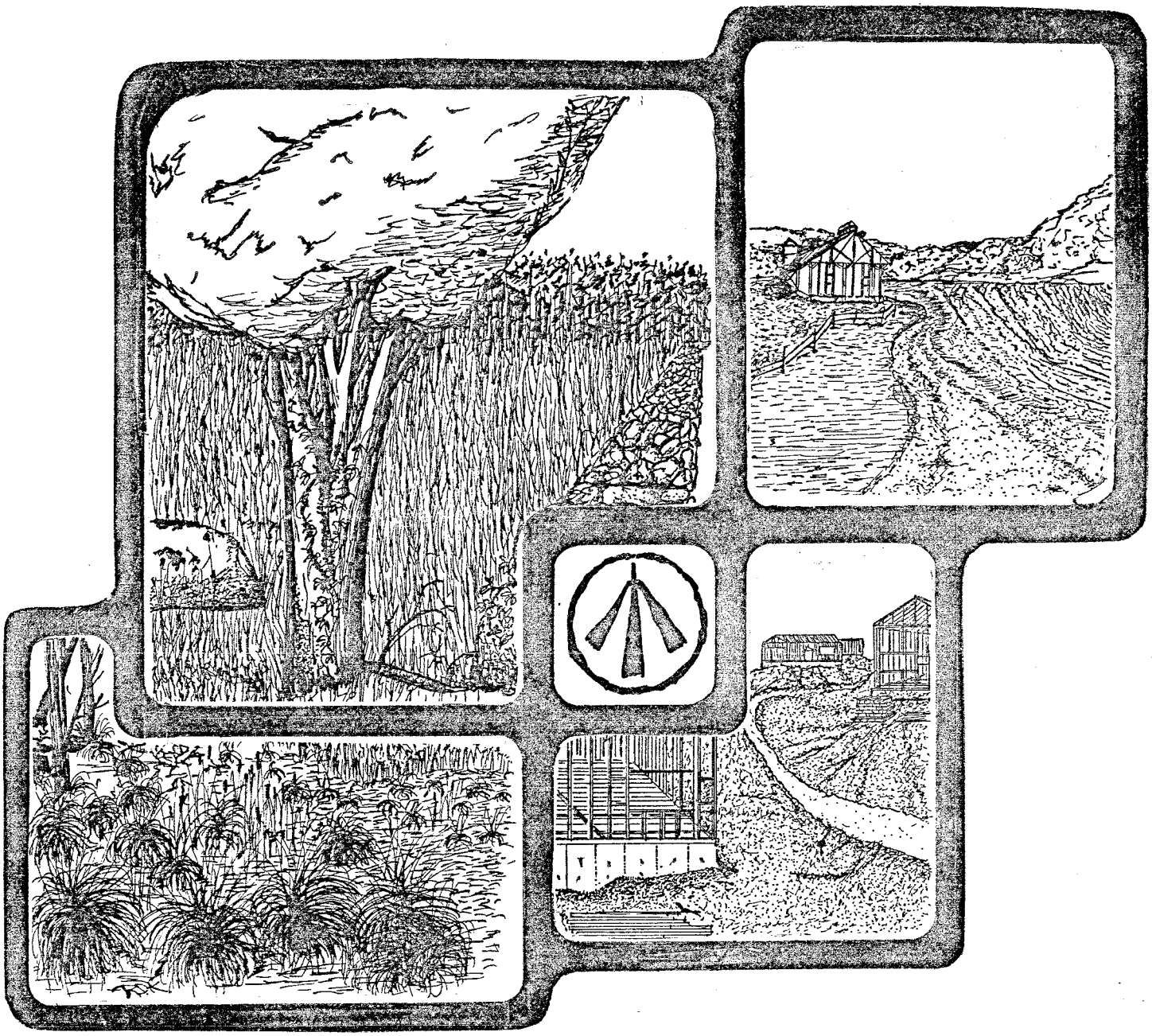
ENVIRONMENTAL REVIEW TEAM REPORT



WIEDEL PROPERTY
DANBURY, CT

KING'S MARK
RESOURCE CONSERVATION & DEVELOPMENT AREA

KING'S MARK
ENVIRONMENTAL REVIEW TEAM REPORT

WIEDEL PROPERTY
DANBURY, CT
MARCH 1984

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
- Department of Transportation

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
- American Indian Archaeological Institute
- Housatonic Valley Association

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FUNDING PROVIDED BY
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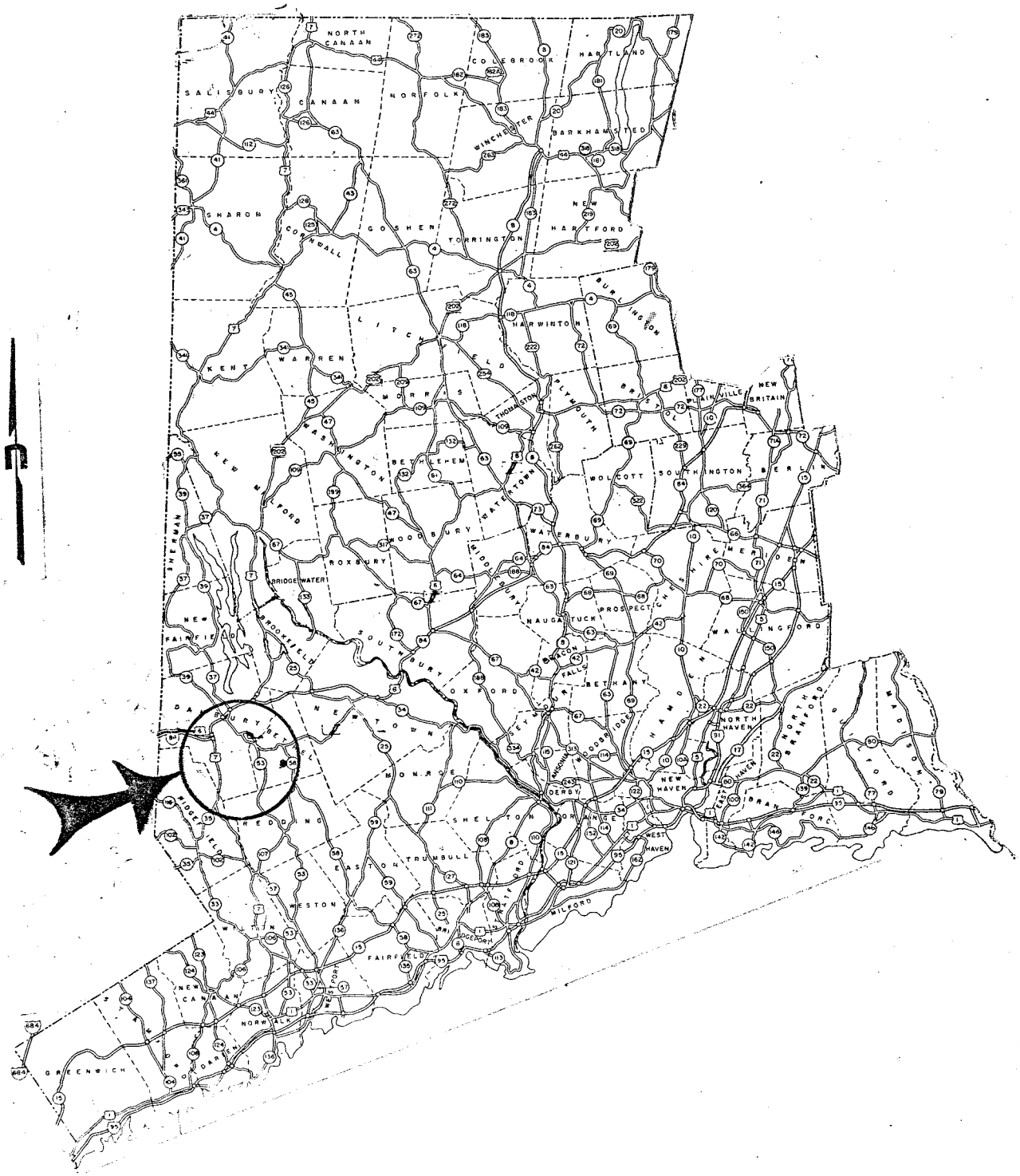
TABLE OF CONTENTS

LIST OF FIGURES

LOCATION OF STUDY SITE



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ENVIRONMENTAL REVIEW TEAM REPORT
ON
THE WIEDEL PROPERTY
DANBURY, CT

I. INTRODUCTION

The 314 acre estate of Dr. and Mrs. Philip Wiedel is located at the southern border of Danbury off Long Ridge Road. As shown in Figure 1, the land is characterized by a diverse topography and includes open fields, wooded land and wetland.

For the purposes of this report, the Wiedel property may be divided into three sections:

Section One: This is the land located west of Long Ridge Road. This section includes the Wiedel residence, a large lawn, and a large wetland area associated with West Redding Brook.

Section Two: This land is located across the street from the Wiedel residence and supports another residential building and two associated structures. The western third of this section is characterized by moderately sloping wooded land. The eastern two-thirds is dominated by very steep and rocky wooded land.

Section Three: This is the southernmost parcel on the property and consists of moderately sloping farmland along its western half and moderately sloping wooded land along its eastern half.

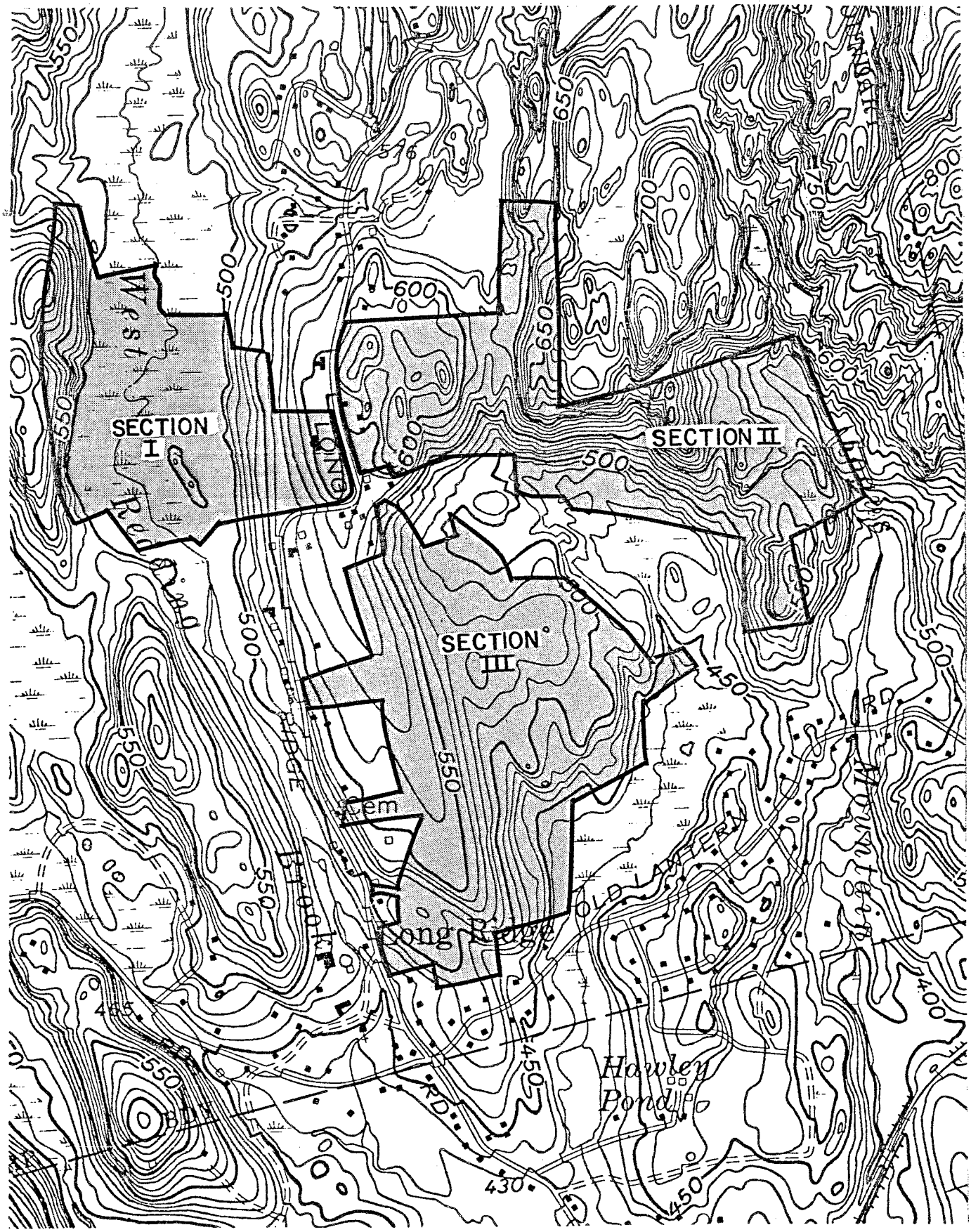
Separating sections two and three of the Wiedel Property is a belt of land owned either by the Swampfield Land Trust of Danbury or the Bridgeport Hydraulic Water Company.

The Wiedels' are interested in developing their property for residential use. To assist them in preparing development plans compatible with environmental concerns, this environmental review was requested by the City of Danbury. Specifically, the ERT was requested to: 1) identify the natural resource base of the site; 2) identify those portions of the site most suitable for residential development; 3) discuss alternate development forms and their environmental appropriateness at the site; 4) discuss appropriate measures for minimizing any adverse environmental impacts of the project, and 5) discuss opportunities for managing the forestry, wildlife and other natural resources of the site commensurate with the proposed land use.

The King's Mark Executive Committee considered the City of Danbury's request, and approved the project for review by the Team.

The ERT met and field reviewed the site on October 19, 1983. Team members participating on this review included:

Figure 1
TOPOGRAPHIC MAP



Scale 1"=1000'

Russell Handsman	Archaeologist	American Indian Archaeological Institute
Randi Lemmon	Land Planner	Housatonic Valley Association
Paul Rothbart	Wildlife Biologist	CT Department of Environmental Protection
Frank Schaub	Sanitary Engineer	CT Department of Environmental Protection
Leonard Sedney	City Planner	City of Danbury
Donald Smith	Forester	CT Department of Environmental Protection
David Thompson	District Conservationist	U.S.D.A. Soil Conservation Service
William Warzecha	Geohydrologist	CT Department of Environmental Protection

Prior to the review day, each team member was provided with a summary of the proposed study, a checklist of concerns to address, a detailed soil survey map, a soils limitation chart and a topographic map of the site. During the field review, team members met with the Wiedels and walked the property. 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 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 city and the landowner. It is hoped the information contained in this report will assist the City of Danbury and the Weidels 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. HIGHLIGHTS

1. *Development of the Wiedel Property may be expected to generate runoff volume increases. These increases in turn may cause peak flows in local stream(s) to increase to an extent based upon the percent of land developed within the watershed. Also, increased runoff could cause overland and stream channel erosion. It is therefore recommended that a detailed engineering study of pre- and post development runoff be developed prior to project implementation. A comprehensive erosion and sediment control plan, which includes runoff control measures, should also be developed for each stage of the project. (p. 10)*

2. *Unless a public water supply line was made available to the Wiedel Property, any residential development would have to be served by on-site wells. The only feasible source of groundwater would be the underlying bedrock aquifer. Bedrock wells in the state are typically capable of supplying small but reliable yields of groundwater to individual wells. The natural quality of the groundwater should be good. (p. 10)*

3. *Approximately half of the Wiedel Property consists of "critical" soils. These soils pose severe limitations for residential development and include inland wetland soils, areas characterized by steep slopes and shallow to bedrock soils. These critical soil areas are the least suitable areas for development on the site. While limited use of the critical soil areas may be feasible (recreational trails, occasional homesites on carefully selected sites), these areas clearly do not lend themselves to any type of intensive development. (p. 16)*

4. *Section III of this site has a core area of approximately one hundred and fifteen acres of easily developed soils. The core area is readily accessible, and has no significant soil related limitations given the present zoning or larger lot sizes. (p. 18)*

5. *Only thirty of the approximately one hundred fourteen acres in Section II have soils that can readily accommodate development. Extremely steep and rocky terrain severely limit the use of most of this section. (p. 18)*

6. *Overall, Section III appears most suited for residential development. Design of small cluster developments (3 to 4 houses) may be feasible provided sufficient area for construction of individual leaching systems is available. Collection of sewage from individual homes for disposal in a single large sewage disposal system would not be advisable on this property. (p. 20)*

7. *The Wiedel Property consists of a wide variety of vegetation types. The composition of these vegetation types and management suggestions are presented in the text of this report. (p. 21)*

8. *The property is made up of three major wildlife habitat types. These are mixed hardwood/softwood forest, open land, and wetland. If the site is developed as planned there will be an immediate negative impact on wildlife. A number of measures can be implemented, however, to minimize the adverse impacts of the project on wildlife. These measures are discussed in the text. (p. 24)*

9. *Existing information suggests that particular sections of the Wiedel Property are archaeologically sensitive. If these unknown prehistoric and known historic sites are to be preserved for future study, then specific zones should be protected from residential development. In the absence of field documentation to date, it is suggested that the landowners consider undertaking additional research and planning in this area of concern. (p. 27)*

10. *The zoning in the area is RA-80 which permits one single family residence for every eighty thousand square foot of lot area. The stated intent of the owner's of the property is to develop the three hundred and fourteen (314) acres for single family use while preserving a large portion of the site for open space. This development would be compatible with surrounding land uses and would be consistent with City plans for future development of the area. The City Plan of Development encourages clustering under conditions present at the Wiedel site. (p. 29)*

11. *The Wiedel property may be divided into six distinct "design zones". Specific comments on the use of each zone are presented in the "Design Considerations" portion of the report. (p. 31)*

III. TOPOGRAPHY AND GEOLOGY

A. Topography

Section I of the Wiedel Property (see Figure 1) is characterized mainly by a wetland, approximately 44 acres in size, which extends through the central portions of the parcel. West Redding Brook, a tributary to the Saugatuck River meanders in a southerly direction through the wetland. Land surface rises moderately (15-20%) to the east and more steeply (25-30%) to the west from the wetland. Elevations on this parcel range from a low of about 510 feet above mean sea level throughout the surface of the wetland to a high of about 610 feet above mean sea level at the top of the hill at the eastern and western limits of the site.

