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October 14, 2014

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 Initial Study Results Meeting Summary
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, 2018. 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.

With this filing, TransCanada submits its Initial Study Results Meeting Summary for the three projects, as required by 18 C.F.R. §5.15(c)(3). The Initial Study Results Meeting was held on September 29, 2014 at TransCanada's Operations Control Center in Wilder Vermont, with WebEx and call-in capability for participants who could not attend in person. The meeting was held within fifteen days of filing the Initial Study Report (ISR) as required by 18 C.F.R. §5.15(c)(2). The ISR was filed on September 15, 2014 in accordance with the one-year anniversary of the Study Plan Determination ("SPD") for non-aquatics studies.[1] At the

[1] On August 27, 2013, Entergy announced plans to decommission its Vermont Yankee Nuclear Power Plant (Vermont Yankee) during the fourth quarter of 2014. Vermont Yankee withdraws its cooling water from and discharges it back to TransCanada's reservoir for the Vernon Project. Operation of Vermont Yankee has influenced

September 29 meeting, it was agreed that the proposed continuation meeting date of October 3, 2014 would not be needed.

The attached meeting summary includes meeting notes, points of discussion, the list of meeting attendees, a copy of the presentation slides used during the meeting, and a copy of written comments submitted at the meeting.

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: Initial Study Results Meeting Summary

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

Connecticut River water temperatures within the Vernon reservoir and downstream since the plant went into operation in 1972. Because the baseline environmental condition will change after 2014, TransCanada's proposed aquatic studies may have produced data not reflective of baseline conditions if they were conducted while Vermont Yankee was still operating. Because of this unusual circumstance FERC issued two study plan determinations, one on September 13, 2013, for non-aquatic studies not impacted by the closure of Vermont Yankee and a second on February 21, 2014, for aquatic studies.

UNITED STATES OF AMERICA

BEFORE THE

FEDERAL ENERGY REGULATORY COMMISSION

TRANSCANADA HYDRO NORTHEAST INC.

Wilder Hydroelectric Project (FERC Project No. 1892-026)
Bellows Falls Hydroelectric Project (FERC Project No. 1855-045)
Vernon Hydroelectric Project (FERC Project No. 1904-073)

Initial Study Results Meeting Summary

October 14, 2014

TransCanada Hydro Northeast Inc.
Initial Study Results Meeting Summary

The meeting was held on September 29, 2014 at TransCanada's (TC) River Control Center in Wilder, Vermont.

Introductions were made of FERC staff, TransCanada (TC) staff, and key consulting team members. Attachment 1 includes the list of attendees.

Progress, early results, and remaining study activities were summarized for each of the 2013/2014 initiated studies as detailed in TC's Initial Study Report (ISR) filed with FERC on September 15, 2014. Studies discussed are listed in the meeting agenda in Table 1 below. Discussion summaries follow the table. Attachment 2 includes the PowerPoint presentation provided for the meeting.

Attachment 3 includes written comments submitted at the meeting by the City of Lebanon, NH. Attachment 4 includes a summary of the October 9, 2014 consultation meeting on Study 24 – Dwarf Wedgemussel and Co-occurring Mussel Survey; and Attachment 5 includes a summary of the October 7, 2014 consultation call for Study 31 – Whitewater Boating Flow Assessment.

Table 1. Meeting agenda, list of studies and presenters.

Study No. and Section No. in ISR Volume I	Study Title	Presenter(s)
1	Historical Riverbank Position and Erosion Study	John Field - Field Geology Services
2	Riverbank Transect Study	
3	Riverbank Erosion Study	
4	Hydraulic Modeling Study	Lissa Robinson – GEI
5	Operations Modeling Study	John Ragonese – TransCanada
7	Aquatic Habitat Mapping Study and GIS	Rick Simmons – Normandeau
8	Channel Morphology and Benthic Habitat Study	Robin MacEwan - Stantec
9	Instream Flow Study	Steve Eggers (on phone) - Normandeau
13	Tributary and Backwater Fish Access and Habitats Study	Rick Simmons - Normandeau
24	Dwarf Wedgemussel and Co-occurring Mussel Study	Ethan Nedeau - Biodrawversity

Study No. and Section No. in ISR Volume I	Study Title	Presenter(s)
26	Cobblestone and Puritan Tiger Beetle Survey	Sarah Allen - Normandeau Don Mason (on phone) - Normandeau
27	Floodplain, Wetland, Riparian, and Littoral Habitats Study	Sarah Allen - Normandeau
28	Fowler's Toad Survey	Sarah Barnum - Normandeau
29	Northeastern Bulrush Survey	Sarah Allen - Normandeau
30	Recreation Facility Inventory and Use & Needs Assessment	Jot Splenda – Louis Berger Group
31	Whitewater Boating Flow Assessment - Bellows Falls and Sumner Falls	
32	Bellows Falls Aesthetic Flow Study	
33	Cultural and Historic Resources Study	Steve Olausen, Suzanne Cherau – Public Archaeology Laboratory; Don Shannon, Willamette Cultural Resources Associates (all on phone).
2015 studies consultation needs		Maryalice Fischer - Normandeau
Questions – Further Discussion		John Ragonese - TransCanada

For each study, the presenter provided a summary of study progress, field observations if any to report, and remaining study activities. Additional discussion and questions/answers are provided below.

Study 1- Historical Riverbank Position and Erosion Study

John Field provided the study summary and requested that if anyone has the rest of the large format 1930's topo maps (he had received some from a landowner), please contact him or TC. We will compare all years of data to understand which areas are persistently eroding, versus periodic eroding, or not eroding at all over time.

Study 2 - Riverbank Transect Study

John Field provided the study summary. To-date results indicate that active erosion is apparent at 2 sites most change occurring between Nov 2013 and May

2014 monitoring rounds. One is the Bellevance site (EMW3) upstream of Bradford VT, at an oxbow formed in 1970s.

Study 3 - Riverbank Erosion Study

John Field provided the study summary. We created surficial geology maps using LiDAR and state maps to determine where the river intersects these various surfaces (floodplains, glacial lake surfaces, etc., including railroad). We modified the Kleinschmidt 2012 study bank line to align with the LiDAR and other data. Study focus is on erosion severity, type, and depositional features. Past efforts might not have even seen an area as eroding so we are teasing apart sites that are eroding but stable and/or are vegetated versus those sites that are actively eroding.

Studies 1 – 3 Discussion

Tom Dean: Question about study 1 report presentation of historical data.

> John Field: We will have appendices to the report with geo-rectified photos, and shapefiles (digital files). We can also create pdf files, with panels for different sections of river. Bank lines will come from the current aerial photos.
>
> John Ragonese: There are over 200 miles of shoreline. To present in pdf or hardcopy is untenable. There are easy to use GIS viewing programs that allow users to zoom in to any area.

John Bruno: Are these studies basically mapping studies?

> John Field: No, study 3 ultimately will look at causes of erosion, using the results of studies 1, 2 and 3 as part of next year's work.

John Bruno: what process will be used to determine the effects of water level on erosion?

> John Field: We have water level loggers at the 21 erosion sites, hydraulic modeling (study 4) at other points and loggers at other points from other studies (Studies 7, 13).

John Bruno: One change in water level due to single event won't show erosion effects. Changes need to be seen over a period of time and series of events. Personally thinks a geotechnical study is needed.

> John Ragonese: We are doing studies with defined scopes. If some questions remain unanswered, the FERC schedule provides for looking at these things. More important is water velocity (horizontal fluctuation), than vertical fluctuation based on water level.

Rod Wentworth: At the Mudge farm 2013 visit we saw piping and are looking for causality. Want to understand what is going on with upstream subsurface flow e.g., with piezometers.

> John Field: Under the current study, there are no piezometers called for or installed.

Brandon Cherry: These types of comments or requests for study modifications can come in response to study summary.

Jim Kennedy: Are you also looking at boat wakes, velocity, etc.?

> John Field: Loggers give 15-min data so we won't see boat wakes, but the hydraulic model (Study 4) will get to velocity.

John Kennedy: Suggests that this factor should be observed and rate of erosion estimated as you can see it when a boat goes by.

> John Field: We have observed boat wakes stirring up silt. But to equate that with actual erosion processes would be difficult.

Mark Goodwin: (reading from written questions provided by Nicole Corman, City of Lebanon – see Attachment 3)

Study 1: When will the affected municipalities have the specific data? Can the city get a copy of the older surveys etc. if they were not aware of them? TC provided geo data in Arc Explorer, but we would like to see a web-based platform instead.

Study 2: The water level logger EMWR-1, first one downstream of Wilder dam was reported lost in the ISR. The lack of that data seems to exclude those areas (Lebanon and Hartford) from these studies and thus a study plan variance.

Study 3: Same question relative to Study 2 above and study plan variance.

> John Field: Specific data will be made available once it is complete and finalized. We found and downloaded the EMWR-1 logger after the ISR was filed. The logger downstream of Vernon was lost or removed and so some data was lost but a new logger was installed. We are still gathering logger information from the other studies and will have erosion maps and monitoring in the riverine sections as well. Technically, there may be a minor study plan variance for Study 2 at Vernon, having lost the logger there (however, it is not uncommon for loggers to be lost or removed and some data lost as a result). The logger data is not a part of Study 3, so there is no study variance there.
>
> John Ragonese: The tailrace areas are monitored all the time, and there are USGS gages below Wilder and Bellows Falls too, that we will use for supplemental data.

David Deen: Comment about using a platform for the geo data that does not need to be installed on one's computer.

> John Ragonese: We are doing the best we can to provide all stakeholders with the data in a useable format that is free. Other platforms that are "off the web" so to speak cost money. We will try to work with those who have issues but cannot guarantee everyone will have the same success.

John Bruno: I believe the entire State of Vermont including both sides of the Connecticut River was flown in 1972 by a company called Aerographics. I have had photogrammetric mapping made from these photos by a firm Potomac Aerial Surveys in Frederick, Maryland.

Melissa Grader: If the study report will be prepared in February 2015, with the review/comment period and FERC review for any study modifications, is there enough time to modify studies before the 2015 field season?

> Brandon Cherry: FERC is trying to get the process plan set up so everyone knows the schedule, and FERC would make sure that there is enough time in the study year to do the work and get the data that is required.

Studies 4 – 5, Hydraulic Model and Operations Model

Lissa Robinson provided the summary of Study 4 and the HEC-RAS model.

John Ragonese: We are moving the model into the area below Vernon. FirstLight (FL) will provide bathymetry to TC and TC is providing LiDAR data to FL. This is a slight deviation from the study plan, but provides more information not less.

John Ragonese: There hasn't been much done in the operations model (Study 5). We are overlaying areas of interest with hydraulic model. The operations model will analyze the extent over which that happens (water level, depth, velocity) to prepare time series analysis of changes/project operations. The operations model has been built, but elements (e.g., cross sections) will be "econodes" in the operations model. Those have not been added since they come from all of the resource studies. Stakeholders will be able to review the selection of econodes.

Studies 4 – 5 Discussion

John Warner: What is the consultation required?

> John Ragonese: Consultation (required in FERC's Study Plan Determination and described in the modified study plan filed March 28, 2014 approved by FERC on April 9, 2014), relates to velocity comparisons via in-water measurements to the model, and which sites to use for that calibration.

Need to wait until the model gets built and we have a chance to identify any areas that may be of interest.

Lissa Robinson: We will also be calibrating the model to measured flows from USGS gages and will also be looking at comparing velocity in locations selected through consultation.

John Ragonese: We will present the selection of range of flows that we want the model to look at, i.e., what the model was designed to look at for the range of operational flows. As further evaluations and flow scenarios are done, more consultation will be conducted.

Study 7 – Aquatic Habitat Mapping Study

Rick Simmons provided the study summary.

John Ragonese: We mapped the riverine areas in 2013 for Study 7, but couldn't use that data at the specificity that the hydraulic model (Study 4) needs. The instream flow study 9 has finer detail for substrate mapping, to be used in the hydraulic model.

Rick Simmons: We are also working on correcting the CD/data provided in May to allow users to distinguish habitat types on the GIS data. The revised geo data is available to working groups on the TC relicensing website.

Study 7 Discussion

Melissa Grader: When will you have the transect IFIM data? And do you intend to update the habitat maps in the Study Report?

John Ragonese: IFIM data from Study 9 will not be incorporated into the habitat mapping. I suppose it could if it served a purpose or was necessary but remember the primary purpose for habitat mapping was to identify and select transect locations for Study 9.

Study 8 – Channel Morphology and Benthic Habitat Study

Robin MacEwan provided the study summary. One recommended site was replaced with a contingency site, both at the Mascoma River in Lebanon NH. The second round of monitoring is scheduled for October.

No Questions or Discussion

Study 9 – Instream Flow Study

Steve Eggers provided the study summary. High flow work and capturing elevation data on some reaches has not been completed, in addition to 2D work and the Sumner Falls and Bellows Falls bypassed reach work.

John Ragonese: Work completed includes velocity measurements at 3 transects in the Bellows Falls downstream reach. We had hoped to get the rest of it completed this summer/fall. Substrate mapping has been completed at low flow. Remaining work includes high flow and associated velocity at all sites, the 2D sites including bathymetry, and the Sumner Falls and the Bellows Falls bypassed reach work as agreed during the site visits. We need to schedule Sumner Falls and Bellows Falls bypass field visits with agencies. The problem is there is no water; I have been trying to coordinate with TC Ops to get the high flows. TC has no storage at this point for these studies, without a sustained rain event or period of rain. At this time TC doesn't anticipate completing high flow work this fall. This will also affect the hydraulic model which relies on Study 9 data and the whitewater boating study at Bellows Falls. Study 9 will focus on the non-high flow elements of remaining work in October.

Edwin Nason: Flows are very low. USGS gage sites show flows are in the 25 percentile (on the low end), from the Connecticut Lakes on down the river. Inflow into the Moore development is less than the guaranteed minimum flow (from Moore storage) for the Comerford development, just downstream of Moore. We did not get any rain in September to improve the situation.

John Ragonese: Moore reservoir elevation is at historic low for this period and will continue to drop just to provide minimum flows downstream at Comerford.

<u>Study 9 Discussion</u>

John Ragonese: Given low flows, TC is asking agencies what we want to accomplish this next visit at Sumner Falls and Bellows Falls.

> Steve Eggers: We can accomplish Bellows Falls bypass transect selection and base flow measurements. Sumner Falls demonstration is somewhat dependent on higher flows with more of a water issue there.

John Ragonese: We would like to schedule our consultation to confirm transects at Bellows Falls bypass. At Sumner Falls, some study components could be done at lower flows, and/or consult on the VANR proposal for that demonstration. TC will want to consult on those objectives.

> Steve Eggers: Sumner demonstration needs to be done in the same day as the higher flows are available, not at a separate time.

John Ragonese: We need to understand what we are actually looking for, for resource effects – species and life stages there.

> Steve Eggers: Some of the habitat criteria are broad, but we need to tie them to at least some species/life stages. Not all species will use an area like Sumner Falls.

Steve Eggers: At the Bellows Falls bypass, the area of interest is the non-pool area that won't change much at higher flows (depth and velocity only). We are thinking that about 6 transects would represent the area. Photo (in presentation) shows ~ 400 cfs. We want to collect velocities more at 1,200 cfs. Beyond that, it becomes unmeasurable and unsafe.

Bob Nasdor: Will there be transects at the fish dam in the bypass?

> Steve Eggers: No, the area of interest is upstream of the fish dam.

Rod Wentworth: Where are we at on the Habitat Suitability Criteria (HSC)? TC is trying to use FL's study and HSCs.

> Steve Eggers: I have a draft based on the first criteria that FL put out. Substrate for lamprey spawning may now have cobble added – from being out in the field and seeing redds in other substrate. TC hopes to send out the HSC work in the next 2-3 weeks.

David Deen: Question about usability of the geo database provided by TC and making it available online. Suggest that TC get in touch with Mark Goodwin from City of Lebanon who made the shapefiles accessible to David.

