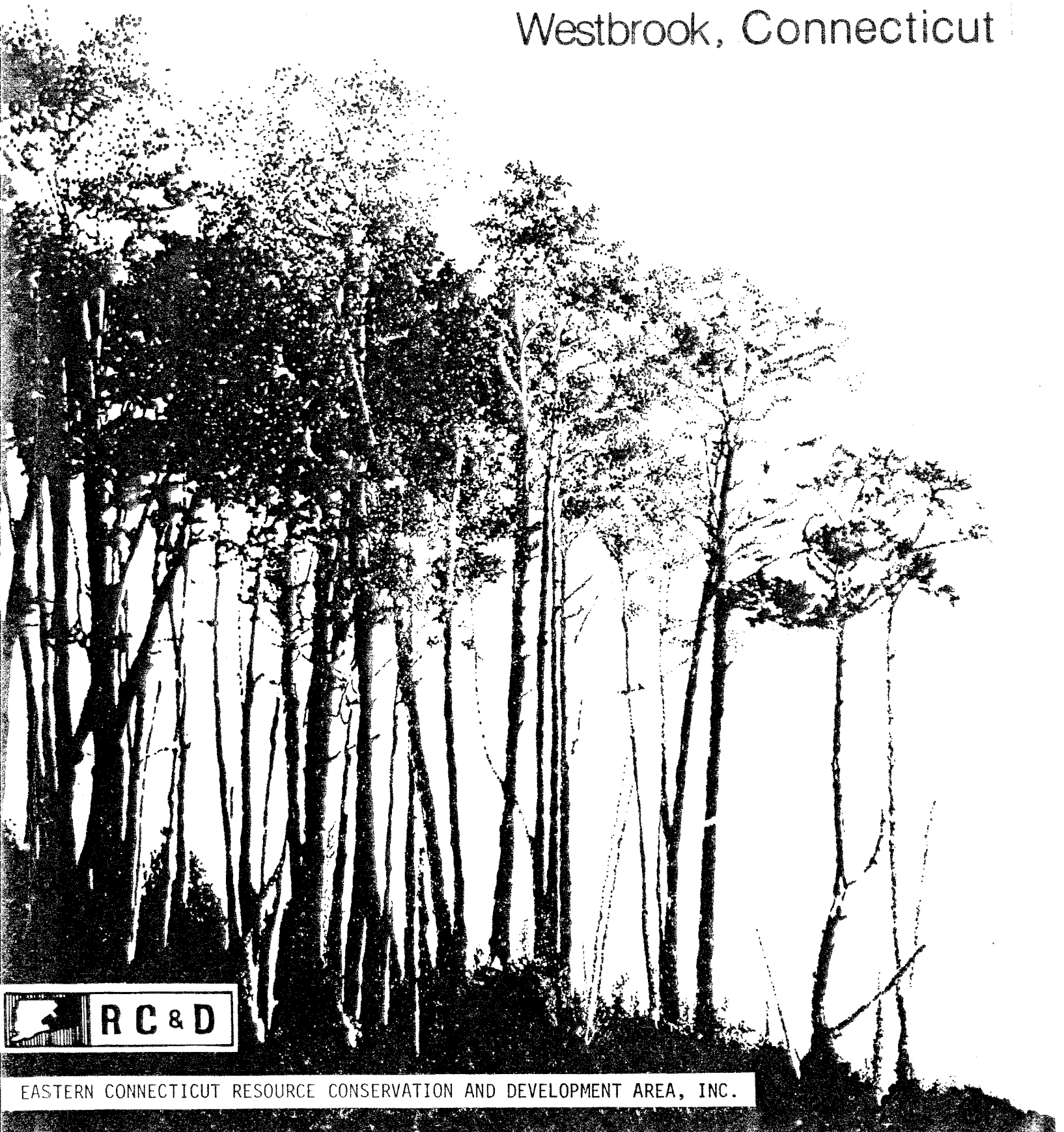
Environmental Review Team Report

Library Associates Subdivision

Westbrook, Connecticut



R C&D

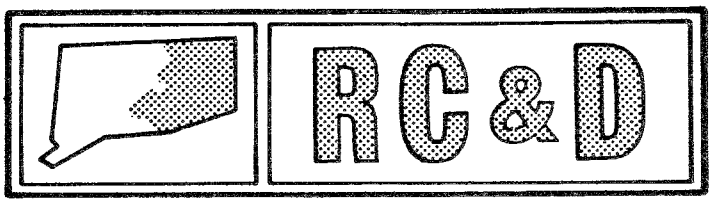
EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT AREA, INC.

