites where access issues have been documented warrant additional evaluation to better understand and assess how project operations may affect access.

#### **Study 14 – Resident Fish Spawning in Impoundments Study**

The goal of this study is to assess whether project-related, water-level fluctuation in the impoundments affect resident fish spawning. Specific objectives include conducting field studies to assess the timing and location of fish spawning under existing conditions and to assess potential effects of impoundment fluctuation on nest abandonment, spawning fish displacement, and egg dewatering. The species of interest were smallmouth bass, largemouth bass, yellow perch, black crappie, pumpkinseed, bluegill, chain pickerel, northern pike, golden shiner, white sucker, spottail shiner, walleye, and fallfish.

During the tributary egg-block sampling effort, eggs of target species were captured at only two locations and eggs at both locations were white sucker eggs. For backwater sampling, northern pike and chain pickerel were not observed spawning, eggs were not found, and individuals captured did not show signs of ripeness. Only a single larval chain pickerel was collected. While black crappie was captured, individuals did not show signs of spawning characteristics and black crappie nests were not observed. No spawning aggregations of golden shiner or spottail shiners were observed, although ripe individuals of these species were occasionally captured.

The study report noted that water clarity was generally reduced throughout June due to high water conditions and many days provided visibility conditions of less than 2 feet, which were judged to be insufficient to adequately identify new spawning activities or to re-locate existing nests or eggs. Considering observations of pike and pickerel in backwaters throughout the sampling period, it is possible that sampling occurred after these species spawned and that due to high flows and low water clarity observations were limited to near shore areas.

While we acknowledge the extensive effort to document spawning activity for the target species, information gaps remain for several species of interest. Specifically the data collected to date for walleye, northern pike, chain pickerel, golden shiner, spottail shiner, black crappie, and white sucker, does not provide the information needed to assess project-related effects on these target species.

#### **Recommendation:**

The Agency believes that additional sampling effort will be needed to provide the information necessary to assess project related effects on several target species identified in the revised study plan. The Agency recommends additional sampling be conducted in spring 2016, with a more narrow focus on walleye, northern pike, chain pickerel, golden shiner, spottail shiner, black crappie, and white sucker with sampling for northern pike and chain pickerel beginning earlier in the season. The Agency recommends consultation with the aquatics working group to develop a sampling plan for spring 2016.

#### **Study 15 – Resident Fish Spawning in Riverine Sections Study**

The goal of this study is to assess whether project-related, water-level fluctuations negatively affect resident fish spawning in the riverine reaches of the projects. Specific objectives include conducting field studies to locate and map nesting locations and spawning sites and assess potential effects of operational flows and water level fluctuations on nest abandonment, spawning fish displacement, and egg dewatering. The target species are smallmouth bass, white sucker, walleye, and fallfish.

The riffle egg block sampling effort did not document white sucker eggs at any egg blocks and only a single walleye egg was collected. Considering the lack of data collected to date on walleye and white sucker spawning, determining project effects for these two species is not possible.

#### **Recommendation:**

Similar to study 14, the Agency believes that additional sampling effort will be needed to provide the information necessary to assess project related effects on walleye and white sucker. The Agency recommends additional sampling

be conducted in spring 2016 with a focus on these two species. The Agency recommends consultation with the aquatics working group to develop a sampling plan for spring 2016.

### **Study 17 – Upstream Passage of Riverine Fish Species Assessment**

The goals of this study are to determine the use and temporal distribution of riverine fish passing upstream of Wilder, Bellows Falls and Vernon fish ladders during the open-water period and to determine the appropriate operation period for these fishways to pass riverine and diadromous fish.

On September 4, 2015, a U.S. Fish and Wildlife Service Fish Passage Engineer visited the Wilder fish ladder and made several observations regarding the pools and entrance velocities. A formal inspection of the fishway was not conducted as part of this visit. The engineer noted that the Ice Harbor fishway is designed for ~11" of drop per pool; however the drop varied greatly from pool to pool. The engineer noted that the cause is likely blockages in the submerged orifices and/or degradation of the weir crests at capacity. This observation was later confirmed by TransCanada during a shutdown of the Wilder fishway to clear debris. Additionally, the attraction water system appeared to be designed to feed two or three entrances, while the study only utilized one entrance, which may result in too much flow running through that entrance. The engineer visually estimated the flow in the collection gallery at six to eight feet per second, and velocity out of the entrance at greater than eight feet per second. It is possible that these conditions could impact results of fish passage study at the Wilder fishway.

