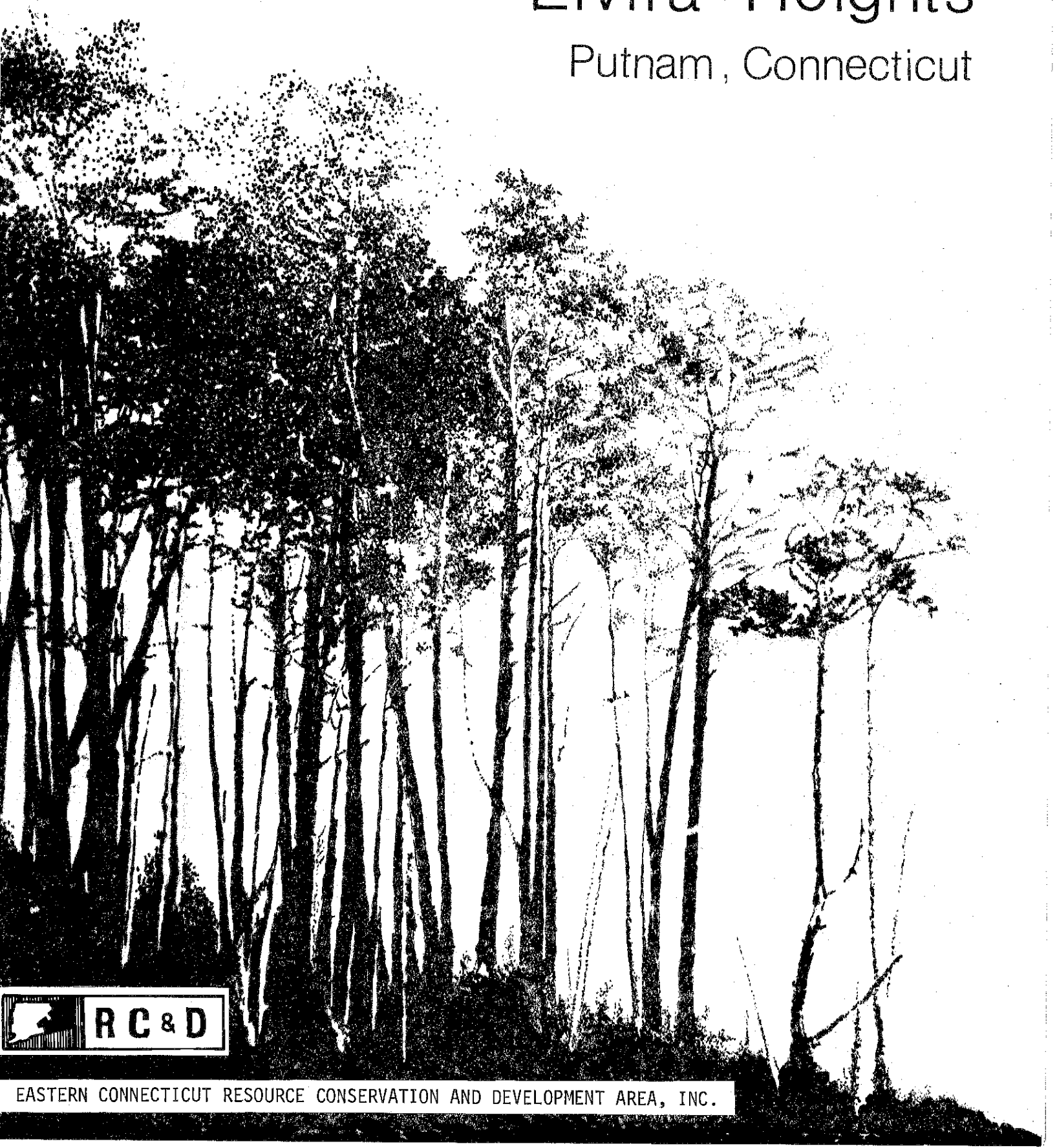
Environmental Review Team Report

Elvira Heights

Putnam, Connecticut



R C & D

EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT AREA, INC.

