Exhibit 2

TO: Robert Hust, Assistant Director   Date: October 25, 2013

           Planning and Standards Division

           Bureau of Water Management and Land Reuse

           Department of Energy and Environmental Protection

Dear Mr Hust

I am writing in response to the Department's request for comments concerning the proposed Classification of streams in the Thames River basin. It is my belief that the DEEP's proposed classification for segment number 109,004,223 is in error and that a Class 1 designation should be assigned to that segment in the final adopted Classifications for the basin.

Segment 109,004,223 was assessed by Department staff following the procedure described in *Methodology for Defining Preliminary Stream Flow Classifications Pursuant to Sections 26-141B-1 to 26-141B-8 of the Regulations of Connecticut State Agencies*. This guidance document describes how the Department employed the 18 factors for consideration listed in the regulation to arrive at a proposed classification.

Step one in the process requires identification of streams that meet the criteria for mandatory designation as Class 3. These factors include location immediately downstream of an existing dam that impounds a public water supply, intersection with a level A aquifer protection area, close proximity to an existing dam which impounds water subject to a consumptive diversion, and segments identified as potential water supply sources where a significant investment in development as a public water supply has been made. None of these conditions apply to segment 109,004,223.

In step 2 a "Hydrologic Stressor Index" is calculated based on geospatial information relating to 4 factors that are known to have significant potential to alter natural stream flow conditions – impervious cover, density of dams, diversions and return flows in the upstream watershed. Each of the 4 factors is assigned into one of three categories (high=3, medium=2, low=1) and an overall index calculated by adding the metric values for each factor to arrive at a cumulative estimate of the hydrologic stress. It is important to note that there is error associated with the quantification of each factor and that all factors are weighted equally in the calculation of the cumulative index although it is arguable that each factor has unequal influence on altering natural stream flow at specific individual sites. With regard to the

impervious cover metric, proximity of developed areas to the site is a significant factor in determining the impact of storm water runoff and reduced groundwater recharge on stream flow at a specific segment downstream. The impact of diversions and return flows are also highly influenced by the location of these stressors within the watershed upstream of the segment. "Dams" are defined as those larger than 15 feet in height or that impound greater than 15 acre-feet. All dams that meet this criteria are treated equally in calculation of the dam density metric yet clearly the impact of a dam on stream flow will be greater for truly large dams in comparison to those that barely meet the criteria for inclusion in the analysis.

The Department's analysis for segment 109,004,223 assigns a value of "1" to the impervious cover metric, the diversion metric, and the return flow metric and assigns a value of "3" to the dam density metric. The cumulative hydrologic stressor index of 6, (1+1+1+3), is at the low end of the range for Class 2, suggesting minimally altered stream flow conditions currently exist at this site consistent with a Class 2 designation.

Segment 109,004,223 however is one among only a few segments within the State where actual monitoring data exists that confirms that current flow conditions meet the criteria for Class 1. A USGS stream gage (01126950) is located in this segment and data collected at that gage between 1961 and 1973 was utilized in development of equations used to define natural stream flow conditions for Connecticut. The decision to incorporate data from this site in that analysis was subject to intense scrutiny by hydrological scientists at the USGS as well as by the members of the DEP Science and Technical Advisory Committee that developed the scientific underpinnings for Connecticut's Stream Flow Regulations. Flow conditions at this index or reference, site were used to define natural flow conditions by the Department as well as by independent outside scientists whose work was subject to rigorous peer review. This information, at the least, must be considered to be of higher value and reliability than that used by the Department in making its preliminary assignment of Class 2 which was dependent primarily on the high value for the dam metric, a landscape feature which has not changed since the USGS data was collected.

In step 3 additional factors are considered that may result in either an increase or decrease in the classification resulting from step 2. There are 10 specific factors in this group as well as a category allowing consideration of "other" factors unique to a specific segment that warrant consideration. Each factor is assigned a "+" or "-". If the number of +'s exceed the number of −'s then a change is made to the class resulting from step 2 (e.g. Class 2 becomes Class 3). Each of the ten factors is given equal weight. It is important to note however that two factors, "potential public water supply" and "identified by DPH" are redundant measures of a single human use metric since this information derives from a single source – the Water Supply

Plans submitted by public water utilities. A positive value for one invariably results in two plus values.

