



Eastern Connecticut Environmental Review Team Report

Eastern Connecticut Resource Conservation and Development Area, Inc.

Autumn Fields Senior Housing

Enfield, 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 Wetlands Commission, Conservation Commission
and Planning Commission
Enfield, Connecticut

September 2001

CT Environmental Review Teams
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Acknowledgments

This report is an outgrowth of a request from the Enfield Assistant Planner/Wetland Enforcement Officer for the Inland Wetland Commission, Conservation Commission and the Planning Commission to the Hartford County Soil and Water Conservation District (SWCD). The SWCD referred this request to the Eastern Connecticut Resource Conservation and Development Area (RC&D) Executive 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, August 1, 2001.

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I would also like to thank Jay Northrop, assistant town planner/wetland enforcement officer, Roger Olsen, inland wetland commission member, John Reveruzzi, Elm Development LLC, John Petronella, Elm Development LLC, Joe Russo and Dana Steele, engineers for the applicant and Dean Gustafson, VHB, Inc., environmental consultant/soil scientist for the applicant, 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 given plans and additional reports and information. Some Team members made individual or additional visits to the project site. 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 potential development, 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 this proposed senior housing development.

If you require additional information please contact:

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Introduction

Introduction

The Enfield Conservation Commission, Inland Wetlands Commission and Planning Commission have requested assistance from the Eastern Connecticut Environmental Review Team in conducting a review of the proposed Autumn Fields Senior Housing Development.

The ±81 acre site is located on Elm Street. Freshwater Brook forms the northern property boundary and an existing condominium development abuts a portion of the southern boundary. The northern section of the site was disturbed sometime in the early 1980's for a proposed development. Approximately ±16 acres will be disturbed for this development, most of it being the previously disturbed northern section. The site contains 42.5 acres of wetlands and ±43 acres are proposed for a conservation easement. The conservation easement will preserve most of the undisturbed wetlands, uplands and vernal pools. Sixty-one individual homes are proposed along a loop road and a cul-de-sac. Some units will have shared driveways. The site contains three existing detention basins constructed during the previous development. Two are being proposed to be utilized as part of this project's storm drainage system. There is one wetland road crossing proposed and the loop road and houses will encircle one vernal pool.

Objectives of the ERT Study

The commissions are requesting the review to assist them in their evaluation of this proposed project. Specific concerns include reviewing and commenting on proposed mitigation, site design regarding configuration and constraints of the site and a balancing of these factors. The ERT report will provide a natural resource inventory, a discussion of impacts, guidelines and recommendations

for the mitigation and protection of the natural resources and also raises some areas of concern where additional information may be required.

The ERT Process

Through the efforts of the conservation and inland wetlands commission this environmental review and report was prepared for the Town of Enfield.

This report provides an information base and a series of recommendations and guidelines which cover the topics requested by the commissions. 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.

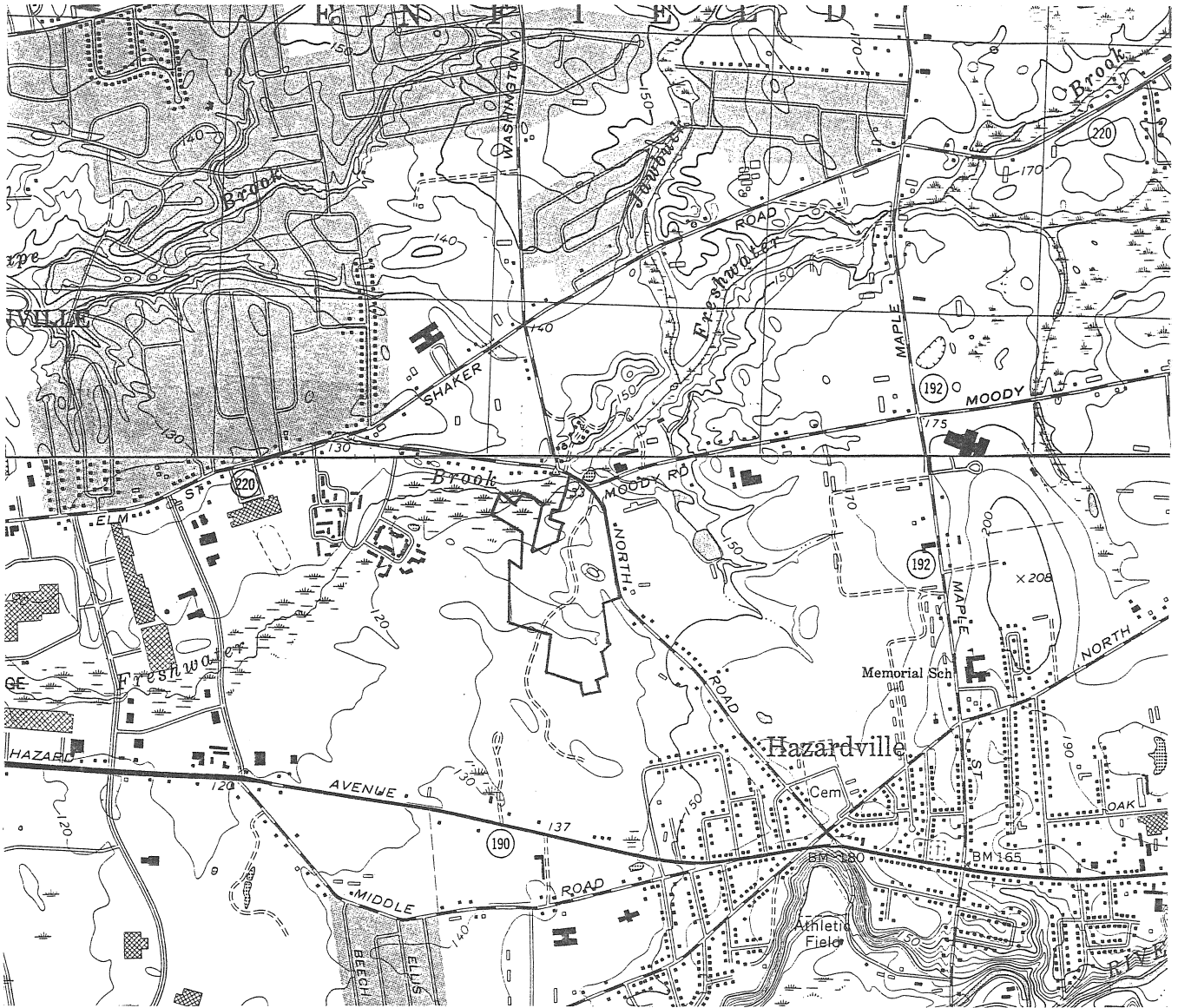
The data collection phase involved both literature and field research. The field review was conducted on Wednesday, August 1, 2001. Some Team members made individual and/or additional site visits. The emphasis of the field review was on the exchange of ideas, concerns and recommendations. Being on site 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.

Figure 1.

Topographic Map

Scale 1" = 2000'



