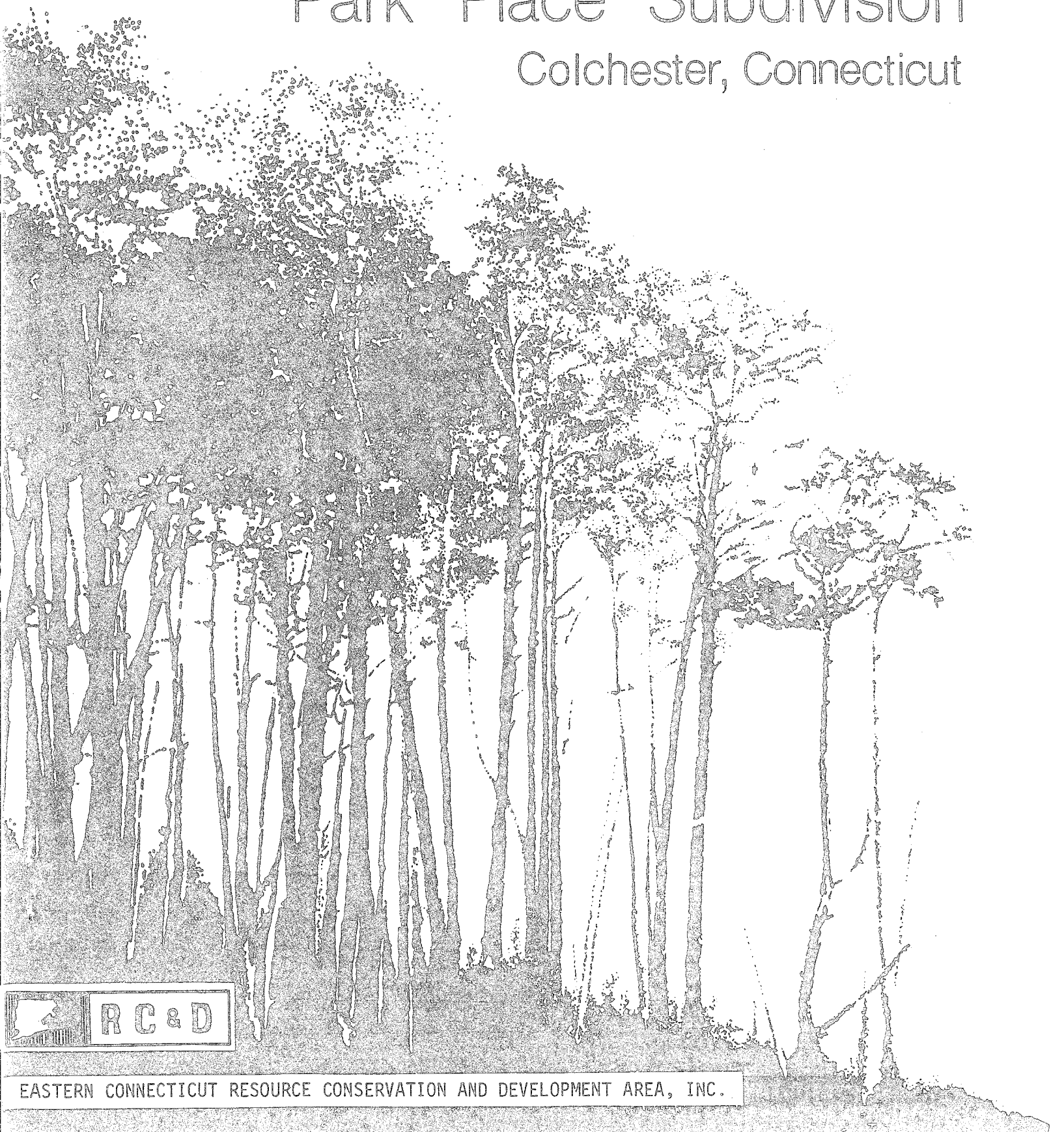
Environmental Review Team Report

Park Place Subdivision

Colchester, Connecticut

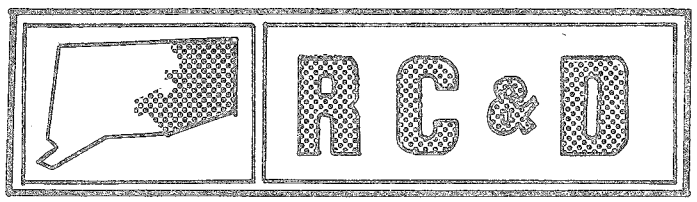


R C&D

EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT AREA, INC.

Environmental Review Team Report
on
Park Place Subdivision
Colchester, Connecticut

December 1980



eastern connecticut resource conservation & development area

environmental review team
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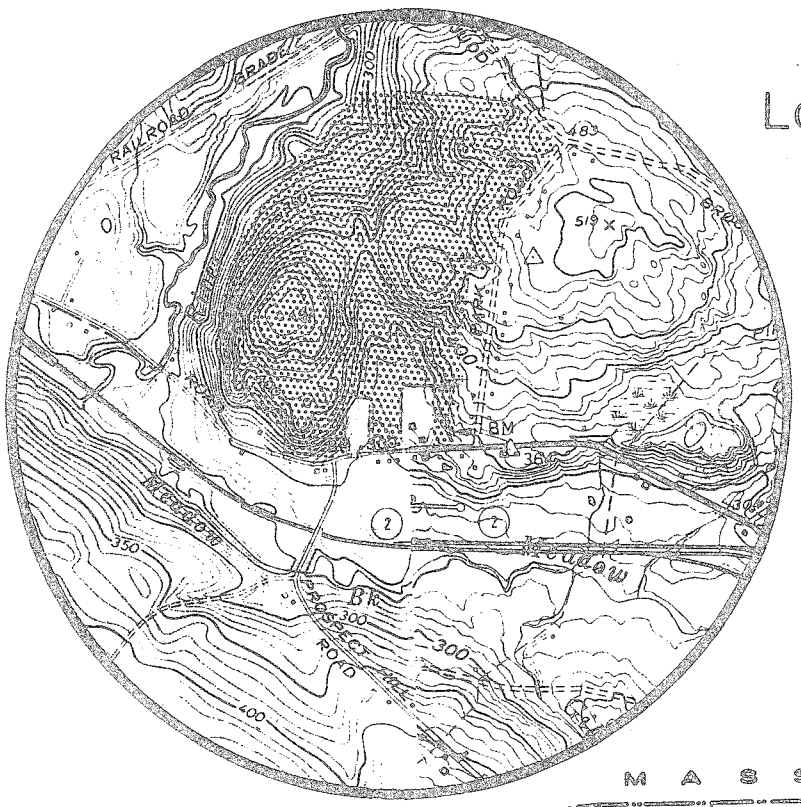
norwich, connecticut 06360



Location of Study Site

PARK PLACE SUBDIVISION
COLCHESTER, CONNECTICUT

ENVIRONMENTAL REVIEW TEAM REPORT
ON
PARK PLACE SUBDIVISION
COLCHESTER, CONNECTICUT

This report is an outgrowth of a request from the Colchester Planning & Zoning Commission to the New London County Soil and Water Conservation District (S&WCD). The S&WCD referred this request to the Eastern Connecticut Resource Conservation and Development (RC&D) Area Executive Committee for their consideration and approval as a project measure. The request was approved and the measure reviewed by the Eastern Connecticut Environmental Review Team (ERT).

The soils of the site were mapped by a soil scientist of the United States Department of Agriculture (USDA), Soil Conservation Service (SCS). Reproductions of the soil survey map as well as a topographic map of the site were distributed to all ERT participants prior to their field review of the site.

