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December 14, 2015

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

Re: TransCanada Hydro Northeast Inc.'s Updated Study Report – Response to Comments
Project Nos. 1892-026, 1855-045, and 1904-073

Dear Secretary Bose:

TransCanada Hydro Northeast Inc. ("TransCanada") is the owner and licensee of the Wilder Hydroelectric Project (FERC No. 1892), the Bellows Falls Hydroelectric Project (FERC No. 1855), and the Vernon Hydroelectric Project (FERC No. 1904). The current licenses for these projects each expire on April 30, 2019. On October 31, 2012, TransCanada initiated the Integrated Licensing Process by filing with the Federal Energy Regulatory Commission ("FERC" or "Commission") its Notice of Intent to seek new licenses for each project, along with a separate Pre-Application Document for each project.

TransCanada submitted its Updated Study Report ("USR") for the three projects, as required by 18 C.F.R. §5.15(f) on September 14, 2015 and in accordance with the two-year anniversary of the Study Plan Determination ("SPD") for non-aquatics studies. The USR meeting was held on October 1 and October 2, 2015 in accordance with 18 C.F.R. §5.15(c)(2); and TransCanada submitted the USR meeting summary on October 14, 2015 in accordance with 18 C.F.R. §5.15(c)(3). With this filing, TransCanada submits its response to comments on the USR for the three projects, as required by 18 C.F.R. §5.15(c)(5).

Comments on the USR were filed by the following parties:

Name of Individual or Organization	**Acronym Used in Comment/ Response Table**
Connecticut River Watershed Council	CRWC
Mr. John Bruno, river abutter (Charlestown NH) and Charlestown representative on the Connecticut River Joint Commissions Mt. Ascutney Subcommittee	Bruno
New Hampshire Fish & Game Department	NHFGD
The Nature Conservancy	TNC
US Fish & Wildlife Service	FWS
Vermont Department of Environmental Conservation	VDEC

If there are any questions regarding the information provided in this filing or the process, please contact John Ragonese at 603-498-2851 or by emailing john_ragonese@transcanada.com.

Sincerely,

John L. Ragonese
FERC License Manager

Attachment: Response to USR Comments

cc: Interested Parties List (distribution through email notification of availability and download from TransCanada's relicensing web site www.transcanada-relicensing.com).

TransCanada Response to Comments on Updated Study Report for the Wilder, Bellows Falls, and Vernon Hydroelectric Projects

The table below summarizes USR comments filed with FERC and provides TransCanada's (TC's) response to each comment.

Study No.	Source	Comment	Response
General Comment	CRWC	For the average river user who should be engaged in the use of their river, the titles published on the public project web site are confusing at best. Your average river user would never know when trying to access any of the individual studies that a report entitled "Updated Study Report Volume III – Containing Sub Volumes III.A – III.B" contains reports for studies 13 and 27 when searching the web site. Please add study descriptive information to the titles of the published documents.	TC will post individual study reports with clear file names on the public website.
General Comment	CRWC	In the notes from the October 1 and 2 USR meetings there is no mention of a request made by CRWC of TC that when an individual study relies on information and/or conclusions in other studies that all of the data and field observations from those other studies be presented in the topical study relying on that information. As an example, Study 3 relies on Studies 1, 2, 4, and 5. It should not be necessary for someone reviewing Study 3 to have all four studies open and be cross-referencing between them. If a study relies on data from another study, the topical study should present that data in total in the topical study.	It is impractical, due to the amount of data involved, to repeat all relevant data from all associated studies in every study report. However, each study report will stand alone with relevant results and conclusions from other studies included. We note that study reports for studies 4 and 5 (modeling studies) will not include any resource or data results as these studies provide output to the other resource studies.
General Comment	FWS	We note that although some reports were defined as "final" by TC, some of these, like the tributary access study will require additional analysis upon completion of final study reports on associated studies such as the instream flow and fish passage studies.	The only study report described as "final" is the report for Study 7 – Aquatic Habitat Mapping Study. That study was conducted in 2013 and the initial study report was filed with FERC as Volume II of the ISR on September 15, 2014. Since no comments were received on the initial report, it was finalized and filed with FERC on March 2, 2015 (March 1, 2015 being the due date specified in FERC's February 21, 2014 Study Plan Determination). Subsequently, corrections were made to some 2013/2014 overwintered water level logger data, and newly downloaded 2014/2105

