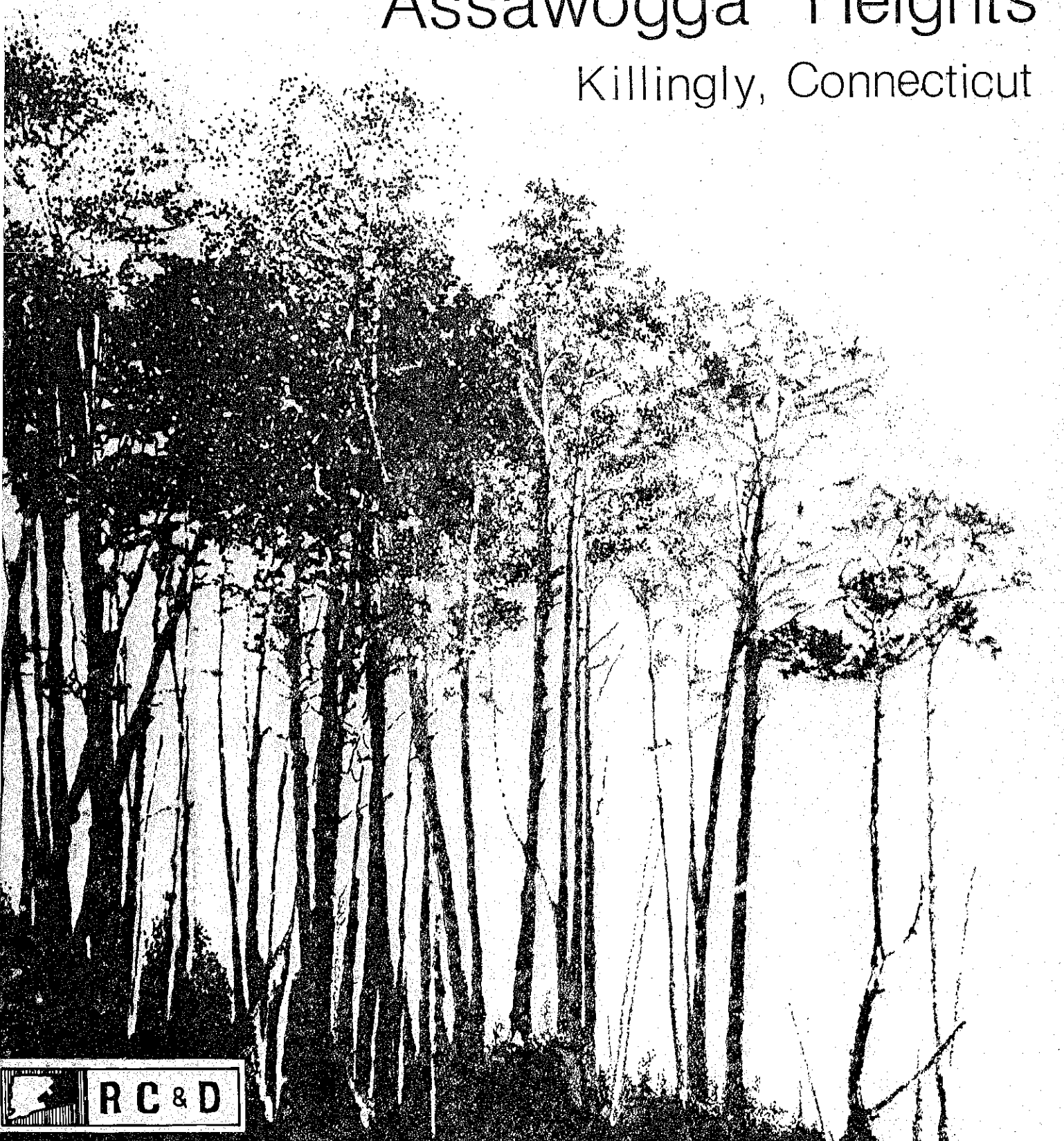


Environmental Review Team Report

Assawogga Heights

Killingly, Connecticut

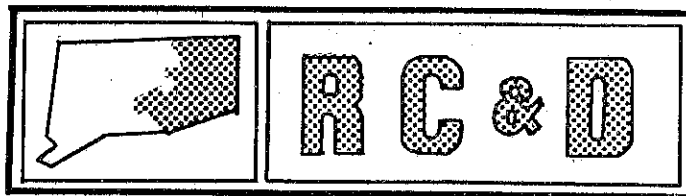


EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT AREA, INC.

