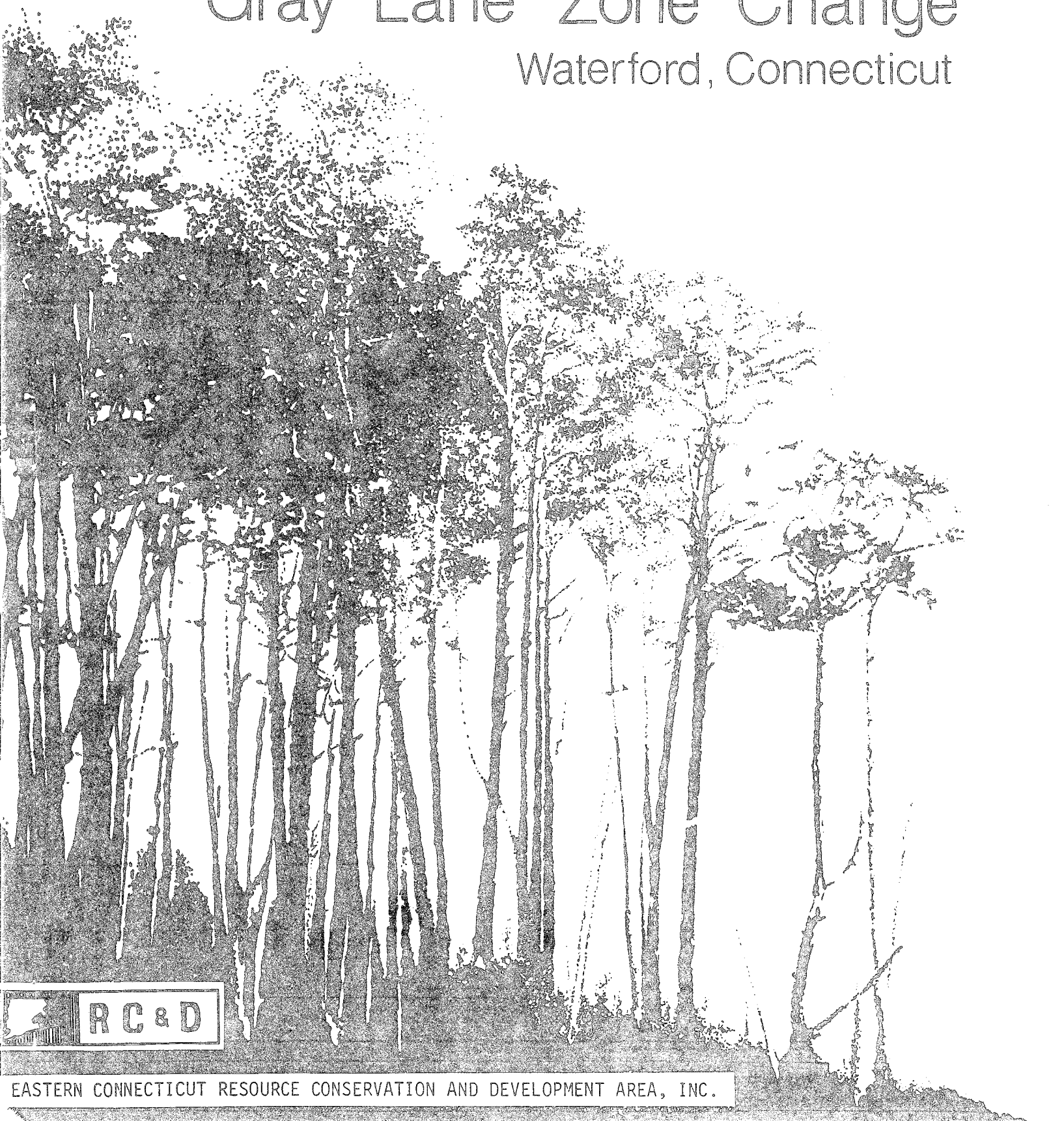
Environmental Review Team Report

Gray Lane Zone Change

Waterford, Connecticut



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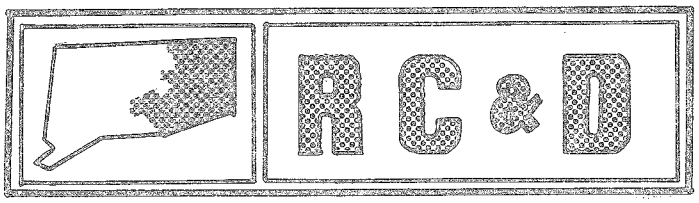
EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT AREA, INC.

