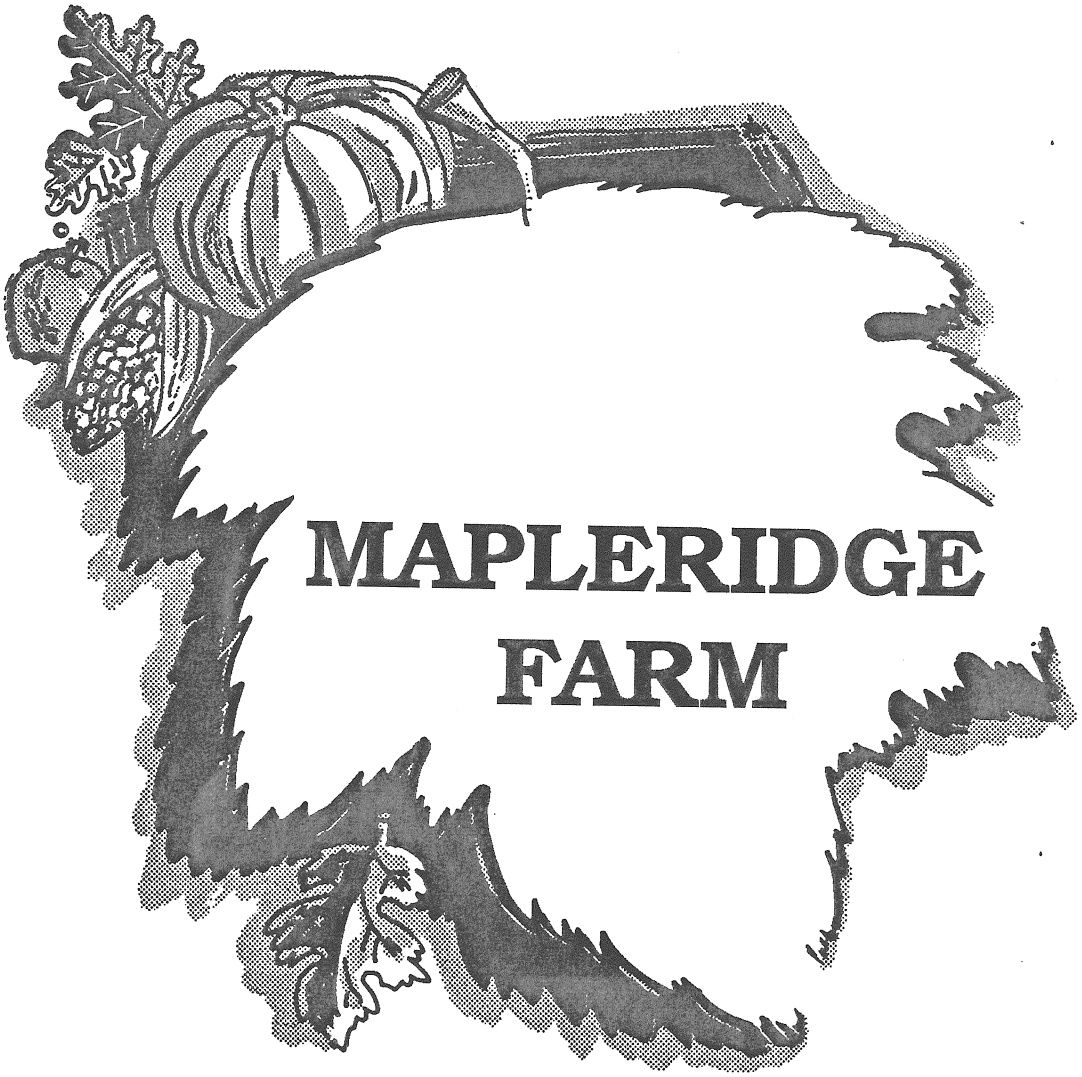

AFFORDABLE HOUSING DEVELOPMENT
HEBRON, CONNECTICUT

SEPTEMBER 1992

Eastern Connecticut Environmental Review Team Report

Eastern Connecticut Resource Conservation and Development Area, Inc.

ENVIRONMENTAL REVIEW TEAM REPORT
ON

Mapleridge Farm
Affordable Housing Development

Hebron, Connecticut

This report is an outgrowth of a request from the Hebron Town Planner to the Tolland County Soil and Water Conservation District (SWCD). The S&WCD referred this request to the Eastern Connecticut Resource Conservation and Development (RC&D) Area Executive Council for their consideration and approval. The request was approved and the measure reviewed by the Eastern Connecticut Environmental Review Team (ERT).

The ERT met and field checked the site on Thursday, July 30, 1992. Team members participating on this review included:

Nicholas Bellantoni	State Archaeologist Office of State Archaeology
Norman Gray	Professor UCONN - Department of Geology & Geophysics
Warren Herzig	Supervising Sanitary Engineer DEP - Bureau of Water Management
David Majchier	Environmental Analyst DEP - Inland Water Resources Division
Dawn McKay	Biologist/Environmental Analyst III DEP - Natural Resources Center
Brian Murphy	Fisheries Biologist DEP - Eastern District Headquarters
Peter Picone	Wildlife Biologist DEP - Eastern District Headquarters
David Poirier	Staff Archaeologist Connecticut Historical Commission
Joyce Purcell	District Conservationist USDA - Soil Conservation Service

Elaine Sych	ERT Coordinator Eastern Connecticut RC&D Area, Inc.
Carol Szymanski	Regional Planner Capitol Region Council of Governments
Maribeth Wojenski	Transportation Planner ConnDOT - Bureau of Policy & Planning

Prior to the review day, each Team member received a summary of the proposed project, a list of the town's concerns, a location map, a topographic map, a soils map and a preliminary site plan. During the field review the Team members were given additional plans and studies. The Team met with, and were accompanied by the Town Planner the developer's engineer and landscape architect. 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 designs 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 landowner. This report identifies the existing resource base and evaluates its significance to the proposed development, and also suggests considerations that should be of concern to the developer and 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 making your decisions on this proposed affordable housing development.

If you require additional information, please contact:

Elaine A. Sych
ERT Coordinator
Eastern Connecticut RC&D Area
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Haddam, Connecticut 06438
(203)345-3977

INTRODUCTION

The Eastern Connecticut Environmental Review Team has been asked to assist the Town of Hebron with the review of a proposed cluster housing development that will meet the definition of "affordable" housing under the Connecticut General Statutes.

The project site is approximately 65 acres in size, located on the east side of Route 85 (Church Street) about .8 miles south of the intersection of Route 66 and Route 85.

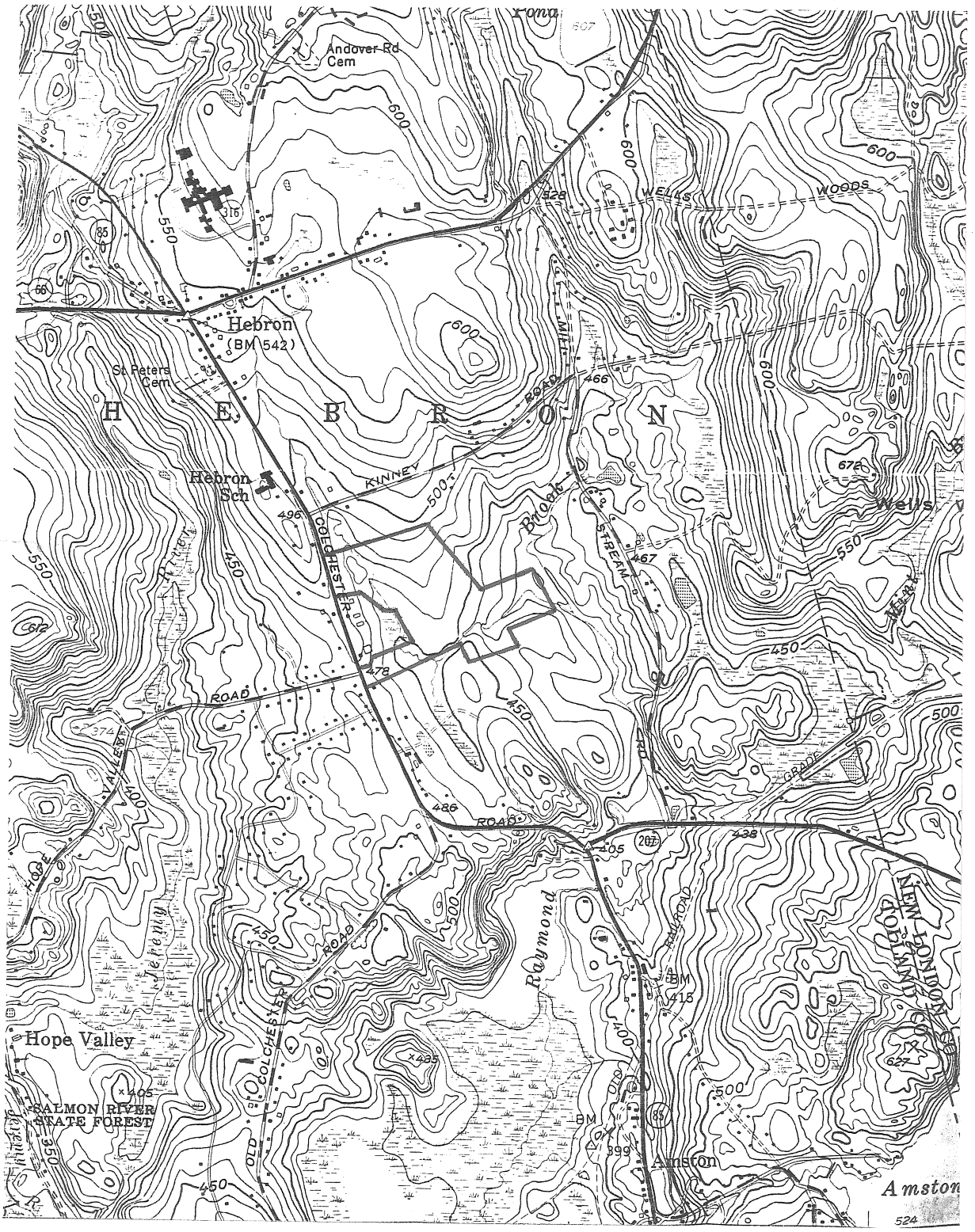
Vision Housing, Inc., the developer, plans to construct 40 single family houses. The homes will be clustered with nearly 60% of the area to be preserved as open space. One access road is proposed for the site. The property contains a man-made pond with a dam in the northwest corner and a significant wetland system in the southeast corner. Numerous stone walls crisscross the site and there are some very large, old maples, as well as fruit trees. The developer plans to have a community well for the water supply and would like to receive permission to tie into the public sewer system.