Study No.	Source	Comment	Response
			overwintered logger data were filed as supplemental report data in Volumes IV.A and IV.B of the USR, on September 14, 2015.
Study 1 – Historical Erosion	CRWC	We know that TC has gather[*ed*] historic riverbank position collection of historic information but we have yet to see any presentation of the gathered information. CRWC cannot verify or deny the initial analysis offered in the report based on what the report presented. Not only does CRWC requests that we have adequate time to review what TC submits but also so do landowners throughout the affected reach of the river, Vernon to Woodsville.	The completed study report for Study 1 was not filed as part of the USR, rather a status summary was provided. The Study 1 report is almost fully complete and will be distributed to stakeholders for review as well as filed with FERC in January 2016.. However, a full analysis of the data will be performed under Study 3's plan of work and will be presented in its report. That analysis and reporting remains incomplete at this time.
Study 2 – Riverbank Transect Study	CRWC	The report does not present any of the cross sections results. The three examples offered in detail do not create enough information to assess causes or status of shoreland erosion. The report says three sites of the 21 selected sites show signs of accelerating erosion. The report is silent on the remaining sites with more information to be forthcoming. CRWC requests that the study clarify the reasons for differentials in cfs flow values that would trigger additional non-spring runoff high flow event surveys at each of the three hydroelectric dams. The current updated study report states that 35,000 cfs at the Wilder project, 44,000 cfs at the Bellows Falls project, and 49,000 cfs at the Vernon project would trigger additional high flow event surveys (non-spring runoff), but the study fails to provide rational[*e*] for that differential in flow values.	Similar to the comment and response above, the completed study report was not filed as part of the USR, rather a status summary and the 3 **examples** were provided to illustrate the type of information that will be included in the Study 3 report. Field work for the study was ongoing until mid-November 2015 and data continues to be consolidated and analyzed. When complete, project effects analysis can be conducted and a study report completed. Three sites have showed measurable erosion of multiple feet during the two year monitoring period. Although not yet available because of ongoing analysis, the other 18 sites have not shown significant erosion. The cfs flow values that would trigger additional surveys were specified by FERC in its September 13, 2013 Study Plan Determination (p. B-2) and defined therein as the approximate "annual flood flow as calculated by a 1.5 year probability recurrence interval". There were no instances of the project discharges exceeding these thresholds after spring runoff during the course of the study. Therefore, no additional monitoring rounds were conducted.
Study 3 - Riverbank	Bruno	A 2 year study period to evaluate active erosion sites is inadequate to fully analyze the impacts on	Study 3 is designed to incorporate information from Study 1 – Historical Riverbank Position and Erosion

Study No.	Source	Comment	Response
Erosion Study		embankment erosion resulting from the operation of the dams. The study as presented does not include any studies in the eroded areas in order to determine the effects that the fluctuation of water levels have on the embankments within the impoundment. The only way to truly determine the effects of the impoundment water fluctuations is to include geotechnical slope stability analysis in the areas of the existing eroded slopes. This analysis would also provide input to determine operational procedures that would eliminate or reduce bank erosion. Recommendations: Expand erosion study sites, particularly, in the Bellows Falls impoundment to ensure that a full analysis of erosion sites are evaluated and included in the Study Plan. In order to evaluate and determine the impacts of water level fluctuations, conduct Geotechnical Slope Stability Analysis at each of the identified study sites.	Study, and Study 2 – Riverbank Transect Study, as well as information collected from desktop investigations in order to put the processes and potential cause of erosion within the project-affected areas into proper context. The purpose of the 2 years of field work in Study 3 was to survey and map bank conditions along the entire 120-mile river reach. We believe that the sum total of information collected and the project operations modeling results will provide adequate information about erosion within the project-affected areas. Two years of monitoring at 21 sites in Study 2 gives some indication to the rates and character of erosion in the study area. Geotechnical analysis can provide detailed information on the causes and thresholds of instability at a particular site, but the stratigraphic information, water level logger data, and erosion monitoring completed is considered sufficient to understand the underlying forces and processes of erosion, if present, at the monitoring sites and along 120 miles of river. With regard to geotechnical slope analysis, we continue to assert that it is premature as such an exercise would be for the purpose of identifying potential mitigation measures rather than license conditions under new FERC licenses, rather than to provide information on the current conditions. FERC agreed in its September 13, 2013 Study Plan Determination (pp. B-6 to B-7), and did not require TC to perform such an analysis at this study stage.
Study 3 – Riverbank Erosion Study	CRWC	CRWC requests that all data presented in the final report be in a format that the average landowner without sophisticated computer skills or software programs can access and understands what the report presents in order to ascertain the veracity of any conclusions offered in the report.	We recognize that study reports will be read by a wide audience including laypersons. We are sensitive to, and make every attempt to provide study results in a clear, concise and understandable manner. The study plan specified, and the field effort included mapping of a variety of bank features including for