Environmental Review Team
Report

Library Associates Subdivision

Westbrook, Connecticut

April 1985

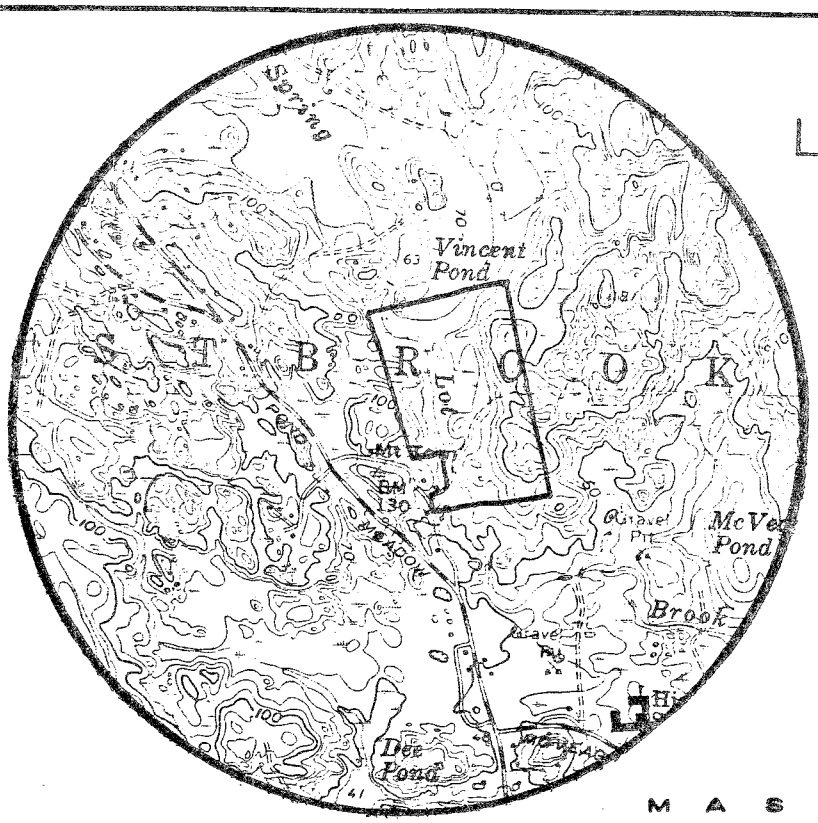


Eastern Connecticut Resource Conservation & Development Area

Environmental Review Team
PO Box 198
Brooklyn, Connecticut 06234

Location of Study Site

LIBRARY ASSOCIATES SUBDIVISION
WESTBROOK, CONNECTICUT



ENVIRONMENTAL REVIEW TEAM REPORT
ON
LIBRARY ASSOCIATES SUBDIVISION
WESTBROOK, CONNECTICUT

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

The soils of the site were mapped by a soil scientist from the United States Department of Agriculture, Soil Conservation Service (SCS). Reproductions of the soil survey map, a table of soils limitations for certain land uses and a topographic map showing property boundaries were distributed to all Team members prior to their review of the site.

The ERT that field-checked the site consisted of the following personnel: Pat Scanlon, District Conservationist, Soil Conservation Service (SCS); Bill Warzecha, Geologist, Connecticut Department of Environmental Protection (DEP); Emery Gluck, Forester, DEP; Richard Joly, Regional Planner, Connecticut River Estuary Regional Planning Agency; Don Capellaro, Sanitarian, State Department of Health; Judy Wilson, Wildlife Biologist, DEP; and Jeanne Shelburn, ERT Coordinator, Eastern Connecticut RC&D Area.

The Team met and field checked the site on Thursday, January 10, 1985. Reports from each contributing 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 problems. This report identifies the existing resource base and evaluates its significance to the proposed development and also suggests considerations that should be of concern to the developer and the Town of Westbrook. 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 Area Committee hopes that this report will be of value and assistance in making any decisions regarding this particular site.

If you require any additional information, please contact Ms. Jeanne Shelburn, Environmental Review Team Coordinator, Eastern Connecticut RC&D Area, Route 205, Box 198, Brooklyn, Connecticut 06234, 774-1253.

INTRODUCTION

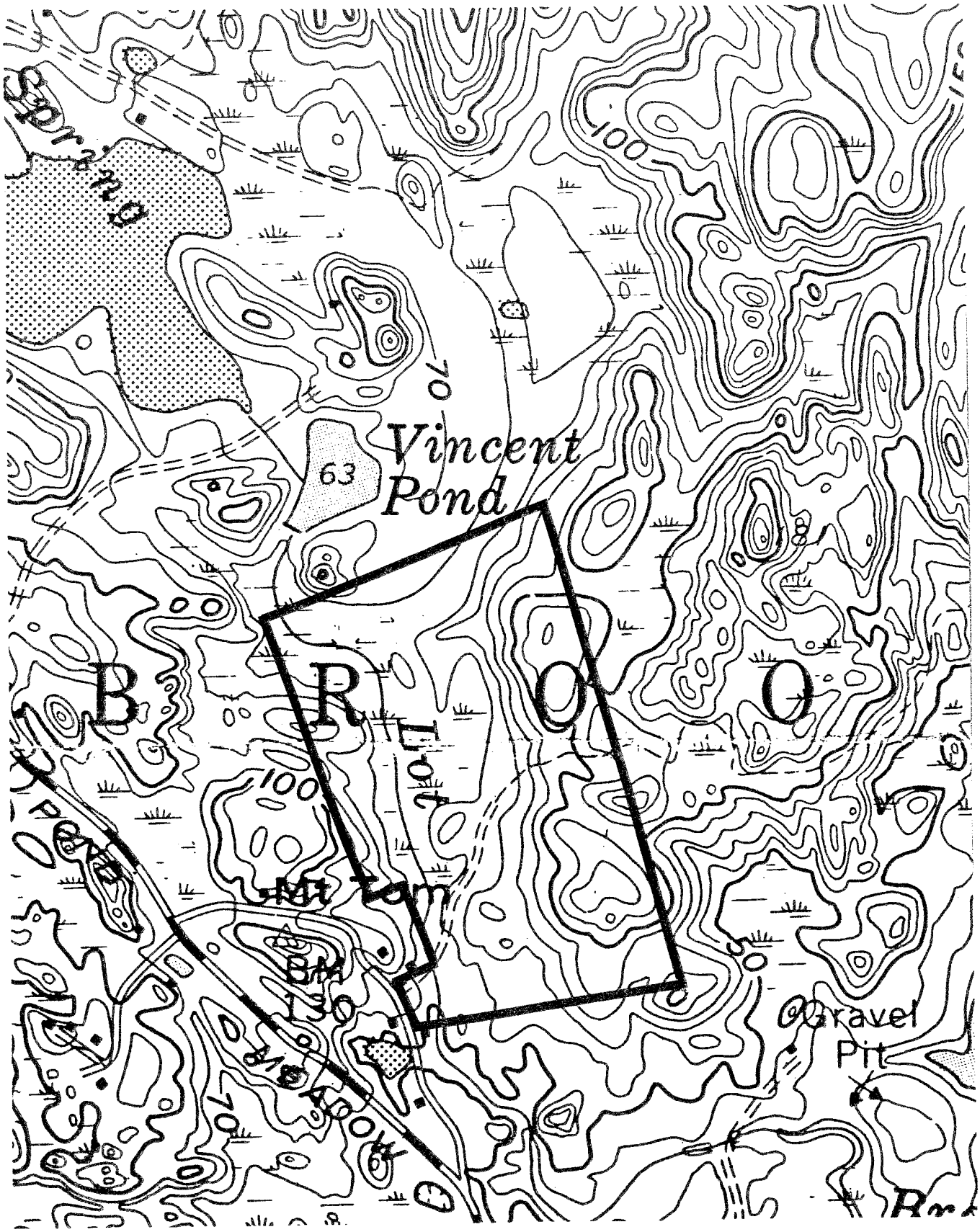
The Eastern Connecticut Environmental Review Team was asked to prepare an environmental assessment of a proposed subdivision in the Town of Westbrook. The site is approximately 64 acres in size and is located east of Boone Circle. Preliminary plans have been prepared by Angus McDonald and Associates, an Old Saybrook engineering firm.

Preliminary plans show 23 lots of two or more acres each. A 2400 foot roadway, ending in a cul-de-sac will extend north into the site from Boone Circle. This road will provide access to all lots. Each lot will be served by on-site septic systems and on-site wells.