Environmental Review Team
Report
on

Assawogga Heights
Killingly, Connecticut

April 1978

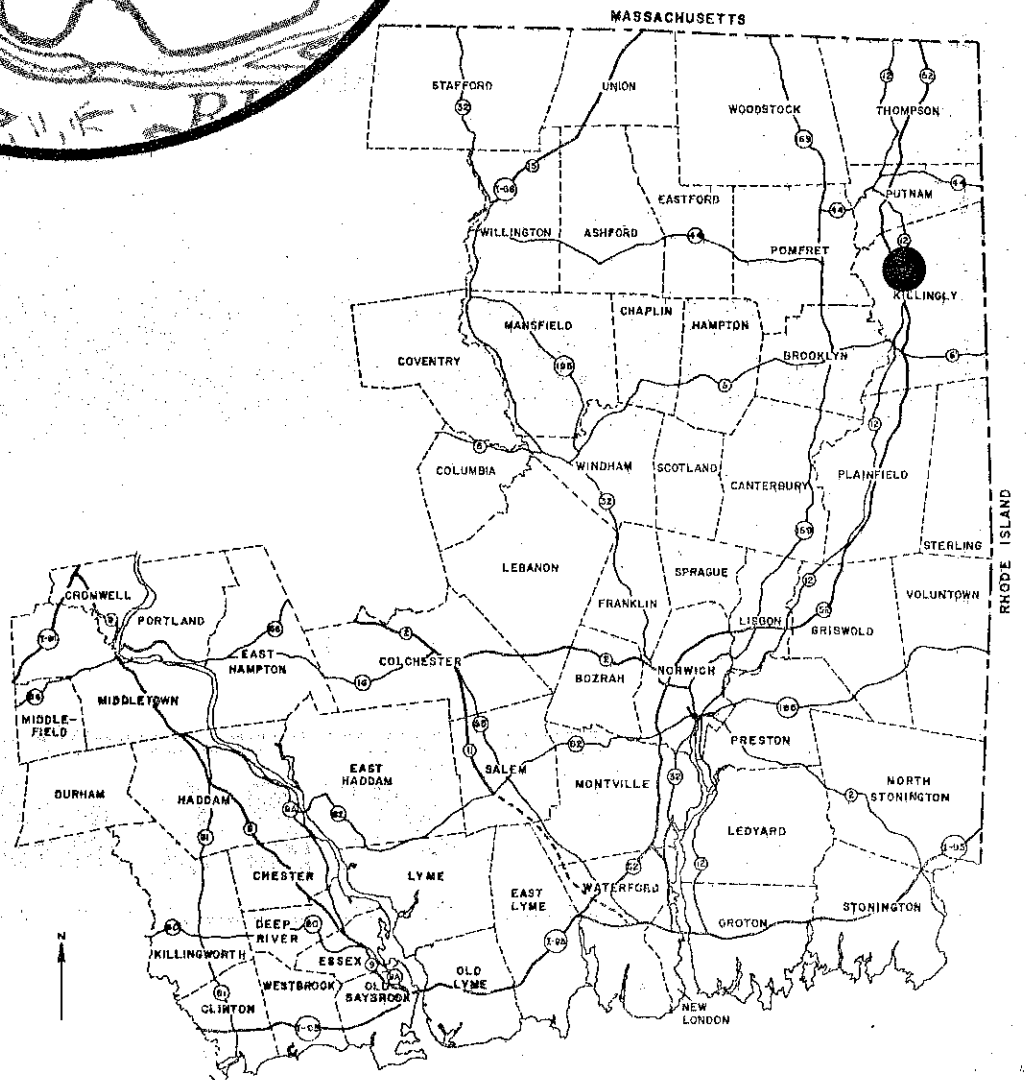
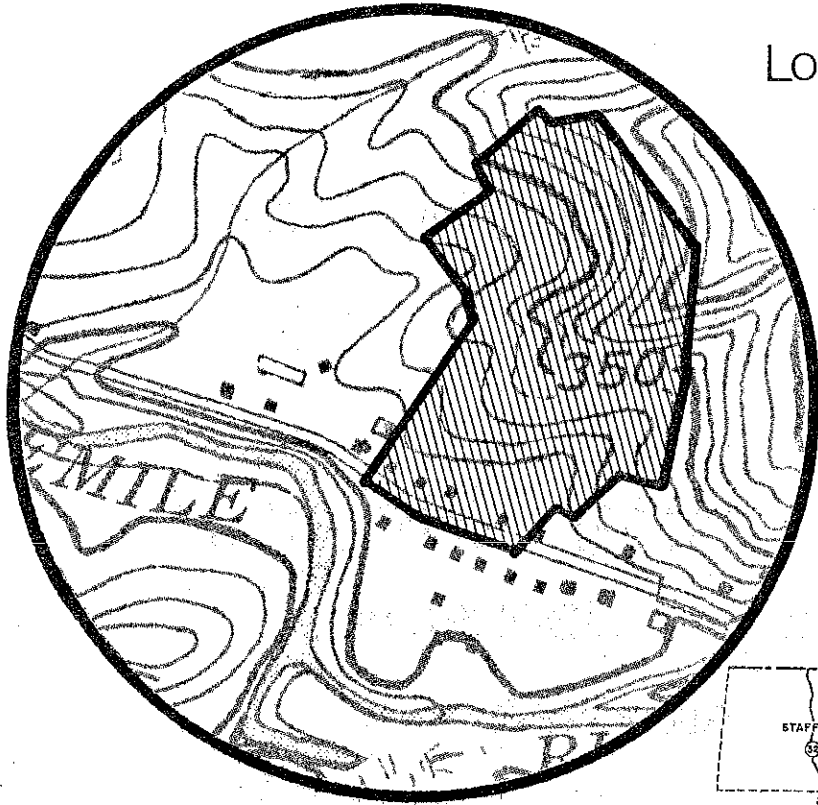


eastern connecticut resource conservation & development area

environmental review team
139 boswell avenue
norwich, connecticut 06360

Location of Study Site

ASSAWOGGA HEIGHTS
KILLINGLY, CONNECTICUT



EASTERN CONNECTICUT
RESOURCE CONSERVATION AND DEVELOPMENT PROJECT



ENVIRONMENTAL REVIEW TEAM REPORT
ON
ASSAWOGGA HEIGHTS
KILLINGLY, CONNECTICUT

This report is an outgrowth of a request from the Killingly Planning and Zoning Commission, to the Windham 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: Howard Denslow, District Conservationist, Soil Conservation Service (SCS), Mike Zizka, Geologist, Department of Environmental Protection (DEP), Donald Smith, Forester (DEP), Mallory Gilbert, Soil Conservationist (SCS), Dick Dystra, Engineer, (SCS), Ernest Julian, Sanitarian, State Department of Health, Peter DeMallie, Regional Planner, Northeastern Connecticut Regional Planning Agency, and Jeanne Shelburn, ERT Coordinator, Eastern Connecticut RC&D Area.

The Team met and field-checked the site on Thursday, March 9, 1978. 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 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 Killingly. 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.

