DEVELOPMENT OF HUCKLEBERRY HILL

CANTON, CONNECTICUT

JUNE 1989

EASTERN CONNECTICUT ENVIRONMENTAL REVIEW TEAM REPORT

EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT AREA, INC.

DEVELOPMENT OF HUCKLEBERRY HILL

CANTON, CONNECTICUT

REVIEW DATE: APRIL 25, 1989

REPORT DATE: JUNE 1989

EASTERN CONNECTICUT
ENVIRONMENTAL REVIEW TEAM

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ENVIRONMENTAL REVIEW TEAM REPORT
ON

DEVELOPMENT OF HUCKLEBERRY HILL
CANTON, CONNECTICUT

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

The ERT met and field checked the site on Tuesday, April 25, 1989. Team members participating on this review included:

Nick Bellantoni **State Archaeologist**
Connecticut Museum of Natural History

Christine Clarke **Soil Scientist**
USDA - Soil Conservation Service

Larry Rousseau **Forester**
DEP - Western District Headquarters

Elaine Sych **ERT Coordinator**
Eastern Connecticut Resource Conservation & Development Area

Carol Szymanski **Community Development Planner**
Capitol Region Council of Governmnents

Bill Warzecha **Geologist**
DEP - Natural Resources Center

Judy Wilson **Wildlife Biologist**
DEP - Western District Headquarters

Prior to the review day, each Team member received a summary of the proposed project, a list of the town's concerns, a location map, a topographic map, and background information. During the field review the Team members were given some plans and additional information concerning the study area. The Team met with, and were accompanied by the Town Planner, members of the

Planning Commission, and a landowner of one of the parcels along with a developer and his engineer. Following the review, reports from each Team member were submitted to the ERT Coordinator for compilation and editing into this final report.

This report represents the Team's findings. It is not meant to compete with private consultants by providing site designs or detailed solutions to development problems. The Team does not recommend what final action should be taken on a proposed project -- all final decisions rest with the Town and landowner. This report identifies the existing resource base and evaluates its significance to the proposed development, and also suggests considerations that should be of concern to the developer and the Town. The results of this Team action are oriented toward the development of better environmental quality and the long-term economics of land use.

The Eastern Connecticut RC&D Executive Council hopes you will find this report of value and assistance in making your decisions on this area proposed for development.

If you require additional information, please contact:

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1. Setting Land-use and Zoning

The Huckleberry Hill site, about 400 acres in size is located on the north flank of a rock-cored hill called Huckleberry Hill in southern Canton. Collinsville, a major commercial area in Canton lies west of the subject site. The study area is bound on the north by a former railroad bed right-of-way and Thayer Avenue, the Avon town line on the south, Route 565 and High Street on the west, and private undeveloped land on the east. King's Highway, a gravel-packed road, traverses the east central parts. Canton Spring Road and Atwater Road both cul-de-sacs terminate at the boundary of the study area in the northern and northwestern parts, respectively. A fire-break is maintained along the western limits of the study area near Collinsville.

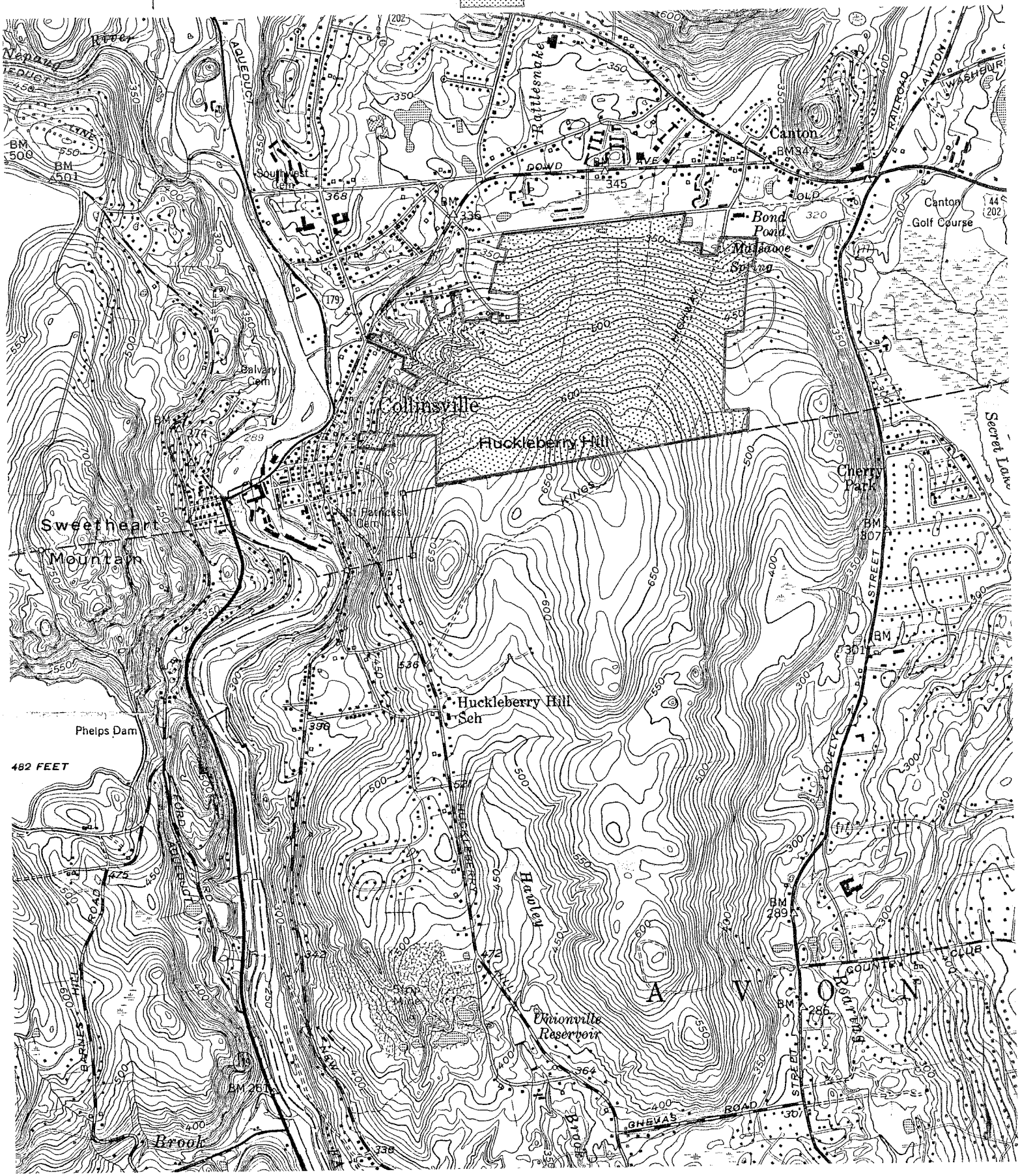
The ±400 acre study area, which is mostly wooded, can be subdivided into four privately owned parcels and a town owned parcel. It constitutes a sizeable chunk of undeveloped land within a moderately densely populated area, most of which is concentrated along Route 565, Dowd Avenue and Route 177. Land uses in the area surrounding the site consist largely of moderately dense residential and mixed commercial/industrial. With the exception of the town owned parcel at the northern limits, the study site is zoned AR-2, which would permit single-family residences on 1 acre or 40,000 square foot lots. The town owned parcel is zoned for industrial purposes. Any other land uses, such as multi-family developments would not be compatible with the AR-2 zone and would therefore require a zone change or variance from the present designation. It is understood that some of the current owners of parcels in the study area are considering multi-family developments.

In order to construct multi-family and industrial developments it seems likely that municipal water and sewers would need to be extended to service these areas. The major concern here is that the town sewage treatment plant is presently at capacity and unless it is expanded the facility cannot handle any additional flows. Team members were informed following the review date that the town voted not to expand the sewage treatment plant at the present time. The Connecticut Water Company, Avon Water Company and Metropolitan District Commission operate water mains near the study area. Extension of these water mains to prospective developments in the study area appears feasible.