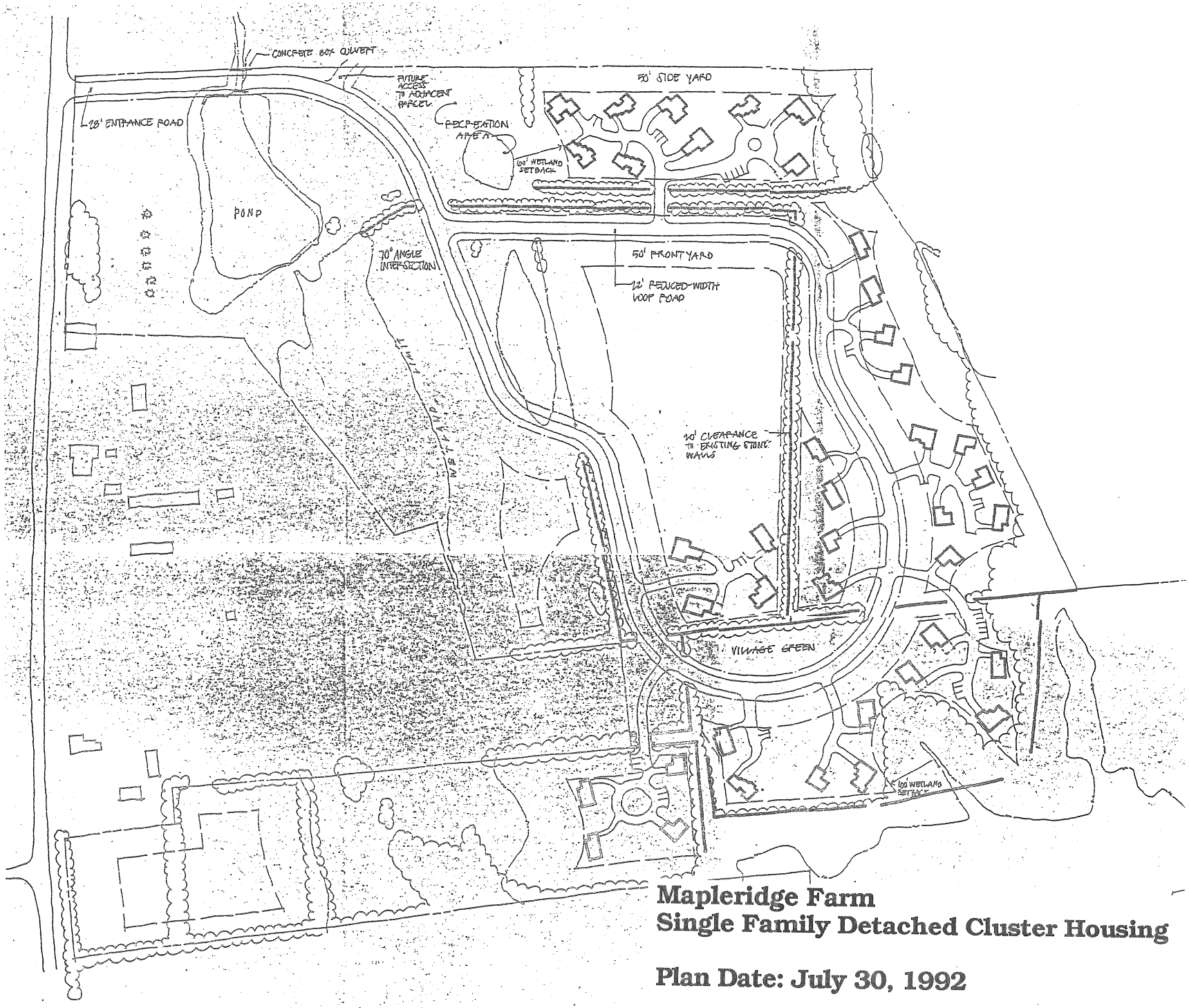
The Town has several specific concerns regarding the development of this site which include: soil suitability if on-site sewage disposal is used, erosion and sediment control, potential impact of adjoining agricultural uses upon groundwater quality for water supplies, potential impacts to wildlife and fish resources, and traffic access. The following sections of the report contain basic natural resource information, highlight areas of concern, recommend measures for mitigation of potential problems, as well as address the Town's concerns.

LOCATION MAP

Scale 1" = 2000'

——— Approximate Site Boundary





Mapleridge Farm
Single Family Detached Cluster Housing

Plan Date: July 30, 1992

No Scale

GEOLOGY AND HYDROGEOLOGY

The proposed Mapleridge Farm Affordable Housing Development lies on the broad smooth back of a NNW-SSE trending 10,000 foot long streamlined till ridge. A small stream which drains 240 acres of land north of the development runs parallel to the ridge, 1000 feet west of its crest. The stream takes a pronounced right angle bend and crosses the axis of the ridge at a swale at the southern boundary of the property. Slopes are generally gentle to moderate. The smooth surface of the ridge contrasts with the rough hummocky topography elsewhere in the area.

A distinct NNW-SSE alignment of valleys, steep slopes and hill crests are apparent on topographic maps and air photos of the area surrounding the till ridge. A few of the most conspicuous lineaments are marked on Figure 1.

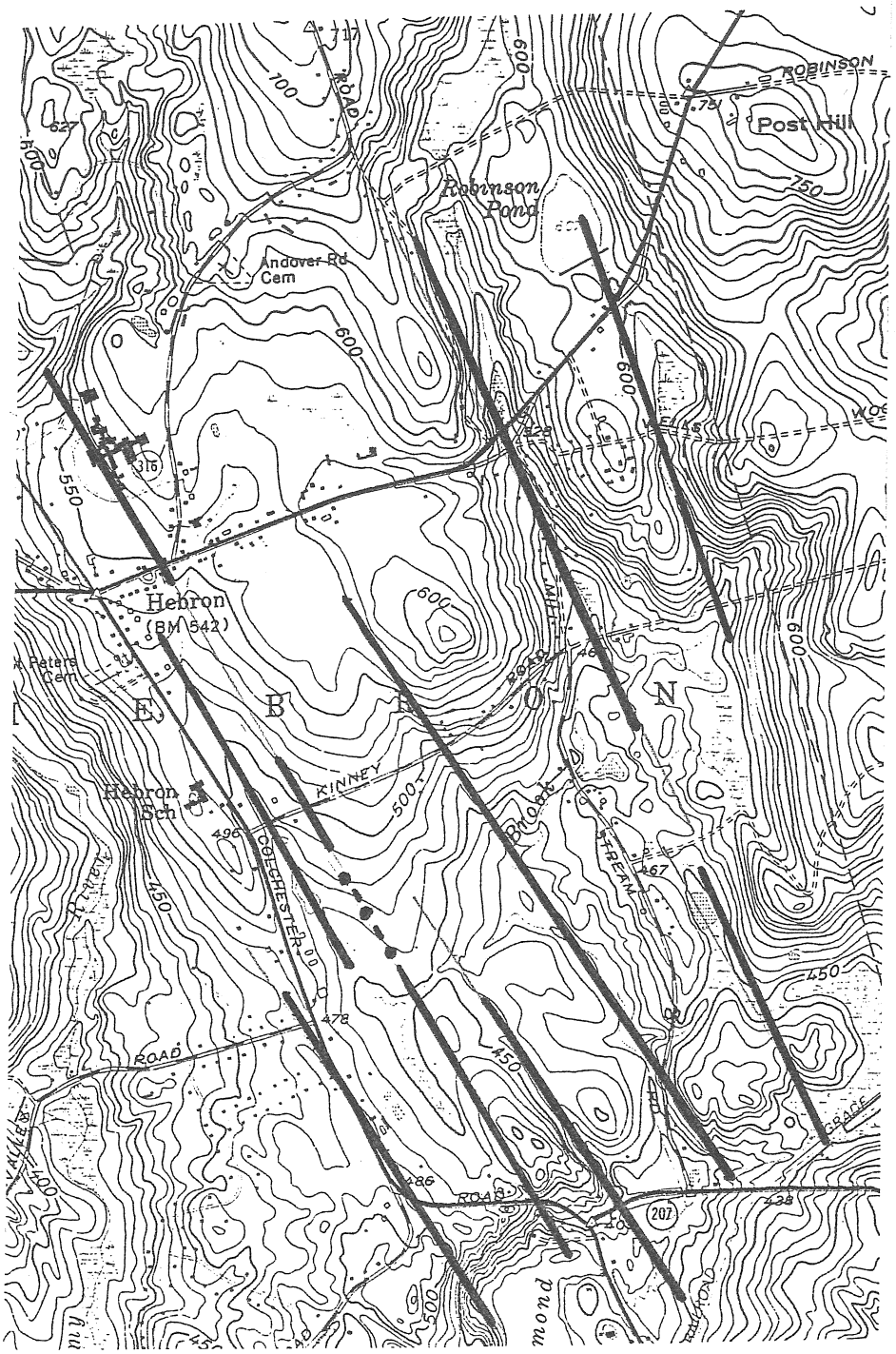
The surface geology of the Columbia Quadrangle is the subject of a 1978, University of Connecticut MSc thesis by Michael Zizka. 40 to 50 feet of glacial till, a poorly sorted mix of clay, silt, sand and gravel sized material deposited at the base of the last continental ice sheet, is inferred to underlie most of the Mapleridge Farm Property. The till is unusually sandy and contains well rounded boulders and cobbles suggesting it may be glacially eroded and redeposited pre-glacial stream deposits. A small 10 foot thick delta-like accumulation of stratified sand and gravels lies just east of the swale through which the stream traverses the till ridge. The present stream is incised several feet below the gently inclined upper surface of this deposit which probably formed as glacial meltwaters drained across low points on the till ridge.