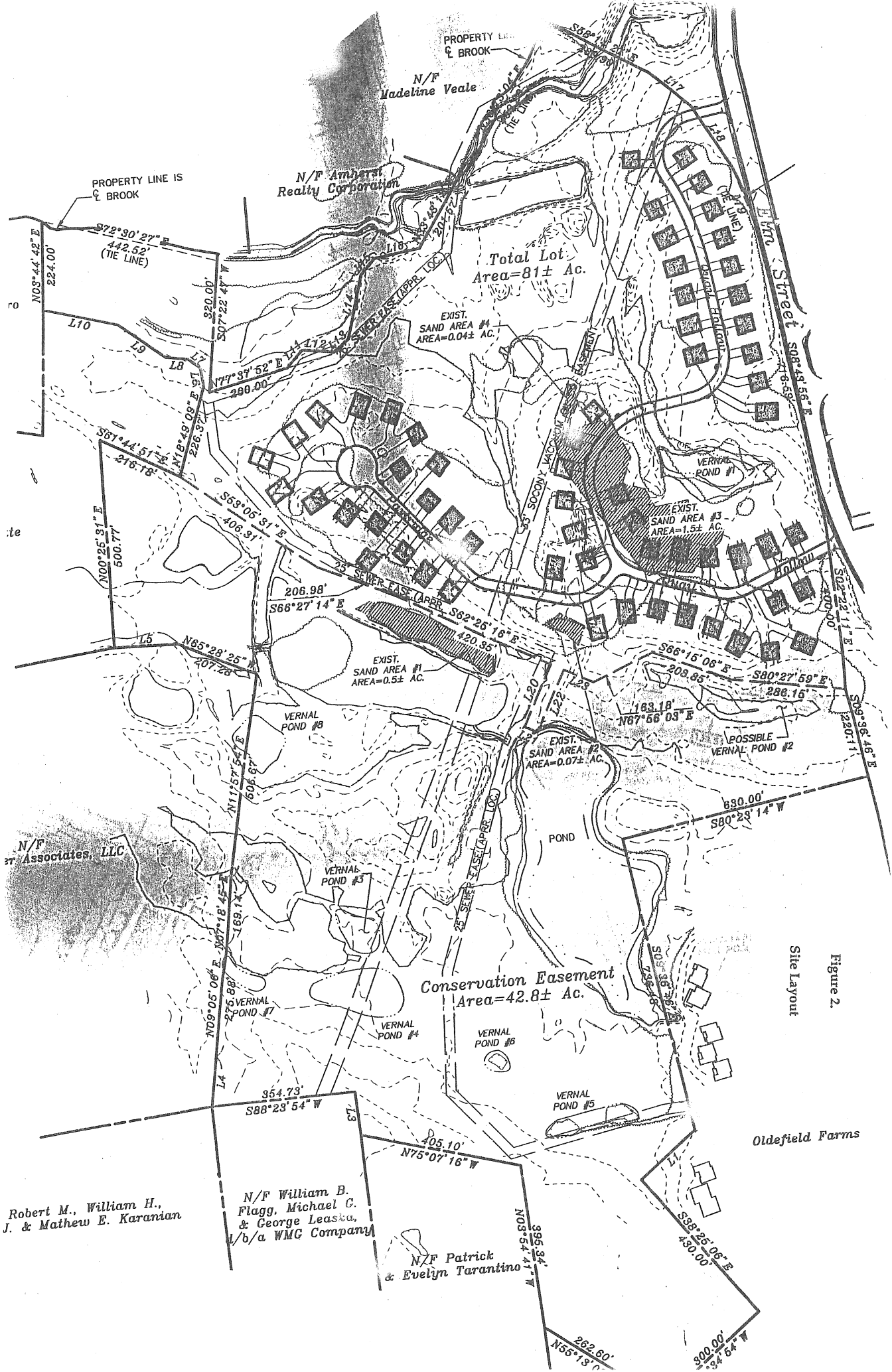


Figure 3.

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Soils Map



0 1/2 1 Mile Scale 1:20 000

Topography and Geology

Background

15,000 years ago the last Great Ice Age was coming to an end and warming climates began melting the ice in the Connecticut River Valley. The weight of the ice, which was more than a kilometer thick, depressed the land. As the ice to the south in modern day coastal Connecticut melted, the land bobbed back up. The resulting increase in the land elevation to the south and a pile of debris in the Rocky Hill area created a dam that backed up melt-waters forming a long narrow lake in the valley (referred to as Glacial Lake Hitchcock). The lake persisted for hundreds of years and all the time, silt and clay settled to its bottom. Along its edges, glaciofluvial sand and gravel were deposited as beaches and deltas. For some time after the lake drained, cold winds coming off the nearby ice blew the finer sand across the dry lake bottom (Thorson and Schile, 1995), covering it with several feet of dune sand and eolian silt. The proposed residential development is sited on land that is covered by several feet of wind-blown material that overlies glaciofluvial sand and gravel and possibly some lacustrine (lake) silt and clay.

Site Observations

The site has low topographic relief with gentle slopes over most of its extent. The higher elevations, (approximately +10 feet relative to surrounding area) are piles of wind-blown sand (parabolic and irregular shaped sand-dunes) that consist of fairly well-sorted fine and medium grains. Some of this sand has been excavated. Although much of the sand was originally covered by a reddish-brown eolian silt (Colton, 1965), no silt was observed during the limited field visit. Freshwater Brook crosses the northwestern border of the site in a small valley approximately 10 feet deep. It apparently is a perennial stream. Much of the area has been

disturbed and boring logs describe anthropogenic debris that had been buried in the past.

The area is all close to the dry season water table as evidenced by a retention pond with a water level only a couple of feet below adjacent grade. Spring water tables are higher as evidenced by numerous vernal ponds on the site. Despite high water tables, the sand that covers most of the surface provides adequate drainage. No gullying was observed during the site visit.

Below the windblown sand veneer over much of the Broad Brook quadrangle is lake clay and glaciofluvial deposits. According to the map by Colton (1965), lacustrine clay and silt may be found to the west and south of the proposed development with glaciofluvial sand and gravel below the site. Therefore, it is recommended that some boring tests be made to determine for certain that there is not clay beneath the western most foundations of the proposed development.

References Cited:

Colton, R.B., 1965, Geologic Map of the Broad Brook Quadrangle, Hartford and Tolland Counties, CT: U.S. Geol. Survey, Geol. Quad. Map #GQ-434.

Thorson, R.M., and Schile, C.A., 1995, Deglacial eolian regimes in New England. Geol. Soc. Am. Bull. 107:751-761.

Wetland Resources Review

Wetland Inventory Introduction

The site is located in the north central part of town north of Route 190 and having its eastern boundary along North Road in Enfield. The site is ±81 acres in size. Of this amount, approximately 35 acres is mapped as wetland. The site will be divided roughly north and south with the proposed development on the north side and a conservation easement on the south side. In the late 1980's there had been development proposed with some of the drainage infrastructure work done on the parcel. The result was that three detention areas exist on site, earth was moved and probably some overland drainage changed.

All of the site exists in the Freshwater Brook watershed and ultimately drains into Freshwater Brook. Freshwater Brook flows across the northern edge of the site and receives drainage from the northern one third of the parcel. This drainage passes through the constructed drainage system and detention basins, into the brook. The drainage on the southern part of the site leaves in a general westerly direction flowing into the wetland northwest of the parcel. From this parcel Freshwater Brook flows about three miles into the Connecticut River.

There are many apparent wetlands on the site. The brook and its linear path pass along the northern border of the parcel is one. Visually, the easiest to see on plans and aerial photographs is the existing 3 1/2+ acre open water pond (drainage pond #1) that exists from the previously proposed development. When looking at the single sheet site plan the eight vernal pools are also easy to locate mostly because of their independent and isolated nature. Most of the wetlands on the site are not impacted by the proposed development.

Wetland Assessment

Water Quality : The water quality for this parcel as mapped by the Connecticut Department of Environmental Protection indicates that the surface water quality classification for all of the parcel is assumed to be A. Ground water quality for the site is assumed to be GA. The descriptions of these classifications are:

Class A

Designated uses: potential drinking water supply; fish and wildlife habitat; recreational use; agricultural and industrial supply and other legitimate uses including navigation.

Discharge restricted to: same as allowed in AA (i.e.: Discharge restricted to: discharges from public or private drinking water treatment systems, dredging and dewatering, emergency and clean water discharges.).

Class GA

Designated uses: existing private and potential public or private supplies of water suitable for drinking without treatment; base flow for hydraulically connected surface water bodies.

Discharge restricted to: same as for GAA (i.e.: discharges limited to: treated domestic sewage, certain agricultural wastes, certain water treatment wastewaters.) and discharge from septage treatment facilities subject to stringent treatment and discharge requirements, and other wastes of natural origin that easily biodegrade and present no threat to groundwater.

Source: *Protection Summary of the Water Quality Standards and Classifications*, Connecticut Department of Environmental Protection, Bureau of Water Management.

National Wetland Inventory: The Fish and Wildlife Service National Wetland Inventory (NWI) has mapped the area on its Broad Brook NWI map. This map classifies the wetland complex along Freshwater Brook as both: PEME - palustrine (P), emergent (EM), with seasonal saturation (E), and PSS1E palustrine, scrub shrub (SS), broad leafed deciduous (1), with seasonal saturation.

