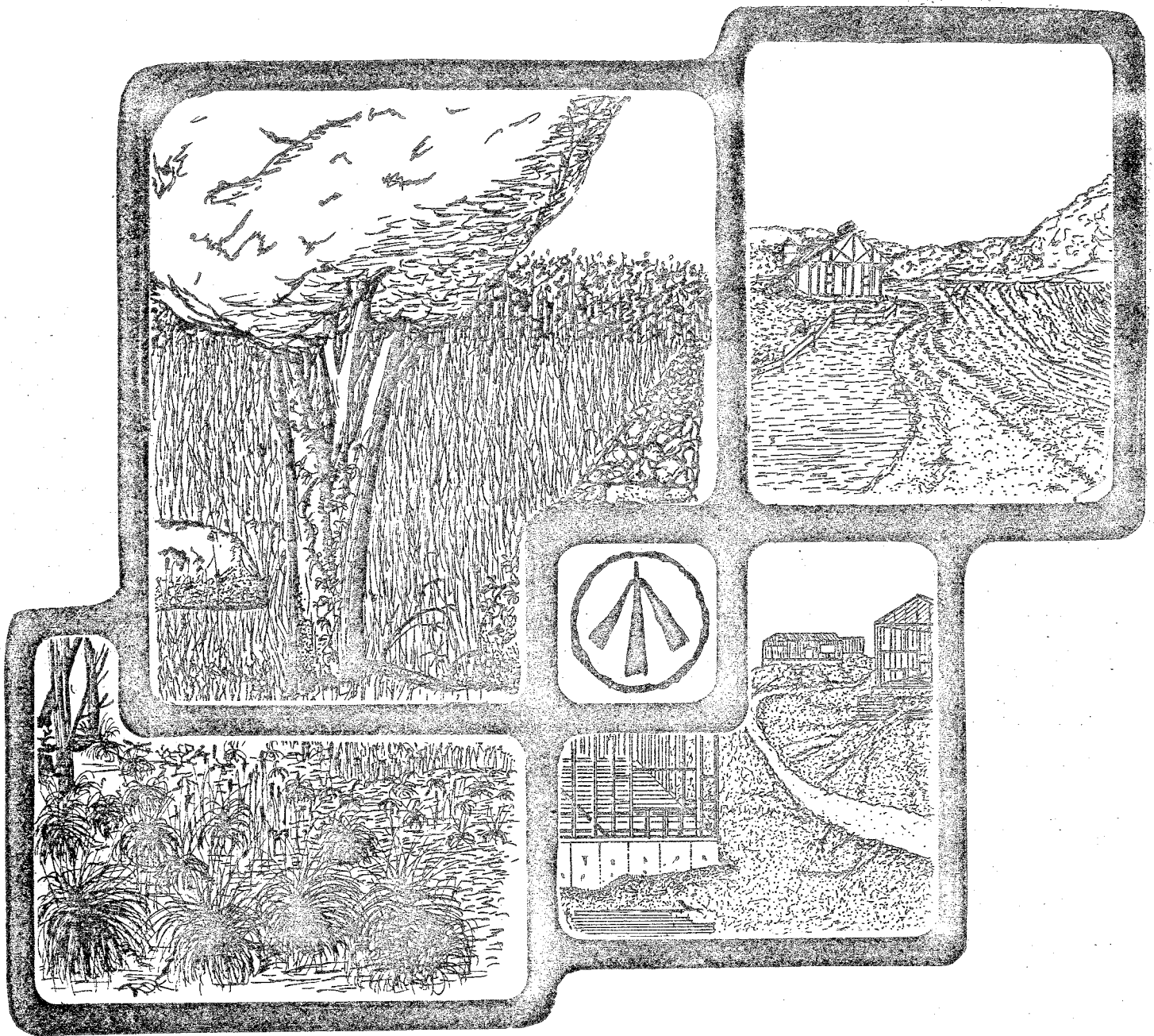


ENVIRONMENTAL REVIEW TEAM REPORT



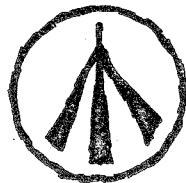
ELDERLY HOUSING PROPOSAL GUILFORD, CONNECTICUT

KING'S MARK
RESOURCE CONSERVATION & DEVELOPMENT AREA

KING'S MARK
ENVIRONMENTAL REVIEW TEAM REPORT

ELDERLY HOUSING PROPOSAL
GUILFORD, CONNECTICUT

OCTOBER 1981



King's Mark Resource Conservation and Development Area
Environmental Review Team
Sackett Hill Road
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
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
Central Naugatuck Valley Regional Planning Agency
Housatonic Valley Council of Elected Officials
Southwestern Regional Planning Agency
Greater Bridgeport Regional Planning Agency
Regional Planning Agency of South Central Connecticut
Central Connecticut Regional Planning Agency
Capitol Regional Council of Governments
American Archaeological Institute