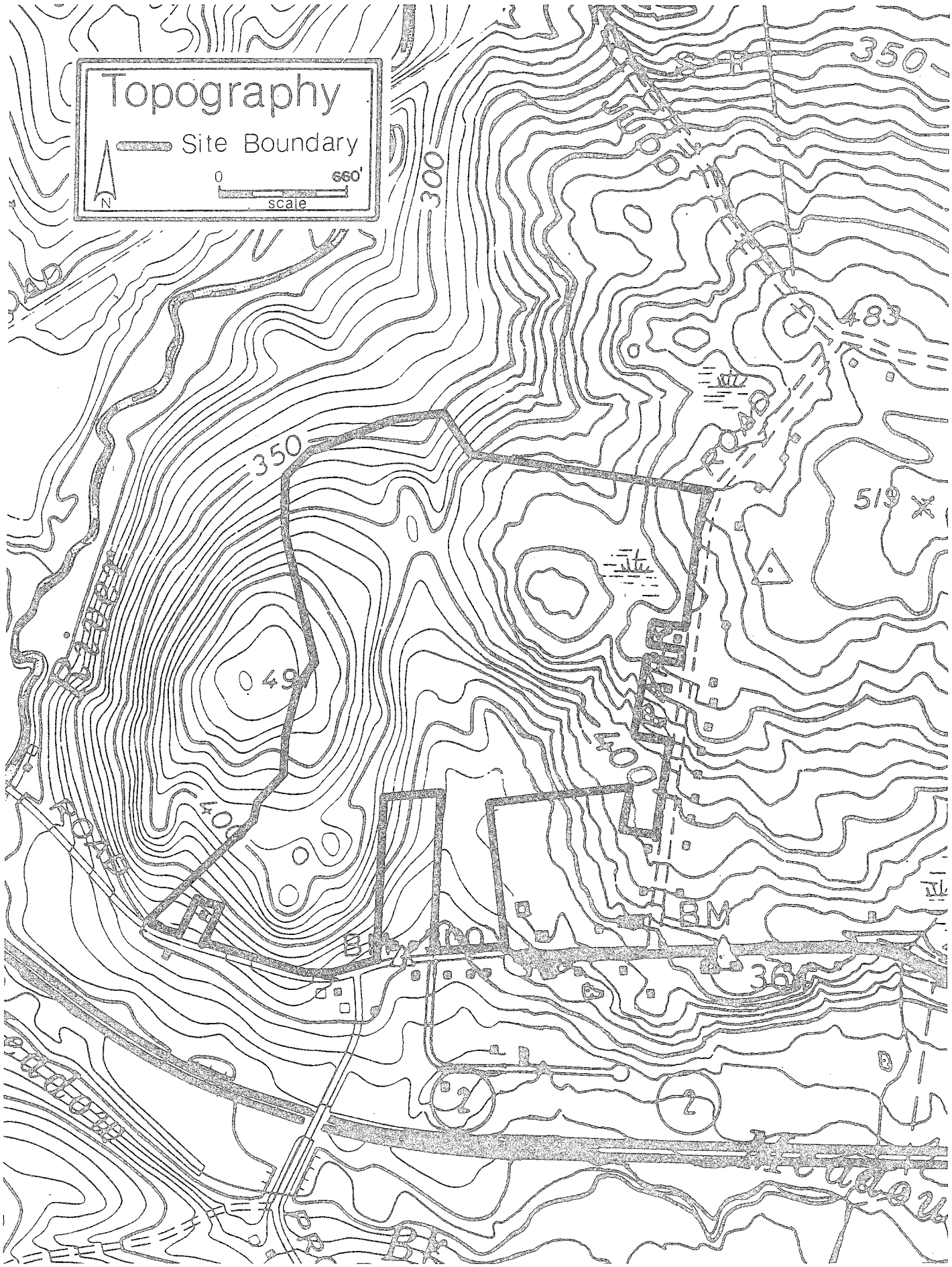
The ERT that field checked the site consisted of the following personnel: Gary Domian, District Conservationist, SCS; Mike Zizka, Geologist, Department of Environmental Protection (DEP); Rob Rocks, Forester, DEP; Tom Seidel, Regional Planner, Southeastern Connecticut Regional Planning Agency; Nels Barrett, Ecologist, DEP; Don Capellaro, Sanitarian State Department of Health; and Jeanne Shelburn, ERT Coordinator, Eastern Connecticut RC&D Area.

The Team met and field checked the site on Thursday, September 18, 1980. Reports from each Team member were sent to the ERT Coordinator for review and summarization for the final report.

This report is not meant to compete with private consultants by supplying site designs or detailed solutions to development problems. 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 of Colchester. The results of this Team action are oriented toward the development of a better environmental quality and the long-term economics of the land use.

The Eastern Connecticut RC&D Project Committee hopes you will find this report of value and assistance in making your decisions on this particular site.

If you require any additional information, please contact: Ms. Jeanne Shelburn, Environmental Review Team Coordinator, Eastern Connecticut RC&D Area, 139 Boswell Avenue, Norwich, Connecticut 06360, 889-2324.


Topography
Site Boundary
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660'
scale
N
350
300
483
519
site
049
400
BM
36
Pond

INTRODUCTION

The Eastern Connecticut Environmental Review Team was asked to provide the Colchester Planning and Zoning Commission with information about the potential impact of a proposed subdivision. The 120± acre site is located on the west side of Park Road and the north side of Old Hartford Road (Route 2). The property is currently owned by the Gallicchio Brothers, Inc., general contractors in Newington. Preliminary plans have been prepared by O.Paquette, land surveyor.

Preliminary plans show 62 lots, ranging from 1 to 3 acres in size. The parcel is divided into two zones of differing lot sizes, R-40 (1 acre lots) and R-60 (1 1/2 acre lots). These lots would be served by on-site wells and on-site septic systems. The proposal indicates that single family homes are planned for approximately one half of the lots, two-family homes would be built on the remaining lots. Eight of the proposed lots will front on and have access to the Old Hartford Road. A loop road extending west from Park Road will provide access to interior lots. A cul-de-sac extends from this loop to the southwest to service twelve additional interior lots.

The property is entirely wooded at present. Extremely steep slopes are found in several sections of the site. Soil characteristics range from shallow depth to bedrock, to seasonal high water tables to regulated wetlands.

The Team is concerned with the impact of the proposed development on the natural resource base of this site. Although many severe limitations to development can be overcome with appropriate engineering techniques, these measures can become costly, often making a project financially unfeasible for a developer. The most notable limitations which will be encountered on this site are directly related to the shallow, highly erosive soils, extremely steep slopes, and high water table found here.

The Team has determined that there will be a significant increase in surface water run-off during storms from the proposed development. This will be most noticeable in the intermittent stream which passes under Old Hartford Road. An engineering analysis will be necessary to determine the adequacy of the existing pipe and whether a rise in water levels would affect neighboring residential lots. A sediment and erosion control plan should be developed for this site and implemented prior to construction. There is also a potential for the high water table on this site to produce wet basements and adversely effect the proper functioning of septic systems. Engineering methods such as curtain drains around foundations and specially designed septic systems will be needed to overcome these limitations. A potential for ground water contamination from poorly renovated septic effluent also exists. (See more detailed discussion in Hydrology and Waste Disposal sections of this report).

Roads planned for this development should be carefully examined, in some cases the slope of these roads exceeds the 8% maximum slope allowed in the Subdivision Regulations.