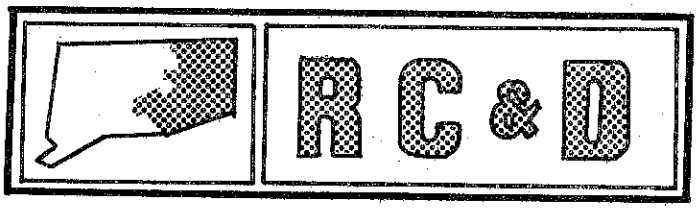
Environmental Review Team Report

on

Elvira Heights

Putnam, Connecticut

June 1978



eastern connecticut resource conservation & development area

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139 boswell avenue
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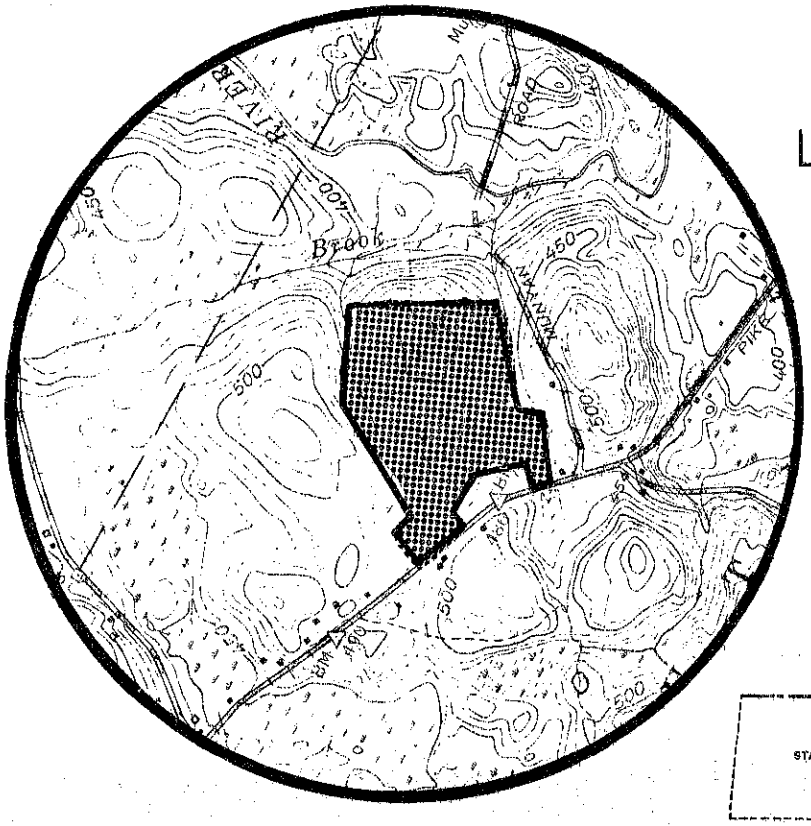
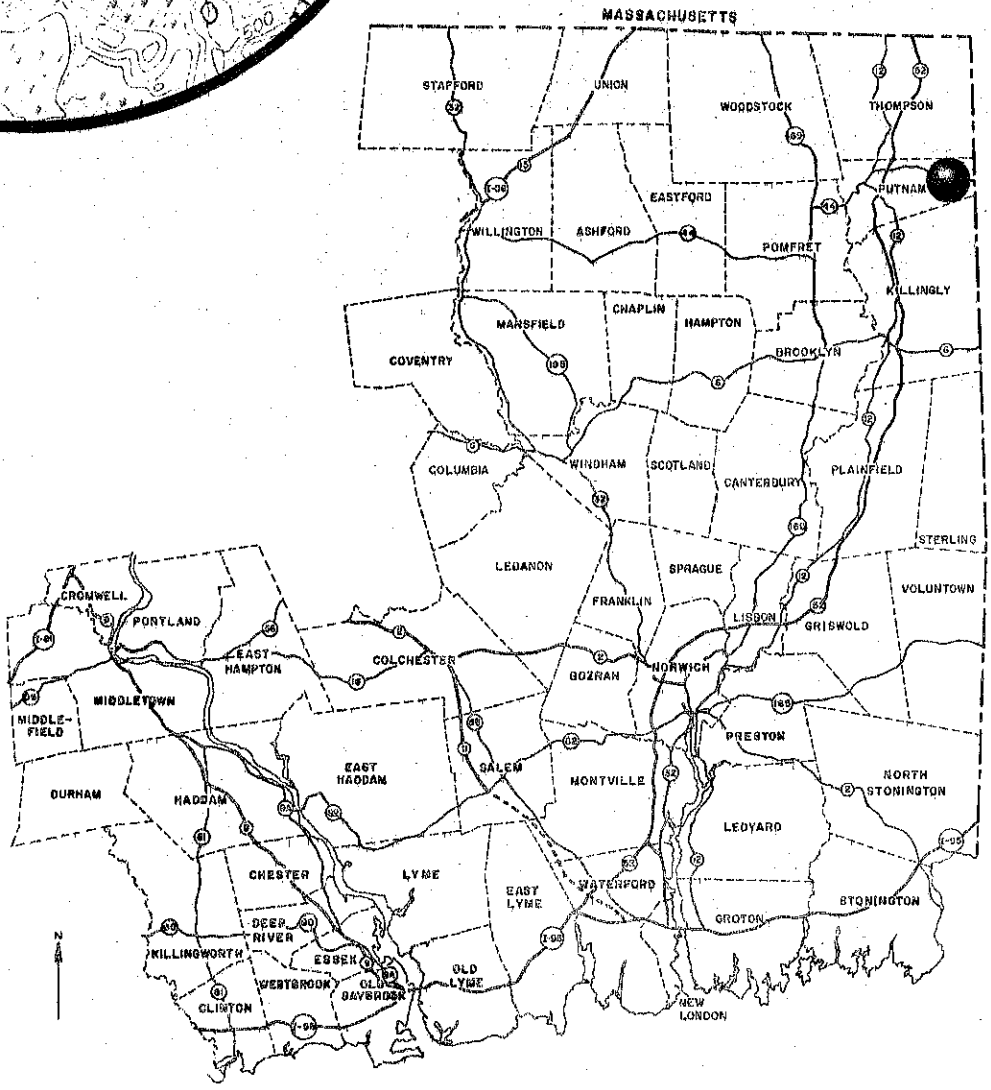