Section II is characterized by a rough and rocky terrain, particularly throughout the eastern half of the parcel. Slopes are moderate to very steep (15-30%) throughout the site due mainly to numerous bedrock outcrops. Approximately 70% of Section II is comprised of areas where bedrock is at or near the land surface. Elevations range from a high of 670 feet above mean sea level near the peak of a bedrock controlled hill in the north central portion of the parcel to a low of approximately 460 feet above mean sea level at the surface of a wetland in the southern section of the property.

Section III of the Wiedel Property is approximately 120 acres in size and is located on the east side of Long Ridge Road, just south of Section II. According to Mrs. Wiedel, this section of the property will be developed first. It is situated on the east flank of Long Ridge, which is a drumloidal hill. (note: for a definition of a drumlin hill, see the Geology Section of this report.) The steepest slopes occur along the eastern limits and in the southern portions. Elevations range from about 450 feet above mean sea level at the outer fringe of the wetland in the southeast portion of the parcel to a high of approximately 580 feet above mean sea level in the northwest section of the parcel. Approximately 15% of Section III comprises wetland areas, which are delineated on the accompanying soils map (see Appendix) as Carlisle (Ce) and Ridgebury, Leicester and Whitman (Rn) soils. Wetland areas extend north to south through the central portions of the site except for a small break in the middle. Also, lesser wetland areas occur in the eastern limits of the site.

B. Geology

The Wiedel Property is located in South Danbury which lies entirely within the Bethel topographic quadrangle. Neither the bedrock or surficial geologic maps for the Bethel quadrangle have yet been published; however, there is information on open file at the Natural Resources Center of the Department of Environmental Protection in regard to the geology of the area.

The bedrock underlying and cropping out on the Wiedel Property appears to be comprised largely of the Dalton formation. This rock unit consists of a grayish tan, medium grained and well layered gneiss or feldspathic quartzite. It is composed essentially of the minerals quartz-microcline-plagioclase-muscovite-biotite and tourmaline. These minerals are in order of decreasing abundance with quartz being the mineral of largest percentage. Gneisses are crystalline, metamorphic (processes which change the original material through

great heat and pressure) rocks which are characterized by bands. These bands are produced primarily by the alternation of dark and light layers of minerals such as quartz, feldspar and biotite.

"Quartzite" is a term given to a sandstone that has been metamorphosed. It consists of a fairly light colored rock, which has a high percentage of the mineral quartz. The term "feldspathic" before quartzite means the mineral feldspar is present in significant amounts in the rock.

Most bedrock outcrops on the Wiedel Property can be seen on Section II, where nearly 70% of the parcel has bedrock at or near the surface of the ground. Also, scattered bedrock outcrops can be observed along the eastern limits of Section III and the western limits of Section I.

Overlying bedrock throughout the Wiedel Property is the unconsolidated material referred to as till. Till is a nonstratified, nonsorted mixture of rock particles and fragments consisting of boulders, cobbles, pebbles and silt. Also, the till may contain lenses of sorted sand and gravel. These rock particles and fragments were accumulated by a moving sheet of glacier ice and later redeposited directly from the ice. The texture of till is commonly loose and sandy in the upper few feet and at depth becomes much siltier and more compact.

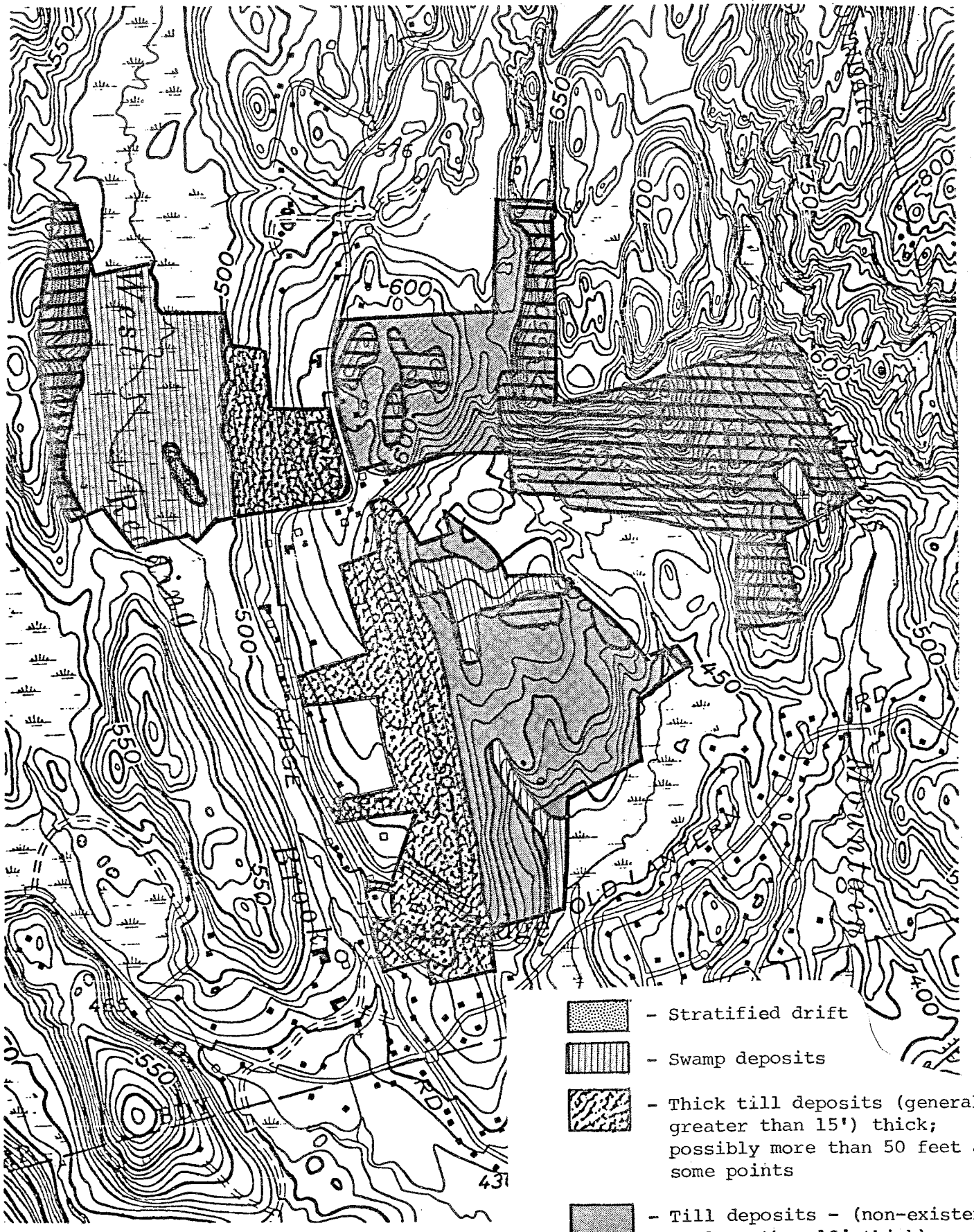
The till deposits covering all of Section II, the eastern half of Section III, and the western limits of Section I are generally thin to non-existent. Depths range from zero where outcrops occur to probably less than 10 feet (see Figure 2).

As mentioned earlier, the western half of Section III is situated on an almost north-south trending drumlin hill. The eastern limits of Section I occupy the west flank of the same hill. Drumlins are hills composed mainly of till, which formed when the sediments were deposited from the ice sheet and were either simultaneously or subsequently overridden and streamlined by the ice sheet. Drumlins most often take the shape of the bowl of an inverted spoon and thus are "cigar shaped" or elliptical. The thickness of the till comprising the drumlin hill is probably at least 15 feet thick but may be as thick as 50 feet or more in some places.

Another type of glacially deposited sediment which overlies till and/or bedrock within the Wiedel Property is ice contact stratified drift. This deposit covers a small area, just under an acre, in the southern portion of Section I. The term "stratified drift" refers to the typically well layered sediments that were deposited by the action of glacial meltwater streams. "Ice contact" means the sediments were deposited on, under, or adjacent to wasting blocks of glacier ice. Deposition of meltwater carried sediments in tunnels or fractures in the ice resulted in the formation of moderate to steep sided ridges after the ice disappeared. An example of such a ridge, which are known as eskers, is found in the southern portion of Section I. The esker is long and narrowly shaped and is composed largely of coarse sand and gravel. Eskers are a remarkable glacial feature and are comparatively rare in the state. Since this section of the Wiedel Property is proposed as open space, the esker could be used for educational purposes.

All three sections of the Wiedel Property include at least some areas of

Figure 2
SURFICIAL GEOLOGIC MAP



Scale 1"=1000'

swamp-deposits, which overlie the till or bedrock. These deposits consist of sand, silt and clay mixed with organic matter. The swamp deposits, which are delineated as Ridgebury, Leicester, and Whitman (Rn) and Carlisle muck (Ce) soils on the accompanying Soils Map (see Appendix) are generally about 5 feet thick, although they may be thicker in the central portions of the wetlands.

Geology and Development Potential

Tentative plans according to Mrs. Wiedel are to first develop Section III then Section II for residential homes and to leave Section I as a private residence and open space. Residential development on Section II and III will require the installation of on-site sewage disposal systems and individual water supplies since these public utilities are not available to the property.

As mentioned earlier, Section II of the property is characterized by (1) a very rough and rocky terrain, where bedrock is at or near the surface of the ground, particularly in the eastern half, (2) moderate to very steep slopes, (3) a generally thin blanket of cover soil (till) and (4) numerous scattered surface boulders.

These geologic conditions greatly hinder (limit) development potential, possibly precluding it in the eastern half of this section. This is due mainly to the constraints they pose with respect to access and the functioning and installation of on-site sewage disposal systems.

Based on visual inspection of areas in the western portion of Section II, it appears as though some residential development will be possible. These areas are delineated on the soils map as Charlton-Hollis soils. Limitations such as steep slopes and relatively shallow soils which predominate in the eastern half of the parcel appear to be less restrictive in the western. In order to determine whether or not the land in this area is suitable for subsurface sewage disposal, it will be necessary to conduct deep observation pits and percolation tests. This testing should be conducted by and/or witnessed by the local health department.

Section III, which is to be developed first, appears to have mostly good to moderate potential for residential development. From a geologic perspective, the limiting factors in this section are the compact nature of the till soils in the western half of the site and the moderate slopes throughout. The compact nature of till soils tends to impede the downward movement of water which results in a high ground water table. Such a condition affects the ability to provide adequate subsurface sewage disposal. However, with proper planning and engineered septic systems, it is possible to overcome these limitations. Septic systems installed on the soils delineated as Paxton soils on the soil map would probably require 1) the installation of curtain drains, which attempts to protect the leaching field portion of the septic system from ground water interference and 2) the placement of proper fill material to elevate the leaching system above the seasonally high ground water table.

IV. HYDROLOGY AND WATER RESOURCES

As mentioned earlier, West Redding Brook flows southerly through the wetlands in Section I of the Wiedel Property. Almost all the surface runoff from this section drains into West Redding Brook. A small piece of this

section does drain easterly, however, into an unnamed tributary east of Section I (see Figure 3).

Also, areas along the western fringe of Section III, as well as a small northern area of Section II (23 acres in size) drains into the West Redding Brook Watershed.

The remaining portions of Section III as well as most of Section II lies within the watershed of an unnamed tributary to the Saugatuck River. This unnamed watercourse drains an area of approximately 0.5 square miles or 320 acres. Surface water runoff from this portion of the Wiedel Property flows mainly by sheetflow and intermittent streams into the wetland area, south of Section II and east of Section III. The watercourse draining the wetland flows in a southward direction into Hawley Pond. The outlet stream from Hawley Pond continues to flow southward until it merges with the Saugatuck River. It should be noted that a small eastern piece of Section II drains into the watershed of Mountain Brook.

Development of Section II and III of the Wiedel Property may be expected to generate runoff volume increases. These increases in turn may cause peak flows in local stream(s) to increase to an extent based upon the percent of land developed within the watershed. Also, increased runoff could cause overland and stream channel erosion. These increases will arise from the conversion of permeable soils to impermeable surfaces (i.e., roofs, driveways, etc), and also, from the removal of vegetation.