> John Ragonese: City of Lebanon may have put it on their website and thus provides the platform needed. We provided a free Arc Explorer for the geo database. To access through another platform, users would need to buy ArcGIS, or Google Earth, or their own platform. TC does not intend to have ESRI host a site.

Study 13 – Tributary and Backwater Fish Access and Habitats Study

Rick Simmons provided the study summary. Field work was more intensive than expected. We collected additional elevation data with an RTK unit. The final site selection report weighted site selection more heavily toward riverine sections than impoundments. We installed water level loggers in small streams. These streams can go dry, so in some cases there is no data in low conditions.
[NOTE: correction to a mis-statement during the presentation that indicated that we collected WQ data (temp, DO, conductivity, pH, turbidity) at a point within the project affected tributary/backwater and in the mainstem. Corrected statement should be: While WQ data was collected within the tributary/backwater; it was not collected in the mainstem. Only water temperature has been collected in the mainstem via the water level loggers.]

Study 13 Discussion

Melissa Grader: The Initial Study Report says that loggers were deployed in late July. Was there a minimum amount of data to be collected to have impact on study data?

Rick Simmons: With low flow conditions all summer, we have confidence in the completeness of the data. Each site will become an econode in the hydraulic model, and along with the RTK data, we will be able to have information over a range of flows.

Gabe Gries: With regard to WQ sampling, in the mainstem and tribs/backwater – is it at the mouths or further up tributaries?

Rick Simmons: Up into the tribs a little bit, generally where we collected the cross section data too. In the small tributaries we may not be able to get more than one round of WQ data due to low flow conditions.

Gabe Gries: How does the available fish habitat portion of the study work?

Rick Simmons: Between the bathymetry data collected last year, the RTK data and the model, we expect to have a good idea of available habitat.

David Deen: Related to changes at the confluence of the Cold River – what importance is there to the historic changes?

Rick Simmons: Folks were concerned about Tropical Storm Irene and the Cold River, it was almost blocked. Over time these streams constantly move and change.

John Ragonese: Our attempt is to try and understand what project operations are doing. We've all seen what beaver dam breaks, Irene, etc., have done. Based on project discharges and/or seasonally based on the hydraulic model – we are looking at how to characterize tributary/backwater access as opposed to what causes deposition.

Study 24 - Dwarf Wedgemussel and Co-occurring Mussel Study

Ethan Nedeau provided the study summary. In 2014 we never found more than 1 dwarf wedgemussel (DWM) which equates to .02 density/sq meter. And we only found them in only 6 of 20 transects. We also did qualitative surveys in the general area to try and find more DWMs, similar to the 2011 and 2013 studies, and only found a few. Quadrat sampling from Cornish Bridge to Chase Island included 3 of the 4 historical sites where DWM was found in 2011 and 2013. We also counted all co-occurring species. No DWM were found. The window for surveys is mid-May to end of September/early October so TC authorized start of work based on the consultation in May and July. Ethan also summarized the FWS counter proposal, received September 4 after the Phase 2 work had already started.

Study 24 Discussion

Katie Kennedy: I haven't had chance to look at the revised study plan TC sent in August. One earlier question was about the specific areas surveyed. It is not clear

how these corresponded to prior sampling sites. Related to that, of the 20 locations used this year, were they chosen because DWM were found there before?

> Ethan Nedeau: We surveyed 20 transects in 6 locations. A location is within~ 400 meters. Where we didn't find DWM was at Sumner Falls transects, nor had we found any there in 2011 and 2013. Just below Cornish covered bridge, where we didn't find DWM in 2013, this year we found an old shell only. At the other sites, at most we found a DWM or two at a transect.

Rod Wentworh: We had talked about building mussel habitat suitability criteria within the instream flow study. How well are the habitat needs known, and what are they?

> Ethan Nedeau: We are developing HSC for DWM. It hasn't really been done for any mussel species to everyone's satisfaction. If you can develop criteria for mussels that can be used for 2D IFIM work, we are doing that along with data from other studies within and outside of the watershed. We will develop that in the off-season and share it with the working group. This is why Study 9 includes a 2D site at the Cornish Bridge – Chase Island reach.

Rod Wentworth: Are habitat needs reasonably understood?

> Ethan Nedeau: Yes, DWM is a generalist and can be found in very shallow water or in 25 feet of water, and across a wide range of stream sizes and substrate types. Earlier work broadened what we thought was habitat.

Katie Kennedy: There must be some variables that are affecting presence.

> Ethan Nedeau: It may not be habitat related, but there could be other variables.

Katie Kennedy: Largemouth bass is generalist, except in cold water.

> John Ragonese: Generalist is a broad term. We know DWM doesn't exist everywhere, we don't know why.
>
> Ethan Nedeau: Academic research hasn't provided more information on that yet.
>
> John Ragonese: We'd like to try to set a time for a meeting that Susi von Oettingen is available. She had suggested October 9th (see Attachment 4 for meeting notes).

Melissa Grader: Will FERC participate in that too? There are substantial differences between TC and agencies on this.

Brandon Cherry: FERC could participate by teleconference. FERC can only go so far in terms of finding a middle ground because there is still a paper process to go through.

Nick Ettema: People are trying to understand when populations have fallen off. DWM were not found in the historical monitoring sites in 2011 and 2013, so the 2014 work is not new information.

Ethan Nedeau: Reports date to ~ 1988. DWM had been recently listed and an influx of funding was available to try to understand distribution and demographics. Studies started in a cursory way then developed over time. Studies were repeated in 1989, 1990, 1991, and 1992. In a 1995 desktop summary of work and the methods used, the conclusion was that methods and objectives had varied so much that we can't really generalize population trends. It was not until 2002 that additional study was done on the mainstem. Ethan had done CPUE work for FWS, and discovered DWM in Wilder in 2005/2006. The mid-80s work was limited to the 4 sites - near Cornish bridge, Chase Island, Horseback Ridge etc. In terms of changes in population numbers, in the 1980's compared to more recently, there does seem to be a big change in population.

Melissa Grader: From 1992 – 1995, there were studies at Horseback Ridge, the cemetery, etc. and in 1993 – 1995 at Cornish Bridge to Sumner Falls.

Ethan Nedeau: I have these reports, and while the sites are the same, in some of those studies even latitude/longitude at the start and end of transects weren't reported. Shell lengths and habitat (depth/substrate) were also not recorded.

Katie Kennedy: You wouldn't have to repeat the transect, you would just need to re-sample the sites.

Ethan Nedeau: The sites are broad and not well established.

Melissa Grader: Clearly the data shows that there are not a lot of DWM in the project-affected areas. Will that get FWS to the goal of talking about project effects? That's what we will be talking about.

Study 26 – Cobblestone and Puritan Tiger Beetle Survey

Sarah Allen provided the study summary. Cobblestone tiger beetles were found at most of the 13 study sites, including several with no prior record. No Puritans were found.

No questions, no discussion.

Study 27 - Floodplain, Wetland, Riparian, and Littoral Habitats Study

Sarah Allen provided the study summary. 11,500 acres of terrestrial habitat were mapped within the parameters of the study plan, ~ 200 feet from the river's edge unless a floodplain or wetlands extended further.

Eric Davis: Is the terrestrial geo data on the geo database on TC's website?

> Jen Bryant: No, not yet as it is still under revision and going through QA/QC. It will be provided when available.

Study 28 – Fowler's Toad Survey

Sarah Barnum provided the study summary. Fowler's toad was found at two island sites, including Stebbins Island which had previous records. The species has a very distinctive call likened to a "sheep in pain". Katie Kennedy played a sample call on her cell phone.

No questions, no discussion.

Study 29 – Northeastern Bulrush Survey

Sarah Allen provided the study summary. Northeastern bulrush can occupy a lot of different habitats, often with fluctuating water levels such as in beaver ponds and deep water marshy areas. It is not a river edge species (i.e., subject to scour and fluctuation of flows). The species can wait in substrate for a long time so if the known beaver pond site has a reduction in water levels at some point in the future, bulrush could return.

No questions, no discussion.

Study 30 - Recreation Facility Inventory and Use & Needs Assessment

Jot Splenda provided the study summary and noted that recreation area inventories and surveys are ongoing through the shoulder months and in January/February 2015 (a minor study plan variance). The mail survey of 2,400 people is being prepared now.

Study 30 Discussion

John Taylor: How would he get a copy of the mail survey? Also, at Wilder (Kilowatt field etc.) are you doing any coordination with organizations and trail users?

> Jot Splenda: The mail survey was included in the revised study plan. Intercept surveys are being conducted mostly in the parking lots. At Wilder, most users are using the trails, and if we can catch them in the parking lot, we do, but we are not going up the trails themselves.

Bob Nasdor: The Sumner Falls whitewater flow study observed a lot of other users not involved in the WW study itself, who are recreational users.

Jot Splenda: We have been talking to the outfitters and also have a traffic counter in place at Sumner Falls parking area which captures everyone going down there.

Mark Goodwin: Is recreational data part of the geo database?

Jot Splenda: Not yet.
John Ragonese: Data collection still ongoing.

Study 31 - Whitewater Boating Flow Assessment - Bellows Falls and Sumner Falls

Jot Splenda provided the study summary, and photos of flows at Sumner Falls. For the planned Bellows Falls bypass study, the anticipated flow range is 6 flows.

Study 31 Discussion

Rod Wentworth: Was video taken at Sumner Falls that could be used for habitat analysis for the instream flow study?

Jot Splenda: Yes, we have terabytes of data.
John Ragonese: We are trying to find a way to share that data. We may want to consider doing some overhead video via drones or something to have a better picture. You can also use Google Earth history to see the reach at various flows.

Bob Nasdor: You could also reach out to boaters with on-water photos/video.

John Ragonese: With regard to the Bellows Falls bypass study, it doesn't look feasible for this fall due to lack of water. We would want to do all flows within the same evaluation timeframe, not some this fall and some next year.

Bob Nasdor: We don't want to wait to the last minute to organize boaters. Maybe have a call next week (see Attachment 5 for the call summary).

John Ragonese: At this point it is very unlikely that we could do the study this fall.

Jot Splenda: We have received comments on the draft boater survey from two boater representatives.

Maryalice Fischer: We are also waiting for any remaining comments on the draft boater survey. Boaters had agreed to respond by September 15th.

Study 32 - Bellows Falls Aesthetic Flow Study

Jot Splenda provided a summary of the study, although little has been done since this study plans to use whitewater and/or instream flow studies in the bypassed reach for purposes of video/photos to use with the focus group.

John Ragonese: We have taken video/photos of natural events. We may also try to coordinate with the instream flow lower flows releases this fall to capture the lower flow video/photos.

No questions, no discussion.

Study 33 - Cultural and Historic Resources Study

Steve Olausen, Suzanne Cherau, and Don Shannon provided a summary of work completed to date.

Suzanne Cherau: Vernon project Phase 1A field work is completed, on flowage lands only from boat. We identified 12 erosion areas with 1 Native American site (new site on NH side) needing Phase 1B survey work. Phase 1B work is on-going and requires landowner permission. All active erosion and survey sites are located on flowage not TC fee-owned land. At Wilder and Bellows we did 200 test pits, and found no significant sites or archeology on fee-owned land. Additional field work is in progress.

> John Ragonese: We are making a concentrated effort to contact those landowners.

Steve Olausen: For Historic building assessments, Wilder baseline condition assessment is completed, and research almost complete. A draft report is expected by Nov 1. Wilder Station is national register eligible.

Don Shannon: For the traditional cultural properties survey, the Narragansett Tribe and Nolumbeka Project have not responded to requests for a meeting. A draft outline of the survey has been prepared based on other archival information but not yet on any Tribal input.

> John Ragonese: TC will make one more effort to reach out to the Tribe by phone. TC has talked with Frank Winchell at FERC. As we understand it, FL hasn't heard anything from the Tribe either. Nor have they responded to FERC. Absent their input, we will put together what we can based on the archival materials. Our belief was that the Tribe and Nolumbeka expressed interest in participating, but some misinformation on their part was apparent, but we haven't heard anything back.

Suzanne Cherau: For the Phase II site evaluations, we haven't found any fee-owned sites. Most of the sites identified before are on flowage lands. Phase II work is expected in 2015.

Edna Feighner: Until we see Phase 1B work, we'll wait to provide comments.

John Ragonese: We will send SHPOs the Vernon monitoring work part of the HPMP and then the rest of the Phase 1B materials separately, along with the architectural resource evaluation package.

2015 Initiated Studies

Maryalice Fischer provided an overview of preliminary work and consultation needed in fall 2014 and/or winter 2015, for 2015 initiated studies (see tables in presentation).

Melissa Grader: Please send out the consultation table.

Maryalice Fischer: We will do that (see 2-page table at end of PowerPoint presentation in Attachment 2).

Bob Nasdor: You should add the whitewater study at Bellows Falls into the table.

Maryalice Fischer: The purpose of the table was to have consultation on site selection and related technical matters for 2015 initiated studies, not for studies like instream flow and whitewater boating that are already in progress. Additional consultation and/or meetings that are required for those studies should really be separate from consultation related to the 2015 studies.

***Questions and Action Items* (see *Table 2*)**

John Warner: We need suggested dates for the DWM meeting and instream flow Sumner Falls discussion.

John Ragonese: DWM consultation we are targeting October 9th based on Susi's availability, with the meeting location to be determined.

Rod Wentworth: We are interested in conservation flows for instream flow.

John Ragonese: I'm not sure, but we may be able to do up to 2,500 cfs or something for a short period of time on a day at Sumner Falls to get an idea of a flow range. We could put a staff gage in and correlate it later to higher flows.

Rod Wentworth: Fisheries folks may need to have a conference call to narrow in, and respond with more specificity on Sumner Falls.

John Ragonese: As we said earlier, what are we trying to measure there? That is what we need to know.

Rod Wentworth: I can appreciate what some criticisms may be, beyond tweaking the approach, to perhaps using different approaches. It is a heterogeneous site, difficult to study.

Maryalice Fischer: We also need to get the HSC curves from Study 9 to the working group, and hope to provide those before the instream flow meeting.

Table 2. Summary of follow up and action items.

Action Item	Responsibility	Due Date
Study 24: Confirm October 9th date and location for DWM meeting.	FWS – confirm Susi's availability and location if meeting at FWS Concord NH office. TC – confirm Ethan's availability	Monday October 6 (Note: this consultation occurred on October 9, see Attachment 4 for a meeting summary)
Study 9: Schedule instream flow study Sumner Falls discussion and Bellows Falls transect selection site visit.	TC – provide proposed dates for both via doodle poll. Dates will likely be between 10/15 and 10/23. Working group – respond to doodle poll with availability for both.	Friday October 10
Study 9: Provide instream flow HSC criteria.	TC – will provide to working group.	Friday October 10
Study 31: Provide remaining comments on draft Bellows Falls boating survey form.	Boating representatives to send additional comments or let TC know if no more comments are expected.	Requested by Wednesday October 15
Study 31: Convene a conference call on study delay.	TC – will propose dates to boating representatives.	TBD (Note: this consultation occurred on October 7, see Attachment 5 for a meeting summary.
2015 Studies: Site selection and consultation	TC – will develop site selection documents and provide to working group. Will propose meeting dates via doodle poll. Working group – respond to doodle poll with availability.	Consultation dates expected in mid to late November.

