

**environmental review team report**

**MOORE  
PROPERTY**

**Killingworth,  
Connecticut**



**RC & D**

**EASTERN CONNECTICUT  
RESOURCE CONSERVATION AND DEVELOPMENT PROJECT**

**ASSISTED BY: U.S. DEPARTMENT OF AGRICULTURE,  
SOIL CONSERVATION SERVICE AND COOPERATING AGENCIES**

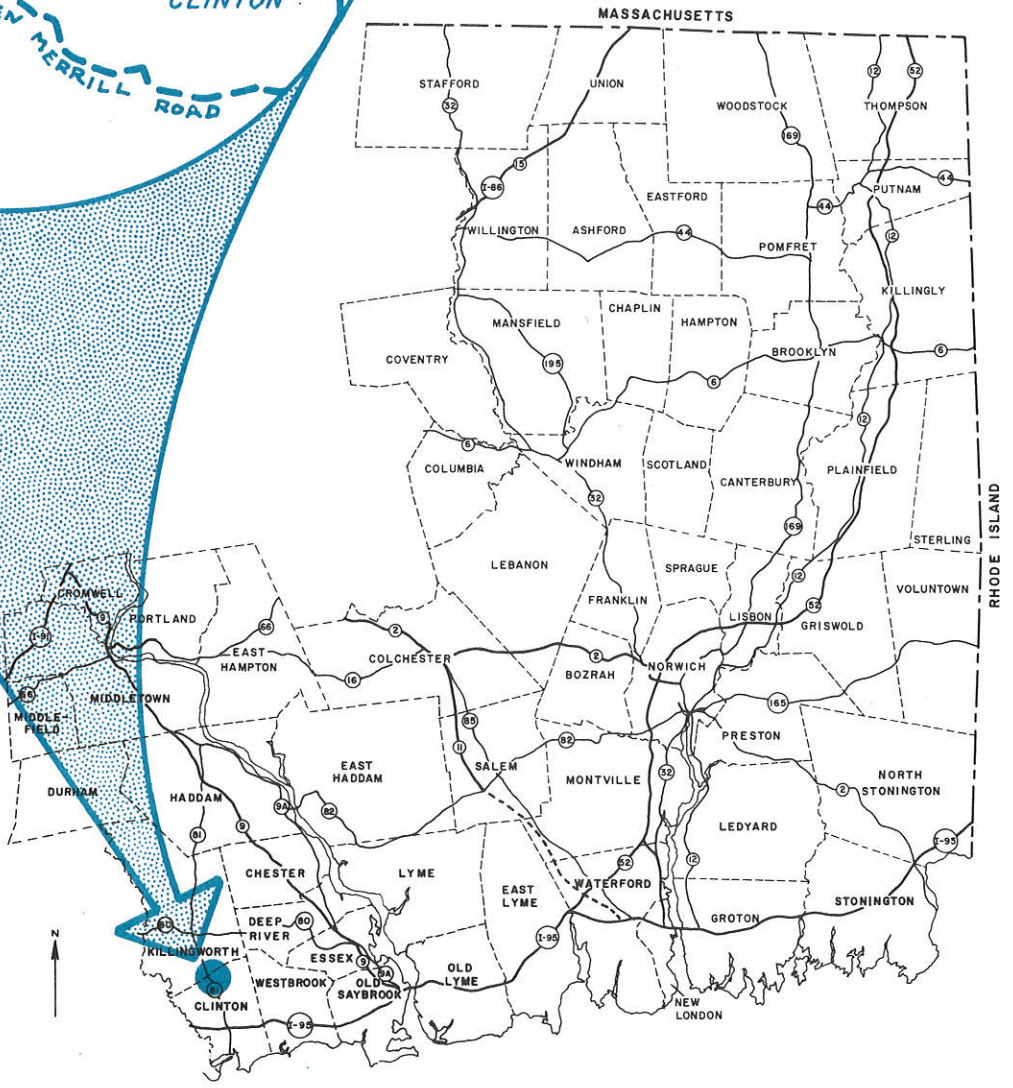
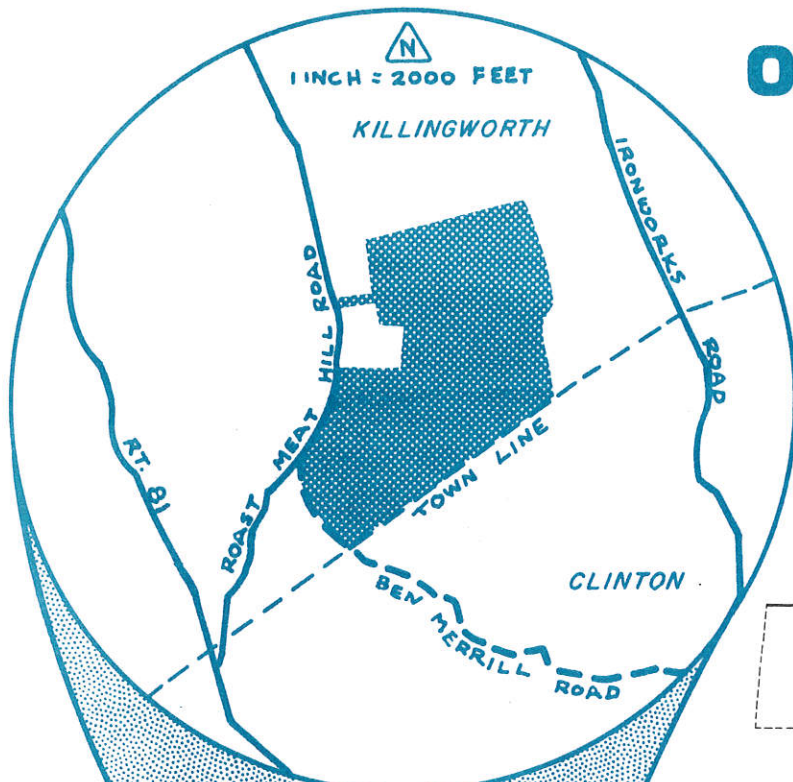
ENVIRONMENTAL REVIEW TEAM REPORT  
ON THE  
MOORE PROPERTY  
KILLINGWORTH, CONNECTICUT  
JANUARY, 1974