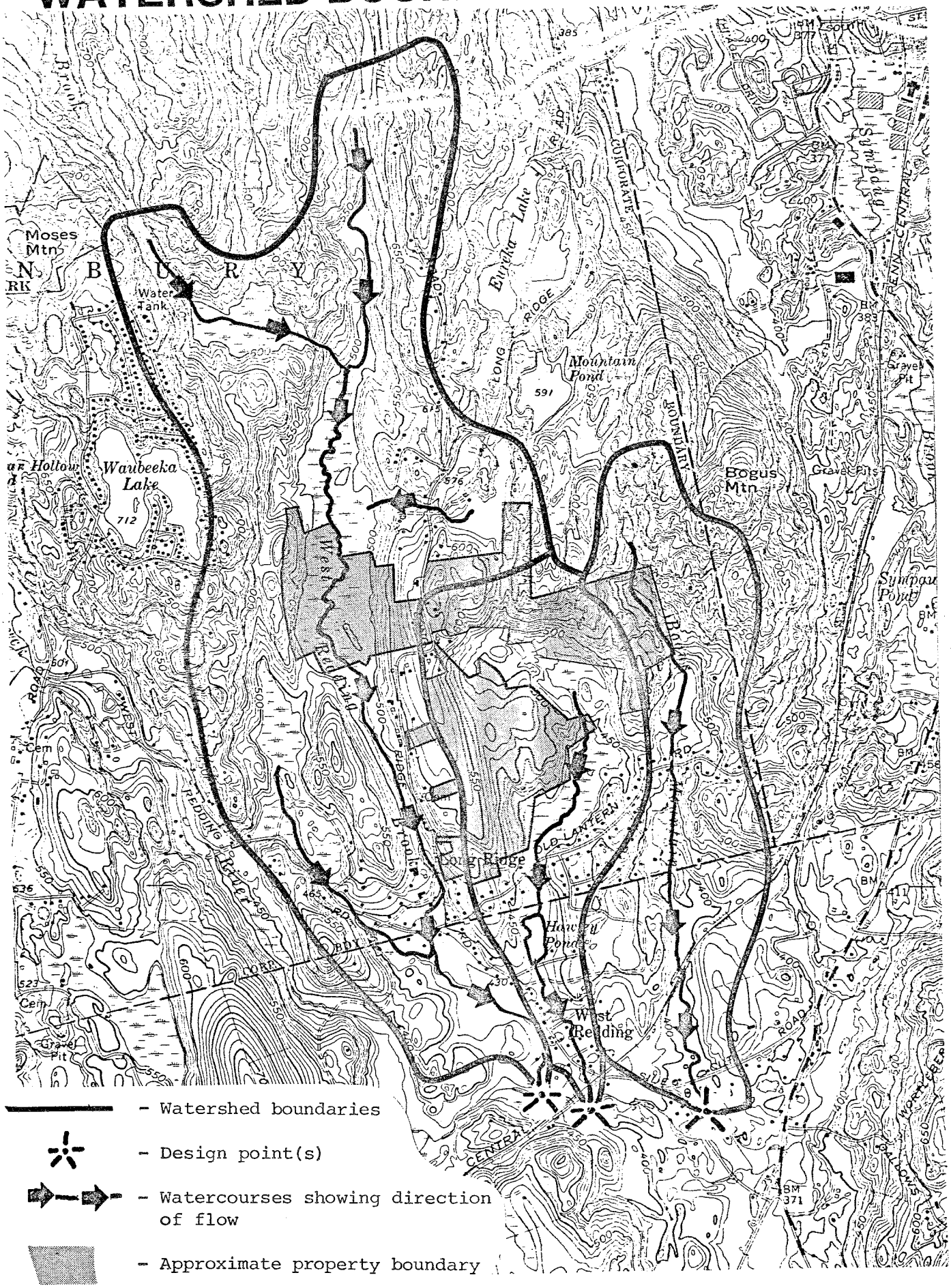
For this reason, it is strongly recommended that a detailed engineering study of the pre- and post development runoff from the areas be developed. Also, a comprehensive erosion and sediment control plan, which includes runoff control measures, should be developed for each stage of development.

On-site Water Supply

Unless a public water supply line was made available to the Wiedel Property, any residential development would have to be served by on-site wells. The only feasible source of groundwater would be the underlying bedrock aquifer.

It is difficult to predict the yield that will be withdrawn from the bedrock underlying the site since these yields depend upon many hydrologic and geologic factors. One of the important factors is the nature and distribution of fractures in the bedrock. Nevertheless, bedrock wells in the state are typically capable of supplying small but reliable yieldsof groundwater to individual wells. A statistical survey was made of 725 bedrock based wells in the Southwestern Coastal River basin to determine the relationship between maximum yield and amount of uncased saturated bedrock penetrated. Based on this survey, yields of at least 3 gallons per minute, which is considered adequate for most domestic uses, may be obtained from bedrock at most places in the basin (Source: Connecticut Resources Bulletin #17). In addition, 90% of the wells drilled through approximately 350 feet or less of uncased saturated bedrock produced or provided3 gallons per minute or more whereas approximately 29 percent of wells drilled through approximately 350 feet or less produced 10 gallons per minute or more.

Figure 3
WATERSHED BOUNDARY MAP



In reviewing four well completion reports for residential wells tapping bedrock along Long Ridge Road, it is reported that yields of 15 gallons per minute, 5 gpm, 7.5 gpm and 10 gpm were obtained from bedrock wells drilled to depths of 101 feet, 125 feet, 100 feet, and 160 feet, respectively. All three sections of the Wiedel Property front along the southern portions of Long Ridge Road, which runs from Mountainville Road to West Redding Road.

The natural quality of the groundwater should be good. Elevated iron and manganese as well as moderate hardness levels are possible in some cases, but do notappear to be a problem in this general vicinity of the Wiedel Property. There are filtration devices available to treat these constituents, if they reach objectionable levels. Some objectionable conditions often associated with elevated iron and manganese levels include (1) staining light colored laundered goods a brownish and/or blackish color (2) imparting a metallic taste to beverages (i.e., coffee, tea, etc.) made with the water and (3) staining plumbing fixtures rusty brown and/or black.

Groundwater with elevated hardness levels often retard the cleaning action of soaps and detergents. It also deposits a hard scale on the bottom of kettles, on heating coils and cooking utensils with a consequent waste of fuel.

Judicious care should be taken in the placement of on-site wells. They should not be placed directly downslope from septic systems, and wells on any given lot should be separated as much as practically possible from all sources of pollution (i.e., septic systems, fuel storage tanks, road drainage outlets, etc.).

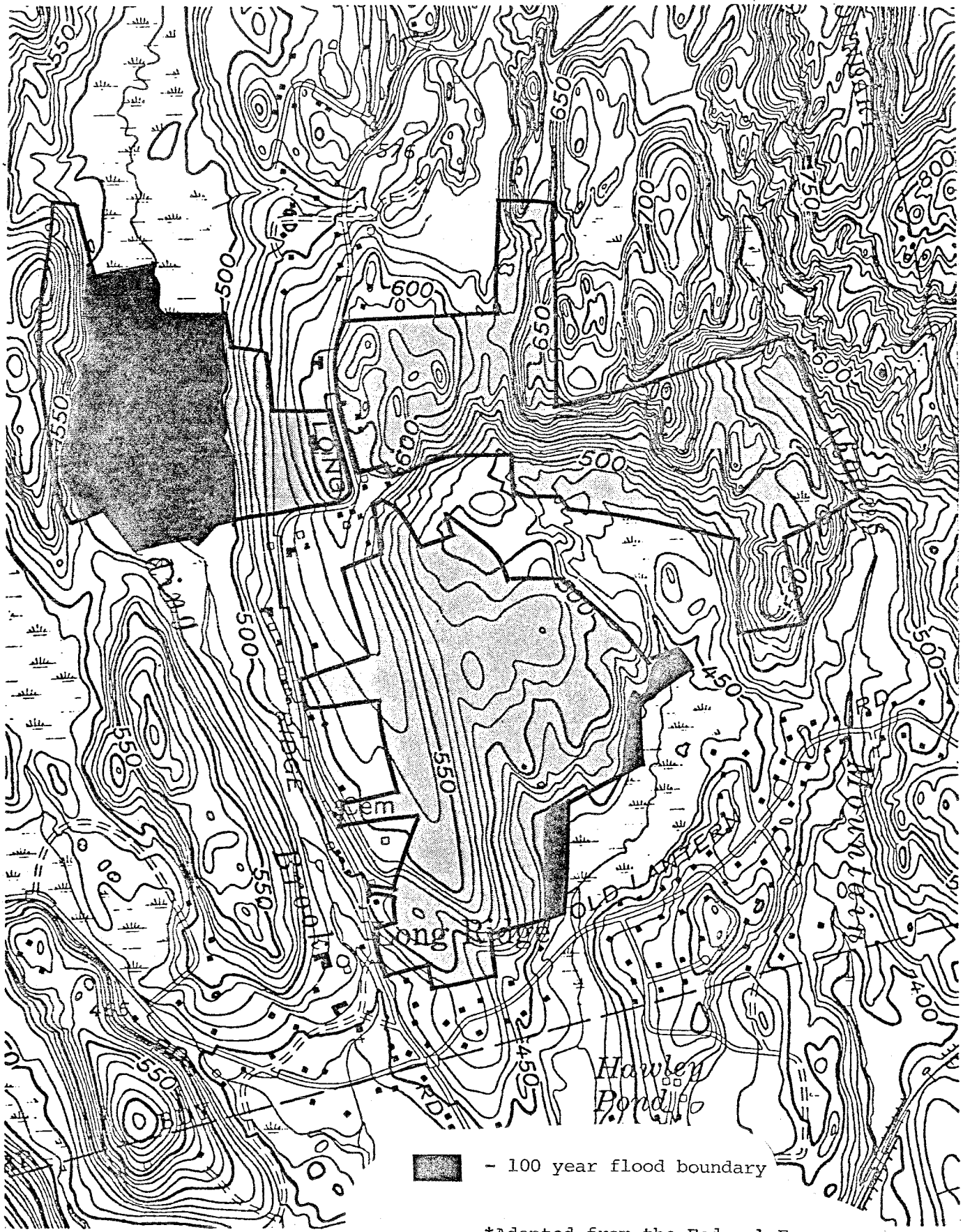
Flood Hazards

There is a Flood Boundary and Floodway Map for the City of Danbury prepared by the Federal Emergency Management Agency which identifies areas that are subject to flooding for both the 100 and 500 year storm. A "100 year flood" is a flood with a one percent chance of occuring in any given year while the "500 year flood" is a flood with one in 500 or .2% chance of occuring in any given year. As shown in Figure 4, which is adapted from the F.E.M.A. Map, the areas subject to flooding during the 100 year storm appear to lie along the watercourse which flows through the wetlands in the central portion of Section I and the unnamed watercourse flowing southeast of Section III. There are no additional areas indicated for the Wiedel Property which would be inundated during the 500 year storm.

It should be noted that there may be other low-lying swampy areas throughout the Wiedel Property, which, although not identified on the map as areas subject to flooding during the 100 or 500 year storm, may be inundated during periods of heavy rainfall.

Wetlands, in general, possess an important hydrologic role in regulating the streamflow of watercourses connected to them. During periods of heavy precipitation and/or during spring thaws, the swamp stores surface water, temporarily releasing it more slowly than would otherwise be the case. As a result, the peak flows in outlet streams are reduced. Other important hydrologic functions of wetlands include protecting the water quality of the surface water by various natural biochemical processes that occur in wetlands as well as to trap sediments from upstream areas. For these reasons, the wetland areas on the site should be disturbed as little as possible with residential development of the property.

Figure 4
FLOOD HAZARD MAP



Scale 1"=1000'

*Adapted from the Federal Emergency Management Agency Flood Insurance Rate Map

V. SOILS

A detailed soils mapping of the Wiedel Property is presented in the Appendix of this report. The Appendix also contains a soils limitation chart which summarizes the suitability of the various soils for alternate land uses. The Appendix also contains a series of descriptive sheets on each of the soils which have been mapped at the Wiedel Property. These sheets describe in detail the on-site soil characteristics and their suitability for various land uses.

Natural Soil Groups

Basically, the soils on this site can be classified into five natural soil groups (see Figure 5). A brief description of each of these soil groups follows.

GROUP A - Terrace soils over sand and gravels (excluding the poorly and very poorly drained terrace soils).

These soils occur above flood plains in river and stream valleys. They are underlain by water - deposited beds of sand and gravel. In most places a few inches to three feet of loamy or fine sandy material cover the older, coarser water deposits. Nearly all sources of sand and gravel, and many of the important sources of water supply, are in areas associated with the terrace soils. On the Wiedel Property, the soil is limited to two small areas in the western portion of the site.

Although terrace soils are generally suitable for community development (i.e., earthmoving is readily done and soil conditions are favorable for buildings, parking lots, and landscaping), care must be taken not to pollute groundwater resources. Rapid percolation rates are characteristic of these sandy and gravelly soils and this can lead to inadequately renovated effluent or leachate reaching the underlying water table. Obviously in areas where these soils are recharging a public water supply well, great care is needed in the siting and design of any land use which may represent a threat to groundwater quality.

GROUP B - Upland soils over friable to firm (permeable) glacial till - excluding the poorly and very poorly drained upland soils).

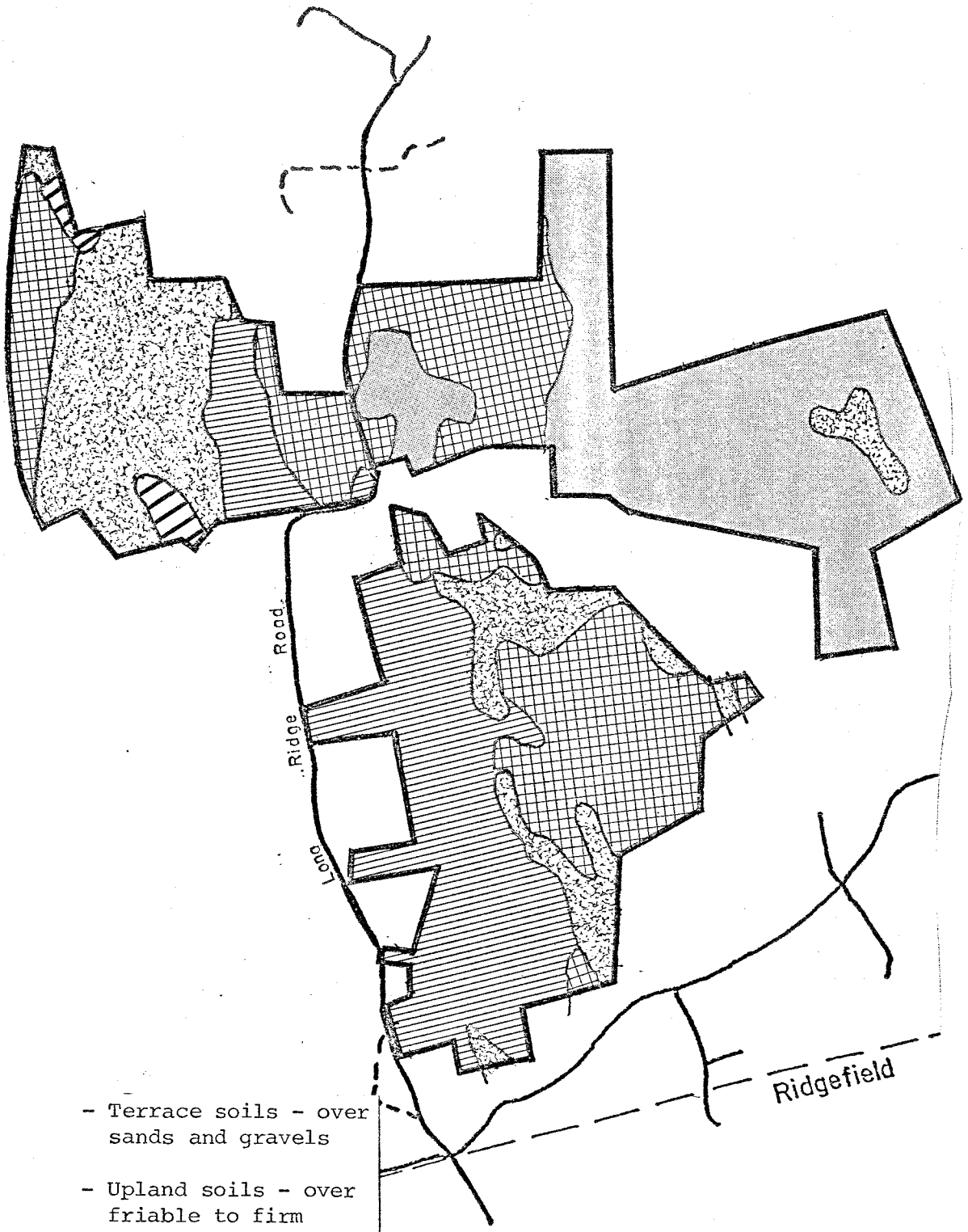
The soils in this group as well as those in the following two groups (Group C and D) are all upland soils that were formed in areas of glacial till. Glacial till is the predominant unconsolidated overburden material (surficial geologic material) found in Connecticut today.

The soils in this group are formed in the thicker, unconsolidated deposits of till usually occuring on hillsides. They generally have good potential for community development except where steep slopes or stoniness present problems.

GROUP C - Upland soils over compact (non-permeable) glacial till (hardpan) - (excluding the poorly and very poorly drained compact till soils).

