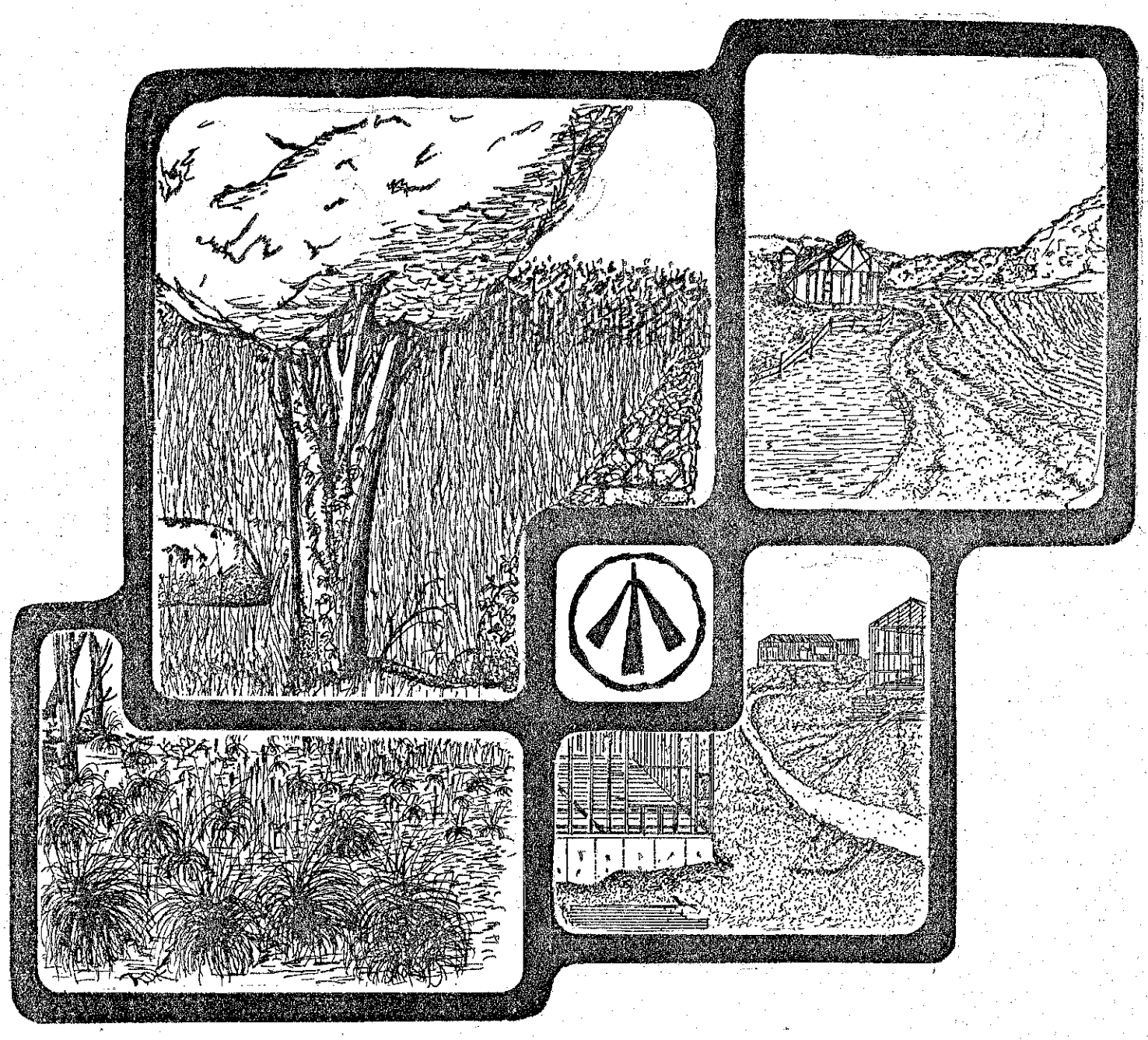
return to Rick Lynch

ENVIRONMENTAL REVIEW TEAM REPORT



SPOONER HILL ESTATES
KENT, CONNECTICUT

KING'S MARK
RESOURCE CONSERVATION & DEVELOPMENT AREA

KING'S MARK
ENVIRONMENTAL REVIEW TEAM REPORT

ON

SPOONER HILL ESTATES
KENT, CONNECTICUT

JULY 1980

King's Mark Resource Conservation and Development Area

Environmental Review Team

P. O. Box 30

Warren, Connecticut 06754

ACKNOWLEDGMENTS

The King's Mark Environmental Review Team operates through the cooperative effort of a number of agencies and organizations including:

Federal Agencies
U.S.D.A. SOIL CONSERVATION SERVICE

State Agencies
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DEPARTMENT OF HEALTH
DEPARTMENT OF TRANSPORTATION
UNIVERSITY OF CONNECTICUT COOPERATIVE EXTENSION SERVICE

Local Groups and Agencies
LITCHFIELD COUNTY SOIL AND WATER CONSERVATION DISTRICT
NEW HAVEN COUNTY SOIL AND WATER CONSERVATION DISTRICT
HARTFORD COUNTY SOIL AND WATER CONSERVATION DISTRICT
FAIRFIELD COUNTY SOIL AND WATER CONSERVATION DISTRICT
NORTHWESTERN CONNECTICUT REGIONAL PLANNING AGENCY
VALLEY REGIONAL PLANNING AGENCY
LITCHFIELD HILLS REGIONAL PLANNING AGENCY
CENTRAL NAUGATUCK VALLEY REGIONAL PLANNING AGENCY
HOUSATONIC VALLEY COUNCIL OF ELECTED OFFICIALS
AMERICAN INDIAN ARCHAEOLOGICAL INSTITUTE

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KING'S MARK RESOURCE CONSERVATION AND DEVELOPMENT AREA

Victor Allan, Chairman, Executive Committee
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Staff Administration Provided By

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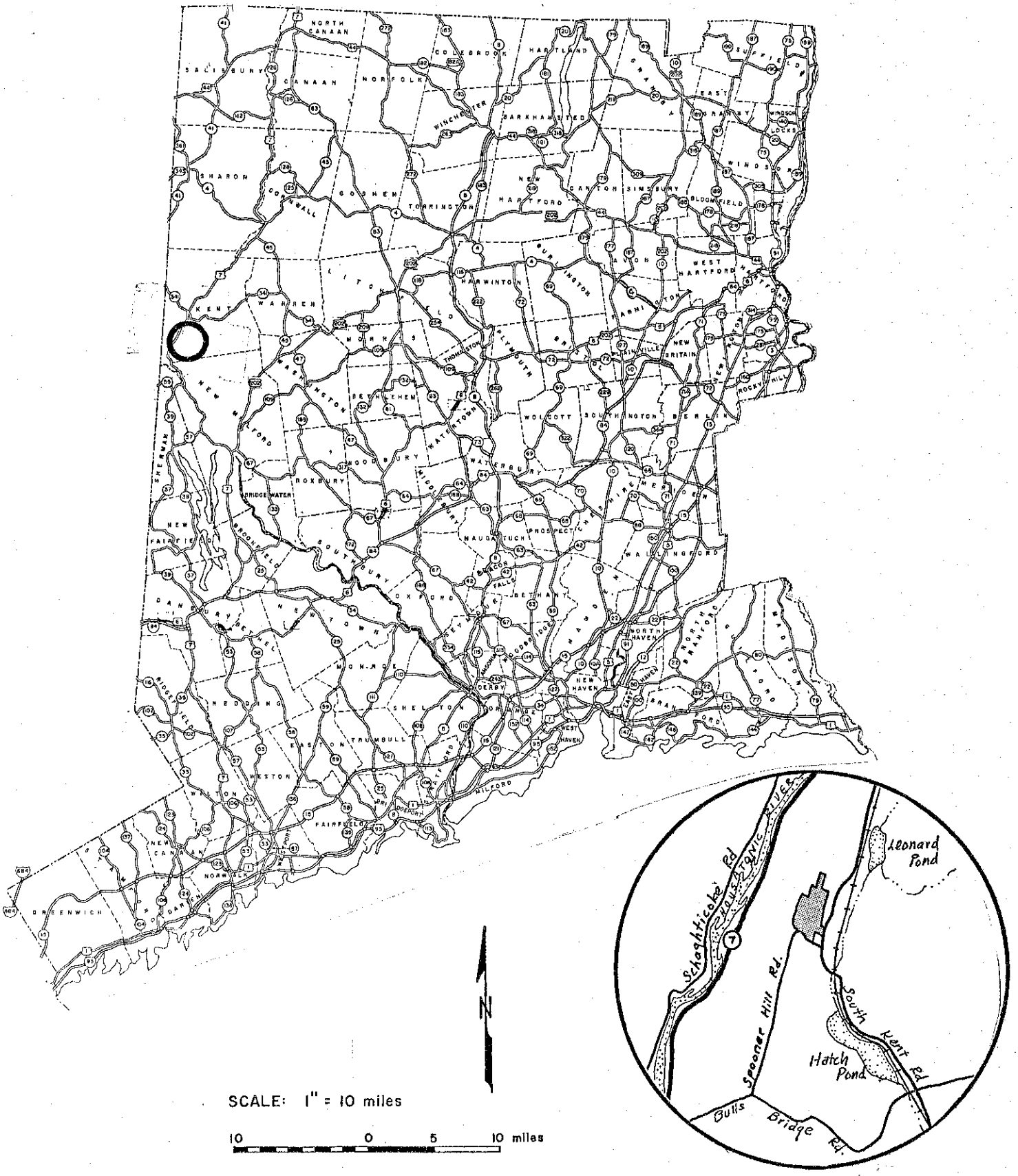
LOCATION OF STUDY SITE

SPOONER HILL ESTATES
KENT, CONNECTICUT



ENVIRONMENTAL REVIEW TEAM REPORT
ON
SPOONER HILL ESTATES
KENT, CT.