LOCATION MAP

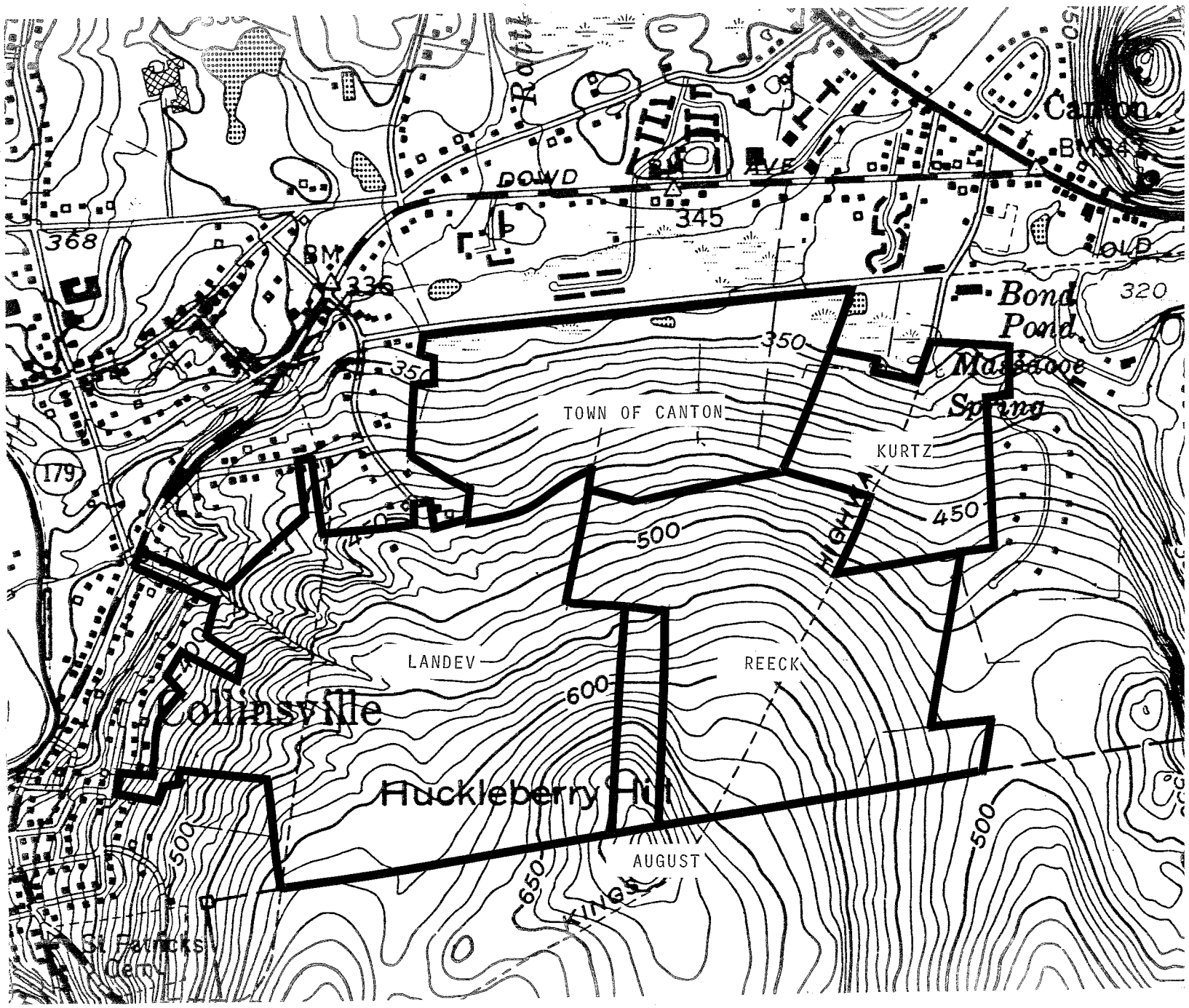
Scale 1" = 2000

Approximate Site Location



PROPERTY BOUNDARY MAP

Scale 1" = 1000'



2. Topography

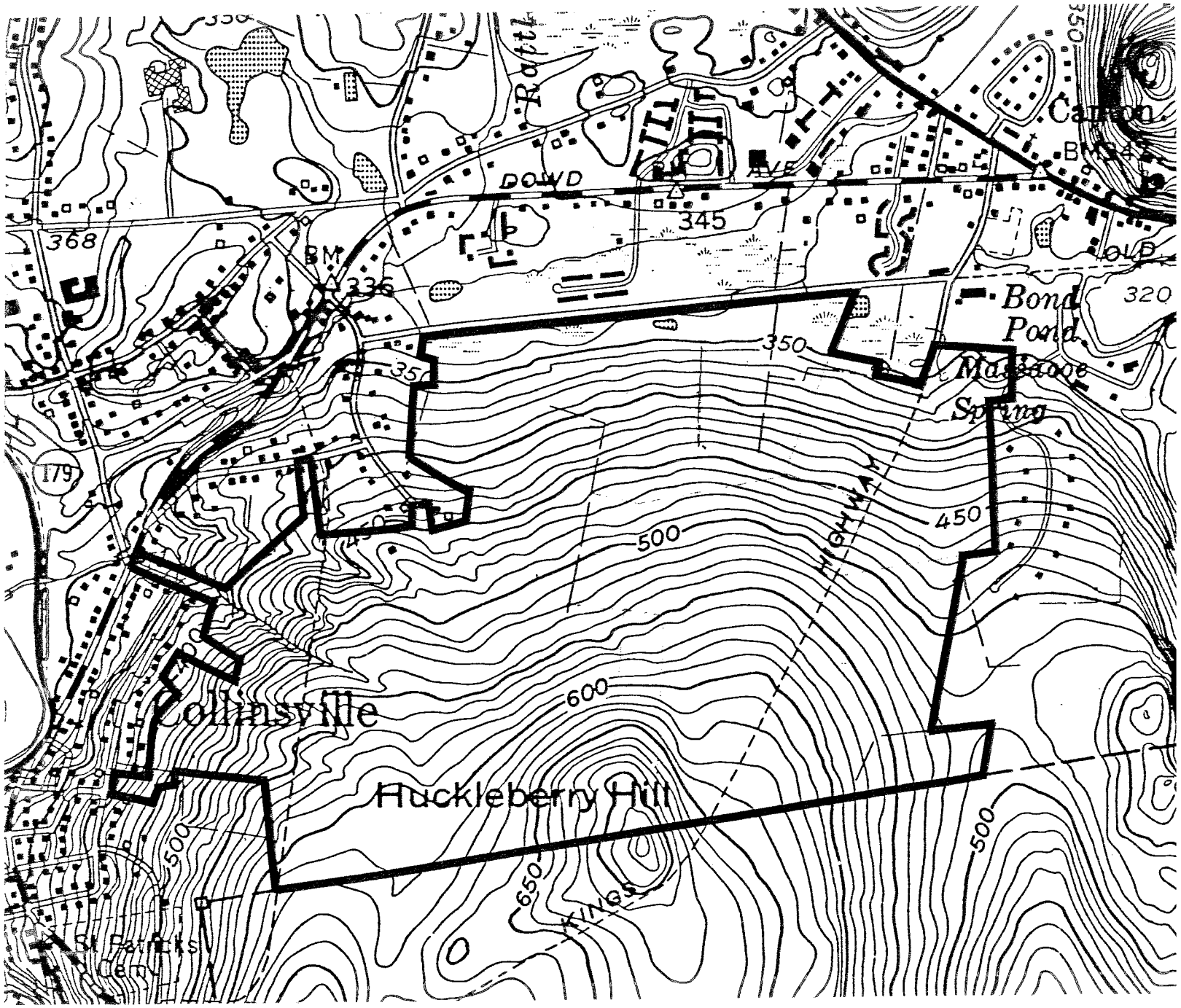
The main topographical feature of the site is Huckleberry Hill. From its pinnacle, at the southern limits, the ground surface slopes to the east, north and west. These slopes range from gentle to very steep. Steepest slopes are concentrated at the western and southern limits. Gentle slopes occur at the west central and east central parts.

The principal watercourse on the site which is unnamed occurs in the western parts and is tributary to the Farmington River. A few seasonal watercourses were visible during the field walk and others probably occur on the site.

TOPOGRAPHIC MAP

Scale 1" = 1000'

Approximate Site Boundary



3. Geology

The study area is located entirely within the Collinsville topographic quadrangle. A bedrock geologic map (QR-16, by Rolfe S. Stanley) has been published for the quadrangle. No surficial geologic map has been prepared to date. The Team's geologist referenced the Soil Survey - Hartford County and the unpublished Surficial Materials Map of Connecticut (Stone, et al, 1985), for the Surficial Geology section of this report.

Bedrock Geology

The bedrock underlying the entire study area consists of the Bristol Member of the Collinsville Formation. It consists of an interlayered rock unit which includes a medium grained gneiss composed of the minerals garnet, biotite, quartz and feldspar, a garnet-biotite-muscovite-plagioclase-quartz gneiss and schist, and amphibolite (a rock composed of amphibolite bearing minerals e.g. plagioclase). To a lesser extent, layers of amphibolite-biotite-quartz-plagioclase gneiss and distinctive zones of quartz-garnet granulite and gneiss are also present in the rock. All rocks range in color from white through shades of gray and greenish gray. At the top of Huckleberry Hill (southern limits) outcrops of granitic rocks with pink feldspar occur.

The terms schist, amphibolite, gneiss, and granulite refer to crystalline, metamorphic rocks (rocks that have sustained changes as a result of very high pressures and temperatures within the earth's crust). These rocks were deposited during the Ordovician geologic period about 438 to 505 million years ago and were subsequently metamorphosed.

Regionally, the site lies in the northcentral parts of the Collinsville Dome, an area of uplifted rocks and west of the western border fault of the Connecticut Valley. The latter boundary separates crystalline, metamorphic rocks from interlayered sedimentary (sandstones,siltstones, etc.) and igneous rocks (basalts). The layering or foliation planes of the rock in the study area dip radially along the dome's perimeter. No economic value can be ascribed to the rock underlying the site.