Environmental Review Team Report on Gray Lane Zone Change Waterford, Connecticut

January 1982

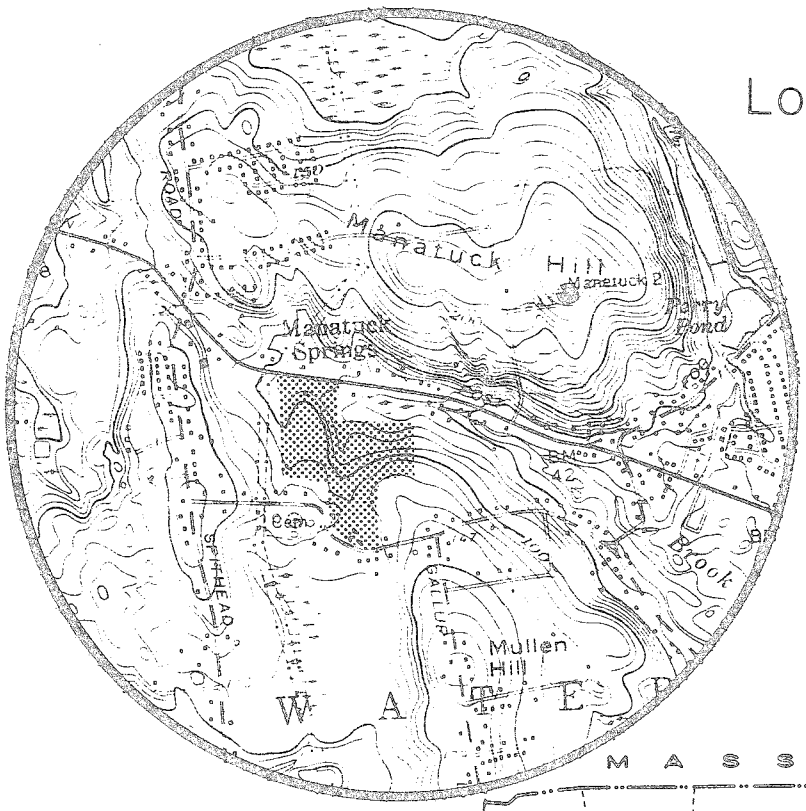


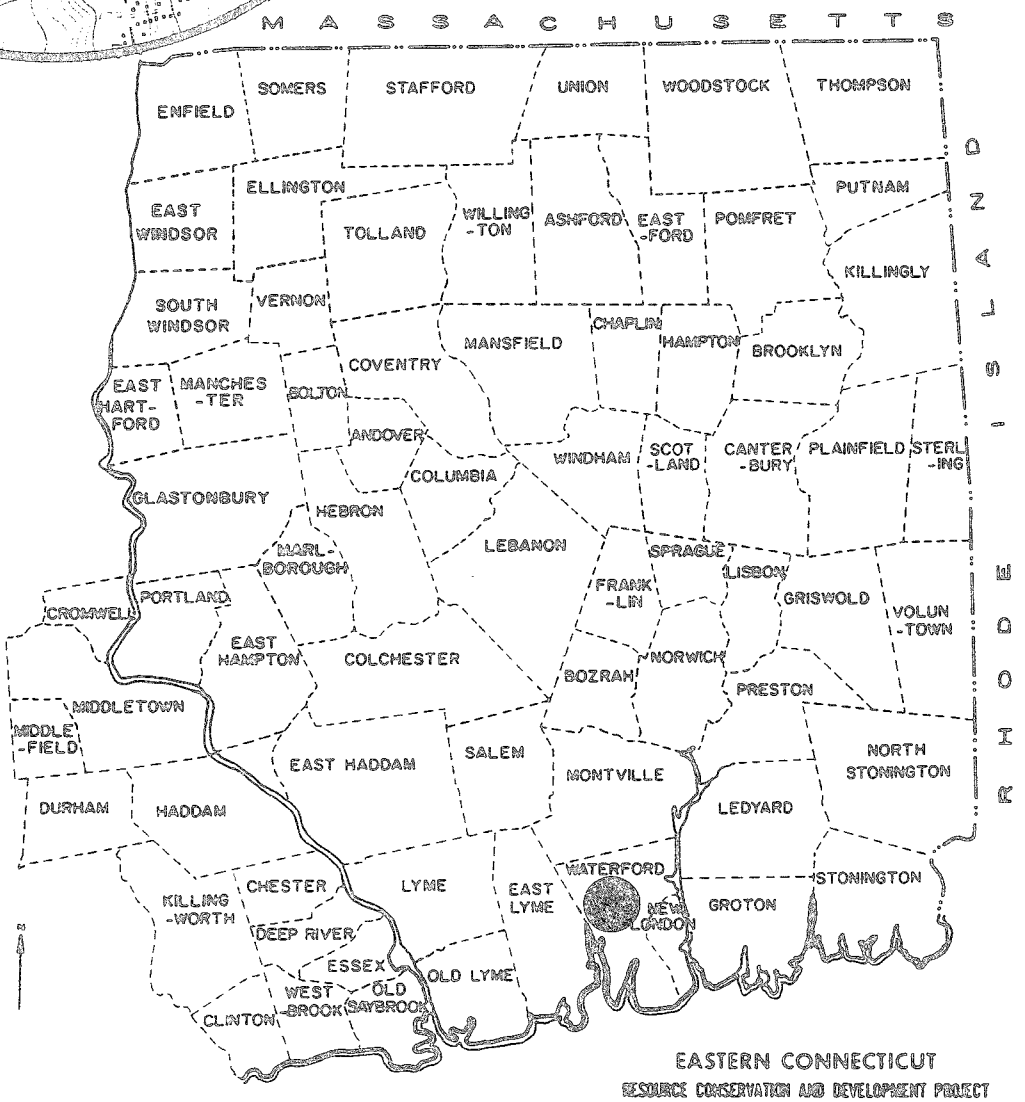
eastern connecticut resource conservation & development area

environmental review team
139 boswell avenue
norwich, connecticut 06360

Location of Study Site

GRAY LANE ZONE CHANGE
Waterford, Connecticut





EASTERN CONNECTICUT
RESOURCE CONSERVATION AND DEVELOPMENT PROJECT

ENVIRONMENTAL REVIEW TEAM REPORT
ON
GRAYLANE ZONE CHANGE
WATERFORD, CONNECTICUT

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

The soils of the site were mapped by a soil scientist of the United States Department of Agriculture (USDA), Soil Conservation Service (SCS). Reproductions of the soil survey map as well as a topographic map of the site were distributed to all ERT participants prior to their field review of the site.

The ERT that field checked the site consisted of the following personnel: Gary Domian, District Conservationist, Soil Conservation Service (SCS); Mike Zizka, Geologist, Department of Environmental Protection (DEP); Rob Rocks, Forester, (DEP); Tom Seidel, Regional Planner, Southeastern Connecticut Regional Planning Agency; and Jeanne Shelburn, ERT Coordinator, Eastern Connecticut RC&D Area.

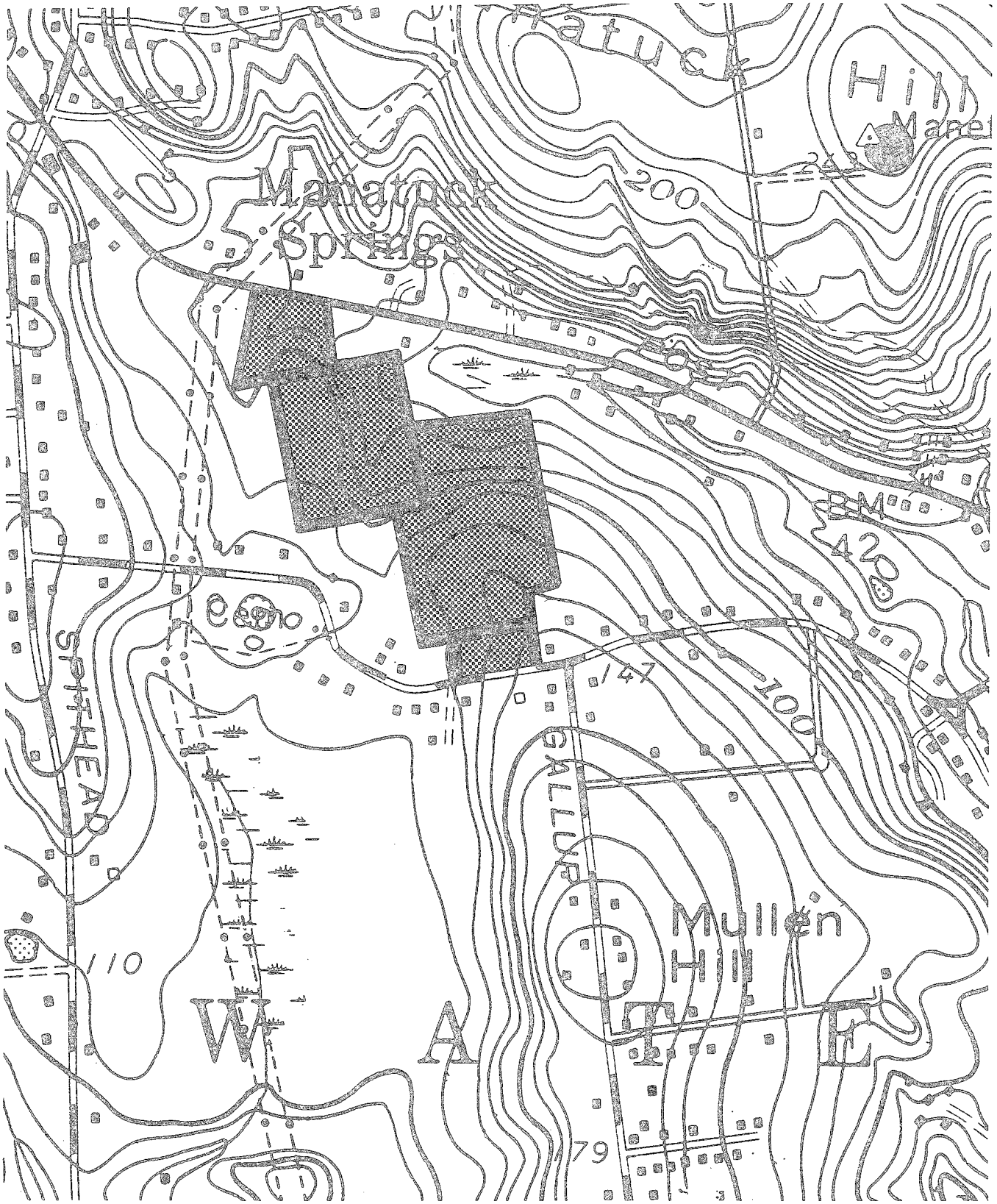
The Team met and field checked the site on Tuesday, December 15, 1981. Reports from each Team member were sent to the ERT Coordinator for review and summarization for the final report.