TransCanada Hydro Northeast Inc.
Initial Study Results Meeting Summary

Attachment 1 – List of Attendees

Name	Affiliation	Name	Affiliation
Brandon Cherry	FERC	Tom Dean (phone)	FERC
Nick Ettema	FERC	John Baummer (phone)	FERC
Steve Kartalia	FERC	Michael Watts (phone)	FERC
Bill Connelly	FERC	John Mudge (phone)	Abutting landowner
Adam Becco	FERC	Edna Feighner (phone)	NH State Historic Preservation Office
Patrick Crile	FERC	John Ragonese	TransCanada
Ken Sprankle	US Fish & Wildlife Service	Jennifer Griffin	TransCanada
Gabe Gries	NH Fish & Game	Erin O'Dea	TransCanada
Susan MacKenzie	Lyme NH Selectboard	Mike Hachey	TransCanada
Jim Kennedy	Connecticut River Joint Commissions – Upper Valley Committee	Matthew Cole	TransCanada
Mark Wamser	Gomez & Sullivan	Edwin Nason	TransCanada
John Bruno	Connecticut River Joint Commissions – Mt Ascutney committee	John Field	Field Geology
		Jonathan Garber	Field Geology
Peter Kulbacki	Town of Hanover NH	Lissa Robinson	GEI
Bob Nasdor	American Whitewater	Robin MacEwan	Stantec
Rod Wentworth	VT Fish & Wildlife	Mike Chelminski (phone)	Stantec
Lael Will	VT Fish & Wildlife	Ethan Nedeau	Biodrawversity
Owen David	NHDES 401 WQC	Maryalice Fischer	Normandeau
Adair Mulligan	Hanover Conservancy	Rick Simmons	Normandeau
Robert Bruce	Pine Park Association	Jennifer Bryant	Normandeau
John Warner	US Fish & Wildlife Service		
Katie Kennedy	The Nature Conservancy	Steve Eggers (phone)	Normandeau
Melissa Grader	US Fish & Wildlife Service	Sarah Allen	Normandeau
David Deen	Connecticut River Watershed Council	Don Mason (phone)	Normandeau
Eric Davis	VT Agency of Natural Resources	Sarah Barnum	Normandeau
Chris Campany	Windham Regional Commission	Doug Hjorth	Louis Berger
Shelley Hadfield	City of Lebanon NH	Jot Splenda	Louis Berger
John Taylor	Upper Valley Trails Alliance	Mike Andrews	Louis Berger
Vicki Smith	Town of Hanover NH	Steve Olausen (phone)	PAL
Mark Goodwin	City of Lebanon NH	Suzanne Cherau (phone)	PAL
		Donald Shannon (phone)	Willamette CRA

Attachment 2 – Presentation Slides

Wilder, Bellows Falls, and Vernon Project Relicensing

Initial Study Results Meeting - September 29, 2014

TransCanada

Agenda

9:00 – 9:15	Introductions; New FERC Staff	John Ragonese & Brandon Cherry
9:15 – 9:50	Study 1-3 Erosion Studies	John Field & Jonathan Garber
9:50 – 10:00	Study 4-5 Hydraulic / Operations Models	John Ragonese & Lissa Robinson
10:00 – 10:15	Study 7 Aquatic Habitat Mapping	Rick Simmons
10:15 – 10:30	Study 8 Channel Morphology and Benthic Habitat	Robin MacEwan
10:30 – 10:40	Break	
10:40 – 11:15	Study 9 Instream Flow; Sumner Falls Study Plan, review, schedule, BF bypass transect selection	Steve Eggers
11:15 – 11:30	Study 13 Tributary and Backwater Fish Access	Rick Simmons
11:30 - 12:15	Study 24 Dwarf Wedge Mussels and Co-occurring species; Discuss Phase 2; FWS comments	Ethan Nedeau
12:15 – 12:45	Lunch	Brought In
12:45 – 1:00	Study 26 Cobblestone Tiger Beetles	Don Mason & Sarah Allen
1:00 – 1:15	Study 27 Floodplain, Wetlands, Riparian, and Littoral Vegetative Habitats	Sarah Allen
1:15 – 1:30	Study 28 Fowler's Toad Survey	Sarah Barnum
1:30 – 1:45	Study 29 Northeastern Bulrush Survey	Sarah Allen
1:45 – 2:00	Study 30 Recreation Inventory, Use & Needs Assessment	Jot Splenda
2:00 – 2:20	Study 31 Whitewater Boating Assessment, schedule	Jot Splenda
2:20 – 2:35	Study 32 – Bellows Falls Aesthetic Flow Study	Jot Splenda
2:35 -2:45	Break	
2:45 – 3:10	Study 33 Cultural Resources	Steve Olausen & Don Shannon
3:10 – 3:45	2015 Studies Consultation	Maryalice Fischer
3:45 – 4:30	Questions – Further Discussions	John Ragonese

Study 1

Historical Riverbank Position and Erosion Study

Study 1 – Historical Riverbank Position and Erosion Study

Study Progress

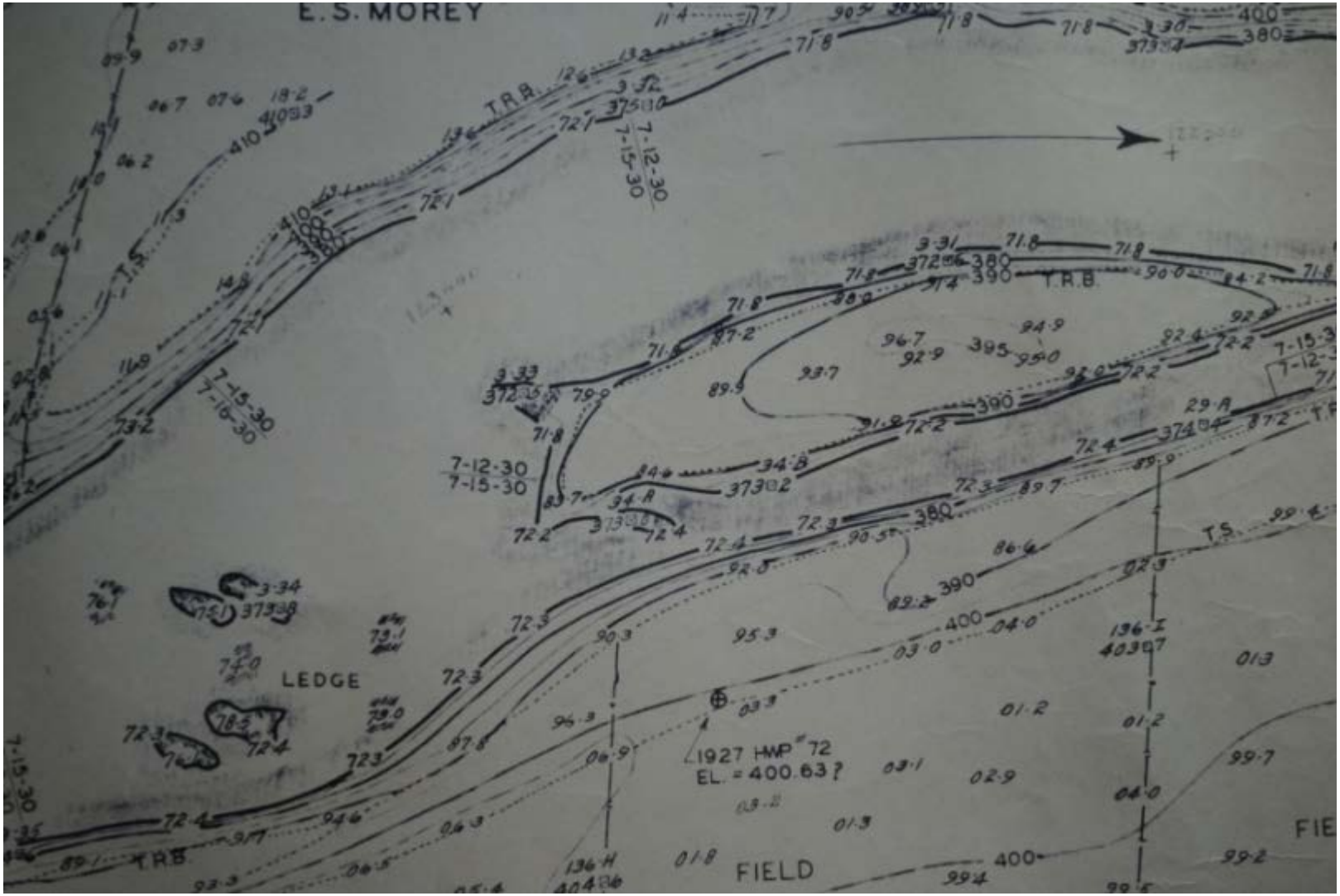
- Geo-rectified 1950's and 1970's aerial photos and overlaid with most current orthophotos, digitized bank lines
- Visited 24 town historical societies, state museums, and state archives
- Collected old ground photos and reviewed TransCanada files
- Contacted landowners to seek additional information
- Received partial set of 1930 large-scale topographic maps
- Received information on past bank stabilization projects

Summary of Findings

- Nearly annual mapping and photographing of erosion extending back to 1930's
- Up to 300 ft of bank migration in some areas, but mostly limited, if any, change

Study 1 – Historical Riverbank Position and Erosion Study

1930 New England Power Service Company map
(Orford, NH/Fairlee, VT)



Study 1 – Historical Riverbank Position and Erosion Study

Remaining Activities

- Collect 1940's aerial photographs of available areas and geo-rectify and compare with other aerials
- Hand digitize a selected number of TC's erosion maps and compare with other mapping efforts (e.g., Army Corps in 1979)
- Continue to follow up with landowners that responded to letter request for information

Study 2
Riverbank Transect Study

Study 2 – Riverbank Transect Study

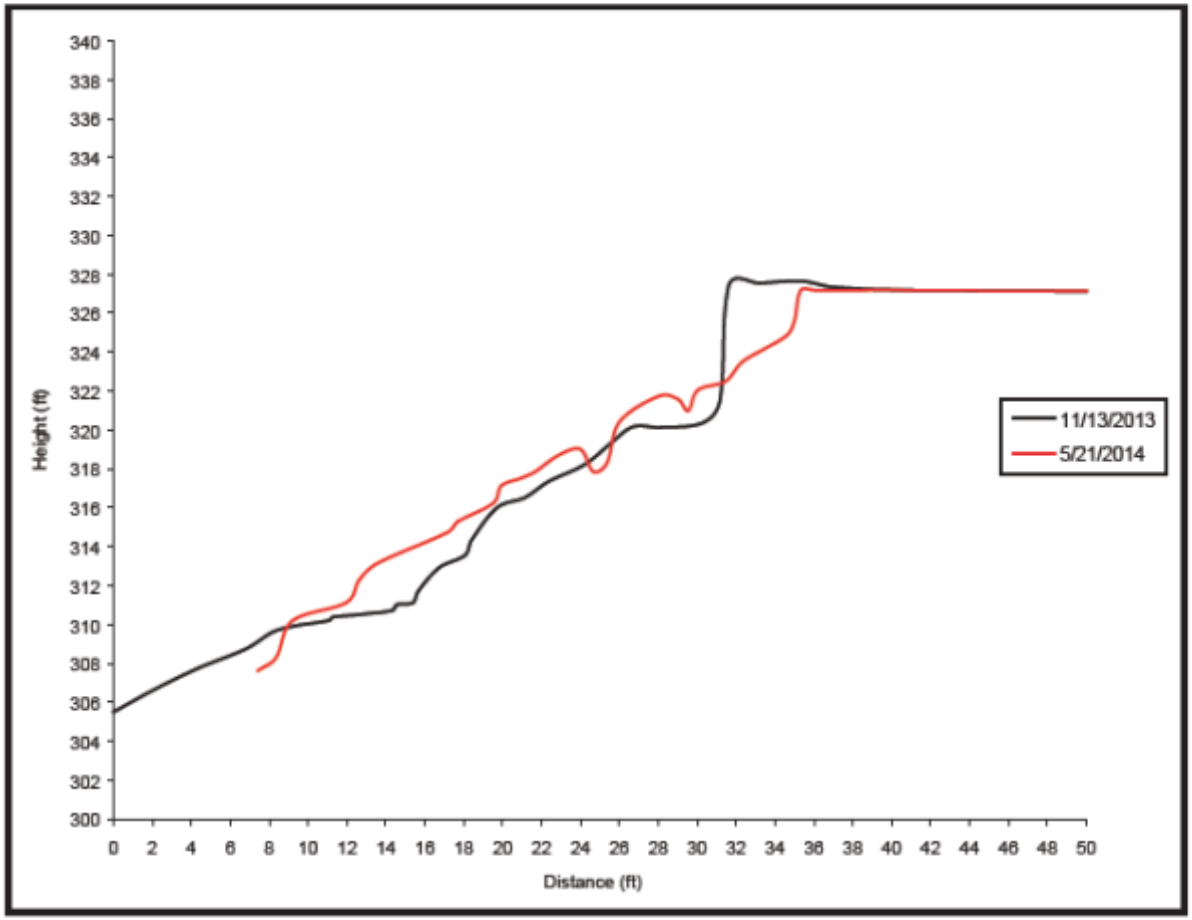
Study Progress

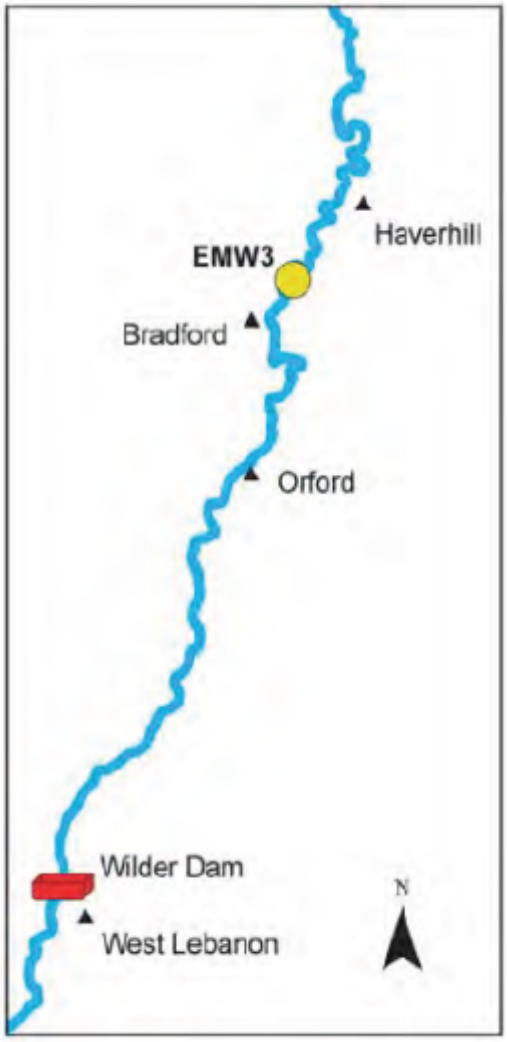
- Completed 4 rounds of erosion monitoring at 21 sites
- Full river cross sections completed at all sites
- Water level monitoring ongoing at all sites with data downloaded during each monitoring round
- Stratigraphic columns of bank sediments measured and described at each monitoring site
- Each monitoring site tied to benchmarks using RTK

Summary of Findings

- Only 2 sites have shown erosion with most bank recession at those sites occurring between November 2013 and May 2014