Given the severe limitations existing on sections of this property, the Team recommends that the Commission consider a cluster approach to development of this

Surficial Geology

(adapted in part from U.S.G.S. Map GQ-1205)

0 660'
scale

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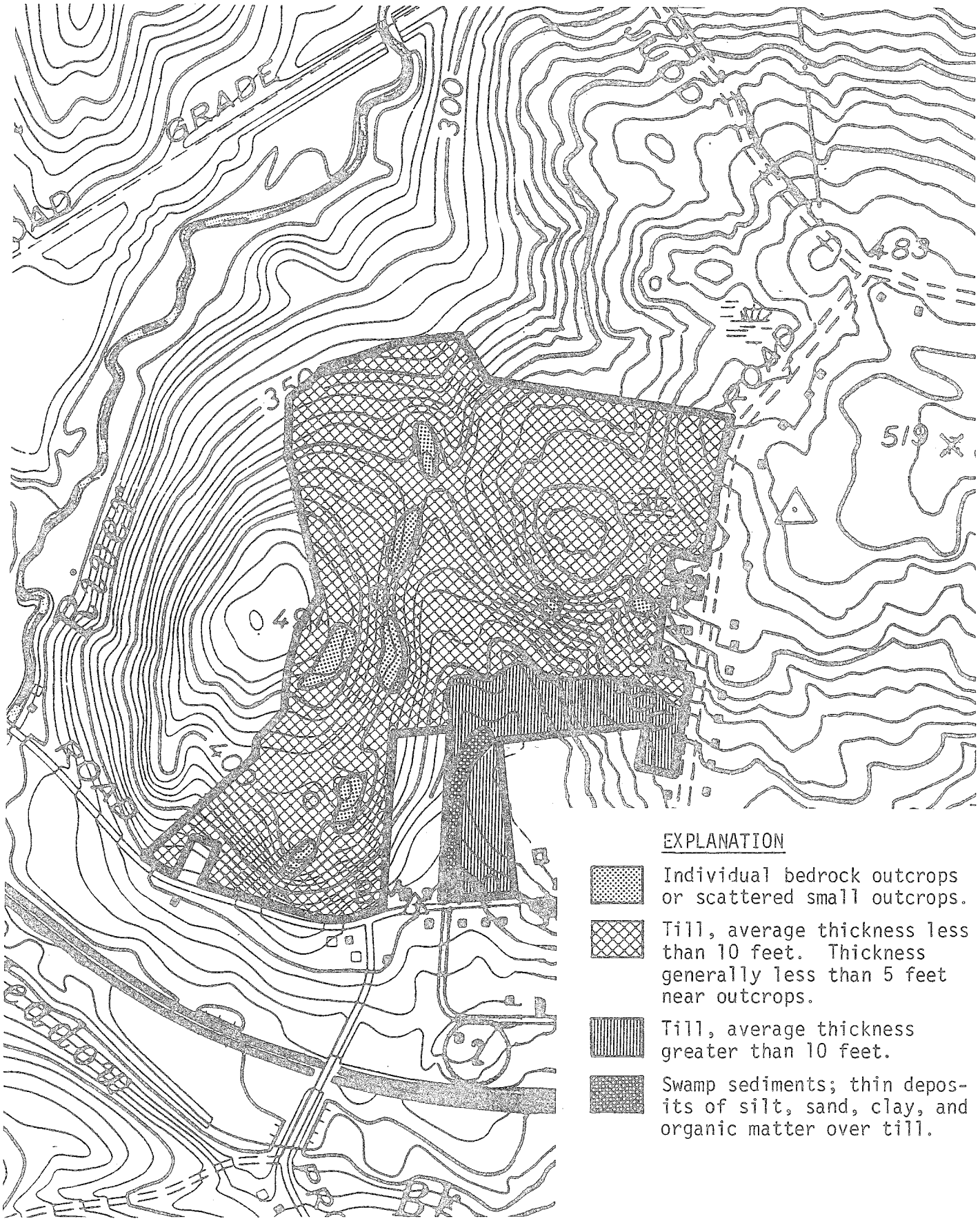

EXPLANATION

- Individual bedrock outcrops or scattered small outcrops.
- Till, average thickness less than 10 feet. Thickness generally less than 5 feet near outcrops.
- Till, average thickness greater than 10 feet.
- Swamp sediments; thin deposits of silt, sand, clay, and organic matter over till.

site. In this way the more easily developed sections of the property could be developed at a higher density, while more fragile areas (steep slopes, highly erosive soils, wetlands) could be reserved for open space. This would also be a benefit to the developer as fewer site development costs would be incurred. These costs are usually lower because fewer roads, drainage facilities and utilities are required and difficult to develop areas are avoided.

ENVIRONMENTAL ASSESSMENT

TOPOGRAPHY

The property is divided into three major topographic sections. The western section is situated on the eastern flank of a steep hill. Knobs and short ridges with precipitous drop-offs are formed by bedrock exposures. Very steep slopes abut Old Hartford Road. The northern portion of this section has the gentlest gradients but is still steep in many places. The central section of the property is a flat to moderately sloping valley, which expands toward the south in a roughly triangular pattern. The southern portion of the valley is flat and very wet. The eastern section of the property is located on a second hill, which has a broad, gently sloping summit with steep slopes to the south-southwest. The two hills on the site are joined by a drainage divide at the head of the central valley.

GEOLOGY

The site is located in an area encompassed by the Moodus and Colchester topographic quadrangles. Bedrock geologic maps of the Moodus and Colchester quadrangles have been prepared by L. Lundgren, Jr., L. Ashmead, and C.L. Snyder. The maps have been published by the Connecticut Geological and Natural History Survey (Quadrangle Report No. 27). A surficial geologic map of the Moodus quadrangle, by D.W. O'Leary, has been published by the U.S. Geological Survey (Map GQ-1205). No surficial geologic map of the Colchester quadrangle has been published to date.

Virtually all of the bedrock cropping out on or underlying the site may be classified as Hebron Formation. This formation consists of interbedded brownish-gray quartz-biotite-plagioclase schist, local muscovite-biotite schist, and greenish gray calc-silicate gneiss. The schists have a slabby appearance that is caused by the alignment of the flaky biotite grains into thin layers. It is this layered structure that gives the rocks the name "schist". The gneiss is also lineated due to the alignment of elongate minerals, but there are few or no prominent parting planes. The lineation gives the rock the name "gneiss". Numerous bedrock exposures were seen in the western section of the property; fewer were found in the eastern section.

The bedrock is incompletely covered by a glacial sediment known as till. Till consists of non-sorted, unconsolidated rock particles that range in size from clay to boulders. These materials were incorporated into a glacial ice sheet as it moved southward; they were later redeposited directly from the ice without substantial sorting by meltwater. The till's principal component is generally sand, but pebbles and larger particles may make up as much as 40 percent of the volume

in some areas, and silt and clay may constitute a similar percentage in others. The thickness of the till is variable, but it is generally less than 10 feet.

HYDROLOGY

Because of the topography of the site, surface and groundwater runoff drains in several directions. Most of the site drains toward a central, southerly oriented swale. Water passing through this swale is discharged from the property via a culvert under Old Hartford Road. The intermittent drainage channel continues along the western side of Hickory Road, passing through culverts under several driveways.

Subdivision and development of the property as presently planned will lead to an increase in surface water runoff generated during periods of precipitation and snowmelt. These increases will, in turn, cause peak flows to rise in drainage channels receiving the runoff. The increases would be a result of the removal of vegetation, particularly trees, from the site and the covering of permeable soils with impermeable materials, such as pavement and roofs.

The most noticeable effect on peak flows would occur in the intermittent stream that passes under Old Hartford Road. Estimates of the magnitude of the peak-flow increases may be made by a method outlined in the SCS Technical Release No. 55 and in "Flood Flow Formulas for Connecticut", a paper prepared by Paul Biscuti of the Department of Environmental Protection. The Team used this method to estimate peak flows at the culvert for the 10-year, 25-year, 50-year, and 100-year rainfall events. These events have a statistical probability of 10 percent, 4 percent, 2 percent, and 1 percent, respectively, of occurring in any given year. The amount of rainfall occuring within a 24-hour period during these storms would be approximately 4.3 inches, 6.0 inches, and 6.5 inches, respectively. Since the peak flows estimated for a given rainfall event may vary depending upon the hydrologic method and the level of precision used, the Team recommends that the figures given below be viewed more as an indication of the percentage increases in flows to be expected following development than as an indication of the absolute flow values that would occur.