Location of Study Site

ELVIRA HEIGHTS
PUTNAM, CONNECTICUT



EASTERN CONNECTICUT
RESOURCE CONSERVATION AND DEVELOPMENT PROJECT

ENVIRONMENTAL REVIEW TEAM REPORT
ON
ELVIRA HEIGHTS
PUTNAM, CONNECTICUT

This report is an outgrowth of a request from the Putnam 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); Michael Zizka, Geologist, Department of Environmental Protection (DEP); Donald Smith, Forester (DEP); Ernest Julian, Sanitarian, State Department of Health; Peter DeMallie, Regional Planner, Northeast Regional Planning Agency, (NECRPA); Tom Maziarz, Regional Planner (NECRPA); and Jeanne Shelburn, ERT Coordinator, Eastern Connecticut RC&D Area.

The Team met and field-checked the site on Thursday, May 18, 1978. Reports from each Team member were sent to the ERT Coordinator for review and summarization for the final report.

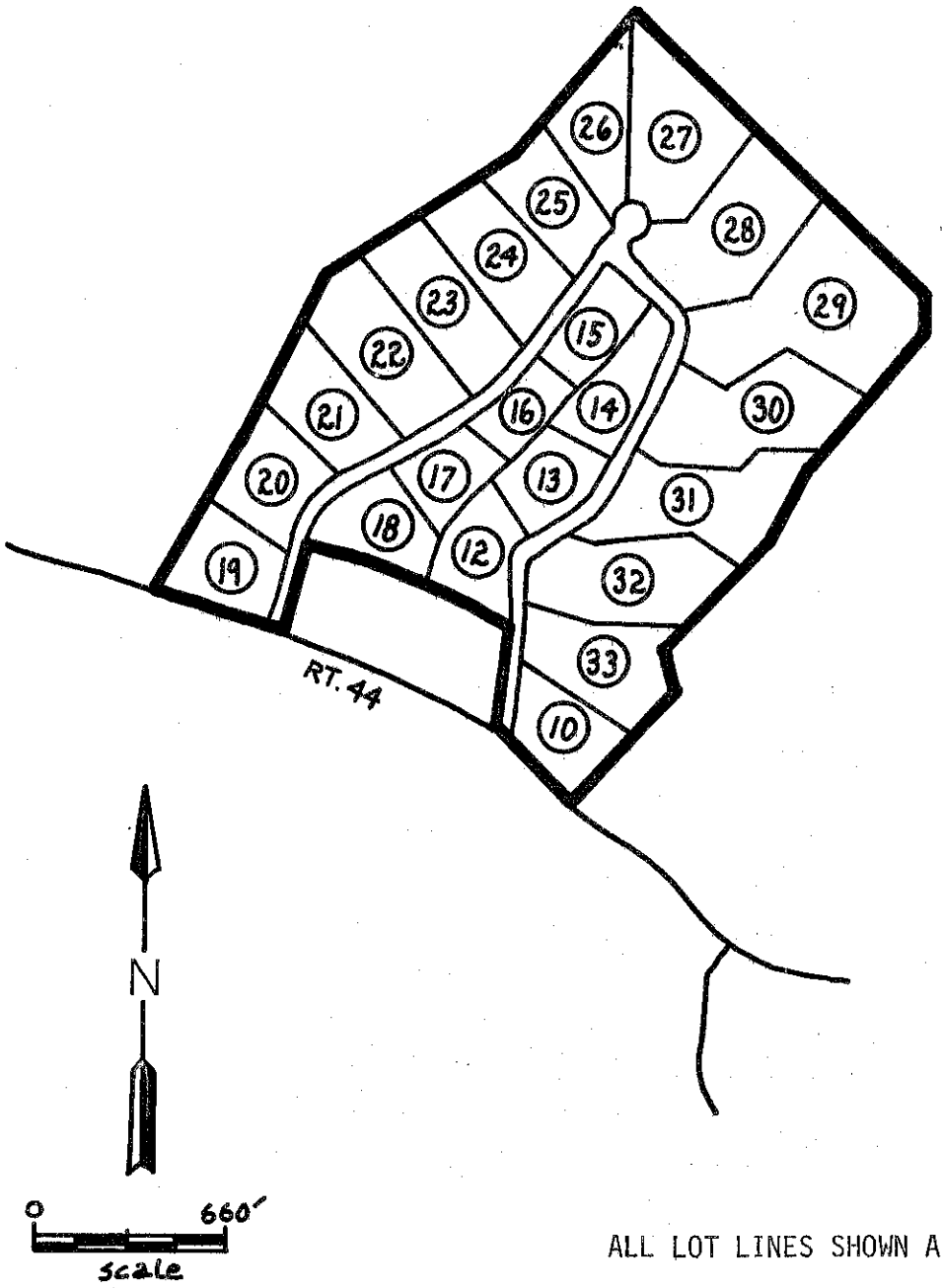
This report is not meant to compete with private consultants by supplying site designs or detailed solutions to development problems. This report identifies the existing resource base and evaluates its significance to the proposed development and also suggests considerations that should be of concern to the developer and the Town of Putnam. 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.

PRELIMINARY SUBDIVISION PLAN

ELVIRA HEIGHTS
PUTNAM, CONNECTICUT



ALL LOT LINES SHOWN ARE APPROXIMATE.

INTRODUCTION

The Eastern Connecticut Environmental Review Team was asked to review a proposed subdivision, to be known as Elvira Heights, in the town of Putnam. The property is presently in the private ownership of James Parziale, a Putnam resident, who will also act as developer for the subdivision. Preliminary subdivision plans have been prepared by Albert Fitzback, registered land surveyor in Thompson, Connecticut. The proposed subdivision is located on the north side of U.S. Route 44 in the Town of Putnam, some two miles east of the junction with Route 52. It encompasses 74.4 acres.

The developer has proposed to subdivide the tract into 22 separate lots ranging in size from a minimum of 2.0 acres up to a maximum of 5.94 acres. Access will be provided by two local roads, each consisting of a 26' roadway centered in a 50' right-of-way. Once complete, the two in tandem will connect to form a U-shaped vehicular network. No public water or sewerage is available. Water and wastewater disposal systems must be provided on-site for each dwelling.

In total, this proposed subdivision appears to be in conformity with local and regional plans and Putnam's zoning, subdivision, and inland wetlands regulations.