This report is not meant to compete with private consultants by supplying site designs or detailed solutions to development programs. 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 of Waterford. The results of this Team action are oriented toward the development of a better environmental quality and the long-term economics of the land use.

The Eastern Connecticut RC&D Project Committee hopes you will find this report of value and assistance in making your decisions on this particular site.

If you require any additional information, please contact: Ms. Jeanne Shelburn, Environmental Review Team Coordinator, Eastern Connecticut RC&D Area, 139 Boswell Avenue, Norwich, Connecticut 06360, 889-2324.

Topography	Site Boundary	0 660' scale	N



INTRODUCTION

The Eastern Connecticut Environmental Review Team was asked to prepare an environmental assessment of a proposed zone change and multi-family development in the town of Waterford. The property is approximately 30 acres in size and is located on Boston Post Road, extending south to Mullen Hill Road and Gallup Lane. Preliminary development plans have been prepared by Dicesare-Bently Engineers, Inc., for the Gray Lane Corporation, the present landowners.

The proposed zone change involves two parcels of the site which are currently zoned R-40 (single-family residential). The developers wish to change the zoning of these parcels to CMF (commercial multi-family). The remainder of their site is presently zoned CMF. A CMF zone is required for the proposed development.

Preliminary plans show 188 units proposed for the site. Developers did note that this may change. All units would be served by public water and public sewer. A roadway is planned through the interior of the property, connecting Boston Post Road and Mullen Hill Road. The site is wooded at present, with a moderately sloping terrain near Boston Post Road and a more steeply sloping terrain near Mullen Hill Road. Soils typical of the site include the Sutton series, the Walpole series and the Canton-Charlton series.

The Team is concerned with the effect of this porposal on the natural resource base of this site. Many severe development limitations can be overcome with proper engineering techniques, however, these measures can become costly, making a project financially unfeasible for a developer. As this project is planned to have both public sewer and public water, there will be no need for concern about proper functioning of septic systems or the quality and quantity of water supply. The major concerns expressed by the Team deal with the substantial increases in runoff expected and a need for clarification of the functioning of the detention basin. These issues are fully discussed in the Hydrology section of this report. In the question of Planning Concerns relating to the zone change issue, the Team feels that a change to CMF on this site, with availability of sewer and public water supply, would be appropriate.