These upland soils occur mostly on the tops and slopes of drumlins (hills

Figure 5
GENERAL SOILS MAP



A. - Terrace soils - over sands and gravels

B. - Upland soils - over friable to firm glacial till

C. - Upland soils - over compact glacial till (hardpan)

D. - Rocky and shallow to bedrock soils

E. - Inland wetland soils

that were smoothed and elongated north to south by the movement of glaciers). The soils are underlain by compact glacial till and have a hardpan or fragipan 16 to 36 inches below the soil surface. Permeability above the hardpan is moderate but the pan drastically reduces percolation. During wet seasons, excess water in the soil moves downslope above the hardpan. This characteristic presents formidable problems in the design and construction of septic system absorption fields that function satisfactorily. Septic systems may be flooded by a seasonally high or perched water table and effluent may "break out" down slope of the septic system leaching fields. Careful design and engineering is also required to prevent groundwater seepage into basements and frost heaving of roads and driveways. Steep slopes and stoniness may also present problems in certain areas.

GROUP D - Upland soils - rocky and shallow to bedrock.

The soils in this group occur mostly in the rougher areas of the uplands. They may occupy narrow ridge tops but most often are on steep side slopes. They are characterized by stoniness and shallow depths to the underlying bedrock. In most places, hard rock is less than 20 inches below the soil surface. These areas provide contrast in the landscape and scenic overlooks, but in most cases pose severe limitations for urban development. Occasionally pockets of deeper soils can be found within this soil group which are more suitable for development purposes (e.g., an individual home site).

GROUP E - Inland Wetland Soils.

This group includes all soils classified as inland wetlands according to P.A. 155 as amended, Connecticut's Inland Wetlands and Water Courses Act. These soils typically have a water table within 6 inches of the soil surface during the wettest part of the year. The high water table often persists into late spring and may reoccur after prolonged or heavy summer rains. Some of these soils are very poorly drained and have water ponded on the surface for significant periods in winter and spring. By definition, well drained and moderately well drained flood plain soils also qualify as inland wetland soils in Connecticut.

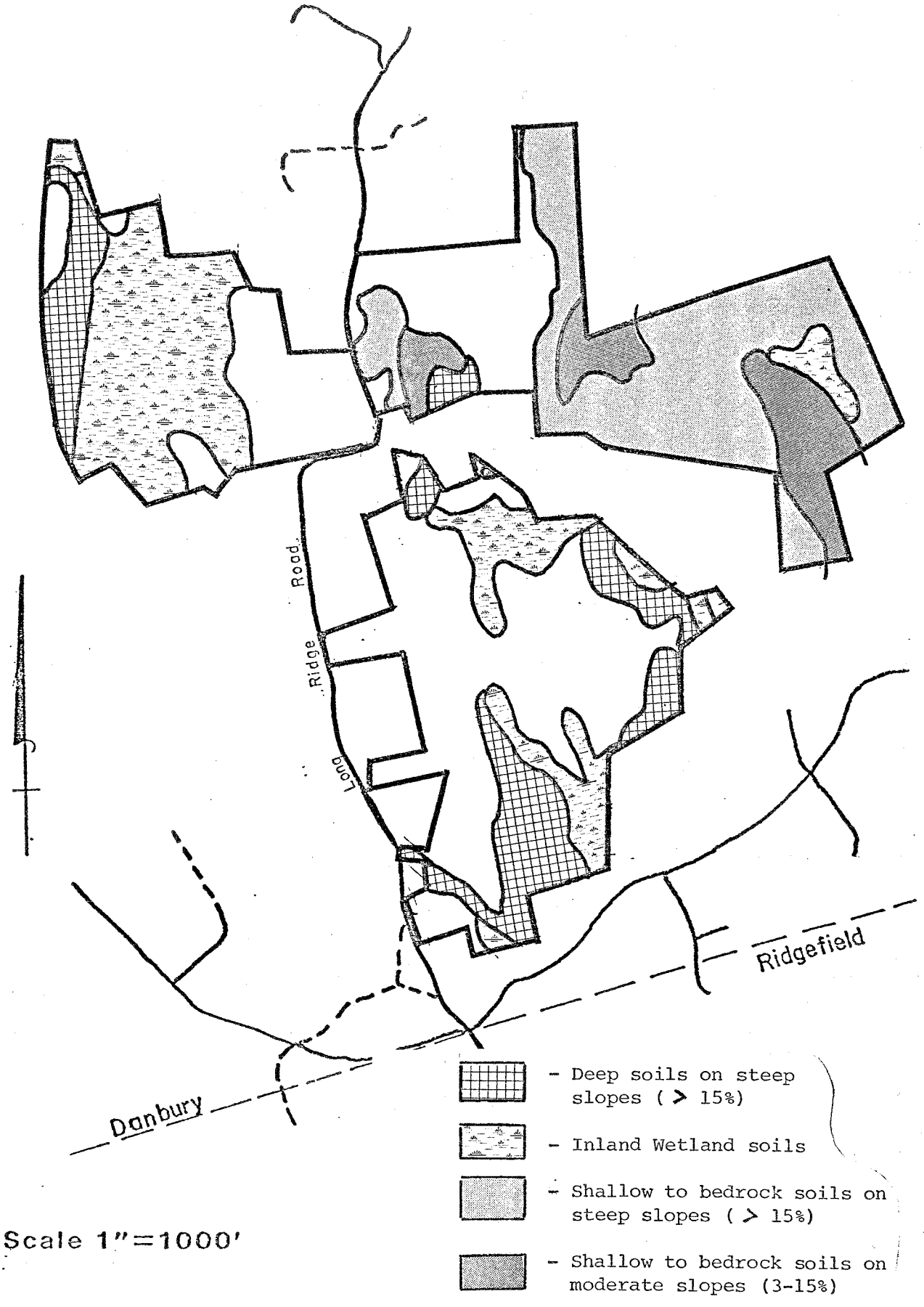
Inland wetland soils present severe limitations for most residential uses. Development is very costly and requires complete alteration of the resource base. Intensive drainage and land fill measures are required to overcome wetness. Inland wetlands and watercourses are regulated in the State of Connecticut because they provide valuable functions and are critical, fragile, and irreplaceable natural resources. They are also an important part of the larger hydrologic system. Disturbance of these areas should be kept to a minimum.

Critical Soil Areas

As shown in Figure 6, approximately half of the Wiedel Property consists of "critical" soils. These soils pose severe limitations for residential development and include:

- inland wetland soils
- areas characterized by steep slopes (greater than 15%)
- shallow to bedrock soils (hard rock is within 20 inches of the soil surface).

Figure 6
CRITICAL NATURAL FEATURES



These critical soil areas are the least suitable areas for development on the site. It should be recognized however that other soils on the property may also present limitations for development (e.g., the hardpan soils may also present limitations, albeit not as severe as the "critical" soils). The Appendix of this report provides more detail on the limiting factors of the various soils.

While limited use of the critical soil areas may be feasible (recreational trails, occassional homesites on carefully selected sites), these areas clearly do not lend themselves to any type of intensive development.

On-site Soils and Development Potential

Section III

As shown in Figure 7, this section has a core area of approximately one hundred and fifteen acres of easily developed soils. The core area is readily accessible, and has no significant soil related limitations given the present zoning or larger lot sizes. Should the need arise for a communal subsurface septic system site, the Charlton soils would be the preferred location.

Bordering the core area are some seventy three acres of similar soils on steeper slopes and several regulated wetland areas. These soils have less utility, but are important for accessory and enhancement functions such as rounding out required lot areas, providing open space, ponds, and to a limited extent, routes for access.

Section II

Only thirty of the approximately one hundred fourteen acres have soils that can readily accommodate development, and more importantly, may be accessible from the limited frontage on Long Ridge Road. Extremely steep and rocky terrain severely limit the use of most of this section.

One consideration may be to contribute a large portion of this section to the local land trust to buffer the gain realized from the development of the south section. It could also provide the open space requirement of the entire development, and as such, link Bethel open space lands, Danbury land trust lands, and Bridgeport Hydraulic Company lands to form an open space corridor from Bethel to West Redding.

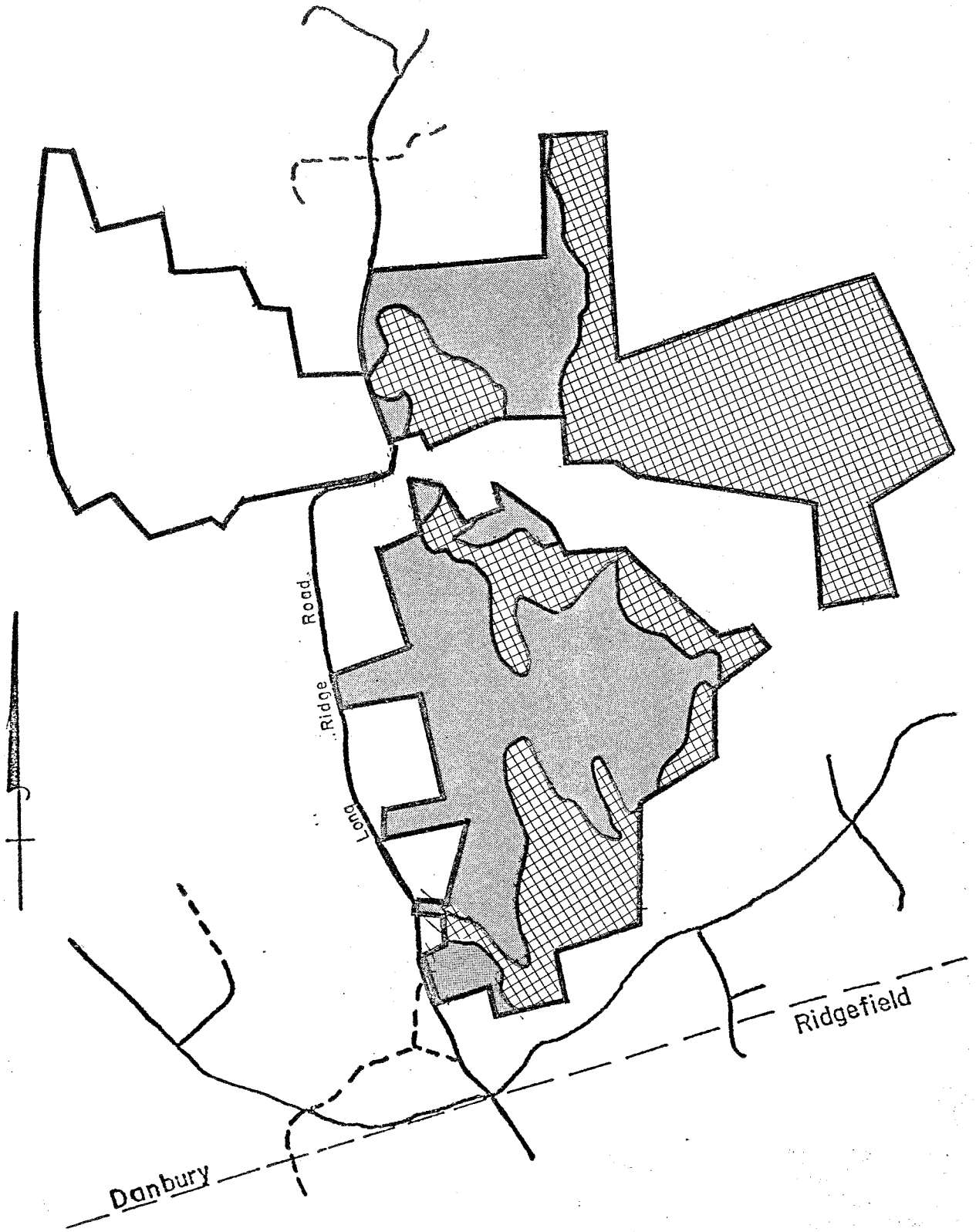
Erosion and Sediment Control

The reasonable development of Sections II and III into two acre (or larger) lots, will not create a serious erosion problem. The north section poses no problem at all, and except for short sections of access to the crest of the ridge from Long Ridge Road, roads into the south block should not require large fill or cut sections.

An erosion and sediment control plan should nonetheless be prepared with project implementation. The plan should consist of a carefully orchestrated sequence of development and simple erosion control practices.

Erosion and sediment control practices are described in the "Erosion and Sediment Control Handbook - Connecticut"(USDA Soil Conservation Service, 1976).

Figure 7
DEVELOPABILITY BASED ON SOIL TYPES



Scale 1"=1000'

Readily Developable

Accessory Land

Additional assistance in the preparation and review of erosion and sediment control plans is available from the Fairfield County Conservation District (743-5453).

The wetlands on sections II and III are the headwaters of an unnamed system that is tributary to the Saugatuck River. Their contribution to this potable water supply requires special consideration for protecting their integrity. Wide, natural buffers should be planned paralleling their boundaries. Deed restrictions may be appropriate for additional protection.

VI. ON-SITE SEWAGE DISPOSAL

Based upon review of all the technical information available and the site inspection made on October 19, 1983, development of the southerly parcel (Section III) would be considered most feasible due to the soils, topography and accessibility to the existing town road system. This parcel lies within the public water supply watershed of the Bridgeport Hydraulic Company and requires minimum 2 acre lot size under existing Danbury zoning regulations. Development of the open field identified in the Paxton Soil Series and the woodlands to the east identified as the Charlton Hollis Series could reasonably accommodate single family homes in accordance with minimum zoning requirements. There would be no unusual site development problems associated with construction of sewage and water supply systems in either of these soil types. Use of fill material to elevate leaching systems above compact soil layers and installation of ground water intercepting drains may be required depending upon site specific soil observations. With respect to on-site sewage, there would be no particular advantage to cluster zoning on either of these soil types. Each dwelling unit would have to be provided with sewage application areas at least 150 to 200 feet parallel to existing contours.

Development of this southerly parcel could be achieved by typical subdivision planning which would require construction of public roads and obviously increase the overall density in order to recover engineering and construction costs. Development of the open field area only could possibly be achieved through individual driveway accesses at the three locations which adjoin Long Ridge Road. With either case, protection of the public water supply watershed in accordance with minimum Public Health Code requirements must be insured to limit adverse effects upon ground and surface water quality. Sewage disposal systems proposed in all the Paxton Soil Series and some of the Charlton Series will require careful design by registered professional engineers.

As discussed in the Soils portions of this report, Section II has a limited area ($\pm$ 30 acres) in the western portion of the section which is suitable for residential construction. Development costs outside this area would be extremely high.

In summary, Section III appears most suited for residential development. Design of small cluster developments (3 to 4 houses) may be feasible provided sufficient area for construction of individual leaching systems is available. Collection of sewage from individual homes for disposal in a single large sewage disposal system would not be advisable on this property. It should be noted that the City of Danbury, through its local regulations, has a minimum setback of 100 feet from any sewage disposal system to a watercourse on public water supply watershed land. This will have an effect of requiring larger lots adjacent to watercourses.

VII. FORESTRY

The Wiedel Property totals approximately 314 acres. According to aerial photo interpretation, approximately 90 acres are non-forested, being either residential, field, or open swamp. The remaining 224 acres may be divided into 8 differing vegetative types, a wooded swamp, and a large (70 acres) inaccessible or inoperable area. Each of these types is discussed below; the location of the various types is shown on the accompanying forest stand map (see Figure 8).

Type 1. Mixed Hardwoods, 5 acres. This area is fully stocked with sapling to pole-sized sugar maple. Infrequently, ash, red maple, and some cherry can be found. Due to the dense overstory, the understory is spare at best. Some residual barberry and multiflora rose can be found. The ground cover here includes grasses, poison ivy, virginia creeper, and some sugar maple seedlings.

Management activity here may be premature, due to the young nature of the stand. Activity at this time should be limited to selection of 100 to 500 "crop" trees per acre (average spacing of 15 to 20 feet between the best quality stems in the stand). Poorer quality trees immediately surrounding these crop trees and physically interfering with them should be removed.