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in part, assisted by a grant from the  
New England Regional Commission.*

EASTERN CONNECTICUT RESOURCE CONSERVATION  
AND DEVELOPMENT PROJECT  
Environmental Review Team  
139 Boswell Avenue  
Norwich, Connecticut 06360

# LOCATION OF STUDY SITE

MOORE PROPERTY  
KILLINGWORTH, CONNECTICUT



EASTERN CONNECTICUT  
RESOURCE CONSERVATION AND DEVELOPMENT PROJECT



ENVIRONMENTAL REVIEW TEAM REPORT  
ON THE  
MOORE PROPERTY  
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This report is an outgrowth of a request from the Killingworth Planning and Zoning Commission, with the approval of the owner, William G. Moore, to the Middlesex County Soil and Water Conservation District (S&WCD). The S&WCD referred this request to the Eastern Connecticut Resource Conservation and Development (RC&D) Project Committee for their consideration and approval as a project measure. The request has been approved and the measure reviewed by the Environmental Review Team.

The soils of the site were mapped by a soil scientist of the USDA Soil Conservation Service. Reproductions of the soil survey and a table of limitations for urban development were forwarded to all members of the Team prior to their review of the site.

The Team that reviewed the proposed development consisted of the following personnel: Barry D. Cavanna, District Conservationist, Soil Conservation Service (SCS); Dennis Hutchison, Soil Scientist, SCS; Edwin L. Minnick, Engineering Specialist, SCS; Huber R. Hurlock, Forester, State of Connecticut Department of Environmental Protection (DEP); T.E. Linkkila, Wildlife Biologist, DEP; Charles L. Phillips, Fishery Biologist, DEP; Ed Meehan, Planner, Connecticut River Estuary Regional Planning Agency; Barbara Hermann, Team Coordinator, Eastern Connecticut RC&D Project.