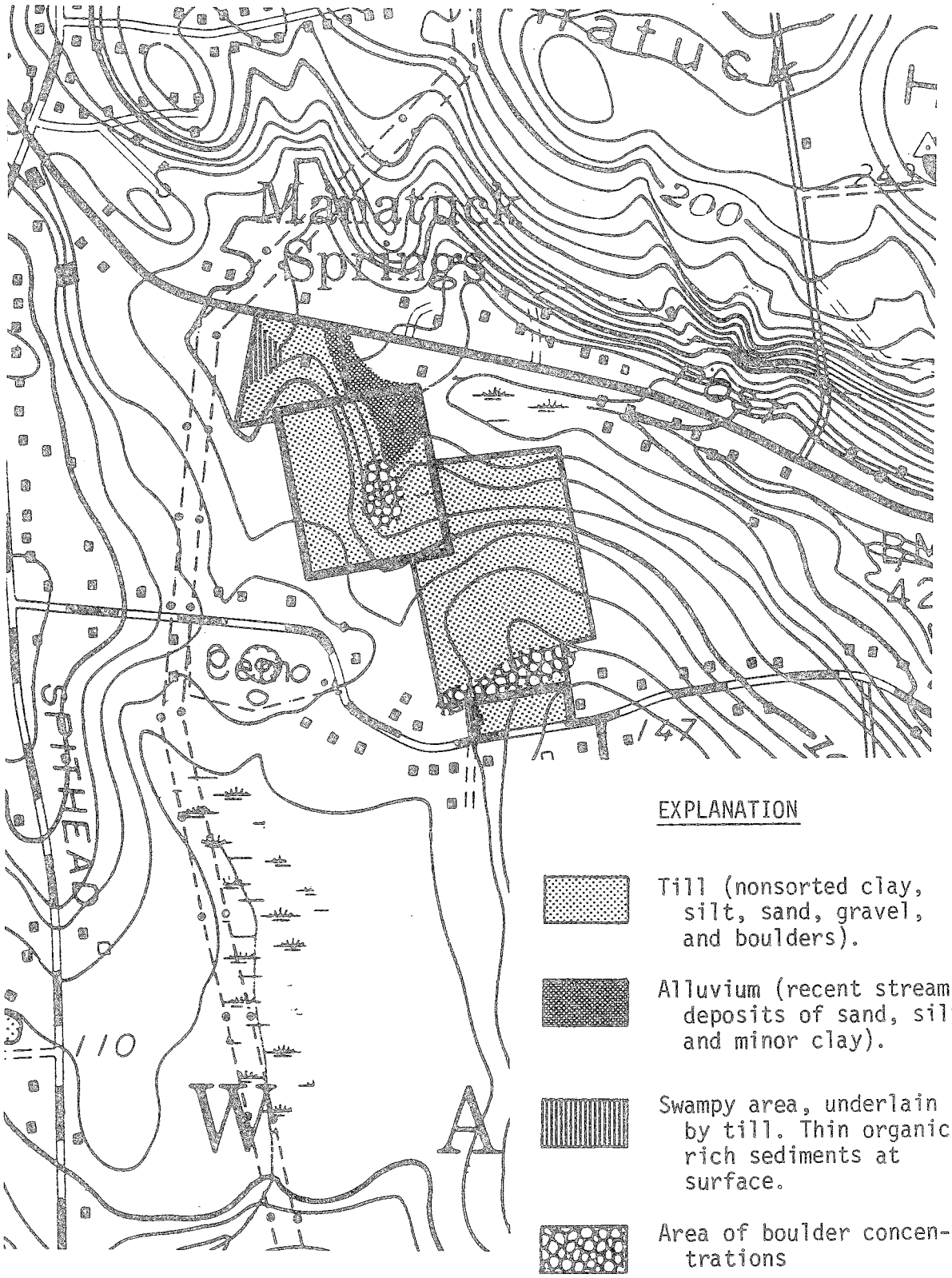
ENVIRONMENTAL ASSESSMENT

GEOLOGY

The Perry property is located within the Niantic topographic quadrangle area. Bedrock and surficial geologic maps of the quadrangle, by Richard Goldsmith, have been published by the U.S. Geological Survey (respectively, Map GQ-575 and Map GQ-329).

No bedrock outcrops were seen on the site. Bedrock is probably closest to the surface along the steep slope in the center of the larger R-40 zoned tract. Elsewhere, the depth to bedrock probably exceeds ten feet, on the

Surficial Geology	Site Boundary	0 660' scale	N



EXPLANATION

- Till (nonsorted clay, silt, sand, gravel, and boulders).
- Alluvium (recent stream deposits of sand, silt, and minor clay).
- Swampy area, underlain by till. Thin organic-rich sediments at surface.
- Area of boulder concentrations

average. Bedrock will probably have little influence on the development of the site, although there is a possibility that rock could be encountered during road construction or sewer-line installation.

Till overlies virtually all of the property. Till is a glacial sediment consisting of a nonsorted mixture of clay, silt, sand, gravel, and boulders. A concentration of surface boulders exists in the southern section of the larger CMF zoned tract. This concentration suggested to Goldsmith that the till in this area was part of a discontinuous end moraine. An end moraine is a linear, hummocky deposit that forms at the end of a glacier (the ice front) when the glacier is neither advancing nor retreating for an extended period of time. Whether the till on this portion of the site is actually part of an end moraine will have little practical effect on the proposed development; the textural characteristics of till and the end moraines mapped by Goldsmith are similar. Typically, the upper few feet of the deposit will be sandy, stony, and loose, while deeper portions will be siltier, less stony, and compact. The texture of till is variable, though, so differences may be expected from place to place.

A second concentration of surface boulders is located along a stream-course near the southwestern corner of the larger R-40 zoned tract. In the northeastern corner, the parcel becomes flat and wet. Thin accumulations of stream-deposited sand, silt, and clay, mixed with minor to major percentages of organic material, overlie till in this area. The developers have proposed constructing a retention pond on this portion of the property.

The surficial geology of the parcel should pose no difficulties for the proposed development, especially since both public water and public sewerage will be available. At worst, the boulder concentrations may be a nuisance to move.

HYDROLOGY

The four tracts of the property all slope generally northward, sending surface drainage into a wetland near Boston Post Road. An unnamed stream flows eastward from the wetland, entering Jordan Brook approximately 4,000 feet east of the site. Jordan Brook then flows south into the estuary known as Jordon Cove.

Several streams actually merge in the wetland near Boston Post Road. One stream originates in a shallow swamp along the western border of the northern-most tract. This stream is piped under the yard of an existing house. It reemerges east of the yard in a wooded area. A second stream, which originates in another wetland just across the Post Road, flows through a culvert under the road and merges with the first stream. A third stream orginates in the bouldery area near the southwestern corner of the larger R-40 zoned tract. This stream flows northeastward, merging with the combined stream described earlier near the northeastern corner of the site.

Any development of the property will cause runoff increases and, without controls, increases in the peak flows of all the streams described above. The

present development plans are preliminary, but the Team geologist estimated the changes in runoff volumes for the site as a whole assuming both a 40-percent impervious cover and a 60-percent impervious cover after development. Rainfall data were taken from Flood Flow Formulas for Connecticut, a technical paper prepared by Paul Biscuti of the Department of Environmental Protection. These data were accumulated at many gaging stations in Connecticut by the U.S. Geological Survey. Runoff volumes were estimated using a table found in SCS Technical Release No. 55.

Table 1. Estimates of rainfall and runoff on the site for storms of various frequencies.

	2-Year Storm	10-Year Storm	25-Year Storm	50-Year Storm	100-Year Storm
24-hour rainfall (inches)	3.2	5.2	6.5	7.5	9.0
Present runoff (inches)	0.52	1.61	2.50	3.24	4.41
Future runoff, 40% impervious (inches)	1.41	3.07	4.24	5.16	6.57
Percentage increase	171%	91%	70%	59%	49%
Future runoff, 60% impervious (inches)	1.85	3.66	4.98	5.94	7.31
Percentage increase	256%	127%	99%	83%	66%

As Table 1 shows, substantial runoff increases may be expected on the site for all storm frequencies. Peak flows in local streams would also rise significantly unless the additional runoff were controlled. The developer has proposed, and received a permit for, construction of a retention pond in the northeastern corner of the larger parcel now zoned R-40. This pond would be dry normally, but would have the capacity to maintain flows at present levels following development for storms up to a 25-year frequency. The pond is proposed to have a grassed bottom, and would be located in an area that presently serves a natural runoff-retention function.

Several issues involving the retention basin should be clarified. The presently suggested layout of the development would seemingly allow only a portion of the property to drain through the basin. Certain areas, specifically those units placed on the eastern side of the proposed road in the southernmost tract, apparently would continue to drain due north, downstream of the basin and off the property. This runoff would, therefore, not be controlled. In order to prevent flow increases in the receiving stream, the basin will need to be designed to compensate for the uncontrolled runoff increases from this

section of the development. If the 25-year storm is to be the measure, for example, flows from the outlet of the basin would actually have to be less than they would be for the same storm today, since flow increases from the development would be occurring downstream.