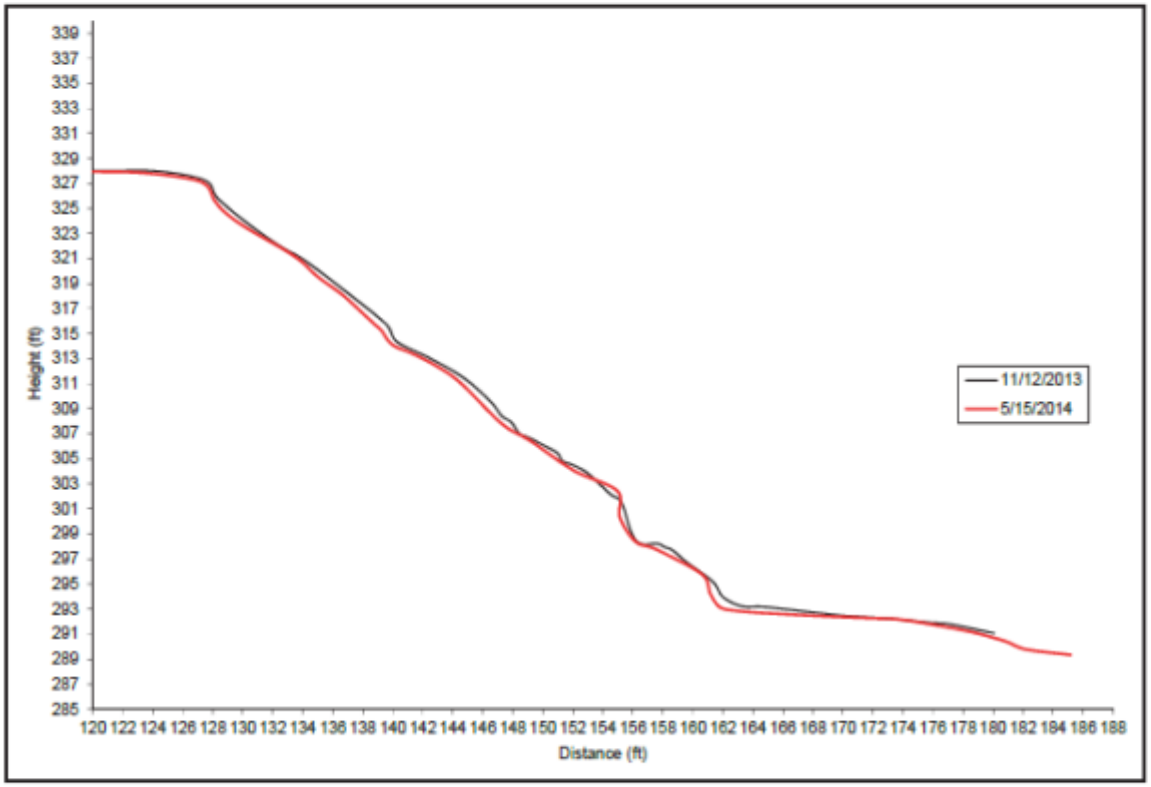
Study 2 – Riverbank Transect Study





Study 2 – Riverbank Transect Study

Riverbank Transect Study - EMB9 (North Walpole Site)



Study 2 – Riverbank Transect Study

Remaining Activities

- Four rounds of monitoring still to complete in 2014/2015
- Continuing to draft full river cross sections and stratigraphic columns
- Comparison of water level data with bank stratigraphy and hydraulic modeling

Study 3
Riverbank Erosion Study

Study 3 – Riverbank Erosion Study

Study Progress

- Surficial geology map created from LiDAR and existing State maps
- Created bank line for mapping by modifying the Kleinschmidt shapefile and digitized Army Corps 1979 erosion map to bank line
- Various erosion features identified and 5 erosion categories defined for mapping
- Eighty miles of nearly 300 miles has been mapped to date

Remaining Activities

- Erosion mapping continuing
- Other bank features to be extracted from LiDAR and other maps – bank height, composition, etc.
- Erosion maps to be compared with bathymetric data and hydraulic modeling results

Study 3 – Riverbank Erosion Study

Bradford, VT

TransCanada

Study 3 – Riverbank Erosion Study

Piermont, NH

TransCanada

Study 3 – Riverbank Erosion Study

Piermont, NH

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Studies 4 and 5
Hydraulic and Operations Modeling

Studies 4 - 5 Hydraulic/Operations Models

Study Progress

- HEC-RAS model refined to include cross-sections corresponding to locations of interest in Studies 7, 8, 9, 13, and 24.
- Operations Model (Study 5) hydrology data, hourly headpond, and hourly project flows provided.
- Number and location of velocity transects to be established in consultation with resource agencies.
- LiDAR data reviewed for model setup and bathymetry and water-level logger data sets from Aquatic Habitat Mapping (Study 7) reviewed for inclusion in this study.

Remaining Activities

- Incorporate Study 9 (Instream Flow) transect data
- Consult on velocity transects
- Set up, calibrate, and verify HEC-RAS model to develop relationships between water levels and flows to assess project effects on resources

Study 7
Aquatic Habitat Mapping

Study 7 – Aquatic Habitat Mapping

Study Summary

- Study completed in 2013.
- Data on impoundment bathymetry, riverine mesohabitat, and water level logger locations provided in geo-database on website, and summarized in study report.
- Data is being used in 2014 and 2015 studies.

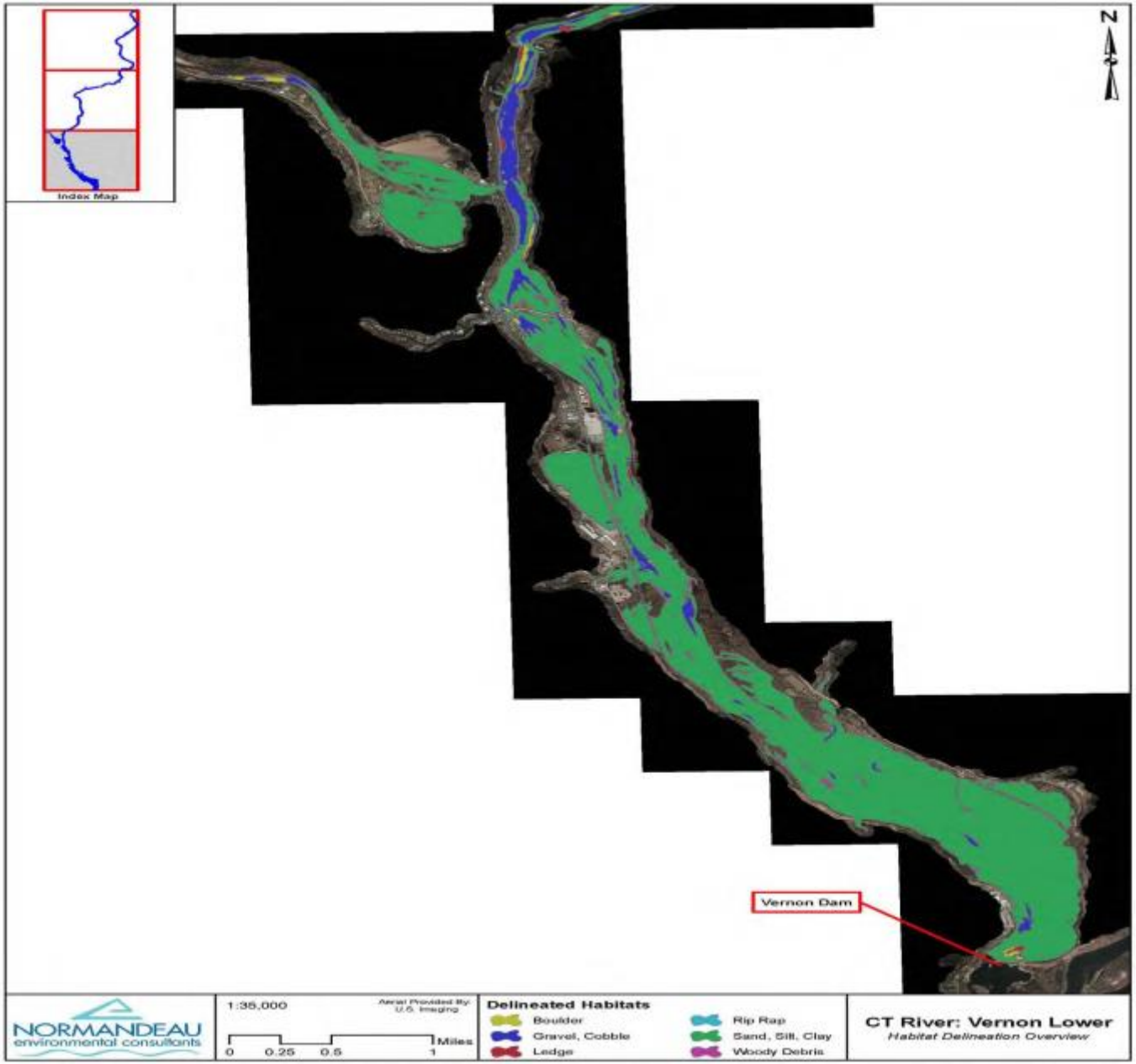
Additional Related Effort

- 5 of 9 water level loggers overwintered 2013/2014 were downloaded in 2014 (3 were lost and replaced, 1 not downloaded).
- Loggers will be downloaded and re-installed for overwintering 2014/2015.
- All logger data from 2014 and from other studies (2, 13) will be added to a water level database.

Study 7 – Aquatic Habitat Mapping

Overview of lower Vernon impoundment aquatic habitat

(image stretched)



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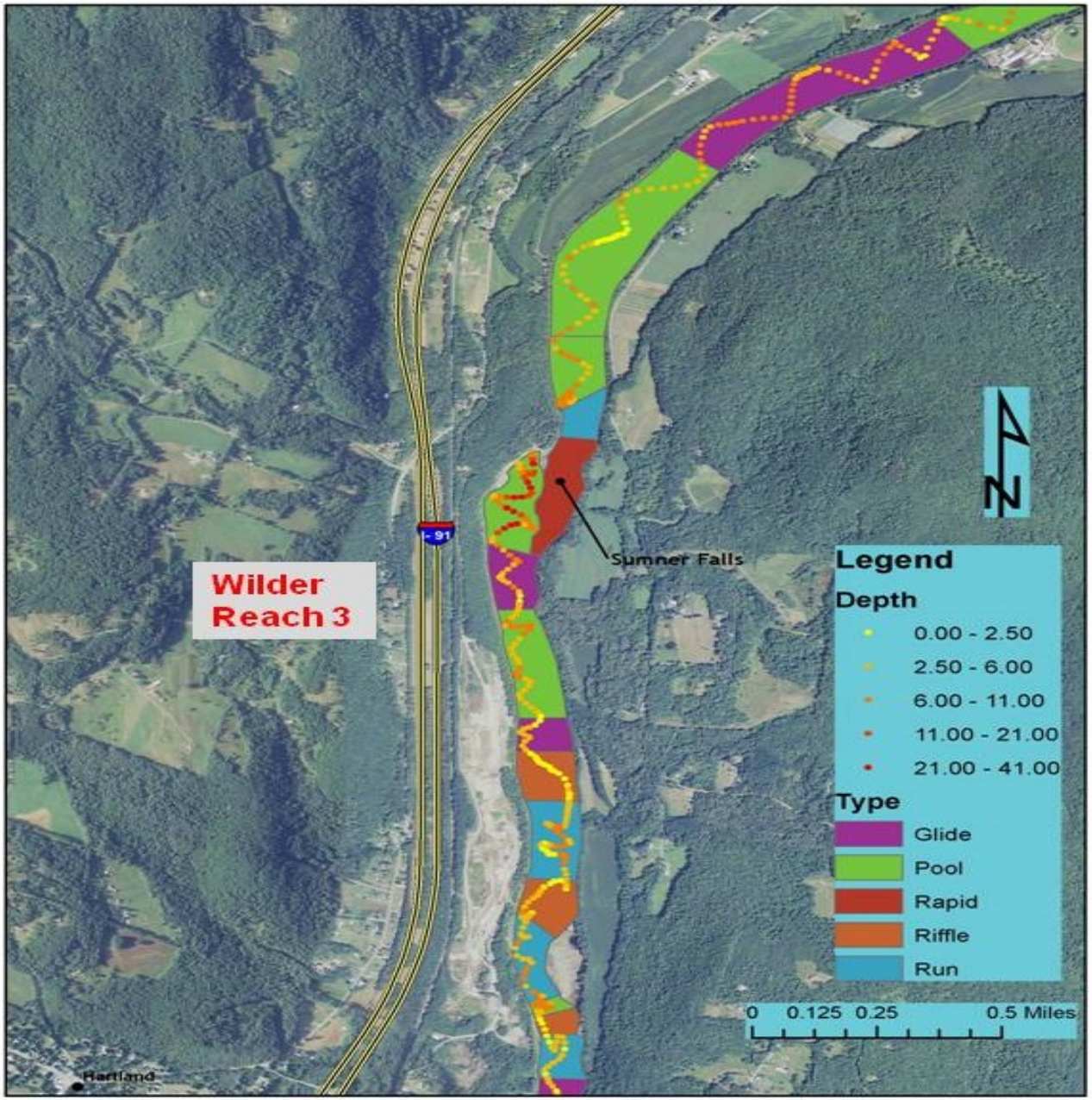
Study 7 – Aquatic Habitat Mapping

Overview of upper Wilder riverine aquatic habitats

(image stretched)



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Study 8

Channel Morphology and Benthic Habitat Study

Study 8 – Channel Morphology and Benthic Habitat Study

Study Progress

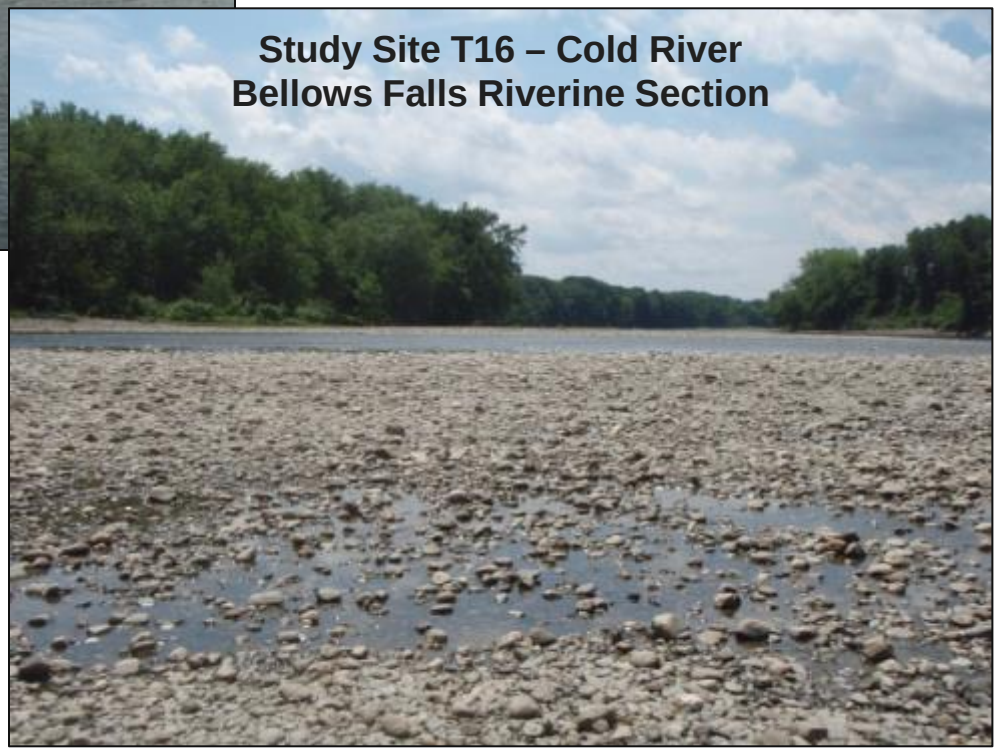
- 1st round of field data collected
- Data collection included:
  - Pebble counts;
  - Embeddedness;
  - Point locations (GPS); and
  - Representative photographs.
- Contingency Site T4 selected to replace Recommended Site T3, both at Mascoma River downstream of Wilder Dam

Remaining Activities

- 2nd round of data collection in October
- Data analysis and reporting to follow
- Potential impact of project operations will be assessed when modeling and erosion studies are complete