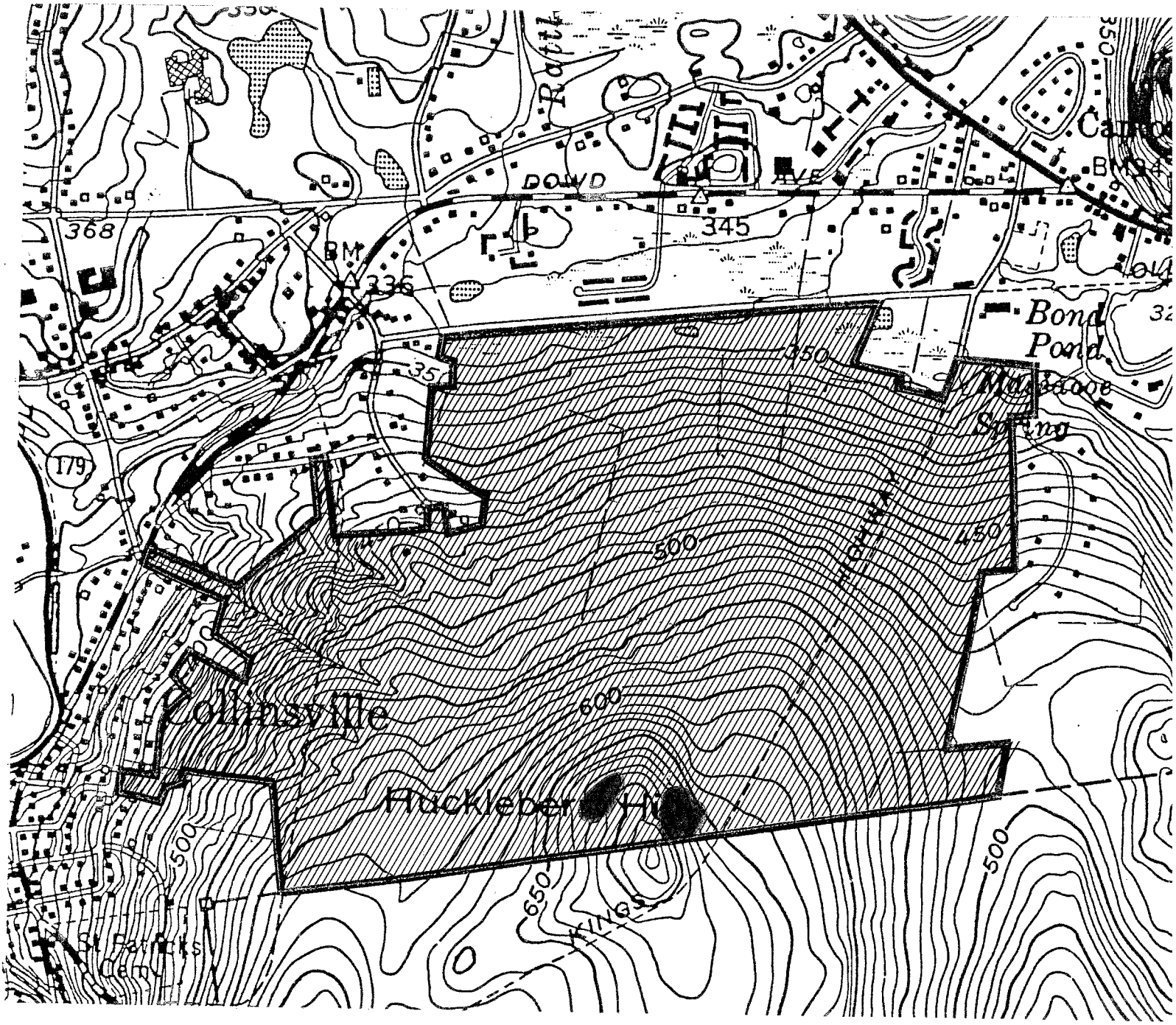
Depth to bedrock on the site ranges from zero in areas of bedrock exposures to at least 137 feet at the northwest corner of the study area. The latter figure is taken from a well log serving a domestic water supply (Viering property).

BEDROCK GEOLOGIC MAP

Scale 1" = 1000'

Bristol Member of Collinsville Formation

Granitic rocks with pink Feldspar



Surficial Geology

Unconsolidated materials overlying bedrock in the study area may be described as the surficial geology of the area. The majority of the site is covered by an unconsolidated material known as till. Till is a glacial sediment composed of rock particles ranging in size from small clay particles to large boulders deposited directly by glacier ice. The textural components of the till are not sorted. For example, fine grained particles are intermixed with coarse grained particles. The upper portions of a till deposit are usually sandy, stony and friable. Generally speaking, where till exceeds 8 feet in depth (i.e., usually the north sides of hills) a compact layer may underlie the friable till layer. In consideration of revised soil mapping data and discussion with the Team's Soil Scientist, both types of till cover the site. (See accompanying Soils Map)

Two well completion reports for domestic wells at the end of Atwater Road revealed 135 and 137 feet of unconsolidated (till) material. On the other hand, the till at the pinnacle of Huckleberry Hill is quite thin (probably less than 2 feet).

Another type of glacial sediment found on this site is a sandy and gravelly sediment called stratified drift. Though minor in terms of distribution and abundance, these sediments were laid down by glacial meltwater during ice retreat. These deposits are restricted primarily to the northern limits between the former railroad bed and the 350 foot contour. A very small deposit of sand and gravel occurs at the western limits. It should be pointed out that the accompanying soils map prepared by the Team's Soil Scientist delineates a larger area of stratified drift soils in the western parts than is shown on the unpublished Surficial Materials Map of Connecticut (Stone, et al, 1985).

Swampy sediments consisting of sand, silt, clay and decayed organic matter cover the stratified drift deposits at the northern limits. This appears to be the largest deposit of swamp sediments in the study area. Regulated inland-wetland areas likely parallel most of the permanent and seasonal watercourses in the study area.

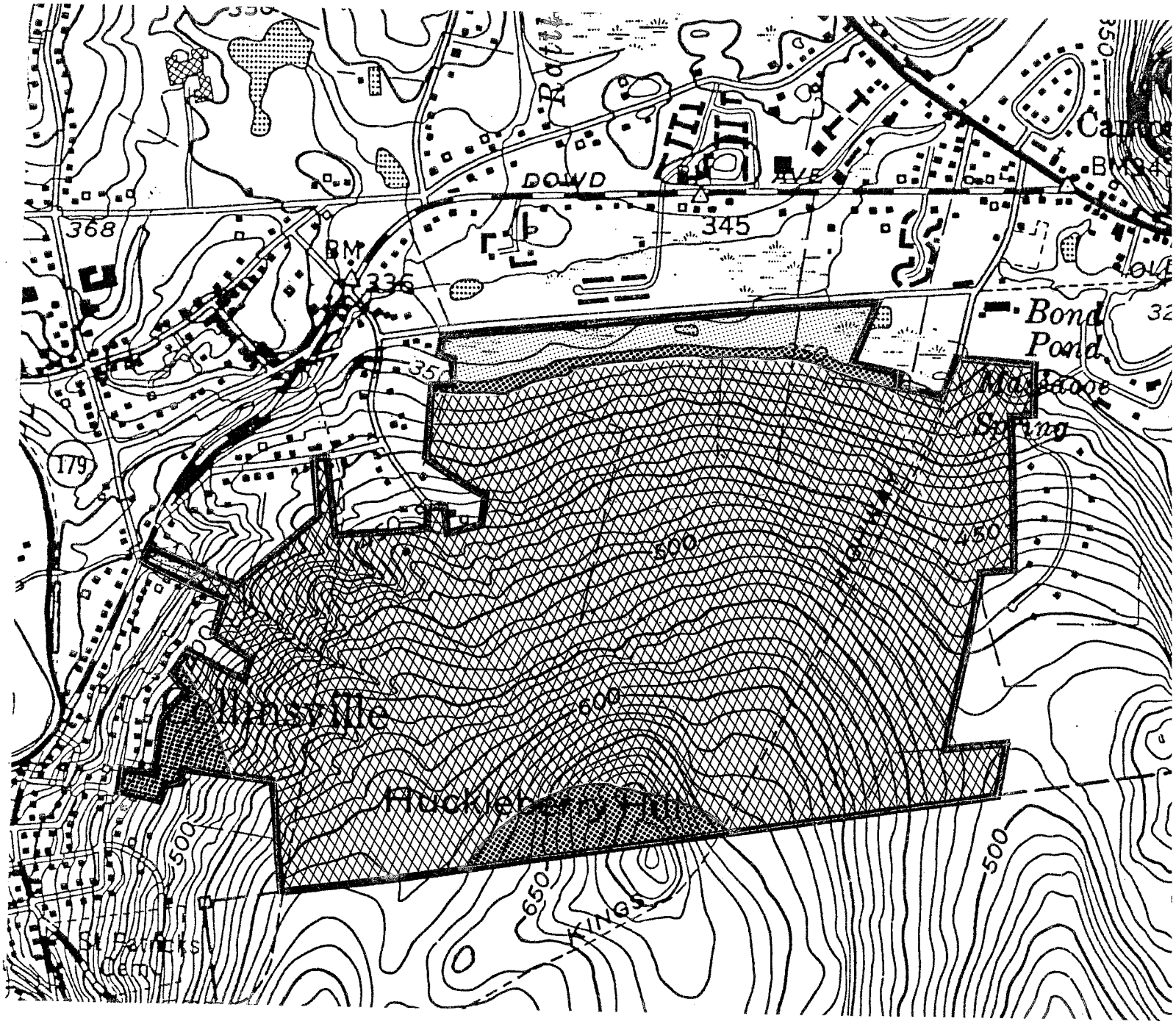
Wetlands are very important from an ecological and hydrological standpoint. They maintain water quality through biochemical processes and reduce stormwater

runoff. For these reasons as well as others, every effort should be made to protect the regulated wetlands in the study area.

SURFICIAL GEOLOGIC MAP

Scale 1" = 1000'