I. INTRODUCTION

The Kent Planning and Zoning Commission is presently reviewing an application for subdivision of ± 42 acres of land. The land is located about one mile south of the center of town and has frontage on South Kent Road (Rte 827) and Spooner Hill Road. The land is entirely wooded and characterized by a moderately sloping ridge top which drops off precipitously towards the eastern and western borders of the property (see Figure 1).

The subdivision plans for "Spooner Hill Estates" calls for the creation of 21 residential lots ranging in size from 1.3 to 2.9 acres. Each of the proposed lots is to be served by on-site wells and septic systems. Access to the interior of the property would be provided by constructing a loop road off Spooner Hill Road. A simplified site plan of the proposed project is presented in Figure 2 of this report.

The Planning and Zoning Commission from the Town of Kent requested the assistance of the ERT to help the Town in analyzing the development proposal. Specifically, the Team was asked to identify the natural resource base of the site, to comment on the suitability of the land for the proposed project, and to provide an objective evaluation of the potential development impact. Of major concern to the Planning and Zoning Commission is the suitability of the land for septic systems and roads; and the effect of the project on local hydrology.

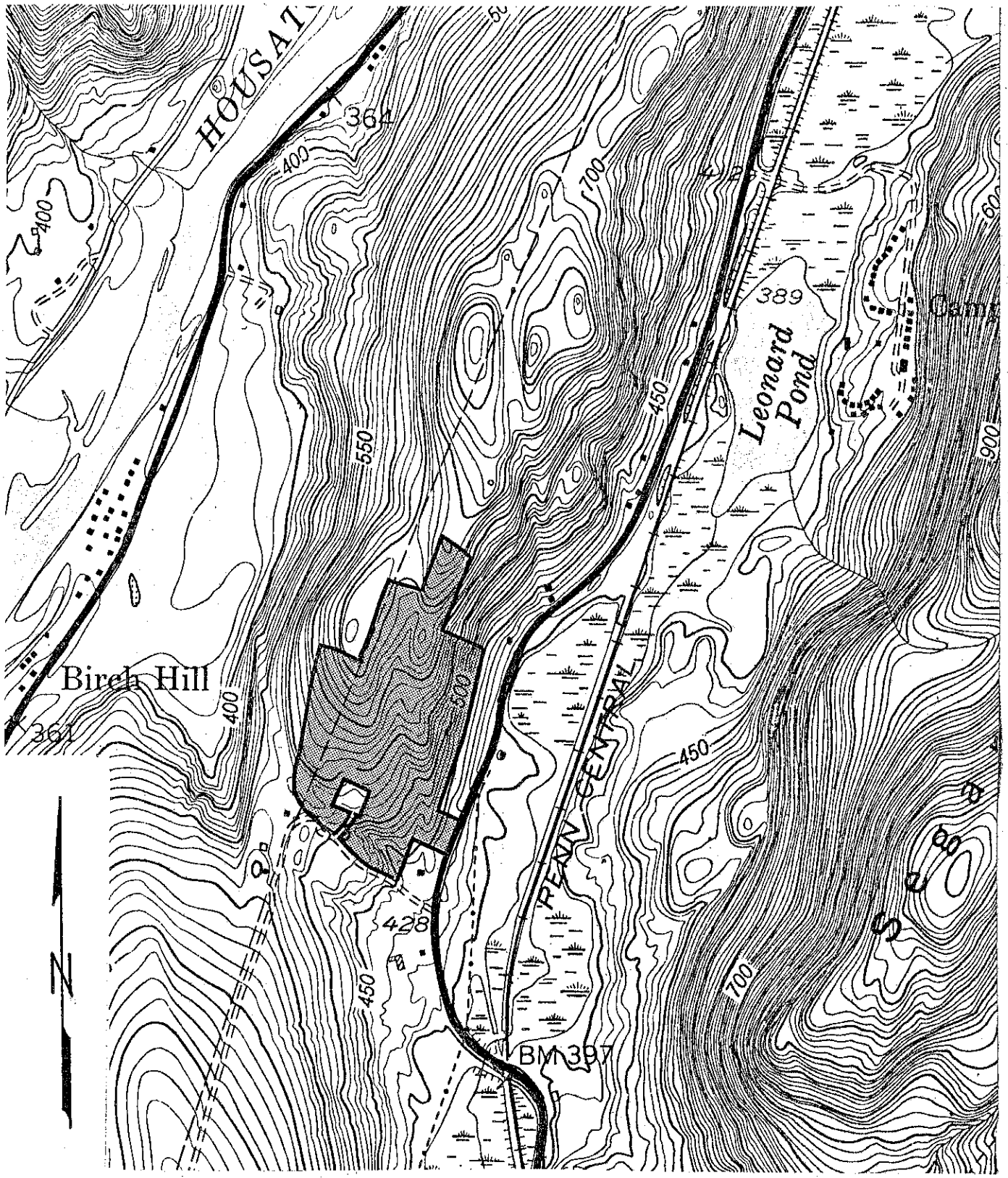
The ERT met and field reviewed the site on June 10, 1980. Team members for this review consisted of the following:

Art Cross	District Conservationist	U.S.D.A. Soil Conservation Service
Fred Johnson	Sanitarian	Connecticut Department of Health
Lee Markscheffel	Regional Planner	Northwestern Connecticut Regional Planning Agency
Rob Rocks	Forester	Connecticut Department of Environmental Protection
Frank Schaub	Senior Sanitary Engineer	Connecticut Department of Health
Mike Zizka	Geohydrologist	Connecticut Department of Environmental Protection

Prior to the review day, each team member was provided with a summary of the proposed project, a checklist of concerns to address, a detailed soil survey map, a soils limitation chart, a topographic map, and a simplified site plan of the development proposal. Following the field review, individual

FIGURE 1.

TOPOGRAPHIC MAP



SCALE: 1" = 1000'

