

Mystic Woods Active Adult Community Groton, Connecticut



Eastern Connecticut Environmental Review Team Report

Eastern Connecticut Resource Conservation and Development Area, Inc.

Mystic Woods Active Adult Community Groton, Connecticut



Environmental Review Team Report

Prepared by the
Eastern Connecticut Environmental Review Team
of the
Eastern Connecticut
Resource Conservation and Development Area, Inc.

for the

Inland Wetland Agency
and Planning Commission
Groton, Connecticut

Report #612

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Acknowledgments

This report is an outgrowth of a request from the Groton Inland Wetland Agency and the Groton Planning Commission to the Eastern Conservation District (ECD) and the Eastern Connecticut Resource Conservation and Development Area (RC&D) Council for their consideration and approval. The request was approved and the measure reviewed by the Eastern Connecticut Environmental Review Team (ERT).

The Eastern Connecticut Environmental Review Team Coordinator, Elaine Sych, would like to thank and gratefully acknowledge the following Team members whose professionalism and expertise were invaluable to the completion of this report.

The field review took place on Wednesday, October 25, 2006.

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I would also like to thank Deborah Jones, environmental planner, Groton, Michael Murphy, planning director, Groton, Scott Cohen, applicant, Andy Bevilacqua and Mike Errickson, project engineers, George Logan and Sigrun Gadwa, project environmental consultants, Harry Heller, attorney for the applicant, and Eric Thomas, watershed coordinator, DEP, and Karen Leonard Allen, DEP, stormwater management, for their cooperation and assistance during this environmental review.

Prior to the review day, each Team member received a summary of the proposed project with location and soils maps. During the field review Team members were able to view additional maps and plans. Some Team members made separate or follow-up visits to the site, while others conducted a map review only. Following the review, reports from each Team member were submitted to the ERT coordinator for compilation and editing into this final report.

This report represents the Team's findings. It is not meant to compete with private consultants by providing site plans or detailed solutions to development problems. The Team does not recommend what final action should be taken on a proposed project - all final decisions rest with the town and applicant. This report identifies the existing resource base and evaluates its significance to the proposed use, and also suggests considerations that should be of concern to the town. The results of this Team action are oriented toward the development of better environmental quality and the long term economics of land use.

The Eastern Connecticut RC&D Executive Council hopes you will find this report of value and assistance in reviewing the proposed active adult community.

If you require additional information please contact:

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Introduction

Introduction

The Groton Inland Wetland Agency and the Groton Planning Commission has requested Environmental Review Team (ERT) assistance in reviewing a proposed active adult community.

The 104 acre site is located on Fort Hill Road and Flanders Road. The project consists of the construction of 219 units of active senior housing on the north side of Fort Hill Road and west of Flanders Road. The site is wooded, but portions have been farmed or logged in the past. Fort Hill Brook flows along the western perimeter of the site. Wetlands encompass 14.7 acres of the site and 44.8 acres will be left undisturbed with 30 acres of the undisturbed portion being uplands.

The development will include 67 buildings containing 2,3 or 4 units per building with garages; a community building with parking and an interior private road network. There are entrances proposed for Fort Hill Road and Flanders Road. The site will be served by city sewer and water.

Objectives of the ERT Study

The town has requested the ERT to assist in a review of the project by providing comments and recommendations on the following concerns: topography and geology, stormwater management, wetland impacts, traffic and access and land use.

The ERT Process

Through the efforts of the Groton Inland Wetland Agency and the Groton Planning Commission this environmental review and report was prepared for the Town of Groton.

This report provides an information base and a series of recommendations and guidelines which cover the topics requested by the town. Team members were able to review maps, plans and supporting documentation provided by the applicant.

The review process consisted of four phases:

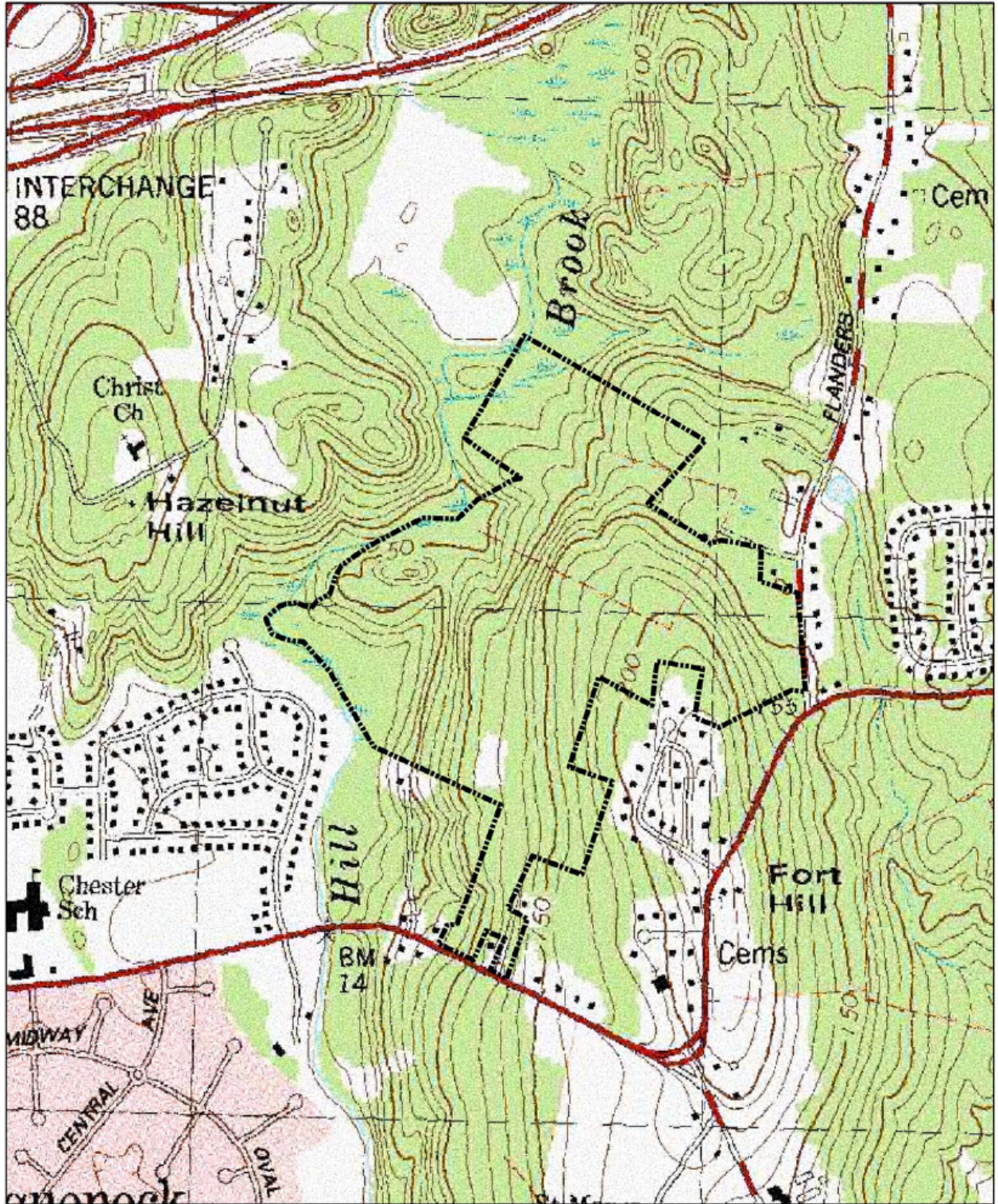
1. Inventory of the site's natural resources;
2. Assessment of these resources;
3. Identification of resource areas and review of plans; and
4. Presentation of education, management and land use guidelines.

The data collection phase involved both literature and field research. The field review was conducted Wednesday, October 25, 2006. The emphasis of the field review was on

the exchange of ideas, concerns and recommendations. Being on site allowed Team members to verify information and to identify other resources.

Once Team members had assimilated an adequate data base, they were able to analyze and interpret their findings. Individual Team members then prepared and submitted their reports to the ERT coordinator for compilation into this final ERT report.

Mystic Woods Site Map



The Connecticut Environmental Review Team

This map was prepared by Amanda Fargo-Johnson for the Connecticut Environmental Review Team. This map is for educational use only. It contains no authoritative data. March 2007.

○ Approx. Site Location

0 0.05 0.1 0.2 0.3 Miles

Groton, CT

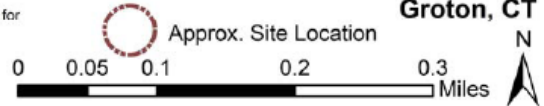


Mystic Woods Aerial Map



The Connecticut Environmental Review Team

This map was prepared by Amanda Fargo-Johnson for the Connecticut Environmental Review Team. This map is for educational use only. It contains no authoritative data. March 2007.



Topography and Geology Review

Topography

The proposed development is planned on the north and west facing slopes of an elongate hill, known as Fort Hill (Fig.1). It is oval shaped in map view, being elongated in north-northwest to south-southeast direction. The maximum elevation of Fort Hill, located off the parcel, is just over 230' above sea level. The western part of the parcel drops to an elevation of less than 20' in a wetland. Fort Hill has relief of over 200 feet. The slopes on the hill are gentle to moderate and will pose little hindrance to development. Steeper portions of west and northwest facing slopes are avoided in the plans. The slopes are persistent which may pose a potential erosion hazard during development when the topography is cleared, in phases, of most vegetation. Erosion and sedimentation is addressed on the plans but were not evaluated by this reviewer.

Geology

Bedrock does not crop out on the site according to the environmental consultants hired by the developer. None was seen during the part of the field review (north end) that this reviewer attended. A published map (Goldsmith, 1962) shows a small outcrop near the parcel's western boundary to the south and an area of shallow bedrock and possible outcrop northwest of the parcel. Except for the southwestern part of the parcel, test pits indicate that most of the area has greater than 12 feet of overburden. The few places where ledge is closer to the surface will not affect the development except possibly localized areas where water or sewer lines may intersect ledge.

All the area is underlain by a veneer of Quaternary deposits associated with the last Ice Age. Most of the area is covered with sandy "melt-out" till. A more compact basal till was only locally encountered in some test pits. In at least one location (TP-4), stratified gravel separated the two tills. Fort Hill is a drumlin, a stream-lined hill shaped by glacial movement and covered by till that is thick in some places. The elongation of Fort Hill (NNW-SSE) is interpreted to reflect the direction of movement of the last ice-age glacier. The north end of Fort Hill has abundant large and small boulders scattered across the surface (Fig. 2). The area is just north of the mapped Mystic Recessional Moraine (Fig. 3, see Stone and others, 2005) and the concentration of boulders here was similarly formed at the margin of glacial ice (Stone and others map an ice margin position as shown in topographic map (Fig. 1 and Fig. 3). Large stones will be a nuisance to development of the north end of the project.

Water seeped into many of the test pits. In all the cases that that this reviewer checked, basement elevations will be above the inferred water table elevations and hence ground water should not be a problem. The development, however, could pose a problem affecting the water quality of local ground water if efforts are not made to limit salt and

pesticide and fertilizer applications. This development poses no special concern, however, and is no different from any other dense development.