The site has a fairly rugged topography throughout its central and eastern sections. A stream runs along the western property boundary. Its associated wetland area is found in the northwest corner of the site. The property is fully forested at present and has minor understory development.

The Team is concerned about the effect of this proposal on the natural resource base of this site. Although many severe limitations to development can be overcome with appropriate engineering techniques, these measures can become costly, making a project financially unfeasible for a developer. Limitations to development of this site include areas of shallow soil depth to bedrock, areas where soil has a seasonally high water table, steep slopes and wetland soil areas. Additional traffic flow to Boone Circle, caused by development of this property with single family homes, is also a concern. These issues are discussed in detail in the following sections of this report. The Team hopes that this information contained in this report will help both the Town and developer in making wise land use decisions for this site.

Topography	Site Boundary	0 660' scale	N



ENVIRONMENTAL ASSESSMENT

TOPOGRAPHY

The site is approximately 64 acres in size and is located east of Boone Circle in central Westbrook. Its topography consists of moderately sloping areas and relatively flat hilltops. The steepest slopes are associated with rock outcrop areas. Maximum and minimum elevations on the site are about 130 feet and 60 feet above mean sea level.

Spring Lot Brook along with its accompanying wetlands traverses the west central parts of the property in a north-south direction.

GEOLOGY

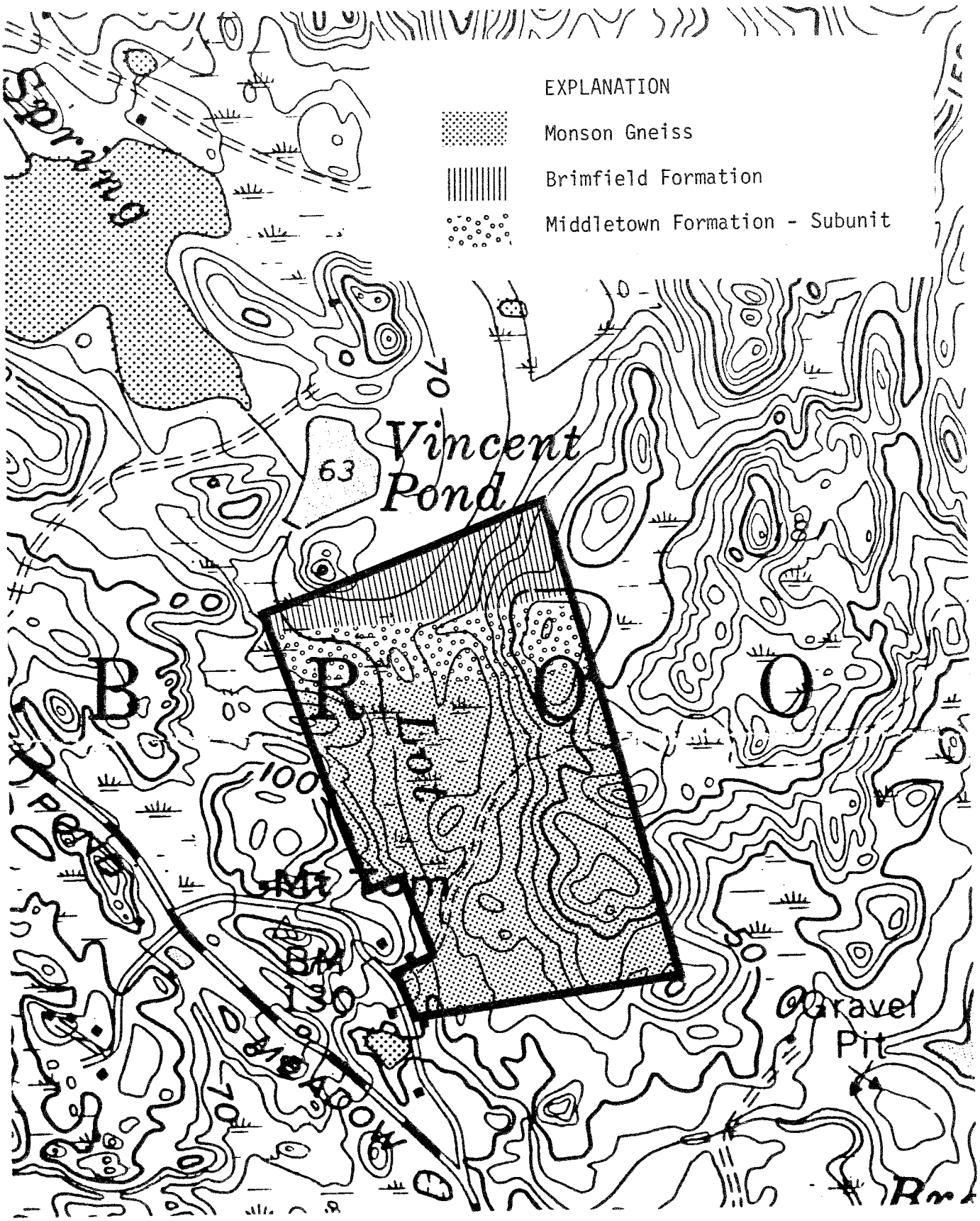
The study site is located within the Essex topographic quadrangle. A bedrock geologic map (QR-15 by Richard Foster Flint) and a surficial geologic map (QR-31 by Lawrence Lundgren, Jr.) have been published by the Connecticut Geological and Natural History Survey.

Most of the bedrock underlying or outcropping within the site has been interpreted as Monson Gneiss. These rocks consist of a light gray gneiss composed of the minerals plagioclase, quartz, biotite, and hornblende interbedded with amphibolite and pink alaskite gneiss.

Other rock formations that underlie or outcrop within the parcel include a rust-stained gneiss composed predominantly of quartz and feldspar with abundant interbedded amphibolite and a rust stained schist composed of the minerals biotite orthoclase, sillimanite and garnet. See accompanying bedrock geologic map for distribution of rock formations on the site.

All of the rock types (i.e., gneisses, schists, amphibolites) mentioned above are metamorphic rocks (rocks geologically altered within the earth's crust by great heat and pressure). "Gneisses" are lineated granular rocks in which bands of elongate minerals alternate with minerals having a rounder or blockier shape. As a result, the rock has a banded appearance. "Schists" are a type of rock, in which platy or flaky minerals, such as biotite (a dark mica) have aligned to form wavy or crinkled surfaces of relatively easy parting. Finally, "amphibolites" are crystalline rocks which consist of dark-colored minerals of the amphibole group (i.e., hornblende). The descriptive term "alaskite" preceeding the word gneiss above, refers to a rock which has a granitic composition and contains only a small percentage of dark minerals.