If only one outlet pipe is used for the basin, as seems most likely, the uncontrolled portion of the runoff may not be a problem. If, for instance, the outlet were designed to allow no more than the flow that would presently occur during a 2-year storm, the uncontrolled runoff would certainly not be enough to raise the total streamflow to present 25-year storm levels. If, on the other hand, a series of outlet pipes at different levels were employed in order to allow present flow rates for several different storm frequencies, the uncontrolled runoff might be a consideration. The multiple-outlet solution may be more expensive, but it would require less storage area than a single-outlet basin designed for low peak-release rates.

The major point is that the developers should clarify what type of basin and outlet structures they have in mind and how that will relate to the uncontrolled runoff. Also, some consideration should be given to increasing the capacity of the basin to accommodate 50-year storm retention. With a natural bottom, the increased basin size may not be economically impractical. A final point that should be addressed is what will happen when the water flow into the new road culverts exceeds the capacity of the culverts. Water would have to be ponded temporarily west of the road. The developers should indicate where the ponding would occur and whether it would have any impact on nearby multi-family units. This question seems most critical for the units in the northernmost tract, near the CL&P right-of-way.

SOILS

A detailed soils map of this site and detailed soils descriptions are included in the Appendix to this report, accompanied by a chart which indicates soil limitations for various urban uses. As the soil map is an enlargement from the original 1,320 feet/inch scale to 660 feet/inch, the soil boundary lines should not be viewed as absolute boundaries, but as guidelines to the distribution of soil types on the site. The soil limitations chart indicates the probable limitations of each of the soils for on-site sewage disposal, buildings with basements, streets and parking, and landscaping. However, limitations, even though severe, do not preclude the use of the land for development. If economics permit large expenditures for land development and the intended objective is consistent with the objectives of local and regional development, many soils and sites with difficult problems can be used. The soils map, with the publication, New London County Interim Soil Survey Report, can aid in the identification and interpretation of soils and their uses on this site. "Know Your Land: Natural Soil Groups for Connecticut" can also give insight to the development potentials of the soils and their relationship to the surficial geology of the site.

The nearly level, poorly drained areas on stream terraces and outwash plains are occupied by Walpole sandy loam. Walpole sandy loam is designated

by soil mapping unit symbol 466. Walpole soils formed in glacial outwash. Permeability is moderately rapid in the surface layer and subsoil, and rapid or very rapid in the substratum. A high water table exists at or near the surface 7 to 9 months of the year. Surface runoff is slow. Walpole sandy loam is a regulated wetland soil according to P.A. 155.

The nearly level to gently sloping, very stony, moderately well drained areas on uplands are occupied by Sutton very stony fine sandy loam. This soil is designated by soil mapping unit 41XB. The letter "X" denotes a very stony surface condition. The letter "B" denotes slopes as being 0 to 8 percent. Sutton soils formed in friable glacial till. Permeability is moderate to moderately rapid. A seasonal high water table exists at 18 to 24 inches. Surface runoff is slow to medium.

The gently sloping well drained areas on drumlins or elongated hills of uplands are occupied by Paxton and Montauk very stony fine sandy loam. This soil is designated by soil mapping unit symbol 35XB. The letter "X" denotes a very stony surface condition. The letter "B" denotes slopes as 3 to 8 percent. Paxton and Montauk soils formed in compact glacial till. Permeability is moderate in the surface layer and subsoil and slow in the substratum (fragipan). Surface runoff is medium to rapid.

The sloping well drained soils on uplands are occupied by Canton and Charlton very stony fine sandy loams. This soil is designated by soil mapping unit symbol 11XC. The letter "X" denotes a very stony surface condition. The letter "C" denotes slope as 8 to 15 percent. Canton soils formed in fine sandy loam mantle underlain by friable gravelly sandy glacial till. Canton soils have moderately rapid or rapid permeability. Surface runoff is medium. Charlton soils formed in friable glacial till. Charlton soils have moderate to moderately rapid permeability. Surface runoff is medium to rapid.

The gently sloping well drained uplands are occupied by Canton and Charlton very stony fine sandy loams. This soil is designated by soil mapping unit symbol 11XB. The letter "X" denotes a very stony surface condition. The letter "B" denotes slopes as 3 to 8 percent. Canton soils formed in a fine sandy loam mantle underlain by friable gravelly sandy glacial till. Canton soils have moderately rapid or rapid permeability. Surface runoff is medium. Charlton soils formed in friable glacial till. Charlton soils have moderate to moderately rapid permeability. Surface runoff is medium to rapid.

The gently sloping well drained outwash plains and stream terraces are occupied by Agawam fine sandy loam. This soil is designated on the soil map by the soil mapping symbol 96B. The letter "B" denotes slope as 3 to 8 percent. Agawam soils formed in water sorted sands. The soils have moderately rapid permeability in the surface layer and subsoil, and rapid permeability in the substratum. Surface runoff is medium. Agawam fine sandy loam qualifies as Prime Farmland soil in Connecticut.

The moderately steep to steep well drained uplands are occupied by Canton and Charlton extremely stony fine sandy loams. This soil is designated by soil mapping unit symbol 11MD. The letter "M" denotes an extremely stony surface condition. The letter "D" denotes slopes as 15 to 35 percent. Canton

soils formed in a fine sandy loam mantle underlain by friable gravelly sandy glacial till. Canton soils have moderately rapid or rapid permeability. Surface runoff is medium. Charlton soils formed in friable glacial till. Charlton soils have moderate to moderately rapid permeability. Surface runoff is medium to rapid.

Sewer line construction will begin for this area in the spring of 1982. Public water systems are already available. The availability of the sewer lines will negate the severe limitations for onsite sewage disposal in all the soils, especially those soils with seasonal high water tables, slow perc rates, and steep slopes. Construction of homes with basements is severely limited on Sutton soils (41XB) and Walpole soils (466) because of high water tables and risk of frost action. Walpole soils are also designated as wetland soils. Other severe and moderate limitations due to surface stoniness and steep slope are generally overcome by proper land preparation, building siting and land grading.

The main road through the property has been located to minimize the impact on the wetlands, however, it will require altering wetlands. This wetland system has been altered downstream in several cases. Sediment accumulations are evident in this system, especially south of Boston Post Road and about 100 feet into the property. The fill will have a minor impact if considered as part of the entire watershed. However, as small areas of fill progress within the wetland and watershed, they can develop into a liability downstream. The impact that filling the wetland will have is that it will decrease wetland habitat and surface area that normally may have been used for storm water storage. Wherever the road crosses the wetlands, adequate drainage beneath the road must be provided and take into account runoff that will be generated after the project is complete.

A sediment retention pond is planned for the site which will reduce further degradation of the wetland. The sediment retention pond is to be planned to allow for adequate storage of sediment anticipated from the watershed behind it. Provisions will also be made to have the basin cleaned out and the spoil spread in non-critical areas that will not allow the sediment to re-enter the basin. Revegetating critical slopes and final graded areas should take place as soon as possible after construction.