Shallow Till
Thick Till
Stratified Drift



4. SOILS

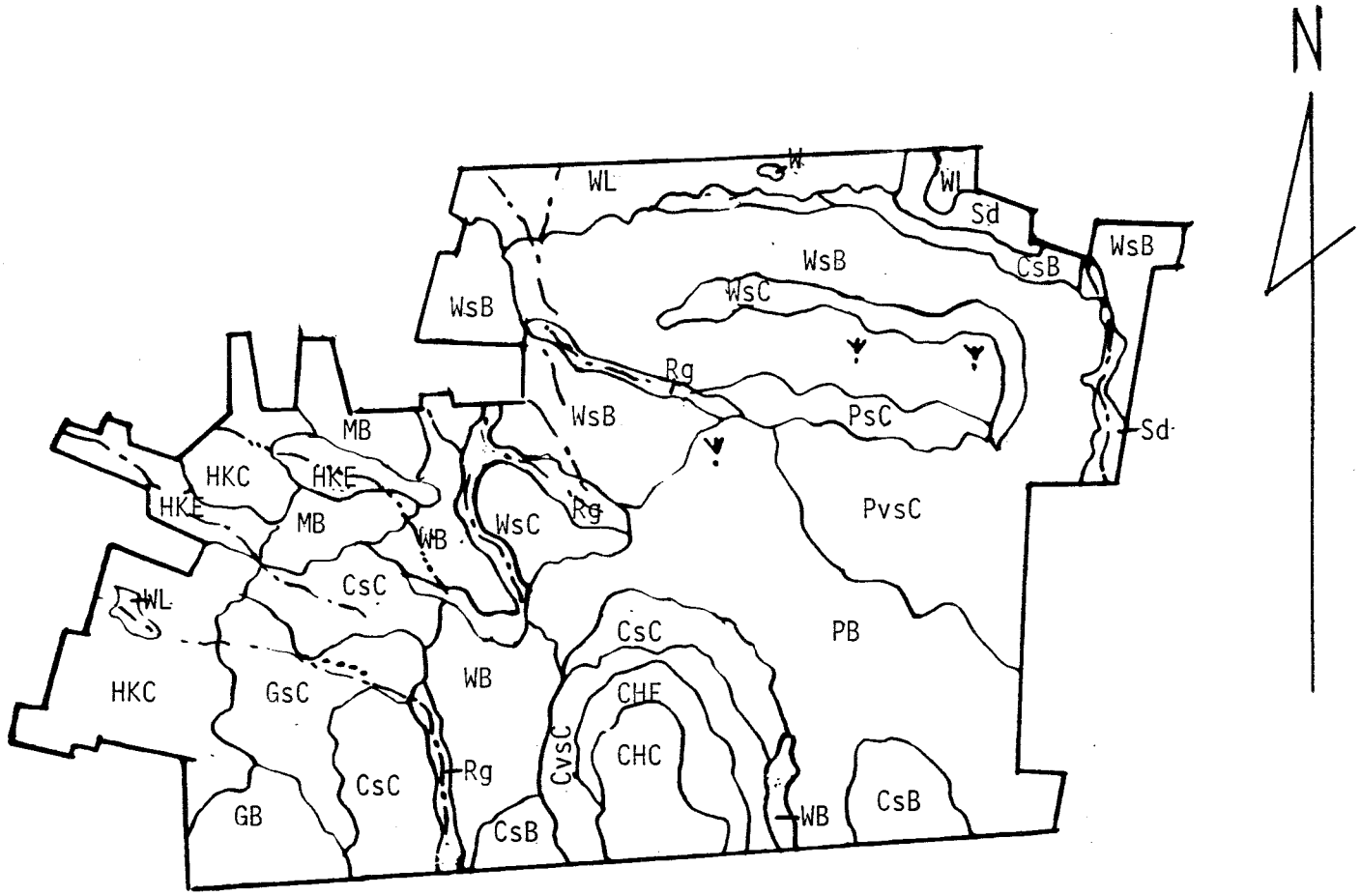
Site Information

Soil resource investigations were made of the site on April 25, 1989, and May 1, 1989. Due to the changing concepts of soil science, size of the property and the age of the Soil Survey of Hartford County, detailed investigations were made. Excavations of up to six feet were observed using spade and soil auger. Stereopaired black and white aerial photographs at a scale of 1" = 1,000" were used, and soil delineations were compiled onto the photobase. Wetland flagging was observed on the site at the time of investigation. For regulatory purposes, it is recommended that flagged and surveyed wetland boundaries be used. Additional wetlands were observed which had not been identified by flagging and did not appear on the subdivision plans for Seven Oaks (specifically on Lot #7,Landev Property). It is recommended that the additional wetland areas be located and incorporated into all future site plans for the area. The flagging which was observed appeared adequate.

Several soil map units have been identified on the site. The majority of the area is dominated by moderately well drained and well drained soils formed in compact glacial till. The area of highest elevation is bedrock controlled with shallow to deep soils occurring in a complex pattern. The west and northern portions of the site are characterized by water deposited outwash materials predominantly of sands and gravels.

A brief description of each map unit is presented below, and Table 1 provides the major limitations to several types of development. The legend used for both the table and soil map is unique to this report and is not transferrable to the Soil Survey of Hartford County.

SOILS MAP



SCALE 1" - 1,000"

Perennial stream

Intermittant stream

Small areas of poorly and somewhat poorly drained soils

. . . . Areas of short steep slopes

W Water bodies

PB, PsC, PvsC - Paxton and Montauk Soils
WB, WsB, WsC - Woodbridge fine sandy loam
Rg - Ridgebury Leicester and Whitman soils
WL - Walpole sandy loam soils
Sd - Sudbury sandy loam soils
CHC, CHE - Charlton and Hollis complex
CsB, CsC, CvsC - Charlton and Canton Soils
GB, GsC - Gloucester gravelly sandy loam
HkC, HkE - Hinckley gravelly sandy loam
MB - Merrimac sandy loam

Soils Descriptions

PB, PsC, PvsC These soils dominate the southeastern portion of the site. They are predominantly deep, well drained soils formed in dense glacial till. Slopes range from 5-10% with few areas reaching slopes greater than 10%. Caution must be taken in all development on these areas as the dense till and slow permeability will prove limiting. Included in this unit are areas of moderately well drained Woodbridge soils and somewhat poorly drained Ridgebury soils.

WB, WsB, WsC These areas are dominated by moderately well drained soils formed in dense compact glacial till. For the most part, these soils occur in association with well-drained Paxton soils and slight depressional areas. Slopes vary from 3-8% and approximately 30% of these areas were found to be very stony. Due primarily to the presence of compact glacial till which inhibits permeability and a seasonal high water table, attention needs to be given to the development of homes with basements and septic systems. Included in this unit are small areas of well drained and somewhat poorly drained soils formed in glacial till.

Rg This unit is comprised of somewhat poorly drained to very poorly drained soils of low lying depressions and drainageways. Included in this unit are small areas of recent alluvial soils and soils over thin glacial till. The majority of the unit is very stony and only slightly sloping (0-3%). Due to very slow permeability and a seasonally perched high watertable, limitations will be very difficult to overcome for development. These soils are regulated under Connecticut State Law.

WL These areas are comprised of very deep, poorly drained soils formed in water sorted glacial outwash. They occupy

the low lying northern boundary of the site and the watertable is at or near the surface several months of the year. The slope of this unit is between 0 and 3%. Due to the high water table and rapid permeability, limitations for development will be difficult to overcome. This unit includes small areas of Sudbury soils. These soils are regulated under Connecticut State Law.

Sd

This soil is deep, moderately well drained, and somewhat poorly drained. They have formed on glacial outwash plains and high terraces. Slope ranges from 0-3%, permeability of the substratum is rapid and the watertable is shallow during much of the year. Present soil characteristics will prove limiting for development. This unit includes small areas of Walpole soils.

CHC, CHE

These areas are comprised of a complex of shallow to very deep, well drained loamy soils over glacial till. The shallow component (Hollis' has bedrock contact within 20 inches and is, therefore, unsuitable in its natural state for on-site septic systems. The deeper component (Charlton) is greater than six feet to bedrock, well drained, and intricately mingled with Hollis and bedrock outcrops. The area is also strewn with stones and boulders (15%), and includes areas moderately deep to bedrock (20 to 40 inches to rock). Additional on-site investigations should be conducted to locate the deep and very deep Charlton component which provide few limitations for development.

CsB, CsC, CvsC

These areas consist primarily of deep and very deep, well drained soils formed in thin glacial till over crystalline bedrock. Slopes range from 3-15%. Included in this unit are small areas of moderately well drained Woodbridge and well drained Paxton soils. In general, these areas provide adequate permeability rates and do not have dense till substratums. They are suitable for on-site

disposal of septic system effluent.

GB, GsC This unit consists of very deep, somewhat excessively drained soils. Much of this unit is very stony and slopes range from 3-15%. Due to the coarse texture of these soils, they provide a poor filter for septic effluent in their natural state. Included in this unit are areas of Hinckly and Charlton soils. Special consideration must be taken in septic system design to avoid groundwater contamination.

HkC, HkE These areas are very deep, excessively well drained soils of water sorted deposits, slopes range from 5-35%, and some areas are extremely stony. Small areas of short, steep slopes are included in this unit. These soils provide a poor filter for on-site disposal of septic effluent. Care must be taken to avoid groundwater contamination. Due to the low water holding capacity (i.e. coarse texture), vegetative stabilization of exposed slopes may prove difficult. Included in this unit are small areas of Merrimac and Gloucester soils.

MB These soils are very deep, somewhat excessively drained, formed in glacial outwash. Slopes range from 3-8%. These soils are coarse textured and, therefore, provide a poor filter for on-site waste disposal. Care must be taken to avoid groundwater contamination. This soil holds little moisture for vegetation and may prove difficult to stabilize with plantings once disturbed. Included in this unit are areas of excessively well drained Hinckly soils.

Table 1 - Soils Limitations

MAP UNIT	GENERAL SOIL PROPERTIES	% SLOPE	DEPTH TO HIGH WATER TABLE	TYPE WATER TABLE	LIMITATIONS				
					SEPTIC TANK ABSORPTION FIELDS	DWELLINGS WITH BASEMENTS	SMALL COMMERCIAL BUILDINGS	ROADS AND STREETS	LAWN AND LANDSCAPING
CsB	loamy glacial till	3-8	>6'	-	Slight	Slight	Mod-Sl	Mod-Sl	Mod Sl, St
CsC		8-15	>6'	-	Slight	Mod-Sl	Severe-Sl	Mod-Sl	Mod-Sl, St
CvsC		3-15	>6'	-	Slight	Mod-Sl	Severe-Sl	Mod-Sl	Mod-Sl, St
CHC	Deep to Shallow loamy glacial till complex over bedrock	3-15	>6'	-	Variable Depth to Bedrock Slight to Severe	Mod-Sl to Sev-Sl, Br	Mod, Sl to Severe-Sl, Br	Severe-Br	Severe-Br
CHE		15-35	>6'	-				Severe-Sl, Br	Severe-Sl, Br
GB	sandy glacial till	3-8	>6'	-	Severe-PF	Mod-St	Mod-Sl, St	Mod-St	Mod-St, D
GsC		8-15	>6'	-	Severe-PF	Mod-Sl, St	Severe-Sl	Mod-Sl, St	Mod-Sl, St, D
HkC	sand and gravel	3-15	>6'	-	Severe-PF	Mod-Sl, St	Severe-Sl*	Slight*	Severe-St, D
HkE		15-35	>6'	-	Severe-PF	Severe-Sl	Severe-Sl	Severe-Sl	Severe-Sl, D
MB	glacial outwash	3-8	>6'	-	Severe-PF	Slight	Mod-Sl	Slight	Slight
PB	loamy compact glacial till	3-8	1.5-3.0'	P	Severe-Sp, W	Mod-W	Mod, Sl, W	Mod-Fa, W	Slight
PsC		3-8	1.5-3.0'	P	Severe-Sp, W	Mod-Sl, W	Severe-Sl	Mod-Sl, Fa, W	Mod-Sl, St
PvsC		3-15	1.5-3.0'	P	Severe-Sp, W	Mod-Sl, W	Severe-Sl	Mod-Sl, Fa, W	Mod-Sl
Rg		0-3	0-1.0'	P	Severe-Sp, W	Severe-W	Severe-W	Severe-W	Severe-W

*Moderate on slopes of less than eight percent.