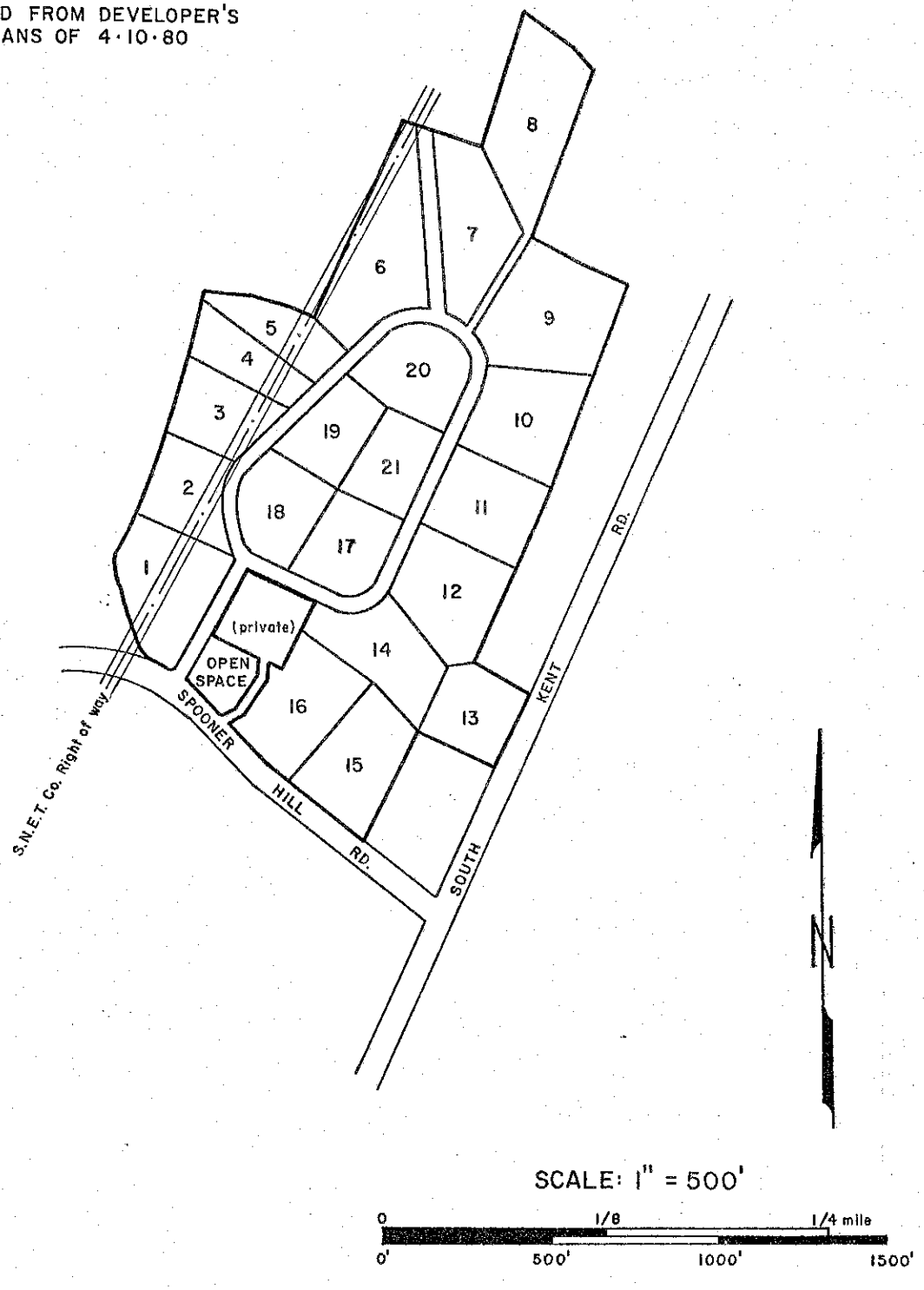
0 1/4 1/2 mile

0 1000' 2000' 3000'

FIGURE 2.

SIMPLIFIED SITE PLAN

ADAPTED FROM DEVELOPER'S
SITE PLANS OF 4·10·80



reports were prepared by each team member and forwarded to the ERT Coordinator for compilation and editing into this final report.

This report presents the team's findings and recommendations. It is important to understand that the ERT is not in competition with private consultants, and hence does not perform design work or provide detailed solutions to development problems. Nor does the team recommend what ultimate action should be taken on a proposed project. The ERT concept provides for the presentation of natural resources information and preliminary development considerations--all conclusions and final decisions rest with the town and developer. It is hoped the information contained in this report will assist the Town of Kent and the landowner/developer in making environmentally sound decisions.

If any additional information is required, please contact Richard Lynn, (868-7342), Environmental Review Team Coordinator, King's Mark RC&D Area, P. O. Box 30, Warren, Connecticut 06754.

* * * * *

II. GEOLOGY

The Spooner Hill site is located within the Kent topographic quadrangle. A preliminary bedrock geologic map of the quadrangle has been prepared by R. Jackson. A preliminary surficial geologic map of the quadrangle has been prepared by G. C. Kelley. Both maps are on open-file at the Natural Resources Center, Department of Environmental Protection, in Hartford.

Jackson describes the bedrock cropping out on and underlying the site as a well-foliated, reddish-tan-or tan-weathering, medium-to coarse grained schist. Major mineral components are feldspar, quartz, muscovite, biotite, garnet, and sillimanite. The terms "foliated" and "schist" both refer to the pronounced thin layers of mica flakes that give the rock its primary structural features.

The bedrock is overlain in most areas by a glacial sediment known as till. Till is made up primarily of rock particles of widely ranging sizes (from clay to boulders) and shapes (rounded, angular, flat, etc.). The particles accumulated in an ice sheet as it passed southward through New England, scraping, chipping, and gouging the preglacial terrain. The sediments were then redeposited directly from the ice. Because of the indiscriminate nature of this collection-and-deposition process, the texture of the till may vary markedly from place to place. On most of this site, however, the till appears to be stony, granular, and compact. A siltier, very hard and more compact till may underlie the granular upper till, particularly in areas where the overall thickness of the deposit exceeds five feet. The thickness of the till itself is variable, ranging from zero at bedrock exposures to 10 feet or more in areas where hollows in the bedrock surface were filled with the glacial sediment. In most places, the till is probably less than 10 feet thick (see Figure 3).

III. SOILS

A soils map of the subject site is presented in the Appendix of this report. The Appendix also contains a soils limitation chart which identifies limiting factors for various land uses on individual soil types. By comparing the soils map with the soils limitation chart, one can gain an appreciation of the suitability of this site for residential development according to Soil Conservation Service criteria.

As shown on the soils map, this site consists predominantly of three soil types. A brief description of each of these soil types is provided below together with a discussion of their opportunities and limitations for the proposed project. Figure 4 of this report illustrates how limiting soil conditions relate to site design.

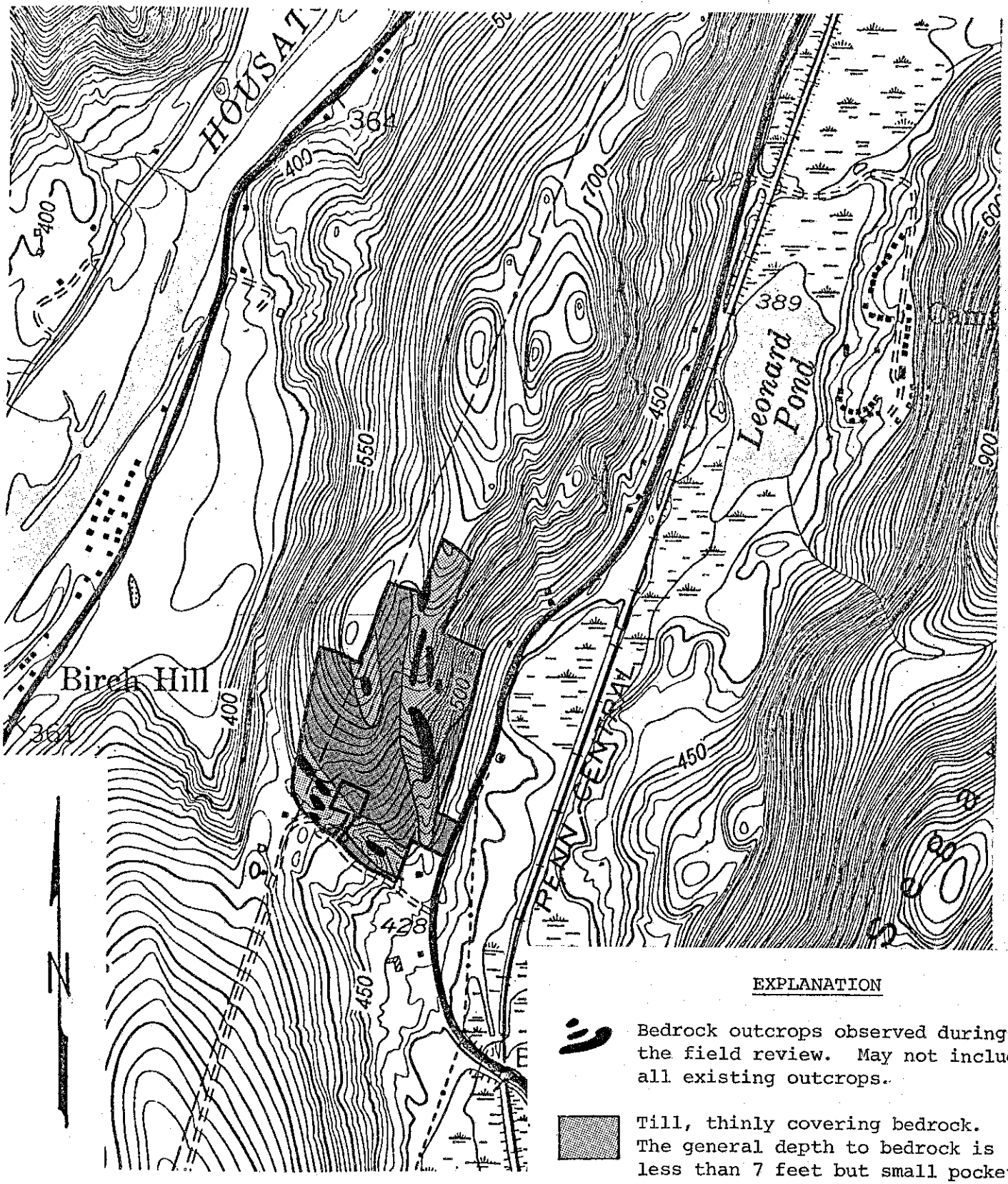
1. Hollis very rocky fine sandy loam on slopes of 15 to 35 per cent (HrE)
(Approximately 50% of the soil on this ± 42 acre site.)