The bedrock geology of the Columbia Quadrangle was mapped in 1967 by G. Snyder and was published by the USGS as Map GQ-592. Although no outcrops are present on the Mapleridge Farm property Snyder's mapping suggest three different rock types form the underlying bedrock (Figure 2). The Devonian Canterbury Gneiss (Dc), a uniform medium grained, gray to white colored feldspar-quartz-biotite gneiss, is inferred to lie beneath the till cover just north of the northeastern corner of the property. A 1000 foot wide belt of Devonian age Lebanon gabbro (Dlg) crosses the southern portion of the area. This unit is a dark black to green colored, coarse grained, feldspar-hornblend-biotite gneiss. Although now metamorphic, both rock types were originally igneous and intruded the sedimentary pile now represented by a deformed interlayered sequence of metamorphic biotite, and biotite-hornblend schists and calc-silicate gneisses belonging to the Silurian age Hebron formation (SOh). Some layers in the Hebron Gneiss are known to contain sulfides which could produce a rusty weathering product. It would not be surprising if the water in wells penetrating these rocks were iron rich. However, the Bedrock Geology map should not be used in siting wells as the locations of boundaries between the various units are based on very limited outcrop data and could be in error by several hundreds of feet.

The pronounced topographic lineament in the area of Mapleridge Farm development must reflect major NNW-SSE fractures traversing the bedrock. The groundwater seeps just west of the central ridge on the property are aligned along this direction with a series of springs north of Kinney Road. The linear feature controlling these seeps may be an actual fracture system, or a linear remnant of pre-

glacial stratified sands and gravel protected from glacial erosion by a bedrock step underneath the present till blanket. In either case, wells drilled on the lineament should be very productive and could form the basis for a single community water supply system.

Mapleridge Farms Affordable Housing



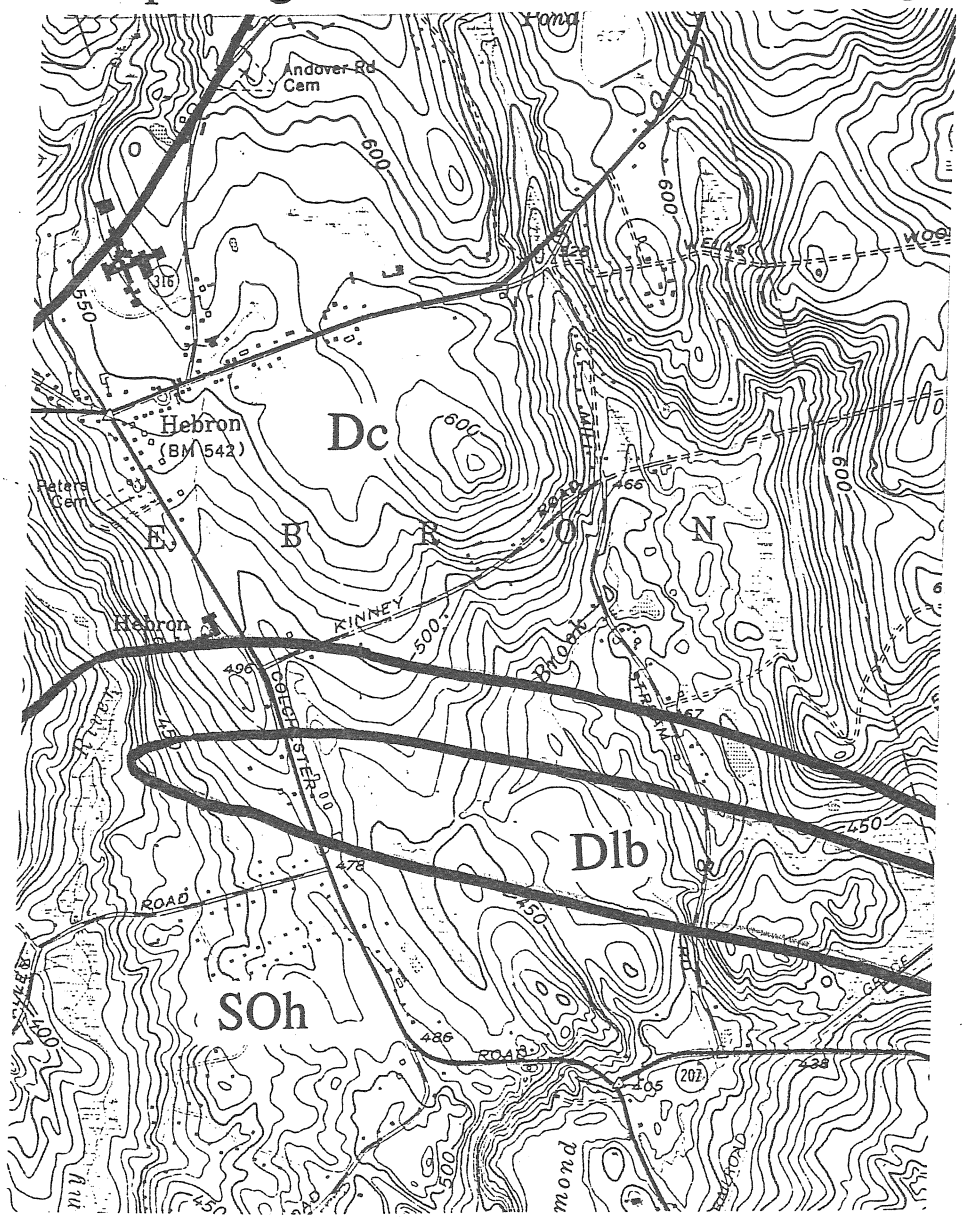
Prominant Lineaments

(Probably reflecting bedrock fracture zone acquifers)