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FUNDING PROVIDED BY State of Connecticut

POLICY DETERMINED BY

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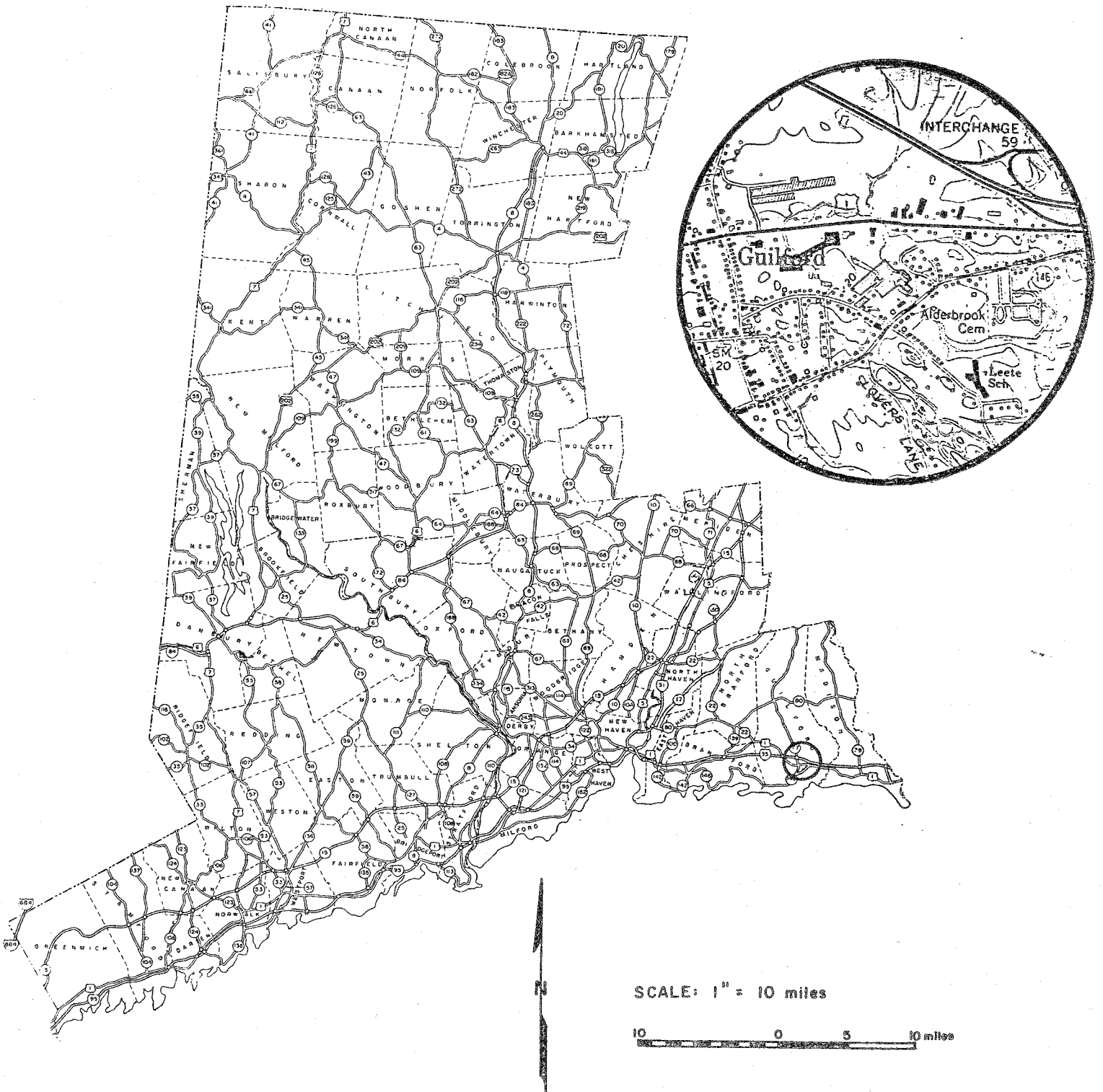
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LOCATION OF STUDY SITE

ELDERLY HOUSING PROPOSAL GUILFORD, CONNECTICUT



ENVIRONMENTAL REVIEW TEAM REPORT
ON
ELDERLY HOUSING PROPOSAL
GUILFORD, CT

I. INTRODUCTION

The Town of Guilford is interested in developing a 5.5 acre parcel of land for elderly housing. The subject site is located in the southcentral portion of town off Union Street (see Figure 1). The proposed project calls for forty dwellings, with a mixture of efficiency and one bedroom units. Architectural plans for the project have not yet been prepared, however several buildings of slab construction are anticipated according to preliminary plans.

The Union Street site is mostly flat and dominated by an open field. The site is served by public water, but is not sewered. As shown in Figure 1, one house (vacant) is now located on the property. Access to the parcel is available from the south off Union Street.