INTRODUCTION

The Eastern Connecticut Environmental Review Team was asked to review a 23 acre proposed subdivision to be known as Assawogga Heights. The land is presently in the private ownership of the Clover Development Corporation and it is their intention to create 29 new residential building lots on this parcel as well as donating a five acre tract to the Town as open space. The lot sizes in this subdivision will vary from 20,000 to 32,243 square feet. It is located in a Low Density Residential Zoning District.

This development hopes to alleviate a small part of the 1,000 unit housing deficiency projected for the Killingly Area in 1980, by the Northeastern Connecticut Regional Planning Agency.

The site of this development fronts in two locations on the north side of Attawaugan-Ballouville Road, approximately 1,900' west of Ballouville Center. The westernmost frontage will be used as an access point to the development, the remaining frontage to the east will be the site of the future storm water retention basin. This site is situated between Attawaugan and Ballouville, two of Killingly's numerous mill villages. The Five Mile River, a Quinnebaug River tributary, flows to the west on the south side of Attawaugan-Ballouville Road.

This subdivision proposal has also been reviewed by Fuss and O'Neill consulting engineers to the Town. The Team feels that many of their recommendations are well founded and should be addressed by the developer, specifically ownership of the storm water retention basin should be included on the plans, any required driveway culverts should be shown and sized on the plans, a stone-lined waterway should be considered in the swale area of Lot 7, drainage easements should be deeded to the Town for all culverts and swales, detailed runoff calculations from this development in the area of Lots 6, 7, 8, and 9 should be computed and the design should follow accordingly. Although there are many mechanical means of alleviating environmental problems once development begins, the Team's primary objective is to alert the Town and developer to these problems before they actually occur.

Generally, the Team feels that this is a subdivision design which has taken many environmental features into consideration, with incorporation of the necessary corrections, we feel that Assawogga Heights will be of benefit to the Town of Killingly and the Northeastern Connecticut Region.

ENVIRONMENTAL EVALUATION

GEOLOGY

Deep snow cover on the day of the field review prevented a thorough examination of the geology of the property. Interpretations contained in this report are based upon topographic features and available published data for areas on or adjacent to the site.

It is likely that most of the surficial geologic material is till, a glacial

deposit composed of clay, silt, sand, gravel, and boulders in various proportions. As glacier ice moved through the area more than 15,000 years ago, it collected and transported preexisting soils and weathered bedrock, and plucked and abraded exposed rock surfaces. Small meltwater pools and streams on, under, or within the ice served as collection areas for sand and gravel, which is found in irregular, scattered pockets throughout till.

The depth of the surficial materials on the property is unknown. The topography and a few visible rock outcrops suggest that the till is thinnest (approximately 0-15 feet) in the northern part of the proposed development. Till depth in the southern part is estimated to be 15-30 feet.

The bedrock underlying the property apparently is Scituate Granite Gneiss, a light gray to pink, medium- to fine-grained gneiss consisting of approximately equal amounts of quartz, microcline, and oligoclase, and as much as 10 percent biotite. No economic mineral concentrations are believed to exist upon the property.

HYDROLOGY/POTENTIAL WATER SUPPLY

The public water supply available is not adequate to provide the amount of water needed for the proposed development, consequently present plans call for on-site wells for each individual unit.

Because till is generally an unsuitable source of groundwater supply, it is likely that wells will have to tap bedrock. No practical method exists for estimating yields from this highly variable aquifer. The metamorphic bedrock of eastern Connecticut contains a negligible amount of interconnected pore space for the storage and transmission of water; consequently, most flow takes place along fractures in the rock. The total yield from a given bedrock well depends upon the number and size of fractures encountered by the well, and the proximity of the well to a source of groundwater recharge.

Although yields can vary greatly in wells only a few tens of feet apart, most wells utilizing a bedrock source can be expected to produce enough water to supply the household needs of an average family [approximately 3 gallons per minute (gpm)].

Connecticut Water Resources Bulletin No. 8 shows the location of several bedrock-tapping wells within one mile of the proposed development area. The yields reported for these wells range from approximately 3 gpm (at a house immediately south of the site, along Attawaugan-Ballouville Road) to 50 gpm (at a building east of Route 12, approximately 0.1 mile south of Route 21). The higher value is unusual for a bedrock well; a yield of 3-15 gpm is more likely to be realized.

The quality of water from new wells on the property is likely to be acceptable. The absence of subsurface waste disposal will be a positive influence on the supply.

All wells should be maintained a minimum of 75 feet away from the sewer lines unless the sewer is constructed of extra heavy cast iron pipe with leaded or equal joints.

FOREST RESOURCES

The site of the Assawogga Heights subdivision can be divided into three forested stands. These areas are illustrated on the accompanying map.

Stand One: This area consists of approximately 5.5 acres, with white pine as the dominant species. Red oaks, red maples and other hardwoods of poor quality are also present. Some forest reproduction, in the form of white pine is evident, but sparse. It is recommended that there be a cordwood harvest in this stand to increase white pine reproduction and to remove hazardous dead and dying trees which had been affected by the gypsy moth infestation several years ago. The probable yield of this cordwood harvest would be 8 cords.

Stand Two: This stand is approximately 7 acres, also with white pine as the dominant species. Other species which are present include birch, cherry, oak and red maple. Seventy-five percent of the reproduction in this area is white pine. There are no live stems over 4" DBH (diameter of trunk at breast height) in this area and there are many dead standing trees from 12 to 18" DBH which represent a hazard. A cordwood harvest, yielding approximately 21 cords, to eliminate all dead and dying material is suggested for this section of the site.

Stand Three: This 11.5 acre area is dominated by red maple. The area is overstocked with sapling to pole size red maple, oak and white pine. There is very little evidence of reproduction in this stand with the exception of red maple saplings. A cordwood harvest of all dead and dying materials is also recommended for this area, with a probable yield of 11 cords.