A larger mapped wetland unit south of the proposed developed area includes the existing large pond (detention pond #1) and some of its surrounding upland habitat. This was mapped as PFO1E. This is Palustrine, forested (FO), broad leafed deciduous, with seasonal saturation. This map unit was mapped before the pond was created.

The map classifies the vernal pools that exist in the south west portion of the parcel as PSS1E. This is palustrine, scrub shrub, broad leafed deciduous, and seasonally saturated. Due to the scale of NWI mapping, 1:24,000, not all of the vernal pools were mapped.

The wetlands on the site were delineated, mapped, and field checked by Mr. Dean Gustafson, Professional Soil Scientist for VHB, Inc. His evaluations and accompanying descriptions as presented in the reports: *Vernal Pool Study* and *Wetland Evaluation* are thorough and do an excellent job of profiling the existing wetland communities, the history of the site, and the results of the earth moving and drainage manipulation of the last few decades. That being the case, there is no need to reiterate the descriptions of the wetlands especially in the southern, non-impacted area. As mentioned above, the proposal does a good job of avoiding the majority of wetlands and vernal pools on the site, including putting a great many of them in the easement area.

The use of existing detention areas for stormwater almost guarantees an ongoing water source for the wet communities that have established themselves in these

locations. The stream corridor connecting open water Detention Basin 1 and the marshy Detention Basin 2 is likewise unimpacted, though based on the *Drainage Study* it may pick up slight increase of outflow from the pond.

There is, however, some impact to the wetlands from the development which needs to be addressed.

Potential Wetlands Impacts /Problems/Plan Recommendations

Impacts to Vernal Pool #1

One of the major points of concern of the proposed development is the impact to the Vernal Pool #1 . Mr. Gustafson's report excelled in coverage and description of the parcel as a whole and about Vernal Pool #1 specifically. He showed nicely that the wetland, although it has undergone significant physical alteration in the past, still exists and, by implication of its current obligate vernal pool species, seems to prosper today. The vernal pool has shown a strong survival history.

But, while Vernal Pool #1 has been impacted in the past with altered drainage and various configuration and landscape changes, one of its constant features has been its surrounding upland area. Although it has changed in configuration, the surrounding expanse of undeveloped upland provides vernal pool migratory animals safe upland habitat. From this perspective, the proposal seeks to impact the pool in a way it has not been impacted in before - by altering the connection with the upland area associated with it.

When vernal pools are considered as amphibian hatcheries for the neighboring uplands there is a better understanding of the relationship and dependence of these wetlands to the upland. Mr. Gustufson's *Vernal Pool Study* shows the obligate species here to be fairy shrimp and wood frogs. Although wood frogs are often cited as needing several hundred feet for their uplands habitat needs they may be able to exist with this reduced area as immediate habitat, provided there is an upland link. The survival, however, is largely contingent on keeping a

truly effective 100' buffer around the vernal pool. The biggest concern is that the 100 foot restricted area often gets increasingly narrow as homeowners expand their yards and/or impact the pool with yard waste dumping (grass, brush, etc.) and grassy area runoff (pesticides and fertilizer).

The connection to the forested upland needs to be maintained. A disconnect between the upland and the vernal pool separates the two necessary elements of wood frog habitat. Forested areas are adult wood frog habitat and vernal pools are their breeding locations.

For wood frogs, road crossings of 5 to 10 vehicles per hour during the hours of 6 PM to midnight during critical movement times can be tolerated. Movement to the pool for breeding occurs in early spring (depending on weather early March to early April) and juveniles are generally emerging from the pool early summer (mid June to mid July). This being an open canopy wetland it likely has earlier dates due to warmer water temperatures than the closed canopy pools, but it also most likely dries out sooner in the summer. Traffic flows exceeding the above rates at migration times (i.e.: 15-20 cars per hour) provide a population damaging mortality rate.

The homeowner association should be responsible for monitoring homeowner encroachment on the pool and be responsible for reporting to the town's wetland enforcement officer (WEO) on a regularly agreed upon schedule.

There was some discussion at the review meeting of treating the *Phragmites* in this vernal pool with *Rodeo*. Consensus among the Team wetland reviewer's colleagues is not to treat the pool with this product and that removal of the reed, if necessary, should be done manually. If the bottom of the pool is going to be disturbed (i.e.: removal of *Phragmites*) a monitoring plan should be submitted to the town WEO for an agreed upon period of one to three years to report on the possibility of invasive plants moving into and dominating the wetland.

Currently the vernal pool bottom/organic layer is composed of deciduous leaves. While the natural balance of this pool shows that it incorporates these leaves as bottom material, the planting of conifers around the pool should be reviewed and the removal of deciduous trees around the pool edge should be carefully considered.

In addition, the proposed pipes that connect the pool to the wetland finger under the Quail Hollow Road may not be needed. Since this vernal pool showed no sign of salamander egg masses and no reports of their being in the vicinity the pipes are of questionable need. Of note though is that crossings such as this are better helped by using a lower curbing, shaped lower in profile to make them passable to the crawling amphibians (salamanders).

Buildings Inside the Wetland Boundary

The plan shows that parts of 13 of the 61 housing units enter into the 100 foot regulated wetland area. This represents 21% of the total proposed structures. The intrusions are especially evident on the west side of Quail Hollow where 6 of the 7 structures are within the 100 foot boundary. Reconfiguration of the buildings to respect the setbacks should be done to allow the buffers the full area to do their wetland protection job.

Maintenance of Catch Basin System

There are four sections of the storm drainage system that ultimately drain into wetlands. This represents the runoff from hundreds of feet of two lane, 24 foot wide roadway. The storm water will run off into the wetlands after passing through the existing detention basin system. To provide effective longevity to the system, the proposed storm drain/catch basins must have sediment trapping capability.

Additionally, it should be imperative for the homeowner's association to be responsible for maintenance of the systems by providing a maintenance schedule to the town wetland (or appropriate) commission. Regularly scheduled catch basin cleanouts avoids sediment filling the basins, clogging the riprap and thus avoids sediment overflow into the wetlands. This often seen subdivision problem is recurrent throughout the state. Only through a regularly scheduled removal of winter road sands from the catch basins can the long term avoidance of filling the three existing sedimentation basins and riprapped outfalls be avoided.

Wetland Boundary Markers

Flags will need to be replaced in the field and the final building plans should include the numbered flags for reference during construction. The lack of existing flags and the fading of numbers from those that do exist (due to the time between the flagging and the present) make it difficult to establish the field relationship to the wetlands while onsite. Given the close proximity of nearly every lot to wetlands, the location of the wetland boundary should be easily reconciled on site at all times.

The Road Should Be Hard Surfaced Before the House Construction Begins

This is especially important on this parcel where the bulk of the soil is sandy and the underlying material is sandy as well. These conditions have the capacity for ease of erosion once the vegetative cover is disturbed. It is especially important since the typical house site has 100 foot or less proximity to wetlands.

Construction Sequence

A construction sequence should be proposed specifically for this site so that all parties understand the steps to be implemented to avoid erosion problems. Items such as when erosion control structures are in place, when ground clearing begins (too late in growing season for establishment of vegetative ground cover

or mulching before winter?), when the access road is built, when heavy equipment arrives, etc. should be detailed once plan approval seems likely.

Soil Stockpiles

Soil stockpiles should be represented/located on the final plan so that all parties understand the locations and so that implementation of erosion and sediment devices/barriers for these areas can be in place accordingly.

Alternative Road Configuration

The Team wetland reviewer offers for consideration and discussion the attached alternative proposal (see Figure 4). There are three primary differences between this concept and the proposed road network that the ERT reviewed.

First, the proposed cul-de-sac (Partridge Run) that was off the main road and home to 19 structures has been moved to the north part of the site. In this alternative location the house count would actually be reduced because of the reworking to avoid wetland intrusions. There is an assumption being made that if there was a cul-de-sac with 19 houses permitted the cul-de-sac with fewer houses would therefore be allowed.

Second, the alternative main loop road offers the bulk of residents separate entrance and exit roads. These roads would be parallel in boulevard fashion at the entry with a turn around before the looping begins.