Study No.	Source	Comment	Response
		CRWC requests that the final report address land uses and the state of the riparian buffer as one of the factors that affects erosion. The draft report does not address that consideration but should. CRWC requests that the final report address the effects of motorboat wake action have on the shore and wake action's role in erosion forces acting on the shore.	instance, the width of mature trees growing along the river's edge. Features mapped in Study 27 – Floodplain, Wetland, Riparian, and Littoral Vegetation Habitats Study and LiDAR data collected in 2013 will provide information on riparian buffers. The GIS map data of erosion and other channel features, such as riparian buffer condition, will identify, among other relationships, what percentage of total erosion in the study area is occurring where a riparian buffer is present compared to where such a buffer is absent. As discussed at the USR meeting, it would be infeasible, if not impossible to attempt to distinguish overall effects of boat wakes from other larger sources of potential changes to the banks. River bank erosion results when the driving forces of erosion are greater than the resisting forces on the bank (such as the stabilizing effects of vegetation). At any one location and at any one time, multiple drivers of erosion might be active such as boat wakes, water-level fluctuations, natural discharge variations, etc. The various patterns of erosion identified through Studies 1-3 will help tease apart these various forces on a broad scale, but a detailed analysis of boat wakes would require a considerable time commitment at a specific site which is beyond the scope of the erosion studies covering over 120 river miles.
Study 4 – Hydraulic Model	CRWC	CRWC is aware of at least one alternative hydraulic model under development. There is nothing in the report and there was no discussion at the October USR meetings whether or not TC will review, evaluate, or consult with other models before issuing a final hydraulic model report. CRWC requests that CRWC, TC, and other interested stakeholders have access to the other model for evaluation before TC issues the final report. CRWC requests the study report include	The study plan was approved with modifications in FERC's September 13, 2013 Study Plan Determination. TC filed the modified plan on March 28, 2014 and FERC approved it on April 9, 2014. The study is being implemented as specified in the modified plan. TC does not intend to evaluate any other model as it is unnecessary and would be outside the scope of the approved study. The commenter may be referring to Study 3 rather than Study 4. The study plan for Study 3 specifies,

Study No.	Source	Comment	Response
		characterization of the processes of erosion occurring within the project-affected area. This issue is within the objectives of the study; though it is not touched upon in the study progress, remaining activities, or study results to date, indicating the study ultimately may not address this aspect.	and the study report will characterize the processes of erosion. That analysis is currently underway and will be described in detail in the study report.
Study 5 – Operations Model	CRWC	Since study 4 links to Study 5, one affecting the other as well as several other studies, CRWC requests that CRWC, TC, and other interested stakeholders have access to and a discussion about any other model before TC issues the final report. CRWC requests that TC fashion/produce a model run for true run of river operations. The interim report says that the model can run flow levels different from the five selected years upon which the model is based and run of river flow should be tested to see if it will enhance environmental protections for the river ecosystem and overall reduce erosion.	See the previous response. The purpose of the operations model (study 5) at this stage of relicensing is to inform other resource studies about timing, frequency, and duration of the currently licensed operations in order to identify project effects on those resources.
Study 6 – Water Quality	CRWC	Prior to TC publishing the study, CRWC would request that the study show a correlation of WQ data with TC operations data. We especially would like to see the generation levels charted over the WQ monitoring period.	As specified in the study plan, water quality data will be correlated to project operations as part of the study's data analysis.
Study 7 – Aquatic Habitat Mapping	CRWC	CRWC has no comments because we will not be able to assess project impacts until TC completes and publishes Studies 4 and 5 and TC incorporates that information into Study 7.	We note that Study 7 does not have a project impacts component nor does the study rely on results from the models (studies 4 and 5).
Study 10 – Fish Assemblage	CRWC	CRWC found none of the fish recorded as present during sampling as usual and await the final study with the following comments. CRWC requests that the study report alter the data represented in table 10-2. The table should include zeros where no fish were identified within a particular reach rather than leaving that field blank. CRWC requests that the study report provide clarity	The commenter clarified that the word "usual" in the comment should be "unusual". No response needed. The study report will include revised tables as requested.