Bedrock Geology



Overlying the bedrock on the site is a glacial sediment known as till. The till consists of a mixture of nonsorted clay, silt, sand, gravel and boulders. These materials were deposited beneath the former ice sheet, but some may have been released from within or from the surface of the ice as it was wasting during the period of glacial retreat. As a result of these different processes, the upper few feet of till are commonly sandy and loose while the lower portion is siltier, blocky and more compact. Based on deep test hole information supplied to Team members, it appears that most of the till encountered within the parcel is of the sandier/gravelly type, particularly along Spring Lot Brook in the western section of the site. A number of deep test pits in this area revealed boney sand and gravel materials. These materials may, in fact, be part of the extensive ice-contact stratified drift deposits which were laid down south of the site. "Ice-contact" stratified drift consists of sand, gravel, silt and clay, which were in close relation to melting glacier ice.

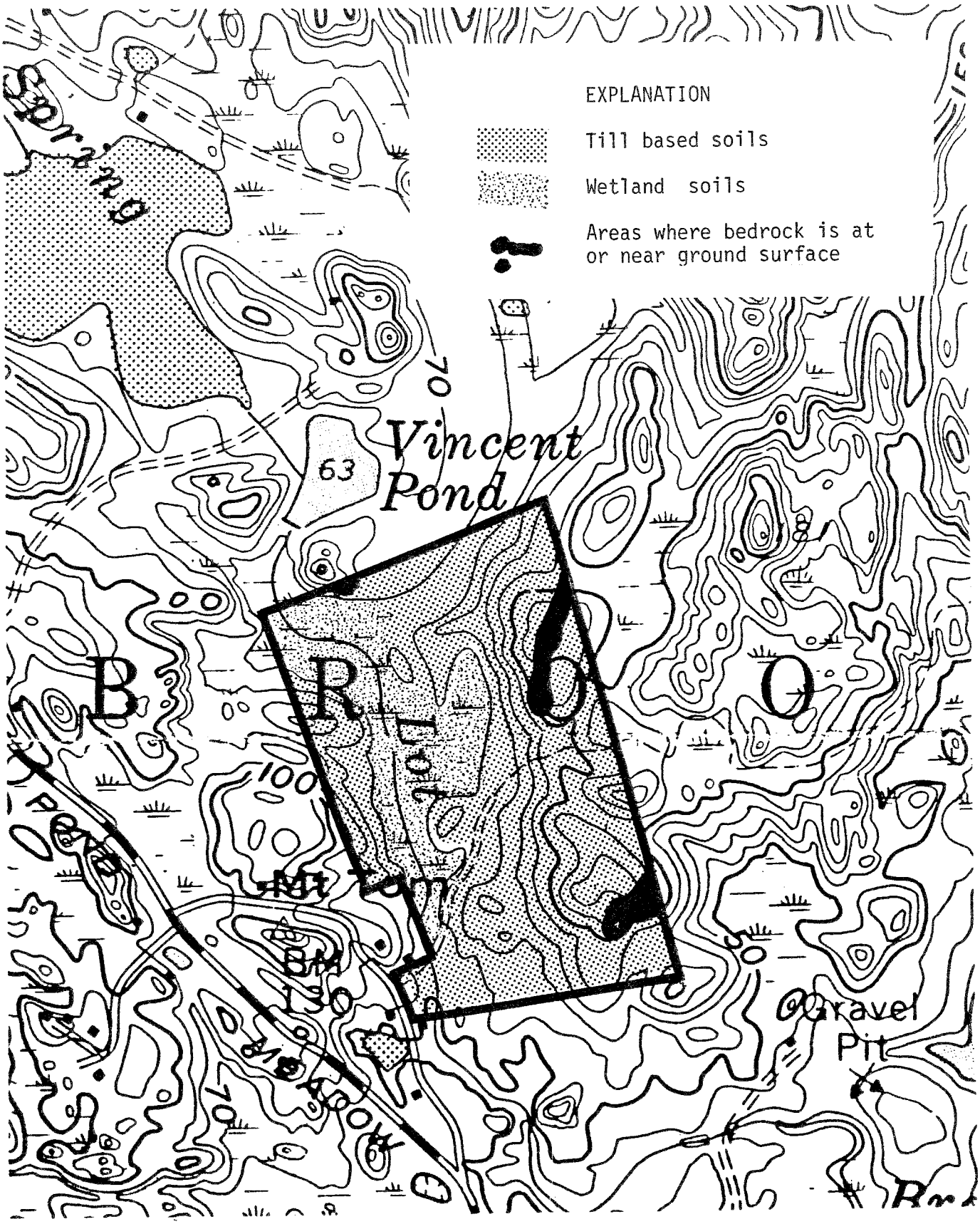
Overlying the till along Spring Lot Brook in the western parts are post-glacial sediments called swamp deposits. "Swamp sediment" consists of silt, sand, and clay mixed with organic matter in poorly drained areas.

Based on the discussion during the prereview meeting, it is understood that each of the proposed 23 lots would be served by individual on-site septic systems and individual on-site wells. The preliminary layout plan indicates that all lots are a minimum of 2 acres or larger. Four lots are a minimum of 3 acres.

From a geologic perspective, it appears that the major limitations in terms of developing the site for residential homes includes the following; (1) areas where bedrock is at or near ground surface (based on available mapping data, visual inspection and deep test hole information, these areas predominate in the upland sections in the eastern part), and (2) areas containing soils which indicate seasonally high groundwater tables. The major concern involving the soils with high groundwater tables and shallow depth to bedrock areas are the potential effect upon proper operation of subsurface sewage disposal systems. Generally, engineered septic systems will be required in areas where these limitations prevail. It should be noted that based on deep test hole information, some lots may be able to support non-engineered septic systems. A properly engineered septic system can overcome high groundwater limitations and shallow depth to bedrock areas, but extreme caution and careful planning is required. Further soil testing will probably be necessary in order to accurately assess the suitability of each lot for subsurface sewage disposal. Because of the larger lot sizes (2-3 acres), the applicant should have flexibility when locating sewage disposal systems.

Based on the preliminary plan layout and visual inspection, it appears that approximately 300 feet of the internal road network in the southcentral portion and about 50 feet at the end of the cul-de-sac will be constructed on steep slopes where bedrock is at or near ground surface. As a result, it may be necessary to build the roads on slopes which exceed 10 percent unless Town regulations prohibit or it may be necessary to blast the underlying rocks in order to construct the roads on slopes which would be less than 10 percent. The latter may prove to be costly.