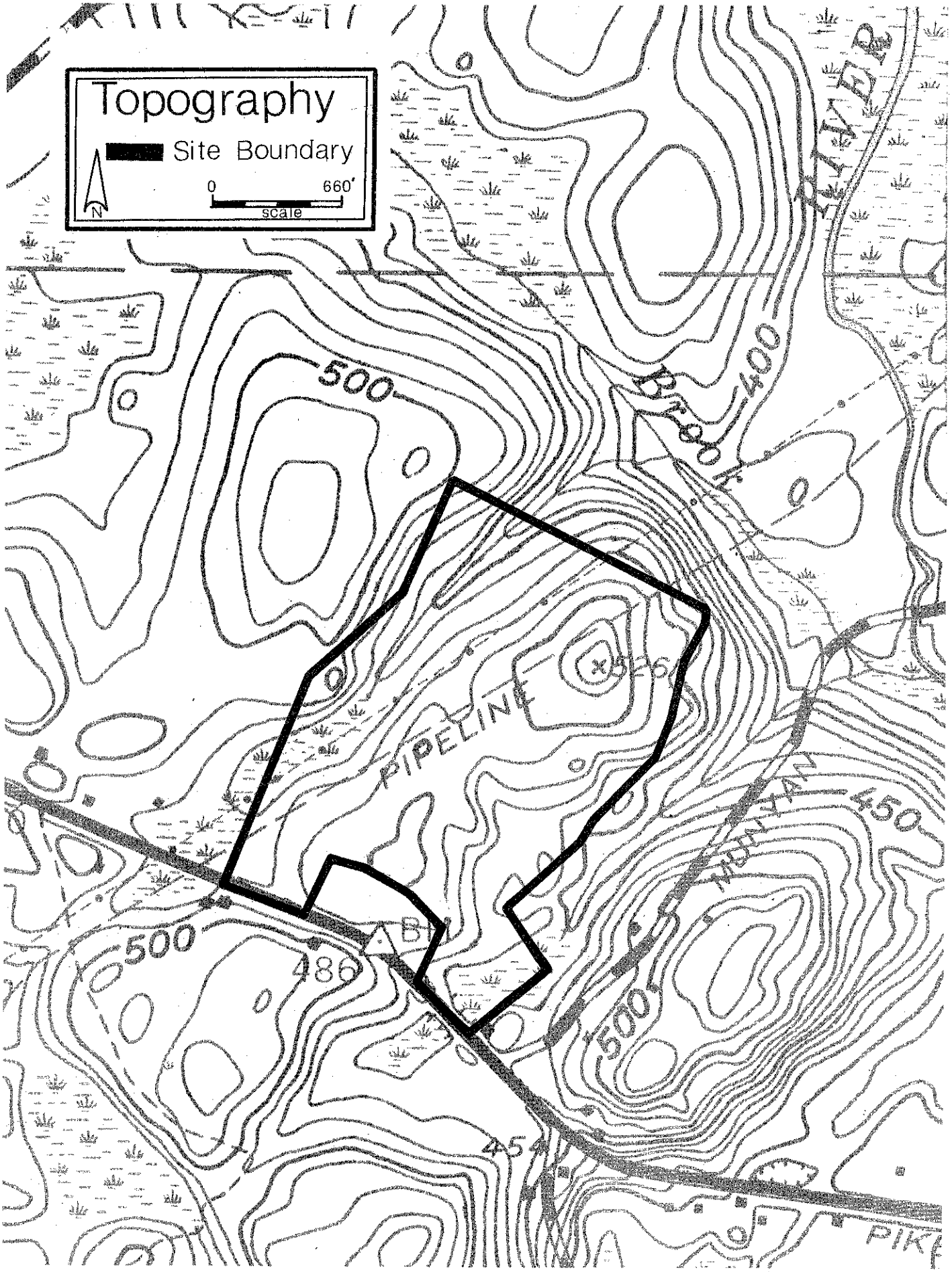
While the tract has numerous sites suitable for large lot (2+ acres) residential development, there are some limiting factors. Slopes in excess of 10% are present as well as some in excess of 15%. An intermittent stream traverses the northwest section and a pond and stream border the property to the southeast. Small wetlands are dispersed over the subdivision's northwest and southeast sections. The property's highest elevation is found at its center. Water drains from this ridge to the northwest and southeast.

