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MEMORANDUM

TO: Christine Nelson, AICP

DATE: October 27, 2004

FROM: Geoffrey L. Jacobson P.E.

PROJECT No.: 0719-0011

SUBJECT: The Preserve – Conceptual Standard Subdivision Review

COPIES: R. Snarski, CPWS, W. Goodfriend, PhD, L. Bonin, S. Lockett, S. Martinson, RS, C. Costa, M. Branse, Esq., Alan Plattus, A.I.A., B. Hillson, P.E.

This memorandum summarizes a joint review of the Conceptual Standard Subdivision conducted by Richard Snarski, Wendy Goodfriend and me. This review includes an overview of the roadway system layout and the location of proposed storm water basins with respect to existing natural resources, as well as a review of individual lots with respect to both existing natural resources and the ability of existing soils to support development of individual onsite subsurface sewage disposal systems. In addition, this memorandum also includes my review of proposed driveways serving individual lots. The overall objective of this review is to identify those lots, which in our opinions, would not realistically conform to applicable regulations and design principals that would be applied during review of a conventional subdivision layout.

Our comments are as follows:

Roadway System

The proposed roadway system layout and the location of storm water basins were reviewed to determine if there were any locations where impacts to vernal pools would occur.

Roadway Layout - Since no ecological assessment of the various individual vernal pools located on the property was submitted, a presumption was made that they were all of sufficient quality to at least merit protection of the forested habitat located within the Vernal Pool Envelope (100' from the edge of pool) in order to maintain pool hydrology and water quality. Clearing in the Vernal Pool Envelope can alter pool hydroperiod (length of time holding water), impact the pool's thermal regime, and allow potential pollutants from adjacent land uses to impact water quality. It should be noted that areas that may also be desirable to preserve within the Critical Terrestrial Habitat (up to 750' beyond the upland edge of the Vernal Pool Envelope) were not considered.

- Proposed Roads #4, #5, #6 and #7 are located within the Vernal Pool Envelopes of pools 3, 7 and 24. Due to the interconnection of these roads, and the locations of the vernal pools, it is recommended that all of these roads be eliminated. This will result in the elimination of

the following 18 lots: 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145 and 146.

- The end of proposed Road #2, northeast of its intersection with Road #8, is located within the Vernal Pool Envelopes of pools 9, 10 and 11. As such, it is recommended that this section of Road #2 be eliminated. This will result in the elimination of the following 3 lots: 97, 98 and 99.
- Sections of Roads #1, #8 and #11 are located within the Vernal Pool Envelopes of pools 6, 10 and 17/18 respectively. Since it would appear that it may be possible to realign these roads so that they are located beyond the edge of Vernal Pool Envelopes, they should be revised accordingly. It is not clear whether the realignment of these sections of roads will result in the loss of any additional lots until such time as the realignments are submitted for review.

Storm Water Basins – Storm water basins should not be located adjacent to vernal pools to protect these resources from hydrological alternation potential and from discharge of nonpoint source pollutants that could impact water quality. Since no ecological assessment of the various individual vernal pools located on the property was submitted, a presumption was made that they were all of sufficient quality to at least merit protection of the forested habitat located within the Vernal Pool Envelope (100' from the edge of pool). While this was the criteria that we established to evaluate the locations of Storm Water Basins, it should be noted that recommended Best Development Practices are to locate detention basins at least 750 feet from vernal pools because of their susceptibility to serve as decoy wetlands. In addition, it should also be noted that a number of Storm Water Basins were located within the 100' upland review area. While no specific recommendations were made with respect to the elimination and/or relocation of basins in these areas, it should be noted that some of them might be considered problematic by the Wetlands Commission.

- Storm Water Basins are proposed to be located within the Vernal Pool Envelopes of pools 7, 10, 21 and 23. As such, it is recommended that these basins be relocated beyond the Vernal Pool Envelopes, which will result in the elimination of the following 3 new (not previously eliminated for other reasons) lots: 102, **130**, 200 and 227 (bold type identifies lots previously recommended to be eliminated for other reasons and are not included within this total).