Surficial Geology



If blasting is required, erosion and sediment control practices should be in place during site development, particularly where the slopes are steep and large areas are disturbed.

HYDROLOGY

The entire site lies within the watershed of Spring Lot Brook, a tributary of Patchogue River. Spring Lot Brook drains a watershed area of about 1,400 acres or ±2.19 square miles. Surface runoff and groundwater emanating from the developed parts of the site flow westward into Spring Lot Brook.

Development of the site under the present proposal would be expected to increase the amount of surface runoff produced during periods of rainfall. The increases will arise primarily from conversion of permeable soils to impermeable surfaces (roof tops, driveways, interior road systems, etc.) and from removal of vegetation. The added runoff could cause increased overland and stream channel erosion. These problems can be addressed by formulating and implementing an effective erosion and sediment control plan for the project. Because the proposed development represents less than 5 percent of the watershed area, it is not expected that post-development flows from the site would significantly increase the peak flows to Spring Lot Brook during various storm events. While the hydrologic impact of the proposed development may be small for the lightly developed watershed, the cumulative impact of unregulated runoff from future developments in the watershed may be severe. For this reason, each developer should do his part to control runoff from future developments.

Although hydrologic calculations were not available to team members on the review day, the project engineer indicated that post-development flows would be maintained at present flows. This will be accomplished by utilizing an existing surface water body in the southwest corner as a detention pond.

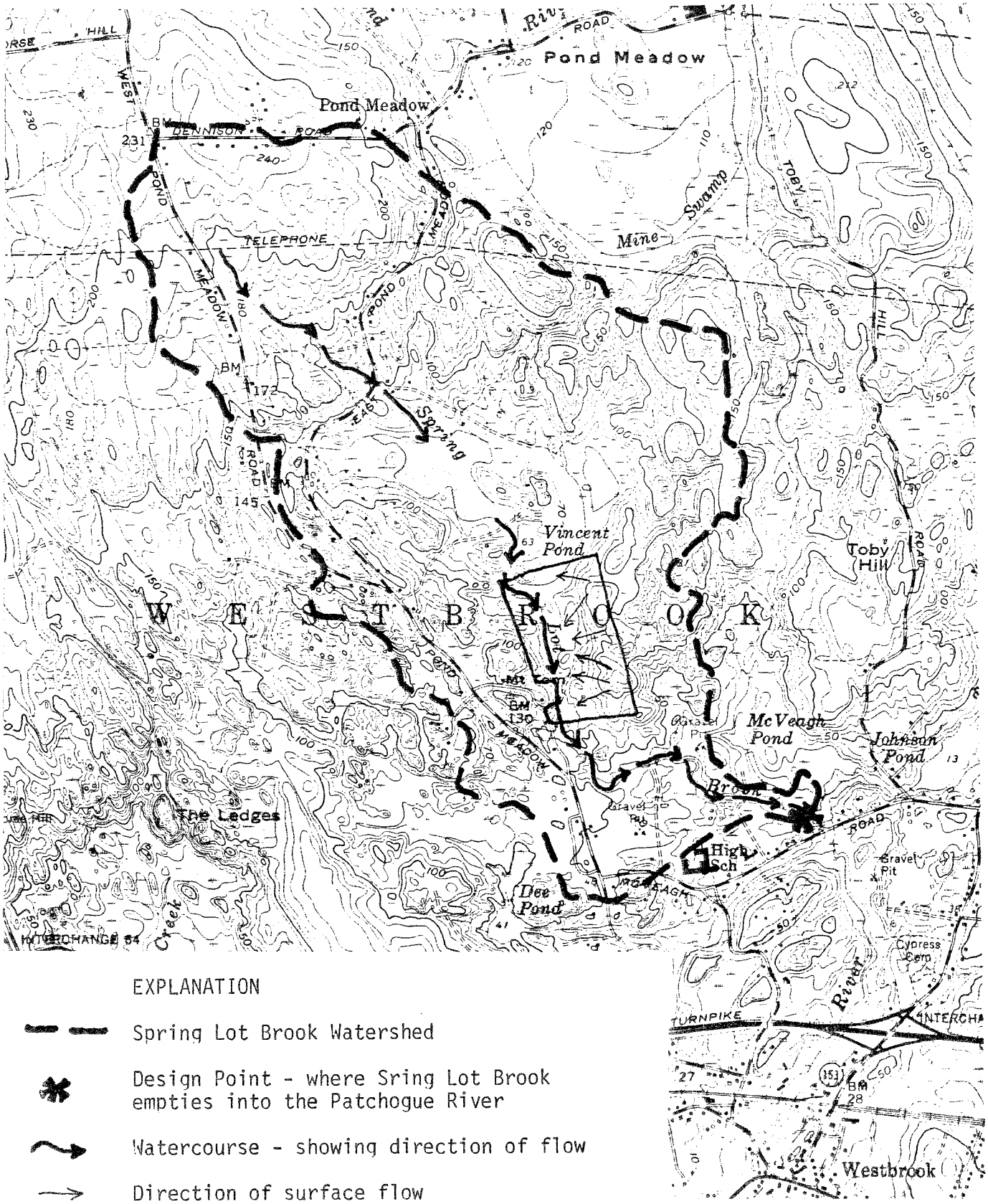
Prior to subdivision approval, it is recommended that the applicant be required to submit detailed hydrological information on pre- and post-development runoff volumes and peak flows from the property. Estimates should be provided for a 10, 25, 50 and 100 year design storm. Detailed design specifications for all stormwater control facilities (including the pond) should also be submitted. All storm drain outlets should include a designed energy dissipator to help protect areas below the outlet from gullying.

The project engineer also indicated that the dam structure at the outlet of the proposed detention pond, which is in disrepair will need to be upgraded. In this regard, the applicant should first secure all of the necessary town permits before work is started. In addition, the plans should also be submitted to the Water Resources Section of the Department of Environmental Protection for review purposes.

Drainage Areas

0 660'
Scale

N



EXPLANATION

- Spring Lot Brook Watershed
- Design Point - where Sring Lot Brook empties into the Patchogue River
- Watercourse - showing direction of flow
- Direction of surface flow

Floodprone Areas

Based on the flood insurance rate map for the Town of Westbrook, the low-lying wetland area astride Spring Lot Brook in the western portions of the site lies within the 100 year flood boundary. A '100' year flood is a flood with a one chance in 100 or 1% chance of occurrence in any given year. It should be pointed out that this does not mean a flood of the magnitude mentioned above will occur only once in a 100 year period. The probability of occurrence remains the same each year regardless of what happened the year before. In addition, there may be some swampy or topographically low-lying areas within the site that may be subject to wetness and perhaps some flooding during periods of particularly heavy rains.