Study No.	Source	Comment	Response
		regarding…additional species included in table 10-2 [Esox and Lepomis genus] not included in…catch counts [*for other species within the same genus*].	
Study 10 – Fish Assemblage	TNC	We suggest that when TransCanada finalizes the Study 10 report, fish species data be presented first in taxonomic order (by family), and then alphabetically within a family to facilitate data interpretation. We also request that data be presented by sample location within a reach, rather than presenting sample data lumped together within a reach (as has been done in Table 10-2 of Volume I of the USR, pp. 50-51). In addition, if both non-detections and missing data are reported together, please clearly distinguish true zeros from the absence of data. The study status reports that the fish assemblage consisted of 35 fish species and two taxonomic groups (Volume I of the USR, p. 48). This language is confusing since there are at least eleven taxonomic groups represented by the 35 fish species; if this language refers to unidentifiable samples that were identified to genus instead of species, please indicate this clearly in the text. We also believe there is a possibility that the bridle shiner sampled in the Wilder impoundment was a misidentification, perhaps of a bluntnose minnow, since bridle shiner is not known to occur in this area. We suggest that if the specimen was preserved, that it be provided to staff at the New Hampshire Fish & Game Department for an additional expert opinion. If the specimen was not preserved, please provide justification (preferably including photos) for the bridle shiner identification.	The study report will include revised tables as requested. With regard to the bridle shiner, six voucher specimens were retained during field sampling and were returned to Normandeau's biological laboratory where they were confirmed using a taxonomic key. Bridle shiners were identified from samples collected in both the Wilder and Bellows Falls impoundments. Those fish have been saved and staff from NHFG and/or any other interested member of the Aquatics Working Group are welcome to arrange a time to view those specimens.
Study 11 – American Eel	CRWC	CRWC requests as we have previously that the study sites for eel expand to include the first impassable	One additional eel (total = 3) was captured in the Bellows Falls impoundment after the USR was filed, but

Study No.	Source	Comment	Response
Survey		barriers up tributaries. Eel congregate at the base of those barriers and it would not be a major effort to do sampling at those few sites. The fact that only two American Eels were captured means that the sampling missed eels and this preliminary report understates their presence in the watershed. CRWC requests that the study report specify the types of bait used in the eel traps that yielded such low catch productivity.	prior to the USR meeting. In accordance with the Revised Study Plan as approved by FERC, sampling was conducted in the project-affected reaches of 24 tributaries along with the 102 mainstem sites, with a total of 252 samples collected as described in the Revised Site Selection Report and approved by the aquatics working group. Sampling gear types used for this study have been employed at numerous other hydro projects for the purpose of collecting eels and the methods in this study were agreed to by the aquatics working group prior to field sampling. Where it was safe and practical, electrofish sampling was conducted during evening and night hours when eels (if present) should be most active. We respectfully disagree that the low number of eels collected implies that they were "missed" or that their presence within the study area was understated. This study was designed to assess eel presence and abundance within the project-affected area, not throughout the entire watershed. The study report will include the types of bait used in eel traps.
Study 11 – American Eel Survey	VDEC	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. While these data [*from Study 17*] where 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	One additional eel (total = 3) was captured in the Bellows Falls impoundment after the USR was filed, but prior to the USR meeting. The goal and objectives of the study was to provide baseline data relative to the distribution and abundance of American eel upstream in the project-affected areas. Therefore, we respectfully disagree that those goals and objectives were not met based on the low numbers of eels collected. We agree that results from Study 17 provide additional information on eels moving through the project-affected area, and the Study 11 report will include that