Table 1 - Soils Limitations Continued

MAP UNIT	GENERAL SOIL PROPERTIES	% SLOPE	DEPTH TO HIGH WATER TABLE	TYPE WATER TABLE	LIMITATIONS: SEPTIC TANK ABSORPTION FIELDS	DWELLINGS WITH BASEMENTS	SMALL COMMERCIAL BUILDINGS	ROADS AND STREETS	LAWN AND LANDSCAPING
	loamy								
Sd	over sandy	0-3	1.5-3.0'	A	Severe-PF, W	Severe-W	Mod-W	Mod-W	Mod-W
WL	glacial outwash	0-3	0-1.0'	A	Severe-PF	Severe-W	Severe-W	Severe-W	Severe-W
WB	loamy	3-8	1.5-3.0'	P	Severe-W	Severe-W	Mod-Sl, W	Severe-FA	Mod-W
WsB	compact	3-8	1.5-3.0'	P	Severe-W	Severe-W	Mod-Sl, W	Severe-FA	Mod-St, W
WsC	glacial till	8-15	1.5-3.0'	P	Severe-W	Severe-Sl	Severe-FA	Severe-FA	Mod-Sl, St, W

Limitations

Slight - Slight limitations to proposed activities indicates that soil properties pose few constraints and/or those present can be easily overcome.

Moderate - A moderate limitation indicates that "special planning, design, or maintenance is needed" for the proposer's use.

Severe - Proposed uses which have severe limitations will require extensive design and maintenance to overcome the unfavorable conditions. The required input cost becomes a major factor.

ABBREVIATIONS

A - Apparent Watertable

D - Droughty Soil Conditions

Br - Shallow to Bedrock

Fa - Risk of Frost Action

P - Perched Watertable

PF - Poor Filter

Sl - Slope

Sp - Slow Permeability

St - Stoniness

W - Wetness

5. Hydrology/Water Resources

The study area can be divided into roughly three watershed areas: approximately two thirds of the site which includes the Town of Canton parcel, Kurtz parcel, most of the Reeck and August property, and part of the Landev parcel drains mainly northward to an unnamed tributary to Rattlesnake Brook. The streamcourse originates in a wetland east-southeast of Mount Horr and flows in a westerly direction enroute to the Farmington River. It joins Rattlesnake Brook east of the Route 565 and the Atwater Road intersection.

The western parts of this study area, which comprises just under one third of the total site and most of the Landev parcel, drains to discharge points that include permanent and seasonal watercourses. These drainageways act as conduits transporting surface runoff directly to the Farmington River.

Finally, about 14 acres at the southeast corner drain southerly to an unnamed tributary to Roaring Brook another Farmington River tributary. It discharges to the Farmington River near Unionville.

Precipitation, which takes the form of runoff, flows across the surface of the land until it reaches a brook or other surface waterbodies. Precipitation may also be absorbed into the ground. Once absorbed, the water may either be returned to the atmosphere through evaporation and plant transpiration, or it may percolate downward to the water table and eventually become part of the groundwater. Once the water reaches the groundwater table it moves downslope by the force of gravity, ultimately discharging to the surface in the form of a spring, wetland area, stream, lake or directly into a river. To a large extent, groundwater flow within the site reflects the surface flow pattern.

Both residential and industrial development of the site would increase the amount of runoff during periods of rainfall. These increases would result from soil compaction, removal of vegetation, and placement of impervious surfaces (roofs, driveways, etc.) over the soil. The major concern with increased runoff is the potential for flooding and streambank erosion. Each developer will need to do his or her part in controlling post-development increases from their respective properties so

that downstream flooding is not created or further aggravated and local water resources protected from erosion and siltation. This can be accomplished satisfactorily with proper implementation of a detailed stormwater management plan. Connecticut's Guidelines for Soil Erosion and Sediment Control should be followed closely with respect to stormwater management on each parcel.

In order to determine the need for on-site detention basins, each applicant's project engineer will need to complete hydrological computations for various storm events, check the potential for downstream flooding or see if existing flooding downstream will be further aggravated, and examine all downstream culverts. Town officials noted on the review day that flooding problems presently exist along Rattlesnake Brook. As mentioned earlier about two thirds of the site drain to this area. Therefore, it seems likely that development in this area may need some type of on-site detention and warrants the need for careful examination. The presence of steep slopes and potential for seasonally high water tables in places in the study area may be a hindrance for locating detention basin(s).

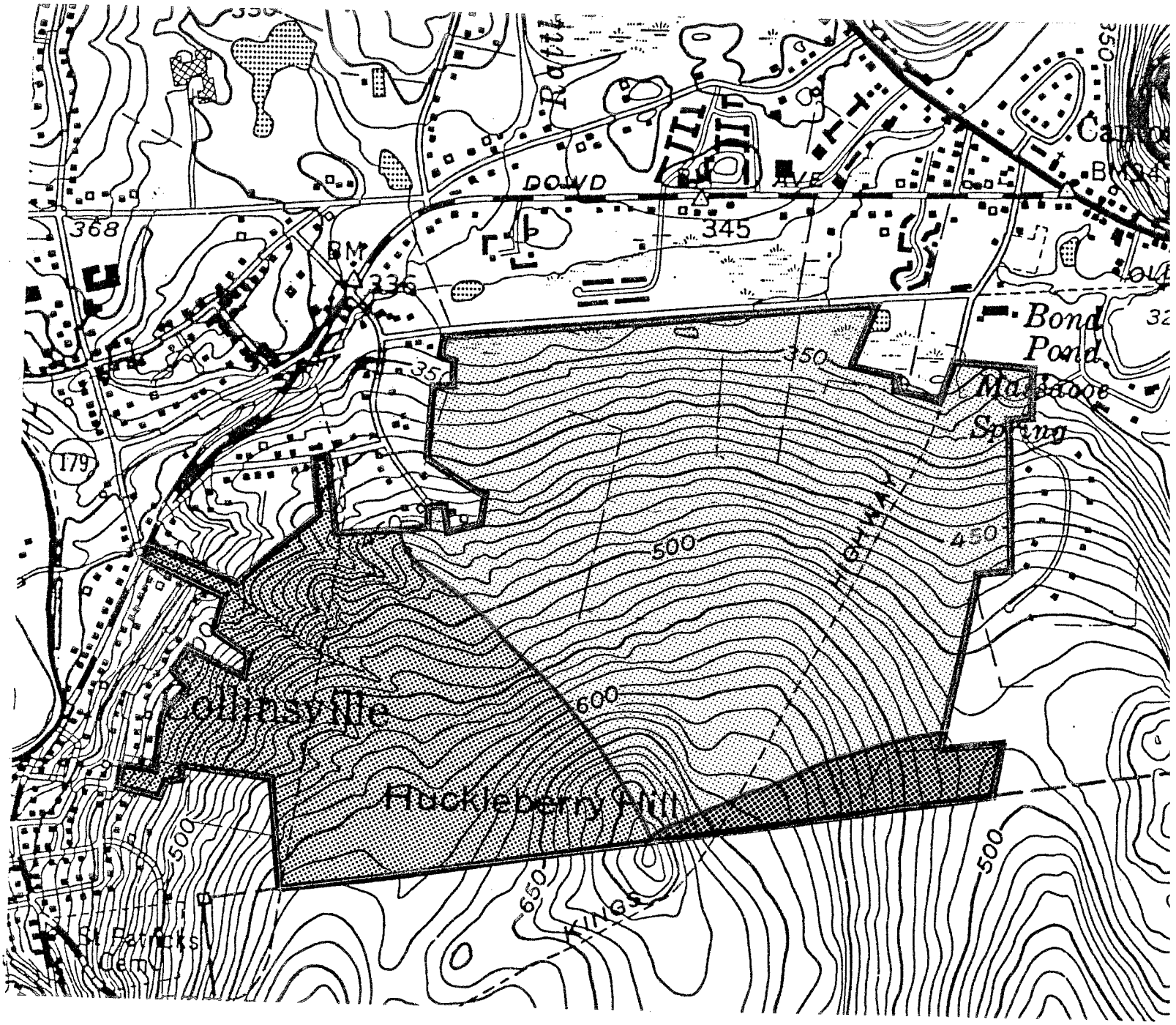
The presence of steep slopes on the site especially at the western limits and the presence of silty soils suggests a potential for erosion and siltation problems if not properly addressed. Each developer should present a detailed soil and erosion plan that addresses site conditions. The plan should be properly enforced by the Town and checked on a regular basis. Given the size of the study area and potential for high density developments, land disturbance seems inevitable. If issues such as flooding and soil erosion are not properly addressed in the study area as a whole, the potential impacts arising from imminent development projects may be severe and not easily rectified.

Groundwater in the area is classified by the DEP as GA, which means that it is suitable for private drinking water supplies without treatment.

WATERSHED BOUNDARY MAP

Scale 1" = 1000'

Portion of site that drains to unnamed tributary to Rattlesnake Brook
Portion of site that drains directly to the Farmington River
Portion os site that drains to an unnamed tributary to Roaring Brook



6. Water Supply

Public water facilities are accessible to the study area. If, for some reason, an on-site well is desired, bedrock would probably have to be tapped. Depending on the location of the well, one hundred feet or more of till may need to be penetrated in places before bedrock is reached. A well drilled no more than 200 feet into the bedrock should be capable of yielding 2-5 gallons per minute, but there is at least a slight probability that drilling in any particular location will result in a dry hole. According to a map entitled Groundwater Availability in Connecticut (Meade, 1978) the northern limits of the study area (between the raised railroad bed and the 350 foot contour) are believed to be underlain by coarse grained stratified drift material. The exact thicknesses are unknown. Additionally, hydrogeologic data for this area is incomplete and verification will require further investigation. Commonly, where stratified drift deposits are coarse grained, generally thick and close to a major streamcourse (saturated) it may be possible to obtain relatively large volumes of groundwater (approximately 50 to 2,000 gallons per minute).