This soil is well or somewhat excessively drained and crystalline bedrock is found at or within 15-20 inches of the ground surface. Bedrocks outcrops occupy as much as 50 percent of the surface area.

On-site examination reveals that in addition to the numerous bedrock outcrops, slopes in some areas are steeper than 35 percent. In some areas slopes are near vertical.

FIGURE 3.

SURFICIAL GEOLOGY



SCALE: 1" = 1000'

0 1/4 1/2 mile

0 1000' 2000' 3000'

EXPLANATION

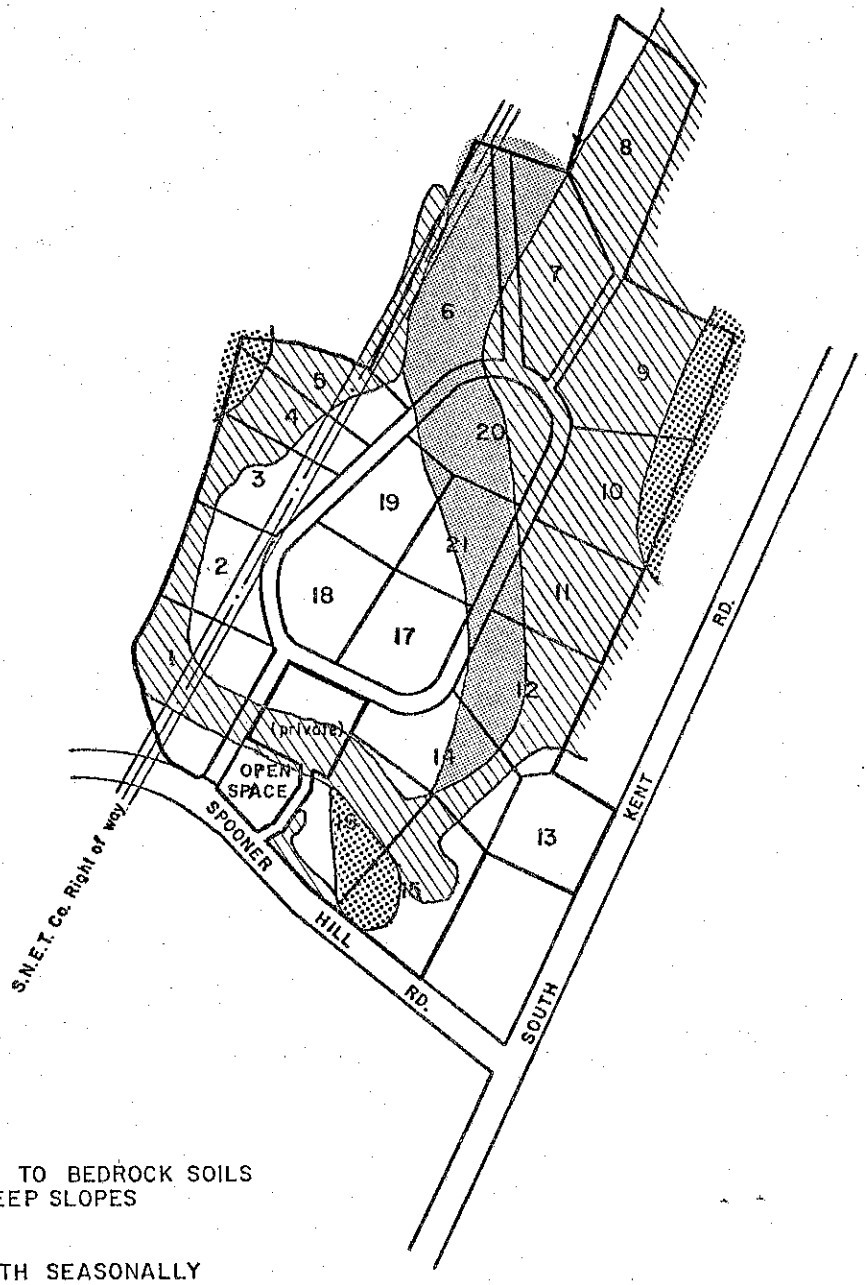
Bedrock outcrops observed during the field review. May not include all existing outcrops.

Till, thinly covering bedrock. The general depth to bedrock is less than 7 feet but small pockets of thicker till may be present.

Till of moderate thickness. Depths to bedrock are more likely to exceed 7 feet, but numerous areas of very thin till may be present.

FIGURE 4.

DEVELOPMENT LIMITATIONS MAP



KEY *

- SHALLOW TO BEDROCK SOILS WITH STEEP SLOPES
- SOILS WITH SEASONALLY HIGH WATER TABLE
- OTHER SOILS HAVING STEEP SLOPES (>15%)

*ACCORDING TO SOIL CONSERVATION SERVICE CRITERIA, THESE FACTORS PRESENT SEVERE LIMITATIONS FOR RESIDENTIAL DEVELOPMENT.

SCALE: 1" = 500'

0 1/8 1/4 mile
0' 500' 1000' 1500'

The limitations for subdivision development on this Hollis soil are all severe to very severe, i.e.:

FOR THE INTERIOR LOOP ROAD: Construction through the Hollis soil areas will be very costly because blasting will be required in order to establish proper grades.

FOR ON-SITE SEWAGE DISPOSAL SYSTEMS: Shallowness to bedrock and steepness of slope severely restricts installation and proper operation. Only by detailed examination can the location and extent of scattered deeper soils be located. Seepage on bedrock and into bedrock cracks can pollute water sources. The soil in general has a very low potential rating for on-site sewage disposal systems. The soil is suitable as woodland-its present use.

FOR HOMES WITH BASEMENTS: Excavation limitations are severe. Blasting is commonly necessary. In some places, lateral seepage is a hazard when water cannot move downward through cracks in the rocks. Footing drains are necessary in these places.

2. Charlton very stony fine sandy loam, 3-15 percent slopes (CrC symbol)
(Approximately 25% of the soil on this ± 42 acre site)

This soil is deep and well drained. Stones and large boulders are common.

Opportunities and limitations are:

FOR THE INTERIOR LOOP ROAD: Costly stone removal will be required. Erosion control during construction will be important as proposed road grades are 10-12% for distances of up to 800 feet.

FOR THE ON-SITE SEWAGE DISPOSAL SYSTEMS: The percolation rate is generally adequate. However, the following management practices should be used to overcome limitations of stoniness and on some lots, slopes to 15%:

1. Land shaping and/or stone removal.
2. Enlarge leaching area.
3. Avoid construction when wet.
4. Serial tile distribution.

FOR HOMES WITH BASEMENTS: Soil conditions are favorable. Heavy equipment may be needed in some areas for removal of boulders. On slopes above 8 percent, difficulty is added to site preparation. However, the steeper slopes can present opportunities for a wider choice of architectural design.

FOR HOMESITE LANDSCAPING: Soil conditions are favorable for the establishment and maintenance of grass, trees and shrubs. On slopes above 8 percent erosion control is necessary on seeded lawns, such as straw mulch, cloth netting or sodding.

3. Sutton very stony fine sandy loam, 3-15 percent slopes (SxC symbol)
(Approximately 20% of the soil on this ± 42 acre site)

This soil has a water table within 15-20 inches of the soil surface during wet seasons such as early spring.

On this site, it is located ± 100 ft. on both sides of an intermittent stream which flows southerly into wetlands and a perennial stream, ± .5 mile above Hatch Pond.

Opportunities and limitations are:

FOR THE INTERIOR LOOP ROAD: The road is proposed to cross this soil area and intermittent stream at two locations. At both locations, filling is indicated on the road profiles which should minimize the hazards of frost heaving of the road and the need for subsurface drainage.

On fill slopes, erosion controls such as hay bale checks, timely seeding and mulching can prevent erosion and resultant sediment from entering the streambed.

