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COPY
PLANNING
COMMISSION
EXHIBIT #A

MEMORANDUM

TO: Christine Nelson, AICP

DATE: January 27, 2005

FROM: Geoffrey L. Jacobson P.E., Wendy Goodfriend, PhD, Richard Snarski, CPSS (certified professional soil scientist), PWS (professional wetland scientist), CPESC (certified professional in erosion and sediment control)

PROJECT No.: 0719-0011

SUBJECT: The Preserve – Summary Response for Planning Commission Determination Questions #1 and #2

COPIES: R. Snarski, W. Goodfriend, L. Bonin, S. Lockett, S. Martinson, C. Costa, M. Branse, Alan Plattus, B. Hillson

This memorandum provides a summary response with respect to the first two, of the six determinations, that the Old Saybrook Planning Commission must make during their deliberations regarding the subject project. These first two determinations are identified in bold underline text, followed by our responses. We have tried to keep our responses as concise as possible. In this regard, rather than reiterating detailed discussions that were provided in prior memorandums, we have made specific references to them. Where we felt that illustrations might better assist in conveying our opinions, graphic plates have been prepared and are attached to this memorandum. The responses provided in this memorandum are the result of a collaborative review effort by Geoffrey L. Jacobson P.E., Wendy Goodfriend, PhD and Richard Snarski, CPSS, PWS, CPESC, with a specific focus on natural resource impacts. More specifically, this review included the layout of the roadway system, storm water basins and other proposed site amenities with respect to existing natural resources, as well as 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. As you are aware, our responses must be reviewed by the Commission in conjunction with input provided by consultants from other disciplines in order to make a comprehensive determination regarding this project.

1. **Is the site more conducive to an Open Space Subdivision in general conformance with the plan proposed by the applicant, or is it more conducive to development as a conventional subdivision?**

To best protect and preserve natural resources on this site it is our opinion that any development should provide in the minimum:

1. Inclusion of all of Pequot Swamp in publicly-owned open space.
2. A 100-foot undisturbed buffer on the east side of Pequot Swamp.

3. Inclusion of unfragmented wooded upland/wetland habitat on the west side of Pequot Swamp within publicly-owned open space.
4. Protection of the exceptionally high quality vernal pool #18 and intact wooded uplands between this pool and the large Red Maple Swamp located to the west.

As currently submitted, neither the Conceptual Standard Plan nor the Preliminary Open Space Subdivision Plans addresses the four desired protection criteria identified above. Both plans do, however, offer some level of natural resources protection even though the amount and configuration of dedicated open space are different. Development of this property will inevitably require some trade-offs in how much and what areas are protected, however we believe that with modification either plan could sufficiently address the desired natural resources protection criteria.

The proposed **Conceptual Standard Plan** has the potential value of preserving a large tract of unfragmented upland/wetland habitat that could protect some of the site's high quality natural resources. In particular, **this plan preserves an intact 100-foot undisturbed, vegetated buffer to the east of Pequot Swamp** where slopes range from 30 to 50%. This buffer is critical to **preserving the water quality and hydrology** of this large and unique wetland resource (refer to Connecticut River Coastal Conservation District October 27 and December 2, 2004 memorandums for a more detailed discussion).

In addition, if **modified** or conditioned to eliminate the 13 lots, 4,000 feet of road, and 650 ft of shared common driveway as discussed in previous staff recommendations (refer to Roadway System section in Nathan L Jacobson & Associates, Inc. October 27, 2004 memorandum for a more detailed discussion), **the Conceptual Standard Plan would preserve a 178 acre tract of unfragmented upland/wetland habitat including Pequot Swamp and a contiguous corridor connecting eleven vernal pools, numbers 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, and 24** (see attached plate No. 1). The proposed **Conceptual Standard Subdivision Plan would not, however, adequately protect vernal pool #18**, noted by the applicant and staff to be a high quality, productive vernal pool.