	10-yr. rainfall	25-yr. rainfall	50-yr. rainfall	100-yr. rainfall
Peak flows before development	106 cfs	128 cfs	205 cfs	243 cfs
Peak flows after development	151 cfs	177 cfs	272 cfs	313 cfs
Percentage increases	42%	38%	33%	29%

The estimated percentage increases are relatively substantial. This is because most of the watershed of the intermittent stream lies within the site and therefore would be developed. On the other hand, the watershed configuration is advantageous

to the extent that the surface hydrologic effects of development can be largely addressed at one point: The Old Hartford Road culvert. At present, the area of the property just north of the culvert (proposed lots 61 and 62) is swampy. If left as open space, this area could serve as a natural runoff-retention basin. Peak flows through the culvert could be maintained at present levels by appropriate sizing of the pipe. Some engineering analyses would be necessary to determine whether this would require replacing the existing pipe, whether the depth of the swamp in relation to the road is adequate to allow the necessary storage, and whether the rise in water levels during major rainfall events would affect neighboring residential lots. Some type of retention seems necessary, though, as the runoff increase would otherwise have the potential for adversely affecting the lots on Hickory Road.

It should be noted that drainage from the northernmost tier of lots would not flow naturally to the swale at the center of the property and therefore would not be controlled at the culvert. Drainage from these lots would be diffused along the hillside. These lots probably would not noticeably affect peak flows in any local streams, but the runoff increases may cause additional erosion on the hillside.

The proposed subdivision has a relatively high potential for causing groundwater contamination unless special precautions are taken. The most obvious and critical limitation is the shallow depth to bedrock, particularly in the western section of the site. Septic systems would have to be very carefully engineered to assure that adequate renovation of effluent would occur in the soil. Poorly treated wastewater could either enter the bedrock fracture system, where it would receive virtually no additional purification, or break out at the surface downslope of the leaching trenches. The first situation would pose a serious health hazard, as the bedrock fracture system would be the source of the subdivision's drinking-water supply. The second situation would constitute both a health hazard and an aesthetic nuisance. It should also be noted that a septic-system deficiency on one lot may cause problems on neighboring lots since the subdivision layout involves the creation of rows of lots downslope from other rows of lots. All of the above discussion is not meant to suggest that the soil limitations are insoluble; rather, it is meant to emphasize the need for caution with regard to the design and, more importantly, the installation of septic systems. Lots in which bedrock seems most likely to pose problems are numbers 8-14, 21-28, 32, 33, 49, 50, 53 and 58.

Another hydrologic factor that may cause problems is the potential for seasonally high groundwater levels in some lots. High groundwater levels may lead to wet basements or failing septic systems. The greatest potential for problems would exist in those lots located on the natural surface-water and groundwater flow channels. Lots in which these conditions are present include numbers 5-9, 32, 33, 39, 42, 43, 57, 58, 61, and 62.

SOILS

A detailed soils map of this site and detailed soils descriptions are included in the Appendix to this report, accompanied by a chart which indicates soil limitations for various urban uses. As the soil map is an enlargement from the original 1,320'/inch scale to 660'/inch, the soil boundary lines should not be viewed as

absolute boundaries, but as guidelines to the distribution of soil types on the site. The soil limitation chart indicates the probable limitations of each of the soils for on-site sewage disposal, buildings with basements, streets and parking, and landscaping. However, limitations, even though severe, do not preclude the use of the land for development. If economics permit large expenditures for land development and the intended objective is consistent with the objectives of local and regional development, many soils and sites with difficult problems can be used. The soils map, with the publication, New London County Interim Soil Survey Report, can aid in the identification and interpretation of soils and their uses on this site. "Know Your Land: Natural Soil Groups for Connecticut" can also give insight to the development potentials of the soils and their relationship to the surficial geology of the site.

The gently sloping to steep landforms down from the bedrock-controlled landforms are occupied by Canton-Charlton fine sandy loams. The mapping unit symbols are 11C, 11XB, 11XC and 11MD. The letter "X" denotes very stony conditions, while the letter "M" donotes extremely stony conditions. The Canton soils formed in a fine sandy loam mantle underlain by gravelly sandy glacial till, derived primarily from gravel and gneiss. The Charlton soils formed in deep loamy glacial till. Cantol soils have moderately rapid or rapid permeability. Charlton soils have moderate to moderately rapid permeability. Surface runoff is medium in Canton soils and medium to rapid in Charlton soils.

The moderately steep to steep landforms adjacent to the highest elevations in the landscape, are occupied by Charlton-Hollis fine sandy loams, very rocky. These soils are designated by the soil symbols 17LC and 17LD. Both soils are well drained. The Charlton soils formed in deep friable glacial till, and the Hollis soil formed in glacial till less than 20 inches deep over bedrock. Charlton soils have moderate to moderately rapid permeability, the Hollis soils have moderate permeability. Surface runoff is medium to very rapid for Hollis soils and medium to rapid for Charlton soils.

The gently sloping to sloping landforms at the highest elevations in the landscape, are occupied by Hollis-Charlton-Rock outcrop complex. The soils are designated by the soil symbols 17MC. The Hollis and Charlton soils are well drained. The Hollis soil formed in glacial till less than 20 inches deep over bedrock. Charlton soils formed in deep friable glacial till. The Hollis soil formed in shallow friable glacial till. The Hollis soils have moderate permeability. The Rock outcrop in this series is rock that is exposed. Surface runoff is medium to very rapid for Hollis soils and medium to rapid for Charlton soils.

Nearly level to gently sloping landforms at the base of hills are occupied by Sutton fine sandy loam, and Sutton extremely stony fine sandy loam. The soil symbols are 41B and 41MB respectively. Sutton soils formed in loamy glacial till. The soils are moderately well drained, and have moderate or moderately rapid permeability. The seasonal high water table is at 18 to 24 inches. Surface runoff is slow to medium.

The low lying, nearly level areas along drainageways in the landscape are occupied by Ridgebury, Leicester and Whitman extremely stony fine sandy loams. The soils are designated by the mapping unit symbol 43M. The Ridgebury and Whitman soils formed in compact glacial till; the Leicester soils formed in friable glacial till. The Ridgebury and Leicester soils have moderate to moderately rapid

permeability in the surface layer and subsoil and slow or very slow permeability in the substratum (fragipan). The Leicester soils have moderately rapid permeability throughout. The seasonal highwater table for Ridgebury and Leicester soils is at or near the surface 7 to 9 months of the year. The Whitman soil has a high-water table at or near the surface 9 to 10 months of the year. Whitman soils have high runoff potential. Runoff is slow to medium in Ridgebury soils and slow in Leicester soils. This soil is designated as a wetland soils and is regulated under Public Act 155.

Sutton fine sandy loam (41B) qualifies as Prime Farmlands. Prime farmland, as defined by the U.S. Department of Agriculture, is the land that is best suited to producing food, feed, forage, fiber and oil seed crops. It has the soil quality, growing season, and moisture supply needed to economically produce a sustained high yield of crops when it is treated and managed using acceptable farming methods. Prime farmland produces the highest yields with minimal inputs of energy and economic resources. Farming it results in the least damage to the environment.

Approximately 40 percent of the site is occupied by soils that have limitations due to slope and shallow to bedrock conditions. The soils are Charlton-Hollis (17LC, 17LD) and Hollis-Rock Outcrop (17MC). The Charlton soils are deep soils and have moderate limitations to most building site development uses because of slope and surface stoniness. The Hollis soils are 20" or less to bedrock and are severely rated to most site development uses because of bedrock and slope. Hollis-Rock Outcrop soils are severely rated for most all building uses because bedrock is at or near the surface.