FOR THE ON-SITE SEWAGE DISPOSAL SYSTEMS: The limitations of watertable, slopes and stoniness dictate that the following management practices should be used:

1. Restricted percolation testing.
2. Subsurface drainage.
3. Enlarge leaching area.
4. Avoid construction when wet.
5. Land shaping and/or stone removal.
6. Serial tile distribution.

FOR HOMES WITH BASEMENTS: Measures such as footing drains are necessary to prevent seepage into basements. Stoniness can add difficulty in excavation.

4. Other soils. (Approximately 5% of this site consists of other soil types)

For the limitations of these soils, refer to the soils limitations chart in the Appendix of this report.

Storm Water Management:

Road water is proposed to be gathered by means of conventional catch basins and piping. Outlets are proposed at 4 different locations.

Energy dissipators at culvert outlets would decrease the potential of downstream erosion. Consideration should be given to providing some means of stormwater retention (see Hydrology section of this report).

IV. HYDROLOGY

Most of the site lies within the drainage basin of Womenshenuk Brook, a minor tributary of Housatonic River. The brook empties into the river near the village of Merwinsville in the town of New Milford, approximately four miles south of the site. Womenshenuk Brook and its two largest ponds (Leonard Pond and Hatch Pond) occupy a structural valley between two bedrock ridges. The valley is underlain by a weaker type of bedrock than that which comprises the ridges. Subsurface drainage in the valley appears to be impeded, with wet, swampy conditions prevailing in the area north of Hatch Pond. These wetland

conditions can be expected to greatly mitigate the peak flow increases in Womenshenuk Brook resulting from light and moderate development in the basin.

Because of the extremely steep slopes flanking most of the valley, particularly the area north of Hatch Pond, it ordinarily would seem unlikely that substantial development would occur. Increased flooding or sedimentation in the valley would therefore not be expected to become a serious problem. On the other hand, as the easily buildable land in Connecticut has approached the vanishing point, developers have been actively seeking permits to build in areas that not long ago would have been considered unthinkable for construction (portions of the subject site would certainly seem to fall into that category). For this reason it may no longer be possible to assess the hydrologic impact of this proposal without looking to the long-range impact of this and future developments on the Womenshenuk Valley. This however is a town-wide planning consideration and will not be addressed further in this report.

It is possible to estimate peak flow increases that would arise following development of this site. Several standard hydrologic methods are available, including the Soil Conservation Service method (as described in that organization's Technical Release No. 55); the so-called "rational" method (generally employed by local engineering firms); and the Weiss method (which is based on statistical analyses of gaged streamflows). These various methods are described in "Flood Flow Formulas for Connecticut", a paper prepared by Paul Biscuti of the Department of Environmental Protection. The method used for this report was the SCS method. The results of the Team's hydrologic analysis, shown below, are meant mostly to provide insight as to the magnitude of the expected peak flow increases, rather than to indicate absolute flow rates.

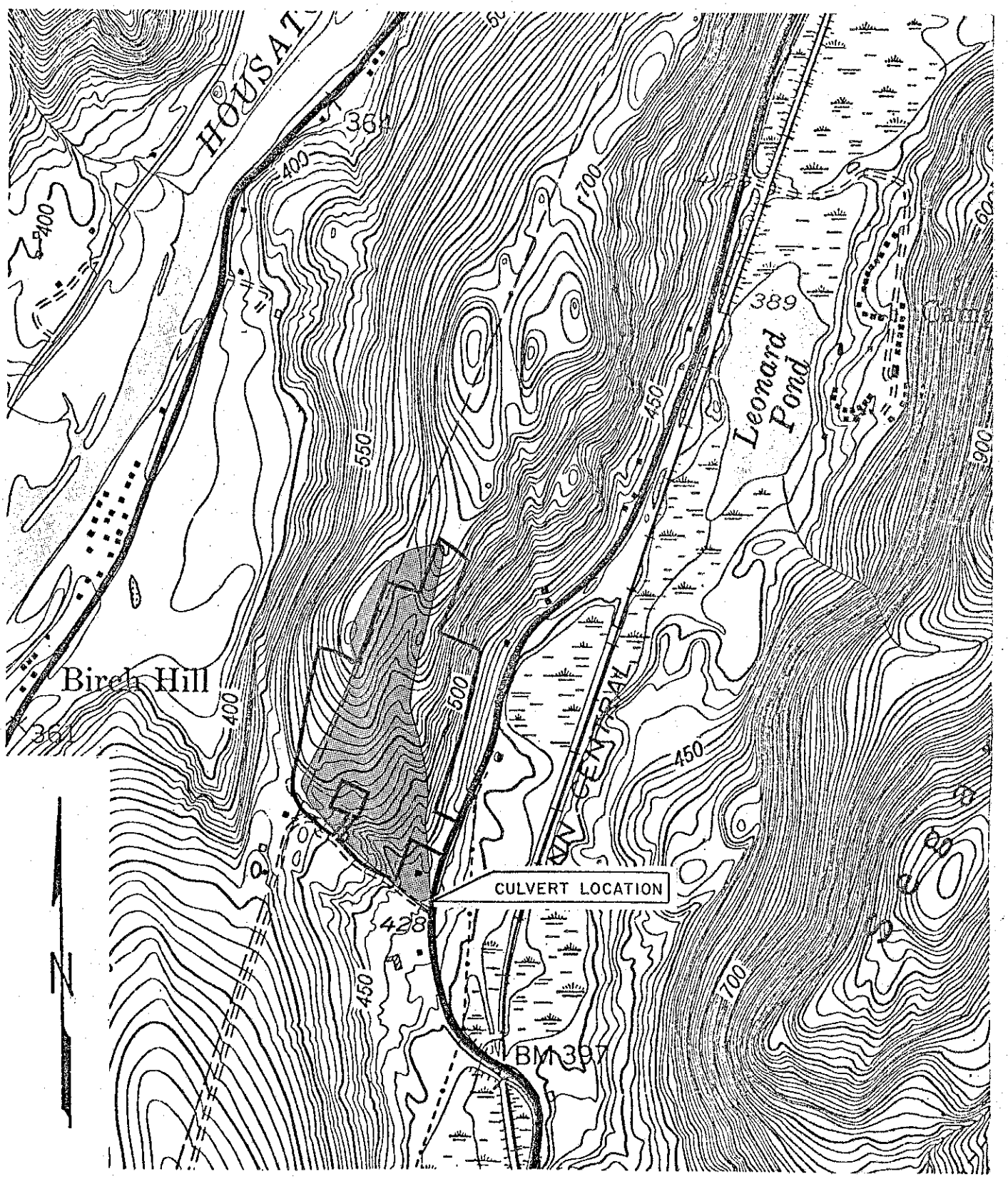
Peak flows were examined for four 24-hour storm events: the 10-year storm, the 25-year storm, the 50-year storm, and the 100-year storm. These storms have respectively, a 10-percent, 4-percent, 2-percent, and 1-percent chance of occurring in any given year. Storms of greater force are less frequent and therefore have smaller probabilities of occurring in a given year. Flow rates were analyzed at the culvert on the corner of Spooner Hill Road and South Kent Road. The drainage area of this point is shown in Figure 5. It was assumed in the Team's calculations that the storm-drainage system and subdivision road layout would not significantly alter the area of land that ultimately drains to the culvert. Results appear in the table below.

Table 1. Estimated present and future peak flows at the culvert near the intersection of Spooner Hill Road and South Kent Road. All flows are in cubic feet per second.

	10-year storm	25-year storm	50-year storm	100-year storm
Present flow	57 cfs	83 cfs	105 cfs	141 cfs
Future flow	92 cfs	129 cfs	157 cfs	204 cfs
Percent increase	61%	55%	50%	45%

FIGURE 5.

DRAINAGE AREA OF THE CULVERT AT THE INTERSECTION OF SPOONER HILL ROAD AND SOUTH KENT ROAD



SCALE: 1" = 1000'

0 1/4 1/2 mile

0 1000' 2000' 3000'

The projected peak flow increases are substantial, despite the relatively large lot sizes, because of the small overall size of the drainage area and the fact that development would occur virtually throughout that area. The most serious concerns these potential increases raise are: 1) the extent to which erosion of soils would occur, particularly along the central streamcourse on the site, and 2) the possibility of flooding in portions of lots adjacent to the central streamcourse. Erosion on both sides of the culvert may also be a problem, as may sedimentation either on the present corner lot or in the field across the highway. It seems clear that a serious effort should be made to develop adequate erosion and peak-flow controls in conjunction with the subdivision of this site.