Type 2. Mixed Hardwoods, 5 acres. This area is well-stocked with sugar maple of similar size and quality as in Type 1. A large portion of this stand contains the remnants of a red pine plantation, now killed by the red pine scale. Understory species, where an understory is identifiable, include spicebush, multiflora rose, and barberry. Ground cover species are basically some grasses, virginia creeper, and a heavy population of poison ivy.

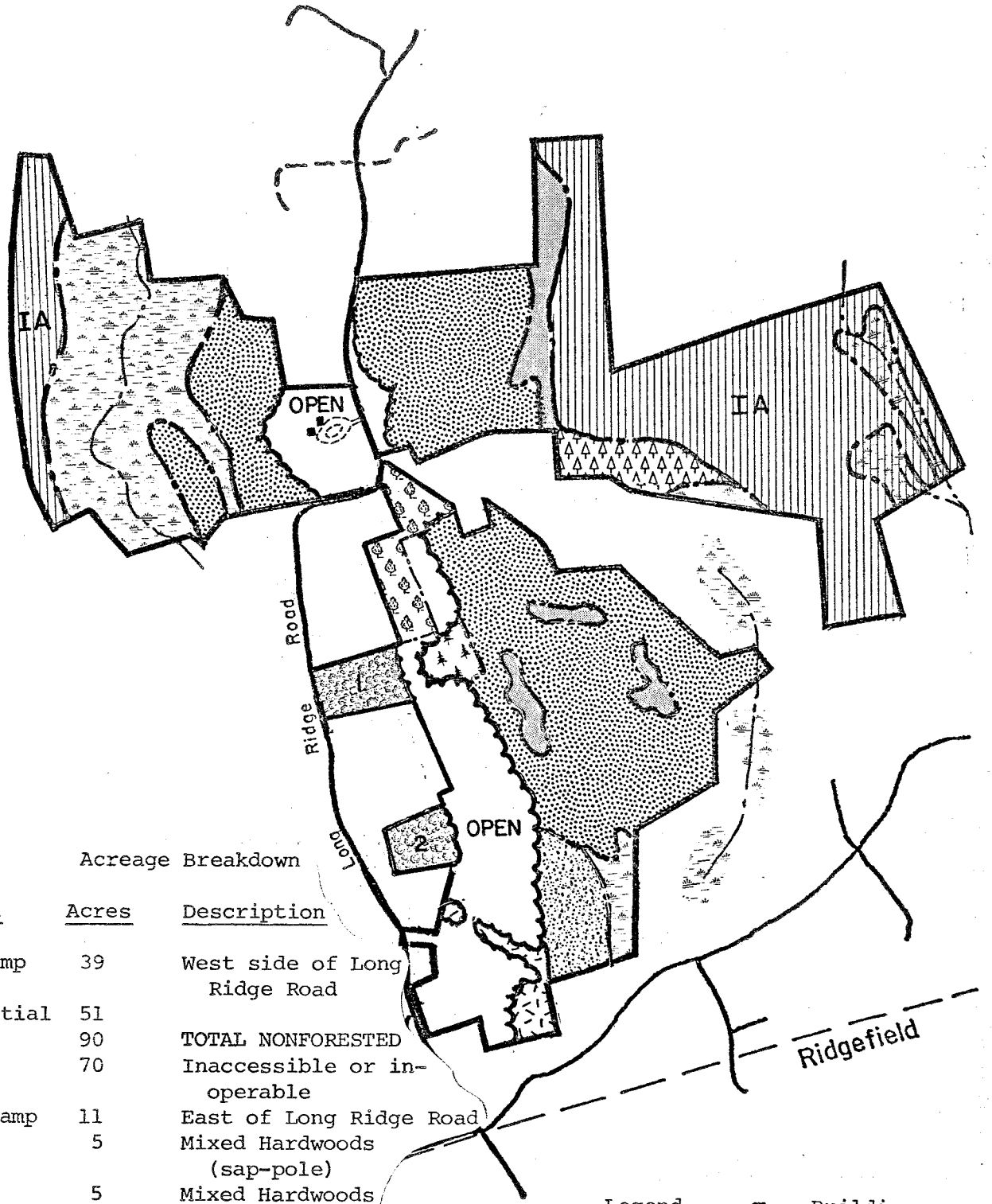
Management activity is probably premature here due to the young nature of the stand. An effort could be made to remove the red pine mortality and blowdowns in order to minimize the fuel available in the event of a forest fire and to enhance the aesthetic appeal of the area.

Type 3. Old Field, 4 acres. This area is occupied by a dense cover of pioneer species of sapling size. Species found here include red cedar, dogwood, grey birch, cherry, red oak, hickory, red maple, sugar maple, sassafras, ash, and black birch. There appears to be no identifiable understory and, due to dense crown cover, little ground cover other than poison ivy, virginia creeper, and some grasses. That portion of the area located at the extreme southern end of the property does contain a fair proportion of pole to small sawtimber-sized red maple, red oak, and ash. This portion appears to bear characteristics of an old field origin, however, thus making it appropriate to include it with the rest of this type.

No management is suggested. A re-examination 10 years hence may be appropriate.

Type 4. Northern Hardwoods, 8 acres. This area is fully stocked with pole-sized sugar maple, ash, and black birch. Yellow poplar and some hickory can be found as well. Due to a dense overstory cover, the understory is sparse. Scattered patches of barberry or spicebush can be found. Ground cover is sparse as well.

Figure 8
FOREST STAND MAP



Acreage Breakdown

Stand	Acres	Description
Open Swamp	39	West side of Long Ridge Road
Open & Residential	51	
	90	TOTAL NONFORESTED
IA	70	Inaccessible or inoperable
Wooded Swamp	11	East of Long Ridge Road
1.	5	Mixed Hardwoods (sap-pole)
2.	5	Mixed Hardwoods (sap-pole)
3.	4	Old Field
4.	8	Northern Hardwoods (sap-pole)
5.	102	Mixed Hardwoods (pole-sawlog)
6.	10	Softwoods
7.	3	Cedar Lot
8.	6	Hemlock/Hardwoods
	224	TOTAL FORESTED

Legend - Building, Stream, Swamp, Forest Edge, Orchard

Management here would be similar to that in Type 1, with material removed probably usable as firewood.

Type 5. Mixed Hardwoods, 102 acres. This area contains various stages of development from its origin as lightly wooded pasture some 40 to 50 years ago. The overstory is generally composed of pole-sized red oak, white oak, hickory, dogwood, red maple, sugar maple, black birch, and grey birch which fully occupy the area. Scattered red cedar can be found in more open areas. Throughout the area, large field-growth "wolf" trees of varying species can be found. The understory is composed of shrub species such as multiflora rose, barberry, blueberry, and spicebush which is found in the wetter areas. Ground cover species include grasses, poison ivy, virginia creeper, ground pine (in patches), raspberry, and greenbriar. Characteristic growth patterns here are tied to old field layout. Older stems occur near the edges of these fields with gradations in age decreasing to the youngest stems near the center of the old fields. The result is a "patchy" appearance.

Management here would range from doing nothing in the most open, youngest areas to crop tree release as in Types 1 and 4 in the more dense areas.

Type 6. Softwoods, 10 acres. These 4 small parcels are composed of primarily pole-sized red cedar and hemlock. Occasionally, larger hemlocks can be found. Interspersed can be found smaller mixed hardwoods, with an understory of shrub species including multiflora rose, dogwood, and viburnum. Ground cover species include poison ivy, grasses, and lowbush blueberry.

Management here should be aimed at retention of the softwoods. Those hardwoods directly competing with softwoods should be removed.

Type 7. Cedar Lot, 3 acres. This area is well-stocked with pole to small-sawlog sized hemlocks mixed with red oak, sugar maple, ash, yellow poplar, and red maple of good quality. The area is characterized by fertile, moist soils and has probably the best growth potential on the property. Unfortunately, access is poor and operability is limited by seasonal wetness. The understory here is absent in heavy pockets of hemlock due to shading. In hardwood areas, spicebush may be found along with viburnum. Elderberry was found along the swamp edge. Ground cover ranges from nonexistent to grasses, mosses, Christmas fern, skunk cabbage, jewel weed, and poison ivy.

Management here should be aimed at retaining the best quality hardwoods and hemlocks. The poorest quality 1/4 to 1/3 of the stems here should be removed - if access is possible.

IA. Inaccessible or inoperable areas, 70 acres. This area is characterized by excessively steep slopes rendering access or operation of vehicles impossible. The area east of Long Ridge Road is basically a hemlock stand with some poorer quality hardwoods interspersed and a fair amount of mountain laurel on a poor growing site with shallow, droughty soils. The area west of Long Ridge Road is similar to the older sections of Type 5, being mixed hardwoods of pole to small sawlog size. Understory and ground cover vegetation vary greatly, due to variations in aspect, soil depth, soil type, nutrient availability, and moisture conditions. These variations result in many microclimates with differing site qualities. It is strongly recommended by the Team's forester that these sensitive areas remain unmanaged.

Wooded Swamp, 11 acres. These areas located east of Long Ridge Road, (one area at the southeast end of the property and two areas in the northeast portion of the property), are characteristically wetland in nature. A high water table on wetland soils render these areas inoperable for wheeled vehicles. The overstory is generally pole to small sawlog-sized red maple with ash, yellow poplar, and sugar maple found in the drier margins. Understory species found include spicebush, sweet pepperbush, and viburnum. Ground cover species include jewel weed, skunk cabbage, ferns, and grasses. Due to the sensitive nature of the soils here, their inability to support wheeled vehicles, and the marginal accessibility of some of the areas, no management activity is recommended. As with the open swamp west of Long Ridge Road, the wooded swamp areas should be disturbed as little as possible to protect their hydrologic and biologic functions.

Modification of Forest Management Recommendations to Enhance Development Potential - As the possibility of development of the property for residential housing exists, some minor modification of the above recommendations may be in order.

Recent research studies have shown that a treed houselot will sell for 12% more than one without trees. Therefore, clearing for construction should be kept to a minimum and residual trees should be protected from physical injury during the construction process. In addition, soil compaction due to heavy machinery travel should be avoided whereever possible beneath trees which are to be preserved.

Throughout this section of the report, recommendations for thinnings and crop tree release have been made. These should be carried out particularly if the proposed residential development is implemented. Thinning and release now will provide an opportunity for the best trees (i.e., in this case the most aesthetically appealing) to develop high vigor and growth rates and improve their resistance to windthrow and the possible impacts from nearby construction.

Finally, the numerous "wolf" trees found on the property can provide invaluable aesthetic appeal in a residential setting. Efforts should be made to remove all competition affecting the healthier wolf trees. These trees should then be given a good sanitation pruning to remove dead wood and sources of rot or disease.

VIII. WILDLIFE

The "Wiedel Property" is made up of three major wildlife habitat types. These are mixed hardwood/softwood forest, open land, and wetland. The location of these types is evident in Figure 8.

Mixed Hardwood/Softwood Forest

This habitat type is predominantly a maple site with a mixture of beech, oak, ash, hickory, birch, and tulip. Softwoods are comprised of several small stands of hemlock and cedar along with being scattered throughout the hardwood type. Understory vegetation consists of blueberry, sassafras, barberry, sumac, and viburnum.

Wildlife observed included deer, grouse, and chickadees. Other species typically inhabiting such areas include squirrels, fox, raccoons, opossums, skunks, and numerous non-game species.

Open Land

This habitat type consists of several (approximately 8) fields totalling approximately 40 acres. The fields are divided by stone walls and forest borders. The fields themselves are mostly grass with some clover and scattered dogwood, cedar and maples occurring in several fields. Some pastures contain old apple trees. Present use is limited to sheep grazing.

Wildlife observed were deer, woodchuck, bluebirds, and meadowlarks. Other species typically utilizing such areas include turkey, grouse, fox, skunks, raccoon, raptors, and numerous songbirds.

Wetland

This habitat type consists of one area located west of the Wiedel residence. There is a small perennial stream traversing north-south through the parcel. In the recent past, beaver have dammed up the stream creating a marsh which was utilized by a wide variety of wildlife. Presently beaver are not inhabiting the site and the marsh has subsided to merely a mucky opening with dead timber and herbaceous vegetation.

Wildlife observed were flickers, frogs, and a rabbit. Species typically utilizing such sites include deer, raccoon, woodcock, skunk, amphibians and reptiles, and numerous birds.

Discussion

If the site is developed as planned there will be an immediate negative impact on wildlife. The primary impact will be a direct loss of habitat due to roads, buildings, driveways, and walkways. Another impact would be a change in habitat where forest and fields are cleared for lawns. A third impact would be the increased human presence, vehicular traffic, and number of roaming cats and dogs. This will drive the less tolerant wildlife from the site, even where it has not been physically changed.

A number of measures can be implemented to minimize the adverse impacts of the project on wildlife. When developing the road and walkway network, every effort should be taken to minimize erosion. If roads traverse wetlands and culverts are needed, they should be built with devices to discourage beavers. Subdivision requiring larger parcels (5 acres instead of 2 acres) would reduce negative impacts on wildlife as would a cluster type development where large blocks of open space are preserved.

To actively encourage wildlife at the site, consideration should be given to the following:

1. Leave snag/den trees throughout the forest area (5-7/acre) for cavity nesting wildlife.

2. Exceptionally tall trees are utilized by nesting raptors and should be encouraged.

3. Mast trees (oak, hickory, beech) are food sources for a large variety of wildlife and should be encouraged.

4. Trees with vines (produce berries) should be encouraged.

5. Maintain the softwood (hemlock/cedar) component, which is valuable winter cover.

6. Leave buffer strips (50 to 100 feet) of natural vegetation along wetlands to help filter and trap silt and sediments which might otherwise reach the wetland.

7. Placement of bluebird boxes along edges of open fields.

8. Relocation of a beaver family to marsh area west of Wiedel residence (July 1 through September 30). This should benefit numerous wildlife species including waterfowl, shorebirds, otter, mink, raccoon, and kingfishers.

9. Placement and/or maintenance of wood duck boxes in marsh.

10. Where apple trees exist, clearing of competitive vegetation should be conducted to release these high value species. They should also be pruned and fertilized.

11. When open fields are developed, the stone walls and forest borders which divide individual fields should be maintained. Also, the scattered dogwood, cedar, and maples should be left.

12. Fields or remaining portions not developed should be mowed every three to five years.

If any further wildlife related assistance is required, the City of Danbury or the Wiedels should feel free to contact a wildlife biologist at the DEP Western District office (485-0226).

IX. CULTURAL RESOURCES

The City of Danbury and its outlying regions have experienced significant residential, commercial, and industrial development since the mid-19th century. This process of urbanization, some of which is quite recent, is reflected by a long and continuing history of landscape disturbance; many archaeological sites have been lost. However there are some large parcels where there has been little or no historic or modern development and these localities could contain important and preserved archaeological sites.

The Wiedel Property, situated along the southern reaches of Long Ridge Road, escaped modern development and so has remained intact when compared to regions further to the north and east. The historic urbanization of Danbury, depicted on an 1875 map (View of Danbury, Connecticut by Fowler and Bailey) did not extend beyond Southern Boulevard. In the same way recent aerial photographs (series of 1934, 1965, 1980) indicate that Long Ridge Road was not a focus for residential construction until the last decade. Even then the Wiedel lands, on both sides of the road, were not extensively disturbed.

Although there are no recorded sites from the property, field studies and data from elsewhere suggest that archaeological resources could be present in some sections (see Figure 9). For example the landforms overlooking West Redding Brook (Locality A) and overlooking the wetlands north of Hawley Pond (Locality B) were probably used by prehistoric populations. Such uses were seasonal or even of a shorter duration and we would not expect to find large, intensively-occupied sites.

The fabric or patterning of such prehistoric archaeological resources would be exceedingly fragile since they would be located at or just beneath the contemporary ground surface. Disturbances such as the construction of houses or roads should be minimized in these sensitive zones if their archaeological potential is to be preserved.

During the late 18th and 19th centuries, several farmsteads were constructed along Long Ridge Road and other highways in southern Danbury. These farmsteads are represented today by standing architecture as well as by historic archaeological features including cellar holes, stone-lined wells and walls, and standing foundations for outbuildings (barns, sheds). Such resources reflect an early and continuing use of the region and are visible and fragile as well.