Public utility rights-of-way bisect the northwest lots. Two interstate gas mains (24 and 30 inches in diameter) are present in a 75 foot right-of-way. A 300 foot easement serves a separate interstate electric transmission line.

The Team is generally concerned with home location, location of septic systems and wells on each lot, the hazards of large overhead electrical transmission facilities and natural gas lines and any detrimental effect of construction on the wetland. Developing a plan with proposed locations of homes, wells and septic systems which meet all separating distance requirements will assure acceptibility of these building lots. Also, designs for septic systems in lots 19, 22, 24, 25 and 30 should be reviewed prior to final approval of these lots.

It appears that adequate sediment and erosion control measures have been included on the proposed subdivision plan, however, additional controls such as hay bales and vegetative cover to be used during construction, will minimize any adverse impact on the wetlands.

To conclude, this proposed subdivision raises numerous development issues. Given the absence of Local, State, or Federal laws governing structural setbacks from large capacity underground natural gas or overhead electric transmission facilities, it is left to the developer and the Commission to protect the health and safety of Elvira Height's future residents.


Topography
Site Boundary
0
660'
scale
N
500
400
PIPELINE
450
500
486
500
450

ENVIRONMENTAL ASSESSMENT

GEOLOGY

According to U.S. Geological Survey Map GQ-1165, the bedrock underlying and cropping out on the property is part of the Quinebaug Formation. This unit consists primarily of medium to dark greenish gray, fine to medium- grained gneisses containing biotite, quartz, andesine and, occasionally, hornblende. Less abundant amphibolite, calc-silicate gneiss, and light gray quartz-feldspar gneiss are interlayered with the predominant gneisses. Bedrock outcrops are shown in the accompanying illustration.

The surficial geology of the property (those unconsolidated materials lying above solid bedrock and below the active soil zone) seems to consist almost entirely of a glacial deposit known as till. Till was deposited directly by ice on a glacially abraded landscape and consists of a heterogeneous mixture of rock particles. Because of its typically high percentage of clay and silt-sized particles, till tends to have only a poor water-transmitting capacity. The depth of the till on the property is not known, but the numerous bedrock outcrops suggest that it is five feet or less in many places.