The revised study plan lays out a protocol for fishway maintenance and monitoring. It states:

“Fish ladders will be cleaned prior to the study year, and a protocol for weekly inspections at each fishway will be developed to evaluate potential blockages to passage during the study year. If these weekly checks indicate that a significant blockage or obstacle to upstream passage is present, a post season shut down may be implemented (i.e., following spring passage season and/or following the summer season). TransCanada will consult with the aquatics working group on the need for dewatering and inspection during the study period. In addition to monitoring passage obstacles, temperature monitors will be placed in each fishway, in the forebays at fishway exits, and in the tailraces. Operational parameters for the ladder (e.g., attraction flow, tailrace and headpond elevations) will be recorded for the period of operation.”

#### Recommendation:

Considering the observations made by the fish passage engineer, the Agency recommends that TransCanada conduct an evaluation of fishway performance to determine if the ladder was providing optimal fish passage conditions during the study period. This evaluation should compare the operational parameters for the ladder collected as part of study 17 to the design specifications for the fishway. Depending upon the results of the evaluation, additional operation may be needed in order to determine the use and appropriate operation of the Wilder fishway under a new license.

### **Study 18 – American Eel Upstream Passage Assessment**

The goal of this study provide baseline data on the presence of American eels attempting to move upstream of the projects and the locations where they congregate while attempting upstream passage. This study was approved as a two year study with first year activities focusing on systematic surveys to identify areas of concentration and second year activities focusing on collecting and passing eels.

Due to the limited success of the baited eel pots, sampling for eels via eel pots concluded in late August, 2015. To date, no temporary ramp traps have been deployed. TransCanada reported that the only aggregation point identified thus far is the Vernon fishway and it may be infeasible to deploy the ladders during the continued upstream fish passage operational flows required by Study 17 – Upstream Passage of Riverine Fish Species Assessment. Systematic surveys of eel presence/abundance at tailrace and spillway locations at all three dams began in April 2015 and will continue through October 2015.

In light of the results of study 10, study 11, and the systematic survey portion of study 18, the Agency notes that the fishways at all three projects, while operating, represent aggregation points for American Eel. For example, the number of eels documented at each fishway is at least an order of magnitude greater than eels identified by systematic surveys. The information collected to date indicates that the fishways are effective in passing at least a portion of American Eel within the project area. It is also clear that American Eel move upstream throughout the summer months. However with the information collected to date, it is not clear whether eels of all stages and sizes pass via the fishway or if the fishways may be effective in passing a certain lifestage or size class of American Eel. Furthermore, it is unclear whether the fishway will be operating or may be operating in some modified manner during the summer months under a new license.

Recommendation:

It is critical for the Agency to understand where American Eel congregate when the fishways are not being operated for use by riverine species in order to determine the most effective method for passing eels and appropriate fishway operations under a new license issued for the projects. Therefore, information pertaining to the distribution of eels and the effectiveness of ramps/traps in locations where they are found to congregate in the absence of fish ladder operation is necessary to inform the appropriate passage methods and requirements for American Eel. In light of the information acquired over the course of the 2015 season with the fishway operating through the summer and the variances from the year one study plan, the Agency recommends that the planned second year of study be conducted when the ladder is not operating or is operating in a modified manner. This operating scenario will need to be paired with some method of visual monitoring to determine locations where eels concentrate under this scenario. If eels are found to congregate, alternate methods of passage (traps/ramps) should be employed as described in the revised study plan. Both the operation of fishways in 2016 and the monitoring for eel congregation should be developed in consultation with the aquatics working group.

Thank you for the opportunity to comment on the updated study report for the Lower Connecticut River hydroelectric projects.

Very truly yours,



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