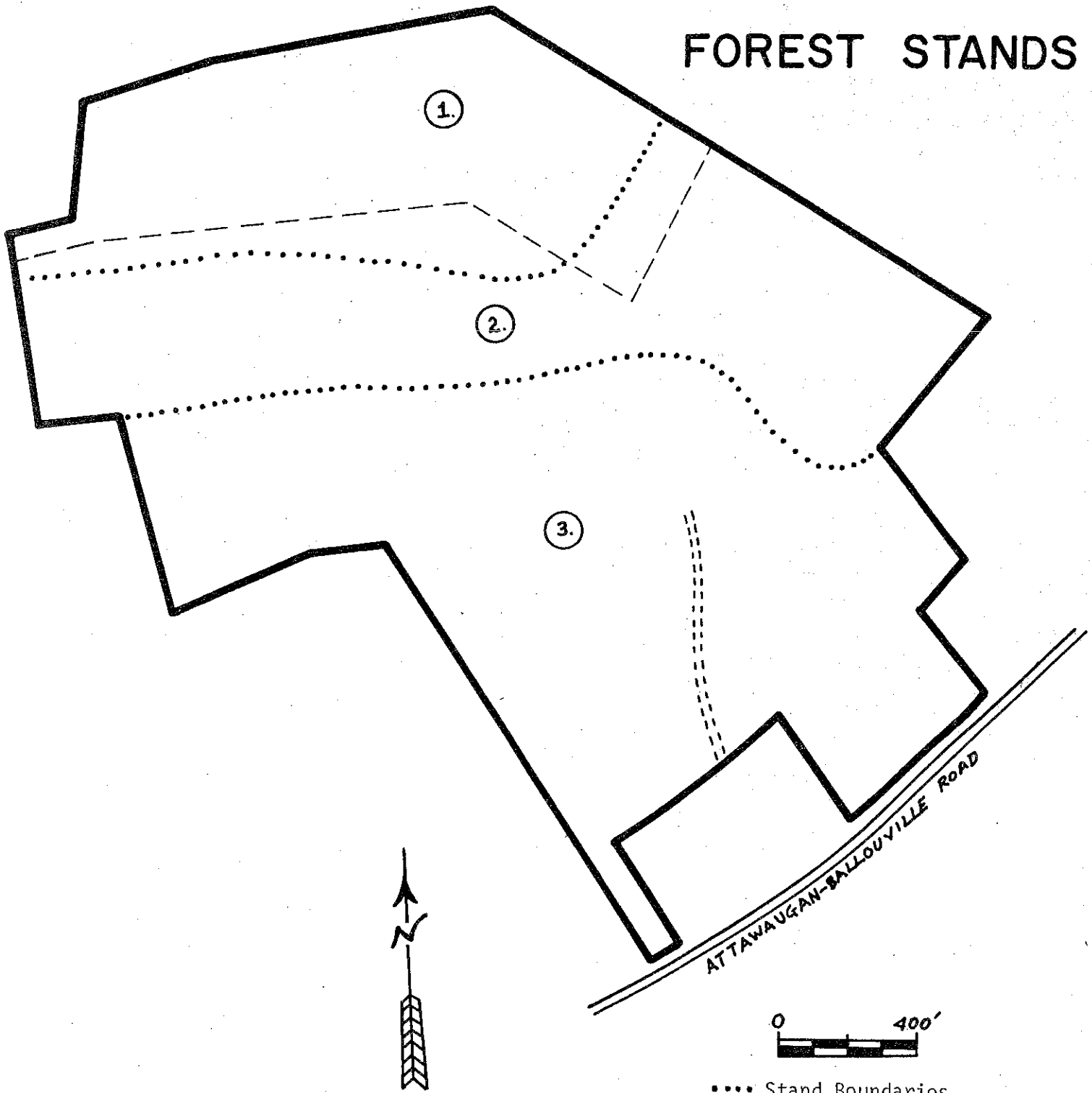
SOILS

A detailed soils map of this site is 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'/inch scale to 330'/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 limitation chart indicates the probable limitations for each of the soils for on-site sewerage, buildings with basements, buildings without 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 Soil Interpretations: Windham County, Connecticut, 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 soils on the Assawogga Heights site consist of several natural soil groups ranging from Group A - terrace soils over sands and gravels to Group D - upland soils which are shallow to bedrock. The majority of soils on this site are derived from glacial till, with wetland areas extending over 8% of the site. Canton-Charlton, Charlton-Hollis, Sutton and Scarborough soils are most representative of this site.

ASSAWOGGA HEIGHTS
KILLINGLY, CONNECTICUT

FOREST STANDS



..... Stand Boundaries

---- Open space Boundary

prepared by D.H. Smith, DEP

The Canton series are well drained soils developed in upland till normally deeper than five feet. These soils are rapidly permeable in the subsoil but slowly to very slowly permeable layers may be present below 60 inches. The water table is normally below 60 inches during most of the year. The Canton soils are naturally stony and contain few to many stones through the soil. Gravel size rock fragments generally make up 10 to 30% of the surface and subsoil. Canton soils constitute approximately 60% of the Canton-Charlton mapping unit. Most development problems are related to slope and stoniness.

The Charlton series are well drained soils developed in upland till normally deeper than five feet. These soils are moderately permeable in the subsoil, but very slowly to slowly permeable layers may be present below 60 inches. The water table normally is below 60 inches most of the year. The Charlton soils are naturally stony and contain few to many stones throughout the soil. Charlton soils make up 30% of the Canton-Charlton series and 50% of the Charlton-Hollis series. Development problems are related to slopes and stoniness.

The Hollis soils are somewhat excessively drained soils developed in sandy material over bedrock, as much as 20 inches deep, principally of schist and gneiss. They occur on uplands where surface rock outcrops vary from few to numerous and varying amounts of surface stone are present. These soils have rapid permeability. Most development problems are related to the depth to bedrock, droughtiness, slope and rock outcrops.