The natural water quality should be generally adequate, but because of the particular mineralogy of the bedrock underlying the site, there is a chance that the water will have undesirable concentrations of iron or manganese, which will discolor the water.

7. Geologic Development Concerns

Except for the Town's industrially zoned parcel at the northern limits, the study area is currently zoned for residential uses. Residential lots, one acre in size would be allowed in the zone. Other uses which do not meet the one acre minimum requirements would require a formal zone change. Residential lots as well as industrial uses on the town owned parcel would currently require the installation of an on-site sewage disposal system since the town's sewage treatment plant is currently at capacity. Public water is accessible in the study area, but individual on-site wells may also utilize the underlying bedrock aquifer. As mentioned earlier the bedrock aquifer should be capable of yielding 2-5 gallons per minute, a yield adequate for most domestic purposes and for industrial land-uses that do not require large volumes of water. In consideration of existing groundwater quality in the study area (Class GA) and risk of groundwater contamination by industrial type land uses that need to rely on individual on-site septic systems would tend to be higher unless septic tank effluent is restricted to domestic type wastes. It is recommended that any industrial development which takes place in the study area be served by municipal water. Any industrial development that takes place in the study area and needs to rely on individual on-site septic systems should be carefully screened by the Town i.e., building official and health district sanitarian to ensure that they do not generate wastes which pose a risk of groundwater contamination. There are certain type industrial uses which should be permitted in the park only if they are connected to municipal sewers. Only those industrial uses that are limited to domestic wastes should be allowed without the availability of municipal sewers.

Based on soil mapping data, geologic maps and visual observations made during the field review, the major geologic limitations occurring in the study area appear to be: (1) an area of shallow to bedrock soils at the southern limits; (2) the presence of "hardpan" soils, which typically have slow percolation rates and seasonally high water tables; and (3) the presence of steep slopes in the western and southern parts.

These geologic limitations either singly or in combination will present obstacles in terms of residential or industrial development. They will weigh most heavily on the ability to provide adequate subsurface sewage disposal which is presently required in

the study area. In some cases, properly engineered systems may be able to overcome the limitations. Exploration for subsurface sewage disposal (soil testing) would be required before a determination of the soils ability to handle the anticipated sewage flows can be made. Soil testing should be coordinated with the Farmington Valley Health District. Because of the geologic limitations mentioned earlier, it is expected that residential development might be appropriate at moderate or low densities (2 acres or more) especially where on-site septic systems and wells are required. Lot sizes two acres or greater generally afford a sufficient land area to properly locate septic systems, house, wells and curtain drains(if needed) so that all necessary separating distances are in compliance with the State Public Health Code. The latter, of course will depend on subsurface conditions. Lot sizes might be reduced with extension of municipal water and/or sewer line. The availability of these utilities would minimize the common hydrogeologic concerns associated with developments where on-site wells and septic systems are required. Multi-family and/or industrial developments in the study area appear to be feasible only with extension of municipal sewers. The potential for high volumes of sewage effluent and the potential for industrial contaminants would seem to pose too great a risk to groundwater if on-site sewage disposal is used.

The geologic limitation mentioned above may also pose a hindrance in terms of road and/or driveway construction such as potential for steep road and driveway grades and the need for cut and fills. Cut areas may encounter bedrock which requires blasting.

Since seasonally high water tables are likely to affect parts of the study area it is suggested that all homes with full basements be protected by building footing drains. This will hopefully keep basements dry.

A flood boundary and floodway map was prepared by the U.S. Department of Housing and Urban Development Federal Insurance Administration for the Town of Canton. According to the map the study area lies outside areas subject to flooding during the 100 year and 500 year flood.

Each developer in the study area should be required to have a certified soil scientist delineate the boundaries of regulated inland wetland soils on each parcel, where applicable. If wetlands are present, they should be delineated in the field and

their boundaries superimposed onto the subdivision plan. The soil scientist that does the mapping should sign a statement on the plan which certifies that the boundaries shown on the map are substantially correct. Since inland wetland soils are regulated under State statute, any activity which involves modification, fillings, removal of soils, "starving" wetlands from ground or surface water drainage due to storm drainage,etc will require a permit and ultimate approval by the Town's Inland Wetland Commission. In reviewing a proposal, the Commission needs to determine the impact that the proposed activity will have on the wetlands. If Commission members determine that the wetland is serving an important hydrological or ecological function and that the impact of the proposed activity will be significant, they may deny the activity altogether, or at least require measures that would minimize the impact.

8. Vegetation

The Huckleberry Hill Development Area is a 356 acre parcel comprised of five private properties and town owned land. (The Team Forester calculated the study area to be smaller than the acreage given by the Town) The parcel is primarily forested with 11 acres open.

The vegetative description for the properties can be divided into three broad vegetative cover types. These are mixed hardwoods, softwood/mixed hardwoods, and wetland forest. The cover types are described in more detail under the heading Vegetative Type Description.

In general, the properties consist of forest stands of mixed hardwood sawtimber of moderate commercial value. Of equal or greater value is the area's aesthetics, watershed, diversified wildlife habitat, and passive recreation potentials.

The forest management potential of the parcel is as varied as the ownerships which make it up. The Town of Canton property currently has the best potential to benefit from an active forest management program. Such a program would complement and enhance the other land values.

Vegetative Type Descriptions

The following is a broad breakdown of the vegetation cover types. The types are directly influenced by either soil conditions, past management of the property, or a combination of both. Soil types often dictate the moisture availability which can limit or restrict the vegetation's growth. Historical use of the land also influences the present vegetation type and condition.

Type 1 -- Mixed Hardwood -- Approximately 296 acres of the parcel are comprised of this type. The hardwood species present are ash, aspen, beech, black birch, white birch, yellow birch, black cherry, hickory, red maple, sugar maple, yellow poplar, black oak, chestnut oak, red oak, scarlet oak, and white oak. The softwood species present are red cedar, hemlock, and white pine. The trees range in size from sapling to large sawtimber. On drier sites, the tendency is to find white birch,

hickory, black oak, chestnut oak, white oak, and white pine growing. On moister sites, growth tends to contain a larger percentage of ash, aspen, black birch, yellow birch, black cherry, red maple, sugar maple, yellow poplar, red oak, scarlet oak, white oak, and hemlock.

The quality of the stems for lumber production corresponds to the soil conditions, in so much as the deeper well-drained soils tend to produce better tree growth.

Type 2 -- Softwood/Mixed Hardwood -- Approximately 30 acres of the parcel can be considered growing this type. These are stands where hemlock or white pine make up a majority of the trees present. The hardwoods found in Type 1 may occur with these softwoods. As in Type 1, the moisture availability of the soils influences the occurrence and growth of the softwood species. Hemlocks tend to favor moister soils, while on drier sites white pine is more prevalent.

Type 3 -- Wetland Forest -- Approximately 15 acres of the Town of Canton property can be classified as this type because of the presence of soils that are poorly drained and have seasonally high water tables. The hardwood species present are alder, ash, aspen, cottonwood, black gum, red maple, sycamore, and willow. The softwood species present are hemlock and white pine.

Limiting Conditions and Potential Hazards

This section will address the factors that could limit forest management activities on the parcel.

The diversity of ownerships which make up the parcel restricts the ability to develop a comprehensive management scheme. The landowner objectives for some of the properties are to convert the forest into residential developments. Here forest management is limited to identifying trees to leave for house lots and the marketing of forest materials that could be generated through construction of roadways and building lots. The other private ownerships' objectives were not known and the scope of management will be directly influenced by them.