Based on the site plan layout, the proposed access road will need to cross Spring Lot Brook in the southwest corner of the site within the flood prone area. It is particularly important that the culvert placed under the road is properly sized and located so that flooding problems do not occur. Road construction in this area should preferably be done during the dry time of the year and should include provisions for effective erosion and sediment control.

SOILS

Soils on the site are primarily glacial till-derived stony and extremely stony fine sandy loams. Some of the soils have high water tables and others have bedrock a few feet below the surface. All have fair to poor potential for community development.

Charlton-Hollis very stony fine sandy loams on 3 to 15 percent slopes (CrC) consist of gently sloping and sloping, well-drained and somewhat excessively drained soils on ridges. Most of the development limitations for this soil complex are due to the shallow depth to bedrock in the Hollis soils.

Hollis-Charlton extremely stony fine sandy loams on 15 to 40 percent slopes (HpE) consist of moderately steep to very steep, somewhat excessively drained and well drained soils on ridges where the relief is affected by the underlying bedrock on upland glacial till plains. Due to steep slopes, shallowness to bedrock, rock outcrops and stoniness, the complex has poor potential for community development.

Test pit data submitted by the engineers indicate that the Charlton component of the two upland complexes occurs throughout the site. Unlike the Hollis component, Charlton soils have moderate limitations for development where they occur on more gradual slopes. The two-acre and larger lots should accommodate, with careful siting, the residential development planned for the area. Many areas of the Charlton-Hollis and Hollis-Charlton complexes can provide a scenic and picturesque setting for homes. The rock outcrops, stones, and boulders can have aesthetic landscape value when left undisturbed.

The Leicester, Ridgebury and Whitman extremely stony fine sandy loams (LG) are inland wetland soils regulated under P.A. 155. These are nearly level to gently sloping, poorly drained and very poorly drained soils in drainageways and depressions of glacial till uplands. The complex occurs in the western third of the parcel, and there is a small area in the northeast corner. Wetland boundaries were flagged in the field by a certified soil scientist. The Inland Wetlands Commission can request assistance from the Middlesex County Soil & Water Conservation District in resolution of any disputed wetland boundaries.

Sediment and Erosion Control

The developer should prepare a detailed plan for control of erosion and sediment on the site. Areas of special concern include where the road crosses Spring Lot Brook, cut and fill slopes along the planned roadway, and the area where the detention basin is planned.

In development of a sediment and erosion control plan, the following guidelines should be followed:

Develop large tracts in small workable units on which construction can be completed rapidly so that large areas are not left bare and exposed for extended periods of time. Try to schedule construction during favorable times of the year. If construction is not completed before the end of a growing season, a winter shut-down plan should be implemented to stabilize disturbed areas temporarily until weather and soil conditions are favorable for construction activities.

Install all street pavements, curbs, and storm drainage systems in the first stage of construction. Where road pavements may be damaged by heavy construction equipment, use temporary measures such as gravel surfaces, filter strips, broad-base dips and stabilized drainage channels to control road erosion. Surround installed stormwater inlets with haybales or filter fence.

Keep construction traffic within established travel lanes on the site to minimize soil compaction and prevent damage to vegetation and installed measures. Construct adequate crossings over drainageways.

Construct diversions, waterways, and other practices to control runoff and safely convey it to storm sewers or other outlets so it will not erode the land or cause offsite damage. Permits are required prior to initiation of any work in or near regulated wetland areas.

Construct sediment basins and install sediment barriers to retain sediment on site and away from wetlands and watercourses as much as possible during construction.

Keep land grading to a minimum by designing the development in accordance with the existing topography. Extensive grading is expensive and increases the erosion potential.

Use temporary vegetation and mulch to protect areas where final grading has not been completed, and when the estimated period of exposure is less than 12 months.

Stockpile topsoil for later use on areas that would otherwise be difficult to vegetate because of soil conditions. Use temporary vegetation and mulch to protect topsoil stockpiles from erosion.

Establish permanent vegetation as soon as practical to any significant portion of the job.

Maintain sediment and erosion control and stormwater management practices during and after construction.

The Town may request assistance from the Middlesex County Soil & Water Conservation District in Haddam in review of the sediment and erosion plan submitted by the developer.

The small dam on Spring Lot Brook is partially breached. This dam should be checked for safety purposes and eroding areas stabilized. It should be registered with the Department of Environmental Protection's Water Resources Unit, Dam Safety Program.

VEGETATION

The vegetation of the property is commonly found throughout the Central hardwood zone that occurs in southern Connecticut. The woodland tract can be divided into three Vegetation Types. These include a mixed hardwood type, a hardwood swamp type, and an open area (an old excavation pit).

Vegetation Type Descriptions

Type A (Mixed hardwood) This understocked stand (49 acres) is predominantly composed of poor and medium quality poles (trees 6.1" to 11" diameter at breast height). Black oak, white oak, scarlet oak, red oak, pignut hickory, shagbark hickory, American beech, red maple, white ash, sugar maple, black birch, black gum, red cedar, tulip poplar, white pine, sassafras, black cherry, grey birch, butternut, and aspen are the tree species present. Flowering dogwood, hornbeam, hophornbeam, spicebush, sweet pepperbush, lowbush blueberry, highbush blueberry, barberry, grapes, witch hazel, and maple-leaf viburnum comprise the shrub layer. The ground cover includes Christmas fern, striped pipsissewa, partridge berry, shining club moss, cinnamon fern, ground cedar, tree club moss, and beech drop. The site potential varies from a poor growing site to a medium growing site. Most of the dominant trees in this Type are immature.

Type B (Hardwood swamp) This 14 acre poor quality pole stand is understocked. The tree species include red maple, black gum and white ash. The lesser vegetation includes sweet pepperbush, shining club moss, highbush blueberry, spagnum moss, and cinnamon fern. The excessively high water table inhibits tree growth, making the area a poor growing site.

Vegetation

VEGETATION TYPE DESCRIPTIONS

Type A	Mixed hardwood,	understocked,	pole size	49 acres
Type B	Hardwood swamp,	understocked,	pole size	14 acres
Type C	Open area	- -	- -	1 acre

Type C (Open area) This 1 acre area is starting to revegetate. Black oak, red maple, aspen, grey birch, red cedar, mountain laurel, and sweet fern are present.