The Team met and reviewed the site on November 15, 1973. Reports from each Team Member were sent to the Team Coordinator for review and summarization.

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 both the Town of Killingworth and the developer. 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 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: Miss Barbara A. Hermann (889-2324), Environmental Review Team Coordinator, Eastern Connecticut RC&D Project, 139 Boswell Avenue, Norwich, Connecticut 06360.



## INTRODUCTION

The Moore property, being developed by the Killingworth Manor Corporation, is located on the east side of Roast Meat Hill Road in Killingworth and abuts the Killingworth-Clinton town line on its southern boundary. The site encompasses approximately 100 acres with a total of 48 single-family lots presently being proposed. The Killingworth Planning and Zoning Commission requested the assistance of the Environmental Review Team in evaluating the site due to the size of the project and the variable character of the land.

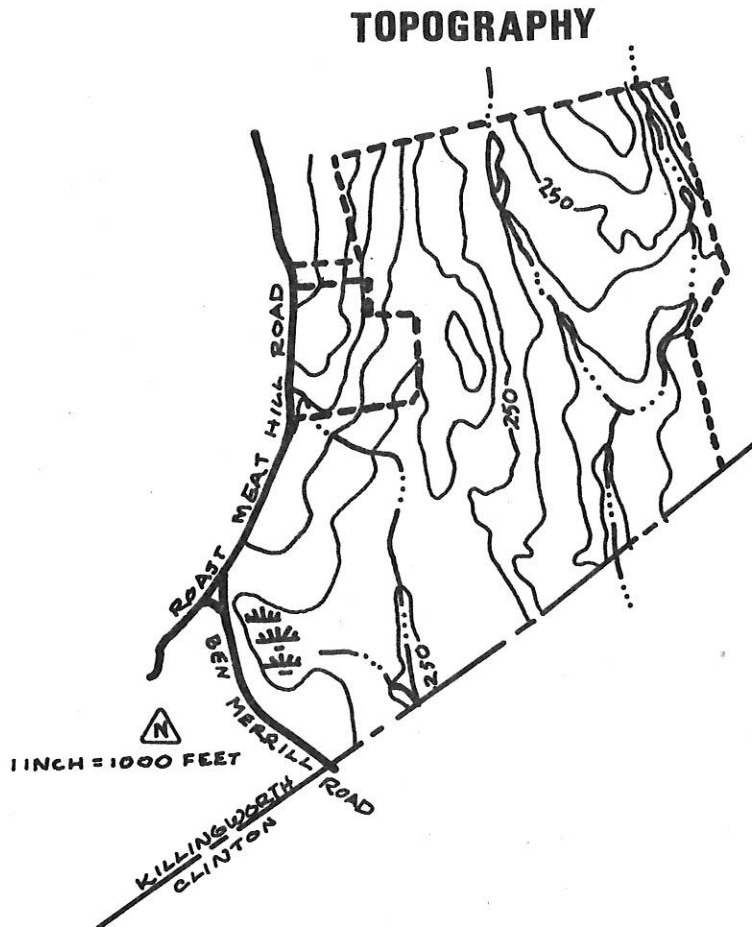
The topography is of a gently rolling nature with several streams flowing through the property in a southerly direction. The many stone walls indicate that an earlier generation might have used the land for agriculture. The streams and their associated wetlands comprise almost thirty percent of the site. Though not suited for development, the streambelt system can be used as an open space corridor through the site. The remaining land is characterized by hardpan soils and areas of shallow depth to bedrock and ledge outcrops, which present some limitations to development. However, with adequate engineering and the large lots, most of these problems can be overcome. The following report will present a more detailed description of the soils of the site, followed by an evaluation of the different aspects of development as they relate to the natural resources. Recommendations or comments made within this report are presented for consideration by the developer and the town in the preparation and review of the development plans and should not be viewed as mandatory or regulatory in nature.