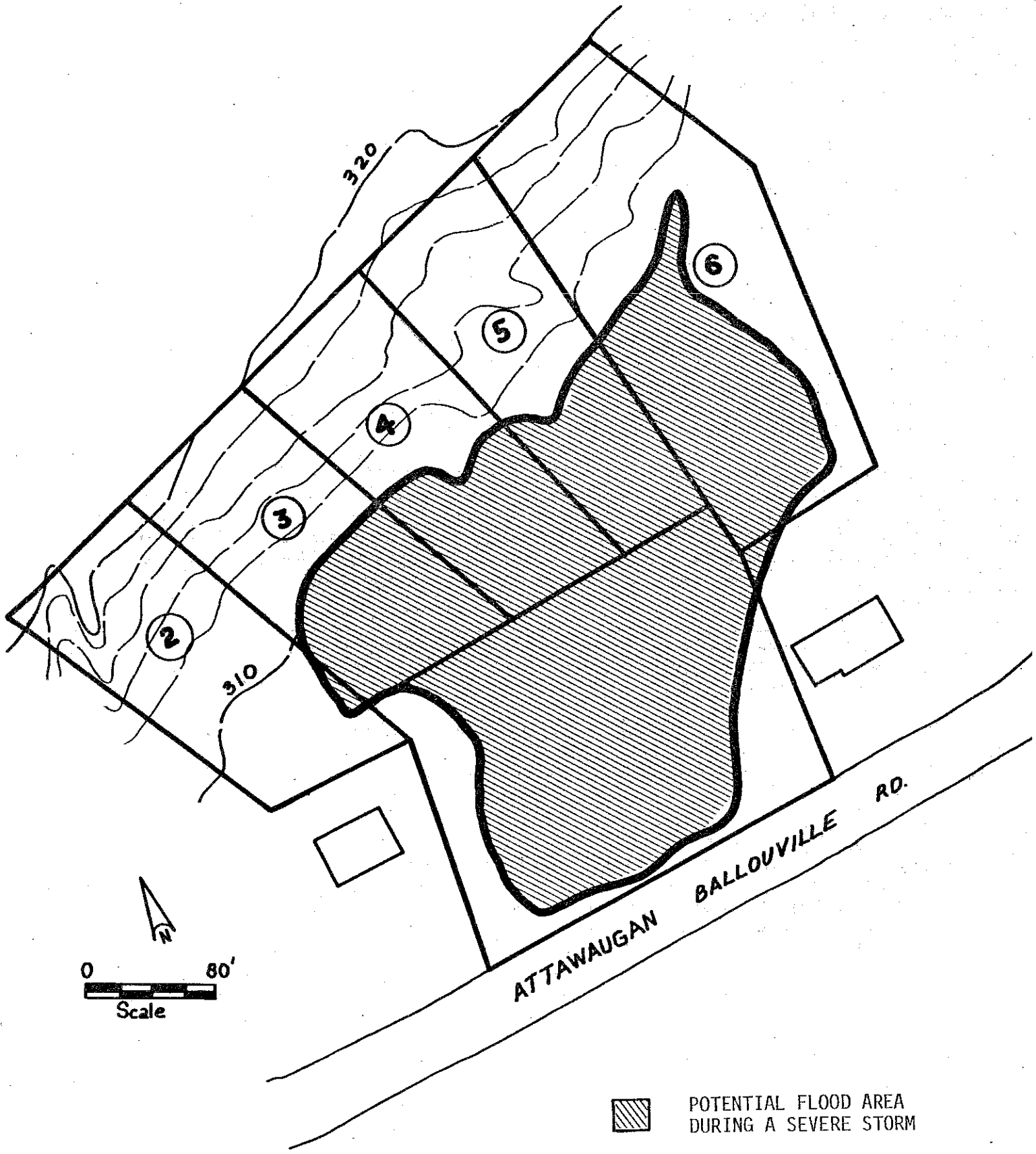
Sutton soils are moderately well drained soils which were developed in upland till normally deeper than five feet. These soils are moderately permeable in the subsoil but slowly to very slowly permeable layers may be present below 60 inches. The water table normally rises to within 15 to 20 inches of the surface during the winter and spring months. The Sutton soils are naturally stony and contain few to many stones throughout the soil. Most use problems are related to high water table and stoniness.

The Scarboro soils are very poorly drained soils developed in sandy water deposits. These deposits, normally deeper than 10 feet, occupy low-lying terraces. Stratified sands and gravels may occur below five feet. They have moderate permeability in the subsoil. The water table normally rises to the surface during most of the year. Most use problems are related to high water table.

As the soils limitation chart in the Appendix shows, approximately 39% of the site is in Canton-Charlton soils, 22% of the site is in Charlton-Hollis soils, 27% is in Sutton soils and 8% is in Scarboro soils which are regulated wetlands under Public Act 155. By comparing the subdivision plan with the soils map of the area it appears that Lots 4, 5, 6, 7, 9 and also Lots 23, 24, and 25 may lie within Sutton soils which are stony, seasonably quite wet. These soils are also severely limited for buildings with or without basements. Portions of Lots 5 and 6 appear to lie within Scarboro soils which are regulated wetlands. As shown in the accompanying illustration the rear of Lots 3, 4, 5, and 6 is also subject to flooding during a severe storm from the storm water retention basin. Future property owners should be made aware of these problems before purchasing the property, perhaps by means of a deed restriction, limiting the construction of accessory structures below the 310 contour mark. Owners of Lots 4 and 5 should be aware of the flooding problems which will exist from the storm water discharge pipe which will disperse continually across their property. This outflow should be riprapped to the rear property line to prevent erosion in this area. Erosion control measures should be

ASSAWOGGA HEIGHTS
KILLINGLY, CONNECTICUT

POTENTIAL FLOOD ZONE



considered for use in lots 7, 8 and 9 as the potential gullying from the proposed swale in this area could prove to be a liability to the lot owner and the Town. A drainage easement on Lots 6, 7, 8 and 9 should be deeded to the Town wherein lot owners are required to maintain drainage swales to allow free flow of water. Due to the nature of the slope and soils, the Team feels that some sort of stone-lined waterway would be needed in the swale area of Lot 7. In addition, establishment of grass in this heavily shaded portion of the site could be a problem in this newly cut area.