References

Goldsmith, Richard, 1962, Surficial geology of the New London Quadrangle, CT-NY. U.S.Geol. Survey, Quad. Map GQ-176.

Stone, J.R., Schafer, J.P., London, E.H., DiGiacomo-Cohen, M., Lewis, R.S., and Thompson, W.D., 2005, Quaternary Geologic Map of Connecticut and Long Island Sound Basin, U. S. Geol. Survey, Sci. Inv. Map 2784, 2 sheets. Also see U.S. Geological Survey Open File Rept. 98-371.

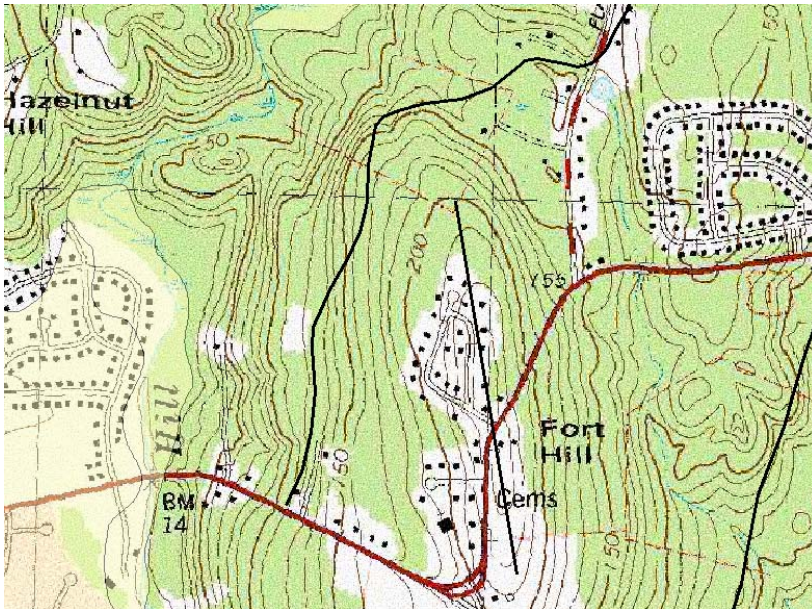


Figure 1. Topographic map showing Quaternary geology (from Goldsmith, 1962, and Stone et al, 2005). Yellow area in the southwest part of the map is underlain by Modern and Quaternary stratified deposits. Remaining areas underlain by till. Long straight line through Fort Hill depicts axis of drumlin and is parallel to direction of ice movement when the drumlin was being shaped. Wavy black line through center of map is inferred ice margin approximately 18,000 years ago during the recession of the last glacier based on abundance of boulders. Ice existed at that particular time north and west of line. Similar line shown in southeastern corner. Here, however, ice existed east of the line. Thus, ice melted off top of Fort Hill sooner than in adjacent lower areas.

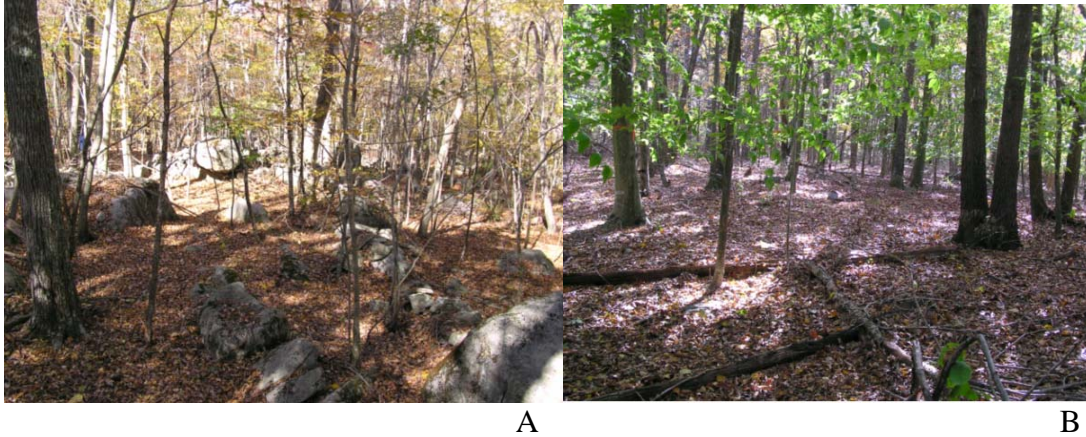


Figure 2a. North end of Fort Hill showing a large bouldery area. Large and small boulders are abundant, in some places covering 50-75% of the ground surface. Largest boulders (not shown in this image) are 3-5 m. in maximum dimension. This area mapped as an inferred ice-margin position (Stone and others, 2005) because it lacks associated collapsed, ice-margin melt-water stream deposits, it is not mapped as an end-moraine. Boulders were concentrated in the shear zone where active ice over-rode thin stagnant ice at the margin of the glacier. The ice position did not remain in the area very long before melting northward. Hence, diagnostic melt-water stream deposits that are associated with end-moraines are lacking.

Figure 2b. Looking southward near the crest of Fort Hill south of the location of Fig. 2a. Note the smooth surface with few boulders on the surface. This is typical of a drumlin surface.