Study No.	Source	Comment	Response
		passing Vernon this year, it is an open question as to how eel distribution and abundance will change when effective passage is provided.	information. Study 18 – American Eel Upstream Passage Assessment will also provide data on the presence of eels moving through the project-affected area. We will attempt to answer the question of whether current operations provide effective passage for eels when results from those studies are evaluated.
Study 12 – Tessellated Darter Survey	TNC	TransCanada's Revised Study Plan for Study 12 states, "Beach seine/backpack electrofish sampling will be used for sampling within all strata (i.e., habitat types) featuring shallow, wadeable water depths…" However, the USR suggests that the only method employed for study 12 was snorkeling, and no variance from the Study Plan was acknowledged. We request that TransCanada please note this as a variance to the Study Plan and provide justification for the change.	As stated in the Revised Site Selection Report (approved by the aquatics working group at a February 10, 2015 conference call and filed as Volume II.D of the USR): "Based on field observations during summer-fall conditions in 2013 and 2014 in each of the six geographic reaches included in this survey, it is anticipated that the use of visual surveys conducted by snorkel or SCUBA will be effective for assessing distribution and relative abundance at all sampling locations. This single sampling approach will allow for a consistent methodology to be used over all sampling areas and will aid in comparison of abundance estimates across locations. We agree that this constitutes a variance from the Revised Study Plan, and will note that in the study report.
Study 13 – Tributary Access and Habitats	CRWC	The narrative section of the summary of this report for water quality parameters sampled as part of the study should describe the effects of the conditions found whether the WQS have numerical values or not. Readers should not need to flip from values found in this study and the charts related to the fish assemblage study and then to the narrative standards in the VT and NH Water Quality Standards.	The study included collection and reporting of limited grab samples of water quality data from 3 or 4 visits to each of the study sites. As a result, the data should not be used to characterize general site conditions or trends. The data reported in this study was not intended to meet the goals or objectives of Study 10 – Fish Assemblage. Study 6 (Water Quality Monitoring) data will provide the best data on overall water quality within the project-affected area.
Study 13 – Tributary Fish Access and Habitats	NHFGD, similar comments from CRWC,	Resource agencies were not consulted on the percentage of time (>25%) of low water depths (<0.5 feet) required to indicate inadequate access. The NHFGD feels that 25% is too high and requests that any location where water depths were <0.5 feet	Modeling data from Study 4 is now available and we are conducting project effects pre-screening at all study sites with < 0.5 ft of water depth. Once operations modeling data is available from Study 5, we will provide a revised study report as was noted in the

Study No.	Source	Comment	Response
	FWS, VDEC	for any period of time be examined to determine if project operations will negatively influence fish access.	USR.
Study 13 – Tributary Fish Access and Habitats	NHFGD, similar comments from CRWC FWS, VDEC	NHFGD still feels it is important to examine fish access at these locations during the spring spawning period and requests that TransCanada extrapolate their data from various studies to determine if fish access was limited (<0.5 feet for any period of time) during the spring of 2015 at any of the 37 study sites examined…If data cannot be extrapolated to determine if fish access at the 37 study sites was limited during the spring spawning period, the NHFGD requests that Study 13 be performed again during the spring of 2016.	Studies 4 and 5 can determine, with significant accuracy and seasonality, both project-affected and non-project related mainstem Connecticut River water surface elevations at all study confluence sites. In combination with the tributary thalwag profile surveys included in the study report, fish access during the spring spawning period will be assessed and this information will be provided in the revised study report.
Study 13 – Tributary Fish Access and Habitats	VDEC	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.	We believe that enough data was collected in 2014 to accurately identify what water surface elevations would be at the tributary/backwater confluences using the modeling results from studies 4 and 5, derived from the hydrologic records corresponding to spring spawning seasons without the need to do additional field work.
Study 14 and Study 15 – Resident Fish Spawning	NHFGD, similar comments from FWS and VDEC	During Study 14's tributary egg-block sampling, eggs of target species (white sucker and walleye) were only captured at two locations and eggs at both locations were from white suckers. During Study 14's backwater sampling, northern pike and chain pickerel eggs were not found and only a single	The study 14 and 15 spawning studies encompassed a vast project area (122 mi) and an intense sampling regime, including deployment of over 240 egg blocks for over 4,000 block-days of sampling, and over 420 backwater, tributary, and island surveys that involved over 400 miles of transects. The abundance of