Third, the gap left between the alternative cul-de-sac and the alternative loop road allow for the necessary connection between the vernal pool and the forest wetland. This scenario exchanges the proposed wetland crossing which separates the pool from the forest for a crossing of less wetland value that segments a finger of forested wetland.

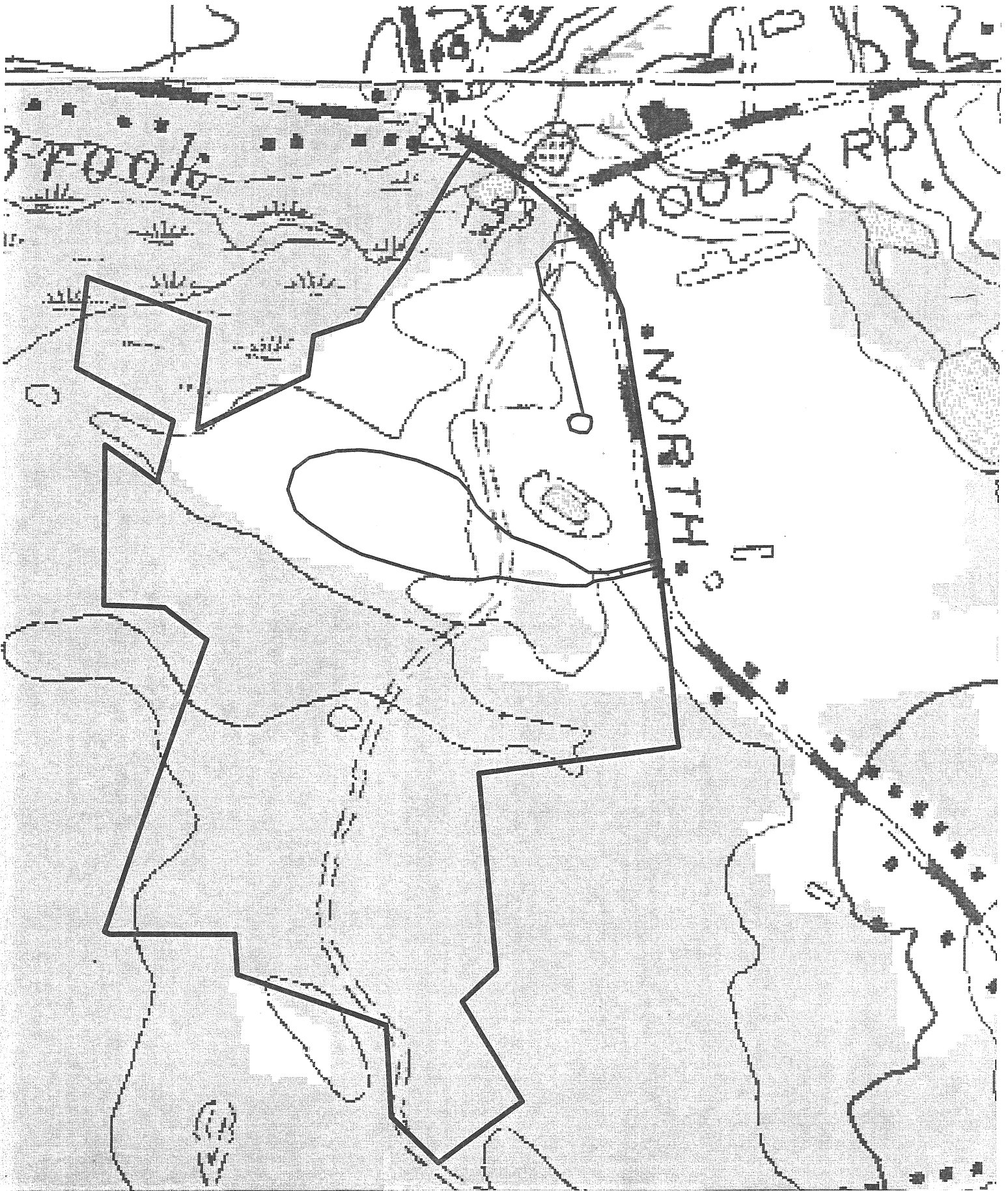


Figure 4.

Wetland Reviewer Map

Soil and Water Conservation District Review

Consultants for the applicant developed an unusual amount of detailed information for review, including evaluations of on-site resources. In addition, town staff was consulted during project development and the plan reflects their input. Sufficient information has been provided by the applicant to evaluate the proposal. Therefore, the following comments focus on specific elements of the proposed development and provide recommendations for improvements in the plan or, in a few instances, recommendations for additional information regarding specific project components.

In general, this is a well designed project with all of the development centered on previously altered land in the northern portion of the property. Only 16 acres of total disturbance is proposed on the 81 acre site. Approximately 43 acres will be left undisturbed and will be permanently protected within a conservation easement. Land within the easement consists of mature forest, wetlands, and seven vernal pools.

The one outstanding issue at the time of the review involves the possible presence of several endangered species or species of special concern. As described to the ERT, most of the potential habitat occurs within the proposed development area. Since the project requires state permits, state requirements for protection of species may apply. Therefore, the proposed development is subject to modification.

Soil and Erosion Control

General upland soil boundaries are identified on a sketch map prepared by VHB, Inc. Upland soil locations are consistent with those identified in the Soil Survey of Hartford County, Connecticut, SCS 1962, with the exception of a designation

for "made land" on the sketch plan. This designation refers to areas altered by excavation or filling and reflects conditions noted in the field. Wetland boundaries were field delineated by VHB, Inc. Soil types are described in a Wetlands Delineation Report prepared by VHB, Inc. The soil descriptions are consistent with those found in the soil survey.

Upland soils (series) consist of Made Land, Agawam fine sandy loam, Ninegret fine sandy loam and Windsor fine sandy loam. All of these soils have low to medium erosion potentials. The Windsor series is the most extensive soil within the proposed development area. This soil has a generally low potential for water erosion, but may be subject to wind erosion. Measures such as watering dry soils during development may be necessary to reduce wind erosion. Establishing vegetation in these areas quickly after disturbance will be critical. It appears that some overlying soils have been excavated in areas mapped as Windsor. The more course sub-soils, which are currently exposed, may not be as vulnerable to wind erosion.

The applicant has developed a detailed erosion control plan, utilizing standard erosion control measures such as silt fence and hay bale sediment barriers, construction entrances, inlet and outlet protection, and final vegetative stabilization. The locations of all measures are shown on the site plan and are located in appropriate places. These measures should be sufficient to protect against erosion, provided they are properly installed and maintained.

Wetlands and Vernal Pools

VHB Inc. evaluated wetlands and vernal pools and accurately characterizes the wetlands encountered in the field by District staff. Wetlands in the southern part of the site will be protected within the proposed conservation area. This includes seven of eight vernal pools, a large detention pond, and a complex system associated with Detention Basin #2. Since this area will be relatively undisturbed

the discussion here focuses on wetland and vernal pool resources proximate to development.

The most significant wetland alteration involves the road crossing. Small areas of wetland will be altered by making improvements to detention basins. A total of 3600 square feet of wetland will be altered - most of this is associated with the road.

Based on comments made by project designers at the ERT, the feasibility of eliminating the road crossing of the wetland has been explored, and would meet the developers needs. However, municipal public safety officials recommended that the road crossing be maintained to provide two contiguous access locations onto Elm Street. No other obvious alternatives to the crossing are available. (See Wetland Review section for a possible alternative.)

The area altered by road construction encompasses the outlet of the Vernal Pool #1, as identified in the VHB report. The location of the crossing maintains the integrity of the vernal pool and crosses at a relatively narrow section of the outlet. Based on the assessment by VHB and field observations, it appears that the outlet is a man-made excavation installed to drain the pool.

The VHB assessment includes a history of the pool based on research of the available records and aerial photographs. The assessment provides evidence that the pool was created by a prior excavation. Despite the fact that the pool may have been created, it should be assessed based on its current function. Obligate vernal pool species, including wood frogs and fairy shrimp, were identified in the pool.