Individual Lots

Individual lots were reviewed with respect to their potential impacts to vernal pools, species of special concern, and the ability of existing soils to support development of individual onsite subsurface sewage disposal systems. Individual driveways were also reviewed with respect to their conformance with applicable town standards.

Species of Special Concern – Several species of special concern, including both plant and wildlife, have been identified and confirmed via visual sightings on the property. As such, these species require special protective measures. In the case of plants, it is our opinion that they should be preserved within publicly owned open space areas. With respect to wildlife, a more judgmental

professional opinion is required regarding the protection of a sufficient area of suitable undisturbed habitat.

- Based on the above, we recommend elimination of lot 11 due to the location of *Optunia Humifusa* (cactus).
- Based on the above, we also recommend elimination of lot 5. This along with the elimination of lot 11 above should provide some protection of the habitat where a box turtle was found.

Vernal Pools – Since no ecological assessment of the various individual vernal pools located on the property was submitted, a presumption was made that they were all of sufficient quality to at least merit protection of the forested habitat located within the Vernal Pool Envelope (100’ from the edge of pool) in order to maintain pool hydrology and water quality. Clearing in the Vernal Pool Envelope can alter pool hydroperiod (length of time holding water), impact the pool’s thermal regime, and allow potential pollutants from adjacent land uses to impact water quality. In addition, so as to maintain pool hydrology and water quality, judgments were made regarding additional areas that warranted protection. It should be noted that areas that may also be desirable to preserve within the Critical Terrestrial Habitat (up to 750’ beyond the upland edge of the Vernal Pool Envelope) were not considered.

- Based on the above noted criteria, we recommend that the following 16 new (not previously eliminated for other reasons) lots be eliminated: 80, 100, 119, 156, 157, 197, 199, 207, 208, 209, 220, 226, **227**, 245, 262, 287 and 288 (bold type identifies lots previously recommended to be eliminated for other reasons and are not included within this total).

Soils - Section 56.3.1C.11 of the Old Saybrook Zoning Regulations sets forth the basic criteria for the evaluation of conceptual lots, which requires conformance with the MABL requirements. In addition to various specific dimensional requirements, the regulations state that no land included within the MABL is permitted to include soils with groundwater higher than 18-inches below the existing ground surface or ledge at depth of less than 48-inches below the existing ground surface. While conformance with these criteria normally requires confirmation through actual soil testing, for Open Space Subdivisions, the aforementioned Zoning Section does not require on-site soil testing. It instead states that such “...demonstration may be based upon soils type analysis... “. The Conceptual Standard Subdivision plan that was submitted with the current application shows the delineation of different soils types based on the Soil Survey of Middlesex County as well as actual test pit data from a prior application. Where existing test pit data is provided, definitive conclusions can be made regarding conformance with the MABL criteria. However, where only the general soil type is known, a more subjective type analysis is required. More specifically, the majority of the developed portion of the site consists of soils identified in the Soil Survey of Middlesex County as Hollis-Charlton (HpE) or Charlton-Hollis (CrC). Both of these soil types have a wide range of characteristics, with the Charlton portion consisting of a well drained soil with depths to ledge of 60-inches or more, and the Hollis portion consisting of soils with a depth to ledge of less than 14-inches. Based on the Soil Survey of Middlesex County, the HpE soil type includes approximately 40% of Hollis type soils, while the CrC soil type includes approximately 30% of Hollis type soils. Both of these soil types also include 25% and 20% of “other soils and bedrock outcrops”, for the

HpE and CrC soils types respectively. The variation in depth to ledge within the HpE and CrC soils types presents a dilemma with respect to the determination of whether a particular lot should be considered to conform to the MABL criteria. In this regard, the following guidelines were established for our decision making process:

- Lots where existing test pit data, located in the immediate vicinity of proposed leaching systems, showed that the depth to ledge was less than 48-inches, were not considered to conform to the MABL criteria and thus were recommended to be eliminated.
- Lots where existing test pit data, located in the immediate vicinity of proposed leaching systems, showed that the depth to ledge was greater than 48-inches, were considered to conform to the MABL criteria, regardless of the soil type.
- Where lots with HpE or CrC soil types did not have any existing test pit data, but were located between lots where existing test pit data revealed an acceptable depth to ledge, and the existing topography was generally uniform, were considered to conform to the MABL criteria, regardless of the soil type.
- Where lots with HpE or CrC soil types did not have any existing test pit data located in the immediate vicinity of the proposed leaching system, tallies were made for each soil type. For those lots located in the HpE soil type, 40% were considered not to conform to the MABL criteria, and thus were recommended to be eliminated. For the CrC soil type, 30% were recommended to be eliminated. No deductions were made for those portions of each soil type that included “other soils and bedrock outcrops”. So as to avoid double counting, any lots that were previously eliminated for other reasons (i.e. impacts to species of special concern, vernal pools, etc.) were not included in this analysis.

Based on the above noted criteria, the following lots were not considered to conform to the MABL criteria:

- It is recommended that 6 lots be eliminated where test pit data, located in the immediate vicinity of proposed leaching systems, showed that the depth to ledge was less than 48-inches. Eliminated lots include 10, 16, 19, 80, 127 and 164.
- It is recommended that 28 lots be eliminated from areas consisting of HpE soil types. The number of lots eliminated was based on 40% of the 70 new total lots located within this soil type. The new (not previously eliminated for other reasons) lots located within this soil type include the following: 14, 17, 22, 26, 30, 31, 40, 41, 42, 43, 44, 55, 58, 60, 61, 62, 63, 65, 69, 75, 76, 77, 78, 107, 115, 124, **129, 133, 134, 135, 136, 137, 138, 139, 140, 141, 144, 145**, 147, 148, 149, 151, 152, 153, 155, **157**, 165, 166, 169, 171, 172, 175, 177, 180, 181, 182, 183, 189, 190, 191, 192, 194, 195, **207**, 214, 212, 213, 215, 219, 256, 259, 260, 268, 269, 270, 272, 273, 274, 276, 277, 278, 284, **288**, 289 and 290 (bold type identifies lots previously recommended to be eliminated for other reasons and were not included in the calculation for this total).

- It is recommended that 23 lots be eliminated from areas consisting of CrC soil types. The number of lots eliminated was based on 30% of the 77 total lots located within this soil type. The new (not previously eliminated for other reasons) lots located within this soil type include the following: **11**, 33, 56, 57, 59, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 96, **97**, **98**, **99**, **100**, 101, **102**, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 116, 117, 118, **119**, 120, 121, 122, 123, 125, **130**, **131**, **132**, 196, **197**, 204, 210, 217, 218, 222, 223, 224, 225, **226**, 228, 229, 230, 231, 232, 233, 234, 236, 239, 246, 251, 252, 253, 254, 261, 264, 265, 271, 275, 279, 280, 281, 283, 285, 286, **287**, 291, 292 and 293 (bold type identifies lots previously recommended to be eliminated for other reasons and were not included in the calculation for this total).

Individual Driveways – Driveways serving virtually all of the lots were found to conform to basic town standards. For those few that did not, it would appear as though they could be modified to conform. However, it is important to note that driveways for a number of lots were at the maximum permitted driveway grade of 15%, and that several employed extraordinary measures in order to demonstrate compliance (i.e. lot #79 driveway which has a retaining wall over 200' in length with heights up to 20'). While economics is not one of the metrics for determination of the lot count, it is quite likely that some of the lots would be difficult to develop with a realistic expectation of having a positive economic gain.

END OF MEMORANDUM