● Groundwater seeps

Scale 1:24000

Mapleridge Farms Affordable Housing



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Bedrock Geology

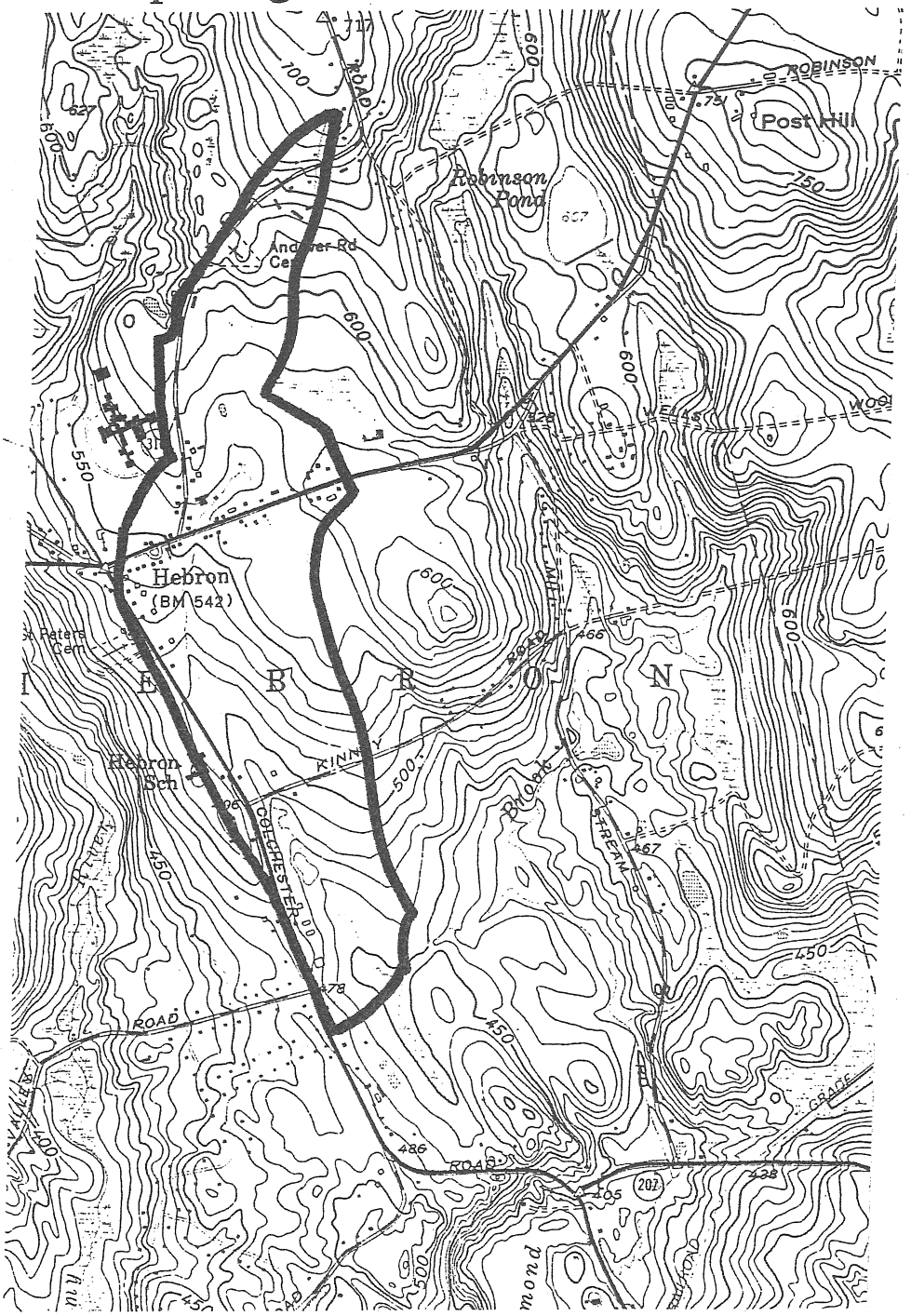
Dc Canterbury Gneiss

Dlb Lebanon Gabbro

SOh Hebron Gneiss

Scale 1:24000

Mapleridge Farms Affordable Housing



N

Drainage Basin of SSE flowing Stream on Mapleridge Farms

Scale 1:24000

SOILS

The following comments are provided as a result of a field examination of the site by the team on July 30, 1992.

(1.) A detailed soil erosion and sediment control plan should be developed and implemented for this site. This plan should be developed using criteria contained in the Connecticut Guidelines for Soil Erosion & Sediment Control (1985). The Tolland County Soil and Water Conservation District would appreciate the opportunity to review the plan prior to final approval.

(2.) The town planner and/or commission may also want to require the following (or similar) statements on the plan which relate to implementation and inspection of the soil erosion and sediment control plan.

A. "The contractor shall secure the services of a certified professional engineer, who shall verify in the field that the controls required by this plan are properly installed, shall make inspection of such facilities not less frequently than weekly and within forty eight (48) hours of any significant rainfall, and shall by written report, inform the owner or his agent not less frequently than monthly of observations, maintenance, and corrective activities undertaken. An approved checklist may be used to document the inspection findings."

B. "There shall be a pre-construction meeting with the town soil erosion and sediment control agent, the town wetlands agent, the contractor, and the contractor,s professional soil erosion and sediment control specialist to discuss the plan and inspection and report requirements.

(3.) A detailed stormwater management plan shall be developed and submitted for review based on a hydrologic analysis of the site. The methods used to estimate peak flows and runoff volumes shall be in accordance with those described in Chapter 9 of the Guidelines for Soil and Sediment Control - CT- (1985).

The peak discharges from the 2-year, 10-year, and 100-year frequency, 24-hour duration, type III distribution storms before and after development and downstream impacts shall be analyzed.

The report and analysis submitted to the Commission shall consist of narrative, table and supporting calculations. The report should show the projected increases in peak flow for different conditions and an appropriate strategy for controlling stormwater provided. Scouring and streambank erosion is evident in the unnamed watercourse that will be receiving additional stormwater from the site.

It is suggested that the applicant submit information on projected Q's and V's for each stormwater outlet for 2, 10, and 25 year storms and design measures accordingly for incorporation into the plan.

(4.) The Department of Environmental Protection and Department of Health Services should be contacted regarding groundwater quality. Existing water tests from neighboring homes may indicate if there are any existing nitrate problems. Drilling a deep well and testing the water quality early on in the project will provide information up front on any potential water quality problems.

(5.) If the proposed development is not connected to the public sewer line, then detailed soil investigations (deep pits, percolation tests) should be conducted throughout the site in order to determine whether or not lots are suitable for on-site sewage disposal.

(6.) In general most or the soils in the area of the proposed development have high groundwater levels. The permanent water table is at an average depth of about 24 inches below the soil surface. In some areas the water table may be closer to the surface. The soils are described in detail on the following pages. An interpretation chart also indicating the wetland and prime farmland soils types are included in this report.

CaB# - Charlton fine sandy loam, 3-8 percent slopes
CaC - Charlton fine sandy loam, 8-15 percent slopes
Lg* - Leicester - Ridgebury - Whitman very stony complex
PbB# - Paxton fine sandy loam, 3-8 percent slopes
Rd* - Ridgebury fine sandy loam
WxA# - Woodbridge fine sandy loam, 0-3 percent slopes
WxB# - Woodbridge fine sandy loam, 3-8 percent slopes
WyB - Woodbridge stony fine sandy loam, 3-8 percent slopes
WzC - Woodbridge very stony fine sandy loam, 3-15 percent slopes

Prime Farmland
* Wetland Soil

SOILS MAP

Scale 1" = 1320'

INTERPRETATIONS FOR DEVELOPMENT
MAPLERIDGE FARMS
HEBRON, CONNECTICUT

SOIL MAP SYMBOL AND SOIL NAME	SEPTIC TANK ABSORPTION FIELDS	DWELLINGS WITH/ WITHOUT BASEMENTS	SMALL COMMERCIAL BUILDINGS	LOCAL ROADS AND STREETS	LAWNS AND LANDSCAPING
#CaB - 3 to 8%					
Canton	Severe-poor filter	Slight	Moderate-slope	Slight	Slight
Charlton	Slight	Slight	Moderate-slope	Slight	Slight
CaC - 8 to 15%					
Canton	Severe-poor filter	Moderate-slope	Severe-slope	Moderate-slope	Moderate-slope
Charlton	Moderate-slope	Moderate-slope	Severe-slope	Moderate-slope	Moderate-slope
Lg - 0 to 5%, stony					
Ridgebury	Severe - wetness percs slowly	Severe - wetness	Severe - wetness	Severe - wetness, frost action	Severe - wetness
Leicester	Severe - wetness	Severe - wetness	Severe - wetness	Severe - wetness, frost action	Severe - wetness
Whitman	Severe - ponding, percs slowly	Severe - ponding	Severe - ponding	Severe - large stones, ponding	Severe - ponding
PbB - 3 to 8%					
Paxton	Severe-percs	Moderate-wetness	Moderate-wetnes, slope	Moderate-wetness frost action	Slight
Montauk	Severe-percs slowly wetness	Moderate-wetness	Moderate-wetness, slope	Moderate-wetness, frost action	Slight

SOIL MAP SYMBOL AND SOIL NAME	SEPTIC TANK ABSORPTION FIELDS	DWELLINGS WITH/ WITHOUT BASEMENTS	SMALL COMMERCIAL BUILDINGS	LOCAL ROADS AND STREETS	LAWNS AND LANDSCAPING
*Rd					
Ridgebury	Severe - percs slowly, wetness	Severe - wetness	Severe - wetness	Severe - wetness, frost action	Severe - wetness
#WxA, WxB - 0 to 8%					
Woodbridge	Severe - wetness, percs slowly	Sevrere - wetness	Moderate - wetness, slope	Severe - frost action	Moderate - wetness
WyB - 3 to 8% ,stony Woodbridge	Severe-wetness, percs slowly	Severe-wetness	Moderate-wetness, slope	Severe-frost action	Moderate-large stones, wetness
WzC - 3 to 15%, stony Woodbridge	Severe-wetness, percs slowly	Severe-wetness slope	Severe-slope	Svere-frost action	Moderate-large stones, wetness, slope

SOIL INTERPRETATIONS FOR URBAN USES

The ratings of the soils for elements of community and recreational development uses consist of three degrees of "limitations:" slight or no limitations; moderate limitations; and severe limitations. In the interpretive scheme various physical properties are weighed before judging their relative severity of limitations.

The user is cautioned that the suitability ratings, degree of limitations and other interpretations are based on the typical soil in each mapping unit. At any given point the actual conditions may differ from the information presented here because of the inclusion of other soils which were impractical to map separately at the scale of mapping used. On-site investigations are suggested where the proposed soil use involves heavy loads, deep excavations, or high cost. Limitations, even though severe, do not always preclude the use of land for development. If economics permit greater expenditures for land development and the intended land use is consistent with the objectives of local or regional development, many soils and sites with difficult problems can be used.

Slight Limitations

Areas rated as slight have relatively few limitations in terms of soil suitability for a particular use. The degree of suitability is such that a minimum o time or cost would be needed to overcome relatively minor soil limitations.