Charlton soils in these mapping units are moderately limited for septic tank absorption fields because of slope and large surface stones. Hollis soils are severely limited because of shallow depth to bedrock. In order to use these soils for leach fields alternatives such as adding fill, controlling housing density, enlarging leaching areas, avoiding construction during wet periods and land shaping and stone removal will have to be implemented. Seepage of effluent along bedrock surfaces can lead to pollution of on-site wells. On-site wells will have to be placed higher in elevation than the leachbeds.

The soils mapped as Canton-Charlton fine sandy loam (11C, 11XB, 11XC, 11MD) occupy approximately 40 percent of the area. Generally, these soils occupy the northern and eastern sections of the property. The soils are moderately rated for septic tank absorption fields primarily because of surface stoniness and slope. Slope becomes a limiting factor on slopes of 8 to 15 percent and greater. Buildings site development for dwellings with basements are rated as severe on soils mapped as 11MD because of extreme stony conditions and slope. The other soils are rated as moderate due primarily to surface stoniness and slope greater than 8 to 15 percent. Limitations to be overcome when establishing septic leaching fields are stone removal, land regrading, enlarging leach fields and avoiding construction during the wet seasons. On-site wells should be located upslope from the leach fields.

The Sutton soils (41B, 41MB) are rated as severe for most building site and septic effluent disposal uses. The rating is severe because of a seasonal high water table that rises to within 18 to 24 inches of the surface during the wet season. These soils also have limitations due to frost heaving and surface stoniness. These soil areas also serve as drainage ways for the associated watersheds. Leaving these areas undeveloped will offer more opportunity to accomodate

Vegetation

0 660' scale

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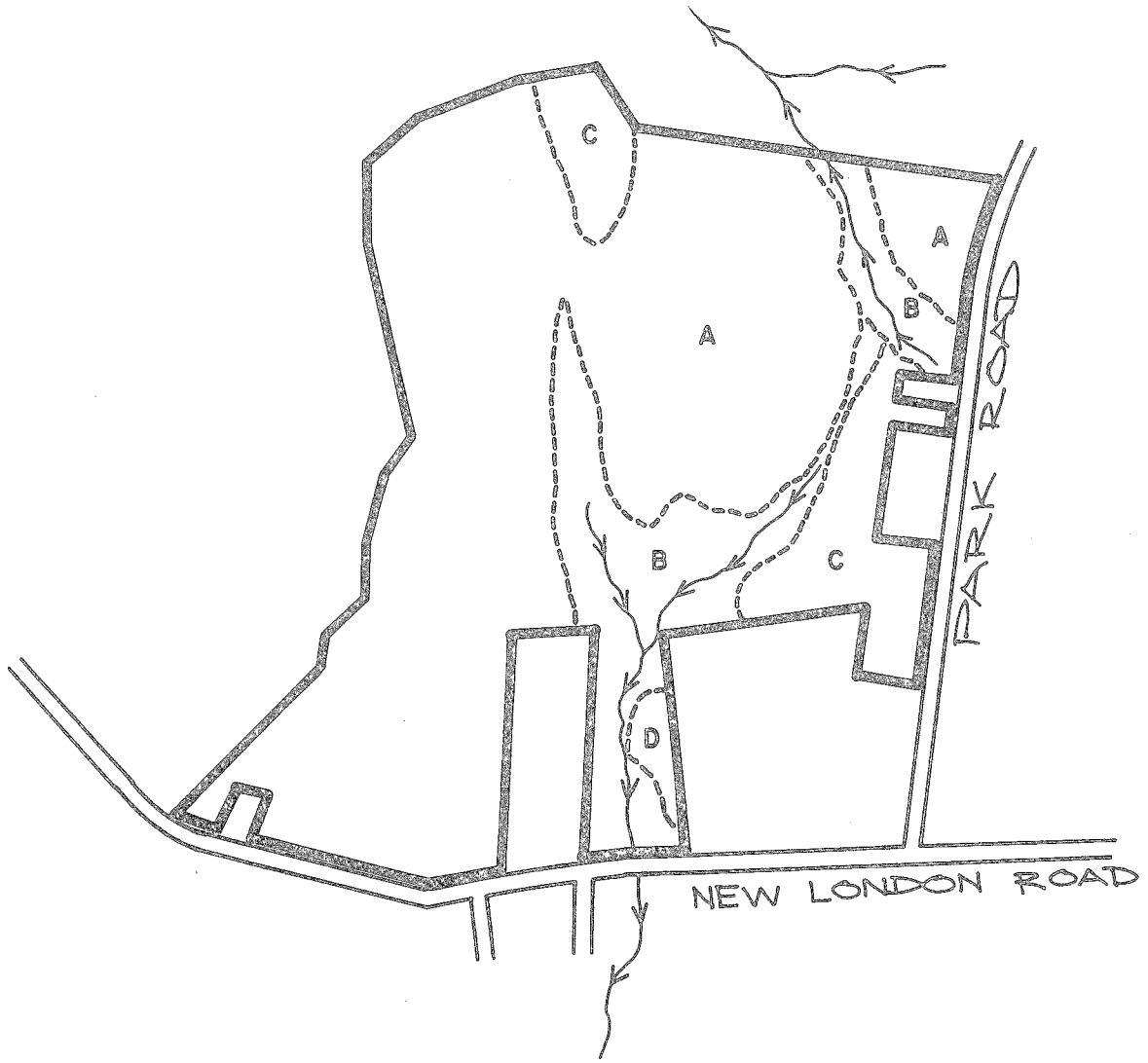

LEGEND

- Road
- Property Boundary
- Vegetation Type Boundary
- Stream

VEGETATION TYPE DESCRIPTIONS*

TYPE A. Mixed hardwoods, 70± acres, Fully-stocked (uncrowded), pole with occasional sawtimber-size.

TYPE B. Hardwood swamp, 18± acres, fully-stocked, pole-size.

TYPE C. Mixed hardwoods, 12± acres, fully-stocked, pole-size.

TYPE D. Old field, 1± acre.

* Seedling-size = Trees less than 1 inch in diameter at 4 1/2 feet above the ground (d.b.h.)
Sapling-size = Trees 1 to 5 inches in d.b.h.
Pole-size = Trees 5 to 11 inches in d.b.h.
Sawtimber-size = Trees 11 inches and greater in d.b.h.

storm water drainage, and these areas can serve as recharge zones for ground water supplies.

The wetland soils on-site are mapped as (43M) and occupy approximately 10 percent of the site. Wetlands are regulated under P.A. 155 and local commissions must approve work that is planned for the wetlands area. The most evident use of the wetland soils are for storm water storage, wildlife habitat and as a ground water recharge zone.

Approximately 70 percent of the area have slopes in excess of 8 to 15 percent. The potential for serious erosion and sedimentation, particularly to the wetlands, increases as development intensity and landform slope increases. Erosion control measures should be planned prior to the beginning of construction. Assistance in developing an erosion control plan can be obtained from the New London County Soil and Water Conservation District.

VEGETATION

The property proposed for subdivision is entirely forested. Four vegetation types are present within this tract. They include two mixed hardwood stands, a hardwood swamp and an old field area. There is a wide transition zone between the mixed hardwood stands, the hardwood stands and the hardwood swamp. In this area many species from each stand are intermixed, as a result stand boundaries and acreages are only approximate. Windthrow is a potential hazard in both vegetation types A and B. Development in these areas may increase this potential.