VEGETATION

The property proposed for zone change and subsequent development may be divided into three vegetation types. These include several stands of mixed hardwoods which total 19± acres, old field areas which total 7± acres and hardwood swamp areas which total 4± acres.

Vegetation Type Descriptions:

Type A. (Mixed Hardwoods) This 8± acre over-stocked stand is made up of medium quality pole to sawtimber-size white oak, black oak, red oak, black birch, red maple and occasional yellow birch, tulip tree and American beech, all of which are declining in vigor. Many of the largest trees are, however, reasonably

Vegetation

0 660'
scale

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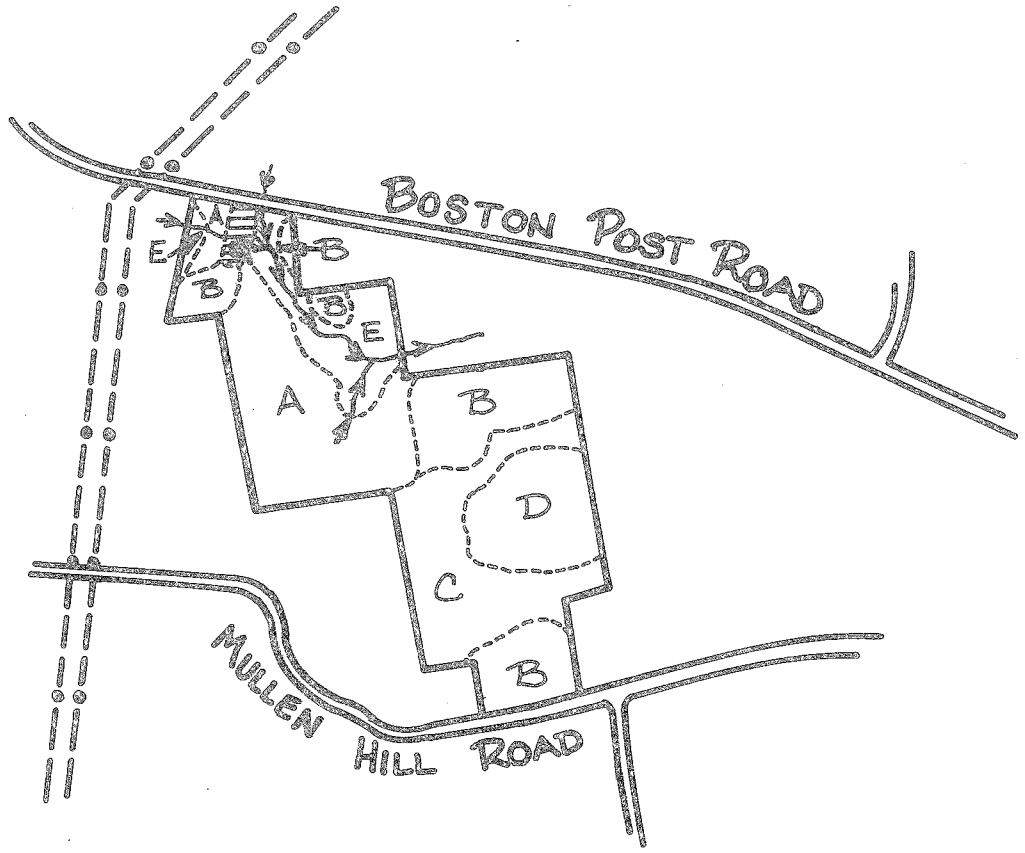

LEGEND

- Road
- Property Boundary
- Vegetation Type Boundary
- Stream
- Building and Grounds, 1±acre
- Power Line

VEGETATION TYPE DESCRIPTIONS*

TYPE A.	Mixed hardwoods, 8±acres, over-stocked, pole to sawtimber-size.
TYPE B.	Old field, 7±acres, under-stocked, sapling to pole-size.
TYPE C.	Mixed hardwoods, 6±acres, fully-stocked, pole-size.
TYPE D.	Mixed hardwoods/burned area, 5±acres, under-stocked, seedling to sapling-size.
TYPE E.	Hardwood swamp, 4±acres, fully-stocked, pole-size.

* Seedling-size = Trees less than 1 inch in diameter at 4 1/2 feet above the ground (d.b.h.)
Sapling-size = Trees 1 to 5 inches in d.b.h.
Pole-size = Trees 5 to 11 inches in d.b.h.
Sawtimber-size = Trees 11 inches and greater in d.b.h.

healthy, although scattered throughout this stand are trees which have large dead branches or are damaged in other ways.

The understory in this stand is made up of mountain laurel, flowering dogwood, hardwood tree seedlings, witch-hazel, spice bush and azalea. Poison ivy, Japanese honeysuckle, Virginia creeper, green brier, barberry, Pennsylvania sedge, club moss, Canada mayflower, Christmas fern, evergreen woodfern, and rock polypody. The total volume present within this stand ranges between 5,500 and 7,500 board feet per acre.

Type B. (Old Field) Approximately 7 acres of this tract is occupied by vegetation characteristic of a transitional stage between old field and mixed hardwoods. These areas are generally understocked with sapling to pole size eastern red cedar, black cherry, red maple, red oak, gray birch, apple, and flowering dogwood. Old field juniper, shadbush, hazelnut, highbush blueberry, smooth sumac, staghorn sumac, alternate leaved dogwood and bayberry are also present. Ground cover is dominated by grasses, goldenrod, green brier, Japanese honeysuckle, poison ivy, club moss and bracken fern.

Type C. (Mixed Hardwoods) This $6\pm$ acre fully-stocked stand is dominated by pole size shagbark hickory, mockernut hickory, black oak, white oak, black cherry, red maple, black birch and occasional sassafras. Mountain laurel, blue beech and witch-hazel are present in the understory. Ground cover consists of poison ivy, Pennsylvania sedge, bracken fern, Christmas fern, green brier and club moss. The total volume of fuelwood which is present within this stand ranges between sixteen and eighteen cords per acre.

Type D. (Mixed Hardwoods/Burned Area) This $5\pm$ acre area which was burned over recently is presently under-stocked with seedling to sapling-size white oak, black oak, mockernut hickory, shagbark hickory, black cherry and gray birch. A dense cover of green brier has become established throughout this area along with lowbush blueberry, huckleberry, bayberry, grasses and bracken fern.

Type E. (Hardwood Swamp) Pole-size red maple with occasional white ash and yellow birch are present in these fully-stocked areas which total approximately 4 acres. Spice bush, sweet pepperbush and highbush blueberry form a dense understory through these areas. Skunk cabbage, swamp dewberry, barberry, poison ivy, cinnamon fern, and marsh fern make up the ground cover vegetation which is present.