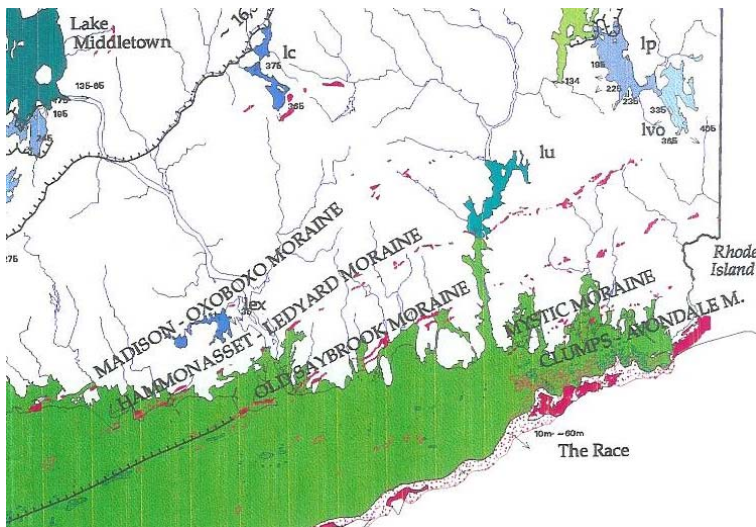


Figure 3. Selected ice margin positions in eastern Connecticut during Late-Wisconsinian deglaciation. This map is copied from Stone et. al., 2005.

Eastern Connecticut **Conservation District Review**

Overview

Based on a review of the materials provided and an inspection of the site, it is ECCD's position that the project can be constructed without causing significant negative impacts to the natural resources in the area. However, a project of this magnitude will likely result in some negative impacts, and any further revisions by the applicant to reduce those impacts are encouraged. Any reduction in the number of units, the area of impervious surface, and any increase in open space would ultimately benefit natural resources such as water quality and wildlife. It is also important that best management practices be utilized in all phases of the project.

Conservation Easements

The applicant has proposed a large conservation easement which is the major element contributing to the protection of the local natural resources. Within this easement are fairly steep slopes, and development on these slopes would have greatly increased the project's potential to degrade surface water quality. The easement also provides a buffer area for wetlands located both on and off the applicant's property. ECCD strongly supports the conservation easement proposal.

Stormwater Management

It is noted that the plans include some measures to increase infiltration of stormwater within the site. Some of these measures involve underground systems. Maintenance of such a system is essential, and the other stormwater management measures on the site will also need to be maintained. ECCD recommends that the Town require a maintenance plan that ensures the long term future maintenance of all stormwater measures. It appears that more on-site infiltration could have been incorporated into the plans. Any revisions to the plans that provide additional measures to infiltrate stormwater are encouraged.

Japanese Knotweed

There is an area within the project that has been overrun by a non-native invasive plant species, Japanese knotweed (*Polygonum cuspidatum* Sieb. & Zucc.). Not only should this plant be eradicated to the extent possible, but also, steps should be taken to ensure that construction activities do not spread the plant further. One concern is that seeds and plant fragments will be mixed in with the topsoil when it is stockpiled. Japanese knotweed can

regenerate from seeds or the tiniest fragment of plant, and many seeds and stems will likely still be viable when the stockpiled soils are used to restore the site at the conclusion



Team members walking through area of Japanese Knotweed near Flanders Road entrance.

of construction. ECCD recommends keeping the topsoil stockpile(s) from the Japanese knotweed area separate from other stockpiles, and take appropriate steps to prevent this weed from spreading. Also, while the topsoil is stockpiled, proper erosion and sediment control measures will help prevent seeds and plant fragments from being transported to another area.

Tree Protection

Much of the area slated for clearing, grading, and construction is presently forested with a mix of upland hardwood trees. Many of these trees appeared to be healthy and well established, with diameters ranging around 12 to 18 inches. It is recommended that the developer consider saving selected trees, where it is possible to do so. Guidance for tree protection can be found in Connecticut's Erosion and Sedimentation Control Guidelines.

Erosion and Sedimentation Control Plan

ECCD recommends that the Town have a qualified individual inspect the E&S measures on this site frequently. It is further recommend that the inspector have the authority to require additions or revisions necessary to address on-site conditions.

Wetlands Review

The property is located in the roughly-shaped square made up of Routes I-95 to the north, Route 117 to the west, Route 1 to the south, and Flanders Road to the east. The parcel was completely wooded at the time of the visit.

The proposal calls for an active adult community being composed of 67 cluster type buildings with a total of 219 units and a clubhouse. Due to the clustered nature of the units, 44.8 acres will be left undeveloped.



This is a section of the 1934 aerial photograph of the area. The view is concentrated on the wetland near Flanders Road. At the time the wetland displayed more open water and there were farmed fields upslope of it.



In this section of an aerial photo taken in 1990 land use changes are readily apparent. The wetland is much more vegetated and the farmed fields have reverted to woodland. Both photographs were taken in the spring of their respective years.

The various wetland areas on the site total 14.7 acres. They are referred to by occurrence and numbered on the plans from west to east, generally by group, 1 through 11. On an

aerial photograph the most visible of these wetlands is at the very northern tip and along the western boundary of this variably-edged property. Those wetlands specifically are tied into the floodplain associated with the marshy, alluvial soils of Fort Hill Brook. The other large wetland is along Flanders Road. It is a 1.35± acre palustrine, forested wetland that encompasses two vernal pools. While most of the other wetlands are unimpacted by this proposal, this vernal pool wetland, number 11 is the cause for concern.

Discussion

The major wetland conflicts come where the proposed roads enter/exit the property. Because of various constraints, both of these areas of egress are narrow. Many points of concern have been raised before this report came into print, specifically by Mr. Snarski in his letter to Mr. Scott dated October 4, 2006, and by Ms. Sharp in her letter to Priscilla Pratt dated October 4, 2006. However, this reviewer will revisit some points because of their importance.