Moderate Limitations

In areas rated moderate, it is relatively more difficult and more costly to correct the natural limitations of the soil for certain uses than for soils rated as having slight limitations.

Severe Limitations

Areas designated as having severe limitations would require more extensive and more costly measures than soils rated with moderate limitations in order to overcome natural soil limitations. The soil may have more than one limiting characteristic causing it to be rated severe.

ON-SITE SEWAGE DISPOSAL

The Town has asked to have comments on the project site's ability to treat and dispose of sewage via an on-site community system. The following comments are offered:

The design flow from the project is calculated as 16940 gallons per day (based upon 40 single-family units with 113 bedrooms and design flow of 150 gal/day/bedroom).

Very little information was provided concerning the on-site soils. Although no site plan was provided to locate the deep test pits, the soil logs appear to conform to the most prominent soil type located on-site, woodbridge, as identified by the Tolland County Soil Survey.

The Woodbridge soil series consist of moderately well drained soils with a fragipan generally within 30 inches of the surface. In reviewing the soil survey this soil type would have severe limitations for on-site sewage disposal because of a reasonably high water table and the presence of the fragipan layer.

When the Department reviews an on-site system 3 basic questions are asked: 1) Does the system design and layout conform to good engineer practice 2) will the system hydraulically work and, 3) will the system adequately renovate specific pollutants in the sewage?

Regarding this specific proposal of initial concern is site hydraulics. Because of the soils and hydrological setting a two dimensional flow analysis would be appropriate. Of most concern would be the permeability of the b horizon soils (subsoil) as one would assume the fragipan (a restrictive soil layer) to be a boundary, the hydraulic gradient which would be assumed at this time to be similar to the surface slope, and the soil window that the effluent would have to move through to be renovated to applicable standards. The Team Sanitarian has attempted to conduct a very preliminary hydraulic analysis and what he will attempt to solve for is the length of the system or how far one would have to construct a system to allow for appropriate hydraulic loading.

$Q = KiA$

$Q = 17000$ gpd $= 2267$ ft^3/day

K from Tolland Soil Survey Woodbridge

.63 - 2.0 inches/hour = 1.26 - 4 ft/day

Kave = 2.63

assume i = .05 ft/ft

and A = Depth x Length assume D = 2 ft

$$Q = KiA$$

$$L = \frac{Q}{KiD}$$

$$L = \frac{2267}{2.63 \quad (.5) \quad (2)}$$

Length of system = 8629 feet

From this analysis one can see that the site would have a difficult if not improbable chance of being developed to support this density of development. Of course the Team Sanitarian has made many assumptions and on-site review and testing would be necessary to make a complete assessment. But he believes that this illustrates some of the difficulties that this soil series presents for developing a rather intense community system. Bear in mind no consideration was given for hydraulic reserve allowances. Other points of considerations would include providing the necessary separation distance from the bottom of the system to the mounded water table.

The Team Sanitarian has not attempted to address pollutant renovation but this would have to be done. Certainly site hydraulics would be of most concern in developing this site to the level of density being considered. He does draw to your attention that he has made some rather simplistic assumptions and there is a need for field verification but he believes the analysis does highlight the concern of developing this site with on-site sewage disposal.

DAM REVIEW

General:

The current dam is an earthen structure with a concrete/masonry overfall chute spillway. The dam is equipped with a six inch mechanical valve located in a compartment adjacent to the spillway. The operability of the valve is unknown. The dam is in fair condition with no significant structural problems observed. The dam in its current configuration does not present a hazard to downstream properties and consequently is not under the DEP's regulation pursuant to the dam safety statutes.

History:

On November 14, 1991 the DEP issued a construction permit to Vision Housing, Inc. The construction permit allows for the significant expansion of the embankment to accommodate a two lane access road. If the permitted construction is not completed by December 1, 1992 the permit must be renewed. The proposed use of this dam requires a DEP/dam construction permit.

NATURAL DIVERSITY DATA BASE

The Natural Diversity Data Base maps and files have been reviewed regarding the proposed Mapleridge Farm project. According to the information, there are no known extant populations of Federal or State Endangered, Threatened or Special Concern Species that occur within the project boundaries.

Natural Diversity Data Base information includes all information regarding critical biologic 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. Consultation with the Data Base should not be substituted 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.

WILDLIFE RESOURCES

Habitat Type Descriptions

The major habitat types include open field and wetland/riparian (forested and open), and hedgerow (mixed hardwoods).

Open field: Open land habitat is beneficial to wildlife. The vegetation provides food as well as structural diversity, creating cover for a great array of wildlife ranging from meadow mice, bobwhite quail, to white-tailed deer. Another important feature of open fields is the edge created where the forest meets the field. This ecotone area is a valuable zone where food and cover consists of a dense conglomeration of small trees, shrubs, vines, and herbaceous plants.

Wildlife (mammals) frequenting such habitat type include *deer, red foxes, *woodchucks, *rabbits, skunks, raccoons, meadow mice and shrews. Birds that use this type of habitat include *redtailed hawks, kestrels, eastern screech owls, *mourning doves, *bobwhite quail, *tree swallows, *eastern kingbirds, bluebirds, and blue and golden-winged warblers.

Wetland/Riparian Habitat: This habitat type consists of ponds, streams, and wet forested area. Associated vegetation includes red maple, winterberry, and various wetland grasses and sedges.

Wildlife (mammals) using the forested wetland areas includes *deer, raccoons, red foxes, skunk, muskrat and mink. Birds using this habitat type include *ruffed grouse with young chicks, *redwinged blackbirds, woodcock, hooded warblers, woodpeckers, and wood ducks. Amphibians and reptiles such as snakes, salamanders, *frogs and toads are common in forested wetland habitats.

Open Water/Stream Habitat type: This habitat type provides for the breeding and survival of many aquatic-based organisms such as fish, snails, salamanders, newts, frogs and toads. The emergent and submergent vegetation provides habitat and foraging opportunities for great blue herons, ducks, and mink.

Hedgerow/Mixed Hardwood/Stone Wall Habitat: This habitat type is made up of large old hardwood, young trees, shrubs, and rock walls. The large old hardwoods (sugar maple, shag bark hickory) are important mast as well as possible den sites for cavity dwelling species. Older trees (85+ years) are important to consider protecting.

Stone walls are man-made but do provide habitat for small mammals, reptiles and amphibians.

Hedgerows have wildlife value as linkages between agricultural fields, development, or other habitats, provide protective cover from predators while traveling or foraging between habitats.

(*) observed wildlife - on site visit (7/29/92)

General Statements on Impacts of Habitat Destruction

Wetland/Riparian Habitat: Wetlands support a high diversity of wildlife due to the complexity of the vegetative structure, high productivity and abundant food supply which allows for a high carrying capacity (Brown et. al. 1978). There are many species that require access to streams or water body margins for survival even though they may spend much of their time in other habitats (Milligan and Raedeke 1986). Part of the food supply for many vertebrates is the high abundance and diversity of insect populations that are typical of wetland ecosystems (Brown et al. 1978). Wetlands presently provide important habitat for a variety of wildlife species and function as areas for absorption of natural runoff.

Vegetation removal in wetlands may have severe impacts on wildlife, especially reptiles and amphibians. One or several of the cover, food, breeding habitat are eliminated and more adaptable species are reduced in numbers (Campbell 1973). To minimize impact maintain a 100 foot wide buffer zone of vegetation around wetland/riparian areas.

On this particular property, the forested wetland areas are reverting back to former vegetative composition which is desirable for wetland-oriented wildlife species. Careful delineation and protection of land that was converted from wetland to pasture/hay field should be undertaken and allow it to revert back to a forested wetland habitat.

The open water wetland consists of a man-made pond which should be protected, however the lack of forest habitat along the edges is not desirable. Allowing 35-50% of the edges to become forested will allow shading (cooling effect) and increase the pond edge diversity which will enhance it for wildlife.

References

Brown, S., M.M. Brinson and A.E. Lugo 1978

Structure and functions of riparian wetlands. Pages 1731. in (Strategies For Protection and Management of Floodplain and Other Riparian Communities). Proc. symp. Dec. 11-13, 1978, Gallaway, GA. Gen. Tech. Rep. W0-12, Forest Serv., U.S. Dep. Agric., Wash. D.C. 410 pp.

Campbell, C.A. 1973

Survival of reptiles and amphibians in urban environments. Pages 61-66. in (Wildlife In An Urbanizing Environment). Proc. symp. Nov. 27-29, 1973, Springfield, Mass. Coop. Extn. Serv., Univ. of Mass., U.S. Dep. Agric., Cnty. Extn. Serv. 182 pp.

Milligan, D.A. and K.J. Raedeke 1986

Incorporation of a wetland into an urban residential development. Pages 162-171. in (Wildlife Conservation and New Residential Developments). Proc. symp. Jan 20-22, 1986. Tucson, Ariz. 203 pp.

FISHERIES RESOURCES

This report will address anticipated impacts to local fisheries resources and delineate appropriate measures to mitigate impacts.

Fisheries Resources

The perennial stream that runs through the property is an unnamed tributary of Raymond Brook. It is best characterized as an open meadow stream adjacent to existing hay fields. Instream habitat is comprised of boulders and fine sands/gravels. The stream in this area more than likely supports blacknose dace, fallfish, and white sucker populations. The dam at the pond is a barrier to upstream migration. A similar fish community exists in areas above the pond that have a forested riparian zone.