Potential impacts to the function of the pool include degradation of water quality, disturbance of associated upland and restriction of travel routes in and out of the pond by mobile species. Mobile species using vernal pools spend the

majority of their life cycle in surrounding uplands, so development of nearby uplands is likely to have an impact on the function of the pool. Surrounding structures and roads will restrict travel to and from the pond and surrounding upland. The project team has developed a number of mitigation strategies to address these issues. They include construction of stormwater collection and treatment swales around the pool perimeter, buffer plantings, and installation of two twelve inch "wildlife corridor pipes".

How effective the mitigation measures will be is impossible to quantify. The stormwater swales will provide some water quality protection, but could also reduce the amount of surface water currently entering the pond. The VHB report suggests that the pool is supported by groundwater, based on soils and the relatively small watershed feeding the basin. However, groundwater infiltration will also be altered by the development by increasing impervious surfaces and installing stormwater collection systems. More information regarding the hydrology of the pool is needed to evaluate potential impacts.

The wildlife corridor pipes will direct organisms into protected wetlands and surrounding upland northwest of the pool. However, no information is provided regarding specifications used in determining the size of the wildlife corridor pipes. The District has no direct experience with this issue, but it would be useful to have some additional information regarding requirement for such structures. There have been some reports that pipes of certain lengths and widths are not effective because of restricted light. Wildlife crossings have been used in other developments in New England, so there is probably some current data available on their effectiveness.

Vernal pool #2 may not function as a vernal pool, based on the assessment by VHB. In any case, development will only effect one side of the adjoining upland. The other side, which includes forested areas, will be protected within the conservation easement.

Direct impacts to other wetlands are minimal, and are restricted to alterations required to use existing detention facilities. Except for the 100 foot regulated area around Vernal Pool #1, most of the activity within (other) regulated areas consists of grading for a number of "backyards" and the backs of some structures. Freshwater Brook is well protected within a wide buffer consisting of a substantial associated wetland of varying widths and adjacent upland, some of which is within the regulated area.

To summarize, it is likely that the development of the road and nearby houses will decrease the habitat value of the vernal pool. If this alteration is viewed in light of the project as a whole, it appears reasonable, given the level of protection afforded the other vernal pools, and proposed mitigation measures.

Recommendation: To assist the Commission with assessing the value of proposed mitigation, additional information should be provided regarding anticipated hydrological impacts to the vernal pool and specifications used for sizing the wildlife corridor pipes.

Stormwater Management

Stormwater will be separated into three discharges, two of which will be detained in existing structures. Subwatershed A will discharge into Detention Basin #3, adjacent to Freshwater Brook. The outlet of the basin will be modified to handle the additional flow. Both the berm and inner basin are currently filled with woody vegetation. Woody vegetation on berms, particularly at the outlet end, can contribute to berm failure from piping along root channels and blowdown. Woody vegetation within basins takes-up storage volume and may impede flow. Detention basins must be maintained to function as designed.

Stormwater from watershed B will be discharged to a rip-rap splash pad adjacent to Freshwater Brook. During a 50 year storm, the outlet will discharge 14.5 cfs. District staff did not inspect the location of the discharge during the site visit.

Recommendation: The project engineer should assess the need for woody vegetation removal within the detention basin and the berm. In addition, the area downslope of the discharge from Basin B should be evaluated to determine if the area is suitable to handle the discharge. Vegetative cover and topography should both be assessed. Even with a splash pad, a 14.5 cfs discharge is a substantial amount of water to pass over unprotected ground, and the water will tend to form channels and gullies.

Stormwater Management Review

The project is a proposed 81± acre, 61 unit senior housing development on Elm Street. Approximately 16 acres will be disturbed for construction of the units and infrastructure. The units front on a proposed loop road and cul-de-sac and will be serviced by town water and sewer. The site is part of property previously approved for the second phase of the Olde Field Farms condominium development and contains some existing stormwater management measures constructed for that development. Phase I of Olde Field Farms was constructed and lies immediately to the south of this site. Approximately 42.5 acres of the site are wetlands and 43 acres of the site, containing most of these wetlands, will be designated as a conservation easement.

Freshwater Brook runs along the northern boundary of the site and all drainage eventually discharges there. There are three existing detention basins on-site constructed for the Olde Field Farms development that will be utilized to address stormwater management for this development. Detention Basins 1 and 2 are located immediately south of the proposed units and Detention Basin 3 lies to the northwest. Basin 1 flows into Basin 2, which then discharges to wetlands associated with Freshwater Brook. Basin 3 discharges directly to Freshwater Brook. Approximately half of the site discharges to Basin 1 and about a quarter of the site discharges to Basin 3. The cul-de-sac, which comprises the western quarter of the site, discharges undetained toward Freshwater Brook. The drainage report for the development indicates that those areas flowing to detention basins are being "over-detained" to compensate for the undetained cul-de-sac drainage. The site topography is rather gentle with few grades over 10 percent.

Approximately three-quarters of the units front on the loop road with the remainder fronting on the cul-de-sac to the west. A town sewer line runs along easements to the north, west and south of the site as well as running within Elm

Street to the east. The southeast portion of the drainage system flows through catch basins in the loop road to a proposed riprap swale leading to the existing Detention Basin 1. The outlet structure of this basin will be modified to provide for the designed detention. There is a vernal pool wetland area surrounded by the loop road in this area. No drainage discharge is proposed to this area other than sheet flow yard runoff from the units surrounding it. Grading and planting buffers are proposed around this area. The northern portion of the loop road will flow through catch basins into the existing Detention Basin 3, whose outlet structure will also be modified appropriately.

The design plans indicate that during construction silt fence will be used along the perimeter of disturbed areas. In addition, the construction should be phased, where possible, to minimize the area of soil exposure at any given time. Gravel dam reinforcement of the silt fence should be considered in areas where length or area drained present the possibility of high flows or concentrated flows. To prevent, as much as possible, the transport of sediment on the site, gravel and/or haybale check dams should also be considered along the roadway shoulders and any diversion swales. Catch basins must also be protected during construction.

The General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities requires that construction sedimentation storage be provided for drainage areas greater than 2 acres. Since the detention basins are already existing, they should not be used for construction sediment control. Independent sedimentation basins should be installed to catch construction runoff before it reaches the detention basins. Energy dissipaters are shown at all outlets. Details and design calculations should be included to verify their adequacy. To address long-term sediment removal as required by the general permit, the detention basins can be modified to provide a sediment forebay. Otherwise, a swirl-concentrator sediment chamber must be included in the drainage system. A maintenance schedule must also be included for all erosion and sedimentation control measures and structures both during

construction and for long-term maintenance. Any proposed modifications to the detention basins should also be addressed.

One way to reduce the impact of stormwater discharges is to reduce the discharges themselves. The town and the applicant may want to investigate means of reducing runoff from the site. This could involve the elimination of curbing for portions of the roadway system, allowing sheet flow to disperse and infiltrate rather than discharge to the drainage system. One means of reducing runoff is to "disconnect" foundation and roof runoff from the drainage system.

A registration for the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities must be submitted at least 30 days prior to the start of construction. A Stormwater Pollution Control Plan must also be prepared and submitted at the same time for any site that will disturb over 10 acres total. In general, erosion and sediment control measures utilized must be appropriate for a site containing and adjacent to a sensitive wetland and watercourse. Construction sedimentation basins or swales shall have a capacity of at least 134 cubic yards per acre drained. Long-term sediment control must also be addressed. The detention basins may be modified to provide this function. Disturbed areas to be left bare for over 30 days will receive temporary seeding or heavy mulch. All disturbed areas must be seeded as soon as possible. No areas may be left bare by the end of the planting season. Care must be taken to properly stabilize seeded areas with mulch and/or geotextiles. Properly constructed and maintained, the site should have minimal impact on the adjacent wetlands and watercourses.

The Natural Diversity Data Base

The Natural Diversity Data Base maps and files regarding the project area have been reviewed. According to our information, there are State Endangered *Cicindela lepida* (Ghost Dune tiger beetle), State Threatened *Cicindela formosa generosa* (Big Sand tiger beetle) and a species of special concern, *Terrapene carolina* (the Box Turtle) that occur at the site proposed for this development.

The Ghost Dune tiger beetle (*Cicindela lepida*) and Big Sand tiger beetle (*Cicindela formosa generosa*) occupy blowouts and sand plains of dry -xeric, loose shifting sands, without water that are sparsely vegetated, such as pine barrens.