Vicinity of Route 1 - Wetland number 4 is small, roughly 600 square feet, and very likely quite low functioning in the watershed. However, the design the ERT Team was given shows it will be transformed into a detention basin. If built, that basin, when approached from the southeast will be at the bottom of a 20 foot drop from the road and will be the recipient of all manner of snow removal, litter, and general debris. It will very much be an area of concentration for these potential pollutants and others. Ms. Sharp's point is solid about not transforming wetlands to detention areas under the guise of mitigation.

The Flanders Road Entry - One of this proposal's largest issues revolves around the wetland which has two breeding vernal pools and its proximity to the proposed entrance road. The proposed congestion in this area due to housing units, roadways and detention basins is the cause for concern. And it is the vernal pools that add an extra level of sensitivity to the discussion.

Vernal Pools – Why they are so sensitive to water quality changes

Vernal pools are typically small, isolated, shallow, circular or oblong depressions in the forested landscape. They are fed primarily by surface water runoff and precipitation, filling with water during the wetter periods of the year (spring and late fall) and becoming drier during the warmer summer months. They exhibit no permanent inlet or outlet. The drainage areas for these pools typically measure 2-3 to 5-6 acres. Thus, local land-use impacts can be dramatic and damaging to the vernal pool ecology.

True breeding vernal pools also support diverse and dynamic, sometimes obligate, wildlife. Much of this wildlife is solely dependent on these areas for one or more periods of their life cycle. Because of the absence of permanent water, fish do not live in the

pools, making them attractive to certain animals whose floating egg masses would normally fall prey to these fish.

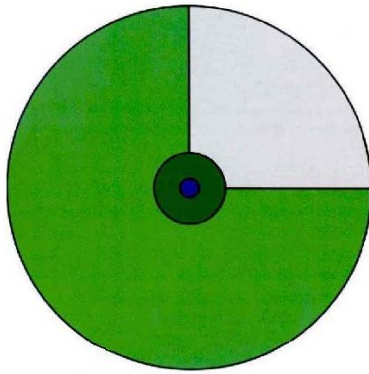
The largest integral part of the vernal pool ecosystem is the upland area which neighbors it. This typically extends away from the pool uphill or upslope to drier soil types. The slopes often vary from gentle to steep, some approach 45 or more degrees. It is in these slopey areas that adult-phase amphibians spend over 90% of their lives, burrowing into the well drained soils. They return to the pools only to breed.





Migration distances away from the pools vary significantly between species. Spotted salamanders can range to 380+ feet from the pool, while the wood frog has a significantly larger range, known to be as far as 1,550 feet for juveniles and 3,835 feet for adults. The away-from-pool amphibian range averages about 525 feet.

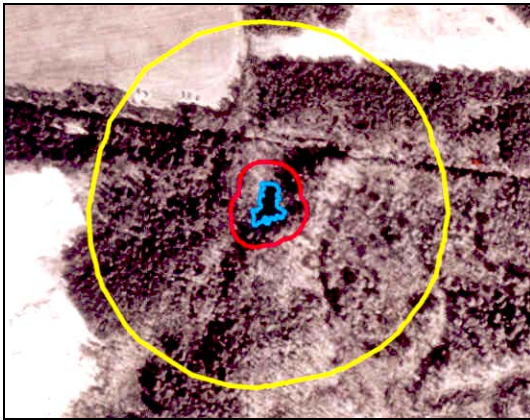
Much of the extensive information about vernal pools points to the fact that the reduction of more than a certain percentage of critical adjacent upland habitat will have telling impacts on the pool's breeding ecology. Modification of, and additions within these adjacent upland areas, and their resulting impacts to water quality, pose a significant impact threat to the pool.

And the impacts may be other than structural. Stormwater outlets, and/or nearby septic leaching fields should not be directed to, or discharged towards, these pools. In addition, thermal warming from opening the area to sunlight and/or heated-from-road runoff as well as salt build-up from winter treated roads and should be of concern.

Dr. Michael Klemens suggests in his book, co-authored with Dr. Aram J.K. Calhoun, entitled: "*Best Development Practices - Conserving Pool Breeding Amphibians in Residential and Commercial Developments in the Northeastern United States*" that there be no development in the 100 foot buffer around the vernal pool. In addition that there be no more than 25% in the critical terrestrial habitat, the distance from 100 feet to 750 feet away from the pool.



-  Vernal pool depression:
No disturbance
-  Vernal pool envelope (100 feet from pool):
No development and implementation of
management recommendations
-  Critical terrestrial habitat (100-750 feet from pool):
less than 25% developed area and implementation of
management recommendations
-  Example of 25% development in critical
terrestrial habitat