In terms of groundwater hydrology, concerns must be raised as to the possibility of pollution from septic systems, particularly in the eastern half of the site. In that section, a steep ridge of bedrock is thinly veneered with till. Deep pockets of till may occur locally where a hollow in the ridge was filled with glacial sediment, but on-site inspection suggests that such pockets are very limited in number and in area. Fill would be needed on most lots. The general shallowness to bedrock and the steepness of the area present problems of possible effluent "breakout" downslope from leaching fields and of effluent contamination of the groundwater supply. The steepness alone raises the question of the stability of a septic system placed in fill. This is not to suggest that suitable sites are unavailable on this property; however, due to the inherent difficulties of developing many of the eastern lots (particularly lots 7-12), it would be advisable to prepare detailed information to assure their buildability. This might include detailed topographic mapping of the property (2' contours), mapping of exposed ledge, conducting numerous deep test pits in the area proposed for sewage disposal to ensure suitable soil conditions, and the preparation of detailed engineering plans for drainage. It is the duty of the developer to prove the land can support the proposed project, and the Town of Kent may wish to request this additional information prior to considering approval of the proposed subdivision.

V. WATER SUPPLY

On-site water supplies could be provided only by bedrock-based wells. Such wells draw most of their water from an interconnected series of fractures in the rock. The yield of a bedrock well depends upon the size and the number of water-bearing fractures that are intersected. The probability of encountering such fractures, in turn, varies with the type of bedrock penetrated and the depth of drilling. Schists are generally the least productive type of bedrock in Connecticut. In the upper Housatonic River basin, less than 70 percent of the schist-based wells surveyed for Connecticut Water Resources Bulletin No. 21 supplied 3 gallons per minute, an amount considered adequate for an average family. In contrast, 80 to 85 percent of the surveyed wells that penetrated non-schistose rocks supplied 3 gpm or more. It is likely that each lot in this subdivision could be served adequately by a bedrock well; however, because schist underlies the site, it is somewhat more probable that yields will be low and that storage space will have to be provided to meet peak demand periods.

The quality of the groundwater initially should be good or moderate. Hardness should not be as much of a problem here as it is in the valley areas of Kent since those areas are underlain primarily by carbonate rocks. High iron

or manganese concentrations may be a problem, though, as suggested by the reddish stains appearing on some of the exposed schist bedrock. Although iron and manganese are not known to be a problem in this area, few well records are available since little development has occurred in the hills to date. In any case, several methods of filtration are available to solve mineral problems.

The future quality of the groundwater is more problematic. Since future quality will depend to a great extent on the adequacy of septic system engineering, it can only be pointed out at this time that the potential for well contamination is relatively high in several of the eastern lots on this site.

VI. SEPTIC SYSTEMS

Based upon a review of the engineering data submitted to the Town by the applicant, and on-site investigation, the following comments and suggestions are made concerning the feasibility of this site for the installation of individual on-site subsurface sewage disposal systems:

1. The topography and soils on lots 2, 3, 4, 5, 13, and 18 appear to be condusive to the installation of subsurface sewage disposal systems with no serious limitations. It is suggested that leaching fields on these lots be installed as shallow as possible in order to utilize the upper sandy loam layers. This should reduce the risk of high groundwater interference and provide for better renovation of the septic tank effluent.

2. Due to a high groundwater table and/or a shallow depth to ledge rock condition lots 6, 8, 12, 14, 17 and 20 should be required to have subsurface sewage disposal systems designed by a qualified professional engineer prior to the issuance of a building permit. Although limitations exist, it appears that these lots can successfully support subsurface sewage disposal systems if the systems are properly designed.

3. On lot 1 the reported test pit was conducted in a swale beside a seasonal pond. This area does not appear adequate for subsurface sewage disposal. The area proposed for the sewage system should be tested and a reserve leaching area should be shown on the plan.

4. Neither lots 9 or 10 had been tested at the time of the ERT's field review. Both of these lots appeared to have some major constraints in finding an adequate location for a leaching area. The noticeable constraints were steep slopes and ledge rock outcrops in the vicinity of the proposed leaching system. Further testing should be conducted to delineate an area of suitable soil, and the location of all rock outcrops in the proposed leaching area should be shown on the plans. Preparation of two foot contours in the leaching area would also be desirable.

5. On lots 7, 11, 15, 16, 19 and 21 the soil as reported appeared to be adequate for subsurface sewage disposal. Site investigation however, indicated that some major constraints existed in installation of the leaching systems as proposed. It appears that the soil test pits were conducted in low swales or basins where adequate amounts of natural soil existed. Areas in close proximity to these tests were characterized by either ledge rock outcrops and/or topography that did not appear to be conducive to the installation of a subsurface

sewage disposal system. On these lots, further deep hole tests or probings should be required to delineate an area for a leaching system where an adequate amount of soil exists. It is also suggested that two foot contour intervals be shown in the area of the proposed leaching system as well as the location of any nearby or down gradient ledge rock outcrops.

In conclusion, it appears that lots 2, 3, 4, 5, 6, 8, 12, 13, 14, 17, 18 and 20 can support subsurface sewage disposal systems if properly designed. On lots 1, 7, 9, 10, 11, 15, 16, 19 and 21 many factors associated with the land could pose constraints in the successful functioning of subsurface sewage disposal systems. The project engineer should address these constraints and provide additional information so that an accurate assessment of the suitability of the proposed lots can be made.

VII. VEGETATION

The 42± acre tract proposed for development into "Spooner Hill Estates" is completely forested. In all, four vegetation types are described.

Vegetation Type Descriptions (refer to Figure 6)

TYPE A. Mixed Hardwoods. This 22-acre fully stocked stand is made up of healthy pole size sugar maple, shagbark hickory, black birch, red maple and occasional sawtimber-size red oak and black oak. Scattered throughout this stand are also poor quality pole size eastern red cedar, paper birch and apple trees. Understory vegetation is dominated by sugar maple seedlings, spice bush, blue beech, hophornbeam, witch hazel, striped maple and barberry. Poison ivy is abundant throughout this stand; other ground cover vegetation includes grasses, solomon's seal, false solomon's seal, virginia creeper, wild violet, wild geranium, Jack-in-the-pulpit, wild strawberry, bracken fern, Christmas fern and maidenhair fern. Located in this stand are two extremely healthy white oaks, one measures 55 inches in diameter at 4½ feet above the ground (d.b.h.) and the other measures 40 inches in d.b.h. (see Vegetation Type Map for location).

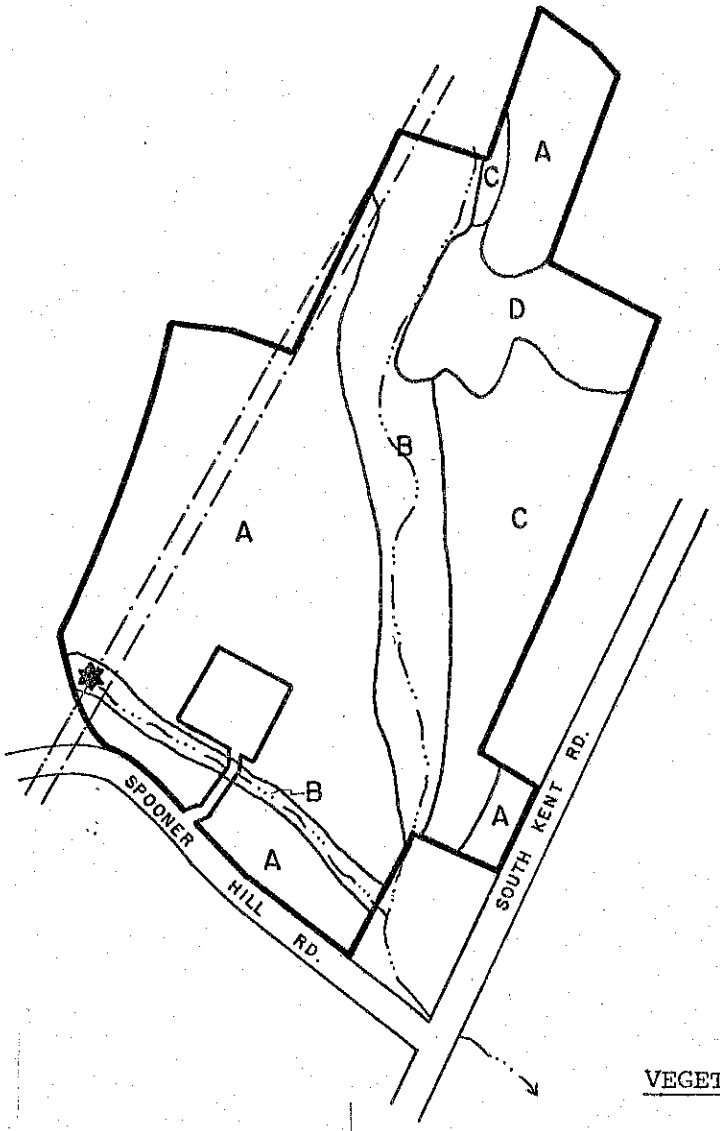
TYPE B. Mixed Hardwoods. This 8-acre overstocked stand is dominated by pole size red maple, sugar maple, white ash and well scattered black birch, yellow birch, black locust and American elm. Poor quality gray birch are present in the understory along with spice bush, sugar maple seedlings, gray stemmed dogwood and round-leaved dogwood. Ground cover is made up of club moss, barberry, poison ivy, Jack-in-the-pulpit, celandine and nightshade.