Eastern box turtles require old field and deciduous forest habitats, which can include power lines and logged woodlands. They are often found near small streams and ponds, the adults are completely terrestrial but the young may be semiaquatic, and hibernate on land by digging down in the soil from October to April. They have an extremely small home range and can usually be found in the same area year after year. This species is dormant from November 1 to April 1. It has been negatively impacted by the loss of suitable habitat.

An additional species of special concern, the Spiny Flower moth (*Schinia spinosae*) has been reported from this site but the record has not yet been documented in the DEP- EGIC database. The caterpillars of this moth are associated with the host plant - jointweed.

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. Please contact (860) 424-3592 if you have further questions. 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.

Wildlife Resources Review

As listed in the Natural Diversity Data Base section of this report the following state listed species are affected by the proposed development: Ghost Dune tiger beetle (endangered), Big Sand tiger beetle (threatened), Eastern Box Turtle (species of special concern), and Spiny flower moth (species of special concern). The caterpillar of the Spiny flower moth is associated with the host plant - jointweed.

After walking the site on September 5, 2001, the Team wildlife biologist, Julie Victoria, thinks the habitat also is ideal for Eastern spadefoot toads (*Scaphiopus holbrookii*), a Connecticut endangered species.

Limited information is known about the Eastern spadefoot toad. They are very secretive and have irregular breeding periods. They are active from June through August. They are expert burrowers, going as deep as 2 meters in sandy, well-drained soil. They are rarely observed outside of the breeding period. Their habitat is arid to semi-arid areas, such as fields, farmland, dunes and woodlands with sandy or loose soils. They breed in temporary bodies of water, flooded fields and forested wetlands. The sand dune habitat and Vernal Pool #1 make a perfect combination for this species.

The Ghost Dune tiger beetle (*Cincindela lepida*) and Big Sand tiger beetle (*Cincindela formosa generosa*) occupy blowouts and sand plains of xeric, loose shifting sands, without water that are sparsely vegetated, such as pine barrens. The development, as proposed, will eliminate the large sand dune habitat between pins 107 and 105 where these species have been documented. The Team wildlife biologist recommends that this area remain undeveloped, and that Quail Hollow units 10, 12, 14, 16, 21, 23, 25, 27, 29, 31 be eliminated or repositioned in the Conservation Easement. Two other sand patches, one to the

south of the sewer easement near #3 Partridge Run and one where #1 Partridge Run is proposed, also should remain undeveloped. This will eliminate #1 Partridge Run. The Team wildlife biologist recommends that Partridge Run begin at Elm Street, contain units #1-9, 11 and 15 then connect to #2 Partridge Run. Consideration also should be given to eliminating units 17 and 19 to maintain some connection between Vernal Pool #1 and the open space/wetland system to the south. The vegetation within this corridor should remain as undisturbed as possible.

It is recommended that the northern end of Quail Hollow Road end in a cul-de-sac from Unit #45 to Unit #18 to protect Vernal Pool #1. Vernal pools are a unique and vulnerable type of wetland that are inhabited by many species of wildlife, some of which are totally dependent on vernal pools for one or more stages of their life cycle. It is not adequate to protect only a small area immediately surrounding a vernal pool. Amphibians spend most of the year in upland habitats. Some species are known to feed and hibernate in uplands 500 feet or more from their breeding pools. Most wildlife vernal pool species are long-lived and navigate under leaf litter basically crawling on their stomachs to return to their natal areas for breeding every year or every two years. If the surrounding habitat is lost to development, the placement of wildlife corridor pipes (not described in the site plan detail drawings) does not guarantee use by any of the impacted species. There is a reference on the Wetland Mitigation Planting Plan to placing silt fence around wetlands during construction and bringing in topsoil. It is recommended that all areas void of topsoil remain undisturbed and silt fence not be placed around Vernal Pool #1. Silt fences can impede the movement of amphibians and reptiles.

If incorporating a cul-de-sac into the plan creates an emergency access concern, a second option would be to shift units 20, 22, 24, 26, 28, 30, 32, 34 and 36 to the north to allow the road to cut back out to Elm Street between units 20 and 18. Modifying Quail Hollow Road as recommended will allow the animals using

Vernal Pool #1 to access the area near Detention Basin #3 without being limited by a road. The Eastern box turtle record, which was documented near the large sand dune habitat, also will benefit from modification of the proposed road plan and the elimination of Quail Hollow units 10, 12, 14, 16, 21, 23, 25, 27, 29, 31.

The recommendation to eliminate 13 of the proposed units can be offset with construction in the Conservation Area. Protection of state listed species is a primary concern for the DEP Wildlife Division. If the Wildlife Division can assist the Town in further review, please feel free to contact them.

Fish Resources

Fish Community

Freshwater Brook adjacent to the proposed development is expected to support a mixed coldwater/warmwater fish community. The DEP Inland Fisheries Division Stream Survey Team collected the following species in Freshwater Brook below Palomha Drive on 9/11/89; tessellated darter, white sucker, fallfish, bluegill, largemouth bass, grass pickerel, and pumpkinseed. The stream is also annually stocked with over 600 yearling brook trout to provide a put-and-take trout fishery.

The stream is best characterized as meandering and low gradient to the proposed development. The channel is highly incised and down-cut. Albeit variable, most mesohabitat is in the form of shallow run/pool habitat with very limited amount of riffle habitat. Dominant substrate is comprised of coarse sands and fine silts. The stream is well shaded with a very tight, closed overhead canopy.

Impacts

Residential design for the most part has mitigated for most potential impacts to fisheries resources of Freshwater Brook by;

- (1) providing a sufficient (greater than 100' in width) undisturbed vegetated riparian buffer zone adjacent to Freshwater Brook and,
- (2) designing a stormwater management system which should minimize the long term and excessive influx of sediments to the watercourse.

As with any residential development, there is always a potential for erosion and stream sedimentation to occur during construction because of disturbed soils. If

sediment runoff does occur, the following damage to aquatic ecosystems could be expected:

- (1) Sediment reduces the survival of resident fish eggs and hinders the emergence of newly hatched fry. Adequate water flow, free of excess sediment particles is required for fish egg respiration and successful hatching,
- (2) Sediment reduces the survival of aquatic macroinvertebrates. Since aquatic insects are important food items in fish diets, reduced insect populations in turn will adversely affect fish growth and survival. Fish require an excessive output of energy to locate preferred prey when aquatic insect levels decrease,
- (3) Sediment reduces the amount of usable habitat required for spawning purposes. Excessive fines can clog and even cement gravels and other desirable substrates together. Fish may be forced to disperse to other areas not impacted by siltation,
- (4) Sediment reduces stream pool depth. Pools are invaluable stream components since they provide necessary cover, shelter, and resting areas for fish. Reductions of usable fish habitat can effectively limit fish population levels,
- (5) Turbid waters impair gill functions of fish and normal feeding activities of fish. High concentrations of sediment can cause mortality in adult fish by clogging the opercular cavity and gill filaments,
- (6) Sediment encourages the growth of filamentous algae and nuisance proportions of aquatic macrophytes. Eroded soils contain plant nutrients such as phosphorous and nitrogen. Once introduced into aquatic habitats, these nutrients function as fertilizers resulting in accelerated plant growth and nutrient enrichment of waters,
- (7) Sediment contributes to the depletion of dissolved oxygen. Organic matter associated with soil particles is readily decomposed by microorganisms thereby effectively reducing oxygen levels.

Recommendations

It is recommended to develop an aggressive and effective erosion and sediment control plan. Proper installation and maintenance of erosion/sediment controls is critical to environmental well being. This includes such mitigative measures as filter fabric barrier fences, staked hay bales, and sediment basins. Existing detention basins may want to be utilized as sediment basins during construction. Land disturbance and clearing should be kept to a minimum and all disturbed areas should be restabilized as soon as possible. Exposed, unvegetated areas should be protected from storm events. The applicant and the local wetland enforcement officer should be responsible for checking this development on a periodic basis to ensure that all soil erosion and sediment controls are being maintained. In addition, the applicant should post a performance bond with the town to protect against future soil erosion violations. Past stream siltation, disturbances in Connecticut have occurred when individual contractors either improperly deployed mitigation devices or failed to maintain these devices on a regular basis.