Aesthetic Conditions

This forested parcel of land offers many of the rural amenities that interest prospective homeowners. The large size of the proposed houselots will allow the possibility of leaving much of the forest intact. A continuous forest would offer good screening effect and privacy between houselots. Also, a forested parcel gives the appearance of being larger than an open lot of the same size.

Large, healthy trees are usually considered aesthetically pleasing. The retention of these trees could add a considerable amount of aesthetic and shade value to the residential area. Black oak, red oak, white oak, white pine, sugar maple, hickory, American beech, and tulip poplar would be the best species to retain since they are the dominant trees in the forest. A good portion of the dominant trees in Type A should be able to grow 16" to 20" in diameter. White pine and tulip poplar overstory trees should be able to grow 20" to 24" in diameter.

Construction activities should be planned and conducted to minimize disturbances around the trees and in sections of the forest that are to be saved. Road building, filling, excavation and soil compaction (from heavy machine uses) may adversely affect the moisture and aeration balance within the soil. This could lead to the decline in tree health and vigor and may eventually lead to the death of the tree within three to five years. Physical damage to the root system and trunk of the tree by machinery may also result in the decline of individual trees.

The removal of a large percent of the trees may have an adverse effect on the remaining trees. The sudden shock of being left in the open may be too much for a tree grown in the forest all its life. White oak, in particular, has a high mortality rate once it suddenly experiences total exposure. Oak will sprout unsightly epicormic branches along its trunk when the trunk is exposed to direct sunlight. Trees in the open are also more susceptible to damage from ice storms that may cause crown breakage.

Most of this woodland tract is particularly susceptible to infestation by gypsy moth because of its large component of oak and location on a dry ridge. Favoring trees that the gypsy moth does not like to feed upon would make the area less susceptible to defoliation. White pine, black birch, sugar maple, pignut hickory, red maple and tulip poplar are some of the species that are not preferred food of the gypsy moth.

Flowering dogwood and mountain laurel are the major flowering shrubs. Most of the dogwood on this property may not reach its aesthetic potential due to its recent decline in health, which can be attributed to the dogwood borer, various diseases, and adverse weather conditions. When healthy specimens are found, some of the overtopping trees should be removed to allow more sunlight to reach the understory. This will stimulate the flowering of these shrubs.

Limiting Conditions

The overall condition of the trees on the property is acceptable. Few trees have any blatant sign of decay or other potential hazard. A portion of the black birch is affected with nectria canker. The formation of cankers on the trunk of the tree structurally weakens the tree and makes it more susceptible to breakage.

Windthrow is not expected to be a hazard in this development. The well-drained soils of Vegetation Type A makes it necessary for trees to grow deep roots in order to obtain enough water. The shallow roots of Vegetation Type B should not experience any increase in windthrow as long as the water table is not raised.

Management Considerations

The objective of management should be to maintain healthy and vigorous trees. Unhealthy trees are more susceptible to insects and disease problems.

Management for Vegetation Type A could include harvesting supressed hardwoods that are experiencing crown dieback from growing in the shade of other trees; these can be harvested as fuelwood. Most of the overstory trees should not be harvested at this time, since they appear healthy and the stand is understocked. Some of the healthier understory white pine can be released by removing overtopping hardwoods. White pine will eventually succumb if grown in the shade.

The shallow dry soils generally found on the hilltops and south slopes of Vegetation Type A make for a poor hardwood growing site. Softwoods, which have lower nutrient and water requirements than hardwoods, would do bettern than hardwoods on these drier soils. White pine could be underplanted in these areas, on a 20' spacing in order to get replacements started for trees that are harvested or die in the future. The removal of some overtopping trees and shrubs would give the pines a better growth and survival rate. Most of the overtopping vegetation should be removed within 20 years of the underplanting.

White pine can be planted on a 10' spacing in the section of Vegetation Type C where the surface water is not present during the growing season.

WILDLIFE CONCERNS

Wetlands cover a portion of the proposed project site. Wetlands are absolutely essential areas for many species of wildlife and important to all because they provide the habitat requirements needed for survival.

Not only are they important to wildlife, they are important to man also. They act as water storage and absorption areas that help prevent flooding. There is usually severe inherent limitations in developing wetlands due to poorly drained unstable soil types.

Wetland habitat provides a rich variety of food, cover, nesting and brood rearing sites for a great number of wildlife species. They provide breeding and nesting

sites for waterfowl. More than 50 species of game and nongame species including beaver, bobcat, fox, mink, muskrat, opossum, white-tailed deer, snowshoe hare, habitat. Because of previous development, there is less wetlands available for use by wildlife. Developing any small area by building on it will leave the majority of the area unavailable for wildlife to use.

Development will decrease the amount of habitat simply because the land will be occupied by physical buildings. The quality of the habitat will be decreased because an undeveloped area of land will be broken up with buildings and human activity.

Some species which require larger undeveloped areas will probably be forced out or will reduce their use of the area. They may be able to move into adjacent undeveloped areas if there is suitable habitat available and the competition with other species already occupying the area is not too great.

Other species which are more adaptable to man's presence will probably remain. Some new species may even be attracted to the area.

Management Concerns

The following wildlife recommendations can help lessen the impact to some species using the area. Some animals will leave the area but others may find it even more attractive after development.

1) Design of Development/Wetlands

The impact on wildlife of the area can be lessened to some degree if some thought is given to the development. Housing developments can be designed in two basic ways. Houses can be built on larger house lots or they can be built on small lots or in clusters, leaving open space areas. Both designs leave more open space for wildlife as opposed to having small lots and developing the entire acreage.

Probably none of the wetland areas should be developed due to the severe limitations caused by soil capabilities and the regulations governing their development.

A buffer area of uncut vegetation should be left along the entire length of any watercourse. This will provide food, cover and nesting sites for many species. Because the brook will remain shaded, water temperature will not rise, making the brook uninhabitable for some species of fish.

2) Clearing

When the initial clearing for building is done, try to leave as many trees and shrubs as possible, especially those useful to wildlife. Some useful species include:

white oak (Quercus albra)
red oak (Quercus rubra)
black cherry (Prunus serotina)
quaking aspen (Populus tremuloides)
red-osier dogwood (Cornus stolonifera)
apple (Malus spp.)

3) Landscaping

On small acreage with many buildings, landscaping can do a great deal to provide habitat and make an area attractive to wildlife. First, leave as many trees as possible around the buildings. This will not only benefit wildlife by providing food, cover and nesting sites (especially for songbirds), but will also be more aesthetically pleasing for the residents of the development.

Leave as many snag trees (standing dead trees) and den trees (trees with holes) as possible. These trees are used by insect eating birds and cavity nesting birds and mammals.