EVALUATION



## TOPOGRAPHY AND SOILS

The topography map below shows the gently rolling nature of the Moore property. The streams run from north to south across the property into Clinton. The site lies within the northern part of the Indian River drainage basin. The entire drainage basin is approximately 7.69 square miles in area and drains the south central section of Killingworth and the central section of Clinton. The Indian River watershed is not presently part of a public water supply system.



A detailed soils map and soils limitations chart for the Moore property can be found in the Appendix of this report. Due to the original scale at which the soils are mapped (1" = 1,320') the lines shown on the soils map should not be construed as precise boundaries, but rather as guidelines to the distribution of soil types on the property. The soils limitations chart indicates the probable limitations for each of the soils for on-site sewage, basements, streets and parking lots, and landscaping. However,

limitations, even though very severe, do not always preclude the use of the land for development. If economics permit greater 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 on this property primarily fall into two natural soil groups, with a small area being classified within a third. The largest area, C-1, includes the soils mapped 35XB and 35XC and consists of 74 acres or 66.7 percent of the site. These soils are underlain by compact glacial till\* and have a hardpan 16 to 36 inches below the soil surface. During wet seasons, the water table rises above the hardpan and the excess water in the soil moves downslope above the hardpan. It is this situation which creates the main limitations for development in these soils, particularly in regard to on-site sewage disposal systems.

On the southern part of the property, some ledge outcrops were noted within the 35XB soils. Careful investigation in this area will be required to insure adequate depths to bedrock for septic systems.

The soil mapped 43M falls within natural soil group B-3 and encompasses 33 acres or 29.7 percent of the site. It is a very poorly drained soil with a high water table during most of the year. It, therefore, is not suited for development. This soil comes within the jurisdiction of the Inland Wetlands Act.

The remaining 3.6 acres fall under natural soil group D and are underlain by bedrock and contain some barren rock outcrops. Bedrock is usually within 20 inches of the surface, though pockets of deeper soil do exist.

#### WATER SUPPLY

A municipal water system does not exist in this area, so an on-site water supply must be developed, either as individual wells on each lot or as a community well system. The engineer for the project expressed some concern over the adequacy of the water supply. Test wells on the site indicated that locating wells on each lot may be a problem. Wells in the surrounding area have required somewhat greater than normal depths to acquire an adequate water supply.

A community well system may be an alternative solution if enough wells with sufficient yield can be located. If this type

\* Till can be described as a predominantly non-sorted, non-stratified material deposited directly by glacial action and composed of varying mixtures of boulders, gravel, sand, silt, and clay.

of system is determined to be feasible, pipe line rights-of-way and designation of the responsibility for future maintenance should be incorporated into the plans.

## WASTE DISPOSAL

On-site sewage disposal systems are planned for the subdivision. The soils mapped as 43M and 17LD (see Appendix) have very severe limitations for the installation and operation of on-site systems due, respectively, to a high water table and to a shallow depth to bedrock and steep slopes. These areas comprise 31.5 percent of the site (35 acres) and should not be used as locations for the septic systems. Some revisions of the present lot layout will be necessary in order to accomplish this.

The remaining 68.5 percent of the site (76 acres) have severe limitations for the installation and operation of sewage disposal systems, due primarily to the hardpan conditions. The hardpan will necessitate additional drainage and possibly some fill to overcome the limitations. However, the favorable topography and large lot design should minimize the degree of severity by giving the developer more latitude in the selection of the best locations for the on-site sewage disposal systems. It is recommended that these locations be identified before determining well and building locations.

## FOUNDATION DEVELOPMENT AND GRADED CONDITIONS

There is no apparent problem associated with the bearing capacity of the substratum soils, though this does not negate the need for test holes on the sites. Footing drains should be installed to eliminate the possibility of wet basements in the hardpan soils.