Discussion: Although the road and lot layouts have been revised, we maintain our recommendation to **eliminate revised lots 98R and 99R and the 900 feet of driveway to these lots**. This long driveway is located within 50-feet of vernal pool 10 (identified by the applicant as a high priority pool); 10-feet from vernal pool 11; and, disturbs the connectivity between these vernal pools and vernal pool 9, which is located approximately 100-feet on the opposite side of the driveway.

In addition, we recommend **terminating Road #6 at lot 144 and eliminating Road #7 serving eight lots** (lots 134 through 141). Lots 142 and 143 would then be reached from Road #4. Also, we recommend **eliminating 700 feet of Road #4 and all of Road #5 serving lots 129, 132 and 133**. These recommendations are consistent with the The Old Saybrook Subdivision Regulations' Statement of Purpose (...preservation of character of land and valuable natural resources for future generation) and Section 5 - Design Requirements, *subsections* 5.1.2 B, C, and D; 5.2.1B; and 5.8 A, B.

The **Preliminary Open Space Subdivision Plan** sets aside a substantial amount of open space and clusters the development, minimizing the total road length and the overall area of disturbance. The layout of the proposed golf course, however, fragments the proposed open space and impacts the ecological integrity of the site's highest quality natural resources, including Pequot Swamp and vernal pool #18.

The applicant has suggested that their proposed **Preliminary Open Space Subdivision Plan** will conserve twelve (12) vernal pools by maintaining the 100 foot vernal pool envelope and limiting "development" of the Critical Terrestrial Habitat (100-750 ft from edge of pool) to 25%. As previously discussed (refer to Connecticut River Coastal Conservation District December 2, 2004 memorandum for a more detailed discussion), we question the methodology used to select these twelve (12) conservation pools. All but one of the pools identified on this site should be considered Tier I per Calhoun and Klemens (2002). In addition, we believe sufficient information to confidently prioritize all of the pools is lacking. For example, dip netting vernal pools in the spring to obtain data on the relative abundance of marbled salamander larvae (**not** gravid, brooding or breeding adults as suggested by Klemens in applicants Response #4) can provide insight into the relative quality of the vernal pool to support successful marbled salamander breeding. Mere presence/absence of data as provided by the applicant does not provide enough information to compare the pools' relative ability to support marbled salamanders.

We also question the nature of the amount of Critical Terrestrial Habitat shown for the on-site vernal pools, including the twelve (12) Conserved Pools. The amount of disturbance (development) was calculated based on clearing for residences and the golf course as well as impervious areas such as roads, paths and driveways. We question whether this methodology accurately accounts for the impact of residential lots and roads since fragmented, uncleared areas are counted as "undisturbed" even if they do not offer meaningful upland habitat (see graphic plate no. 2). In Calhoun and Klemens (2002) publication, desired management recommendations for Critical Terrestrial Habitat focus on maintaining a minimum of 75% of **contiguous** forest cover with a **partially closed canopy, minimal disturbance to the forest floor, and native understory vegetation**. Our interpretation of these recommendations is that only meaningful, unfragmented forest areas should be counted as undeveloped Critical Terrestrial Habitat. The methodology used by the applicant overestimates remaining suitable Critical Terrestrial Habitat in areas with existing and proposed buildings and roads (see graphic plate no. 2). Disturbance levels within the Critical Terrestrial Habitat due to the golf course were, however, accurately represented by this methodology.

Most of the twelve (12) Conserved Pools are in and near the golf course. Even though approximately 75% of these pools Critical Terrestrial Habitat will not be developed, the remaining undeveloped area is in most cases fragmented by golf course fairways (see graphic plate no. 2). We believe that fragmentation of Critical Terrestrial Habitat by golf course fairways will negatively impact the population of pool-breeding amphibians and the ecological integrity of the site's natural resources.