The property is owned by the Town of Guilford and the Town has applied for and received a commitment from the Connecticut Housing Authority for funding of the project. Recently questions have been raised by local residents as to the suitability of the site for subsurface sewage disposal and the impact of the project on local hydrology.

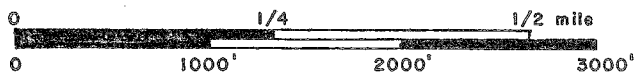
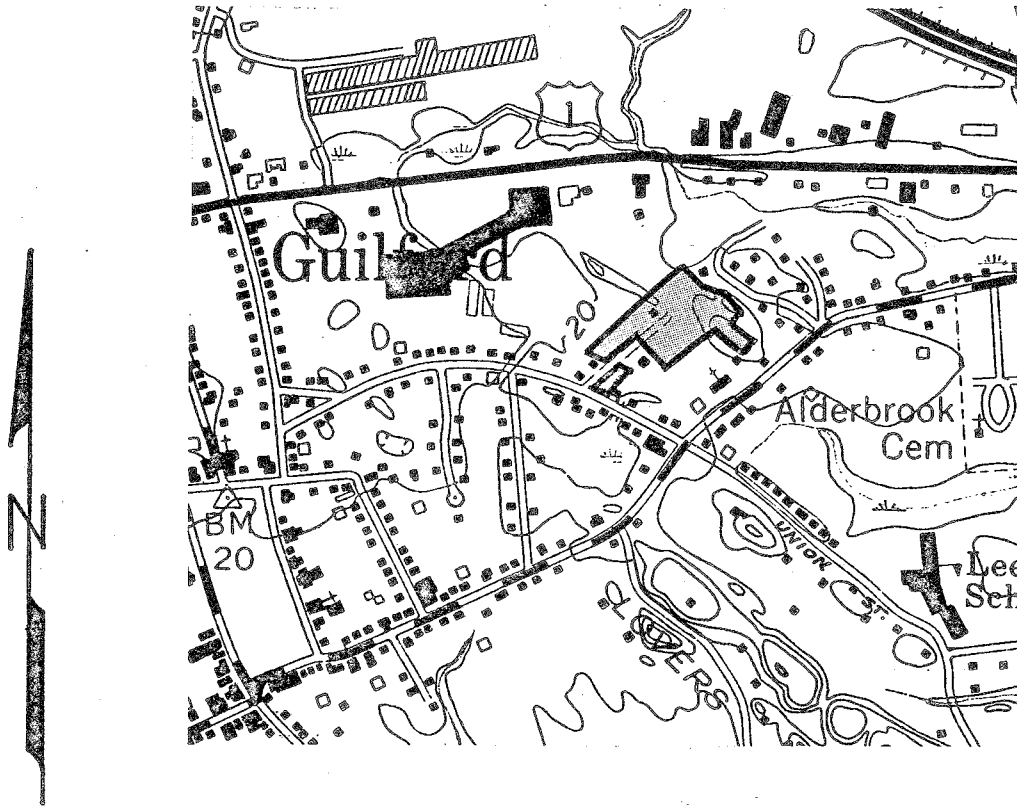
The First Selectman of Guilford requested this environmental review to receive an objective assessment of the suitability of the site for the proposed project, the probable environmental impact of the project, and mitigating measures which could be employed to minimize adverse environmental effects.

The King's Mark Executive Committee considered the town's request for an ERT study and approved the project for review by the Team.

The ERT met and field reviewed the site on September 23, 1981. Team members for this review consisted of the following:

Norris Andrews.....	Regional Planner.....	Southcentral Connecticut Regional Planning Agency
Brian Curtis.....	Sanitary Engineer	Ct. Department of Environ- mental Protection
Frank Indorf.....	District Conservationist.....	U.S.D.A. Soil Conservation Service
Rob Rocks.....	Forester.....	Ct. Department of Environ- mental Protection
Mike Zizka.....	Geohydrologist.....	Ct. Department of Environ- mental Protection

FIGURE I.
TOPOGRAPHIC MAP



SCALE: 1" = 1000'

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, and a topographic map of the subject site. Following the field review, individual 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. It should be recognized 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 at the local level. It is hoped the information contained in this report will assist the Town of Guilford 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, Sackett Hill Road, Warren, Connecticut 06754.

* * * * *

II. GEOLOGY

The geology of the proposed elderly housing site consists primarily of bedrock and glacial outwash (see Figure 2). Bedrock is exposed, or very thinly covered with outwash, on the ridges along the northeastern and northwestern borders of the parcel. Although there is some variation in the bedrock, the most extensive type of rock on the site is a medium to coarse grained gneiss composed primarily of feldspar, quartz, and biotite or hornblende. "Gneiss" is a term given to metamorphic rocks (rocks whose original characteristics were altered by high pressures and/or temperatures) in which thin layers of elongate or platy mineral grains alternate with thin layers of more rounded mineral grains. The lineation visible in the gneiss outcrops on the northeastern ridge is unusually distinct and striking. Other rock types observed on the property include pegmatite (a very coarse-grained quartz and feldspar rich rock) and amphibolite (a rock in which minerals of the amphibole group, in this case specifically hornblende, are predominant).