Study No.	Source	Comment	Response
		pickerel larvae was collected. Also during Study 14's backwater sampling, no captured black crappie showed signs of spawning characteristics, no black crappie nests were observed, and no spawning aggregations of golden shiner or spottail shiners were observed, although ripe individuals of these species were occasionally captured. During Study 15, no white sucker eggs and only a single walleye egg were collected. Water clarity during backwater sampling for Study 14 in June was listed as a reason in the Updated Study Report for not being able to identify new spawning activities or to re- locate existing nests or eggs. Similarly, it was suggested in the Updated Study Report that the lack of white sucker eggs collected in Study 14 and walleye eggs in Study 15 was likely because spawning occurred some distance upstream. Another potential reason given by TransCanada's consultants for the lack of walleye eggs sampled was that they might have spawned in deeper water than what was sampled and thus would not be impacted by Project Operations. During a meeting with Agency Staff on October 1, 2015, TransCanada staff was asked if sampling could have occurred after the northern pike and chain pickerel spawn to which their consultants replied that they didn't miss the spawn, but were "just in the wrong spots." The NHFGD completely understands the difficulty in collecting these types of data and the intense effort that went into completing these two studies. However, regardless of the reasons given above for minimal or missing species specific information, it appears the data needed to assess project-related impacts on resident fish spawning are lacking for walleye, northern pike, chain pickerel, golden shiner, spottail shiner, black crappie, and possibly white	spawning data collected for several species, as well as the lack of spawning data collected for other species, is diagnostic both of the relative abundance of these species and the utilization (or non-utilization) of shallow-water habitats within the project-influenced area. Spawning surveys in impoundments and riverine reaches focused on shallow-water habitats that are directly influenced by project-related changes in water surface elevations, as dictated by working group concerns and included in the approved study plans. For those species where shallow-water spawning data was collected (yellow perch, bluegill, pumpkinseed, largemouth bass, smallmouth bass, and fallfish), an assessment of the potential risk of eggs or larvae to project operations will be fully evaluated in the report currently in preparation. For those species where few or no spawning observations were made (northern pike, chain pickerel, white sucker, walleye, black crappie, and golden or spottail shiners), the lack of such observations, despite the intense survey effort, suggests that these species are not likely to be utilizing shallow, project-influenced habitats for spawning, their abundance is too low, or their spawning activities are too limited in scope to be detectable by the survey methods approved for these studies. Northern pike and chain pickerel, being top-tier predators, are typically less abundant than most of the other target species, and although known to spawn in shallow water habitats, they are also known to spawn at depths well beyond the 1-2 ft fluctuation zone that is characteristic of impoundment backwater habitats. Although dataloggers revealed that water temperatures showed a remarkably rapid rise in temperatures in mid to late-April (nearly 1^{o}C/day), backwater and tributary surveys were initiated well within the preferred

Study No.	Source	Comment	Response
		sucker. The NHFGD requests that Study 13 and 14 *[presumably refers to studies 14 and 15]* be conducted again in 2016, but only targeting these specific species. It is hoped that environmental conditions in 2016 will be more conducive for conducting this study and/or that different sampling locations will be examined in order to provide the information needed on these species. VDEC also requests consultation with the aquatics working group to develop a sampling plan for spring 2016.	spawning temperatures for pike, pickerel, suckers, and walleyes. The paucity of spawning observations for these species cannot be attributed to mis-timed or insufficient effort, faulty sampling design, or inadequate field methodologies. TC will provide the preliminary study report and consult with the working group on the appropriateness and need for additional field work.
Study 15 – Resident Fish Spawning in Riverine Sections	CRWC	CRWC requests that the study report include potential explanations as to why the study design yielded no white sucker eggs. It is stated within the study report that a likely explanation for the lack of walleye eggs yielded by the study design was upstream tributary spawning, however no rational[*e*] as to why there were no white sucker eggs observed is not provided within the report.	White suckers and walleye are well known to migrate upstream into tributaries for spawning, but information suggesting that spawning occurs within the tributary/reservoir interface is lacking. The few eggs that were collected for each species suggests that spawning activities did indeed take place farther upstream beyond the influence of reservoir operations, as indicated by the low number of eggs (mostly <5) captured on several egg blocks, despite the high fecundity of suckers and walleyes (>10,000 eggs). The lack of egg captures in most mainstem riverine locations suggests that these species either spawn in deeper habitats not subject to project dewatering (and not the focus of these studies), or else that they also utilize smaller tributaries for spawning, as suggested by the single walleye egg captured in the lower reaches of the Cold River and school of suckers observed staging at its mouth.
Study 16 – Sea Lamprey Spawning	CRWC	CRWC finds it interesting that the base of impassable barriers on tributaries were one of the sites where field workers went to look for Lamprey since CRWC is requesting that TC examine these same locations for American Eel and so far, TC refused that request.	The methodology of Study 16 included radio-tagging sea lamprey which allowed us to track individuals to spawning locations and to locations and times when they moved out of the project-affected area and up into tributaries. Study 11 was designed as a population and abundance survey that did not include tagging of individuals. However, Study 11 did sample