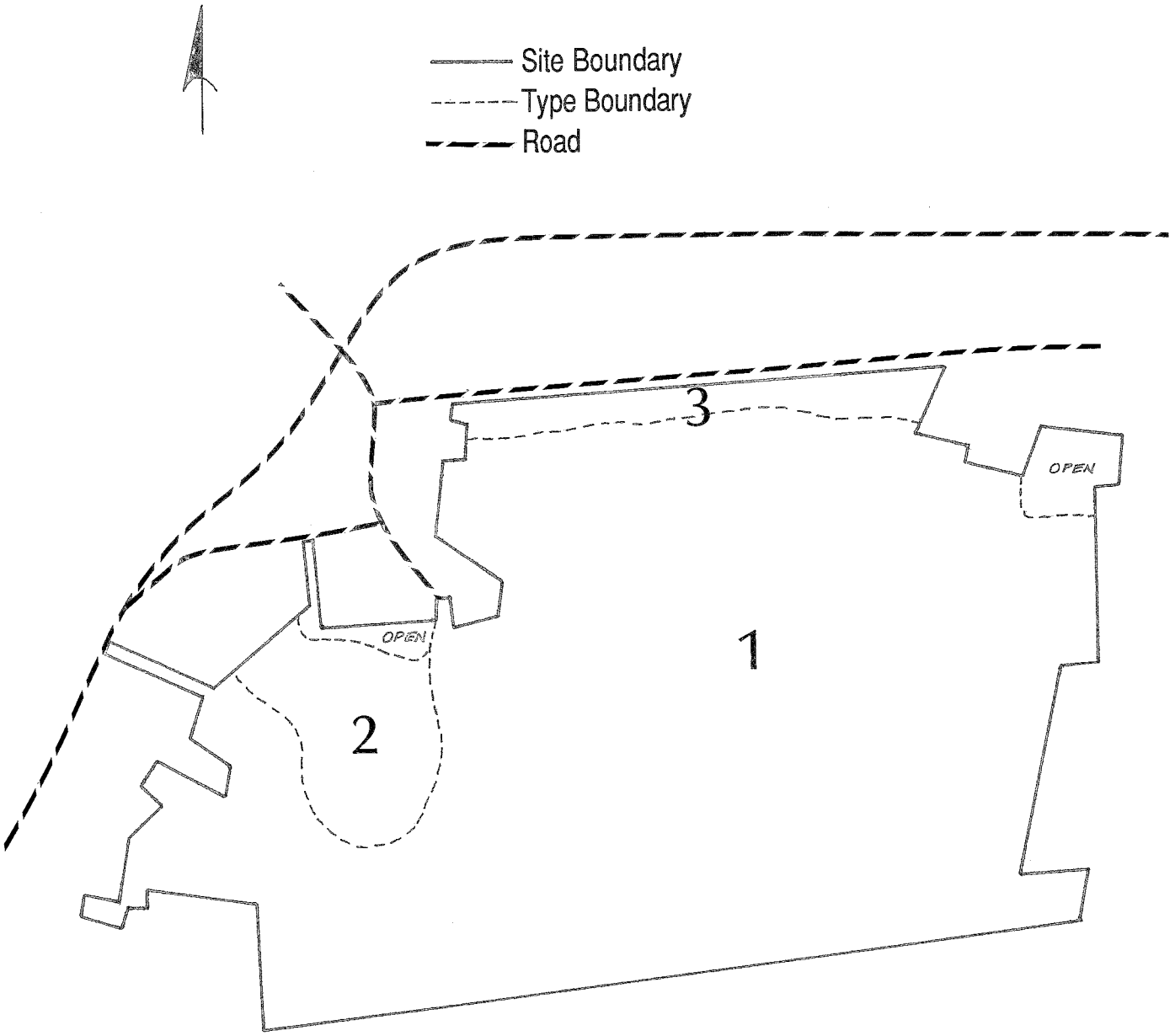
The natural factor that may limit operations on the properties are the soils that have poor drainage or are excessively shallow to bedrock. The potential hazard is that openings made in the forest canopy could predispose the remaining trees to windthrow.

Management Considerations

Forest management recommendations for ±350 acres based on observations from a day's walk through the properties would be very general. A detailed forest management plan would require a more intensive forest stand inventory than the ERT process can offer. Further assistance in forest management planning can be obtained from a public service forester with the Connecticut Bureau of Forestry or a private consultant forester. For information about such services or to obtain names of consulting foresters, contact the Connecticut Bureau of Forestry's Pleasant Valley Office at 379-7085 or write P.O. Box 161 Pleasant Valley, CT 06063.

VEGETATION MAP

Scale 1" = 1000'



9. Wildlife Resources

Description of Area and Habitat

The 400 acres of land occupies the north half of the hill known as Huckleberry Hill, which lies half in Canton and roughly half in Avon. The area under consideration is in Canton near the Collinsville section). The parcel slopes down to the developed areas of Collinsville. The remaining half of the hill which abuts this property in Avon is not developed at this point except at the lower elevations. This area represents one of the larger remaining tracts of undeveloped land in the immediate Collinsville area.

Most of the area is covered with mature oak hardwood dominated forest. Logging in the past has created some small openings which have regrown to briars, seedlings and saplings. The area also contains a number of wetlands, mainly deciduous wetlands. In addition, there are several very small ponds on the parcel owned by the town of Canton. Several streams, some intermittent and some which flow year round are found on the parcel.

Thus the area offers several different habitat types including mature deciduous forest, forest openings, wetlands and several brooks. Generally, the greater the habitat diversity and degree of interspersion of these habitat types, the greater the variety of wildlife there will be using an area. The area does offer some variety of habitats, although the variety along with the degree of interspersion is limited. But the area does represent a large tract of undeveloped forest habitat. The area offers fair to good habitat in general and probably good habitat for species requiring large tracts of forestland habitat with relatively little human disturbance.

Species which might utilize this area for all or some of their habitat requirements would include: gray squirrel, deer, coyote, fox, white-footed mouse, meadow vole, short-tailed shrew and various song birds such as the catbird, robin, cardinal, yellow warbler, a variety of sparrows, and various raptors. Various species of reptiles and amphibians could also be expected to use the site such as northern brown watersnake, garter snake, spotted turtle, painted turtle; along with a variety of frogs and salamanders.

As stated before, this Huckleberry Hill parcel represents one of the larger undeveloped areas of land in Collinsville. The area is surrounded by development on three sides, but the south boundary of the property adjoins a large undeveloped acreage located in Avon, which adds to its value as wildlife habitat. This adjoining area represents the largest contiguous tract of open land remaining in the town of Avon. Taken together these two tracts comprise almost 2000 acres, the majority of which lies in Avon.

There are other large acreages of undeveloped land in Canton, but most of this land is located in the northern section of town.

The area under consideration is comprised of five ownerships. Three of the major landowners are proposing major residential development on their properties. Eighty-three acres owned by the town of Canton had been purchased with the intention of developing an industrial park. This proposal has not been committed to.

Forest

The mixed hardwood forest contains a variety of tree and shrub species. Forested areas provide cover, nesting and roosting places. In addition, various tree and shrub species provide valuable food in the form of mast, fruits, catkins buds and twigs. For example, the oak provides mast or acorns and buds and twigs for browse. Some parts of the forest have a fairly thick understory of shrubs and small trees. This diversity of foliage heights encourages a diversity of wildlife use especially for songbirds. In general, the greater the foliage height diversity, the greater the diversity of song birds there will be using an area.

The snag trees (dead trees) on the property provide insects for a variety of wildlife such as woodpeckers, chickadees and other insect eating birds. The den trees (trees with holes) found scattered throughout the property provide cavities for nesting owls, swallows etc. The cavities also provide denning sites for raccoons etc.

The small forest openings provide early successional stage habitat, an important type of habitat because it contains a variety of plant communities including grass and herbaceous plants to shrubs and young trees. Although this

habitat type is limited in this area, where present these areas can provide food and cover to wildlife.

Brooks/Wetlands

There are several areas of deciduous wetlands, wetlands associated with brooks and the two small ponds located in the area. These areas provide habitat for a variety of species. Deciduous wetlands can be especially important areas for reptile and amphibian breeding.

Because wetlands increase the habitat diversity of an area and offer a variety of food and cover to wildlife they are important areas to consider as open space. Acre for acre wetlands and their associated riparian zones exceed all other land types in wildlife productivity. In addition to their value as wildlife habitat, wetlands serve other valuable functions including, water recharge, sediment filtering, flood storage etc. Because of their value as wildlife habitat and the other important functions they serve, the development of, filling in and/or crossing should be avoided or limited whenever possible.

As proposed the retention basins (partially vegetated and rip rapped shallow excavations) will have little value to wildlife. (This refers to the Landev subdivision) A grassed in retention pond does not typically duplicate the function of a naturally created wetland with its own unique hydrology and vegetational diversity. Because the basins would probably not provide water on a steady basis, and would have low vegetational diversity they would not be attractive to many species of wildlife. The grass would offer little cover and have limited food value. The creation of retention ponds in a non-wetland site within the wetland may have negative effects on the wetland around it, such as changing its hydrology and thus vegetation.

If no other alternative to the retention pond can be found, then constructing the pools so that some level of water can be maintained in them should be considered. With a continuous pool of water, a greater variety of vegetation could be sustained, and the pools would probably be useful to a greater variety of wildlife.

Wetland areas are limited in quantity in the state and continue to dwindle on an almost daily basis, another important factor in considering their preservation.

Their value increases as the quantity of the resource diminishes. A buffer of the least 100 feet is recommended around any wetland to preserve its value and use by wildlife.

Because of the importance of wetlands to wildlife and the fact that wetlands are being reduced on an almost daily basis it is always preferably to choose a path of development that least impacts wetlands. The value of a wetland increases as the quantity of the resource diminishes.

Open Space

Whatever type or combination of types of areas are set aside, setting aside an "island of open space" surrounded by development is the least desirable for wildlife. The area should have natural travel pathways for wildlife (such as streams, valleys, and ridgetops) to enter and exit to other open space areas outside the development. The open space area is more valuable to wildlife if not traversed by roads which may impede the movements of wildlife at times. The open space area becomes more valuable to wildlife as its size increases. It is preferable to set aside a variety of habitats, especially if they are connected to one another.

In a small but heavily developed and populated state like Connecticut, where available habitat continues to decline on a daily basis, it is critical to maintain and enhance where possible existing wildlife habitat.

Wildlife Resources and Recommendations

As with any development the impact on wildlife habitat in general will be negative. Generally, the larger the development the greater the impact, obviously. A sizeable area will be broken up and lost with the construction of roads, driveways, walkways, parking areas and homes. Another impact is the loss of habitat where cover is cleared for lawns and landscaping. A third impact is the increased human presence, vehicular traffic, and a number of free roaming dogs and cats. This could drive the less tolerant species from the site, even in areas where there has been no physical change.

Certain species which are adaptable to man's activities may increase due to his presence and associated nuisances may occur. Typical species which can become a nuisance include pigeons, starlings and raccoons.

The design of some of the Huckleberry Hill development which contains many small lots (approximately 1 to 2 acres) will probably augment the negative impacts to wildlife habitat.

Consideration should be given to cluster housing so more open space could be set aside. This would provide a net savings of habitat which although impacted would still be available for some species of wildlife to utilize.

In planning and constructing a development there are steps that should be considered in order to help minimize adverse impacts on wildlife.

1. Maintain a 100 foot (minimum) wide buffer zone of natural vegetation around all wetland/riparian areas to filter and trap silt and sediments and to provide some habitat for wildlife.

2. Utilize natural landscaping techniques (avoiding lawns and chemical runoff) to lessen acreage of habitat lost and possible wetland contamination.

