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Re: **Concerns Remain Relative to Eversource Seacoast Reliabilty Project Protecting the Health of the Little Bay and the Great Bay Estuary**

Dear Bill,

I want to thank you for your letter dated July 10, 2017, in regard to the proposed Eversource Seacoast Reliability Project currently before the NH Site Evaluation Committee (SEC), and the additional analysis and study your consultants have performed as a result of questions and concerns raised by Durham's independent experts which we shared with you last February. Because I understand you are committed to safe and responsible construction in Little Bay, I believe it important to share with you directly my general understanding of the concerns that our experts still have with the project as modified and presently proposed before the SEC.

After reviewing new and revised material submitted by Eversource, a joint testimony was prepared and submitted by the GeoInsight-Woods Hole Group technical team and Dr. Steve Jones of the University of New Hampshire to the SEC on July 24, 2017, to present concerns that still remain and must be addressed to adequately evaluate the risks and uncertainties for the Little Bay crossing component of the SRP. I hope you sympathize with our concerns that at this time there are inadequate protections to ensure that no unreasonable adverse effects on water quality and the natural environment will result from the SRP.

Without technical data, peer-reviewed literature, and/or industry white papers that demonstrate the expected sediment mobilization in Little Bay from the jet plow or hand jetting activities to the proposed (and recently revised) depths, it is not possible to judge the appropriateness of the 2 foot compositing interval used for the 2017 Sediment Characterization Report or to make an informed evaluation of potential ecological risk from exposure to sediments and associated contaminants suspended in the water column.

The sediment concentrations used in the mass balance model calculations are derived from two different datasets – the 2016 0- to 4-foot composites and the 2017 0- to 2-foot composites. This represents an inconsistency in the water quality model inputs and, therefore, an uncertainty in the mass balance model calculations. A source of additional uncertainty in the mass balance model is that the contaminant concentrations used in these calculations may significantly underestimate the concentrations on the materials that are actually suspended from

jetting activities. Since the heavier sands (which do not carry contaminants) included in the bulk sediment composites will rapidly fall out of suspension, it is the concentration of contaminants on the silt fraction that should be used in the mass balance model in order to achieve conservative water quality estimates.

The assumptions for background concentrations of contaminants in the water are not conservative. The background concentrations of organic contaminants were assumed to be zero, which is highly unlikely given (1) land use patterns in the adjacent and tidally-connected watersheds are likely to contribute organic contaminants such as PAHs via runoff; (2) Little Bay has been listed on the New Hampshire 2014 List as "Not Supporting" for dioxin and PCBs; and (3) the wide distribution and persistence of organic contaminants in the environment.

Eversource has not presented model results for a worst-case scenario and the potential upper bound on suspended sediment concentrations and plume footprint is not currently known. Since the interpretation of the water quality modeling is dependent on the maximum total suspended solids results from the dispersion model, it is possible that contaminant concentrations could exceed acute water quality criteria, and those exceedances could occur over a larger area and over a longer period of time. This inadequacy in dispersion model sensitivity analysis represents a large uncertainty for the water quality modeling, and highlights a significant obstacle to the design of adequate controls for the protection of aquatic life.

Your team has submitted a Revised Environmental Monitoring Plan, which established a mixing zone around the construction area that is designed to be permissive of these water quality violations. In reviewing the documentation of the proposed mixing zone and the Water Quality Standards, it is clear that Eversource has not adequately met the Criteria for Approval of Mixing Zones (Env-Wq 1707.02). This rule states that the NHDES shall not approve a proposed mixing zone unless, among other requirements, it meets the criteria in Env-Wq 1703.03(c)(1). Env-Wq 1703.03(c)(1) states that "all surface waters should be free from substances in kind or quantity that...produce...turbidity that is not naturally occurring and would render the surface water unsuitable for its designated uses." It is counter-intuitive and does not achieve the goals of the New Hampshire Surface Water Quality Standards to allow a mixing zone specifically for abnormal turbidity and related contamination when the rules clearly state that abnormal turbidity is not to be permitted even in mixing zones. Eversource should clearly and unequivocally demonstrate that the proposed mixing zone meets the Criteria for Approval (Env-Wq 1707.02).