Study No.	Source	Comment	Response
			within project-affected reaches of 24 tributaries as described in the approved study plan.
Study 17 – Upstream Passage of Resident Fish	CRWC, similar comments from TNC	Table 17-1 needs to be reconfigured because by giving just the sum of up minus down fish passage does not give an accurate picture of the total amount of fish movement in the ladders. CRWC requests that TC reconfigure the chart so that it shows a total up stream count and total downstream counts of fish. The chart could still show the net passage figures in the chart as it does now as a matter of interest.	The final study report will include revised tables as requested.
Study 17 – Upstream Passage of Resident Fish	FWS, similar comments from VDEC	At the USR meeting, we noted the concern raised by our fishway engineer that, based on a site visit on September 4, 2015, the attraction water and pool-to-pool flows in the Wilder ladder appeared to be outside of normal operational parameters. These conditions could have impacted passage counts, especially for poorer swimming fish (juveniles, eels, etc.). Our engineer noted: the Ice Harbor fishway is designed for -11" of drop per pool; however the drop varied greatly from pool to pool; some drops look insurmountable for weaker swimming riverine species; the cause is likely blockages in the submerged orifices and/or degradation of the weir crests; and at capacity, the attraction water system appears to be designed to feed two or three entrances; the study used only one entrance (shore side, right river) and too much flow is running through that entrance. Visually, the flow in the collection gallery was estimated to be between 6 and 8 feet per second (fps) and the velocity outside of the entrance was over 8 fps. TC indicated that they would provide a discussion on the ladder operation parameters in their final report…the passage data and/or response on operational issues may indicate that there is a need for additional summer/fall passage counting under	The fish ladders were monitored during the course of the study but no apparent operating issues were identified. The ladders will be inspected after shutdown this year and findings will be included in the study report. Fish ladder operating protocols will be included in a report appendix. The purpose of the study was not to optimize operations for resident species, and we did not attempt to do so for any of the species observed. The study purpose was to evaluate resident fish usage of the ladders if operated year round. Even if there were no reported operational issues, passage conditions might not be optimal for any variety of fish for which the ladders were not designed. The study report in conjunction with results from other studies (e.g., Study 10 –Fish Assemblage) will include an assessment of the need to provide upstream passage for resident fish species that were observed during this study.

Study No.	Source	Comment	Response
		appropriate ladder operation conditions. VDEC 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	CRWC	CRWC requests that the study include a description of the methodology for baited eel pots, specifically a list of different baits used within the eel pots and their locations prior to ceasing this method of eel trapping.	The study report will include the types of bait used and the locations of eel pots.
Study 18 – American Eel Upstream Passage	FWS	The fish counting at Vernon [*in Study 17*] indicated large numbers of eels were attempting to use the existing fish ladder for upstream passage. However, the efficiency of that ladder in passing eels is not known. The ladder was running all summer and fall in 2015 as part of the resident fish passage study. Since ladder operation may or may not occur through the eel upstream passage period in 2016 or under a new license, eel passage in the absence of ladder operation must be assessed. Such a study would assess whether a trapping facility could offer interim or permanent eel passage at the projects. In 2016, if the ladders are not operated, temporary eel ramp traps should be installed in the lower sections of the three project fish ladders. These temporary ramp traps should be operated and monitored from the time when the fish ladders are closed for anadromous fish passage through the end of the eel migration season.	We acknowledge the commenter's position that additional monitoring of eels may be warranted. The results of Studies 17 and 18 indicate that any additional effort should be focused on passage at the fish ladders. Based on the numbers of eels observed in Studies 17 and 18 we do not believe that additional monitoring at Bellows Falls or Wilder is warranted at this time. We will review the results of Study 17 and consult with the working group on methods and scope prior to the need to initiate any field work.

Study No.	Source	Comment	Response
		The design of and attraction flow used for the in-ladder eels traps have not been determined. To the extent that the ramp trap evaluations release less attraction flow than currently used to operate the ladders, attraction to the ladder entrances may be lower, and more eels may seek alternate passage routes. To assess any changes in attraction to the traps versus the full ladder operation, at least some visual observations should be repeated in 2016 simultaneously with trap operations. These surveys can be focused on general periods of higher eel observations and ladder counts.	
Study 18 – American Eel Upstream Passage	VDEC	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…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. 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	See the previous response.