With regard to segment 109,004,223, two increase metrics (potential public water supply and identified by DPH) and a single decrease metric (USGS Index gage) are reported. This by itself would argue for an increase in the classification. However, the Department has indicated that factor 16 "restoration potential", while specified in the regulation and relevant to the assignment of Class, was not considered in proposing its classifications for the Thames basin but will be considered when adopting classifications on a case by case basis. It seems reasonable and prudent to consider all available information at the time of initial classification and to ignore information specific to a segment that leads to a misclassification of that segment shortsighted. As noted above, there exists a large body of highly reliable, quality controlled data confirming that stream flow in segment 109,004,223 exhibits all the characteristics of a natural free flowing Class 1 stream. On this basis alone, the "restoration potential" factor should be assigned a "-" value since no effort or expense is required to restore flows to a condition that meets the narrative standard for Class 1 waters.

The arguments presented above provide a solid basis for assigning segment 109,004,223 a preliminary Class 1 following the procedure for Step 2 and retaining that designation following completion of step 3. However, the regulation also provides for consideration of "other factors" which may be relevant to a specific segment's classification. It should be noted that reliable monitoring data exists for only 27 sites in Connecticut that exhibit the natural flow characteristics necessary to qualify as reference sites for the purpose of defining natural flow conditions. Each represents a significant investment of public funds to provide the information necessary to support the scientifically-based water management policy envisioned under the recently adopted regulations. Among these, only 9 are currently active as a result of cut backs in public funding for monitoring activities. Seven sites are located in the Thames basin of which only three are currently active. The loss of one reference site in this basin represents a significant decrease in the ability of scientists to further define and quantify what conditions constitute "natural flow" and seriously impair future efforts to manage Connecticut's water resources in accordance with sound science.

It is also noteworthy that the Department has utilized data characterized as "other factors" to adjust its proposed classifications for several streams. Specifically, large reaches of the Quinnebaug and Shetucket Rivers encompassing multiple segments have been given a proposed Class 3 designation due to "severe hydrologic alteration". This precedent was established based on review of USGS gage information specific to those segments, data similar

to that I have cited as a reason to modify DEEP's proposed classification for segment 109,004,223.

Environmental science is by necessity a comparative endeavor. Our understanding of how natural systems work and how to manage our natural resources effectively is based on comparing managed systems with those that function with minimal human influence. Reference sites, particularly those with a long period of record describing conditions across a range of climatic change are an invaluable resource. Water resource management in Connecticut cannot be based on good science if reference site data is not available. One of the legislative directives to the Department in PA 05-142 was to base Stream Flow regulations on the best available science. Currently, the best available science relies on the data from reference sites such as segment 109,004,223. A Class 3 designation would jeopardize future use of this site as a reference since management of the resource consistent with meeting the standard for Class 3 (moderately altered) would result in this segment no longer adequately reflecting natural conditions.

Assigning a Class 1 designation to this segment in no way diminishes its potential for future use as a public water supply. The conditions that result in consideration for that use will remain and a change in classification to allow greater human use as a water supply as opposed to its current human use as a reference site to support water management policy decisions at some future date are allowed under the regulation. Nothing is lost by assigning a Class 1 designation to segment 109,004,223. However, allowing for human use of this valuable resource as a water supply without first considering alternatives as part of a broader water supply system would be short sighted and unnecessarily damaging to Connecticut's ability to manage its water resources according to sound scientific principles. This not a question of balancing human and ecological uses for water but rather balancing competing human uses – as one of numerous potential future water sources within a water supply system, or as one of a very few reference monitoring locations that are necessary to define natural flow conditions in order to implement Connecticut's water management programs and maintain a firm scientific basis for Connecticut's water management program.

Sincerely,

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