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ASE 5825

January 8, 2014

Acton Conservation Commission  
472 Main Street  
Acton, MA 01720

Re: 114 River Street - NOI

Dear Commission Members:

Please be informed that this office has been retained by Adria Cohen and others to review the Notice of Intent and related documents filed with the Commission for the construction of a single family house at 114 River Street.

We note that the Plan on file with the Commission is dated as being revised on 7/27/01 and site conditions should be confirmed as accurately depicting present day site conditions, including the delineation of wetlands and the mean annual high-water line of Fort Pond Brook. Any confirmation should be stated on the Plan by the professional responsible for the Plan.

The Plan identifies the applicant as Winding Brook Realty Trust and the Notice of Intent identifies the applicant as Westchester Homes, Inc. This discrepancy should be corrected.

The construction of a single family home is allowed by 310 CMR 10.58(4)(d)3 if the performance standards of 310 CMR 10.58(4)(d) are met to the maximum extent feasible. It is our opinion that this is not true and the project should be redesigned to better meet the standards established by the Wetlands Protection Act, as presented below.

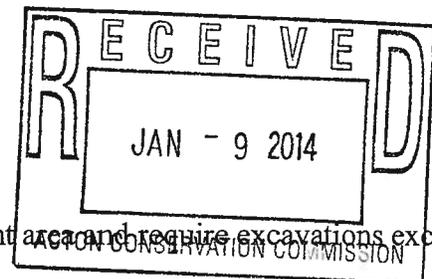
The Act does not allow an applicant to maximize the economic return on a project and we believe that an Alternative Analysis should be prepared to determine if the proposed development is the most suitable and that others will not decrease the adverse impacts to the Interests of the Act and the Purposes of your Bylaw.

***Plan Accuracy***

The Plan does not depict existing conditions.

***Extent of Alterations***

The project will alter over 10,000 square feet of riverfront area and require excavations exceeding 15 feet in depth.



The Plan states that blasting will be required and the applicant should prepare an estimate of the volumes of materials to be removed to allow the Commission to better judge the time required for construction and the number of vehicle trips required to effect removal.

### ***Subsurface Conditions***

The site is shown to be located on a surficial geologic formation known as a ground moraine [USGS, Hansen 1948], which is confirmed by the NRCS classify the soils as being of the Paxton Association.

Ground moraines consist of a thin veneer of glacial till deposited over bedrock and till, or Paxton soils, typically exhibit a perched groundwater table 24 to 30 inches below the ground surface.

The surface of the bedrock will most likely be undulating and valleys should be expected along with fractures in the bedrock making the direction and extent of groundwater movement difficult to determine.

It must be assumed that all but shallow excavations will be below groundwater and will encounter bedrock.

### ***Groundwater Interception***

The excavations will be below the groundwater table and therefore intercept groundwater. A four to six foot deep [or to bedrock] subdrain is shown with the apparent purpose of intercepting groundwater before it reaches the required site excavations. The drain will most likely not intercept groundwater flowing through bedrock valleys or fractures. No invert elevations are provided for the subdrain.

If, the subdrain is ineffective in intercepting groundwater earthen materials could be transported through the "riprap" shown on the slope detail or decrease the bearing capacity at the toe of the slope causing a slope failure.

The basement is shown to be at elevation 165 and 15 feet below the exiting ground surface. It must be considered to be below the groundwater table and bedrock. The garage slab is shown to be at elevation 161. A foundation drain is not shown and any groundwater intercepted by the buildings foundation would flow down the driveway onto River Street. No street drainage system is shown in River Street and a direct discharge to Fort pond Brook must be assumed.

### ***Groundwater Recharge***

Without any substantiating information it must be assumed that any recharge works must be near the ground surface if the necessary recharge is to occur and if adequate storage of runoff is to be provided for.

No calculations of the increase in runoff from the 10,000 square feet of alterations and the addition of impervious surfaces have been presented and the applicant should be required to present the calculations necessary for the Commission to determine impacts on the various Interests of the Act. While the Massachusetts Stormwater Standards do not apply to projects consisting of a single residential structure they due provide a metric for designing and determining impacts.

The drywell detail indicates that its bottom is 5.5 feet below the ground surface and it must be considered as being within the groundwater table.

The short infiltration trench located downhill of the drywell will result in a discharge onto River Street

No detail is provided for the infiltration trench on the east side of the house, but by interpretation we have determined the bottom to be 7 feet below the ground surface and within the expected groundwater table. No calculations were presented to document its capabilities and we expect that any intercepted ground water or surface water from it tributary area is likely to flow to River Street.

### ***Details***

The details lack the specifics required to control construction including, but not limited to, the type of "filter fabric" to be utilized and the placement of riprap.

The roof runoff recharge trench is offset from the eave and earthen materials generated by the impact of cascading runoff are likely to be transported to and clog the trench.

### ***Erosion Controls***

Limited erosion control measures are provided by the Plan and given the extent and nature of the alterations greater details including a construction sequence with specific controls to limit impacts during each construction process should be provided. At a minimum the Plan should be revised to include a tracking pad, dewatering methods, control of refuse, dust abatement and the type of explosive to be utilized.

The barriers shown near River Street will, if they intercept runoff, result in a concentration of runoff and result in erosion onto River Street and to Fort Pond Brook.

### ***Alternative Analysis***

The proponent states that the house is of moderate size, which does not necessarily mean it is of the minimum size or of the only shape or orientation possible.

Any alternative analysis should address the purchase price of the property as the applicant is not the owner.

***Blasting and Excavations***

Blasting and excavations could impact adjacent properties including subsurface sewage disposal systems.

***Adverse Impacts***

The interception and possible direct routing of groundwater onto River Street and then to Fort Pond Brook will adversely impact groundwater supply and decrease low flow augmentation during periods of draught.

Lacking calculations pertaining to runoff and the apparent inadequacies of the recharge systems the Commission must assume that stormwater damage will be increased and flood control will be adversely impacted.

Due to the inadequacies of the erosion control methods proposed and increased possibilities of erosion during and after construction, pollution of Fort Pond Brook is likely.

The addition of runoff from impervious surface and interception of groundwater directed to River Street will increase the transport of materials from the street and other areas to Fort Pond Brook resulting in pollution and damage to fisheries.

The Commission should assess the adverse impacts on the underlined Interests of the Act and purposes of your Bylaw as incremental adverse impacts.

***Summary***

It is our opinion that the proponent should present a thorough alternative analysis and fully address subsurface conditions, control of groundwater and runoff during and after construction to allow the Commission and our client's to adequately determine the projects impacts.

On behalf of our clients and other citizens of Acton we thank you for any considerations given to the contents of this letter.

Very truly yours,



Mark T. Donohoe, PE  
for: Acton Survey & Engineering