Study 8 – Channel Morphology and Benthic Habitat Study

Study Site M7 – Wilder Riverine Section



Study Site T16 – Cold River
Bellows Falls Riverine Section

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10-minute break

Study 9
Instream Flow Study

Study 9 – Instream Flow Study

Study Progress

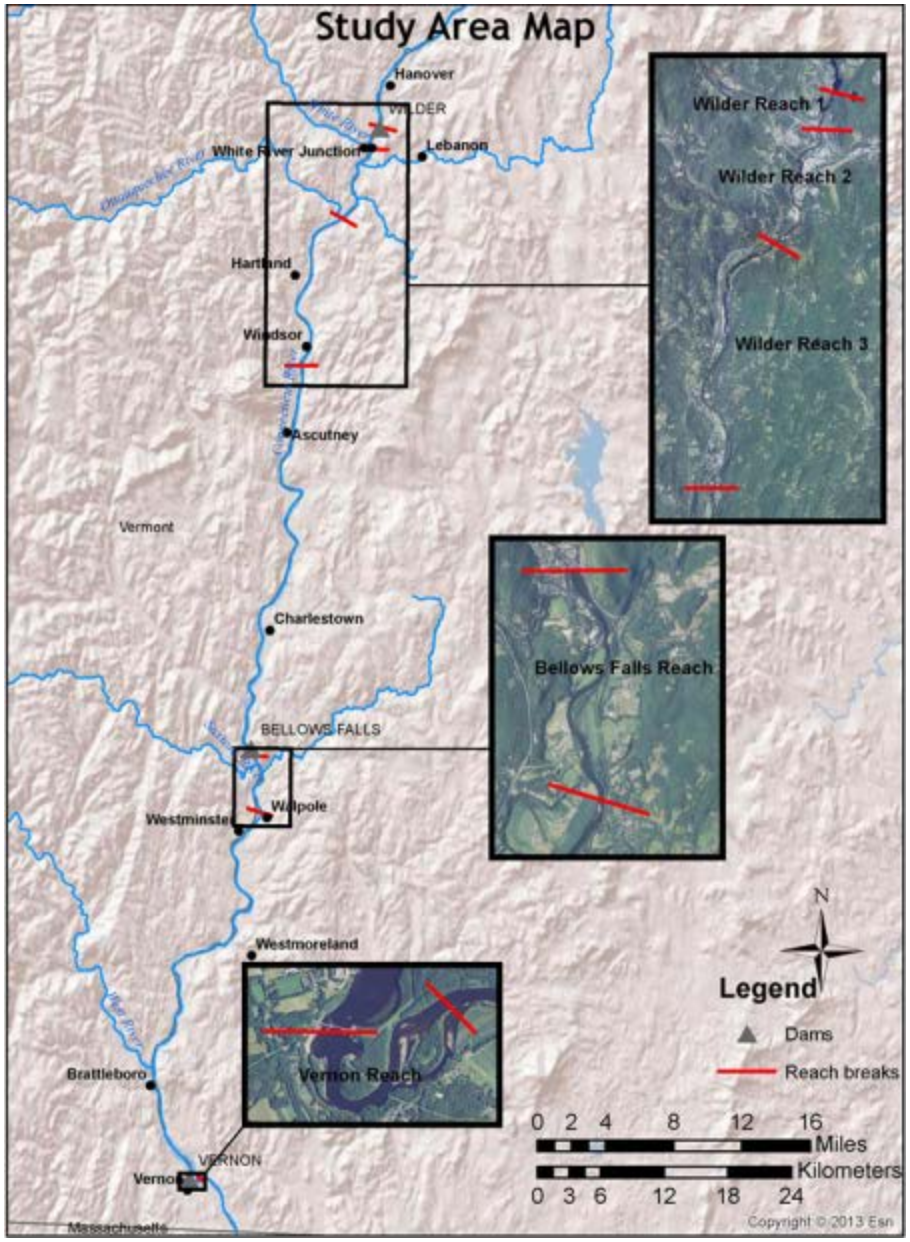
- Transect selection in field with working group
- Site visit to Sumner Falls during transect selection
  - General agreement that a DFA approach may be best to assess this site
- Site visit to Bellows Falls bypassed reach
  - Agreement to model upper portion of bypassed reach using 1D transects
- Low flow and middle flow measurements
  - Includes substrate coding, out-of water profiling (banks and exposed gravel bars)
- Most substrate coding of the 2D sites completed (Johnston Island, Chase Island)

Study 9 – Instream Flow Study

Study Area

- Wilder Reach 1 – 9 transects
- Wilder Reach 2 – 15 transects plus a 2D site
- Wilder Reach 3 – 13 transects plus a 2D site
- Bellows Falls Reach – 19 transects
- Vernon Reach – 10 transects

Number and location of transects in Bellows Falls bypassed reach to be determined with working group in the field



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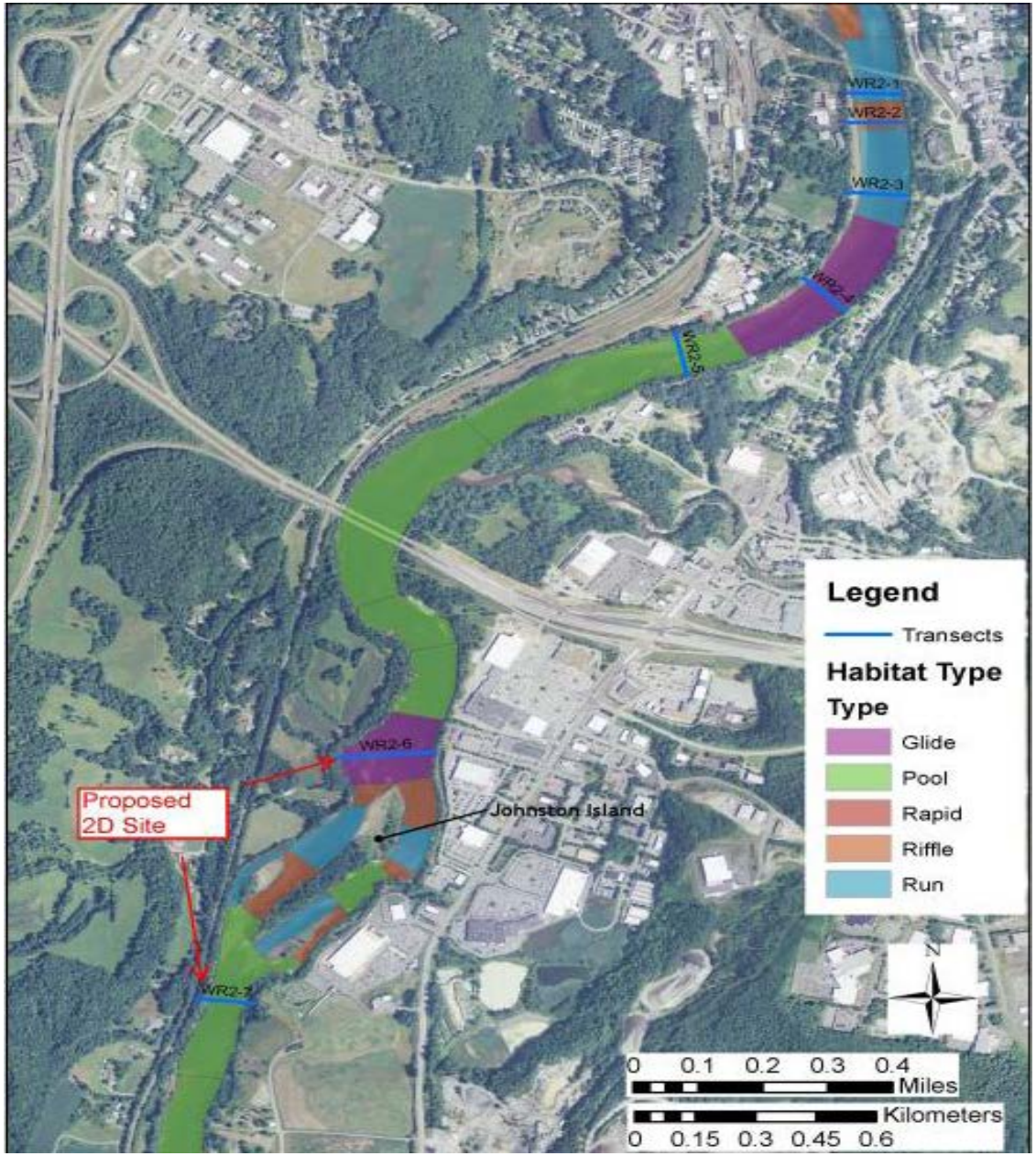
Study 9 – Instream Flow Study

2D Site
Wilder Reach 2
Johnston Island

(image stretched)



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Study 9 – Instream Flow Study

2D Site
Wilder Reach 3
Chase Island

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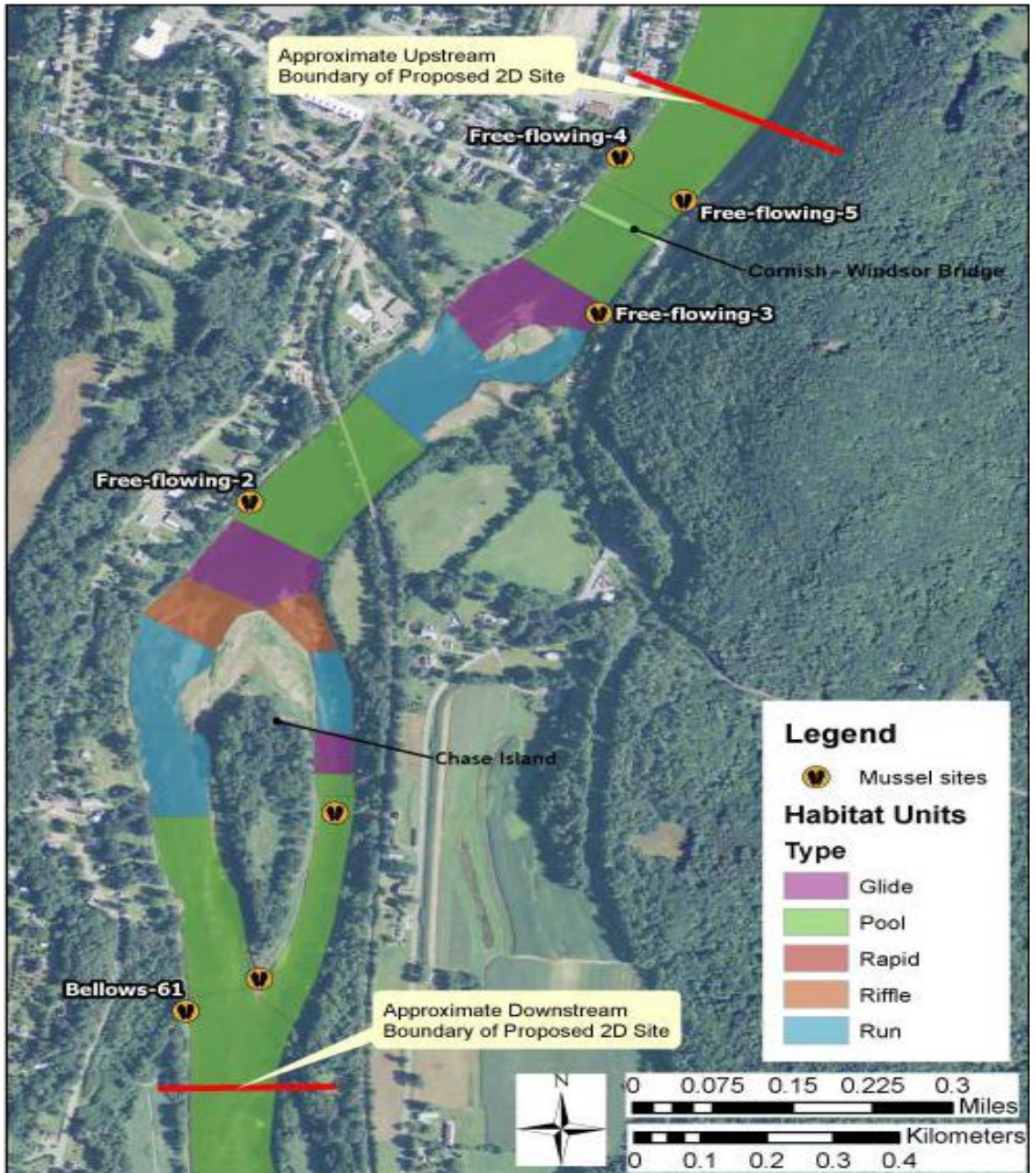

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Study 9 – Instream Flow Study

Study Progress

Target Flows are based on release from dam	Low Flow (cfs) Target: 700-2,000	Middle Flow (cfs) Target: 5,000	High Flow (cfs) Target: 10,000
	Measured	Measured	Measured
Wilder Reach 1	800	5,500	Not measured yet
Wilder Reach 2	1,200	6,500-8,000	Not measured yet
Wilder Reach 3	1,500-1,700	6,500	Not measured yet

	Low Flow (cfs) Target: 1,300-2,000	Middle Flow (cfs) Target: 4,500-7,500	High Flow (cfs) Target: 9,000-11,000
	Measured	Measured	Measured
Bellows Falls	1,800	5,500	11,500 (at 3 transects)

	Low Flow (cfs) Target: 1,600-2,500	Middle Flow (cfs) Target: 5,000-7,500	High Flow (cfs) Target: 10,000-12,000
	Measured	Measured	Measured
Vernon	2,100	4,100	Not measured yet

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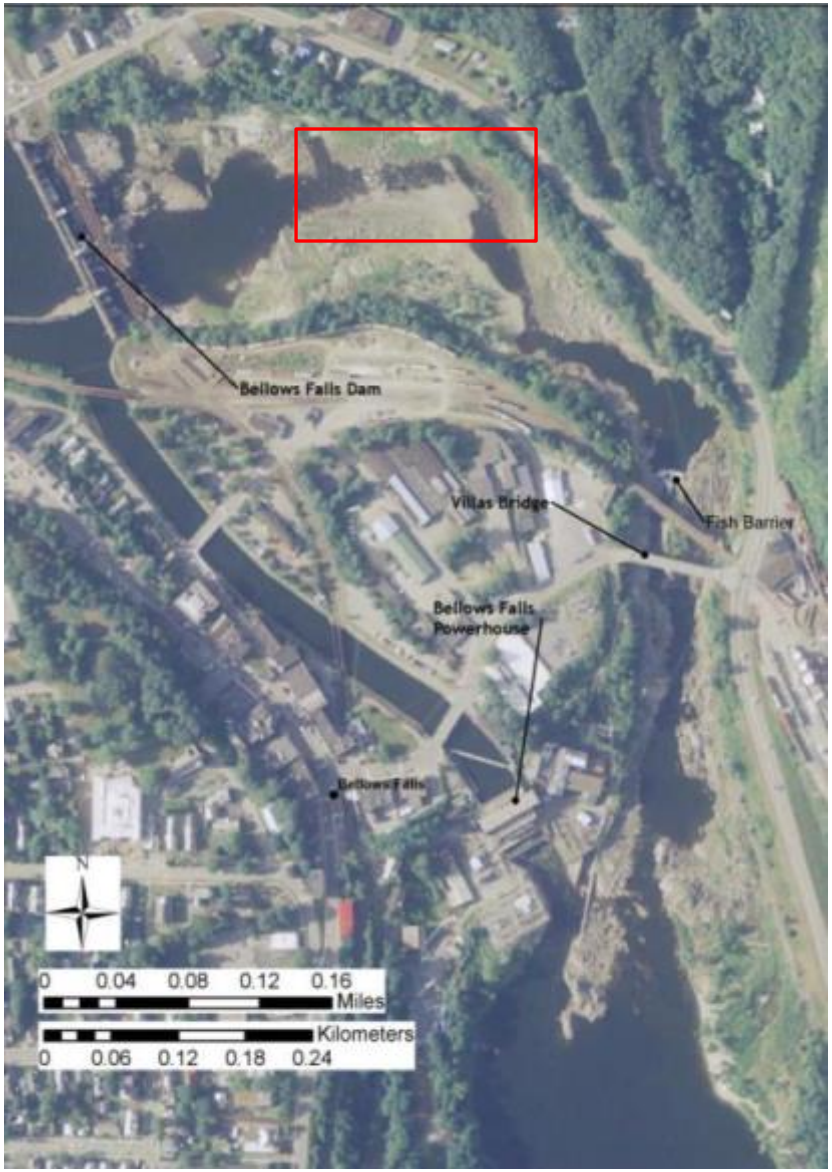
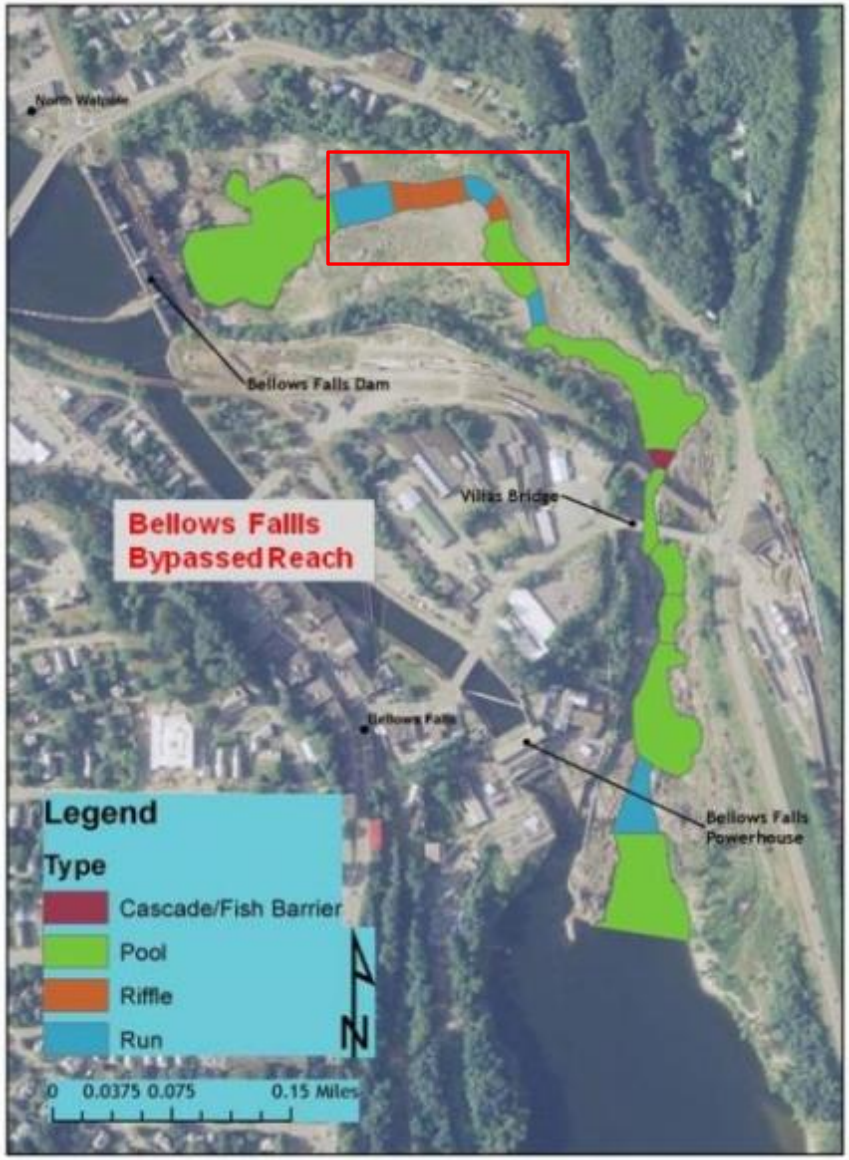
Remaining Activities