Soil erosion and sediment control plans should be developed before, and followed during, construction. Minimum disturbance of the landscape is recommended to reduce erosion potential. Clearing should not take place until construction is ready to begin at a particular site. Disturbed areas should be graded, fertilized, and seeded or sodded as soon as practical. Any cut or fill slopes should not be steeper than one vertical to three horizontal for the purpose of establishing and maintaining vegetation.

The Erosion and Sediment Control Handbook, published by the Soil Conservation Service in Connecticut, provides the standards and specifications for numerous vegetative and mechanical measures for the prevention and control of erosion. This handbook, as well as technical assistance in the preparation of an erosion control plan, can be obtained from the county offices of the Soil Conservation Service.

## ROADS AND UTILITIES

Several access points to the proposed development are available off of Roast Meat Hill Road. Route 81 is 2,500 feet southwest of the site and functions as a collector road in Killingworth. It provides circulation to other parts of Killingworth and neighboring towns. The development should not greatly affect the capacity of the existing road system in the area.

In accordance with Killingworth Subdivision Regulations, all new roads within the development will require a 50 foot right-of-way with a paved surface of 34 feet. Since this site abuts Clinton, recognition should be made that future intertown right-of-way and pavement widths are coordinated.

During road construction the potential for erosion will be greater than during any other phase of development. Erosion and sediment control practices should be installed at key locations during construction to minimize sedimentation of the streams.

Road subgrades should be designed using sound drainage principles to reduce future maintenance. Where roads must cross low areas or streams adequately sized culverts should be installed to insure against flooding. The 25 year storm is recommended as a basis for culvert design. The storm sewer system should be designed to minimize shock loading of silt and road debris in the stream. Possible measure which could be used include settling or debris basins, oversized sumps, and filters.

Road cuts or fills should not have slopes steeper than 1 vertical to 3 horizontal to enable the establishment and maintenance of good vegetation. Disturbed areas should be graded, fertilized, and seeded or sodded as soon as practical.

## POTENTIAL HAZARDS

Natural. The branching stream on the eastern portion of the subdivision has approximately 400 acres of contributing drainage area. Some flooding may occur on this stream. Protection of the streambelt area would minimize the possibility of property damage from flooding.

Man Induced. The streams and wetlands on the property are the most susceptible to damage from construction of the subdivision. Inadequately placed and/or constructed septic disposal fields could lead to contamination of the streams. Erosion and sedimentation, particularly during road construction, could cause aggravation of the stream beds. Sand and salt on roads during the winter could also affect the streams. Measures for preventing or alleviating these problems should be incorporated into the development plans.

Road culverts, if inadequately designed or installed, could result in an increased flooding potential.

## AESTHETICS AND PRESERVATION

Several streams traverse the Moore property (see topography map on page 6). Though the streams and their associated wetlands are not suitable for development, they offer an opportunity for the design of open space corridors throughout the development, utilizing the streambelt concept.

Streambelts are natural environmental corridors that comprise the most valuable water related values of a town, region, or watershed. A streambelt includes not only the stream itself, but also its wetlands and flood prone areas. The Soil Conservation Service has prepared streambelt maps for many towns within Connecticut, including Killingworth.

It is generally recommended that a buffer zone of 150 feet be established between a streambelt and construction areas. This aids in protecting streams from sedimentation arising from erosion and contamination by septic systems, as well as minimizing the danger of flood damage. The resulting "buffer strips" provide a natural break between developed areas and afford some protection of the fish and wildlife habitats.

Using the streambelt map for Killingworth as a guide, it is recommended that the streambelts on the Moore property be left undeveloped, except where a road may have to cross a stream. These areas could then be given as an open space reserve to the town or another appropriate organization. If this is not desired by the town and developer, the streambelts could be included as additional acreage on the adjoining properties.