Fish habitat is of "high quality" along the southern portion of the property containing well developed pools and riffles, undercut banks, large woody debris, less fines and more suitable substrates for aquatic insect production and fish spawning. This stretch is expected to support large size (>6") native brook trout. Fish diversity will increase in this stretch as fish seasonally migrate from Raymond Brook. The southern stretch has a closed overhead riparian canopy and a wide band of forested riparian wetlands that are critical for stream flow maintenance.

The man-made pond is extremely shallow as it functions as a sediment basin. The pond contains dense mats of filamentous algae and extensive beds of the submergent aquatic vegetation, American elodea. The pond contains marginal habitat necessary for the survival of warmwater pond fishes such as sunfish and largemouth bass.

Impacts

The following impacts on fisheries resources can be expected if proper mitigation controls are not implemented:

1. Construction site soil erosion and sedimentation through increased runoff from unvegetated areas. During housing and road construction, topsoil within the parcel will be exposed and susceptible to runoff events. Erosion and sedimentation due to construction is a major cause of aquatic habitat degradation. The watercourse above the man-made pond contains sediment from past runoff events that have occurred within the upper portion of this watershed. Pond and stream eutrophication can be accelerated by excessive erosion and sedimentation and seriously impact resident fishes, water quality, and recreational value. In particular, excessive siltation will:

* **Reduce the amount of usable fish habitat used for spawning purposes** - preferred substrate that becomes compacted with silt is no longer available for spawning. Fish will be forced to disperse to other areas not affected by siltation.

* **Reduce fish egg survival** - water free of sediment particles is required for egg respiration (biological process of extracting oxygen from water) and successful hatching. Silt deposits will smother eggs.

* **Reduce aquatic insect production** - sediment-free water is also required for successful aquatic insect egg respiration and hatching. Aquatic insects are the primary food source of Young and adult fishes. Reduced insect levels will adversely affect fish growth during their early growth period. Ultimately, this will lead to reduced fish growth rates and negatively impact survival.

* **Reduce water depth** - this occurrence will result in a further reduction of usable fish habitat.

* **Contribute to the depletion of oxygen** - organic matter associated with soil particles is decomposed by microorganisms contributing to the depletion of oxygen in waters overlying sediments.

* **Adversely affect "gill" function and impair feeding activities** - studies have documented that high sediment concentrations and turbidity will disturb fish respiration and gill function.

2. Road construction. Placement of a concrete box culvert at stream grade may prevent resident fish passage due to: (1) increased water velocities within culverts during periods of high river flows, and/or (2) insufficient water depth within culverts during summer low flow conditions. Moreover, culvert placement results in the direct loss of instream fisheries habitat since the local stream bottom will be replaced with artificial materials. Instream culvert placement in concert with placement of fill for road construction will inevitably result in stream sedimentation problems if proper erosion and sedimentation controls are not followed. Impacts due to stream sedimentation were previously discussed.

3. Aquatic habitat degradation in the stream due to the influx of stormwater drainage. No detailed stormwater management plans were available for review; however, it is expected that stormwaters from the project will eventually outlet from the road system and into the stream. Stormwaters contain a variety of pollutants that are detrimental to aquatic organisms. Pollutants commonly found in stormwaters are: hydrocarbons (gasoline and oil), herbicides, heavy metals, road salt, fine silts, and coarse sediment. Nutrients in stormwater runoff can fertilize stream waters causing water quality degradation. Additionally, fine silts in stormwaters that remain in suspension for prolonged periods of time often cannot be effectively removed from roadway catch basins and/or stormwater detention basins. Accidentally spilled petroleum based chemicals or other toxicants can precipitate partial or complete fishkills if introduced in high concentrations.

4. Percolation of septic effluent into stream and wetland ecosystems. On-site septic systems can be potentially dangerous to stream and wetland environments. Nutrients and assorted chemicals that may be placed in septic systems could enter aquatic environments in the event of a failure or infiltrate the groundwater during the spring when water tables are close to the surface. The introduction of septic effluent could result in a major threat to fish habitat, public health, and overall water quality

conditions. Effluent will also stimulate the growth of nuisance aquatic vegetation and algae.

5. Transport of lawn fertilizers and chemicals to pond/stream environments. Runoff and leaching of nutrients from lawn fertilizers will stimulate aquatic weed and algal growth in ponds/streams and degrade water quality. Introduction of lawn herbicides may result in "fish kills" and water quality degradation.

Recommendations

The following recommendations should be considered by Hebron land use commissions to mitigate impacts to local aquatic resources.

1. Cluster housing and open space. A concerted effort should be made to minimize construction adjacent to sensitive on-site aquatic habitats. From a fisheries standpoint, the southern stretch of the unnamed tributary of Raymond Brook and its associated riparian wetlands are of high quality. Even though a 100 foot buffer zone is planned for this stretch per town regulations, numerous housing units are planned to be constructed adjacent to this area. A more environmentally prudent alternative would be to cluster housing units in less sensitive areas such as along the main loop road in the central portion of the existing hay field. This alternative would provide more open space along the southern stream corridor thereby insuring added protection from development impacts.

2. Pond Maintenance. The small pond is filled with sediment from past runoff events. The developer should consider dredging if the pond is to be utilized for recreational purposes and fish management. To benefit pond fisheries, the pond should be dredged to an average water depth of 3 feet. Consideration should also be given to constructing a sediment basin above the pond to collect sediment from future runoff events. This mitigation effort will ensure that nutrient loading to the pond is kept to a minimum. A sediment basin will be easier to periodically maintain than the pond.

3. Develop an aggressive and effective erosion and sediment control plan. Proper installation and maintenance of these devices is critical to environmental well being. This includes such mitigative measures as filter fabric barrier fences, staked hay bales, and sediment catch basins. 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 Hebron wetland enforcement officer should be responsible for checking this development very frequently 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 associated with housing developments have occurred when individual contractors either improperly deployed mitigation devices or failed to maintain these devices on a regular basis.

4. The developers should submit detailed stormwater management plans for town review. The effective management of stormwaters and roadway runoff can only be accomplished through proper design, location, and maintenance of stormwater basins. The soft stormwater design is preferred; however, more detailed plans are

required for a thorough evaluation. When possible, stormwaters should only be outletted into non-wetland habitat; thus, avoiding direct contact with wetlands. Timely maintenance of catch basins is of critical importance. Roadway catch basins should be regularly maintained to minimize adverse impacts to aquatic habitats. The use of road salt to deice roads should be minimized.

5. Sewage Disposal. To avoid any potential water quality impacts due to septic system effluent, the developer should dispose of waste through the existing town sewer line system.

6. All instream work and land grading/filling near aquatic habitats and wetlands should take place during low flow periods. This will help minimize the impact to the aquatic resources. Reduced streamflows and rainfall during the summer and early fall provide the least hazardous conditions in which to work near sensitive aquatic environments.

7. Limit liming, fertilization, and the introduction of chemicals to housing development lawns. This will help abate the amount of additional nutrients to the pond and stream environments. Nonphosphorus lawn fertilizers are currently available from various lawn care distribution centers.

PLANNING CONSIDERATIONS

Although the 65.3 acre site is zoned for a conventional subdivision, the community at large would benefit more by the proposed open space subdivision, newly adopted by the Hebron Planning and Zoning Commission.

The environmental constraints of this site, a wetland and water body paralleling the Route 85 access, make initial ingress and egress difficult. The proposed wetland crossing on the upper reaches of the pond appears to be the least invasive possibility. According to Tony Baihaghy, CRCOG Transportation Planner, one outlet on Route 85 is not sufficient if the length of the road exceeds 1200 feet. Perhaps a second means of egress can be explored on the lower end of the pond. Access by emergency vehicles will be limited with only one road into the development. Future outlets for this road by way of connections with later developments should be explored.

Clustering the homes in groups of five or so will provide privacy for the homeowners. A cookie cutter subdivision would not be as aesthetically pleasing for the site. According to the landscape architect at the site visit, existing trees would remain to visually separate clusters of homes. Although the land will be held in common by all the homeowners, individual homeowners should have some control over landscaping decisions around the immediate vicinity of their homes.

Two recreational facility sites are proposed. These sites can be a vital part of the new community. Some active and some passive activities are proposed such as basketball courts, tennis courts, etc. Community gardens and composting sites can be designated as well. Neither of the recreational sites should be located in wetland areas. Wetlands should be preserved as open space. A buffer area around the wetlands should be observed. Future homeowners should be educated about wetlands and their use and functions. For example, grass clippings should not be stored in wetlands. These sensitive environmental features should not become dumps for trash and cars in the future. Policing of the area should be every homeowners responsibility. The deeds to the homes should alert buyers of the existence of wetlands and the responsibilities which accompany them.

In conclusion, the Capitol Region Council of Governments supports affordable housing developments and looks forward to the completion of this plan.

TRAFFIC CONSIDERATIONS

Traffic generated by the proposed Mapleridge Farms Affordable Housing project should not adversely impact Route 85 (Colchester Road, a.k.a Church Street) as deduced from an analysis of traffic conditions prepared by Wengell, McDonnell & Costello, Inc. Traffic on Route 85 will increase approximately 2% per year. This subdivision should generate approximately 400 trips per day. The peak hour splits of 28 a.m. trips and 17 p.m. trips are reasonable.