Archaeological and Historical Review

A review of the State of Connecticut Archaeological Site files and maps show no known archaeological sites listed for the project area. However, our files indicate three prehistoric Native American campsites associated to the east along Freshwater Brook. As a result, the northern portion of the project area adjacent is most sensitive for Indian sites.

The proposed Senior Residential Development is located immediately north of the Hazardville National Register Historic District (Figure 5), a 19th century commercial and residential community that was established in support of the Hazard Powder Company. However, the Connecticut State Preservation Office expects that the proposed new construction, which is sufficiently distant and buffered by topography and vegetation, will have no visual impact upon the historic and architectural character of the Hazardville Register Historic District.

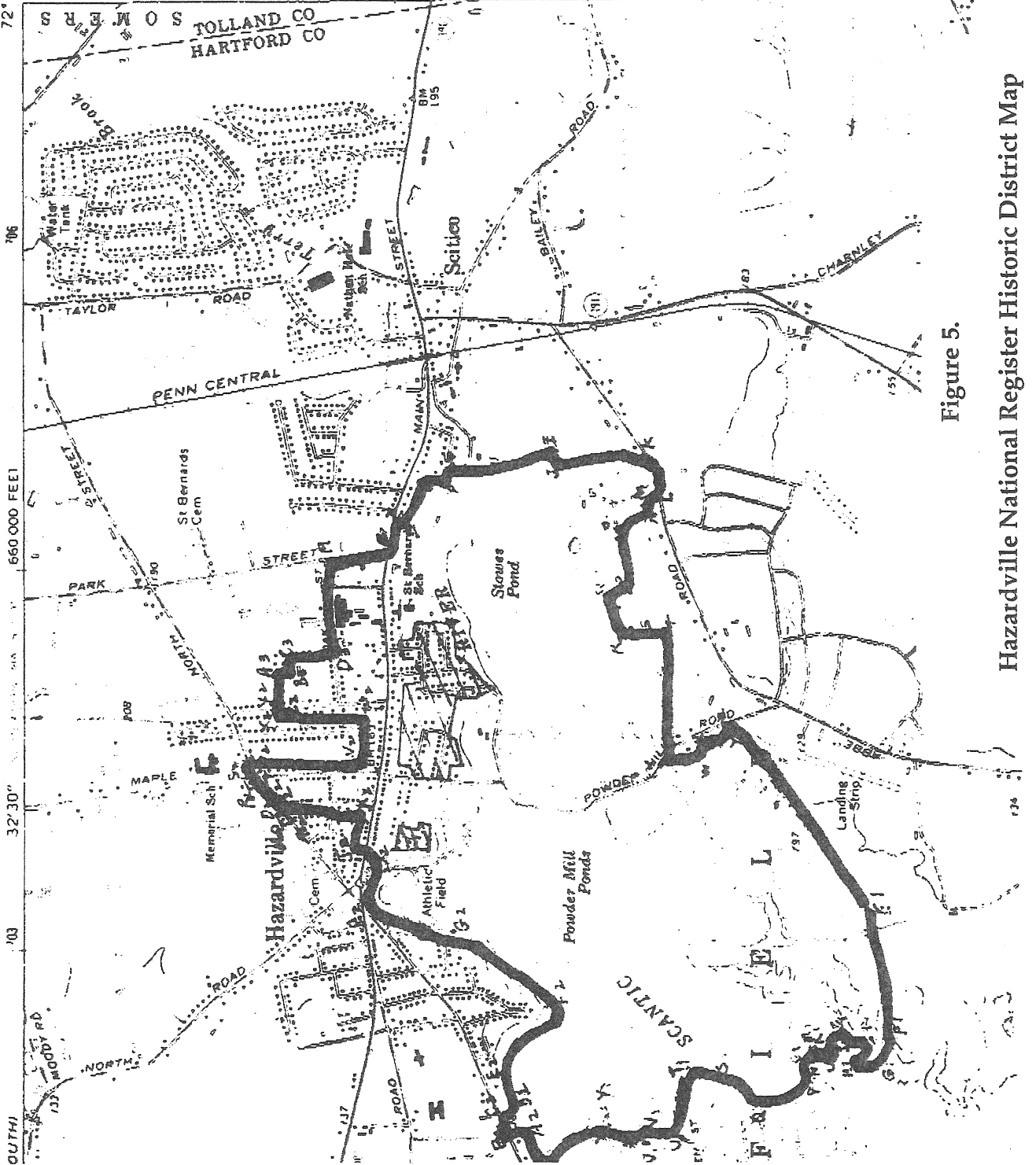
Nonetheless, the project area possesses moderate to high archaeological sensitivity for prehistoric Native American and historic archaeological resources. In particular, 19th century industrial archaeological remains have been preliminarily identified along Freshwater Brook at the intersection of Washington, Moody and North Roads.

The Office of State Archaeology and the Connecticut Historical Commission strongly recommends that an archaeological reconnaissance survey be undertaken in order to professionally identify, evaluate, and manage all archaeological resources which may exist within the project boundaries. This survey should be conducted in accordance with the Connecticut Historical Commission's *Environmental Review Primer for Connecticut's Archaeological Resources*. Both offices are prepared to offer any technical assistance to the

applicant in conducting this survey and working with the Town of Enfield in the preservation of the town's archaeological resources.

BROAD BROOK QUADRANGLE
CONNECTICUT
7.5 MINUTE SERIES (TOPOGRAPHIC)

72°30' 42"00"



Hazardville National
Register Historic
District
Enfield, CT

UTM References:

- A 18/704720/4641240
- B 18/704780/4640970
- C 18/704900/4640750
- D 18/704890/4650000
- E 18/705060/4650830
- F 18/705070/4650720
- G 18/705100/4650720
- H 18/705100/4650520
- I 18/705190/4650290
- J 18/705130/4650260
- K 18/705100/4649860
- L 18/705000/4649810
- M 18/705000/4649860
- N 18/704950/4649860
- O 18/704990/4650000
- P 18/704620/4649930
- Q 18/704610/4650020
- R 18/704410/4649970
- S 18/704450/4649860
- T 18/704450/4649760
- U 18/703940/4649720
- V 18/703860/4649800
- W 18/703890/4649620
- X 18/703940/4649610
- Y 18/703980/4649510
- Z 18/704060/4649520

- E1 18/703240/4648840
- F1 18/702730/4648760
- G1 18/702580/4648780
- H1 18/702570/4648890
- I1 18/702670/4648840
- J1 18/702660/4648910
- Ja 18/702720/4648950
- K1 18/702680/4649030

Figure 5.

Hazardville National Register Historic District Map

Planning Review

A Review and Summary of Elements of Town and Regional Plans and Existing Zoning

The proposed Senior Residential Development (SRD) on Elm Street in Enfield contains elements that are in harmony with local and regional development goals, as well as elements that may be in conflict with other such goals. The SRD's location is the origin of many of these elements. The Elm Street site is an approximately 81 acre lot, 42.8 of which will be preserved as open space or conservation lands. The site is directly across Elm Street from the Enfield Police Station, and from the future Enfield Senior Center. Public water and sewer lines would be available for the SRD.

The site is the home of a large wetlands area, located largely in the southern, conserved half of the lot, as well as several vernal pools. One of these pools, and a connected wetland, is located in the proposed development area. Virtually the entire site, including the actual proposed construction area, lie within a Department of Environmental Protection Natural Diversity Database (NDDDB) zone. The rare and/or endangered species identified on site include Wood Turtle and Tiger Beetle. The site also overlays an important aquifer area used for public water supply.

The site lies within a 1 - acre minimum lot size residential zone. A recent (5/18/00) zoning change allows SRD of this size and density to be located in this zone. The purpose of allowing such a development in this zone, according to the Enfield Zoning Regulations (EZR) is to "Accommodate alternative housing needs that will have no greater impact on Town services than the impact of a conventional, single family subdivision on such services;" and to "Allow development in harmony with the objectives and goals of the Enfield Plan of

Conservation and Development" (EZR 10-2.1). While it does seem clear from the development proposal that the SRD would not have a greater impact on Town services than would any other subdivision, there may be a question as to whether the SRD is in harmony with all goals from the Enfield Plan of Development (EPD).