Forestry. It appears that the site was logged about 15 years ago. The existing timber is of a low quality with more than usual culls. However, it might be practical to sell logs on the roadside as the roads and building lots are cleared. The growth of trees has been slow due to the high water table. Any lowering of the water table through development would result in healthier trees.

Wildlife. The site contains a good mixture of hardwoods with scattered hemlocks, small streams and wetlands, and grown-over old fields. There is a fair supply of shrubs throughout the area. Together with the many acres of basically undeveloped land in the surrounding area this site presently provides a good upland game habitat. Any development of the site will exclude the large wildlife species, such as deer, and be replaced by smaller birds and mammals.

Fish. The streams in the development area are too small to support more than a very small fish population.

## SERVICES TO SUPPORT DEVELOPMENT

Public water and sewerage are not available to this site. Therefore, services required of the town will consist mainly of school facilities, police and fire protection, and expanded use and wear on town roads.

## COMPATIBILITY OF SURROUNDING LAND USES

The primary land uses in the area of the proposed subdivision are scattered single-family homes and undeveloped land. The proposed development is consistent with the Killingworth Town Plan of Development and the adjacent land use designation in Clinton. Both Killingworth and Clinton have zoned this area for a minimum lot size of 2 acres. The Connecticut River Estuary Regional Planning Agency's proposed Land Use Guide also suggests development of medium intensity (not less than 2 acres per lot) for this area of Killingworth. It appears the proposed development is compatible with both existing land uses and local and regional development plans.

## ALTERNATIVE LAND USES FOR AREA

An alternative to residential development would be to include the site in a wildlife preserve, as this is one of the few remaining areas in the state providing a good upland game habitat.

With respect to alternative types of development, it appears that residential use, with protection of the streambelts, is preferable. The site's location and lack of public water and sewer facilities make it unsuitable for more intense uses. However, due to variations in soils and their limitations, it is imperative that a good preliminary investigation be made prior to the submission of the final subdivision plans to insure the most economical and trouble free installation.