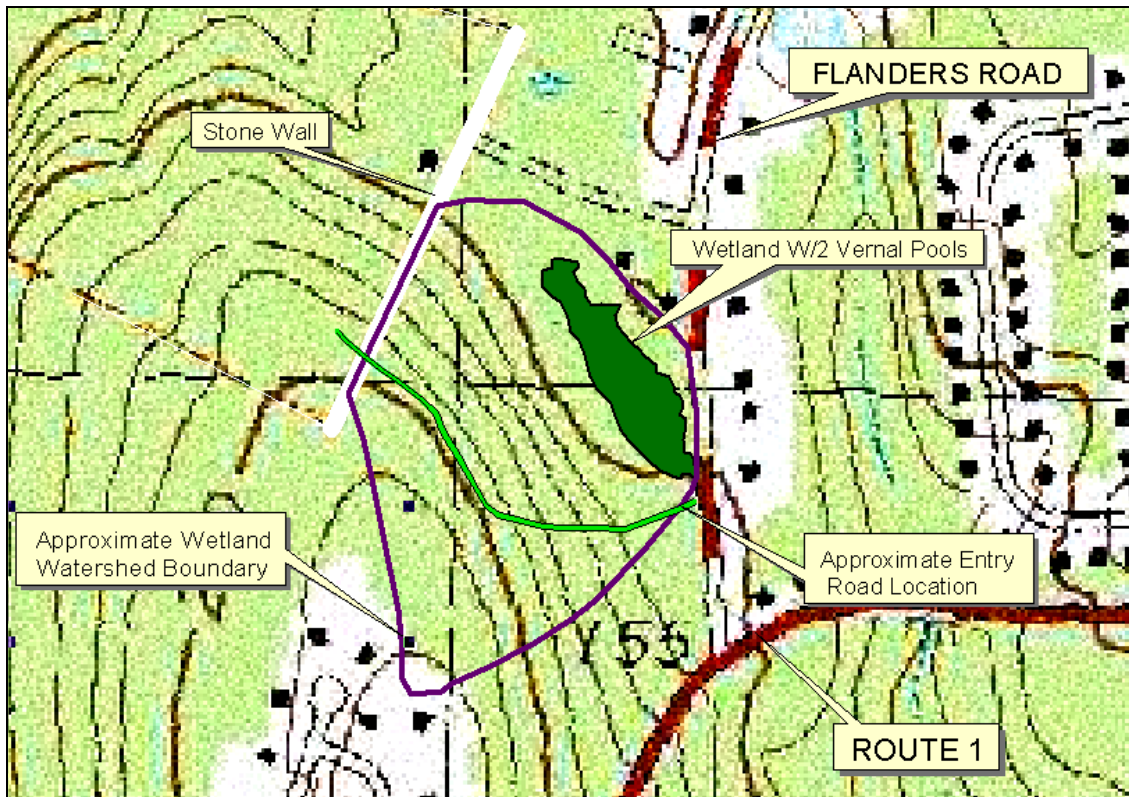
Vernal pool shown in blue with undisturbed envelope in red and less than 25% of the critical terrestrial habitat developed as bounded by yellow. Existing amphibian populations will likely remain viable in this pool.



Vernal pool shown in blue with some disturbance in the envelop shown in red and more than 25% of the critical terrestrial habitat having been developed, within the yellow line. It is highly unlikely that this pool will probably be able to support viable amphibian populations.

*(The above graphics are taken from Dr. Klemens' document which may be obtained from the DEP Store:
<http://www.dep.state.ct.us> .)*

As depicted on the graphic below, this reviewer has estimated the total watershed for this vernal pool/ wetland system to be ± 14 acres. Almost the entire watershed is to the west and southwest of the wetland. Just a small portion of the watershed is to the east and north/northeast. The ten or so acres that feed the wetland from the west and southwest will be divided roughly in two by the entry road. And this is the quandary of the matter. Given the information Dr. Klemens et al supplied above, and the fact that these are breeding vernal pools, the applicant would need to show how best to preserve this documented resource.



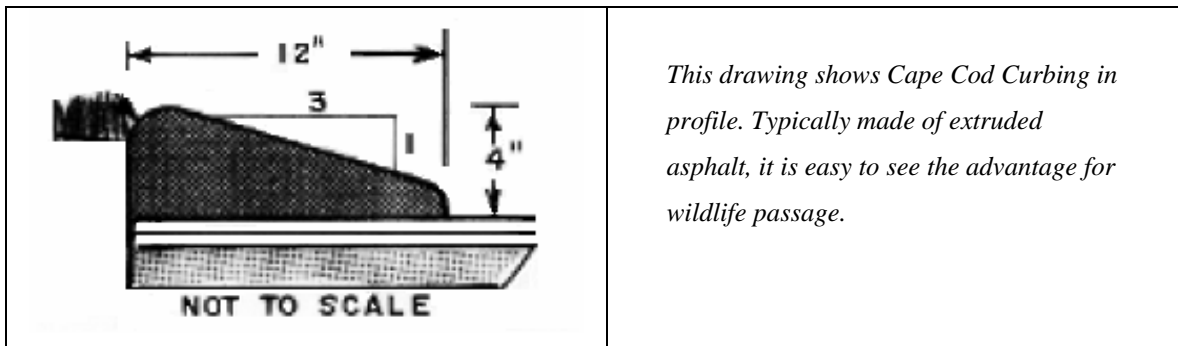
The base map for this graphic is the United State Geological Survey 7.5 minute New London topographic map

For instance, a revised proposal might offer to free the entry road area of congestion by the removal of units 66, 67, 68, and 69. This would “unsqueeze” the entry road, minimize the need and/or size(s) of detention basins, and allow the road to sweep further away from the wetland. All of this would decrease the need to treat runoff that would be redirected into the wetland system.

Use of Curbing - Curbs often function as a means of channeling water to storm drains. To minimize the flow to the storm water system, where possible, the applicant should be encouraged to use no curbs (typically in low gradient areas). This allows runoff to more easily infiltrate in non-point locations. It also serves to take the pressure off of the

stormwater system and allows the land to more naturally renovate the runoff, ultimately protecting the wetland resources.

In addition, the main road way in the vicinity of the vernal pool wetland will cut across amphibian migration paths. Vertical curbing does not allow for the passage across the road way of small amphibians. The curb walls are cliff-like to them and form an insurmountable presence. Cape Cod Curbing however, because of its gentle profile does allow for the migration from the pool to the upland and back because of its lower over all height and low gradient slope.