While the SRD certainly meets the Town goal of promoting "development of economic benefit to the Town," the EPD states, in its "Land Use" and "Open Space" goals that any development should be done with an eye on protecting the Town's important natural resources, including rivers, streams, ponds, floodplains, wetlands, and aquifers (EPD p.3). While over half of the site is proposed to be dedicated as open space land, 61 single-family homes will be built on land that includes wetlands, vernal pools, NDDB habitat, and aquifer protection area. The collective impact of these homes, the associated roads, driveways, lawns, and human activity must be weighed carefully to determine if the economic benefits to the Town are more significant than the loss of this important, undeveloped land.

Where regional development goals are concerned, the issues are quite similar. In the "Land Use" section of the Regional Plan of Development (RPD), concerns about wetland, aquifer protection areas, and other natural resources are expressed (RPD 11). The major goal of the "Housing" section of the RPD is "to increase the range of choice in housing for persons of all incomes and all ages, but especially to those who have had the least choice, according to their location preference" (RPD 17). While the dedication of this development exclusively to seniors (55+) could be seen as increasing housing options, this may not be the case.

Demographic trends indicate that senior housing will become a very important consideration over the next twenty years, though a varied range of prices will still be necessary. According to the SRD developer, each of these 61 units will have an approximate market price of \$200,000. This development includes no affordable housing component, and offers housing at \$80,000 more than the FY

2000 median home price in Enfield (CRCOG Home Sales Report 2000). Further, all of these homes will be single-family detached units. In short, the SRD will provide more homes in Enfield for seniors, but does nothing to improve overall housing opportunities to residents at lower and middle income levels.

Summary of Surrounding Land Use and Current Use of the Site

The proposed SRD site is located within a residential zone of one-acre minimum lots, though the residential density in the immediate area of the site is much lower than that. Abutting the zone to the north and east are commercial/business zones and Town property. As stated above, the Town Police Station and future Senior Center are directly across the street from the SRD site. A condominium development abuts the site to the southeast, and the stormwater from this development is discharged into a detention pond on the SRD site. Elm Street is a well-traveled local road, though the section of the street where the site is located appears less busy than other sections of the Street further west. The site is near the large commercial center of the Enfield Mall area, though probably is not within walking distance. The location of the site, wetland constraints, and the SRD design limits the incorporation of the SRD into any existing neighborhoods. Instead, the SRD will seem to be a self-contained subdivision neighborhood with easy access to the Senior Center.

The current site is undeveloped, though some land has been cleared as part of previous development plans. To this end, some of the existing wetlands and vernal pools may have been impacted from the clearing of vegetation. Some of the vernal pool area is vegetated by phragmites, a harmful, invasive wetland plant.

The SRD layout plans have been drawn with much of the natural resources of the site in mind. The largest portion of the wetland, and most of the vernal pools

have been placed in the conservation portion of the site. Efforts were clearly made to avoid development directly on, or too near, the remaining pools and wetland. The concern shown Vernal Pool #1 and the associated wetland through the use of culverts and wildlife passageways does demonstrate this. Further consideration should be given the site's location in a public water supply aquifer area, and how the existence of 61 new detached residential units might affect both water quality and quantity in that aquifer. Additionally, clarification is needed in the Town's EPD goals to determine how important vernal pools and NDDDB habitats are as unique natural resources. Should these environmental factors hold some weight, the development may need to be scaled back in density, number of units, or placement of units.

Local Transportation Facilities and Comments on Road Layout

The entire SRD is to be located on private roads that would be constructed off of Elm Street. The main road, tentatively called "Quail Hollow," will empty onto Elm Street at two locations, forming a loop. The other road, "Partridge Run" would be a cul-de-sac off of Quail Hollow. A Traffic Impact Report associated with this proposal indicated that the traffic increase associated with the development would not place undue demands on the local street network. From a regional perspective, the development along existing infrastructure is in harmony with efforts to limit sprawl. Roads within the development are designed to minimize environmental impact and retain a neighborhood character. The roads were also laid out to avoid the most sensitive wetland and vernal pool areas within the site.

Bus service in Enfield is currently limited, and there is no existing or proposed bus line near the SRD site. Future transit service may include transportation to and from the Senior Center, and future bus service would likely include Elm Street and the Senior Center on regular routes. Other senior transit options would also include dial-a-ride bus services. For these reasons, the SRD, along

with the Town of Enfield, should consider options for a bus stop, perhaps sheltered, that could serve as a point of departure for the entire development. If the intent of the placement of the development is for the future Senior Center to serve as this point of departure, a crosswalk and/or traffic signal should be placed on Elm Street at the intersection of the SRD driveway and the Senior Center driveway to ensure the safety of older residents as they cross the busy street.

Lot Layout Feasibility, Livability of Lots, Solar Access, Open Space and Aesthetics

The zoning regulations governing SRD proposals such as this one allow for relatively high density development. An interpretation of this permitted density allows the developer to place 61 single-family detached housing units in a relatively small area. Even though the minimum required square footage per unit for this development is 900 square feet, the developer has proposed that each unit have a minimum of 2,300 square feet, plus a two-car garage for each unit. While not the extremely large homes that typify contemporary subdivision developments, the combination of the homes' substantial size and proximity may result in a fairly tight sight design. The key will be in the design and placement of homes, which could be done in a manner that creates a "town green" feeling typical of village centers. This aesthetic consideration will be limited to those within the development itself, as most of the homes will not be visible to the traffic on Elm Street.

Given that the development is intended for older residents who typically do not desire large expenditures of effort on yard maintenance, the small lot sizes are reasonable. There seem to be no major problems with lot livability, layout or solar access with this proposal.

In clustering the lots so closely together, the developer has been able to set aside a large portion of the overall site to open space. This preservation is commendable

and is in harmony with local and regional goals of preserving valuable natural and undeveloped property. The Town's stated goal of developing a greenway along the Freshwater Brook at the northern border of the property would also enhance the appeal, livability, and aesthetic qualities of the development.

Existing Infrastructure and New Needs

Public water lines and public sewer lines are available in Enfield, and will serve the SRD. The proposed density would be impossible without both. The number of housing units added will not overburden the current water or sewer systems or require major upgrading. A continuing concern of the SRD site will be its presence in a public supply aquifer area. Though pollution controls can be put into place during the construction of the development, once individual homeowners move in, there is little regulation of the use of potentially hazardous materials. The use of fertilizers, herbicides, and pesticides on lawns, the use of household cleaning products, as well as chemicals and hydrocarbons associated with automobiles are all possible contaminants of the aquifer beneath this development.

The storm water management system in the SRD seems to be more than adequate. The existing system of detention ponds and detention basins on the site should have little problem accommodating the increased runoff associated with the development. The development proposal's small upgrades and routing of storm water appears to be well planned, with sufficient time and distance necessary to ensure that storm water of a reasonably high quality will reach Freshwater Brook.

Proper Services to Support Development

The unique nature of a senior housing development make the question of some services totally irrelevant, and others extremely pressing. Access to schools and youth-oriented recreation opportunities are not major concerns, except for those residents that may be teachers or wish to walk to the park with grandchildren. The location of the Enfield Police Station and the future Senior Center directly across the street from the proposed SRD are significant advantages. While safety officials have commented that slightly wider streets would be preferable for fire engines and ambulances, the central location of the site along a major existing road would allow quick access to the development in emergencies.

As stated above, the nature of the surrounding zone, the dedication of open space, and the isolation of the SRD streets will limit much development in the immediate vicinity of the site. Continued commercial development of Elm Street may gradually creep toward the SRD site, placing some shops within walking distance. Though bus access to shopping, employment, or other locations is not available or planned, the likelihood that the upper-income residents of this development will have ready access to personal vehicles should allow sufficient mobility.

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, elderly housing, 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 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 Soil and Water Conservation District and the ERT Coordinator. A request form should be completely filled out and should include the required materials. When this request is approved by the local Soil and Water Conservation District and the Eastern Connecticut RC&D Executive Council, 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.