- Geo-referencing of transect elevations (RTK) – partially completed
- Bathymetry at 2D sites
- High flow measurements and velocity acquisition
- Bellows Falls bypassed reach – transect selection, base flow measurements, and velocity acquisition at various flow levels
- Sumner Falls Demonstration Flow Analysis (proposal submitted by VTFWD)
  - Objective is to qualitatively assess the relationship between base flows and aquatic habitat using expert visual assessment of up to 4 flows from up to 6 observation points; along with depth and velocity measurements.
  - Species and life stages of interest need to be determined in advance of the DFA.
  - Model results to identify evaluation flows will not be available this fall due to lack of high flows thus far for high flow transect and velocity measurements.

Study 9 – Instream Flow Study

Bellows Falls bypassed reach





Study 9 – Instream Flow Study

Bellows Falls bypassed reach

Study 9 – Instream Flow Study

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Study 9 – Instream Flow Study

Upper portion of Sumner Falls at ~1,000 cfs

Upper portion of Sumner Falls at ~5,000 cfs

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Study 13
Tributary and Backwater
Fish Access and Habitats Study

Study 13 – Tributary and Backwater Fish Access and Habitats

Study Progress

- Initial site visits at all 37 locations conducted under low water conditions in July and August.
- Installed water level loggers in tributary and adjacent mainstem locations.
- Collected geo-referenced bed elevation information.
- Collected WQ information - temperature, DO, pH, turbidity, conductivity.
- Numerous photographs taken of sites and project-affected areas.

Observations

- Most backwater habitats and larger tributaries (S.O. 2+) appear to have sufficient access for fish.
- Some of the small tributaries had little to no flow (above the confluence) in the summer.

Remaining Activities

- September monitoring was conducted the week of 09/22.
- October monitoring is expected to occur near the end of the month.
- Water level loggers will be removed during October monitoring.

Study 13 – Tributary and Backwater Fish Access and Habitats

Harriman Brook, Upper Wilder Impoundment – Stream Order 2

Confluence

View towards confluence

TransCanada

Study 13 – Tributary and Backwater Fish Access and Habitats

Hanchetts Brook, Upper Wilder Riverine – Stream Order 1

View upstream from confluence

View towards confluence

TransCanada

Study 13 – Tributary and Backwater Fish Access and Habitats

Cold River, Walpole NH – Stream Order 5

Confluence

View towards confluence

View upstream of confluence

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Study 24
Dwarf Wedgemussel and Co-occurring Mussel Study

Study 24 – Dwarf Wedgemussel and Co-occurring Mussels

Summary of 2011-2013 Study Results

- Wilder: Low density of DWM found 27-41 miles upstream from Wilder Dam (only 45 live animals, 64 survey sites).
- Free-flowing Reach: No live DWM found (39 survey sites).
- Bellows Falls: Low density of DWM in upper 17 miles of impoundment (only 24 live animals, 61 survey sites).
- No DWM in Vernon impoundment, or in tailwaters of the three dams.

2014 Field Observations

- Twenty 50-m2 transects established among six locations. DWM detected in 6 (never more than 1/transect).
- Low numbers of DWM found during qualitative surveys near transects, similar to 2011 and 2013 results.
- Almost 400 1.5 x 1.5m quadrats sampled in the Cornish Covered Bridge to Chase Island reach. No DWM detected but good data on co-occurring species and habitat parameters.

Study 24 – Dwarf Wedgemussel and Co-occurring Mussels

Response to FWS Phase 2 Counter Proposal

- Broader geographic scope is not aligned with original study requests or project nexus.
- Re-survey of historical sites both within and outside of the project-affected area is aimed at determining region-wide population trends, which is not a study goal.
- Most historical surveys provided inadequate population baselines. They varied widely in approach and methods, most are not “repeatable”, and therefore they do not allow for rigorous or scientifically defensible trend or effects analyses.

However,

- Similarities exist between the revised Phase 2 Plan and FWS counter-proposal within the project-affected areas (survey locations, survey methods, analyses).
- 2014 quantitative sampling includes four of the long-term monitoring sites (Cornish Covered Bridge North and South, Horseback Ridge, and Sumner Falls), as well as other areas where dwarf wedgemussels were found in 2011 and 2013.
- Elements in the FWS counter proposal may be possible and reasonable to accommodate (e.g., bank-to-bank transects) and we will consult with FWS on these elements.

Lunch – 30 minutes

Study 26
Cobblestone and Puritan
Tiger Beetle Survey

Study 26 – Cobblestone and Puritan Tiger Beetle Survey

Study Progress and Field Observations

- 13 study sites selected and surveyed.
  - 12 sites visited 3 times between July and September, 2014.
  - One marginal site (Saxton's River) visited 2 times.
- Cobblestone Tiger Beetle (CTB) observed and photographed at 7 sites.
- CTB observed with lower certainty at 3 additional sites.
- Study resulted in 2 new CTB state records.
- Detailed habitat assessment performed at each site.
- No Puritan Tiger Beetles observed during study.

Remaining Activities

- Field effort completed September 3, 2014.
- Data analysis and report to be completed in fall of 2014.
- Potential impact of project operations will be assessed when modeling and erosion studies are complete**.**

Study 26 – Cobblestone and Puritan Tiger Beetle Survey

Burnap's Island, upper Wilder riverine

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Study 27
Floodplain, Wetland, Riparian and Littoral Vegetative Habitats Study

Study 27 – Floodplain, Wetland, Riparian, and Littoral Vegetative Habitats

Study Progress

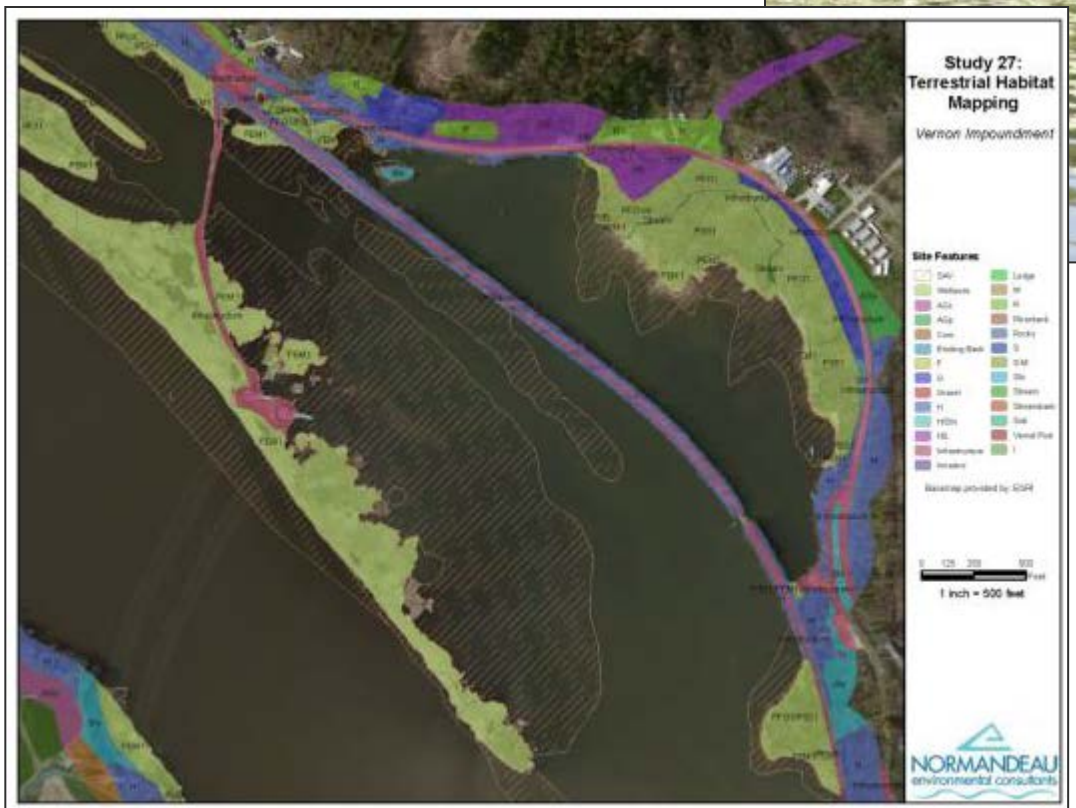
- Draft habitat maps have been completed for all 3 impoundments
- Field verification occurred in June, July and August
  - Verified accuracy of boundaries and cover types on at least 50%
  - Collected data on representative habitats
  - Mapped and confirmed aquatic vegetation beds
  - Mapped/identified beds of invasive species
  - Surveyed potential winter bald eagle roost habitat
  - Incidental list of wildlife species

Remaining Activities

- Map revisions are mostly complete, data compilation underway
- Potential impact of project operations will be assessed when modeling and erosion studies are complete.

Study 27 – Floodplain, Wetland, Riparian, and Littoral Vegetative Habitats

Example
terrestrial habitat map
Hinsdale, NH



Study 28
Fowler’s Toad Survey

Study 28 – Fowler's Toad Survey

Study Progress and Field Observations

- 15 sites surveyed
  - 11 call survey sites with 3 rounds of site visits.
  - 4 acoustic monitoring sites over 2 – 4 weeks.
- Survey methods consisted of direct listening (call surveys) and acoustic recording
- Fowler's toad was detected in two locations:
  - Hart Island breeding pool in Wilder riverine section
  - Stebbins Island in Vernon riverine section

Remaining Activities

- No further field work is required
- Additional analysis of acoustic records is ongoing
- Potential impact of project operations will be assessed when modeling and erosion studies are complete.

Study 28 – Fowler's Toad Survey

Breeding pool, Hart Island

Breeding pool, Stebbins Island

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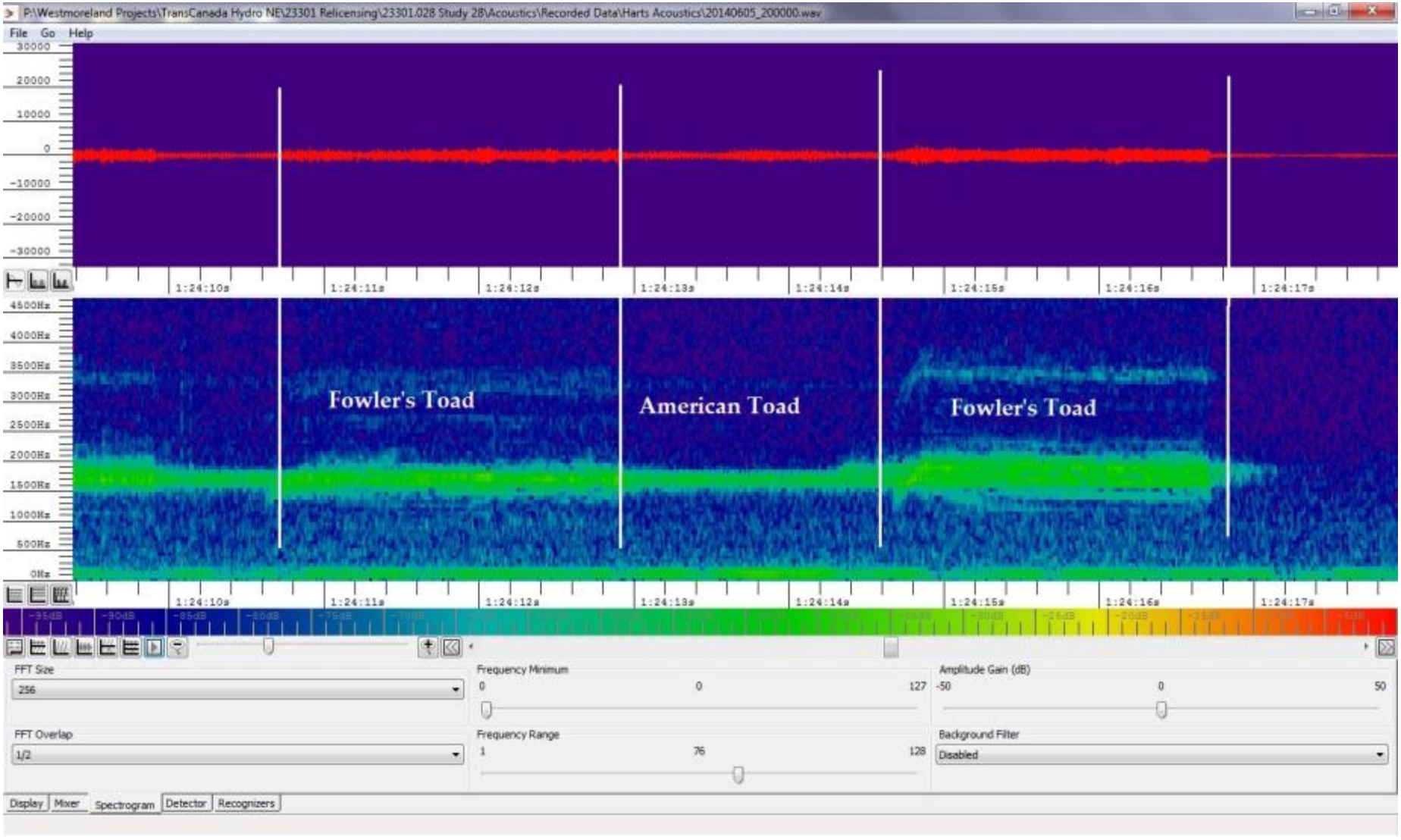
Study 28 – Fowler's Toad Survey

Example Sonogram
June 5, 2014 from Hart Island breeding pool



Study 29
Northeastern Bulrush Survey

Study 29 – Northeastern Bulrush Survey

Study Progress and Field Observations

- Developed a typical profile of suitable habitat.
- Vegetation habitat maps were reviewed for potential sites.
- Field verification was conducted in August and September.
  - 9 sites were initially identified
  - 4 sites were eliminated based on field review
  - The remaining 5 sites were more intensively surveyed
  - Including the one site where northeastern bulrush was last observed
- No plants were found.
  - Water levels were very high due to beaver activity at the known site
  - The known site and other potential sites are above influence of project operations

Remaining Activities

- Assess known site for potential to support suitable habitat in the future.
- Data analysis and reporting.