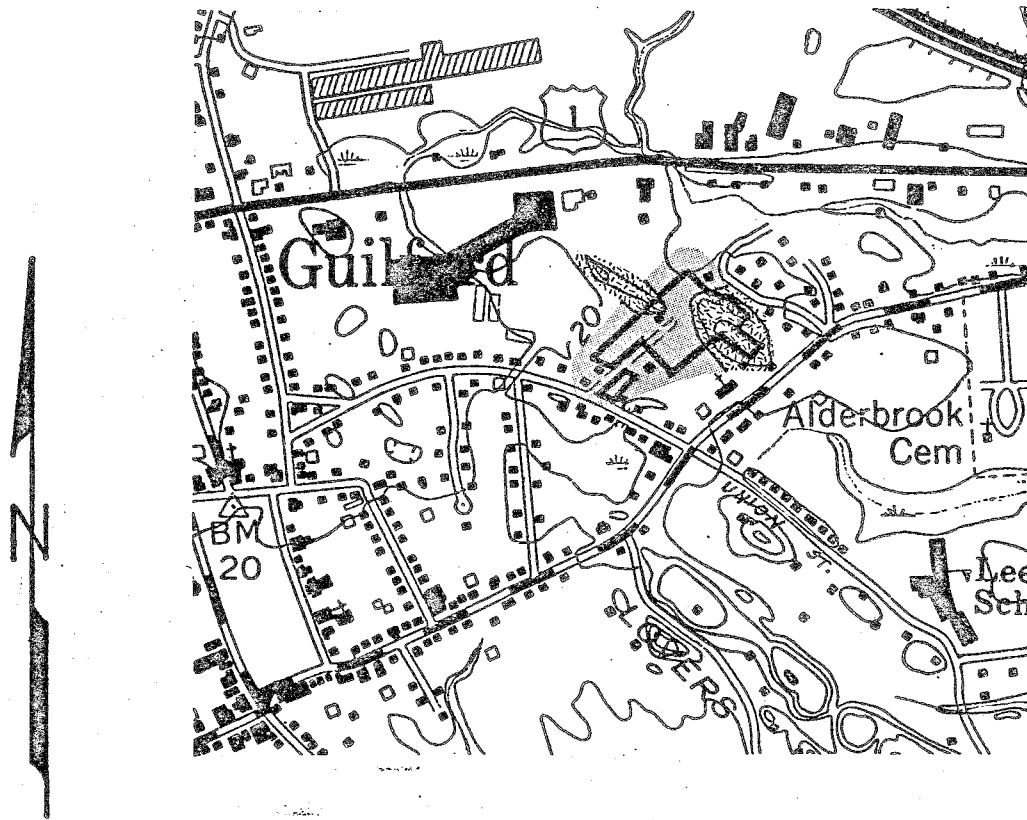
The depth to bedrock in the flat portion of the site probably exceeds 20 feet in most places. Several test holes were dug in the flat area on the day of the Team's field review. Each hole exposed 7 to 8 feet of overburden without reaching bedrock. The upper 1 to 3 feet of overburden was poorly sorted and relatively silty. Below that zone, stratified, well-sorted sand and pebble gravel were predominant. The contact between the two types of material was sharply defined in several test holes. The lower material is glacial outwash, a sediment that was deposited by meltwater streams flowing from wasting masses of glacier ice. The origin of the upper material is not so clear, but it may include some till (sediments deposited directly from glacier ice). In all of the test holes, a zone that included the bottom of the poorly sorted sediment layer and the top of the well-sorted outwash deposit was found to be noticeably cemented. The cementing minerals have probably been derived by leaching from the upper levels of the poorly sorted material. The cemented zone forms a slowly permeable cap over the well-drained outwash. Hence, water percolating down from the surface may be temporarily "ponded" above the cemented zone. If the zone is breached, e.g. by septic system trenches, water should pass easily through the outwash.

III. HYDROLOGY

The proposed elderly housing site is located in a generally flat area with no well established surface drainage patterns. Most of the land surrounding the site is slightly lower than the site itself, so that surface water and groundwater may flow from the property in virtually all directions. Undoubtedly, some of the site's runoff now flows onto the neighboring property of the Bethel Assembly of God Church. Standing water in the church's parking area has historically been a problem.

Development of the site as planned will lead to increases in the amount of surface runoff generated during periods of precipitation. These increases will result primarily from the establishment of impervious surfaces, such as roofs and parking areas. The development plans for the parcel are presently only rudimentary, but it is safe to conclude that the percentage runoff increases will be rather high. If at least once acre of total impervious surface is created, as seems likely, the increases may be estimated to be 86 percent for a 2 year

FIGURE 2.
SURFICIAL GEOLOGY



EXPLANATION



GLACIAL OUTWASH



BEDROCK OUTCROPS AND VERY
THINLY COVERED BEDROCK

storm, 44 percent for a 10 year storm, 35 percent for a 25 year storm, 32 percent for a 50 year storm, and 26 percent for a 100 year storm. On the other hand, since the area of the site is small, the actual volume of additional runoff would not be substantial.