TYPE C. Mixed Hardwoods. This 8-acre stand is presently at the low end of being fully stocked. The pole to small sawtimber size black oak, white oak, chestnut oak, black birch, red maple and occasional hemlock are of poor to medium quality and are slow growing. Black birch seedlings, witch hazel, hemlock seedlings and striped maple are present in the understory. Club moss and Christmas fern are the most conspicuous ground cover forms.

TYPE D. Hemlock. This 4-acre stand is fully stocked with healthy sawtimber size eastern hemlock and occasional sawtimber size black oak and black birch. Hemlock seedlings and maple leaved viburnum are present in the understory. Ground cover is sparse in this stand, but where present it consists of Canada mayflower and Christmas ferns.

FIGURE 6.

VEGETATION TYPE MAP



SCALE: 1" = 500'

LEGEND

- ROAD
- PROPERTY BOUNDARY
- VEGETATION TYPE BOUNDARY
- STREAM
- UTILITY RIGHT-OF-WAY
- LOCATION OF TWO LARGE OAK TREES

VEGETATION TYPE DESCRIPTIONS*

- TYPE A Mixed hardwoods, 22-acres, fully-stocked, pole size
- TYPE B Mixed hardwoods, 8-acres, over-stocked, pole size
- TYPE C Mixed hardwoods, 8-acres, fully-stocked, pole to small sawtimber size
- TYPE D Hemlock, 4-acres, fully-stocked, sawtimber size

* Seedling size trees - less than 1 inch in diameter at 4½ 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.

Aesthetics and Preservation

There are many large healthy trees, including the two previously mentioned white oak trees, present in vegetation Type A. These trees have high aesthetic value and would make excellent specimen trees if they were retained.

Care should be taken during any site construction not to disturb the trees that are to be retained. Special care should be taken near hemlock trees, because of their shallow root systems. 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.

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 avoided during construction.

Trees are very sensitive to the condition of the soil within the entire area under their crowns. Construction of roadways, buildings and septic systems near trees may disturb the balance between soil aeration, soil moisture level and soil composition. These disturbances 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.

Limiting Conditions

The rocky, shallow to bedrock soils present in vegetation type C are excessively drained. Tree growth is limited by the low moisture levels in these soils. Many of the slow growing trees in this stand are somewhat malformed. Operability in this area is limited by steep slopes and rockiness and management of this area for timber production is not considered economically feasible.

Potential Hazards and Mitigating Practices

Windthrow is a potential hazard in vegetation type C, where shallow depth of soil limits root growth, and also in sections of vegetation type B, where high groundwater limits root depth.

The steep slopes present in vegetation type C may intensify the windthrow hazard; however if the underlying bedrock is highly fractured, the windthrow hazard may be lessened because tree roots may penetrate deeper for improved stability.

Light thinnings in vegetation type B will, over time, help residual trees to become more stable by stimulating crown and root growth.

Clearing operations in these areas should be limited however because large clearings may allow wind to pass through rather than over these stands, thus increasing the already high windthrow hazard.

It should be noted that a sudden exposure to direct sunlight, and the increased soil temperatures caused by clearing, may injure or cause mortality to the residual hemlock trees in vegetation type D. Hemlock, because of their shallow and sensitive root systems are very susceptable not only to windthrow but also to damage caused by changes in micro-climate brought about by clearing for construction.

Poison ivy is the most conspicuous ground cover species in vegetation type A. If this area is cleared for construction purposes, the increased sunlight which reaches the forest floor will stimulate its growth. This condition may become a hazard to area users. Effective eradification may be accomplished through the careful application, by a licensed applicator, of a federal and state approved herbicide. When using any herbicide it is imperative to follow label directions and precautions. This treatment should take place prior to completion of the proposed construction.

Suggested Management Techniques and Utilization

A light fuelwood thinning in vegetation type B would help to improve the health, vigor and stability of the residual trees in this stand over time. Removal of approximately one fourth of the total volume would stimulate the growth of the residual trees by reducing competition for space, sunlight and nutrients. This thinning should be focused on removal of unhealthy trees, damaged trees, poor quality trees, undesirable species such as red maple, and those trees which are directly competing with healthy, high quality trees. This thinning will produce between three and five cords of fuelwood per acre. Ideally this thinning should take place prior to any subdivision of the property; however, it may be carried out subsequently by individual lot owners.

If the proposed development of this parcel takes place, the trees which are cleared for construction of roadways, buildings and septic systems should be utilized for fuelwood.

A consultant forester or public service forester could be contacted to help mark the trees to be removed.

VIII. ADDITIONAL PLANNING CONSIDERATIONS

Adjacent Land Uses

The subdivision as proposed is compatible with adjacent land uses from a planning viewpoint. The property is bounded by either vacant forested tracks or single family residential units.

Consistency of Proposed Project with State Plans

The "Conservation & Development Policies Plan 1979-82" has been approved as the planning document for the State. As such, the document is to serve as a planning guide for those activities which involve state funding or state review. The locational Guide Map which accompanies the Plan indicates that the subject area is designated "Conservation". This designation includes a variety of important natural resource areas throughout the state such as public

water supply watersheds, flood fringe areas, prime agricultural lands, historic areas, and scenic streambelts. This property is classified as "conservation" because of its location within the Housatonic River scenic streambelt.

The "State Action Strategy" for "Conservation" areas is as follows: "Plan and manage for the long term public benefit the lands contributing to the State's need for food, fiber, water and other resources, open space, recreation and environmental quality and insure that changes in use are compatible with the identified conservation values." A large-lot subdivision as proposed, with suitable environmental safeguards, would appear to be in conformance with this strategy.

Regional Plans

The only goal within the Regional Land Use Policies Plan which has a bearing on this subdivision is "To encourage adoption of local regulations and local and state programs that promote environmentally sound land use development at a density that reflects the region's soil system and is consistent with the region's rural landscape."

The proposed subdivision lies outside the outer boundary of the Housatonic River Corridor as defined by the Housatonic River Commission in their Management Plan dated October 31, 1978.

Local Plans

The 1975 Plan of Development for Kent designates the subject property as "Residential - Low Density". The following recommendations have relevance for this subdivision.

"Within the Rural District, the minimum lot size should be one acre, where physical conditions are good. For example, one good condition is satisfied if the soil produces favorable seepage and test pit results."

"Where physical conditions are less than good, the lot size should be a minimum of two to five acres, as determined on a case-by-case basis."

"All proposed lots in the Rural District with poor soil and severe or very severe physical conditions should have seepage tests between November 15 and May 15; test pits to ten feet, and review by the Board of Health and Building Inspector/Sanitarian of leaching field installations. All subdivision plans in the Rural District should be reviewed by the U.S. Soil Conservation Service prior to acceptance by the Planning and Zoning Commission."

Given the severe soil limitations as indicated by the SCS Soil Survey and physical examination of the site, it is critical that thorough septic system testing be performed to insure the buildability of all lots especially given the applicant's proposed density of development.

Traffic

The access to this project will be via Spooner Hill Road and South Kent Road (State Route 827). Both roads are paved and have two lanes. Spooner Hill Road, in the vicinity of the subdivision, has a pavement width of approximately 18 feet. Spooner Hill Road is a connector road between South Kent Road

and Bulls Bridge Road.

South Kent Road, the road providing access to Kent Center and New Milford, had an average daily traffic (ADT) in 1978 of 850 vehicles. This represents an increase of 250 vehicles per day on the same section of highway in 1973. However the 850 ADT is well below the capacity of the highway. The capacity in both directions is 1620 vehicles per hour. Hence current traffic volumes are only approximately 6% of capacity.

The growth of traffic on South Kent Road has been more rapid than forecast. The Kent Plan of Development projected a 1983 ADT of only 726, a figure which has been exceeded by 1980. The importance of South Kent Road to the town traffic circulation pattern and its potential use in the future is shown in the Kent Plan of Development. "The Plan suggests the Town of Kent and New Milford cooperate in seeking improvement of Rt. 827 (South Kent Road) between Kent and New Milford. This would draw intertown traffic and possibly development away from the Housatonic Valley and the present Rt. 7 north from New Milford." Control of access points onto Rt. 827 should be emphasized since uncontrolled access reduces road capacity and leads to traffic congestion and potential traffic hazards.