Study 29 – Northeastern Bulrush Survey

Known northeastern bulrush site

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Study 30
Recreation Facility Inventory and Use & Needs Assessment

Study 30 – Recreation Facility Inventory and Use & Needs Assessment

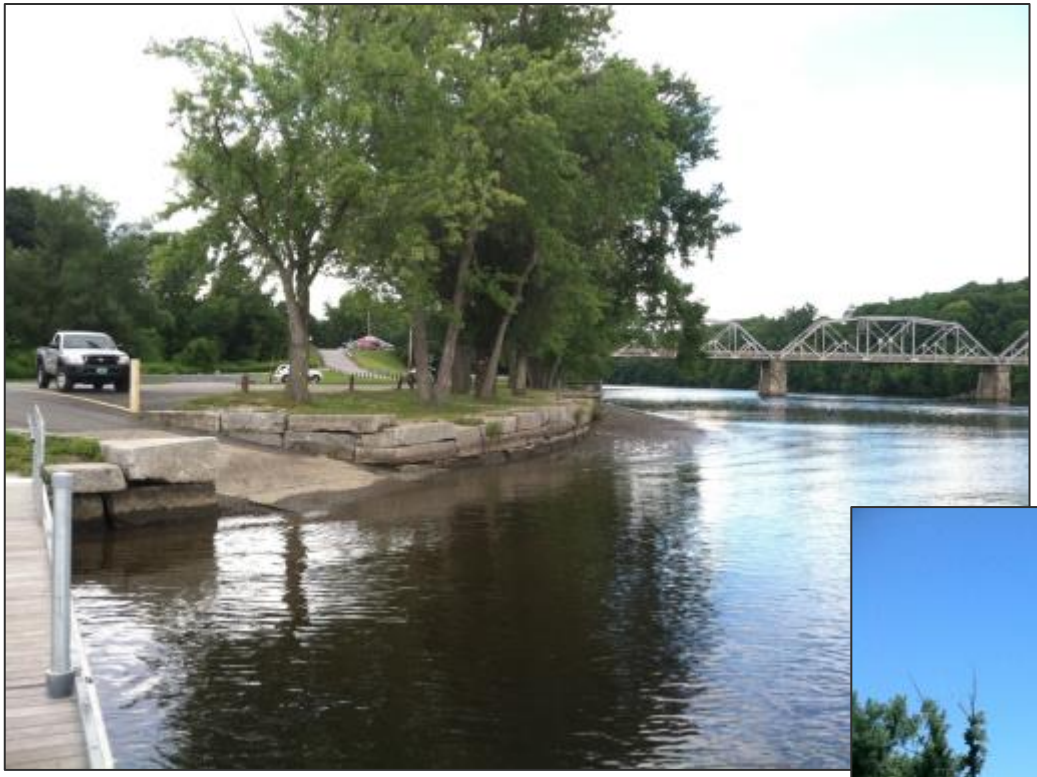
Study Progress

- 47 recreation sites identified and surveyed
- Traffic counters deployed at 18 sites
- Interviews and spot counts began in March and continue
- Hundreds of interviews and spot counts for each project
- Completed 3 rounds of visits to canoe trail campsites

Remaining Activities

- Fall shoulder season and winter visits (early 2014/2015) for remaining interviews, spot counts, and traffic counts
- Mail out surveys (currently) & tabulate responses
- Finalize inventory and site condition assessments
- Data entry and analysis, reporting

Study 30 – Recreation Facility Inventory and Use & Needs Assessment



Hoyt's Landing
Bellows Falls impoundment
Owned by State of VT

TransCanada Recreation Area
Downstream of Vernon Dam

TransCanada

Study 31
Whitewater Boating Flow Assessment
Bellows Falls and Sumner Falls

Study 31 – Whitewater Boating Flow Assessment

Study Progress

- Late winter/early spring 2014 photos & video clips were taken at different levels of natural spill in the Bellows Falls bypassed reach and shared with boater representatives
- Boater consultation meeting and field visits conducted May 27 & 28. Bellows Falls planning teleconference occurred Aug 22
- Sumner Falls evaluation occurred June 28 & 29 with16 boaters and 5 flow levels
  - There were multiple play spots throughout the channel
  - Two preferred flow ranges (5500 and 13000) were identified but for different wave features

Remaining Activities

- Bellows Falls bypassed reach evaluation scheduled for October 18 & 19, pending water availability.
- Data entry and analysis, reporting

Study 31 – Whitewater Boating Flow Assessment

Sumner Falls Evaluation

4,000 cfs

7,500 cfs

13,000 cfs

TransCanada

Study 32
Bellows Falls Aesthetic Flow Study

Study 32 – Bellows Falls Aesthetic Flow Study

Study Progress

- Late winter/early spring 2014 photos & video clips were taken at different levels of natural spill in the Bellows Falls bypassed reach

Remaining Activities

- Photo & video recording of the different controlled release flows to be conducted during the whitewater boater evaluation study
- Conduct focus group around the documented releases
- Data entry and analysis, reporting

Study 32 – Bellows Falls Aesthetic Flow Study

Key Observation Points

10-minute break

Study 33
Cultural and Historic Resources Study

Study 33 – Cultural and Historic Resources Study

Study Progress

- Vernon Project 2013 Monitoring Program/Update of Phase 1A Archaeological Reconnaissance Survey Report – in draft form.
- Phase IB Archaeological Identification Surveys – Wilder, Bellows Falls, and Vernon Projects – fieldwork and landowner coordination in progress.
- Historic Architectural Resources National Register Evaluation – fieldwork completed, research continuing.
- Traditional Cultural Properties Identification Survey - background archival ethnographic material is being gathered; no responses from Tribal representatives to 2 requests for a meeting.

Remaining Activities

- Phase II Archaeological Site Evaluations for the Vernon, Bellows Falls, and Wilder Projects - spring/summer 2015.

Pre-planning for 2015 Studies

2015 Studies

Study No.	Study Title	2014 Tasks	2014 Consultation Purpose and Scope
6	Water Quality Study	Select monitoring sites at tributaries and upstream of impoundments. Develop sampling/analysis (S&A) plan.	Site selection concurrence. NHDES and VTDEC review /approval of S&A Plan
10	Fish Assemblage Study	Select study sites from Study 7 and stratified random sampling over the various impoundments and reaches. Develop site selection report.	Site selection concurrence.
11	American Eel Survey		
12	Tessellated Darter Survey		
14	Resident Fish Spawning in Impoundments Study	Conduct literature reviews. Select study sites from Study 7 habitat data, stakeholder input (and stratified random sampling if number of potential survey sites warrants). Develop site selection report.	Site selection concurrence.
15	Resident Fish Spawning in Riverine Sections Study		
16	Sea Lamprey Spawning Assessment	Select study sites from Study 7 habitat data, stakeholder input (and stratified random sampling if number of potential survey sites warrants). Develop site selection report.	Site selection concurrence.
17	Upstream Passage of Riverine Fish Species Assessment	Purchase laptops. Obtain Salmonsoft licensing approval.	VANR – Salmonsoft software

2015 Studies

Study No.	Study Title	2014 Tasks	2014 Consultation Purpose and Scope
18	American Eel Upstream Passage Assessment	Construct eel trap passes. Develop communications/consultation protocol for installation/placement of eel trap passes.	Agreement on communications/ consultation protocol.
19	American Eel Downstream Passage Assessment	n/a in 2014.	2015 – consult on turbine survival scope pending outcome of route selection.
20	American Eel Downstream Migration Timing Assessment	Literature review.	n/a
21	American Shad Telemetry Study - Vernon	Review USGS 2012 data.	Additional consultation on study details, if needed based on USGS data review.
22	Downstream Migration of Juvenile American Shad - Vernon	2014 - Juvenile shad transport and tagging evaluations (October). 2015 - Turbine evaluation and selection (needs Study 5 information	2014 - Coordinate with FWS on transport and tagging evaluation.. 2015 - Agreement on selection of turbines to use for survival testing.
23	Fish Impingement, Entrainment, and Survival Study	n/a in 2014. Literature review in 2015.	n/a
25	Dragonfly and Damselfly Inventory and Assessment	Site selection	Site selection concurrence.

Discussion and Questions

Attachment 3 – Written Questions from City of Lebanon, NH

mark.goodwin@lebcity.com

Goodwin, Mark

From: Nicole Cormen [nscormen@gmail.com]
Sent: Monday, September 29, 2014 12:02 AM
To: Hadfield, Shelley; Goodwin, Mark; Coats, Paul
Cc: Lewis, Greg
Subject: Comments/Questions on ISR to Share @ 9/29/14 Transcanada Meeting

All,

I won't be able to attend this Monday's (9/29/14) Transcanada meeting on Initial Study Results (ISR) related to the relicensing of Wilder Dam and others in the study area.

I share the following comments and questions to be raised at the appropriate time during the meeting. All page references are to
http://www.transcanada-relicensing.com/download/Documents/Study Reports/Initial Study Reports/PUBLIC_091514TransCanada_LC_ISRreduced.pdf

Study 1: Historical Riverbank Position

A. Will the affected municipality have access to the specific data resulting from this study, i. e., updated maps with digitized bank lines revealing "areas of significant erosion within a relatively stable river planform" (p. 13)?

When can local governments expect to have these data?

B. Although "individual areas of significant erosion are limited in area," such individual locations are very significant locally. We look forward to seeing the details for local and regional planning purpose.

Study 2: Riverbank Transect Study

A. Do we understand correctly that the water-level logger installed at site EMWR1—"the first monitoring site downstream of Wilder Dam"—was "likely removed" after just one month (p. 24)? On what basis was it concluded that "replaced loggers would likely be removed" and therefore not replaced?

B. The loss of EMWR1, plus the absence of any other erosion monitoring sites along the Lebanon shoreline, effectively appears to exclude our community—host (with Hartford, VT) to Wilder Dam as well as the impounded and freer-flowing sections above and below the dam—from participating in studies 2 and 3. Consequently, can Lebanon and Hartford expect no baseline data from studies 2 and 3?

Study 3—Riverbank Erosion Study

A. Same question as for Study 2, comment B.

B. Since no water-level logger returned data at site EMWR1—one of the "21 transect locations established in the Riverbank Transect Study," how can Study 3 comply with FERC's Sept. 13, 2014, modified RSP (p. 25)? And how can section 3.5 claim that "There have been no deviations from the study plan … to this point" (p. 27)?

Study 26—Cobblestone and Puritan Tiger Beetle Survey

A. Nice to see the preliminary finding of cobblestone tiger beetle on Johnston Island (Table 26-1, p. 71) after no previous record (Figure 26-1, p. 68).

Attachment 4

Study 24
Dwarf Wedgemussel and Co-occurring Mussel Survey
Consultation Meeting Summary – October 9, 2014

In attendance:

Jen Griffin – TransCanada (TC)
Ethan Nedeau - Biodrawversity
Maryalice Fischer - Normandeau
David Deen – Connecticut River Watershed Council (CRWC)
Susi von Oettingen, Melissa Grader – US Fish and Wildlife Service (FWS)
Katie Kennedy – The Nature Conservancy (TNC)

On phone:
Nick Ettema – FERC
John Ragonese – TransCanada

Jen: The purpose of this meeting is to discuss the FWS counter proposal on the Dwarf Wedgemussel (DWM) study and for TC to listen. We want to understand FWS reasoning for the proposal, which is outside of the relicensing study scope (e.g., outside of project area, historical comparisons beyond the relicensing baseline).

Katie: If historical surveys are within the period of current licenses, "currently" includes the length of whole license. Definition of "current" thinks it means the term of current licenses, not just recent operations.

Jen: The purpose of the studies is to collect baseline data under existing conditions and operations.

John: For instance, baseline water quality in 1976 is very different than what we'd find now.

Susi: Doesn't know FERC process very well, but under the Endangered Species Act (ESA), FWS wants to determine if changes in projects would result in harm to DWM. The population was healthy up to 10-12 years ago, and has since declined. If there was a change in project management, FWS needs to understand how that changed the DWM population. What happened to that population, and what needs to be done to avoid jeopardy and negative impacts, mitigation, etc? In the 1990s the Connecticut River area was considered the largest population of this species, now it is almost gone. Presence/absence and CPUE was higher here than in the south. Recruitment is difficult to get at.

John: FWS does not have an unreasonable perspective. But we are not sure how FWS will get to what they are looking for. If there is some measure of data that in fact says the species is in decline, what are the causes? In the erosion studies, we

are going outside of current operations (looking at erosion over time historically). How would you historically characterize what the causes are for DWM decline? It could be a lot of things other than project operations, which haven't changed except TC is now providing minimum flows from the upstream projects (Fifteen Mile Falls).

Susi: Ethan has surveyed a lot of locations.

Melissa: We don't have the privileged geodata.

John/Jen: TC thought we sent that, and will resend it.

Susi: We didn't see a shift, but we see absence. At Sumner Falls, for 3 years no one found DWM there. Hurricanes and storms should not affect them if they are submerged.

Ethan: There is difficulty with the substrate since historical studies didn't record that information. We can look now and quantify it, but has the substrate changed, and/or water level changed as a result?

Susi: We used to call the power company and knew their schedule of operations.

John: Yes, there is a certain level that is more variable due to the market, but the largest effect is not the market, but the water itself. For instance, Tropical Storm Irene. We are seeing much more water in the basin overall (annual basis and periodic events) over the last 10 years (8 of them almost 20% higher than normal) and very episodic rain events. TC is spilling more often throughout the year. Irene occurred in the late summer, where typical high water events are in the spring. Irene's inflow came primarily from the White River, not further upstream. If there was some movement of DWM population they probably moved very far away due to Irene. Need to ask – what are the significant differences as there were no significant operations changes.

Katie: We will not be able to answer all the questions within the timeframe. So what can we answer? One issue we won't be able to get at is density dependence. It is possible that DWM has been in long, slow decline and finally hit a level too low to reproduce. That can take a long time.

Melissa: One rationale for going outside of project area is in part, to put Ethan's data into context to compare. If we are seeing similar trends that would lead to one path vs. if there are different trends within and outside the project area. Even if it was Irene, we still have the ability to recolonize suitable habitat and determine how that is influenced by project operations.

Susi: Looking at areas not affected by Irene also puts it into context with other places in the watershed like the Asheulot River. Will DWM be adversely affected, especially with low populations that even small changes could affect?

Ethan: The Ashuelot was included in the 2009, 2012, and 2014 studies. The population there has declined too.

Susi: The benefit of the doubt goes to the species under ESA. FWS has to look at available information, and if not sufficient to make a strong argument one way or another, FWS has to look at the worst case scenario.

John: It would be great to have a lot of data. But, that would be an agency management goal. Given that these areas have had some history, and some change it seems that the need for information is related to what has changed in that environment. It would be great to have a broader sense of the species, but opening up another set of variables on another river could compound the issue. As a starting point, data should try to focus on what it is that can be identified (e.g., substrate is gone, sediment changes, temperature, WQ. etc.). Some of this data we will get from other studies and hopefully see if there is a condition that has changed within the project.