The present drainage plans call for routing runoff from the developed portion of the site to the stream bordering the proposed Village Walk parcel, which is located immediately north of the site. The routing would be partly accomplished by using an existing easement through the Village Walk tract. At the point of the proposed discharge, the stream has a drainage area of about 475 acres. If the drainage plans for the elderly housing site are implemented as planned, the site would add less than one percent to the drainage area of the stream. Hence, no significant impacts on peak flows would be anticipated. Moreover, the stream would trap some of the sediment that enters and leaves the drainage system. Finally, the directing of runoff from the developed area to the stream would probably reduce the amount of runoff that flows from the site to the adjoining church property. While this is not likely to solve the church's problems (the cemented zone in the outwash deposits is probably the major factor), it should not add to these problems in any way.

IV. SOILS

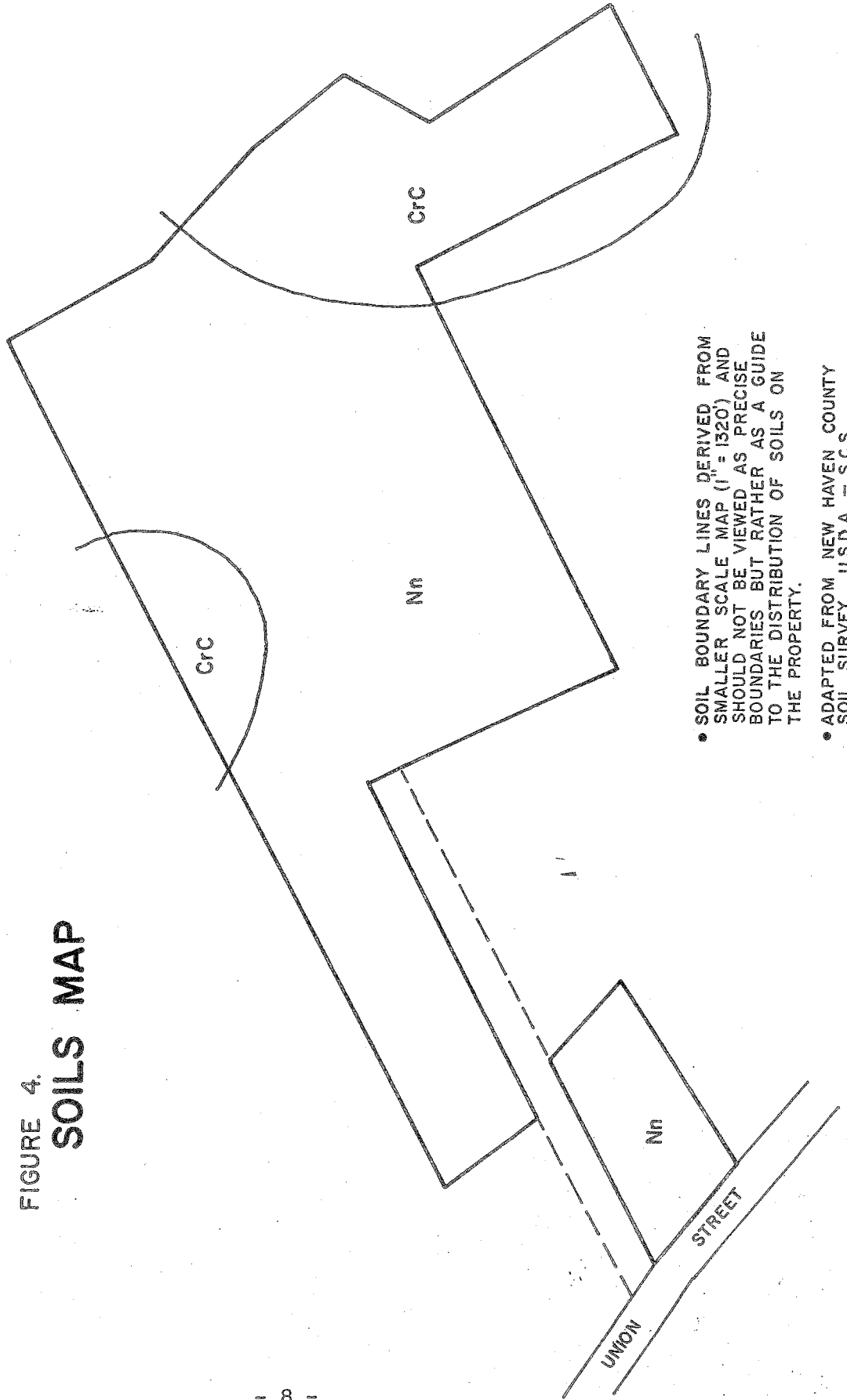
According to the New Haven County Soil Survey, this site is underlain by Ninigret fine sandy loam soils (see Figure 4). Ninigret is a nearly level, moderately well drained soil. Typically, the surface layer is a dark brown fine sandy loam 8" thick. The subsoil is dominantly dark yellowish brown and yellowish brown, mottled fine sandy loam. The substratum, to a depth of 60" is brown stratified sand and gravel. However, on this site there is a cemented silty sand layer at 16-34". This cementation causes a perched water table to exist and could cause problems with the successful operation of on-site sewage disposal installations. Installing stand pipes in 2 or 3 areas to check the normal high ground water levels is desirable. During the ERT's field review, groundwater levels were in the vicinity of 4-6½ feet.