Connecticut's Erosion and Sediment Control Handbook published by the Soil Conservation Service will aid both the developer and the Town in preparing and approving an adequate erosion and sediment control plan. Standards and specifications for both mechanical and vegetative practices listed within the Handbook are available at the Windham County Soil Conservation Service office, Brooklyn, Connecticut.

FOUNDATION DEVELOPMENT/GRADED CONDITIONS

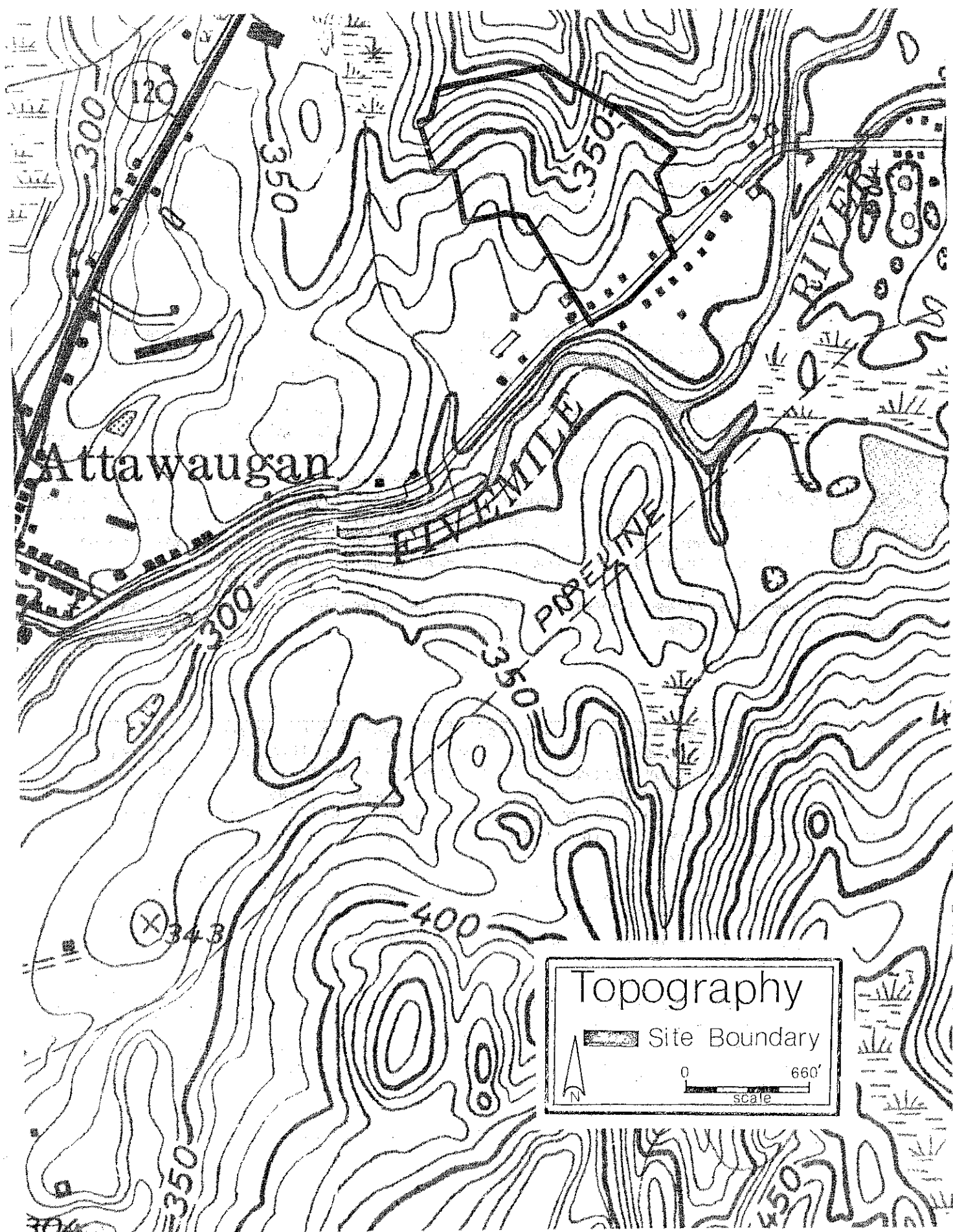
A final grading plan should be drawn showing finished contours for all lots before final approval is given for this subdivision plan. Care must be exercised to avoid channeling surface water into one small area which might create an erosion problem or wet basements. Footing drains may be sensible to consider in lots on Sutton soils to prevent seasonably wet basements.

In order to accommodate the anticipated storm water runoff, a new storm water drainage system has been proposed by the applicant. This system is comprised of 854' of storm sewers and 13 catch basins, most of which will drain into a new retention basin. The site's entire storm water flow will eventually drain into an existing Town storm water system from two locations--the retention basin and a small system of three catch basins and culverts at the street entrance to this subdivision.

The Town-owned storm water system under Attawaugan-Ballouville Road was constructed in 1973 by the Public Works Department. It drains into the Five Mile River approximately 200 feet from the development.

At the time of this writing, the application materials do not portray how storm water runoff will be controlled on each individual lot and in general from the hillside; this information should be furnished. The installation costs for the new storm water system will be borne by the applicant.