Study No.	Source	Comment	Response
		with the aquatics working group.	
Study 19 – American Eel Downstream Passage	CRWC	CRWC hopes that TC successfully secured the permissions necessary to bring the eels to the river, that the eels are completely disease free, and that they are still on schedule to complete this study this fall.	All permissions and permits were received, imported eels were tested and found to be disease free, and approved for import into the Connecticut River, and the field portion of the study was completed in mid-November.
Study 20 – American Eel Downstream Migration Timing Assessment	CRWC	CRWC hopes that TC successfully secured the permissions necessary to bring the eels to the river, that the eels are completely disease free, and that they are still on schedule to complete this study this fall.	Study 20 is a desktop study so the issue of eel importation is not relevant.
Study 24 – Dwarf Wedgemussel and Co-occurring Mussel Study	CRWC	CRWC requests that the study report provide transparency regarding the rational for limiting the scope of the study to the Wilder and Bellows Falls project areas, not to include the Vernon project area within the assessment. CRWC has recently, as a member of the Fifteen Mile Falls M&E Fund Advisory Committee been party to funding a DWM study on the upper Connecticut River beyond the project area. High water delayed the completion of the study so there is no formal report yet. An informal conversation about the study revealed that the selected transects for that study were not selected parallel but perpendicular to the flow. The field workers in that study found DWM. The original and revised study plan relied on parallel and quadrats study transects. If the current plan design does not give useful information then CRWC requests that TC extend this study through the spring of 2016 and that TC use perpendicular transects in some percentage of the transects selected.	The mussel study spanned the entire distance from the upper end of the Wilder impoundment to below the Vernon Dam. Neither the impoundment of the Vernon Dam, nor its tailwaters were excluded from the study (*see the TC mussel survey report from the 2011 field season*). Phase 2 quantitative sampling and analysis in 2014 focused on areas where dwarf wedgemussels (DWM) occur and the working group agreed to limit Phase 2 sampling to the Wilder impoundment downstream into the Bellows Falls impoundment. DWM were not found in the Vernon impoundment or its tailwaters in 2011, nor has the species been found in these areas in more than 40 years despite numerous surveys (summarized in Nedeau 2008, "*Freshwater Mussels and the Connecticut River Watershed*", Nedeau 2009, "*Distribution, Threats, and Conservation of the Dwarf Wedgemussel (Alasmidonta heterodon) in the Middle and Northern Macrosites of the Upper Connecticut River*", and Nedeau 2006, "*Freshwater Mussels of the Upper Connecticut River, with Emphasis on the Federally Endangered Dwarf Wedgemussel*". The issue of the Fifteen Mile Falls study was thoroughly discussed during a March 5, 2015 working group consultation call. TC's mussel studies have included

Study No.	Source	Comment	Response
			semi-quantitative sampling and quantitative sampling using both transects and quadrats. Transects and quadrats were established both parallel to flow and perpendicular to flow (from bank to bank). All of these sampling efforts provide valuable data for characterizing the distribution, density, and habitat use of DWM and co-occurring mussel species, and for understanding project effects. FERC approved the development of Habitat Suitability Criteria (HSC) that would use these field data in addition to published and unpublished data on DWM from the Connecticut River and other locations within the species' range, and also expert opinion via the Delphi process. HSC are currently being developed. Any ongoing DWM studies in the Connecticut River, such as that alluded to in the comment, or elsewhere in the species' range are relevant to this process if results can be provided in a timely manner. However, results from ongoing or planned field studies should not be considered a basis for any requests that TC conduct more field studies in order to develop HSCs or complete the project effects analyses.
Study 30 – Recreation Inventory, Use & Needs	CRWC	CRWC requests that the study report include a list of survey & interview questions used throughout the course of this study, as well as demographics data surrounding those who participated in written surveys and/or face-to-face interviews. The study report states that most public boat launches were below capacity for the majority of the year. The intent of this comment is to request that poor facility maintenance or closure of facilities due to lack of maintenance, as well as severe overcrowding at the few well maintained facilities within the project affected area be taken into account before making this claim.	The survey tools and all data collected from them will be included as appendices to the study report. Observations on facility condition and use (including observations of maintenance and/or overcrowding) will be discussed in the study report.
Study 31 –	CRWC	CRWC requests that TC present the survey tool used	The survey tool and all data collected from it will be

Study No.	Source	Comment	Response
Whitewater Boating Flow Assessment		to determine the value of the experience at the different flow levels in the final report.	included as appendices to the study report.
Study 32 – Bellows Falls Aesthetic Flow Study	CRWC	CRWC requests that the final study report include any available demographic data and residency status of those who participated in the interviews in this study report.	Information that was provided by participants will be included in the study report.
Study 33 – Cultural and Historic Resources Study	CRWC	CRWC requests that TC make the reports presented to the state SHPO offices and FERC available on the secure relicensing site.	The requested reports contain sensitive information about the location of archaeological sites that is restricted under federal and state law. The release of that information to the general public is subject to the approval of the State Historic Preservation Office (SHPO). In the event the SHPO grants approval of a request to receive the information, TransCanada will make copies of the archaeological reports available.

Document Content(s)