A minimum pavement width must allow for the safe passage of moving vehicles in each direction exclusive of other interference, such as on-street parking. Parking of this type will occur occasionally within all residential neighborhoods; however, the rate of occurrence will be a function of density, off-street parking availability and local ordinances. The 22 foot width will not allow two opposing vehicles to pass a parked vehicle; however, low volumes make this rare occurrence tolerable. As seen on the design plan, approximately 33 off-street parking spots will be available. It is uncertain if suitable parking for visitors and recreational vehicles is available. In general, if 2 off-street parking spaces are being provide for each home, then the minimum width of roadway can be used. If only one space per unit is being provided, then 6 feet should be added to the pavement width. Each cluster will have a private drive of 12 feet for 1-2 units and 18 feet for 3 or more units. It is not mentioned whether parking will be allowed on these drives.

It is stated in the traffic report that sight distances of 775 feet or more can be expected at the proposed Mapleridge Drive/Route 85 intersection. Assuming the 775 feet is in one direction, with an additional 775 feet in the opposing direction, these figures are adequate.

It should be noted, a permit will be needed for any work being performed within the State Right-of-Way. Contact the District II Maintenance office in Norwich.

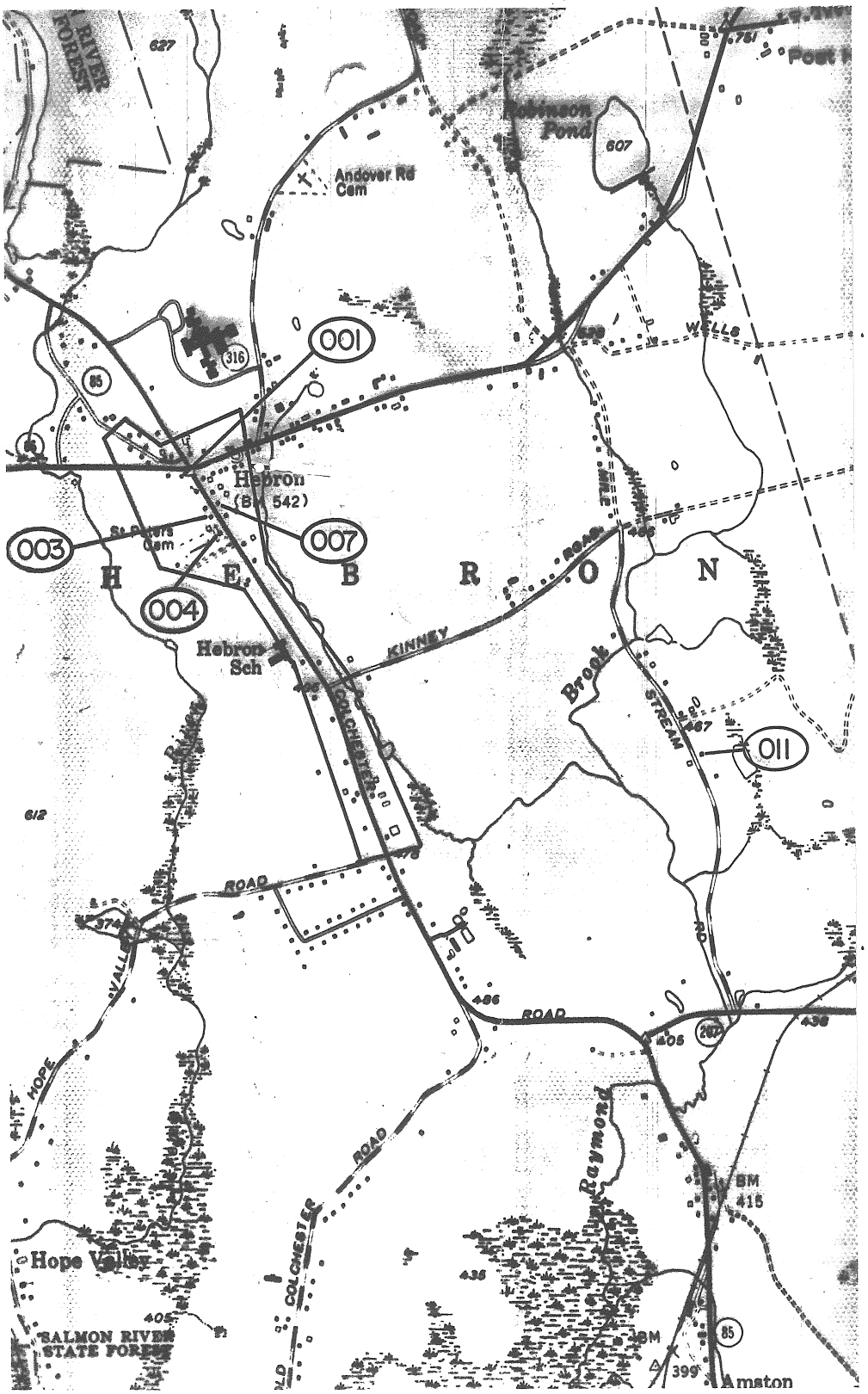
HISTORIC REVIEW

On site review of the Mapleridge Farms Affordable Housing Project indicates its location within a potential National Register historic district. The enclosed highlighted map provides tentative boundaries for a National Register historic district. This office strongly encourages retention of all mature tree species along Colchester Road (Route 85) and throughout the project area which would serve to provide a vegetative screen for the proposed new construction vis-a-vis the historic rural ambience of the neighborhood. Further, the Connecticut Historical Commission recommends the retention of the stone walls located throughout the project area. Proposed access roads should be designed in keeping with the rural scheme of this historic area.

The project appears to possess low sensitivity with regard to historic archaeological resources.

LOCATION OF POTENTIAL NATIONAL REGISTER HISTORIC DISTRICT

(Highlighted map provides tentative boundaries for area)



ARCHAEOLOGICAL REVIEW

A review of the State of Connecticut Archaeological Site Files and Maps shows no known prehistoric or historic archaeological resources in the project area or in the immediate vicinity. In addition, a field inspection conducted in November of 1991 initiated by WMC Consulting Engineers indicated that there would be a low-to-moderate sensitivity for undiscovered archaeological resources.

While a significant wetland exists in the southeast corner of the project area, the relative lack of high knolls consisting of well-drained soils immediately adjacent to the brook system argues against the utilization of the property by prehistoric hunters-gatherers. As a result, this proposed development project should have no adverse effect on the state's archaeological resources.

APPENDIX

1. List of Team Members
2. Soils Descriptions

LIST OF TEAM MEMBERS

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CaB

60B

CaB - Canton and Charlton soils, 3 to 8 percent slopes

This unit consists of gently sloping, deep well drained soils on ridges, hills, and side slopes of glacial till uplands. The areas are mostly rectangular or irregular in shape. Slopes are generally smooth and convex and 200 to 400 feet long. About 45 percent of this unit is Canton soils, 40 percent is Charlton soils, and 15 percent is other soils. Some areas of this unit consist almost entirely of Canton soils, some almost entirely of Charlton soils, and some of both. The soils were mapped together because they have no significant differences in use and management.

Typically, the Canton soils have a surface layer of very dark grayish brown fine sandy loam 2 inches thick. The subsoil is yellowish brown fine sandy loam, gravelly fine sandy loam, and gravelly loamy sand to a depth of 60 inches or more.

Typically, the Charlton soils have a surface layer of dark yellowish brown fine sandy loam 5 inches thick. The subsoil is yellowish brown fine sandy loam and sandy loam 20 inches thick. The substratum is light yellowish brown and light brownish gray sandy loam to a depth of 60 inches or more.

Included with these soils in mapping are small areas of somewhat excessively drained Gloucester and Hollis soils, well drained Paxton soils, and moderately well drained Sutton soils. Also included are a few large, nearly level areas and a few areas that have a compact substratum at a depth of 40 to 50 inches.

The water table in these Canton and Charlton soils is commonly at a depth of more than 6 feet. The permeability of the Canton soils is moderately rapid in the surface layer and subsoil and rapid in the substratum. The permeability of the Charlton soils is moderately rapid. Both soils have medium to rapid runoff, have moderate available water capacity.

Instability of some excavations in the Canton soils is the main limitation of these soils for community development.

CaC

60C

CaC - Canton and Charlton soils, 8 to 15 percent slopes

This mapping unit consists of sloping, deep well drained soils on ridges, hills, and side slopes of glacial till uplands. Slopes are mainly smooth and convex and less than 200 feet long. The soils of this unit are the same as those described for the Canton and Charlton soils, 3 to 8 percent slopes except for slope gradient. Included with these soils in mapping are a few areas with slopes greater than 15 percent.

Slope is the main limitation of these soils for community development, especially for onsite septic systems. Excavations in these soils are unstable.

Lg

3

Lg - Ridgebury, Leicester and Whitman soils, extremely stony

This mapping unit consists of nearly level, poorly drained and very poorly drained soils in depressions and drainageways of glacial till uplands. The areas are mostly long and narrow or irregular in shape. Slopes range from 0 to 3 percent and are mainly 100 to 300 feet long. Stones cover 8 to 25 percent of the surface. About 40 percent of this unit are Ridgebury soils, 25 percent are Leicester soils, 15 percent are Whitman soils and 10 percent are other soils. Some areas of this unit will consist of one these soils and other areas will consist of two or three. The soils of this unit were mapped together because they have no significant differences in use or management.