Several members of the Team have suggested the possibility of a drainage system around some home sites consisting of an earthen berm on the upslope and a grassed waterway system to the culverts. The Team agrees however, in order to further preclude basement flooding, proper provisions should be made to slope the ground away from the foundation especially in the area of Lots 18, 19, 20, 8 and 7. Runoff flowing down the swale to the northeast of Lot No. 9 and, according to the plans, continuing across Lots No. 8, 7, and 6, and finally terminating at the retention basin, should be controlled. This control should: a) prevent flooding at the permanent cul-de-sac; b) assure the water is directed to the retention basin; and c) channel the water away from all dwellings, and culvert it under all driveways in its path. A cursory review of the present grading plan indicates design problems in the area of the swale in Lot 8. It appears that the swale will not be deep enough on the southern side to prevent water from spilling out across the lot



toward the proposed house site. Perhaps a berm on the southern side of the swale in Lots 8 and 9 should be considered to correct this problem.

The scheduling of development components will be an important factor in controlling sedimentation and erosion on this site. Having disrupted areas either temporarily seeded or mulched through the winter wet season is important to limit sheet erosion across the site. Removing additional sediment from the storm water retention basin should also be accomplished after completion of the development and before the Town accepts the subdivision.

WASTE DISPOSAL

Soils on only one of the 23 acres proposed for this development, contain slight limitations for on site subsurface septic systems, thus the remaining 22 acres are generally unfavorable for subsurface septic systems.

Present and former residents of the area have indicated a problem with high water tables. The Team concludes that the applicants should pursue their plans to connect into the existing Killingly public sewer lines running directly in front of the site on Attawaugan-Ballouville Road. Care should be exercised in the sewer installation to avoid possible contamination of water supplies due to leakage where the soil is shallow to bedrock. Proper bedding should be provided for these line extensions and it should be tested for leakage. Manholes for this system should be water tight and located a minimum of 75 feet away from wells.

The Town sewer lines presently appear to be more than adequate to handle present and future flow.

STREETS

2,006 feet of new roads are planned, all of which are centered in a 50 foot right-of-way. These roads include one permanent and one temporary cul-de-sac. The typical cross-section portrays a local street paved to a full 26 foot roadway width. The pavement structure includes a 12" subbase, 4" base course and is topped with a 2" bituminous concrete surface course. All 29 house lots will front on these new streets. The installation costs of all proposed streets will be borne by the applicant.

Given the possibility, however slight, that the road system will not be continued after this initial 29 lots, the temporary cul-de-sac at one road terminus should be built to the design standards of the Subdivision Regulations.

The Team feels that the 26 foot wide street is more than adequate for a local road. Vertical curves at Stations 3+75 and 4+0 appear to be too short for motorist safety, thus they should be lengthened to insure a 200' stopping sight distance. Slopes don't exceed 7% at any point on the proposed roadway, and only in two spots does the road course go against the grade, thereby limiting cutting and filling. Egress from Attawaugan-Ballouville Road to Route 12 should be corrected by the installation of a traffic light. This subdivision will only aggravate the already serious line-of-site problem at this intersection in Attawaugan village.

COMPATIBILITY WITH LAND USE PLANS

This application is in relative conformity to the Killingly Plan of Development (1974) and the Regional Plan of Development (1978). The Town's Master Land Use Plan map assigns this area to residential uses, at primarily low and medium densities. The Plan defines low density development as residential development of two or fewer families per acre, and medium density residential development as residential development of between two and eight families per acre. This is consistent with the Assawogga Heights site plan, inasmuch as 29 new one-half acre building lots are portrayed. As for the Regional Plan of Development, its map dedicates this area for future urban development. The Regional Land Use element further proposes that the majority of new housing be at the urban low density category located in and around existing built-up areas, such as the area immediately in between the secondary regional centers of Ballouville and Attawaugan, i.e., Assawogga Heights.

The Killingly Inland Wetland Commission regulates residential developments if they come within 200 feet of a wetland. In the Assawogga Heights development, Lots 2, 3, 4, 5, 6, and 7 and perhaps Lots 1, 12, and 11 also, and the area reserved for the retention basin are within the regulated area. On March 9th the Commission received an application from the developers, and at that time postponed action until the snow-cover dissipates, which is anticipated to be in late March or early April. A member of the Wetlands Commission accompanied the Environmental Review Team during its field survey of the site. The wetlands review may wish to focus on the significance of this small wetlands area in terms of unique vegetation, wildlife habitat, and pollution filtration. Although there was a snowcover at the time of our field inspection, at this time we feel the scale of this wetlands, its immediate proximity to existing development, the current water quality of the Five Mile River, (a class A watercourse), and the absence of any information on significant vegetation or wildlife are factors which lead to the conclusion that a properly designed and executed retention pond in this wetlands should not render any appreciable damage. Should new information develop, however, then this position should be reevaluated. The natural water retention characteristics of the wetland relative to the Five Mile River basin flood hazard will be significantly improved with the completion of the proposed retention basin.

AESTHETICS

The developer's declaration not to clear-cut the forestlands will enhance the beauty of this development, as well as limit disruption of the environment and erosion, and increase real estate values. If at all practicable, telephone and electrical service lines should be placed underground, but with provisions for access to them without necessitating street excavation.

ENERGY CONSERVATION

Assawogga Heights will be an auto-dependent neighborhood, however, this does not preclude limited rural public transportation service such as that now provided by NECTAR. This subdivision will reinforce the existing village centers of Attawaugan and Ballouville as transportation modes, in support of more efficient public transportation and common origins for carpooling.

The homes have been designed with 10" insulation in the ceilings and 6" in the walls, thus energy consumption for heating purposes should be reduced. Because these homes are on a south slope and face the sun, winter heating costs should be further reduced. Additionally, homeowners will be provided with facilities for using wood burning stoves for heating purposes.

FIRE PROTECTION

Clover Development is planning to furnish a non-pressurized dry hydrant along Attawaugan-Ballouville Road to draw water from the retention basin. The Team feels that this will be a great asset to the Town.