Should ground water levels come up to the lower level of the cemented layer, then a mounded type on-site sewage disposal system may have to be installed.

Ninigret soils typically have a seasonal high water table at a depth of about 20 inches from late in fall until mid-spring. Permeability is moderately rapid in the surface layer and subsoil and rapid in the substratum. This soil has a moderate available water capacity. Runoff is slow. This soil dries out and warms up rather slowly in spring. It has a low shrink-swell potential. Unless limed, this soil is very strongly acid through medium acid.

This soil typically has fair to poor potential for community development. It is easy to excavate; however, the steep slopes of excavations are unstable. It has poor potential for waste disposal systems, such as septic tank absorption fields, because of the seasonal high water table. Without proper engineering, waste from the septic systems may pollute the ground water. Foundations need to be properly designed and constructed to insure stability. Also, all storm drainage systems along roadways should have slotted pipe or joints should be cracked to prevent hydrostatic pressure from causing roads to crack and break up due to freezing and thawing action.

FIGURE 4.
SOILS MAP



• 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 NEW HAVEN COUNTY SOIL SURVEY, U.S.D.A. -- S.C.S.

SCALE: 1" = 100'

This soil is well suited to landscaping. During periods of construction, conservation measures are needed to prevent excessive runoff, erosion and siltation.

Because of the perched water table condition, no basements should be installed unless they are raised above the perched water table. However, if a suitable free flowing outlet can be established it would be possible to install foundation drains which would, if properly installed, maintain dry basements. It should be noted that preliminary plans for the project do not call for basements.

It may also be possible to install curtain drains around leaching areas to prevent flooding and drowning out during the wetter times of the year. Here again a suitable free flowing outlet is a must. Any tile drainage system installed should have rodent guards on the outlet ends.

The only other soil type present on this property, according to U.S.D.A. Soil Conservation Service mapping, is Charlton-Hollis fine sandy loams, 3 to 15 percent slopes (see Figure 4). Approximately 45 percent of this soil is Charlton fine sandy loam, 30 percent is Hollis fine sandy loam, and about 25 percent is other soils.

This complex has fair to poor potential for community development due to steepness of slopes and stoniness. Shallowness to bedrock will also present limitations in certain areas. These soils do however offer a picturesque setting for homesites and may have potential for residential structures of unusual design. During construction, conservation measures are needed to prevent excessive runoff, erosion, and siltation.

Overall, if proper engineering methods and conservation practices are designed and completed for this area, there is no reason why the proposed project cannot go forward as planned.

V. ON-SITE SEWAGE DISPOSAL

Review Requirements

The review and approval requirements for subsurface sewage disposal systems depends upon the type and size of system to be employed. The Local Health Department has jurisdiction over individual systems with a capacity of less than 5,000 gallons per day total flow to any one property. If flows are in excess of 5,000 gallons per day or if any community sewerage systems are proposed, a State Discharge Permit must be obtained from the Department of Environmental Protection as well as obtaining local Health Department approval. Any Community System must also be approved by the State Department of Health Services.

Due to the typically low level of water use associated with elderly housing it is not anticipated that flows from this project will be in excess of 5,000 gallons per day. At this point it is unknown whether individual or community systems will be used.

Soil Conditions

A series of seven test pits excavated on the site on 9/23/81 revealed a fairly consistent soil profile over the flatter portions of the property. The soil profile was characterized by a 16 - 34 inch layer of both topsoil and a fairly compact, cemented, silty sand subsoil. Mottling was observed at depths of 18-34 inches in this compacted layer. From a depth of 34-84 inches stratified layers of fine-medium-coarse sands and fine gravels were encountered. Groundwater on the date of testing was observed at 4-6½ ft. from the surface. The actual groundwater table elevation is fairly flat on the site due to the relatively permeable nature of the sandy subsoils and its depth from the ground surface varies due to changes across the site in ground surface elevations. Sandpipes were installed in a number of test pits for groundwater elevation observation in the spring of 1982. In general the groundwater table will be closest to the ground surface in the south western portion of the site.