Vegetation Type Descriptions

Type A (Mixed Hardwoods). This 70± acre uncrowded, fully-stocked stand is made up of poor to medium quality pole-size scarlet oak, black oak, white oak, black birch, mockernut hickory, shagbark hickory and scattered red maple. Occasional poor quality sawtimber size scarlet oak, black oak and white oak are also present. Understory species include blue beech, maple leaf viburnum, patches of mountain laurel, occasional highbush blueberry, hardwood tree seedling, widely scattered white pine and hemlock seedlings. Grasses, partridgeberry, dewberry, low bush blueberry, huckleberry, wild sarsaparilla, club moss, Christmas fern and ebony spleen-wort form the ground cover in this stand.

Type B (Hardwood Swamp). Pole-size red maple with occasional white ash and American elm are present in this 18± acre fully-stocked stand. A very dense understory made up of spice bush, high bush blueberry and arrowwood is present in this wetland. Ground cover species include skunk cabbage, false hellebore, sphagnum moss, wild violet, tussock sedge, cinnamon fern, Christmas fern, hayscented fern and club moss in the driest sections.

Type C (Mixed Hardwoods). This 12± acre fully-stocked stand is becoming crowded with pole-size black oak, white oak, red oak, black birch, shagbark hickory, red maple and occasional sugar maple. Witch-hazel, maple leaf viburnum sapling-size white pine, hemlock seedlings, flowering dogwood, ironwood and hardwood tree seedlings are present in the understory. Club moss, hayscented fern, New York fern, Christmas fern, wild sarsaparilla and rattlesnake plantation form the ground cover in this stand.

Type D (Old Field). This 1± acre old field is vegetated with grasses, goldenrod, mild weed, flowering dogwood seedlings and red maple seedlings.

No rare or endangered plant species were observed during the field investigation of this property.

As with other subdivisions in forested areas, retention of the larger, healthier trees is desirable. These trees have high aesthetic value, their presence may enhance the value of each lot by as much as twenty percent.

Development of this property as proposed will neccessitate a great deal of excavating, filling and grading for construction of roadways, buildings and septic systems. These actions may disturb the balance between soil aeration, soil moisture level and soil composition. Trees are very sensitive to the condition of the soil within the entire area under their crowns. Any disturbances within this zone may cause a decline in tree health and vigor, potentially resulting in tree mortality within three to five years. Mechanical injury to trees may cause the same results. Dead trees reduce the aesthetic quality of an area and may become hazardous and expensive to remove if near roadways, buildings or utility lines.

Care should be taken during the construction period not to disturb the trees that are to be retained where feasible, trees should be saved in small groups or "islands". This practice lowers the possibility of soil disturbance and mechanical injury. Individual trees and "islands" of trees should be temporarily, but clearly marked so they may be more easily avoided during construction. In general, healthy and high vigor trees should be favored over unhealthy trees because they are usually more resistant to the environmental stresses brought about by construction.

Saturated soils in vegetation type B (hardwood swamp) limits tree growth to species such as red maple, which are able to survive under conditions where excessive moisture is prevalent. The high water table in this area also limits the depth of tree root systems. Under these conditions trees are unable to become securely anchored and are highly susceptible to windthrow.

Linear openings which allow wind to pass through rather than over these stands will increase the windthrow hazard. Openings and clearings in and along side these wetlands should be avoided if at all possible.

Alterations in wetland areas which permanently raise the water table, such as restricting natural drainage and stream flows, may eventually have a negative impact on vegetation in these areas. Raising the water table may drown roots, causing wide spread mortality in the trees, shrubs and herbaceous vegetation which are now present. Over time, vegetation will become established which is able to adapt to the new water table conditions. These changes, however, may significantly alter the appearance and character of the wetland.

The excessively drained and shallow to bedrock soils which are present throughout most of vegetation type A (mixed hardwoods) have a limiting effect on tree health and stability. The lack of adequate moisture during the spring rapid growth season prevents the trees present from reaching their full growth rate potentials. Trees when stressed in this way are more susceptable to insect and disease damage. Windthrow is also a potential hazard in this stand. Many of the trees in this stand are unable to become securely anchored in the shallow to bedrock soils which are

present.

In some places the steep soils intensify this hazard. If the underlying bedrock is highly fractured, the windthrow hazard will be lessened because tree roots may be able to penetrate deeper for more stability. Clearing operations may increase wihdthrow potentials in this stand.

Many of the large sawtimber-size trees which are present in vegetation type A have large dead branches and damaged crowns. These trees will become a hazard if houses or roadways are constructed near them. Removal of these trees will eliminate this potential hazard.

The trees present in vegetation type C (mixed hardwoods) are declining in health and vigor as a result of their crowded condition. A thinning which would remove approximately one third of the volume in pole size trees, would provide additional space, sunlight, water and nutrients to help improve the health and vigor of residual trees. At present the lack of adequate access to this area limits management. Once the area is subdivided and roads are constructed, the thinning would be feasible. This thinning could take place on individual lots by lot owners. Only damaged and the poorest quality trees should be removed.

Trees which are removed during construction of houses, driveways and septic systems, should be utilized as fuelwood. The large, damaged trees in vegetation type A which present a potential hazard should also be removed and utilized as fuelwood prior to subdivision.

WILDLIFE

Park Place is mostly reforested of a mixed hardwood composition. The area includes a woodland pool (northeast of hilltop knolls) and a forested red maple swamp (acer rubrum). Local site conditions also include a steep slope and ridge, hilltop, lowland drainage swale, and average midslope site.

Scattered areas of the site reveal a few persistant post-agricultural indicators, suggesting that grazing had occured in the past. Indicator species were red cedar (Juniperus virginiana), prostrate juniper (Juniperus communis), and Japanese barberry (Berberis thunbergii).

Both hilltop site, steep slope, and dry ridge, exhibit a poorly developed understory. Evidence of deer browse was absent except very light browsing occured around the perimeter of the woodland pool. Large trees, mostly white oaks (Quercus alba) are widely spaced, yielding limited mast. At one time in the past a low intensity fire may have swept through the hilltop site. Tree reproduction is absent and understory development is poor. Most trees have either dropped lower limbs or dying limbs up to ten feet above ground level. Two ruffed grouse (Bonasa umbellus) were flushed nearby from an area with a high abundance of huckleberries (Gaylussacia sp.), whose fruit contribute to the diet of many upland game birds.

The rich lowland drainage swale supports many hickories (Carya spp). The average midslope supports both oaks (Quercus spp) and hickories. Together these areas constitute a good yield of mast for wildlife; including mammals such as the eastern chipmunk (Tamius striatus), grey squirrels (Sciurus carolinensis) and visiting