RECREATION/OPEN SPACE

The five acres of open space lands to be dedicated to the Town are a welcome addition to the Town's existing open space inventory, according to the Killingly Recreation Director. This addition is particularly important in view of the plans now being formulated to construct substantial new housing in the Attawaugan and Ballouville areas. If the parcel to the north, also owned by Clover Development, is developed for residential purposes, as now planned, the applicants have indicated their intent to enlarge this open space area by some ten acres. The subdivision plan shows two 15' access strips which should be adequate.

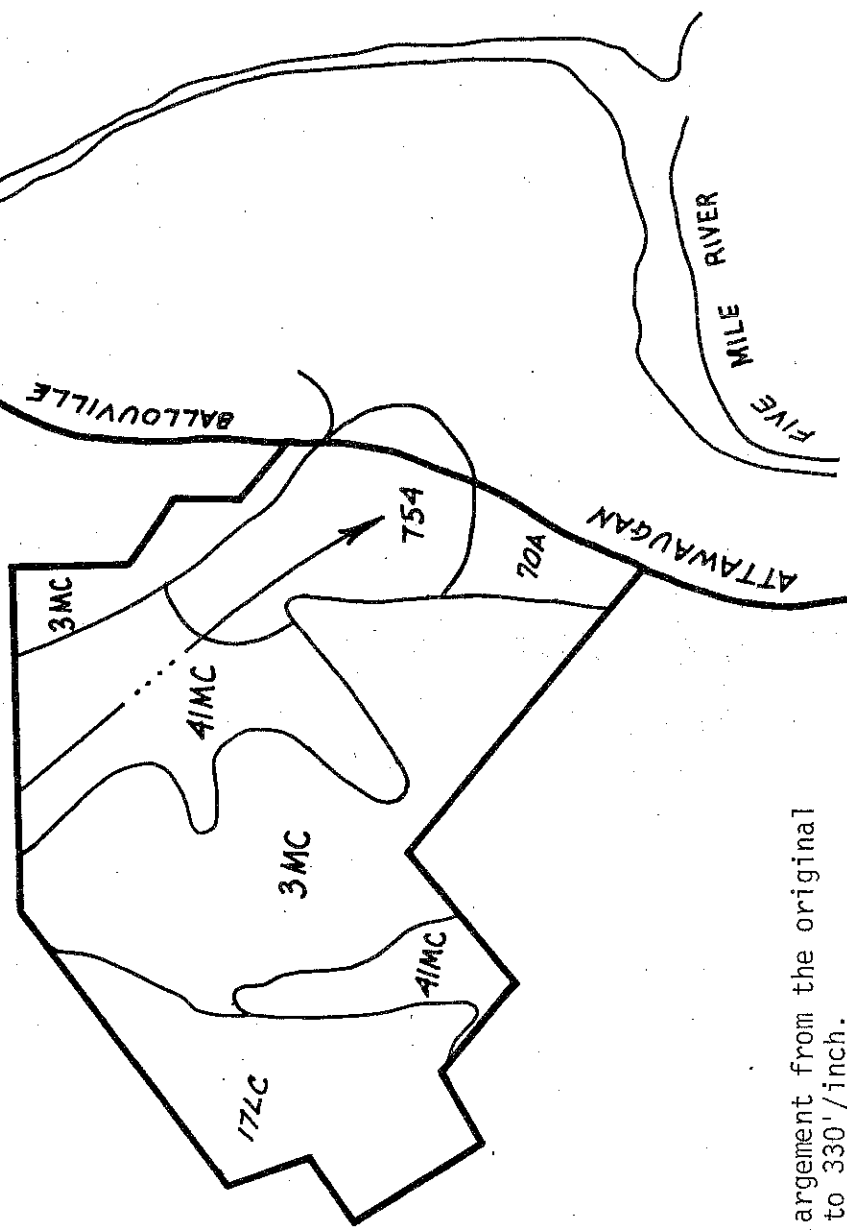
The Team does question, however, the specific five acres which have been designated for open space. As shown on the development plan, the 5 acre parcel is quite steep and susceptible to erosion if the forest floor cover is disrupted or removed. This could happen through trail bike use or improperly designed hiking paths directed up the slope instead of paralleling the contours of the hill. Run-off erosion and gulying could occur, causing problems for houses located down slope from the open space area.

The Town may wish to consider another area for open space in this subdivision which would be mutually agreeable with the developer. The storm water basin and portions of the surrounding area may be a possibility. A pond for swimming, skating, fishing, fire water supply, etc., with picnic tables and a roof shelter may be very desirable for use by the present neighbors as well as property owners in the subdivision. The Town would have easy access to this area, from Attawaugan-Ballouville Road, although there would be no area provided for off street parking.

Appendix

SOILS

ASSAWOGGA HEIGHTS
KILLINGLY, CONNECTICUT



This map is an enlargement from the original
1,320'/inch scale to 330'/inch.

Prepared by: United States Department of Agriculture, Soil Conservation Service.
Advance copy subject to change.

ASSAWOGGA HEIGHTS
KILLINGLY, CONNECTICUT

PROPORTIONAL EXTENT OF SOILS AND THEIR LIMITATIONS FOR CERTAIN LAND USES

Soil Series	Natural Soil Group	Soil Symbol	Approx. Acres	Percent of Acres	Principal Limiting Factor	Urban Use Limitations				
						On-Site Sewage	Dwellings with Basements	Dwellings without Basements	Roads and Streets	Land-scaping and Lawns
Canton & Charlton	B-1c	3MC	9	39%	Slope	2	2	2	2	2
Charlton-* Hollis	B-1b	17LC	5	22%	Slope	2	2	2	2	2
Sutton	B-2b	41MC	6	27%	Wetness, stones slope	3	3	3	2	3
Merrimac	A-1d	70A	1	4%		1	1	1	1	1
Scarboro#	A-3b	754	2	7%	Wet	3	3	3	3	3

* In some areas of this delineation depth to rock may change the interpretations.

Wetlands by PA 155

Limitations: 1 = slight, 2 = moderate, 3 = severe

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.