In Eversource's initial analysis of sediment quality, the argument that high levels of arsenic in sediment are due to a naturally occurring deposit does not preclude the sediments from further analysis. Mobilizing sediment (that would otherwise have stayed in place) to the water column as a result of the SRP installation could have an impact on aquatic biota (based upon the available sediment information). Additionally, the identification of nutrients and microbial contamination (especially near shellfish beds) should not be ignored. Eversource has only made a preliminary (non-quantitative) assessment of nutrient impacts to aquatic biota, and no assessment of microbial concerns.

In the Revised Water Monitoring Plan, Eversource is only proposing to monitor total suspended solids and not critical contaminants (nitrogen, bacteria, metals, toxic organic

compounds, in water and in shellfish), the analysis of which is necessary to verify that there are no impacts to aquatic organisms. The monitoring plan does not evaluate impacts to the oyster farms and/or natural oyster beds located within the proposed mixing zone and does not explain how they will mitigate degraded sediment and water quality.

Your team's assessment of nitrogen potentially underestimates nitrogen loading. Our technical team calculated that the amount of N loading to the estuary resulting from hand jetting and jet plowing could be comparable to the discharge of total N from the Town Wastewater Treatment Facility (WWTF) over a ten month period.

The sediment quality report does not adequately address potential impacts upon oysters and other organisms in the Little Bay environment from bacterial contaminants. *Escherichia coli, Salmonella spp.*, enterococci, *Giardia lamblia, Cyrptosporidium parvum, Clostridium perfringens, Vibrio parahaemolyticus, V. cholerae,* and *V. vunificus, and Aeromonas hydrophila* have been documented as being present in sediments, water, and shellfish in the Great Bay-Little Bay area and all can include pathogenic strains. The sediment quality report does not adequately address these potential impacts upon oysters and other organisms in the Little Bay environment.

The revised modeling report states the winds from the most significant wind event observed in the data were blowing from the NE to ENE, with peak wind from the NE, and then blowing from the NW for other strong wind events. These winds could certainly affect circulation in Little Bay given its north-to-south orientation and measured fetch lengths of 1.8 miles from NE to SW and 2.0 miles from NW to SE. These are considerable distances over which sustained winds can produce surface stresses and induce currents capable of suspending and transporting sediment.

Given that the sediment plume from the jet-plow activity is shown to extend to the water surface in the shallow tidal flats and that the hand-jetting may be conducted in water depths as small as 1 foot, there is sufficient reason to expect winds can affect sediment dispersion and contribute to additional and prolonged resuspension of sediments. The modeling should evaluate the expected range of wind conditions that will occur during the burial process, and how that affects the sediment plume characteristics and subsequent deposition. This would also help inform whether certain constraints need to be considered during the construction process due to predicted meteorological (wind) and tide (depth) conditions.

Based upon what was presented in the SRP Modeling Report, sensitivity testing was conducted with the SSFATE model to evaluate modeling parameters that can be varied within the range of probable working conditions related to: 1) the jet plow advance rate, 2) the sediment loading to the water column (loss rate) from the jetting process, 3) tidal variations (spring and neap) during the jet-plow burial, as well as 4) the resuspension of sediments after the jet plow burial. These sensitivity tests show the model predicts changes in the sediment plume that would be expected (i.e., there are higher SS concentrations with a higher sediment loss rate); however, the variation in the sediment plume and deposition results were not quantified to fully characterize the range of potential sediment dispersion that may occur as a result of the burial process.

For example, the model simulation conducted where the resuspension of sediments was activated in SSFATE predicts a plume with much greater extent and increased durations of exposure than the "base case." This simulation would also result in increased deposition (both extent and thickness), although these results were not presented. With the shown resuspension of sediments predicted to occur, this option should have been activated for all model simulations that were conducted, and the results quantified in terms of the extent exposed to different SS concentration levels, the duration of exposure, and sediment deposition.

Additionally, based upon the model sensitivity results, model simulations, which represent more of a worst-case scenario, should have been conducted to better understand the potential sediment plume and deposition. There is still much uncertainty based upon the modeling conducted regarding the sediment plume extent, SS concentrations, duration of exposure, and deposition that will occur with the cable burial, so there is the need to better quantify the upper bounds of the predictions.