Plant trees and shrubs which are useful to wildlife and landscaping such as:

Japanese barberry (Bergeris bulgaris)
flowering dogwood (Cornus florida)
honeysuckle (Lonicera spp.)
juniper (Juniperus spp.)
bayberry (Myrica pensylvanica)
maple-leaved birburnum (Biburnum acerifolium)
red-osier dogwood (Cornus stolonifera)
American holly (Ilex opaca)
American mountain ash (Sorbus americana)
autumn-olive (Elaegnus umbellata)
winterberry (Ilex verticillata)
American cranberrybush (Veburnum trilobum)
red maple (Acer rubrum)
alternate-leaf dogwood (Cornus alternifolia)

A variety of trees and shrubs should be used. Most species of wildlife need to have cover when they move from place to place. By leaving corridors of vegetation, this will allow wildlife to utilize the area and also have access to adjacent areas. Large expanses of lawn with no trees or shrubs present should be discouraged. These factors will allow wildlife to better utilize the area and thus make it more attractive to wildlife.

WATER SUPPLY

Homes in the proposed subdivision would be supplied with water by on-site wells. The only suitable aquifer available appears to be bedrock. Yields from bedrock wells depend upon the number and size of water-bearing fractures that are intersected by the wells. Density and size of fractures in different bedrock zones vary widely, but in general, both are greater in granular rock than in schist. Since the bedrock underlying the site comprises both types of bedrock, the ultimate yields may depend upon the particular type tapped. In either case, however, there would be at least an 80 percent chance that a well at any site could yield at least 3 gallons per minute (gpm) and at least a 50 percent chance that it could yield at least 6 gpm (Source: Connecticut Water Resources Bulletin No. 21). Such yields should prove adequate for the household needs of an average family. In most cases, no more than 150 feet of bedrock should have to be penetrated to obtain these yields. If less than 1 gpm is achieved after drilling through 150 feet of rock, it may be more fruitful to drill in an alternate location than to extend the first well, as the density and size of fractures decreases markedly at such depths.

Natural groundwater quality should be good, although some possibility of undesirably high mineral (particularly iron or manganese) content exists, particularly those wells topping the Brimfield or Middletown formation. Should well water prove to be high in mineral content, several filtration methods are available to overcome these problems.

WASTE DISPOSAL

Sewage disposal for this rural area would depend upon the installation of properly located and constructed subsurface sewage disposal systems.

Based on visual observations, consideration of soil survey mapping data and review of the engineer's test results, the major constraints for sewage disposal are steep slopes and rock outcrops and/or shallowness to bedrock. To a lesser degree of concern would be those areas being wet or having a seasonal water table due to the firmness of the lower underlying soil layer.

In order that bedrock not interfere with the operation of the leaching system and to have sufficient soil to renovate the quality of sewage effluent, a minimum of 4 feet of soil is necessary between the bottom area of the leaching system and bedrock. This normally requires bedrock to be 6-7 feet below ground surface in order to be able to accommodate a shallow system. In addition, there should be no rock outcroppings within 50 feet downgrade of the leaching facility.

Certainly on several of the proposed lots where rock outcrops are most pronounced (area of lots 2 and 3, 18 and 21), limitations would affect the location of homes and sewage systems. Because shallow types of leaching systems require more area for installation purposes, it is most important to know that bedrock will not, in fact, unduly encumber such areas. As the depth to bedrock is often quite variable over a short space, there must be a sufficient number of test pits on a lot to determine the elevation of the rock and its general profile. Areas or lots subject to a relatively elevated groundwater table would need to keep the leaching system a minimum distance of 18 inches above the maximum water level.

In general, lots in the subdivision are quite large and sewage disposal should be feasible, although certain restrictive conditions (topography, rock outcrops, watercourse-wetlands) are present.

For some of the more restrictive lots, additional testing would be warranted. Also at the beginning of the roadway, it may be necessary to combine lots 1 and 23. It would also be recommended that the most obvious and spectacular rock outcrops be identified as such on the subdivision layout.

PLANNING CONCERNS

The Westbrook Master Plan of Development calls for two acre residential development for this site, except that it recommends that the streambelt area along

the western side of the site be kept in open space. This preliminary plan fulfills the recommendation of the Master Plan to the extent that it would dedicate a 7.4 acre portion of the streambelt and associated wetlands as open space. In order to implement the Master Plan fully, the Westbrook Planning Commission may want to request that no development take place along the entire streambelt area associated with this site. The Regional Plan of Development classifies this site as a Natural Resource Area because of the environmental constraints for development that are located on this site. These environmental constraints include steep slopes, wetlands and shallow soil depth to bedrock.

The zoning for this area is an RR Residence District which requires a two acre minimum lot size and a minimum frontage of 200 feet. The surrounding land use reflects this zoning with low density residential development. This proposed development with 23 lots on 64 acres would also be low density residential development and should, therefore, be compatible with surrounding land use.

Traffic Concerns

The Connecticut Department of Transportation does not have any traffic counts available for Boone Circle. However, it can be estimated (1) that the present traffic on Boone Circle equals about 60 trips on an average weekday. The addition of this subdivision should add about 230 trips per day, resulting in a total trip generation on Boone Circle of about 290 trips per day. This would include about 29 trips during the peak evening hours of traffic. Boone Circle is a narrow road of about 15 feet in width with horizontal and vertical curves at many points. There were no recorded accidents on this road between 1979 and 1983, but the increase in traffic that this development will cause brings about a concern for traffic safety on Boone Circle.

There are several concerns about the new road that is proposed for this subdivision. This road has to pass through steeply-sloping areas in the vicinity of lots 21 and 22. The Town should insure that the grade of the road is not too great in this area and that erosion and sedimentation control measures are adequate to deal with any cut and fill work that is done for the road. There are sight distance problems at the intersection of the proposed road and Boone Circle. To the north of this intersection, there is a vertical curve in Boone Circle that limits sight distance. To the south there is a horizontal curve in Boone Circle which also limits sight distance. The clearing of vegetation along the inside of this horizontal curve would improve sight distance in this direction.

If this subdivision is approved, it is recommended that Boone Circle be upgraded to provide safe traffic flow. The Town should discuss with the developer a contribution to this road improvement.

---

(1) Trip Generation, 34d Edition, Institute of Transportation Engineers, 1983.

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 activitis. 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 (774-1253), Environmental Review Team Coordinator, Eastern Connecticut RC&D Area, P.O. Box 198, Brooklyn, Connecticut 06234.