A recent peer-reviewed study by Betsie B. Rothermel (*Ecological Applications* 14(5):1535-1546) referenced in the REMA review dated January 7, 2005, demonstrates that migrating juvenile spotted salamanders are impeded by open pasture. The study found that an average of

only 9% of juveniles survived traveling across 165 feet (50 m) of pasture to a forested edge. This is most likely due to the pasture's physical characteristic, which is dryer and offers less protection from desiccation than forested habitat. It is important to note that fairways shown on the **Preliminary Open Space Subdivision Plan** within vernal pool Critical Terrestrial Habitat are commonly 200-300 feet across. We expect that these mowed fairways will have less cover than a pasture, and will therefore impact the success of migrating juvenile amphibians. In addition, in the study juveniles migrating across pastures were not able to selectively orient themselves towards the nearest forest edge. This suggests that once on a fairway, some of the juveniles will not find the shortest path (or perhaps any path) across the fairway.

We believe modifications to the **Preliminary Open Space Subdivision Plan** could adequately preserve and protect the site's significant natural resources. Addressing the four desired protection criteria detailed on pages 1 and 2, would require:

1. Eliminating or reconfiguring the golf course.
2. Reconfiguring the proposed open space as previously recommended by staff (note that this **does not** necessarily mean that additional acreage be included as open space).
- 3) Reconfiguring the layout of some of the residential development.

2. **If the site is more conducive to an open space subdivision, what is the proper number of lots to be derived from the yield plan?**

Based on 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, **it is our recommendation that the lot count as determined by the applicant be reduced by a total of 55 lots as follows:**

- **Eliminate lots 98R and 99R** due to the 650-foot long shared common driveway that is located within 50-feet of vernal pool 10 (identified by the applicant as a high priority pool); 10-feet from vernal pool 11; and, disturbs the connectivity between these vernal pools and vernal pool 9, which is located approximately 100-feet from the shared common driveway (refer to Roadway System section in Nathan L Jacobson & Associates, Inc. December 2, 2004 memorandum for a more detailed discussion).
- **Eliminate lot 209R** due to its proximity to vernal pool 27 and the unrealistic development constraints that is imposed on this lot in order to preserve the 100-foot vernal pool envelope (refer to Individual Lots section in Nathan L Jacobson & Associates, Inc. December 2, 2004 memorandum for a more detailed discussion).
- **Eliminate lot 11** due to the location of *Optunia Humifusa* (cactus), a species of special concern, along the limit of the proposed clearing required for development of this lot (refer to Individual Lots section in Nathan L Jacobson & Associates, Inc. December 2, 2004 memorandum for a more detailed discussion).

- **Eliminate 26 lots from areas consisting of HpE soil types.** The number of lots eliminated is based on 40% of the 65 total lots located within this soil type. Lots located within this soil type include the following: 8, 16, 17, 18, 21, 22, ~~26~~, 36, 38, 39, 40, 41, 42, 43, 58, 60, 61, 62, 75, 124, 129, 133, 134, 135, 136, 137, 138, 139, 140, 141, 143, 144, 145, 147, 148, 149, 151, 155, 167, 171, 182, 183, 190, 191, 192, 193, 194, 203, 207, 219, 259, 260, 268, 269, 270, 272, 273, 274, 276, 277, 278, 284, 289, 290 and 292 (refer to Individual Lots section in Nathan L Jacobson & Associates, Inc. December 2, 2004 memorandum for a more detailed discussion).
- **Eliminate 25 lots from areas consisting of CrC soil types.** The number of lots eliminated is based on 30% of the 84 total lots located within this soil type. The lots located within this soil type include the following: 11, 19, 33, 56, 57, 59, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, **98R, 99R**, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 125, ~~130~~, ~~131~~, 132, 153, 197, 198, 199, 204, 210, 217, 218, 222, 223, 224, 225, 226, 228, 229, 230, 231, 232, 233, 235, 246, 248, 253, 254, 261, 271, 275, 279, 280, 281, 282, 283, 285, 286, 287, 291 and 293 (refer to Individual Lots section in Nathan L Jacobson & Associates, Inc. December 2, 2004 memorandum for a more detailed discussion). Lots identified with bold type were previously recommended to be eliminated for other reasons stated within this memorandum and were not included in the calculation for this total.

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26
- 13 double reason
13 other

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25
- 10 double reason
15 other

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