Wind forcing should be included in the sensitivity analysis if it cannot be demonstrated that the effects are minimal for neap and spring tide conditions. These additional simulations would help in representing the full range of probable varied combinations of model parameters and better quantify the potential sediment plume and deposition.

With the estuarine environment of Little Bay having shallow tidal flat areas dominated by silts and the proposed cable burial methods, further confidence in the sediment plume characteristics and deposition predicted by the SSFATE model could be achieved by conducting a pilot study using proposed construction methods and a field program to characterize the sediment dispersion that actually occurs. This would allow for better quantification of the amount of uncertainty that should be considered when evaluating the results.

The 2017 grain size data indicates that the sediment contains more silt and less clay than assumed in the original sediment dispersion model, and this could have significant implications for suspended sediment in Little Bay during and after the proposed construction activities. Clays have several properties, including a high surface area and electrostatic attraction, that cause clay particles to flocculate and settle into a relatively cohesive sediment with a relatively low potential for resuspension. Silts do not have these properties and tend to settle into relatively incohesive sediment that has a relatively high potential for resuspension, particularly in areas of high current velocities, such as in this project area. Therefore, to account for the likely resuspension of the incohesive silty sediment, the resuspension component of the SSFATE model should be run for each of the completed sensitivity analyses, not just the base scenario.

According to information provided by Normandeau during the July 11, 2017 technical session, sediment suspension and deposition associated with the removal of existing cables and during cable clearing procedures (pre-lay grapnel run or PLGR) was not modeled. It is stated in Eversource's cable removal plan that turbidity levels during cable removal procedures are "expected to be low and ephemeral;" however, no basis for this statement was provided. It is also stated that the PLGR utilizes a 2-inch thick, 1-meter deep blade that will be dragged through the centerline of the proposed cable route. Although the details of this procedure are not

provided, disrupting up to 1 meter of sediment would likely cause significant sediment suspension. We consider this to be an omission that should be evaluated individually and in context of total project impacts.

In summary, our technical team concluded that Eversource has not adequately demonstrated that the range of possible or even likely conditions under which cable laying will occur will ensure adequate protection of the Little Bay ecosystem. Fundamental issues were identified in February 2017 that still remain to be addressed by Eversource. These deficiencies have implications throughout the rest of the evaluation that are enumerated in the Joint Testimony submitted by the GeoInsight-Woods Hole Group technical team and Dr. Steve Jones. The most significant of these deficiencies are:

- failure to run the SSFATE model using combinations of likely scenarios during the sensitivity analysis. By not evaluating these combinations, the potential worst-case conditions that may be encountered during cable laying activities are still unknown, and uncertainty remains in the sediment dispersion that would occur;
- the model did not account for the potential compounding effects of wind-driven currents on sediment transport or show that such effects would be minimal. By not considering these factors and other probable conditions, the base case model underestimates the suspended sediment concentrations and the deposition that would occur;
- the ecological risk assessment did not consider modeled worst-case scenarios in evaluating potential ecological risks; therefore, such risks may be underestimated;
- Eversource has not demonstrated compliance with New Hampshire Surface Water Quality regulations, specifically including the establishment of a mixing zone

Based upon these factors and the issues presented in the Joint Testimony submitted on July 24, 2017, our independent technical team concludes that the residents of Durham and the Seacoast cannot be assured that there will be no unreasonable adverse effects on water quality and the natural environment of Little Bay, or that the impact on natural resources will be manageably limited in Little Bay as a result of the SRP as it is currently proposed.

We look forward to continuing to work with Eversource as part of the SEC process to address the concerns of the Durham community. I hope you will take your stated commitment seriously and revise SRP's plans to adequately assure us that you will indeed protect Little Bay.

Please do not hesitate to contact me should you have further questions regarding this or any other matter.

Very truly yours,

Todd I. Selig
Administrator

cc: Madbury Board of Selectmen
Martha Roy, Newington Town Manager
Denis Hebert, Newington Planning Board Chairperson
John Bohenko, Portsmouth City Manager
Tom Irwin, Conservation Law Foundation of NH
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