Katie: It may not be a change within the project; it only looks like the population has declined over the past 40-50 years. Without determining if there has been a similar decline in other rivers, CPUE has declined and presence/absence has declined.

Susi: Where did they go? There has been no significant change in land use. If it was Irene, did that hit the northern extent of the watershed? Have the parameters changed there and here? Anecdotally, we haven't seen anything change on the surface after Irene (substrate, etc.).

David: NH had a very different experience of Irene than VT did. There was a much lesser effect in general. You would have to check rain records on each tributary.

Susi: We are finding DWM on small streams in CT.

Ethan: Irene varied a lot geographically across the region.

Katie: If we are talking about resilience of animals, if anything would have been destroyed by Irene, it would have been tiger beetles and they weren't affected. It is possible that Irene had an impact, but if substantial that implies something else is going on too, otherwise wouldn't hurt the population on its own.

Susi: Under the ESA, FWS can't require TC to gather this information, but we need the best data to assess what's going on – 2-3 years of data is not enough.

Susi: We need to understand the population and stressors.

David: Tesselated darter is part of the DWM lifecycle. The largest Irene impact was on fisheries. VTDFW information shows 3-5 year period to reestablish populations of fish.

John: We are conducting a tessellated darter survey in 2015.

Melissa: Yoder is the only historical fisheries source; the darter survey will provide baseline data now.

John: Would not guess that we would see data to say there is a significant population shift in darter.

Jen: We did look at fisheries data for the PADs and there isn't a lot.

Melissa: The states look at game species. David raises a good point – one of the elements was to look for darter in DWM locations.

Katie: If we don't find any tessellated darters that would be a strong correlation.

John: The darter study is not restricted to DWM locations only. Other studies including fish assemblage and DWM will/did look for darter.

Melissa: re: FWS proposal, Goal 1 is done.

Ethan: There are DWM, just at low density, so they aren't gone. We found them at the lower end of Chase Island and we found 1 live one below the railroad just below Cornish covered bridge.

Susi: We had previously found them more broadly at Cornish, and at Wilgus state park.

Ethan: We found them in small numbers at Wilgus state park, Fort at No. 4 etc.

Susi: What is the difference between the impoundments and free flowing areas?

Katie: Habitat selection – we can't draw a conclusion that because a mussel is found that the habitat is adequate/suitable if there is not a viable population. We can't correlate presence with habitat suitability (i.e., the mussel could have been dropped there).

Melissa: Agrees that going to tributaries introduces more variables, but Lunenburg is on the mainstem and we have some data to help determine effects.

Katie: Rectify how to get the information needed to answer the questions while staying within the FERC licensing.

Jen: TC wants to understand the elements of the FWS counter proposal.

Melissa: We can wipe away the issue of population decline – we know that.

Ethan: Yes, we can agree that population has declined.

John: Where is the decline most noticeable – riverine or impoundments?

Ethan: There isn't good historical data for impoundments.

Susi: Sean Worley had found some mussels in impoundments during a different study.

Ethan: We have a lot of negative data.

Melissa: Charlestown is in the Bellows Falls impoundment.

Ethan: We surveyed there, and there are DWM near the Black River confluence.

John: We are saying that there is an indication that at least in riverine sections there is a population decline.

Ethan: DWM were never known below Bellows Falls (in the mainstem), only in the riverine section below Wilder.

John: These impoundments have been around longer than the 50 years of the current licenses. There is no new environment due to the projects. Wilder is a little different in that it was built in 1950s but the area had been previously impounded. Flows are more stable under projects, and based on Fifteen Mile Falls operations. We understand the FWS goal – to get a better understanding of what's going on, but how to tie that back to the project to try and meet the goal? If FWS wants to study periodically in the future, that is different than trying to be sure what the effects may or may not be due to the projects. TC is not sure that data for data's sake would get FWS any closer to their goal.

Melissa: We are trying to understand what if any project effect there may be to DWM. Go outside the project area to collect data to be used in effects analysis. Other than doing that, it isn't dissimilar to the target fish species.

John: The challenge is there are lots of variables. FWS has a perception that the TC variable is a significant one, but is it, in the context of where the species exist and those other potentially significant variables? We may need to back our way into putting projects operations in context, not via presence/non-presence alone.

Katie: The upstream population, we should try to determine if there has been a similar decline up there. If the population there is booming, then there is potentially an issue with the TC projects.

John: Minimum flows have changed drastically in the last 10-15 years (Fifteen Mile Falls new license) and clearly a different hydrology is going on up there as a result.

Katie: It is not a "therefore", but if there is a similar decline there, then that could help to rule out project operations. The goal is to sustain the population over time.

Ethan: The Lunenburg/Lancaster site is an impoundment of Gilman dam, similar to the upper reaches of upper Wilder impoundment where we found DWM. What we need is a free-flowing reach similar to Wilder riverine in the watershed – but there isn't one.

Melissa: You could still collect habitat data

Ethan: We did that a few years ago.

Katie: Does that data include all variables, nearby cover, etc.?

Ethan: Not all variables, no.

Katie: Embeddedness, local cover, and temperature have become important variables.

Susi: North Umberland NH is the upper extent of DWM found. Is that in the upper extent of Gilman dam?

Melissa: DWM was also found at then upstream end of Moore impoundment.

Ethan: There is a short 2 mile section between Gilman Dam and Moore reservoir. At Lunenburg and any impoundment site, we could have recorded exact water depth, but that won't provide the data FWS wants. There isn't critical habitat in those areas.

Katie: Hypothesis - they are in upstream portions of impoundments as a velocity refuge – still riverine but slower moving. They aren't randomly located, they are there on purpose. And there aren't enough velocity refuges as there used to be.

Ethan: That is possible.

Susi: If we took Lunenburg out as being too different, then the question is – what are conditions now and have they changed over time? We haven't had reproduction. If they are gone, it is hard to believe that they were all swept away during Irene. So what data do we need and how collected, to understand what's happening to the population – do we write off recovery? Is any change in the project management going to preclude recovery?

Katie: Is Lunenburg habitat similar to the upstream section of Wilder? Are there any sections in the riverine portion of Wilder that could come close to that?

John: The area at Cornish/Chase is affected by the Bellows Falls impoundment. At the upstream side of Sumner falls there is a velocity refuge. Maybe you do look for habitats that appear to be potential flow refuges.

Ethan: We look at refuge habitats. There are a lot in the riverine section, but we haven't found DWM even in those places. Below Sumner Falls was a great refuge, but the data from this study and other TC studies are going to be able to show where those refuges are. We are pretty sure that will correlate at least with elliptio.

Katie: What about the effects of peaking?

John: Maybe TC should be pulling together a lot of the existing data. We should aim toward what are we going to do next year, and FERC may be looking at January timeframe for study plan revisions.

Nick: It is unlikely that FERC would require off-site data collection and trend analysis since there is no nexus to project operations and we can't distinguish project operational effects.

John: We can go back and look at what we have for data, and is there more information than we know about? To take Katie's hypothesis – in upper impoundment refuges, what distinguishes those areas? We may have some of that data or maybe we can adjust other studies to increase the amount of that type of data collected.

[John got off call]

Nick: I need to get off the call too. Reiterates that FERC is not looking at regional trend of species. When FERC is submitting issues about the study plan within a few months, everyone needs to address the study criteria, especially in 18 CFR 5.15(d) and (e) since TC has already filed its approved study plan.

Melissa: You say "approved study plan", but TC has also acknowledged they can't complete it due to the Phase 1 results, for instance the video monitoring. FERC hasn't approved the revised study plan (from August 2014).

Nick: The Phase 2 plan was adaptive and more up in the air. Just keep the criteria in mind when submitting comments.

David: Nick's statement indicates that FERC does not consider trends throughout a watershed, even though it is a connected system. I am surprised to hear that in relation to ESA species.

Nick: FERC would consider trends, but there would be disagreement on the obligation of a licensee to provide data for those trends. That information should be provided from existing information.

Melissa: FERC would consider data beyond the project affected area, but not require TC to collect that data?

Nick: Yes.

Melissa: FWS needs to revisit the counter proposal, based on the current un-inhabited areas and low populations.

Ethan: It is hard without good baseline data. 95% of the channel never got surveyed.

Melissa: Could look at tessellated darter habitat.

Susi: You could do bank to bank transects at Cornish/Chase Island and other places where DWM had been found by FWS. That habitat is not consistent from Wilder dam to the head of [the Bellows Falls] impoundment. Did something change in the habitat (e.g., flows, temperature, and host fish)?

Ethan: Some of that information is being planned to be gathered, for instance in the tessellated darter study.

Maryalice: FWS could also look at the tessellated darter study plan and request locations to survey, as TC will be doing stratified random sampling of potential darter survey locations this fall.

Susi: At the head of impoundments, what is it that makes these good or better habitats and is there a way to bring back riverine sections to be better habitat?

Katie: Darter, but there used to be other hosts too.

Ethan: Barry Wicklow did that work – includes slimy sculpin (in cold water tributaries) and darter, potentially salmon.

Melissa: McLean and Ross looked at darter.

Susi: For instance, spring water bottling plants, draw groundwater from places where it would normally upwell into a river (combination of velocity and temp). We want to untie enough of the natural effects from project operations to determine adverse effects. FWS doesn't have an obligation to collect any data (e.g., land use over time, water withdrawals). FWS only takes the data they are given and has to draw conclusions based on the information they have. It would benefit TC to collect more data.

Katie: For all these variables, we know with confidence that most river processes are driven by flow. The biggest variable on an evolutionary scale would likely be project operations.

Susi: TC is telling us that operations haven't changed, but we have to understand that with data.

Katie: Pre and post deregulation changes have not been evaluated. Maybe TC should do this to support their position of no operations changes

Ethan: Mussels respond to extremes not averages, and those extreme flows are outside of project operations.

Susi: We need to understand how going from minimum flow to generation flows changes habitat, velocity, etc.

Maryalice: The instream flow and hydraulic model studies will provide this data.

David: Compare historic presence/absence above and below the White River in both impoundment and riverine settings. This river doesn't have bedload high water events, but Irene moved bedload. It was 2 years after Irene before insects even returned.

Melissa: Any DWM recruitment evidenced?

Ethan: Yes, young animals (small DWM, 20 mm range) were found upstream of Wilder and Bellows Falls impoundments. We would want at least 200 animals for an adequate sample. Shell length measurements are used to determine recruitment (age).

Susi: I recognize we can't do statistical analysis. In riverine sections, we probably can't verify long term persistence. FWS should re-group on this issue. We would like to see a self-sustaining population, and understand why it isn't where it was and what can be done to support recovery.

Ethan: There is a lot we want to understand. What effect flow operations may have, will be very difficult to discern that from other variables. DWM has the lowest longevity, fecundity and its host issues. It is the most vulnerable species even without project operations etc. There are low density thresholds.

Katie: We need to make sure that project operations don't contribute. Of those pockets left in the area, if they are good habitat - can they be replenished?

Susi: Over the period of the current licenses how many times have we had significant events and/or are project operations having incremental effects?

Melissa: Habitat suitability criteria (HSCs) and the hydraulic models will allow for evaluation of project effects. We need to have a high level of confidence in HSCs and we won't have the data to necessarily do that in robust way.

Katie: We need to make sure that habitat data is tied to locations where there are populations.

Ethan: With regard to HSCs, I suspect there is no specific threshold, more like a range of conditions.

Susi: Question to TC - how closely can FWS work with Ethan?

Jen: TC would like to know what's going on.

Susi: Is this an opportunity for a smaller group to hammer out technical details, etc.?

Jen: TC will want to be involved in those discussions. Copy TC on emails, and TC also would want to be on calls/meetings. Larger than that, the idea behind the working group was to do this. Not sure you'd get much smaller than this group today.

Melissa: It seems like it would be more efficient to see the raw data that has been collected so as not to assume there is no data.

Ethan: We had a study plan and did a lot of 2014 field work. All the data collected in his career over the last 14 years is data that would be used in developing HSCs along with the 2014 data. We are now implementing a study plan. What FWS is talking about seems to be wanting that data in order to develop a study plan.

Katie: We want to help develop HSC.

Ethan: We were at least 70% done with the 2014 study plan field work before the FWS counter proposal was received (September 4, 2014).

Katie: I am sure that the data collected will get us far.

Ethan: As an update, we found 1 DWM at Cornish/Chase after the ISR summary and study results meeting. Co-occurring species will provide more insight. We did over 400 quadrats. We reviewed the 2014 work at ISR meeting, and added 2 transects on the north side of Cornish covered bridge and recorded exact counts of co-occurring species.

Susi: Next steps?

Jen: Suggest we meet again, if the working group re-evaluates the FWS counter proposal and come back to TC? And is there information TC has that is needed?

Susi: We need Ethan's data in geodatabase.

Jen: We thought TC had sent it, will resend.

Maryalice: Users of the privileged data can use the excel spreadsheet from the ISR and convert to kmz or Arc GIS.

Jen: The working group should also review the tessellated darter study plan and other studies to see if they want to suggest study sites in those studies that might relate to DWM.

Attachment 5

Study 31 – Whitewater Boating Flow Assessment
Consultation Conference Call Summary – October 7, 2014

Participants:
John Ragonese, Jen Griffin, Matthew Cole, Jason Canaday, Dennis Goodwin - TransCanada
Jot Splenda - Louis Berger
Adam Beeco, Brandon Cherry - FERC
Bob Nasdor - American Whitewater
Tom Christopher - New England FLOW
Norm Simms - Appalachian Mountain Club

John Ragonese initiated the call and summarized the current situation and lack of rain and water in the Connecticut River system and that there are challenges getting instream flow studies done this month. TransCanada had success in having the agencies agree to curtail the increased minimum flow releases scheduled to begin October 1, from the Fifteen Mile Falls Project; Moore Reservoir is currently at 796-ft elevation right now, a historical low for this time of year. TC Operations Coordinators, Jason, and Dennis gave the latest forecasts which were calling for a small amount of rain, but not enough to increase storage at Moore, and continued dry weather after the rain. John R. confirmed that this study cannot continue this month as originally planned and suggests rescheduling during the tail end of the spring runoff (May-June) period in 2015. Tom Christopher agreed this is the best path at this time and everyone prefers to do all the boating flows during one weekend rather than do some now and some later.

The boaters expressed their interest in continuing to have conversations with TransCanada regarding the study plan and relicensing process moving forward related to potential ramifications of conducting the study with the fish dam in place. Specifically, that the study would not capture the boating conditions at, and below the fish dam. John R. agrees this area would be excluded from the study; however this section represents a very short segment of the overall reach and not boating this segment shouldn't be a driver to suggest the study doesn't comply with the study plan. The section below the fish barrier dam can be described with video, photos, flow measurements, etc.

Jot Splenda provided a brief update on the Sumner Falls boating study: the data has been entered into a database and preliminary results have been reviewed;

however, a draft report has not been prepared yet for TransCanada or the boaters. Jot S. also indicated that comments on the Bellows Falls surveys were received from Adam Beeco and Norm Simms and that he will redistribute the revised versions to call participants when we reconvene conversations in March.

TransCanada operators will look at historical data and provide John with a window of about three weeks of optimal flow conditions to help guide scheduling the study next spring. Adam Beeco recommended giving boaters three weeks' notice before conducting the study to ensure sufficient boater turnout. John R. described the lack of storage within the Connecticut River system and reiterated the need to understand the best window of opportunity for planning purposes as it's difficult to give long lead times on this river system for the flows requested on this study. John R. also suggested that boaters target a higher number of potential study participants to hedge against lower boater numbers once a date has been set which everyone agreed was an appropriate way to proceed.

The boaters will prepare a safety plan after they conduct another field visit to finalize safety protocols and responsibilities and have that available by March.

The study group will revisit these conversations in March once TC operators have a better understanding of the snow pack and hydrologic conditions in the Connecticut River this winter.