Based upon observations of soil coloration it appears that two zones of saturation occur in the spring months. The upper compact soil layer has a low permeability due to its dense nature and restricts the downward movement of precipitation. This results in periods of saturation or near saturation in the lower portions of this layer giving rise to soil mottling. Colors of the underlying stratified sands and fine gravel indicated that the high groundwater table does not extend up into the compact upper soil layer, but that a 1-2 ft. zone of unsaturated soil exists over much of the site. Observation of groundwater elevations in the standpipes across the site will reflect the exact springtime conditions.

System Functioning

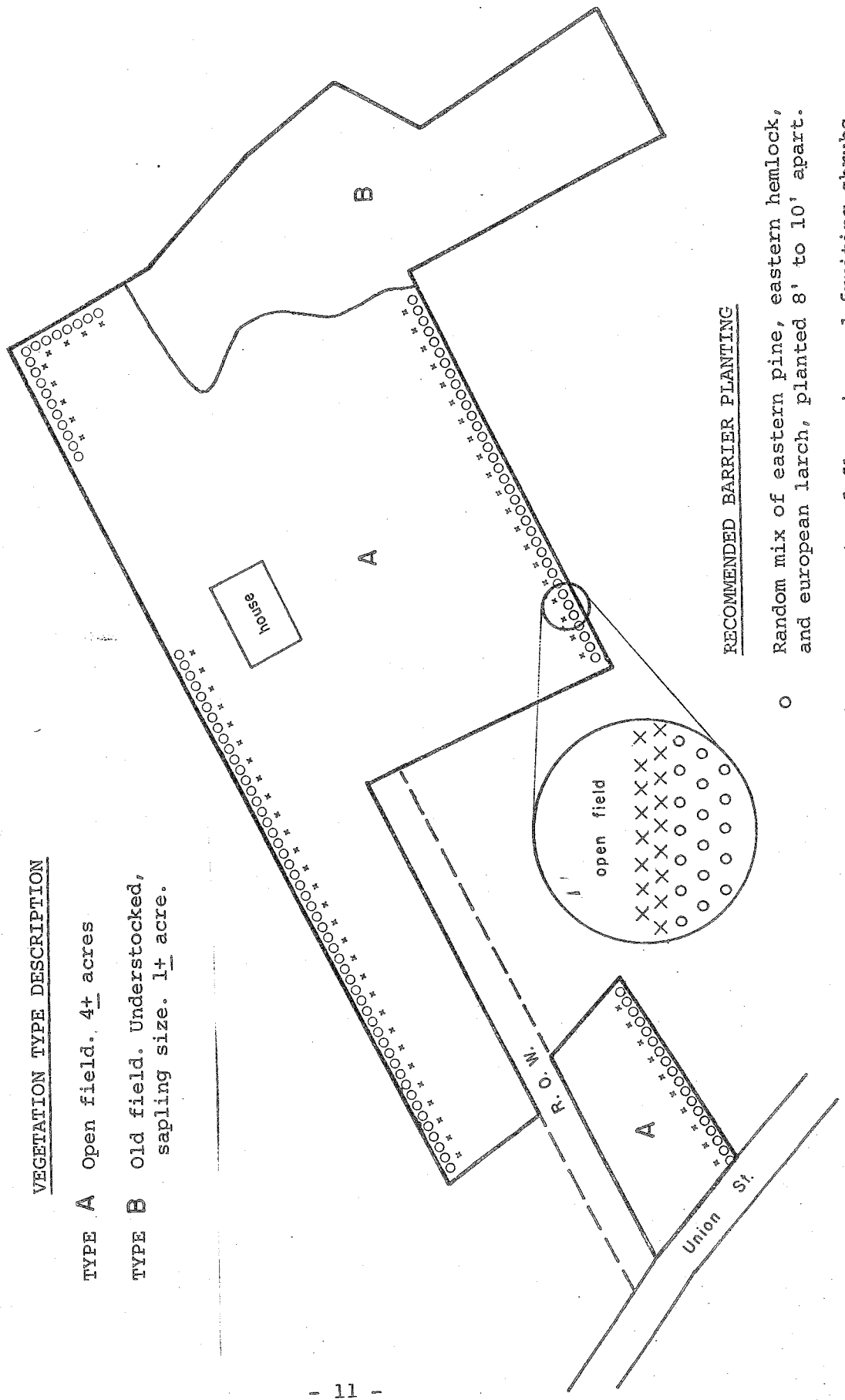
If the maximum (1 month average) ground water table remains down in the stratified sand and fine gravel subsoils and leaves a 1-2 ft. unsaturated zone of sand above, then a shallow conventional leaching trench system should function properly on this site. The key for construction of such a system will be to "key" the base of the system into the more permeable sand and fine gravel subsoils while remaining above the saturated zone. This will provide an outlet for applied flows. Once the system has commenced operation and developed a biological growth layer at the stone-soil interface in the leachfield, proper effluent renovation will be achieved prior to it's mixing with ground water. One final matter which should be considered is the separation distance between storm drainage sewers and leach field systems. If separation distances become too close, water tight pipe construction should be employed.