WILDLIFE HABITAT AREAS

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scale

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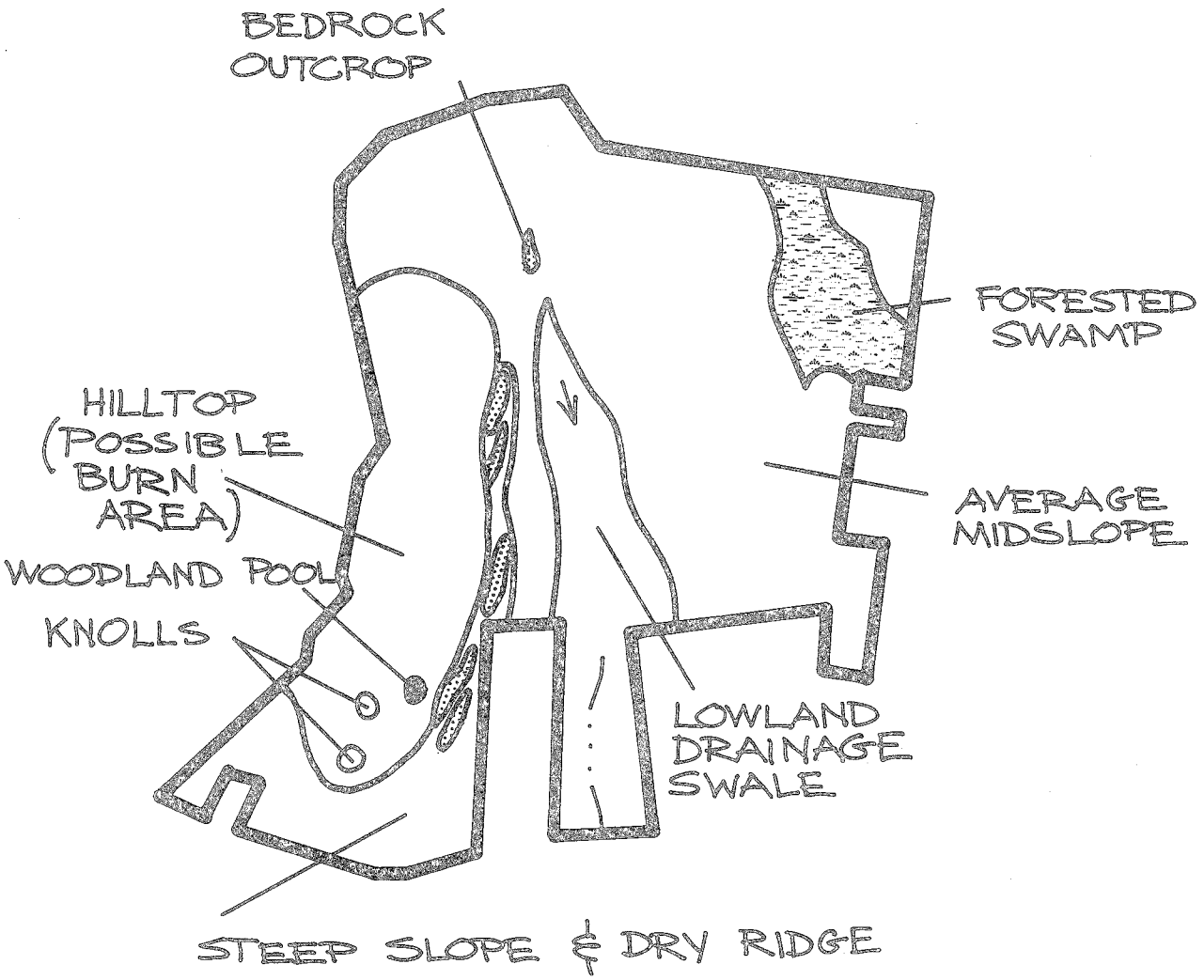


songbirds, especially bluejays (Cristae cyanocitta), white-breasted nuthatch (Sitta carolinensis), purple grackle (Quiscala quiscalis) and brown thrasher (Toxostoma rufum) as well as game birds, the ruffed grouse.

Abundant tree reproduction on the midslopes provide an excellent browse layer for white tailed deer (Odocoileus virginianus). Moderate browsing had occured along access roads. Also in the understory, the drupes of Maple-leaf vibernum (Vibernum acerifolium) contribute to the diet of ruffed grouse and eastern chipmunks.

The forested red maple/spicebush (Acer rubrum/Lindera benzoin)swamp serves as a local water source for wildlife. Young red maples along the swamp border have been browsed by white tailed deer. The fruits of spicebush are eaten sparingly by most birds except the woodthrush (Hylocichla mustelina)and veery (H, fuscenscens).

Development of the site as proposed will eliminate much of the wildlife habitat in the area. Removal of most-producing trees will decrease food availability to both mammals and birds, as well as, reducing the potential volume of winter food caches.

White tailed deer will be affected little since they only occasionally visit the area, prefering better habitat such as abandoned fields.

The proposed roadbed to the north, crosses through the forested swamp. Such a road may deleteriously affect water quality and access as a local water supply for wildlife.

Reducing the number of lots, leaving lots wooded or providing vegetated buffer zones between lots will provide scattered habitat for those animals which can cohabitate with man, i.e. grey squirrels, eastern chipmunks, skunks and songbirds. Ruffed grouse may migrate to an area with a more continuous habitat.

WATER SUPPLY

Drinking water for the lots in the subdivision is proposed to be provided by individual on-site wells. Because of the lack of a substantial sand-and-gravel aquifer on the property, the wells would undoubtedly be drilled into bedrock. Water is transmitted through bedrock by fractures; the ultimate yield of a bedrock well therefore depends upon the number and size of fractures that the well intersects. Fractures are distributed irregularly through bedrock, so there is no way of predicting the yield of a well drilled at any particular location. However, statistical analysis of bedrock wells in eastern Connecticut indicates that the probability of achieving a yield of at least 3 gallons per minute, an amount considered sufficient to meet the needs of most families, is 80 percent or greater. Most lots should therefore be able to provide an adequate water supply.

The natural quality of the groundwater should be good. Unlike most of the town of Colchester, the Park Place property is not thought to overlie the Brimfield Schist, a bedrock formation that has produced high sulfur, iron, and manganese concentrations in local well water. There is a small potential, nevertheless, for undesirable mineral concentrations in at least some wells in the subdivision. The other major potential water-quality problem is related to the operation of septic

systems in the subdivision. As mentioned in other sections of this report, the site has severe soils limitations in many areas. The success with which these limitations are overcome will directly influence the future quality of ground-water obtained on the site.

WASTE DISPOSAL

While Colchester (Borough) is presently undergoing a sewerage program in conjunction with several other towns, the location in question is not part of the area to be included. Therefore, this proposed development along with other existing housing in the area would and continue to have on-site subsurface sewage disposal.

Overall conditions, based on areas of rugged topography characterized by frequent bedrock outcrops and steep slopes, wet areas with defined water courses, and soil service mapping data indicates the property is limited as to the feasibility for sewage disposal.

In order to have reasonable assurance that subsurface sewage systems will function properly without contaminating or seriously degrading ground water there should be suitable soils which are deep enough to provide treatment and attenuation of the effluent. In accordance with Public Health Code requirement the bottom area of a leaching system would need to be elevated at least 1 1/2 feet above the maximum high ground water level and four feet above bedrock. Minimum area is needed when site and soil conditions are favorable. However, the area requirements will increase greatly as soil percolation, soil depth, depth to ground water decreases and slope increases. Slopes exceeding 20-25% are basically unsuitable.

Excluding a considerable portion of the property due to wetlands, steep slopes, or being marginally acceptable depending upon the depth to ledge rock the proposed overall density for the subdivision appears to be rather liberal. As approximately half of the 62 lots would be for duplex houses, a total of some 93 families would be residing there.

A more comprehensive program of on-site testing of the acreage is needed to locate and define suitable sites. Unsuitable sites which cannot demonstrate sufficient area to place a house, well and disposal system (primary and reserve area) should be eliminated from consdideration. In general, large lots certainly appear to be necessary in order to achieve satisfactory facilities in conjunction with the housing units.

STORM DRAINAGE

Since most runoff will flow south to Old Hartford Road, runoff should be calculated to determine if the existing pipes under this road are adequate. Also, care should be exercised in design so that no flooding results in the existing subdivision along Hickory Road between Old Hartford Road and Route 2. These concerns should be addressed under sections 7.5.2 and 7.5.3 of the Subdivision Regulations.

If lots 5, 6, 61 and 62 are used for open space-conservation this should help with runoff and flooding problems north of Old Hartford Road. The storm drainage system should be designed so that no flooding occurs on the property to the east of lot 61.

ROADS

There are no transportation improvements scheduled in the area of the proposed development. Because of site lines, the intersection of Park Road and Old Hartford Road could cause problems as traffic flows increase. If necessary in the future Park Road - Judd Brook Road could be extended east to Miller Road or Old Hebron Road. Since Old Hartford Road is a collector street a sidewalk will be required along lots 15 through 19.