The Ridgebury soils have a seasonal high water table at a depth of about 10 inches from fall through spring. The permeability of the soils is moderate to moderately rapid in the surface layer and the subsoil and slow to very slow in the substratum. Runoff is slow The Ridgebury soils have a moderate available water capacity.

The Leicester soils have a seasonal high water table at a depth of about 10 inches from fall through spring. The permeability of the soils is moderate or moderately rapid throughout. Runoff is slow. The Leicester soils have a moderate available water capacity.

The Whitman soils have a seasonal high water table at or near the surface from fall through spring. The permeability of the soils is moderate or moderately rapid in the surface layer and subsoil and very slow in the substratum. Runoff is slow. The Whitman soils have a moderate available water capacity.

The high water table and slow to very slow permeability are major limitations of the soils of these areas for community development. Steep slopes of excavations in these soils slump when saturated. The stones on the surface restrict landscaping and lawn areas are soggy most of the year.

PbB

84B

PbB - Paxton and Montauk Soils, 3 to 8 percent slopes

These gently sloping, well drained soils are on drumloidal, glacial till, upland landforms.

This mapping unit is about 45 percent Paxton soil, 40 percent Montauk soil, and 15 percent other soils. Areas consist of Paxton soil or Montauk soil, or both. These soils were mapped together because there are no major differences in their use and management.

Typically, the Paxton soil has a very dark grayish brown, fine sandy loam surface layer 8 inches thick. The subsoil is dark yellowish brown, yellowish brown, and light olive brown fine sandy loam 19 inches thick. The substratum is firm, very firm, and brittle, olive brown fine sandy loam to a depth of 60 inches or more.

Typically, the Montauk soil has a very dark grayish brown, fine sandy loam surface layer 7 inches thick. The subsoil is dark yellowish brown fine sandy loam 16 inches thick. The substratum is brown loamy sand and firm, very firm, and brittle, grayish brown loamy sand to a depth of 60 inches or more.

Included with these soils in mapping are small areas of well drained Broadbrook, Canton, and Charlton soils; moderately well drained Woodbridge soils; and poorly drained Ridgebury soils.

Permeability of the Paxton soil is moderate in the surface layer and subsoil and slow or very slow in the substratum. The available water capacity is moderate. Runoff is medium. The Paxton soil warms up and dries out rapidly in the spring.

Permeability of the Montauk soil is moderate or moderately rapid in the surface layer and subsoil and slow or moderately slow in the substratum. The available water capacity is moderate. Runoff is medium. The Montauk soil warms up and dries out rapidly in the spring.

The major limiting factor for community development is the very slow, slow, or moderately slow permeability in the substratum. Onsite septic systems need special design and installation to prevent effluent from seeping to the surface. Steep slopes of excavations slump when wet. Quickly establishing a plant cover and using mulch, temporary diversions, and sediment basins help to reduce erosion during construction.

Rd - Ridgebury Fine Sandy Loam

This nearly level, poorly drained soil formed in compact loamy till. It is in depressions and small drainageways of upland hills and drumlins. Bedrock is commonly more than 60 inches below the surface. This soil has a perched, seasonal high water table at a depth of 0 to 18 inches from the fall through spring. Permeability is moderate or moderately rapid in the surface layer and subsoil, and slow to very slow in the dense substratum. Surface runoff is slow to medium, and the available water capacity is moderate.

WxA

45A

WxA - Woodbridge fine sandy loam, 0 to 3 percent slopes

This soil is nearly level and moderately well drained. It is on the top and lower side slopes of large drumlins and hills on glacial till uplands. The areas are mostly oval or irregular in shape.

Typically, the surface layer is very dark grayish brown fine sandy loam 8 inches thick. The subsoil is mottled, dark yellowish brown and yellowish brown fine sandy loam 22 inches thick. The substratum is firm and very firm, olive gray fine sandy loam and gravelly fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of well drained Paxton soils, moderately well drained Sutton soils, and poorly drained Leicester and Ridgebury soils. A few small areas have stones on the surface, and a few large areas have a surface layer and subsoil of silt loam. Included areas make up about 10 percent of the unit.

This Woodbridge soil has a seasonal high water table at a depth of about 20 inches from fall to spring. It has moderate available water capacity. This soil has moderate permeability in the surface layer and subsoil and slow to very slow permeability in the substratum. Runoff is medium.

This soil is well suited to woodland and cultivated crops. The main limitation for crops is the seasonal high water table, which causes the soil to dry slowly in the spring. Providing drainage helps to dry this soil earlier in the spring, but even drained areas remain wet for several days after heavy rains.

The water table and slow or very slow permeability in the substratum are the main limitations of this soil for community development, especially for on-site septic systems. Lawns on this soil are soggy in the autumn and spring and after heavy rains.

WxB

45B

WxB - Woodbridge fine sandy loam, 3 to 8 percent slopes

This soil is gently sloping and moderately well drained. It is on the tops and lower side slopes of large drumlins and hills on glacial till uplands. The areas are mostly long and narrow.

Typically, the surface layer is very dark grayish brown fine sandy loam 8 inches thick. The subsoil is mottled, dark yellowish brown, and yellowish brown fine sandy loam 22 inches thick. The substratum is firm to very firm, olive gray fine sandy loam and gravelly fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of well drained Paxton soils, moderately well drained Sutton soils, and poorly drained Leicester and Ridgebury soils. A few small areas have stones on the surface, and a few large areas have a surface layer and subsoil of silt loam. Included areas make up about 15 percent of the unit.

This Woodbridge soil has a seasonal high water table at a depth of about 20 inches from fall to spring. It has moderate available water capacity. The soil has moderate permeability in the surface layer and subsoil and slow to very slow permeability in the substratum. Runoff is medium.

This soil is well suited to woodland and cultivated crops. The main limitation for crops is the seasonal high water table, which causes the soil to dry slowly in the spring. Providing drainage helps to dry the soil earlier in the spring, but even drained areas remain wet for several days after heavy rains.

This water table and the slow or very slow permeability in the substratum are the main limitations of this soil for community development, especially for on-site septic systems. Lawns on this soil are soggy in the autumn and spring and after heavy rains.

WyB

46B

WyB - Woodbridge fine sandy loam, 2 to 8 percent slopes, very stony

This soil is nearly level to gently sloping and moderately well drained. It is on the tops and side slopes of drumlins and hills on glacial till uplands. The areas are mostly long and narrow or irregular in shape. Stones cover 1 to 8 percent of the surface.

Typically, the surface layer is very dark grayish brown fine sandy loam 8 inches thick. The subsoil is mottled, dark yellowish brown, and yellowish brown fine sandy loam 22 inches thick. The substratum is firm to very firm, olive gray fine sandy loam, and gravelly fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of well drained Paxton soils, moderately well drained Sutton soils, and poorly drained Leicester and Ridgebury soils. A few small areas do not have stones on the surface. Included areas make up about 10 percent of the unit.

This Woodbridge soil has a seasonal high water table at a depth of about 20 inches from fall to spring. The available water capacity is moderate. This soil has moderate permeability in the surface layer and subsoil and slow to very slow permeability in the substratum. Runoff is medium.

Most areas of this soil are in woodland. A few areas are in pasture, and a few are in community development.

This soil generally is too stony for cultivation, but is well suited to woodland. Stone removal makes the soil well suited to cultivated crops, but is difficult. Seasonal wetness is an additional limitation of the soil for crops.

The water table and the slow or very slow permeability in the substratum are the main limitations of this soil for community development, especially for on-site septic systems. Lawns on this soil are soggy in the autumn and spring and after heavy rains.

WzC

47C

WzC - Woodbridge fine sandy loam, 3 to 15 percent slopes, extremely stony

This soil is gently sloping to sloping and moderately well drained. It is on the tops of large drumlins and hills on glacial till uplands. The areas are mostly oval or irregular in shape. Stones cover 8 to 25 percent of the surface.

Typically, the surface layer is very dark grayish brown fine sandy loam 8 inches thick. The subsoil is mottled, dark yellowish brown and yellowish brown fine sandy loam 22 inches thick. The substratum is firm to very firm, olive gray fine sandy loam and gravelly fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of well drained Paxton soils, moderately well drained Sutton soils, and poorly drained Ridgebury soils. Included areas make up about 15 percent of the unit.

This woodbridge soil has a seasonal high water table at a depth of about 20 inches from fall to spring. It has moderate available water capacity. The soil has moderate permeability in the surface layer and subsoil and slow to very slow permeability in the substratum. Runoff is rapid.

This soil is mostly in woodland. A few areas are in pasture, and a few are in community development.

This soil generally is too stony for cultivation but is well suited to woodland. Stone removal makes the soil well suited to crops but is difficult. Seasonal wetness in fall and spring is an additional limitation for crops.

The water table and the slow or very slow permeability in the substratum are the main limitations of this soil for community development, especially for on-site septic systems. Lawns on this soil are soggy in the autumn and spring and after heavy rains.

ABOUT THE TEAM

The Eastern Connecticut Environmental Review Team (ERT) is a group of professionals in environmental fields drawn together from a varety 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: 203-345-3977, Eastern Connecticut RC&D Area, P.O. Box 70, Haddam, Connecticut 06438.