At least three zones of historic archaeological potential have been identified (Localities C-E in Figure 9) on the Wiedel property. Two of these are depicted on an 1867 map of the region (F. W. Beers' Atlas of New York and Vicinity) and represent 19th century agricultural use. The third zone (E) does not appear on this map and could represent earlier use prior to about 1860.

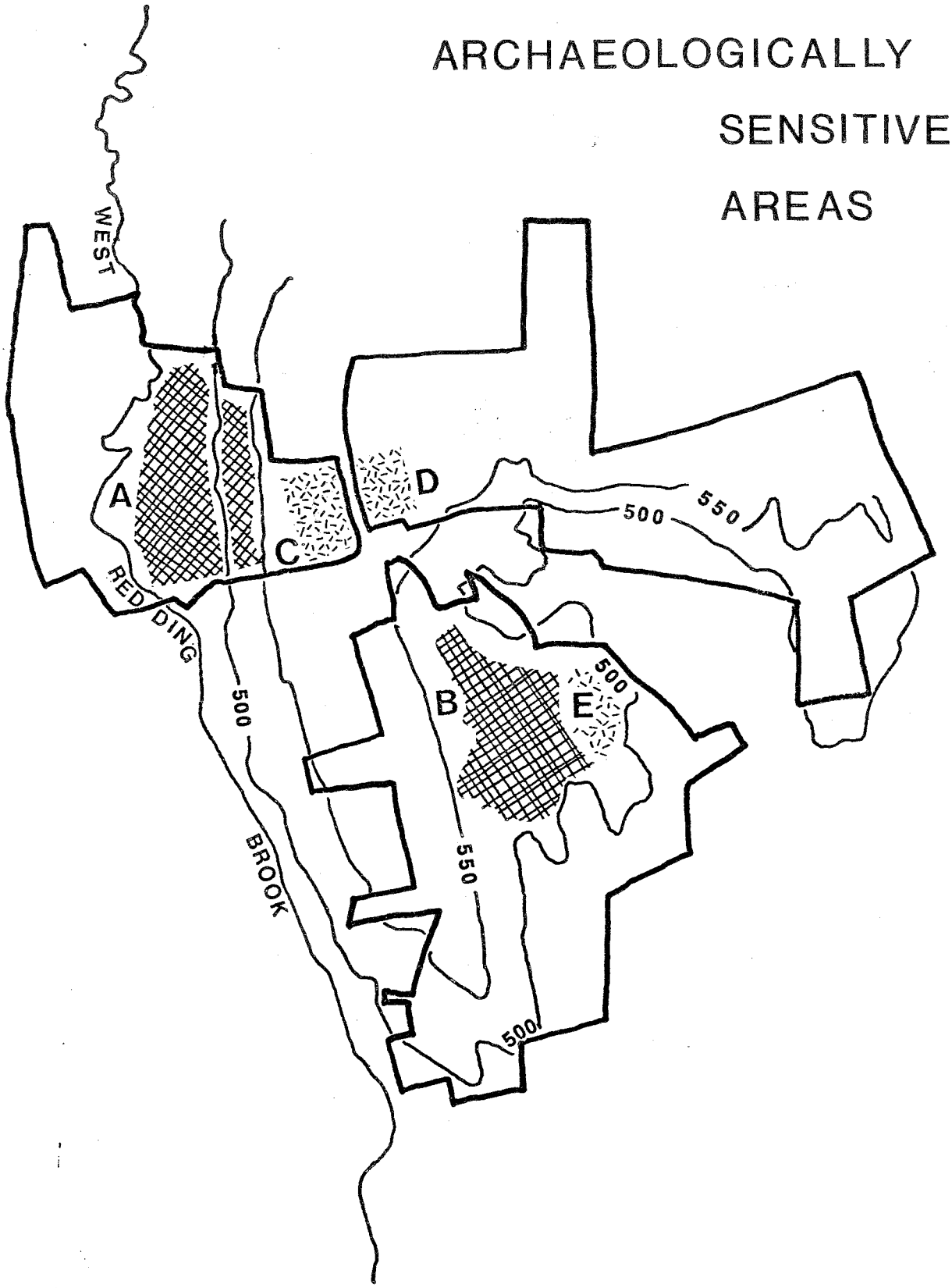
All of this information suggests that particular sections of the Wiedel Property are archaeologically sensitive. If these unknown prehistoric and known historic sites are to be preserved for future study, then specific zones should be protected from residential development. In the absence of field documentation to date, it is suggested that the landowners consider undertaking these steps:

1. Completion of an archaeological reconnaissance of those localities such as B and E which are most suitable for future development. These field studies would determine whether any prehistoric sites exist in either locality and would evaluate the potential research significance of any site which was identified. If there are no signs of archaeological records, then development could be undertaken without any loss.

2. Completion of an archaeological study of the historic sites in locality E. The purpose of these field studies would be to delimit the extent of these resources and to map associated features such as wells, walls, and cellar holes. Once available these maps would allow one to draw boundaries around the more significant spaces and free the remainder for development.

3. Donation of easements on any identified archaeological resources to a concerned local land trust. In this way we could be sure that a small part of Danbury's once extensive archaeological record would remain intact and available for future study.

Figure 9



note: see text for area descriptions

X. PLANNING CONSIDERATIONS

The Wiedel Property is located in an area of sparse single family development. The zoning in the area is RA-80 which permits one (1) single family residence for every eighty thousand (80,000) square foot of lot area. This zone also permits by special exception corporate development if the property is located within seven thousand five hundred (7,500) feet of a full interchange of a limited access expressway. When Route 7 is upgraded the Weidel Property could be eligible for corporate development but this possibility is remote and long-range.

Most of the single family development in the area is located directly on Long Ridge Road and developed on lots larger than eighty thousand (80,000) square feet. The only exception is a subdivision located directly south of the Wiedel Property on Old Lantern Road. This subdivision dates back to the mid-1960's and is subdivided into forty thousand (40,000) square foot lots which was consistent with the zoning designation at the time. Until 1971 the subdivision on Old Lantern Road and all the property off Long Ridge Road was zoned for forty thousand (40,000) square foot lots.

In 1971 the property off Long Ridge Road including the Wiedel Property was redesignated RA-80. This redesignation was due in part to the 1967 Plan of Development and sewer and water studies conducted in the late 1960's. The 1967 Plan of Development designated areas served by public water and sewer and areas planned for extension of sewer and water in the future. The 1967 Plan recommended that sewer or water not be extended beyond Southern Boulevard which is three miles north of the Wiedel site. The 1978 Plan of Development continued with these recommendations and again recommended that sewer and water not be extended. In addition the Plan indicated that the major portion of the vacant land remaining in the south section of the City has very rugged topography and poor soil conditions. Therefore, the most appropriate use of the land would be one (1) unit per two (2) acres which would allow the safe placement of on-site sewage disposal systems and wells.

The property is also located within an area of substantial wetlands (see Figure 6). Any disturbance of wetland area will require that an application be submitted to the City's Environmental Impact Commission for a ruling. Due to the topographic and wetland conditions on the property, the property could best be developed as a cluster development if the property owners want to achieve maximum density. A cluster subdivision would permit the same number of dwelling units allowed under the zoning ordinance but on smaller lots which would result in more acreage devoted to open space and avoidance of rugged topographic areas and wetlands. The Plan of Development encourages clustering under conditions present on the Wiedel site.

Access

Access to the site is available from either the north or the south but in either case access is limited. From the north access is available along Long Ridge Road which is a narrow sometimes windy road with steep grades that could present difficulties during inclement weather. Long Ridge Road between the Redding border and it's intersection with Brushy Hill Road has been identified as a major collector in the Danbury Plan of Development.

From the south, access to the site is available from Long Ridge Road and West Redding Road. Again, Long Ridge Road in this area and West Redding Road are narrow, windy roads that present access problems. Route 7, a major north-south highway is less than a mile and a half southwest of the site but the poor access makes this route less attractive. Route 7 is scheduled for a major upgrading to a four (4) lane limited access highway in the future. Recognizing this, the Danbury Plan of Development has recommended that a new corridor be created that will more directly link Long Ridge Road with a new interchange on Route 7 at Starrs Ridge Road. This new corridor is generally in the vicinity of the Wiedel Property. This new corridor has never been designated as a priority item and no capital funds have been allocated to it. In addition there are no other capital improvements scheduled in the area that would improve access to the site.

Development of the Wiedel Property at existing zoning utilizing the cluster provisions of the zoning regulations would yield a maximum of one hundred and thirty-eight (138) single family homes. Based on the Institute of Transportation Engineer's estimates development of the site at this density would generate one thousand three hundred and eighty (1,380) additional vehicles per day. The peak hour generation would be one hundred and thirty-eight (138) vehicles per hour which is a significant increase on Long Ridge Road. The poor access to the site and the potential of traffic generation of the large site dictates that the site is appropriately zoned at one (1) unit per eighty thousand (80,000) square feet.

Planning Summary

The stated intent of the owner's of the property is to develop the three hundred and fourteen (314) acres for single family use while preserving a large portion of the site for open space. This development would be compatible with surrounding land uses and would be consistent with City plans for future development of the area.

XI. DESIGN CONSIDERATIONS

A. Land Protection - As shown in Figure 7, the Wiedel Property may be divided into:

1) lands best suited for development, and
2) lands best protected or preserved.

These two categories are based on a review of soils, slopes, vegetation, access, area significance, and visual character.

With regard to property to be protected, such protection might be in the form of total preservation, estate size residential lots, farmland management, and/or recreational management. The protection of certain parts of the property is, in some instances, self-enforcing due to on-site development constraints while in other areas this may not be so. In the opinion of the ERT's Land Planner, a balanced mix of protection and development is potentially compatible with the limitations of the resource, the nature of the community, and the goals of the landowner. A case can be made for controlled sensitive development of various types with the use of easements or gifting of the lands of conservation value. The benefits to the landowner would include:

- increased value of development lands adjacent to protected properties;
- potential charitable deduction for certain gifts of land or easements;
- community support for well-planned limited development;
- increased sales potential on development land abutting protected lands.

B. Development Types

There are 3 potential development scenarios which appear feasible for those sections of the property found suitable for development.

1. 2 acre residential lots (as currently zoned)
2. large, estate-sized lots (as currently zoned)
3. cluster development

The pro's and con's of these options would include:

1. length of road required
2. visual impact
3. proper use of the property
4. impact on surrounding land values
5. development costs

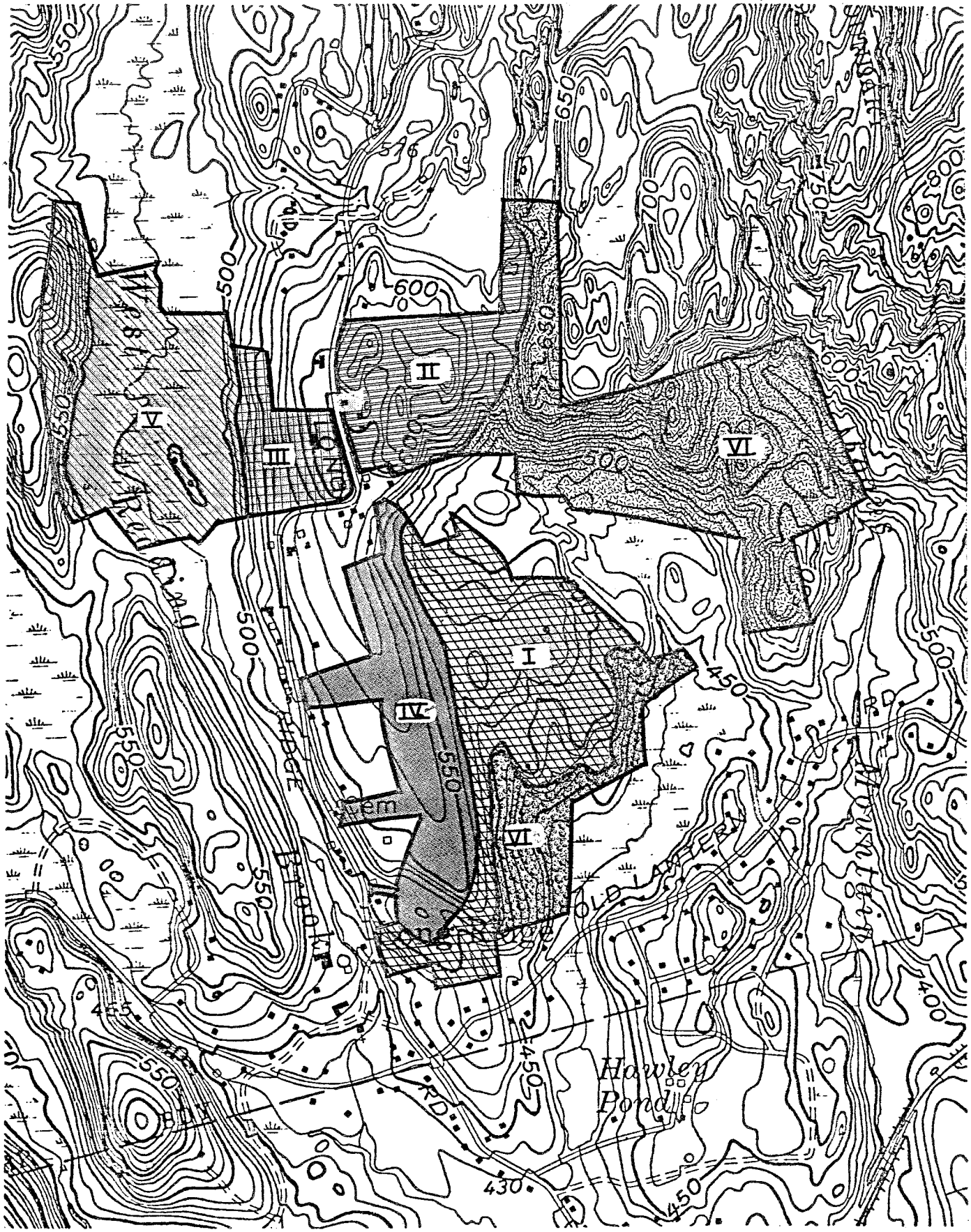
For the purposes of this report, the following general observations on the development options are offered for consideration.

1. In open areas, such as area IV (see Figure 10), higher densities tend to reduce per lot values
2. Frontage development on Long Ridge Road could have an adverse impact upon the area's scenic quality
3. Development on the back portions of the property must provide adequate financial return to warrant the cost of access plus site plan approvals
4. More intensive development can occur in wooded areas without overall negative impact if properly sited and buffered
5. There is value to the landowner and the community in adding stream-belt and wetlands to abutting protected watershed properties

C. Design Zones

For the purpose of this report, the Wiedel property may be divided into six distinct design zones (see Figure 10). The following comments and recommendations for each design zone are offered for consideration.

Figure 10
DESIGN ZONES



Scale 1"=1000'

* See text for discussion

• Zone #I (65 +/- acres) has good potential for development.

a. Vegetation cover buffers development.
b. Soils are well suited to development.
c. Access is good in several locations along Long Ridge Road.
d. High scenic quality and landscape features such as stone walls and large trees.
e. Increased value if surrounded by dedicated open space.

• Zone #II (32 +/- acres) is capable of sustaining limited residential development as controlled by soils and slopes

a. It appears that the site can sustain 5-8 estate size (3-5 acre) lots with property lines conforming to stone walls and hedgerows.
b. This portion of Long Ridge Road is less desirable for increased traffic than further south closer to the West Redding town line.
c. 3-5 acre lots will better blend with neighboring parcels and existing development.

• Zone #III (15 +/- acres) contains the main house, pool, yard area, gardens, etc. This should be retained or sold as a unit with restrictions against further subdivision.

• Zone #IV (35 +/- acres) contains prime and important farmland which should be protected. Soils have only moderate potential for on-site sewage disposal due to the presence of a hard pan. In contrast, this hard pan provides good water holding capacity for crop production.

a. This area is well suited for sale as a mini-farm with house to be located near or within vegetation type 1 (see Figure 8).
b. Consideration should be given to restricting future use of this area to agriculture through the use of a permanent agricultural easement.