Section 6.3.6 of the Colchester subdivision regulations limits dead end streets to 600 feet. As shown on the plan, the dead-end road is over twice this length. If under Section 6.3.6 this dead-end street is to be extended in the future, then it will have to be built to local street standards.

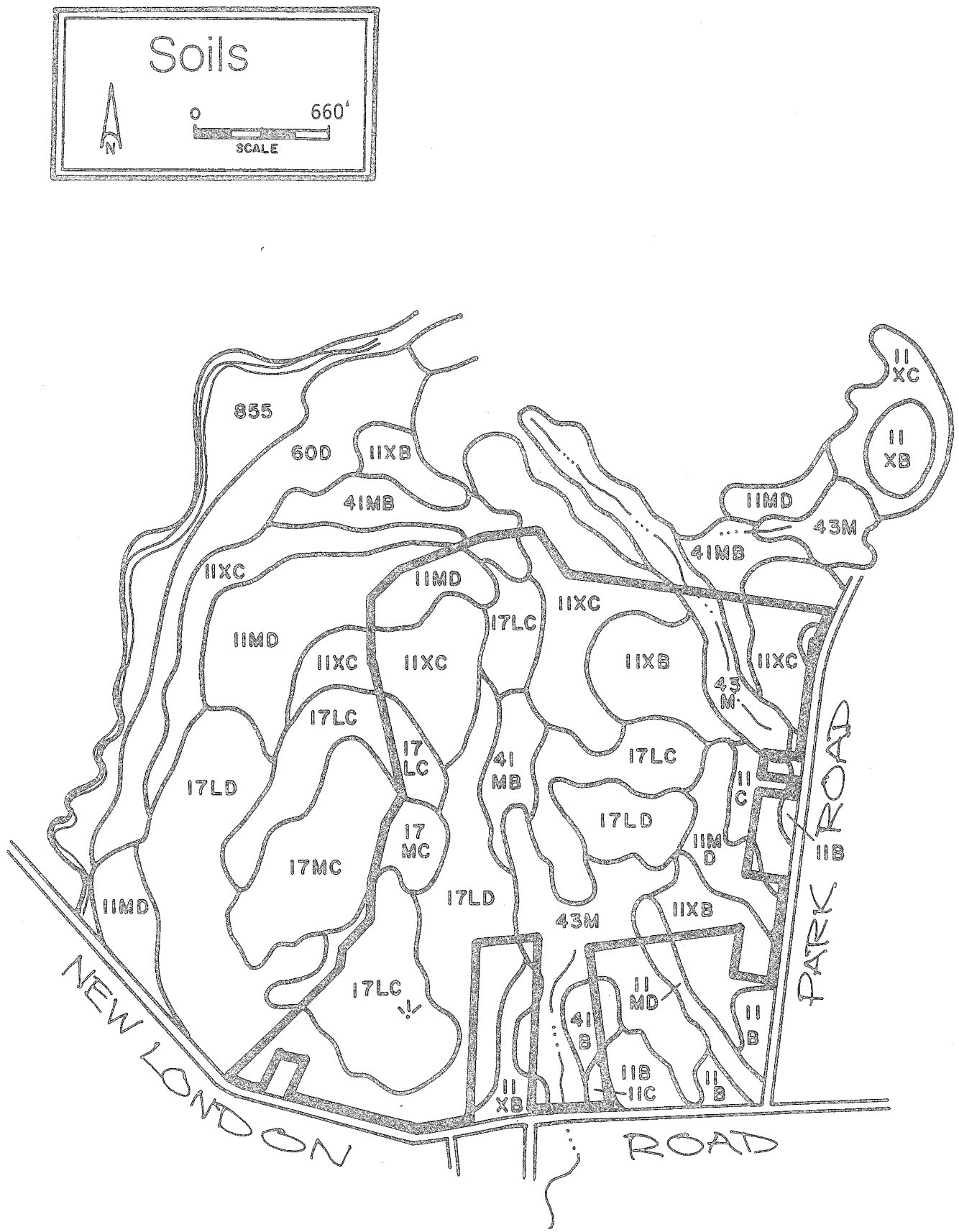
Section 6.3.7 of the subdivision regulations limits street grades to 8%. In several cases the proposed roads exceed this slope, Relocation of the roads could avoid some of these slopes, although the hilly nature of the site makes this difficult and would probably reduce the total number of lots.

PLANNING CONCERNS

Surrounding land uses are low density residential and undeveloped. On a land use basis the proposed development would be compatible with surrounding uses. Other than low density residential or undeveloped there appear to be few uses for the land. The area is too forested and hilly to be used for agriculture and there are no sand and gravel deposits worth mining. School, government and commercial facilities are available in the borough of Colchester about two miles east of the site.

Because of steep slopes, shallow bedrock soils, and high water tables and wetness lots such as 8 through 19 should not be developed as indicated. Lots along Old Hartford Road have 25-30% slopes which will make development and access expensive and difficult. For instance, the driveway to lot 14 would rise 66 feet over 240 feet. Even other lots such as 26, 27 and 53 through 56 have steep slopes which could hinder development. One way to deal with these problems might be to use cluster development. Under cluster residential development the dwelling units are grouped closer together on the land best able to support them with the remainder of the land preserved as open space. The overall density of units cannot exceed that permitted by the zoning. Under cluster development site development costs are usually lower because fewer roads, drainage facilities, and utilities are required.

Appendix


Soils
N
0
660'
SCALE
855
60D
11XB
41MB
11XC
11MD
17LC
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PARK ROAD
NEW LONDON
ROAD

PARK PLACE SUBDIVISION
COLCHESTER, CONNECTICUT

PROPORTIONAL EXTENT OF SOILS AND THEIR LIMITATIONS FOR CERTAIN LAND USES

Soil Series	Soil Symbol	Approx. Acres	Percent of Acres	Principal Limiting Factor	Urban Use Limitations*			
					On-Site Sewage	Buildings with Basements	Streets & Parking	Land-Scaping
Canton-Charlton	11C	2	2%	Slope	2	2	2	2
Canton-Charlton	11XB	10	9%	Large stones	2	2	2	2
Canton-Charlton	11XC	26	22%	Slope,large stones	2	2	2	2
Canton-Charlton	11MD	8	7%	Slope,large stones	3	3	3	3
Charlton-Hollis Charlton Part Hollis Part	17LC	25	21%	Slope,large stones,depth to rock	2 3	2 3	2 3	2 3
Charlton-Hollis	17LD	21	18%	Slope,depth to rock	3	3	3	3
Hollis-Rock Outcrop	17MC	2	2%	Slope,depth to rock	3	3	3	3
**Ridgebury,Leicester & Whitman	43M	14	11%	Wetness,large stones,percs slowly	3	3	3	3
Sutton	41B	2	2%	Wetness	3	3	2	1
Sutton	41MB	6	6%	Wetness,large stones	3	3	2	3

Limitations: 1 = slight, 2 = moderate, 3 = severe

** Regulated Wetland Soil Under P.A. 155.

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 of 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.

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, climatologists, soil scientists, landscape architects, archeologists, recreation specialists, engineers and planners. The ERT operates with state funding under the supervision of the Eastern Connecticut Resource Conservation and Development (RC&D) Area.

The Team is 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, sanitary landfills, commercial and industrial developments, sand and gravel operations, 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 officials 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. This request letter should include a summary of the proposed project, a location map of the project site, written permission from the landowner allowing the Team to enter the property for purposes of review, and a statement identifying the specific areas of concern the Team should address. 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 regarding the Environmental Review Team, please contact Jeanne Shelburn (889-2324), Environmental Review Team Coordinator, Eastern Connecticut RC&D Area, 139 Boswell Avenue, Norwich, Connecticut 06360.