Roof Drain Recharge – the applicant should be applauded for his efforts to mimic on-site predevelopment conditions and help minimize the effects of many acres of impervious roof surface. The gallery-like system proposed should be confirmed by Groton that it will apply to all of the proposal’s roof runoff.

Flanders Road/Route 1 Intersection - Because of the current configuration of the Flanders Road/Route 1 intersection and the traffic challenges it brings with it, the proposed entrance road for this project cannot be moved further south, away from the wetland. The resources are all interconnected; land use, transportation, and sewerage are not isolated entities.

Traveling west to east along Route 1, in the 1,200 feet going downhill to Flanders Road the elevation changes from \pm 235 feet above sea level to 155 feet. This represents approximately a 6.7 per cent slope. That slope limitation, in combination with the curvature in the road at the entry of Flanders Road (line of sight obstructions), prohibits the proposed subdivision road to be moved south, away from the wetland.

In addition, from Route 1, Flanders Road runs ~1.1 miles north to the interstate, and, as part of this proposal a sewer line will be carried through the parcel ending at Flanders Road. Sewers often allow for increased and denser development than well and septic can support. This will only add to the traffic in years to come. In addition, Route 1 traffic will not likely abate, only increase in daily traffic count as municipal populations continue to grow. Add to that the active adults that in 12 to 15 years will be less active, less agile and less in a hurry. The Flanders Road/ Route 1 intersection will become increasingly hazardous. If in fact a window of opportunity exists to reconfigure the intersection now, it

will allow for more efficient near-future planning and cost millions less than it will in eight or ten years when reconstruction could become mandatory.

If the transportation problem that is sure to grow in the future is reconciled today, it would solve both the wetlands conflict and the traffic quandary, and allow for both the proposed development and the preservation of the wetlands.

Infiltration Spreader A-2 - flowing from basin A-2 discharges 40 feet from Wetland Area three. Without much effort this could be reconfigured to discharge further west and provide more of an overland buffer. The rough surface of leaves and woody debris will serve as excellent buffer materials. The outflows from basin A-4 provide at least twice that distance from the wetlands.

Detention Basin Bottoms - Vernal pools are *generally* fed by surface runoff and precipitation. Since this is a larger wetland with persistent water throughout the year other geohydrology may be in place.

To ensure the upslope surface runoff continues to feed the wetland system two detention basin proposals were discussed. One featured an open bottom detention basin to allow for groundwater recharge and the other a closed bottom basin to renovate surface runoff with hydrophytic vegetation, specifically nutrient uptake. One of the challenges of the open bottom basins is the maintenance of its infiltration capacity. Very often, one season of leaf fall can initiate a nearly impenetrable organic bottom layer that would preclude infiltration soon thereafter. This scenario makes the hydrophytic option seems more beneficial to the restoration of the water quality upslope of the wetland.

But, since there is standing water in the wetland, the question arises if that is the ground water surface. If it is, then ensuring groundwater recharge to maintain water levels in the wetland will also be a priority. Without knowing the hydro-geologic regime of the wetland/vernal pool system, it is difficult to plan the best way to preserve the resource. Given the above possibilities, Groton will have to decide if they need more hydro information to favor either of the design concepts.

The Natural Diversity Data Base

The Natural Diversity Data Base maps and files have been reviewed regarding the project area. According to our information, there are no known extant populations of Federal or State Endangered, Threatened or Special Concern Species that occur at the site in question.

Natural Diversity Data Base information includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the Natural Resources Center's Geological and Natural History Survey and cooperating units of DEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Data Base should not be substitutes for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data Base as it becomes available.

Also be advised that this is a preliminary review and not a final determination. A more detailed review may be conducted as part of any subsequent environmental permit applications submitted to DEP for the proposed site.

Archaeological and Historical Review

The Office of State Archaeology (OSA) and the State Historic Preservation Office (SHPO) believes that the proposed project area possesses a high sensitivity for archaeological resources. This review is based on known prehistoric Native American sites in the State of Connecticut's archaeological site files and maps, and, topographic and environmental characteristics of the land. Native American sites have been located in the immediate proximity of the project area. These sites include hunting and gathering camps dating over 4,000 years ago. These sites were recorded as part of an archaeological survey for the proposed highway corridor through eastern Connecticut. Proximity to the wetlands to the east and the soil types and slope associated with the project area also suggests a high probability for undiscovered archaeological resources.

The OAS and the SHPO concur in the need for a professional reconnaissance survey that should be undertaken in order to locate, identify and evaluate all archaeological resources that may exist within the ERT study area. A reconnaissance survey would provide the Town of Groton, OSA and SHPO with important cultural resource information for assisting in the local landuse decision-making processes. All archaeological investigations should be carried out pursuant to SHPO's *Environmental Review Primer for Connecticut's Archaeological Resources*.

It is also understood that the above recommended survey has been initiated and the OSA and SHPO look forward to reviewing the research design and the findings. Their offices are available to provide technical assistance to the applicant and the Town of Groton in conducting the recommended survey.

Planning and Transportation **Considerations**

Although the primary emphasis of this ERT review was for wetland/natural resource concerns, there are planning/transportation items that will be addressed at the site plan review stage with the Groton Planning Commission.

The Groton Plan of Conservation and Development recommends this area of town for medium density residential uses.

The Connecticut State Plan of Conservation and Development depicts this area in its Growth Area category.

This area of Groton is currently zoned Residential RU-20 which provides for active senior housing according to the provisions of Section 7.1-45, and other appropriate sections, of the Groton zoning regulations. The Groton Planning Director has indicated overall compliance with the density requirements of the zoning regulations and density recommendations of the adopted Groton Plan of Conservation and Development.