Given the importance of limiting access ways to South Kent Road it is recommended that investigation be made of providing access to lot 13 via the proposed subdivision road if grades permit.

It is difficult to calculate the immediate impact of this project on Rt. 827 and Spooner Hill Road since there is no time table for development. However, the ultimate traffic impact may be determined. Two independent studies, one by the Institute of Traffic Engineers, the second by Traffic Statistics Unit, Connecticut Department of Transportation, indicate a traffic generation rate median range of between 10 and 10.6 one way traffic movements per dwelling unit per weekday for single family detached housing. Using these figures, it is estimated that this twenty lot development will generate between 200 and 212 trips per day when fully developed. Given the capacity of South Kent Road it appears that the road will be able to absorb the added increase in traffic.

Internal Circulation

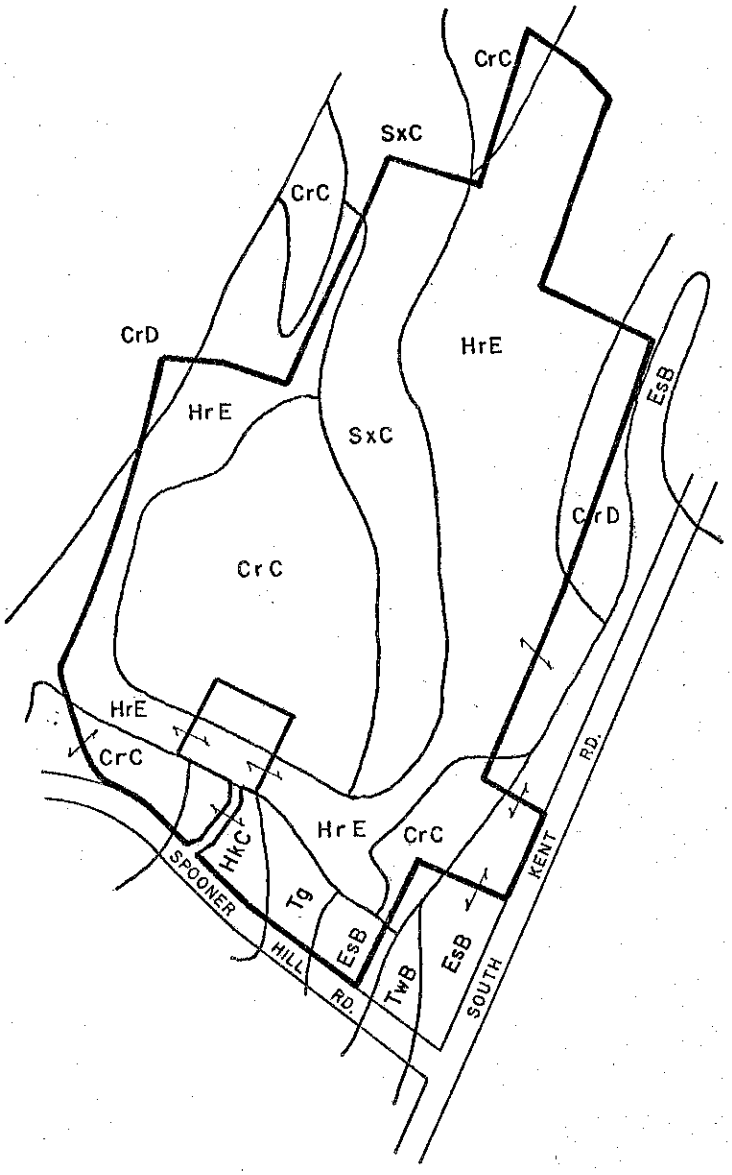
The applicant has proposed a subdivision road to serve nineteen lots. Grades have been proposed in excess of 12%. This should be reviewed in great detail to insure provision of safe passage for all types of emergency service equipment. This is critical since there is only one access to this subdivision. The applicant has provided for future road extension to service the table lands north of the property. This is commendable, however such provision indicates that it is even more critical that the subdivision road proposed here be as safe as possible.

Sight distance inadequacy is limited on this project to one area along Spooner Hill Road looking southwesterly at the exit of the subdivision road. Investigation should be made as to the amount of clearing on the Spooner Hill Road right of way that can be made to improve sight distance to the minimum 350 feet required. If necessary, discussion should be held with the adjacent property owner for possible clearing on private land.

* * * * *

IX. APPENDIX

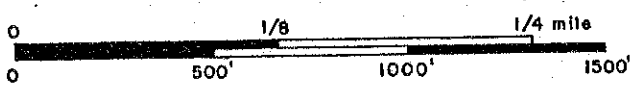
SOILS MAP



NOTE • SOIL BOUNDARY LINES DERIVED FROM SMALLER SCALE MAP (1" = 1320') AND SHOULD NOT BE VIEWED AS PRECISE BOUNDARIES BUT RATHER AS A GUIDE TO THE DISTRIBUTION OF SOILS ON THE PROPERTY.

• ADAPTED FROM LITCHFIELD COUNTY SOIL SURVEY, U.S.D.A. – S.C.S.

SCALE: 1" = 500'



"SPOONER HILL ESTATES" - SOILS LIMITATION CHART

MAP SYMBOL	SOIL NAME	SEPTIC ABSORPTION FIELDS	DWELLINGS W/ BASEMENTS	ROADS OR DRIVEWAYS	LANDSCAPING
CrC	Charlton very stony fine sandy loam, 3 - 15% slopes	Moderate; Slope, Smears	Moderate; Large stones, Slope,	Slight - Moderate; Slope	Moderate; Large stones
CrD	Charlton very stony fine sandy loam, 15 - 35% slopes	Severe; Slope, Smears	Severe; Slope	Severe; Slope	Severe; Slope
EsB	Enfield silt loam, 3 - 8% slopes	Severe; Poor filter, Smears	Slight	Moderate; Frost action	Slight
HkC	Hinckley gravelly sandy loam, 3 - 15% slopes	Severe; Poor filter, Slope	Slight - Moderate; Slope	Slight - Moderate; Slope	Moderate; Slope, too sandy
HrE	Hollis very rocky fine sandy loam, 15 - 35% slopes	Severe; Slope, Depth to rock, Large stones	Severe; Slope, Depth to rock, Large stones	Severe; Slope, Depth to rock	Severe; Slope, Depth to rock
SxC	Sutton very stony fine sandy loam, 3 - 15% slopes	Severe; Wetness, Smears	Severe; Wetness	Moderate; Slope, Frost action	Moderate; Slope, Large stones
Tg	Terrace escarpments	Severe; Slope	Severe; Slope	Severe; Slope	Severe; Slope
TwB	Tisbury and Sudbury soils, 3 - 8% slopes	Severe; Wetness, Poor filter	Severe, Wetness	Severe; Frost action	Slight

EXPLANATION OF RATING SYSTEM:

SLIGHT LIMITATION: indicates that any property of the soil affecting use of the soil is relatively unimportant and can be overcome at little expense.

MODERATE LIMITATION: indicates that any property of the soil affecting use can be overcome at a somewhat higher expense.

SEVERE LIMITATION: indicates that the use of the soil is seriously limited by hazards or restrictions that require extensive and costly measures to overcome.

ABOUT THE TEAM

The King's Mark Environmental Review Team (ERT) is a group of environmental professionals drawn together from a variety of federal, state, and regional agencies. Specialists on the team include geologists, biologists, foresters, climatologists, soil scientists, landscape architects, recreation specialists, engineers, and planners. The ERT operates with state funding under the aegis of the King's Mark Resource Conservation and Development (RC&D) Area - a 47 town area in western Connecticut.

As a public service activity, the team is available to serve towns and developers within the King's Mark Area --- free of charge.

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 the review of a wide range of significant activities including subdivisions, sanitary landfills, commercial and industrical developments, and recreation/open space projects.

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 an administration agency such as planning and zoning, conservation, or inland wetlands. Requests for reviews should be directed to the Chairman of your local Soil and Water Conservation District. This request letter must include a summary of the proposed project, a location map of the project site, written permission from the landowner/developer 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 King's Mark RC&D Executive Committee, the team will undertake the review. At present, the ERT can undertake two reviews per month.

For additional information regarding the Environmental Review Team, please contact your local Soil Conservation District Office or Richard Lynn (868-7342), Environmental Review Team Coordinator, King's Mark RC&D Area, P.O. Box 30, Warren, Connecticut 06754.