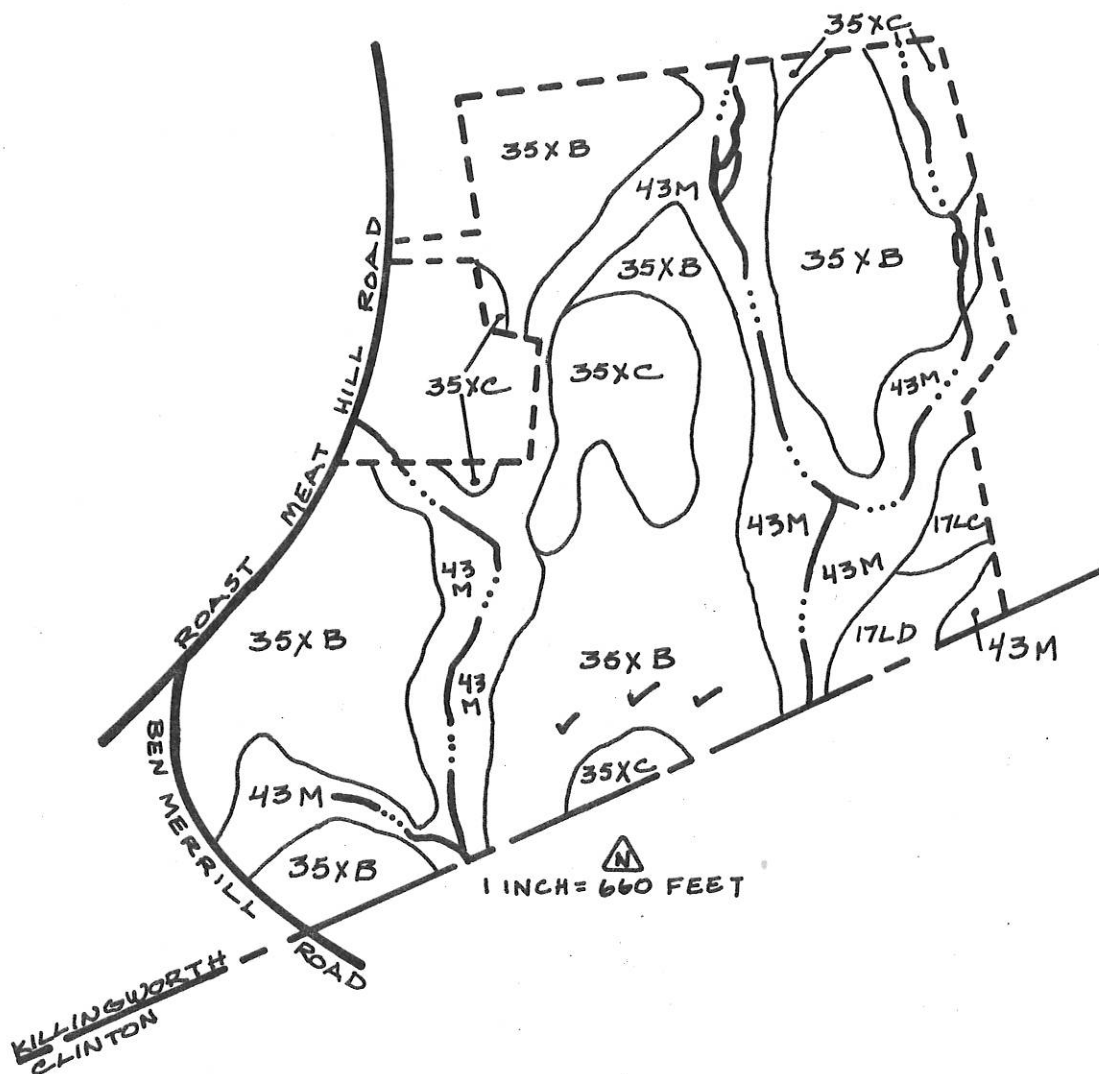


APPENDIX



# SOIL MAP

MOORE PROPERTY  
KILLINGWORTH, CONNECTICUT



Prepared by: UNITED STATES DEPARTMENT OF AGRICULTURE,  
Soil Conservation Service

ADVANCE COPY, SUBJECT TO CHANGE

NOVEMBER, 1973

SOILS LIMITATIONS CHART

Natural Soil Group*	Mapping Symbols	Acres	Percent of Total Acres	Limitations For: **			Streets and Parking	Principal Limiting Factor
				On-Site Sewage	Base-ments	Land-scaping		
B-3b	43M	33	29.7	4	4	4	4	High water table
C-1a	35XB	61	55.0	3	1	1	1	Fragipan
C-1b	35XC	13	11.7	3	2	2	2	Fragipan, slope 8-15%
D-1	17LC	2	1.8	3	3	3	3	Shallow to bedrock, slope 8-15%
D-2	17LD	2	1.8	4	4	4	4	Shallow to bedrock, slope over 15%
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\* Refer to Know Your Land, Natural Soil Groups for Connecticut, Soil Conservation Service, USDA Connecticut Cooperative Extension Service, for further explanation of the natural soil groups.

\*\* Limitations: 1-slight; 2-moderate; 3-severe; 4-very severe.

ACREAGE SUMMARY OF SOILS LIMITATIONS

	<u>Slight</u> <u>Acres</u>	<u>%</u>	<u>Moderate</u> <u>Acres</u>	<u>%</u>	<u>Severe</u> <u>Acres</u>	<u>%</u>	<u>Very Severe</u> <u>Acres</u>	<u>%</u>
On-Site Sewage	-	-	-	-	76	68.5	35	31.5
Basements	61	55.0	13	11.7	2	1.8	35	31.5
Landscaping	61	55.0	13	11.7	2	1.8	35	31.5
Streets and Parking	61	55.0	13	11.7	2	1.8	35	31.5