Development of this property as proposed will necessitate extensive clearing of the vegetation which is present. Such widespread clearing has the potential to accelerate erosion of the soil from the site causing increased siltation and sedimentation of neighboring watercourses. The potential for degradation of water quality and loss of soil due to erosion can be reduced if a sediment and erosion control plan is drafted and followed for the development of this property. Vegetation plays an important role in reducing erosion and stabilizing soils. It is imperative to revegetate areas with grasses or other suitable ground cover as soon as possible after construction begins.

There are many trees within Vegetation Type A (Mixed Hardwoods) which are healthy and of high enough quality to be considered for retention for their

aesthetic value. If it is at all possible, some of these trees should be retained to provide shade and improve the aesthetic quality of the area once development has occurred.

Several species of flowering trees and shrubs including flowering dogwood and mountain laurel are present in Vegetation Types A, B, and C. These flowering trees and shrubs have high aesthetic value and should be retained where feasible. The flowering of these trees and shrubs may be stimulated by allowing direct sunlight to reach them. This may be accomplished by complete or partial removal of the overstory trees which obstruct direct sunlight.

It should be noted that trees are very sensitive to the condition of the soil within the entire area under their crowns. Soil disturbances which alter the balance between soil aeration and moisture levels, or change soil composition may cause a decline in tree health and vigor and potentially result in mortality within three to five years. Mechanical damage to trees or tree's root systems may cause the same results. Trees and flowering shrubs that are to be retained should be included in the final site plan for development of the area. These trees should be clearly but temporarily marked in the field so that they will not be damaged during construction. It would also be desirable to retain trees in small groups or "islands," when possible. This practice allows trees to be more easily avoided during the construction period.

Windthrow is a potential hazard in the hardwood swamp areas (Vegetation Type E). The soils in these areas are saturated with water for the greater part of the year causing soil aeration to be poor. These conditions result in the development of shallow root systems which are unable to securely anchor trees. Clearings and openings which are made in or along side this area (such as clearing for the proposed retention pond) may accelerate the loss of neighboring trees to windthrow and should, therefore, be minimized or avoided. Ideally, clearing operations should also be avoided in a 30 to 50 foot wide buffer area surrounding the sensitive hardwood swamp areas.

Scattered throughout Vegetation Type A (Mixed Hardwoods) are large saw-timber size trees, some of which have large dead branches which could become a hazard if buildings, roadways, parking lots or utility lines are located near them. These trees should be pruned of their dead branches or completely removed to avoid this potential hazard.

The trees which are present in Vegetation Type A (Mixed Hardwoods) are rapidly declining in health and vigor as a result of their crowded condition. Under these conditions, the trees which are present are becoming more susceptible to further degradation by adverse weather condition, disease and insect infestation. Ideally this stand should receive a commercial improvement thinning. This harvest could remove approximately one-third of the trees from the overstory, focusing on the removal of the poorest quality trees. Such a thinning would reduce the competition between the residual higher quality trees for space, sunlight, nutrients and water. The remaining trees will overtime become more stable and improve in health and vigor.

Should development of the proposed magnitude occur, clearing operations will obviously preclude the need for the above thinning. Trees which are

removed for development of this property should, however, be utilized as fuelwood and, where feasible, as sawtimber. Care should be taken so that the removal of trees desired for retention does not occur. Revenues received from the sale of wood products could be utilized to help offset landscaping costs. A public service forester or private forester should be contacted to help mark trees that are to be removed should the proposed thinning be implemented. A professional forester should also be contacted to select and mark trees and shrubs to be retained for their aesthetic value should development of this property occur.

WATER SUPPLY/WASTE DISPOSAL

Water for the proposed development will be supplied by the New London public water supply system. Public sewer will be provided for waste disposal.

PLANNING CONCERNS

Surrounding land uses are low density residential and commercial along Boston Post Road, medium density residential along Mullen Hill Road, and undeveloped land east and west of the proposed development. The area is recommended for commercial and multi-family uses in the Waterford Plan of Development. Currently the area of the site fronting on Boston Post Road and an interior parcel are zoned commercial-multi-family. It appears logical to rezone the two requested parcels to commercial-multi-family to connect the existing multi-family zoned interior parcel with Boston Post and Mullen Hill Roads. Public water is currently available to the site and public sewers will be available in the near future to serve this kind of development. Governmental and educational facilities are located about 1 1/2 miles east of the site on Boston Post Road.

Weekday commuter bus service to the Groton industrial area is available along Boston Post Road. Two hour interval corridor bus service between East Lyme and New London via Boston Post Road is also available. This service allows one to transfer to local New London buses or to Routes 12 and 32 corridor service.

At a maximum permitted density of eight housing units per 40,000 square feet, the 27 1/2 acre site would allow about 240 units. One hundred eighty-eight units were indicated on a previous sketch plan for the site at a density of about 6.8 units per acre. This will generate new traffic in the area. A 1979 study* indicated an average of 6.1 vehicle trips per weekday generated by an apartment unit. This would indicate a range of 1,147 to 1,464 daily vehicle trips based on the above number of units. This is about 11-14% of the 1979 average daily traffic of 10,700 on this section of Boston Post Road between Cross Roads and Rope Ferry Road. If the site were to be developed for condominiums, the volumes would be lower. A CONNDOT** study indicated an average of 5.3 vehicle trips per weekday generated by condominiums. This would indicate a range of 996 to 1,272 daily vehicle trips based on the projected number of units.

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* Trip Generation, Institute of Transportation Engineers, 1979.

** Trip Generation of Various Land Uses, Supplement A, CONNDOT, 1975.

Another study of CONNDOT* indicated a volume/capacity ratio of 0.9053 for this section of Boston Post Road which means that the road is in the congested category but below the intolerable threshold of a 1.25 ratio.

Any proposed road through the site will intersect Mullen Hill Road along the hill leading up to Gallup Lane. It would be desirable to improve the intersection of Mullen Hill Road and Gallup Lane by reducing the sharp vertical curve in this area. This would improve sight lines for traffic entering and exiting the proposed development. In terms of the site itself, any road should be constructed to avoid negative impacts on the wetland soils. If the access road is to become a public street, its area should be subtracted from the tract total to determine the allowable number of units. If the road occupies 2-3 acres, this would mean a reduction of about twenty units or 100-125 daily vehicle trips.

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* Vehicle/Capacity Ratio, CONNDOT, 1979.