• Zone #V (65 +/- acres) has been identified as being a rich habitat for a variety of flora and fauna and is therefore recommended for preservation. Such permanent protection would increase the value of Zone III, and could act as a model for streambelt protection.

a. The granting of an easement or fee gift of wetlands to the Danbury Land Trust or other suitable organization should be considered.
b. Such a gift could be used to initiate a project of contacting abutting landowners in an effort to permanently protect the entire wetland area. The Housatonic Valley Association (927-4649) is available to assist in such an effort.

• Zone #VI (102 +/- acres) can best be used as a watershed buffer and scenic strip.

a. This zone offers a desirable area for passive recreation (hiking, etc.) with large hemlocks, rock outcrops, and rich marsh areas.
b. Excellent wildlife habitat is available and should be protected.
c. Based upon natural conditions and access limitations, this area is not considered readily developable.
d. This area could be included in any arrangement for a gift of easement or fee ownership to a qualified charitable land trust.

e. If restricted by a conservation easement, the underlying fee title could be held and managed by a homeowners association and become an attractive element of any planned cluster development in Zone I.

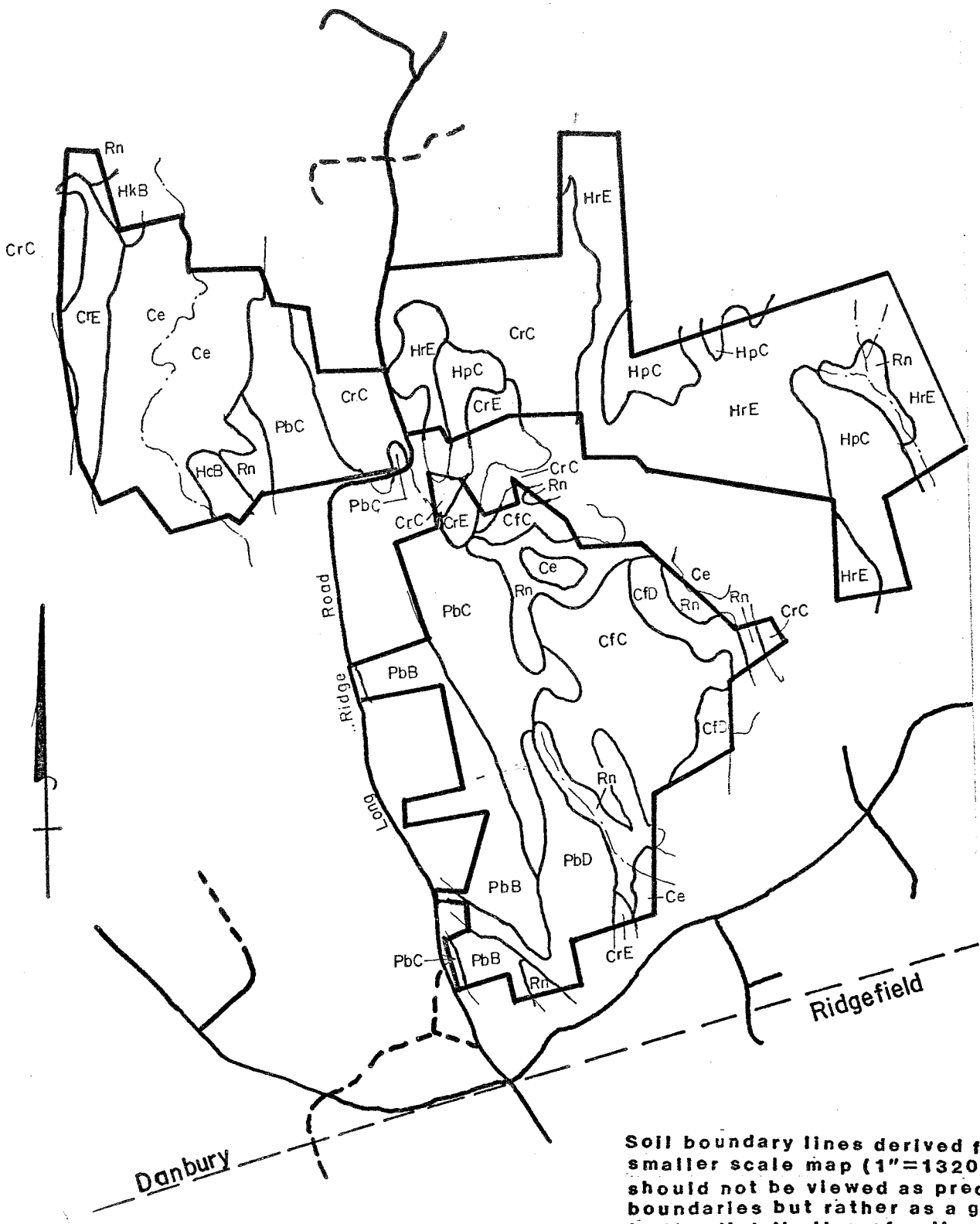
* * * *

XII. APPENDIX

Soils Map
Soils Limitation Chart
Soil Descriptions

APPENDIX

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.

Scale 1"=1000'

SOILS LIMITATION CHART - WIEDEL PROPERTY - DANBURY, CT

Limitation/Ratings for:

MAP SYMBOL	SOIL NAME	SEPTIC SYSTEMS	DWELLINGS W/ BASEMENTS	ROADS & DRIVEWAYS	LANDSCAPING
Ce	Carlisle muck	Severe; Floods, wetness	Severe; Ponding, low Strength, floods	Severe; Ponding, low Strength, floods	Severe; Ponding, low Strength, floods
CfC	Charlton fine Sandy loam, 8-15% slope	Moderate; Slope	Moderate; Slope	Moderate; Slope	Moderate; Slope
CfD	Charlton fine Sandy loam, 15-25% slopes	Severe; Slope	Severe; Slope	Severe; Slope	Severe; Slope
CrC	Charlton Hollis Fine sandy loams Very rocky, 3-15% slopes	Moderate - Severe; Large stones, Depth to rock	Moderate - Severe; Slope, Depth to rock	Moderate - Severe; Slope, Depth to rock	Moderate - Severe; Slope, Depth to rock
CrE	Charlton Hollis Fine sandy loams Very rocky, 15-45% slopes	Severe; Slope, Depth to rock	Severe; Slope, Depth to rock	Severe; Slope, Depth to rock	Severe; Slope, Depth to rock
HcB	Haven silt loam 3-8% slopes	Slight	Slight	Moderate; Frost action	Slight
HKB	Hinckley gravelly Sandy loam; 3-8% slopes	Slight	Slight	Slight	Severe; Small stones, Droughty
HpC	Hollis-Charlton Rock outcrop complex, 3-15% slopes	Moderate - Severe; Slope, depth to rock	Moderate - Severe; Slope, depth to rock	Moderate - Severe; Slope, depth to rock	Moderate - Severe; Slope, depth to rock

SOILS LIMITATION CHART CONT'D

MAP SYMBOL	SOIL NAME	SEPTIC SYSTEMS	DWELLINGS W/ BASEMENTS	ROADS & DRIVEWAYS	LANDSCAPING
HrE	Hollis-Charlton Rock outcrop complex, 15-45% slopes	Severe; Slope, Depth to rock	Severe; Slope, Depth to rock	Severe; Slope, Depth to rock	Severe; Slope, Depth to rock
PbB	Paxton fine sandy loam, 3-8% slopes	Severe; Percs slowly	Slight	Moderate; Frost action	Slight
PbC	Paxton fine sandy loam, 8-15% slopes	Severe; Percs slowly	Moderate; Slope	Moderate; Slope Frost action	Moderate; Slope
PbD	Paxton fine sandy loam, 15-25% slopes	Severe; Slope Percs slowly	Severe; Slope	Severe; Slope	Severe; Slope
Rn	Ridgebury, Leicester, and Whitman, extremely stony fine sandy loams	Severe; Wetness Large stones	Severe; Wetness Large stones	Severe; Wetness Frost action	Severe; Large stones, Wetness

NOTES:

1) Limitation ratings from USDA Soil Conservation Service criteria and Hill, David "Soil Interpretations for Waste Disposal", CT Ag. Experiment Station, 1979.

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.

SOIL DESCRIPTIONS

Ce -- CARLISLE MUCK.

This nearly level, very poorly drained soil is in depressions and on plains and terraces. Slopes are less than 1 percent.

Typically, this soil consists of black, dark brown, and dark grayish brown decomposed organic material to a depth of 66 inches or more.

Included with this soil in mapping are small areas of very poorly drained Adrian, Saco, and Scarboro soils that make up about 15 percent of the map unit.

This Carlisle soil is wet most of the year, and the watertable is generally at the surface from early fall to late spring. Runoff is very slow. Some areas have water ponded on the surface. A few areas are subject to flooding. The permeability of the soil is moderate or moderately rapid, and the soil is very strongly acid to neutral.

Most areas of this soil are wooded or are covered by marshgrasses and sedges.

The major limitations of this soil are the high watertable, ponding and the instability of the organic material.

The soil is unsuitable for cultivated crops, recreation, and poorly suited to timber production.

CfC -- CHARLTON FINE SANDY LOAM, 8 to 15 percent slopes

These gently sloping, well-drained soils are on hills and ridges.

Typically, the surface layer is very dark brown fine sandy loam 6 inches thick. The subsoil is strong brown and yellowish brown fine sandy loam 23 inches thick. The substratum is light olive brown gravelly sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of somewaht excessively drained Hollis soils, well-drained Paxton soils, and moderately well-drained Sutton soils and small areas of soils with bedrock at a depth of 20 to 40 inches. Included areas make up about 15 percent of this map unit.

The permeability of Charlton soil is moderate or moderately rapid. Runoff is medium, and available water capacity is moderate.

Recreation. These soils are favorable for picnic areas and camp sites. The level soils have few limitations for play areas, but limitations are more severe on slopes greater than 2 percent.

Wildlife. These soils are well suited for the dependable growth of a wide variety of desirable openland and woodland wildlife food and cover plants. Habitat for woodland wildlife species is easily created, improved, or maintained. On the stony soils and slopes above 8 percent, it is difficult to establish grain, grasses, and legumes for openland wildlife. It is impractical to develop wetland wildlife habitat on these soils.

Woodland. These soils have fair productivity for wood crops. Competition from hardwoods is a problem on the soils formed in loamy till (like Charlton) when managing for pine, spruce, or larch.

Cropland. The soils cleared of stones are well suited to the production of the crops generally grown in the area. The somewhat droughty soils (like Gloucester) are best suited for the production of early vegetables and early grass and legume crops. Erosion is a hazard on these soils. Intensive surface water control measures are needed on slopes above 8 percent.

CfD -- CHARTON FINE SANDY LOAM, 15 to 25 percent slopes.

This moderately steep, well drained soil is on hills and ridges.

Typically, the surface layer is very dark brown fine sandy loam 6 inches thick. The subsoil is strong brown and yellowish brown fine sandy loam 23 inches thick. The substratum is light olive brown gravelly sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of somewhat excessively drained Hollis soils and well drained Paxton soils and small areas of soils with bedrock at a depth of 20 to 40 inches. Included areas make up about 15 percent of this map unit.

The permeability of this Charlton soil is moderate or moderately rapid. Runoff is rapid, and available water capacity is moderate. It is very strongly acid to medium acid.

Urban. Costly measures are required to overcome severe limitations because of slope and stoniness in developing these soils for urban use.

Recreation. These soils have severe limitations for picnic areas, camp sites, and play areas.

Wildlife. Habitat requirements of openland wildlife species can be established, improved, or maintained but slope and stoniness make it very difficult to plant grain, grasses, and legumes. These are few or no soil limitations that affect the development or maintenance of woodland wildlife habitat. It is impractical to develop wetland wildlife habitat on these soils.

Woodland. These soils have fair productivity for wood crops. Competition from hardwoods is a problem when managing for pine, spruce, or larch on the soils underlain by loamy till (like Charlton). Equipment operation is difficult because of steep slopes. Attention to erosion control measures is important on skid trails and roads.

CrC -- CHARLTON-HOLLIS FINE SANDY LOAMS, VERY ROCKY, 3 to 15 percent slopes

This complex consists of gently sloping and sloping, well drained and somewhat excessively drained soils on hills and ridges. They have an undulating topography marked with exposed bedrock, a few drainageways, and a few small, wet depressions. Stones and boulders cover 1 to 5 percent of the surface and exposed bedrock up to 10 percent of the surface.

The complex is about 50 percent Charlton soils, 25 percent Hollis soils, and 25 percent other soils and exposed bedrock. The Charlton and Hollis soils are so intermingled on the landscape that it was not practical to map them separately.

Typically, the Charlton soils have a surface layer of very dark brown fine sandy loam 3 inches thick. The subsoil is strong brown and yellowish brown fine sandy loam 26 inches thick. The substratum is light olive brown gravelly sandy loam to a depth of 60 inches or more.

Typically, the Hollis soils have a surface layer of very dark grayish brown fine sandy loam 3 inches thick. The subsoil is dark yellowish brown fine sandy loam that extends to bedrock at a depth of 17 inches.

Included with this complex in mapping are small areas of well drained Paxton soils, moderately well drained Sutton soils, poorly drained Leicester soils, and a very poorly drained Adrian soils. Also included are small areas of soils with bedrock at a depth of 20 to 40 inches and a few larger areas, mostly in the southern part of the county that have been cleared of stones and boulders.

These Charlton and Hollis soils have moderate or moderately rapid permeability. Runoff is medium to rapid. Available water capacity is moderate in the Charlton soils and low in the Hollis soils. They are very strongly acid to medium acid.

The major limitations of this complex are the shallow depth to bedrock in the Hollis soils, the areas of exposed bedrock, and the stones and boulders on the surface.

Recreation. Picnic areas and camp sites are very difficult to develop and access is usually a severe limitation. However, the terrain provides an attractive setting for these uses.

Wildlife. These soils are poorly suited for the production of openland wildlife habitat. The habitat for woodland wildlife species can be established, improved, or maintained but moderate treatment is required. It is impractical to develop wetland wildlife habitat on these soils.

Woodland. The productivity of most of this land is poor for wood crops. Pockets of deeper soil within these areas have fair productivity. Equipment operation is very difficult because of rock outcrops. Seedling survival and windthrow of trees are problems on the shallower areas.

Cropland. These soils are not suited for the production of cultivated crops because of rock outcrops and shallowness. Scattered areas with deeper soils and less numerous rock outcrops can be used for improved hay, pasture, and orchard.

CrE -- CHARLTON-HOLLIS FINE SANDY LOAMS, VERY ROCKY, 15 to 45 percent slopes.

This complex consists of moderately steep to very steep, well-drained and somewhat excessively drained soils on hills and ridges. They are marked with exposed bedrock, a few drainageways, and a few small, wet depressions. Stones and boulders cover 1 to 5 percent of the surface and exposed bedrock up to 10 percent of the surface.

The complex is about 50 percent Charlton soils, 30 percent Hollis soils, and 20 percent other soils and exposed bedrock. The Charlton and Hollis soils are so intermingled that it was not practical to map them separately.

Typically, the Charlton soils have a surface layer of very dark brown fine sandy loam 3 inches thick. The subsoil is strong brown and yellowish brown fine sandy loam 26 inches thick. The substratum is light olive brown gravelly sandy loam to a depth of 60 inches or more.

Included with this complex in mapping are small areas of well drained Paxton soils, moderately well drained Sutton soils, and poorly drained Leicester soils. Also included are small areas of soils with bedrock at a depth of 20 to 40 inches; a few larger areas that have been cleared of stones and boulders; and a few areas where stones and boulders cover more than 5 percent of the surface.

These Charlton and Hollis soils have moderate or moderately rapid permeability. Runoff is rapid. Available water capacity is moderate in the Charlton soils and low in the Hollis soils. Both soils are very strongly acid to medium acid.