3. Stone walls, shrubs and trees should be maintained along field borders.

4. Early successional stage vegetation (i.e. field) is a habitat type and should be maintained if possible.

5. During land clearing, care should be taken to maintain certain forest wildlife requirements:

    a. Encourage mast producing trees (i.e. oak, hickory, beech). A minimum of five oaks per acre, 14 inches dbh or greater should remain.

    b. Leave 5 to 7 snag/den trees per acre as they are birds and mammals for nesting, roosting and feeding.

c. Exceptionally tall trees, used by raptors as perching and nesting sites, should be encouraged.

d. Trees with vines (i.e. fruit producers) should be encouraged.

e. Brush debris from tree clearing should be piled to provide cover for small mammals, birds and amphibians and reptiles.

f. Shrubs and trees which produce fruit should be encouraged (or can be planted as part of the landscaping in conjunction with the development) especially those that produce fruit which persists through the winter (winterberry, autumn olive). See Suitable Planting Table for a list of suggested shrub and tree species that can be encouraged and/or planted to benefit wildlife.

g. Nesting sites can be provided for a great variety of birds with placement of artificial nest boxes.

Large houselots and implementation of the suggested guidelines may help to minimize some of the adverse impacts to local wildlife populations. Implementation of backyard wildlife activities include providing food, water, cover and nesting areas.

If large houselots cannot be provided for, cluster housing should be considered. By clustering the homes together, less land is disturbed and built on and therefore more remains to be utilized for wildlife habitat.

Table 2 - Suitable planting materials for wildlife food and cover.

Herbaceous/Vines	Shrubs	Small Trees
Panicgrass	Sumac	
Timothy	Dogwood	
Trumpet creeper	Elderberry	Hawthorn
Grape	Winterberry	Cherry
Birdsfoot trefoil	Autumn olive	Serviceberry
Virginia creeper	Blackberry	Cedar
Switchgrass	Raspberry	Crabapple
Lespedeza	Honeysuckle	
Bittersweet	Cranberrybush	
Boston ivy		

10. PLANNING REVIEW

Background Information

The most striking issue faced by the various Canton Land Use Boards and Commissions is how to balance the developer's (and the town's) right to develop the land against the need to preserve open space.

Huckleberry Hill is the last bastion of significant open space remaining in the Collinsville section of Canton. The Hill extends into the Town of Avon and was partly preserved by the town of Avon purchasing the land specifically for open space. Many issues will affect the future of Huckleberry Hill -- sewer capacity, the need for affordable housing, and opportunities to increase the tax base through industrial growth are just a few.

Existing Zoning Designation

The bulk of the site is designated "AR-2" which permits single family development on one acre of land. Various owners hold title to these parcels of land.

One remaining parcel is owned by the Town and is zoned "IP," permitting a coordinated Industrial Park development. This parcel has frontage on a former railroad right-of-way which would require improvement to town road standards.

A great deal of interest exists in increasing the allowable density to permit multi-family housing on the currently zoned "AR-2" land. Indeed, this Hill itself may be one of the town's hopes for development of affordable housing if new construction is determined to be an option. However, increasing or decreasing the current density should be determined by a detailed on-site soils analysis. Since it appears that public sewer will not be available to this site since the sewer plant expansion was recently defeated, a private community system may be explored. The major drawback to this option is the extensive review and approval time period required by the State.

Traffic Issues

Capitol Region Council of Government's Senior Traffic Engineer, Kauzem Baihaghy, was requested to review two traffic narratives dated June 15, 1987 and July 6, 1987, submitted by the Landev Developer to the town of Canton. After reviewing the traffic reports prepared by F. A. Hesketh, it is evident that some further information needs to be developed before a substantive review can be performed by the CRCOG office. They would be happy to review such information once it becomes available. Among the items needed:

-- A Capacity Analysis of background and combined traffic counts for the A.M and P.M. peak hours, specifically for the intersections of Thayer Avenue and Maple Avenue and High Street and maple Avenue;

-- The developer should indicate what his exact intentions are in introducing the percentage of traffic onto Maple Avenue for east and west directions;

-- Sight line distances should be provided for the intersections of Atwater Avenue and Maple Avenue as well as for High Street and Maple Avenue;

-- An accident analysis should be provided;

-- An traffic impact analysis should be provided.

Attached for the Town's use is a report which has been prepared by Kauzem Baihaghy, Senior Traffic Engineer for the Capitol Region Council of Governments. The analysis is based upon information provided by the developer's traffic engineer for a projected development of 120 condominium units on the Viering property located on Huckleberry Hill.

Recommendations

The 1988 Capitol Region Plan of Development designates Huckleberry Hill and surrounding Collinsville as "Town Center." According to this document, appropriate development within this category includes "***clustered*** residential, commercial and light industrial growth." (emphasis the Team Planner's).

When contemplating any degree of development of a former pristine open space, clustering should be considered a viable option. The new development itself, as well as existing surrounding areas would greatly benefit if open space is maximized in the developmental process. Communities in Connecticut such as Farmington, Glastonbury, and Middlebury have utilized land use controls such as open space subdivisions, and multi-family clustering to the benefit of the town as a subdivision, and multi-family clustering to the benefit of the town as a whole. Copies of these regulations are available at the CRCOG office.

Development of this site should be sensitive to the existing slopes. A radical alteration of the natural topography should be discouraged. The proposed road network servicing this site should be coordinated and outlined in a master road plan, including a construction sequencing plan or "phasing plan." This approach will have the least disruptive effect on existing traffic. The Town need not shoulder this financial burden; the traffic engineering costs could be prorated among the developers.

Table 3 - Vehicle Trip Generation Calculation (Residential Condominium)

Residential Condominium(230)

Vehicle Trip Generation Calculations
Fourth Edition
RESIDENTIAL CONDOMINIUM. Land Use, (230)
Average Weekday Vehicle Trip Ends Vs:Dwelling Units

Number Of Dewlling Units=X=(120)

Time Periods	*Equation*	*%Entering Trips*	*%Exiting Trips*
Average Weekday Vehicle Trip Ends Per Dwelling unit	Ln(T)=0.84Ln(X)+2.60 Ln(T)=0.84Ln(120)+2.60 T= 751	Not Avalable	Not Avalable
A.m.Peak Hour Adjacent St. (1 Hour Between 7&9a.m.)	Ln(T)=0.80Ln(X)+0.29 Ln(T)=0.80Ln(120)+0.29 T= 62	16% 10	84% 52
P.m.Peak Hour Adjacent St. (1 Hour Between 4&6p.m.)	Ln(T)=0.84Ln(X)+0.27 Ln(T)=0.84Ln(120)+0.27 T= 73	67% 49	33% 24
Weekday A.m.Peak Hour Generator Per Dwelling unit	Ln(T)=0.82Ln(X)+0.18 Ln(T)=0.82Ln(120)+0.18 T= 61	17% 10	83% 51
Weekday P.m.Peak Hour Generator Per Dwelling unit	Ln(T)=0.79Ln(X)+0.52 Ln(T)=0.79Ln(120)+0.52 T= 74	66% 49	34% 25
Saturday	T=3.62(X)+428.0 T=3.62(120)+428.0 T= 862	Not Avalable	Not Avalable
Saturday Peak Hour Generator	T=0.29(X)+43.0 T=0.29(120)+43.0 T= 78	54% 42	46% 36
Sunday	T=3.13(X)+357.0 T=3.13(120)+357.0 T= 733	Not Avalable	Not Avalable
Sunday Peak Hour Generator	T=0.23(X)+50.0 T=0.23(120)+50.0 T= 78	49% 38	51% 40

11. Archaeological Review

Review of the State of Connecticut Archaeological Site Files and Maps show no archaeological sites within the proposed project area. However, the development overlooks the Collinsville Historic District, which is listed on the National Register of Historic Places. Collinsville is an unusually intact 19th-century community. The National Register inventory-nomination form describes the historic significance of the community. All proposed new construction must take into consideration the potential adverse impact upon this highly significant area. The scale, mass, height, and materials of all new construction should be in keeping with the historic ambience of Collinsville. It is imperative that all mature tree species be retained in order to provide the maximum visual buffer for all new construction.

The Collinsville Historic District Commission should be provided with an opportunity to review and comment upon all proposed new facilities which would be visible from the National Register area.

In summary, the project area has a low-to-moderate sensitivity for prehistoric Indian archaeological resources. However, the Collinsville Historic National Register District is immediately adjacent. All proposed new construction must take into consideration the potential adverse visual impact upon this highly historic area. In addition, the Collinsville Historic District Commission should be allowed to comment on the proposal.

ABOUT THE TEAM

The Eastern Connecticut Environmental Review Team (ERT) is a group of professionals in environmental fields drawn together from a varety of federal, state and regional agencies. Specialists on the Team include geologists, biologists, foresters, soil specialists, engineers and planners. The ERT operates with state funding under the supervision of the Eastern Connecticut Resource Conservation and Development (RC&D) Area — an 86 town region.

The services of the Team are available as a public service at no cost to Connecticut towns.

PURPOSE OF THE TEAM

The Environmental Review Team is available to help towns and developers in the review of sites proposed for major land use activities. To date, the ERT has been involved in reviewing a wide range of projects including subdivisions, landfills, commercial and industrial developments, sand and gravel excavations, elderly housing, recreation/open space projects, watershed studies and resource inventories.

Reviews are conducted in the interest of providing information and analysis that will assist towns and developers in environmentally sound decision-making. This is done through identifying the natural resource base of the project site and highlighting opportunities and limitations for the proposed land use.

REQUESTING A REVIEW

Environmental reviews may be requested by the chief elected official of a municipality or the chairman of town commissions such as planning and zoning, conservation, inland wetlands, parks and recreation or economic development. Requests should be directed to the chairman of your local Soil and Water Conservation District and the ERT Coordinator. A request form should be completely filled out and should include the required materials. When this request is approved by the local Soil and Water Conservation District and the Eastern Connecticut RC&D Executive Council, the Team will undertake the review on a priority basis.

For additional information and request forms regarding the Environmental Review Team please contact the ERT Coordinator: **203-345-3977, Eastern Connecticut RC&D Area, P.O. Box 70, Haddam, Connecticut 06438.**