Appendix

Soils

0 660'
scale

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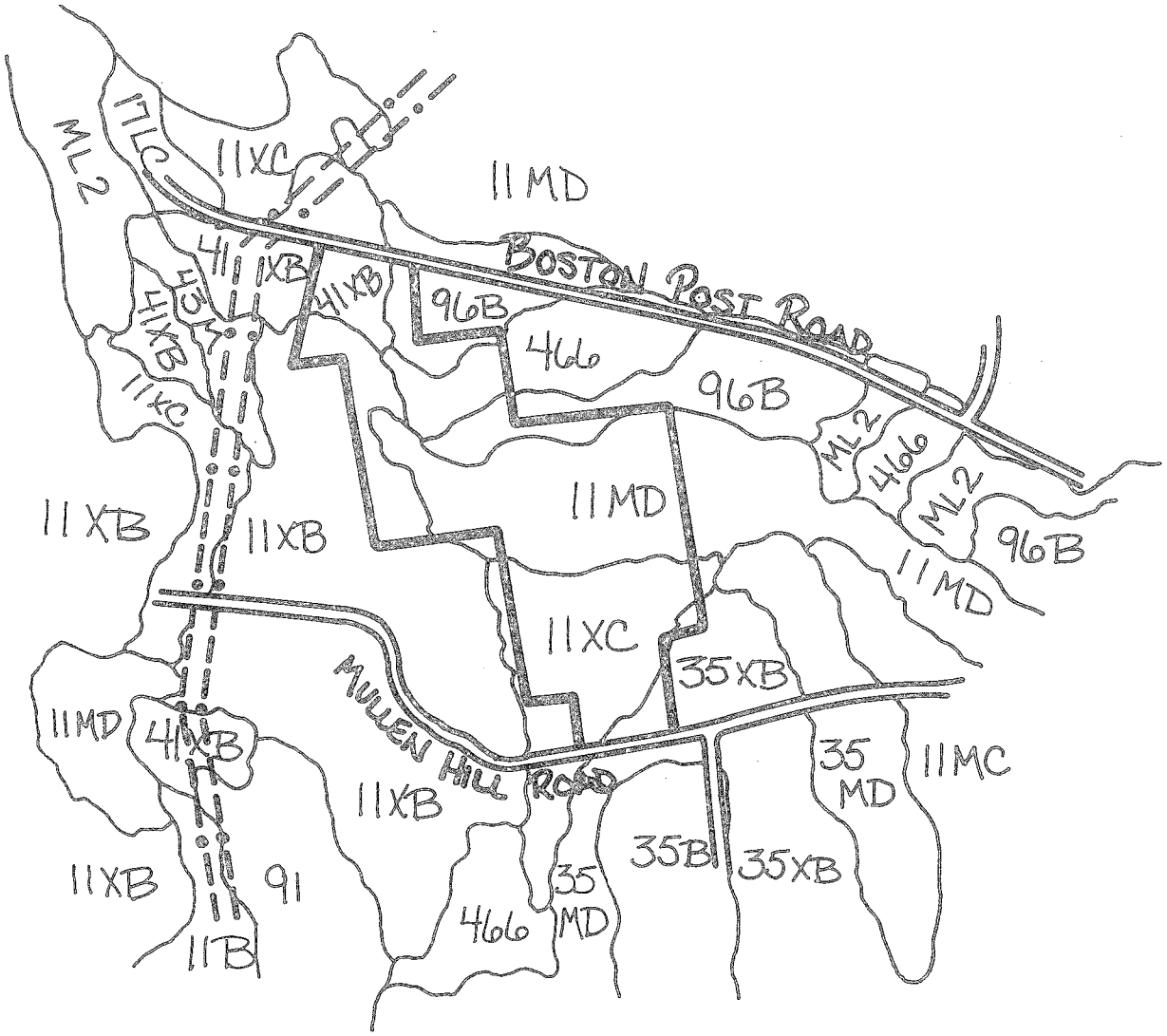

GRAY LANE PROPERTY
WATERFORD, CONNECTICUT

PROPORTIONAL EXTENT OF SOILS AND THEIR LIMITATIONS FOR CERTAIN LAND USES

Soil Series	Soil Symbol	Approx. Acres	Percent of Acres	Principal Limiting Factor	Urban Use Limitations*			
					On-Site Sewage	Buildings with Basements	Streets & Parking	Land-Scaping
Agawam	96B	2	5%		1	1	1	1
Canton-Charlton	11XB	8	21%	Large stones	2	2	2	2
Canton-Charlton	11XC	6	16%	Slope, large stones	2	2	2	2
Canton-Charlton	11MD	12	32%	Slope, large stones	3	3	3	3
Paxton	35XB	5	13%	Percs slowly, Large stones	3	2	2	2
Sutton	41XB	2	5%	Wetness, Frost action	3	3	2	1
**Walpole	466	3	8%	Wetness, Frost action	3	3	3	3
		38	100%					

LIMITATIONS: 1=Slight; 2=Moderate; 3=Severe

** Inland Wetland soil regulated under P.A. 155.

SOIL INTERPRETATIONS FOR URBAN USES

The ratings of the soils for elements of community and recreational development uses consist of three degrees of "limitations:" slight or no limitations; moderate limitations; and severe limitations. In the interpretive scheme various physical properties are weighed before judging their relative severity of limitations.

The user is cautioned that the suitability ratings, degree of limitations and other interpretations are based on the typical soil in each mapping unit. At any given point the actual conditions may differ from the information presented here because of the inclusion of other soils which were impractical to map separately at the scale of mapping used. On-site investigations are suggested where the proposed soil use involves heavy loads, deep excavations, or high cost. Limitations, even though severe, do not always preclude the use of land for development. If economics permit greater expenditures for land development and the intended land use is consistent with the objectives of local or regional development, many soils and sites with difficult problems can be used.

Slight Limitations

Areas rated as slight have relatively few limitations in terms of soil suitability for a particular use. The degree of suitability is such that a minimum of time or cost would be needed to overcome relatively minor soil limitations.

Moderate Limitations

In areas rated moderate, it is relatively more difficult and more costly to correct the natural limitations of the soil for certain uses than for soils rated as having slight limitations.

Severe Limitations

Areas designated as having severe limitations would require more extensive and more costly measures than soils rated with moderate limitations in order to overcome natural soil limitations. The soil may have more than one limiting characteristic causing it to be rated severe.

About the Team

The Eastern Connecticut Environmental Review Team (ERT) is a group of professionals in environmental fields drawn together from a variety of federal, state, and regional agencies. Specialists on the Team include geologists, biologists, foresters, climatologists, soil scientists, landscape architects, archeologists, recreation specialists, engineers and planners. The ERT operates with state funding under the supervision of the Eastern Connecticut Resource Conservation and Development (RC&D) Area.

The Team is 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, sanitary landfills, commercial and industrial developments, sand and gravel operations, 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 officials 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. This request letter should include a summary of the proposed project, a location map of the project site, written permission from the landowner 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 Eastern Connecticut RC&D Executive Council, the Team will undertake the review on a priority basis.

For additional information regarding the Environmental Review Team, please contact Jeanne Shelburn (889-2324), Environmental Review Team Coordinator, Eastern Connecticut RC&D Area, 139 Boswell Avenue, Norwich, Connecticut 06360.