The anticipated overall sewage discharge to the property will not cause any ground water quality problems with excessive nitrate concentrations.

VI. VEGETATION

The subject site may be divided into two vegetation types (see Figure 5). These include 4+ acres of open field and approximately one acre of old field. The large trees which are present along the border of the open field have high aesthetic value and should be retained if possible. The planting of trees and shrubs to improve aesthetics and to provide a wind and vision barrier should be considered. The soils present in the open field area do not present any limitation to landscape design, while the shallow soils of the old field area somewhat limit design options.

FIGURE 5.
VEGETATION TYPE MAP



VEGETATION TYPE DESCRIPTION

- TYPE A Open field. 4+ acres
- TYPE B Old field. Understocked, sapling size. 1+ acre.

RECOMMENDED BARRIER PLANTING

- O Random mix of eastern pine, eastern hemlock, and european larch, planted 8' to 10' apart.
- X Random mix of flowering and fruiting shrubs, planted 6' to 8' apart.

SCALE: 1" = 100'

1. Vegetation Type Descriptions (refer to Figure 5)

TYPE A. OPEN FIELDS. Just under four acres of open fields are present within the tract which is proposed for elderly housing. Grasses are the dominant form of vegetation present, however golden rod, sedges, asters, Queen Anne's lace and chicory are also wide spread. Several sawtimber-size trees, including bitter-nut hickory and black cherry are located to the northeast of the house which is present within this property.

TYPE B. OLD FIELD. This 1+ acre old field area is under stocked with sapling size white oak, red oak, black cherry and mockernut hickory. Eastern red cedar, old field juniper, flowering dogwood, gray stemmed dogwood, gray birch, barberry, staghorn sumac and winged sumac are also present. Ground cover in this area is dominated by grasses, golden rod, poison ivy, greenbrier, cinquefoil, asters, blue-curly, butter-and-eggs, gill-over-the-ground, chicory and Queen Anne's lace.

2. Aesthetic Considerations

The few large trees which are present within this property have high aesthetic value. These trees should be retained and worked into the overall landscape design of the area where possible.

Plantings to improve landscape aesthetics should be included in the site plan for this property. Any plantings should include native tree and shrub species. Native species will blend in more naturally with the character of the surrounding vegetation. Native species will also be more compatible with local climate conditions.

Plantings to form a wind break or a visual barrier along the northern and southern boundaries of this tract may be desirable (see Figure 5). These barrier plantings could consist of several staggered rows of a random combination of eastern white pine, eastern hemlock and perhaps european larch. These trees if planted between 8 and 10 feet apart will eventually produce an adequate barrier. Other tree and shrub species, including flowering dogwood, silky dogwood, flowering crab apple, autumn olive, tartarian honeysuckle and high bush cranberry could be planted along with the conifer planting to provide additional density and depth. These plantings will also provide quality cover and food for many species of songbirds and small mammals. The varying colors and forms of the species recommended for planting will improve the aesthetic value of the area.

The proposed landscape plantings are not limited by the soils which are present in the open field areas. These soils are moderately well drained and have favorable soil moisture and adequate aeration. These conditions will allow high survival and rapid growth of properly planted and healthy tree and shrub seedlings.

Landscaping practices are, however, somewhat limited by the rocky, shallow to bedrock soils which are present in the old field area. If development does occur in this area, an effort should be made to utilize the healthiest trees and shrubs which are present for landscaping purposes.

All areas that are disturbed by construction practices, should be stabilized and revegetated with sod as soon as possible. This will help to minimize runoff and erosion problems.

VIII. PLANNING CONSIDERATIONS

Review of the proposed project from a planning viewpoint indicates the following:

1. The site for proposed elderly housing in the Town of Guilford has already been acquired by the Town for this purpose.
2. The site is exceptionally well located and will provide maximum accessibility for the elderly population in relation to shopping and community services.
3. The site is in conformity to local, regional and state plans for the following reasons:
 - . The site is an interior parcel of land most suitable for clustering of dwelling units.
 - . The location of the project will increase the population in close proximity to the center. This is a goal of the three plans.
 - . The proposed development of a walkway to Route 1 with a broad range of retail facilities eliminates the need for most transportation.
 - . The site is adjacent to residential areas and is compatible with existing standards.
4. While it is apparent that the soil characteristics of this site are not the most suitable for development, it should be stressed that the goals of the three plans are directed to proper site location to strengthen and enhance existing centers. To accomplish this requires the development of parcels ideally located which might be left unused if subject to conventional development. In this case location is a most important criteria and the additional expenses necessary for proper engineering of the site justifiable.
5. Attention should be directed to the schematic site plan distributed during the ERT's field review. It would appear this plan ignores the provisions of Public Act 81-334 concerning passive solar design.

* * * * *

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 industrial 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.