Primary access to the development will be via Flanders Road with secondary egress only from the southern portion of the development onto Route 1 (Fort Hill Road) in a westerly direction from Mystic Woods. In general, for a development of this scale the existence of more than one way in and out is critical for emergency access and is very desirable for residential use on a daily basis. The primary access onto Flanders Road is about 200 feet from the intersection with Route 1. Mystic Estates development has been approved for the southeastern side of this Flanders Road/Route 1 intersection. This intersection most likely will need improvements in terms of road locations and geometry and evaluation as to whether a traffic light is needed. It would be desirable if the access to Mystic Woods proposal could be moved further north along Flanders Road to the north of the wetlands area on the edge of the property. The applicant should investigate property to the north for alternative access.

The development should be pedestrian friendly. All internal new roads should have sidewalks to facilitate walking intra site and also providing access to existing or proposed sidewalks offsite. The existing sidewalk on Route 1 extends east to Route 215 and is

proposed to be extended to the Mystic Estates development, however it is located on the southerly side of Route 1 which would make it hazardous for senior residents attempting to use it from Mystic Woods because they would have to cross three lanes of traffic on Route 1 which could be a challenge even with a traffic light for pedestrian crossing. The recent subdivision on the northerly side of Route 1 between Flanders Road and Lemont Road is scheduled to construct a sidewalk in this location.

Internal road geometry should be checked to ascertain that the buses of the regional transit district (SEAT) could maneuver on them. Currently SEAT Groton service is located about one-half mile to the west in the vicinity of Route 117/Route 1/ Midway Oval, and it is conceivable that as intensive development increases in this eastern portion of Groton that additional bus service would be desirable and service areas could be extended.

State of Connecticut

Department of Transportation

Planning Comments

Based on the ERT meeting held on October 25, field review, and report information the following comments apply:

- This report states the primary access road will be from Flanders road. This was also discussed at the review meeting. This item should be more clearly addressed, including intersection turning volumes, in any subsequent documents or submissions regarding this proposal.
- Traffic data, including build and no-build turning movements for the proposed access drives should be provided. Potential safety impacts to Route 1 (Fort Hill road) from the access drive and also the intersection of Route 1 and Flanders Road should be provided.
- Groton's Planning Board request for information in attachment A should include accident analysis for Route 1.
- All State and Local permit approvals be obtained.
- Construction traffic entering and exiting the site may pose a safety concern due to the location of the entrances to the site and construction vehicle size, weight and operational characteristics.
- To alleviate these concerns, proper signage, traffic control and control of truck access to the site should be utilized.
- An examination of potential site line restrictions, particularly at access road intersection, and at the proposed access road to Route 1 would be appropriate.
- The close proximity of the primary access road to the intersection of Flanders Road and Route 1 should be investigated thoroughly.
- The retaining wall at the primary access road should be reviewed to ensure that no sight line issues are created in any direction.
- The secondary access to the site (access from Route 1) is located on a steep hill. Route 1 Northbound consists of a travel lane and climbing lane. As stated at the review meeting, this access point should be thoroughly investigated, with possible ingress and egress restrictions.

- If restrictions are recommended for the secondary access site proper signage should be installed.
- Possible turning lanes, signalization, shoulder widening and adjustment of pavement markings on Route 1 and the intersection of Flanders road with Route 1 should be investigated. This will ensure sufficient width in the direction of travel for by-pass around vehicles entering or exiting the site.
- Prior to and at periodic intervals during construction, the condition of Route 1 should be monitored, including photographs, for any damage due to additional truck traffic.
- The limiting of construction vehicles entering and exiting the site during certain hours may need to be considered.
- The access road for construction activities should be paved; and maintained (i.e. cleaning), a sufficient length to minimize the amount of material being tracked onto the roadway.
- An area of sufficient size should be created to allow tractor trailers to unload construction equipment on the site and not on the roadway. At no time should construction equipment be allowed to off-load on Route 1 or Flanders road without the proper signage and certified traffic control.

About the Team

The Eastern Connecticut Environmental Review Team (ERT) is a group of professionals in environmental fields drawn together from a variety of federal, state and regional agencies. Specialists on the Team include geologists, biologists, foresters, soil specialists, engineers and planners. The ERT operates with state funding under the supervision of the Eastern Connecticut Resource Conservation and Development (RC&D) Area — an 86 town region.

The services of the Team are available as a public service at no cost to Connecticut towns.

Purpose of the Team

The Environmental Review Team is available to help towns and developers in the review of sites proposed for major land use activities. To date, the ERT has been involved in reviewing a wide range of projects including subdivisions, landfills, commercial and industrial developments, sand and gravel excavations, active adult, recreation/open space projects, watershed studies and resource inventories.

Reviews are conducted in the interest of providing information and analysis that will assist towns and developers in environmentally sound decision-making. This is done through identifying the natural resource base of the project site and highlighting opportunities and limitations for the proposed land use.

Requesting a Review

Environmental reviews may be requested by the chief elected official of a municipality and/or the chairman of town commissions such as planning and zoning, conservation, inland wetlands, parks and recreation or economic development. Requests should be directed to the chairman of your local Conservation District and the ERT Coordinator. A request form should be completely filled out and should include the required materials. When this request is reviewed by the local Conservation District and approved by the ERT Subcommittee, the Team will undertake the review on a priority basis.

For additional information and request forms regarding the Environmental Review Team please contact the ERT Coordinator: 860-345-3977, Eastern Connecticut RC&D Area, P.O. Box 70, Haddam, Connecticut 06438, e-mail: cert@comcast.net