The major limitations of this complex are slope, stones and boulders, areas of exposed bedrock, and the shallow depth to bedrock in the Hollis soils.

Urban. Steep slopes, many rock outcrops, and soils shallow to bedrock impose very severe limitations for urban development. The rugged topography and rock ledges are picturesque and enhance adjoining areas.

Recreation. Picnic areas and camp sites are extremely difficult to develop.

Wildlife. The habitat requirements of woodland wildlife species can be established, improved, or maintained on these soils but the rockiness and steep slopes present severe limitations. Habitat management will be difficult and expensive and results may be unsatisfactory. It is impractical to develop openland or wetland wildlife habitat on these soils.

Woodland. The productivity of this land is poor for wood crops. Equipment operation is extremely difficult because of numerous rock outcrops and steep slopes. Seedling survival and windthrow of trees are problems.

Cropland. These soils are not suitable for the production of cultivated crops.

HcB -- HAVEN SILT LOAM, 3 to 8 percent slopes.

This gently sloping, well drained soil is on plains and terraces in stream valleys.

Typically, the surface layer is very dark brown silt loam 7 inches thick. The upper 13 inches is dark brown and dark yellowish brown silt loam. The substratum is yellowish brown gravelly sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of somewhat excessively drained Merrimac soils, well drained Agawam soils, and moderately well drained Ninigret soils. Included areas make up about 15 percent of this map unit.

The permeability of this Haven soil is moderate in the surface layer and subsoil and very rapid in the substratum. Runoff is medium and available water capacity is moderate. It is very strongly acid to medium acid.

Urban. Permeability and most other soil factors are favorable for installation and operation of septage effluent absorption fields. The percolation rate and underlying sand and gravel may allow sewage effluent to pollute groundwater. On slopes greater than 8 percent, the design and site selection for absorption fields requires special consideration.

Soil conditions are favorable for homes with basements. On slopes above 8 percent, difficulty is added to site preparation. However, the steeper slopes may present opportunities for a wider choice of architectural design.

Soil conditions are favorable for the establishment of lawns, trees, and shrubs. Slopes above 8 percent add difficulty for landscaping. the sandy loam soils are somewhat droughty.

Difficulty in constructing and maintaining streets and parking lots is slight on level areas, moderate on slopes between 3 and 8 percent, and severe on slopes above 8 percent. Earth moving is readily done.

Recreation. These soils have slight or moderate limitations for picnic areas and camp sites. The level soils are favorable for play areas, but limitations for this use increase on soils having slopes above 2 percent. The potential for recreational use of these soils in enhanced by their proximity to streams, ponds, and sites with potential for water developments.

Wildlife. Habitat for openland and woodland wildlife species is easily established, improved, or maintained on these soils. They are well suited for the dependable growth of a wide variety of desirable food and cover plants. It is impractical to develop habitat for wetland wildlife on these soils.

Woodland. Productivity for wood crops ranges from fair on the sandy loam soils to good on the silt loam soils. Both hardwoods and conifers are well suited. Competition from hardwoods is a problem when managing for pine, spruce, or larch.

HcB -- HAVEN SILT LOAM, 3 to 8 percent slopes (cont'd)

Cropland. These soils are suitable for the production of all agricultural crops adapted to the area. Supplemental irrigation is needed to assure necessary production levels for crops with a high cash return. Erosion is a hazard on these soils. Intensive surface water control measures are needed on slopes above 8 percent.

HkB -- HINCKLEY GRAVELLY SANDY LOAM, 3 to 8 percent slopes.

This gently sloping, excessively drained soil is on terraces, kames, and eskers in stream valleys.

Typically, the surface layer is dark brown gravelly sandy loam 5 inches thick. The substratum is 10 inches thick. The upper 4 inches is strong brown gravelly sandy loam, and the lower 6 inches is dark brown gravelly loamy sand. The substratum is light olive brown gravelly sandy to a depth of 60 inches or more.

Included with this soil in mapping are small areas of somewhat excessively drained Merrimac soils and well drained Agawam and Haven soils. Included areas make up about 15 percent of this map unit.

The permeability of this Hinckley soil is rapid in the surface layer and subsoil and very rapid in the substratum. Runoff is slow, and available water capacity is very low.

Urban. The permeability of this soil is favorable for the installation and operation of septic sewage disposal systems. On slopes above 8 percent, the design and site selection for absorption fields requires special consideration. The percolation rate may allow sewage effluent to pollute water if water sources are nearby.

Soil conditions are favorable for homes with basements. The steeper slopes may add difficulty to site preparation. However, the steeper and irregular slopes present opportunities for a wider choice of architectural design. Conditions are favorable for stability of footings and performance of footing drains.

Land grading for landscaping will expose sand and gravel. Grass, trees, and shrubs are difficult to establish and maintain because of low water-holding capacity and low natural fertility. On the steeper slopes, further difficulty is added to these problems.

When constructing streets and parking lots, earth moving is readily done, but stabilizing and vegetating cut banks is difficult, particularly on the steeper slopes.

Recreation. The potential for recreational uses of these soils is enhanced by their proximity to streams, pond, and sites with potential for water developments. They are favorable for picnic areas and camp sites. Even on level areas these soils present difficulty when establishing or maintaining vegetation for play areas. The soils with steeper and irregular slopes have severe limitations for play areas.

Wildlife. These soils are poorly suited for the production of habitat required by openland and woodland wildlife. Dependable growth of desirable food and cover plants is limited by the low natural fertility and low moisture-holding capacity. Food and cover can be established, improved, or maintained, but it is difficulty and expensive especially for openland wildlife. Results are not always satisfactory. It is impractical to develop wetland wildlife habitat on these soils.

Woodland. Productivity for wood crops is poor on these soils because of low natural fertility and low water-holding capacity. Because of droughtiness, high mortality of natural or planted seedlings can be expected. White pine should produce a greater yield than hardwoods.

HkB -- HINCKLEY GRAVELLY SANDY LOAM, 3 to 8 percent slopes.

Cropland. Droughtiness and low natural fertility severely restrict the use of these soils for crop production. Irrigation with intensive fertilization is essential for satisfactory yields of crops including tobacco, corn, vegetables, and hay. If cultivated crops are grown on the steeper slopes, measures for controlling erosion and runoff are necessary. Wind erosion is a hazard particularly on loamy sands.

HpC -- HOLLIS CHARLTON-ROCK OUTCROP COMPLEX, 3 to 15 percent slopes.

This complex consists of gently sloping and sloping soils on hills and ridges. They have an undulating topography marked with exposed bedrock, a few narrow drainageways, and a few small, wet depressions. Stones and boulders cover 1 to 5 percent of the surface.

The complex is about 35 percent somewhat excessively drained Hollis soils, 20 percent well drained Charlton soils, 20 percent exposed bedrock, and 25 percent other soils. The Hollis and Charlton soils and exposed bedrock are so intermingled on the landscape that it was not practical to map them separately.

Typically, the Hollis soils have a surface layer of very dark grayish brown fine sandy loam 3 inches thick. The subsoil is dark brown and dark yellowish brown gravelly fine sandy loam and fine sandy loam that extends to bedrock at a depth of 17 inches.

Included with this complex in mapping are small areas of moderately well drained Sutton soils, poorly drained Leicester soils, and very poorly drained Adrian soils. Also included are areas of soils with bedrock at a depth of 20 inches to 40 inches, a few areas where stones cover more than 5 percent of the surface, and a few areas with no stones or boulders on the surface.

These Hollis and Charlton soils have moderate or moderately rapid permeability. Runoff is medium to rapid. The available water capacity is low in the Hollis soils and moderate in the Charlton soils. Both are very strongly acid to medium acid.

The major limitations of this complex are the shallow depth to bedrock in the Hollis soils and the areas of exposed bedrock.

Recreation. Picnic areas and camp sites are extremely difficult to develop.

Wildlife. The habitat requirements of woodland wildlife species can be established, improved, or maintained on these soils but the rockiness and steep slopes present severe limitations. Habitat management will be difficult and expensive and results may be unsatisfactory. It is impractical to develop openland or wetland wildlife habitat on these soils.

Woodland. The productivity of this land is poor for wood crops. Equipment operation is extremely difficult because of numerous rock outcrops and steep slopes. Seedling survival and windthrow of trees are problems.

Cropland. These soils are not suitable for the production of cultivated crops.

HrE -- HOLLIS-ROCK OUTCROP-CHARLTON COMPLEX, 15 to 45 percent slopes

This complex consists of moderately steep to very steep soils on hills and ridges. They have an undulating topography marked with exposed bedrock, a few narrow drainageways, and a few small, wet depressions. Stones and boulders cover 1 to 5 percent of the surface.

The complex is about 40 percent somewhat excessively drained Hollis soils, 25 percent exposed bedrock, 20 percent well drained Charlton soils, and 15 percent other soils. The Hollis and Charlton soils and the areas of exposed bedrock are so intermingled that it was not practical to map them separately.

Typically, the Hollis soils have a surface layer of very dark grayish brown fine sandy loam 3 inches thick. The subsoil is dark brown and dark yellowish brown gravelly fine sandy loam and fine sandy loam that extends to bedrock at a depth of 17 inches.

Typically, the Charlton soils have a surface layer of very dark brown fine sandy loam 4 inches thick. The subsoil is trong brown and yellowish brown fine sandy loam 25 inches thick. The substratum is light olive brown gravelly sandy loam to a depth of 60 inches or more.

Included with this complex in mapping are small areas of moderately well drained Sutton and Woodbridge soils, poorly drained Leicester soils, and very poorly drained Adrian soils. Also included are small areas of soils with bedrock at a depth of 20 to 40 inches. A few small areas have slopes of as much as 90 percent, and in a few areas stones and boulders cover more than 5 percent of the surface.

These Hollis and Charlton soils have moderate or moderately rapid permeability. Runoff is rapid or very rapid. Available water capacity is low in the Hollis soils and moderate in the Charlton soils. Both are very strongly acid to medium acid.

The major limitations of this complex are slope, the shallow depth to bedrock in the Hollis soils, the stones on the surface, and the areas of exposed bedrock.

Recreation. Picnic areas and camp sites are extremely difficult to develop.

Wildlife. The habitat requirements of woodland wildlife species can be established, improved, or maintained on these soils but the rockiness and steep slopes present severe limitations. Habitat management will be difficult and expensive and results may be unsatisfactory. It is impractical to develop openland or wetland habitat on these soils.

Woodland. The productivity of this land is poor for wood crops. Equipment operation is extremely difficutl because of numerous rock outcrops and steep slopes. Seedling survival and windthrow of trees are problems.

Cropland. These soils are not suitable for the production of cultivated crops.

PbB -- PAXTON FINE SANDY LOAM, 3 to 8 percent slopes.

This gently sloping, well drained soil is on drumlins and hills.

Typically, this soil has a surface layer of dark brown fine sandy loam 9 inches thick. The subsoil is brown gravelly fine sandy loam 22 inches thick. The substratum is very firm grayish brown gravelly sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of well drained Charlton and Stockbridge soils, moderately well drained Georgia and Woodbridge soils, and poorly drained Ridgebury soils. Also included are a few areas of nearly level soils. Included areas make up about 15 percent of this map unit.

The permeability of this Paxton soil is moderate in the surface layer and subsoil, and slow or very slow in the substratum. Runoff is medium, and available water capacity is moderate. It is very strongly acid to slightly acid.

Urban. The design and construction of septage effluent absorption fields that function satisfactorily are very difficult because of the hardpan. Slopes above 8 percent add further difficulty and problems in design and site selection for absorption fields.

Conditions are favorable for excavation of basements of homes on soils with slopes less than 8 percent. Slopes above 8 percent are a moderate limitation; however, the steeper slopes present opportunities for a wider choice of architectural design. Stability of footings is not a problem, but measures such as footing drains are needed to prevent seepage into basements.

Soil conditions are favorable for the establishment and maintenance of grass, trees, and shrubs. The stony soils and slopes above 8 percent add difficulty in landscaping.

Difficulty in constructing streets and parking lots ranges from slight on level areas, to moderate on 3 to 8 percent slopes, to severe on slopes above 8 percent. The hazard of frost heaving because of water accumulation above the hardpan requires special consideration. Also soil slippage on road cuts is a hazard during wet seasons.

Recreation. These soils are favorable for picnic areas and camp sites. The level soils have few limitations for play areas, but limitations for this use are greater on the steeper slopes and stony soils.

Wildlife. These soils are well suited for the dependable growth of a wide variety of desirable openland and woodland wildlife food and cover plants. Habitat for woodland wildlife species is easily established, improved, or maintained. On the stony soils and slopes above 8 percent it is difficult to establish grain, grasses, and legumes for openland wildlife. It is impractical to develop wetland wildlife habitat on these soils.

Woodland. These soils have good productivity for wood crops. Both hardwoods and coni ers are well su ed. Competition from hardwoods is a serious problem when managing for pine, spruce, or larch. Hardwoods to favor on these soils are red oak, white ash, and sugar maple.

Cropland. The soils cleared of stones are suitable for the production of most agricultural crops grown in the area. Erosion is a hazard and on the steeper slopes more intensive surface water control measures are needed.

PbC -- PAXTON FINE SANDY LOAM, 8 to 15 percent slopes.

This sloping, well drained soil is on drumlins and hills.

Typically, this soil has a surface layer of dark brown fine sandy loam 9 inches thick. The subsoil is brown fine sandy loam 22 inches thick. The substratum is very firm, grayish brown gravelly sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of well drained Charlton and Stockbridge soils, moderately well drained Georgia and Woodbridge soils, and poorly drained Ridgebury soils. Included areas make up about 15 percent of this map unit.

The permeability of this Paxton soil is moderate in the surface layer and subsoil and slow or very slow in the substratum. Runoff is medium, and available water capacity is moderate. It is very strongly acid to slightly acid.

Urban. The design and construction of septage effluent absorption fields that function satisfactorily are very difficult because of the hardpan. Slopes above 8 percent add further difficulty and problems in design and site selection for absorption fields.

Conditions are favorable for excavation of basements of homes on soils with slopes less than 8 percent. Slopes above 8 percent are a moderate limitation; however, the steeper slopes present opportunities for a wider choice of architectural design. Stability of footings is not a problem, but measures such as footing drains are needed to prevent seepage into basements.

Soil conditions are favorable for the establishment and maintenance of grass, trees, and shrubs. The stony soils and slopes above 8 percent add difficulty in landscaping.

Difficulty in constructing streets and parking lots ranges from slight on level areas, to moderate on 3 to 8 percent slopes, to severe on slopes above 8 percent. The hazard of frost heaving because of water accumulation above the hardpan requires special consideration. Also soil slippage on road cuts is a hazard during wet seasons.

Recreation. These soils are favorable for picnic areas and camp sites. The level soils have few limitations for play areas, but limitations for this use are greater on the steeper slopes and stony soils.

Wildlife. These soils are well suited for the dependable growth of a wide variety of desirable openland and woodland wildlife food and cover plants. Habitat for woodland wildlife species is easily established, improved, or maintained. On the stony soils and slopes above 8 percent it is difficult to establish grain, grasses, and legumes for openland wildlife. It is impractical to develop wetland wildlife habitat on these soils.

Woodland. These soils have good productivity for wood crops. Both hardwoods and conifers are well suited. Competition from hardwoods is a serious problem when managing for pine, spruce, or larch. Hardwoods to favor on these soils are red oak, white ask, and sugar maple.

Wildlife. These poorly drained soils are not suited for the production of openland or woodland wildlife habitat. Dependable growth of desirable food and cover plants is limited by their wetness. Habitat for wetland wildlife can be developed, improved, or maintained on these soils, but stoniness imposes difficulties in constructing water impoundments.

Woodland. Productivity for wood crops ranges from fair to poor. Stoniness and wetness pose severe problems in the use of equipment. Because of wetness, there are severe problems in the survival of tree deedlings, the windthrow of trees, and competition from other plants.

Cropland. With drainage the soils cleared of stones are suitable for the production of silage corn and adapted hay crops. The stoniness and wetness of the soils make them unsuitable for agricultural crops.

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.