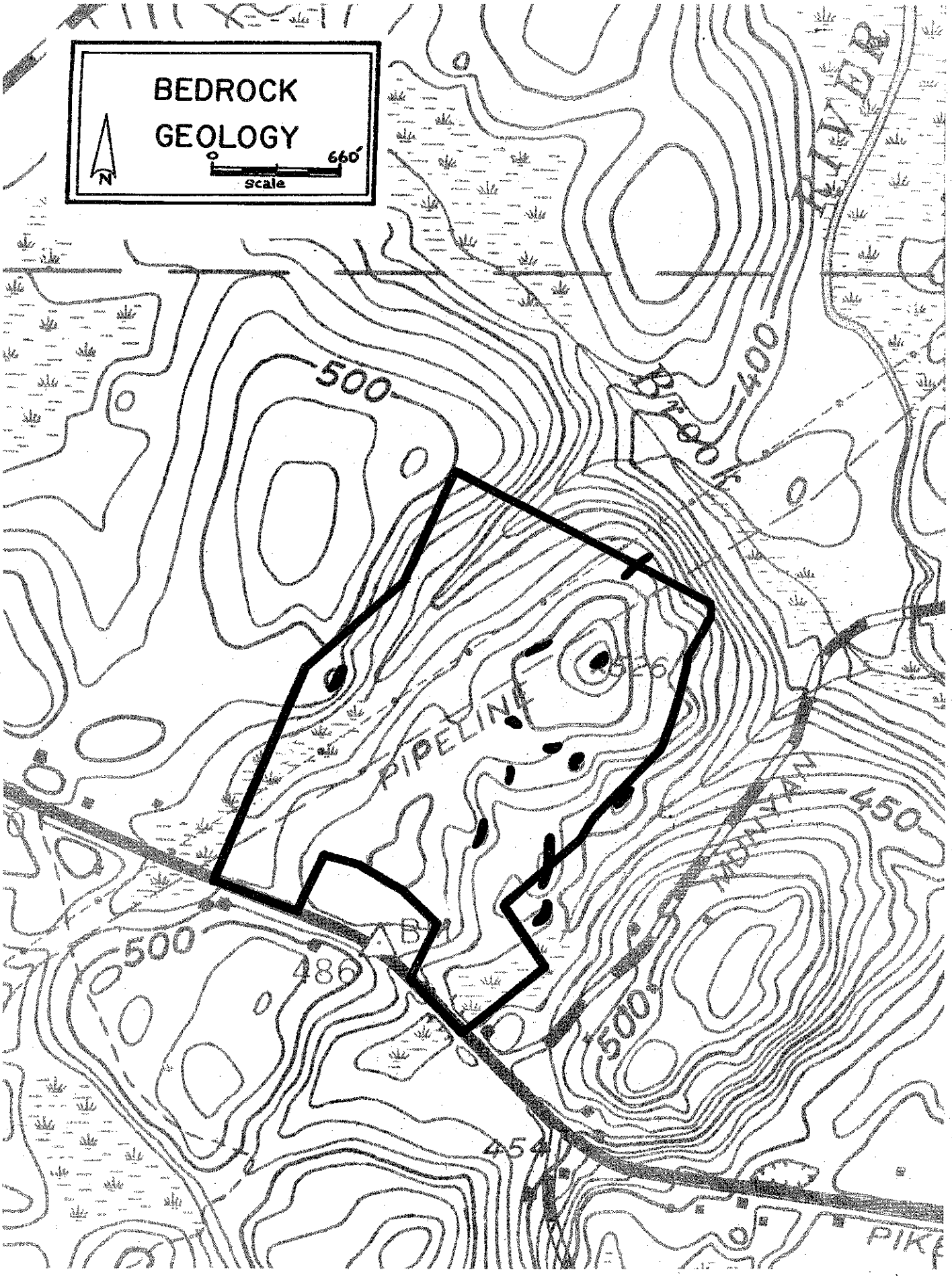
TOPOGRAPHY/HYDROLOGY

The property is situated on a small highland area whose shape seems to be related principally to the structure of the underlying bedrock. Two half-mile-long brooks flank the property; the brook on the western side originates in a wetland, while the brook on the eastern side originates at a dam on a small impoundment. Both brooks flow northeast into Munson Brook, which in turn flows southeast into Five Mile River. All runoff from the property enters this stream system. The change in land use, from forested to residential, and the construction of paved drainage channels will increase the amount of runoff for a given amount of rainfall to some extent. The large lot size, however, will help to minimize this increase. Channeling of road drainage into the small wetland on lot 31 may increase slightly the dimensions of the wetland, but it should help to prevent road sand and salt, as well as other debris, from entering the pond. It is possible, however, that the overall effect on the wetland may be unpleasant for the owner of lot 31.

FOREST RESOURCES

The vegetation of the Elvira Heights subdivision site has been divided into five basic cover types. The southeast section of the property is occupied by a mixed hardwood-softwood type. Hardwoods in this area are primarily of pole size and consist of red oaks, white oaks, red maple, ash and hickory. Softwoods, here, consist of sawlog size white pine with occasional hemlock, and sapling size reproduction of the same species. This area is currently being harvested for cordwood and should develop into a pure softwood stand.

The central portion of the property contains a stand similar in species composition to the southeastern area, but with a smaller population of softwoods. Sizes are similar and reproduction is primarily in hardwood species. Cordwood


BEDROCK
GEOLOGY
N
0
660'
Scale
500
400
PIPELINE
INDIAN
450
500
480
455
PIKE

harvesting here would encourage softwood reproduction.

There are remnants of a white pine plantation in the north central portion of the property. Current plans call for development of a cul-de-sac which would necessitate removal of a large section of these trees. Trees in this area have a high aesthetic value and consideration of changing the location of the cul-de-sac may be desirable.

The northwestern section of the property has a mixed hardwood stand primarily of sawlog size and of the same species composition as the central portion of the property.

The final distinct forest type is located in the southwestern corner of the property as well as a small section along the east central boundary. This area is essentially a wetland with some young field growth of sapling size. Species composition is dominated by oaks, birches, cherry and white pine on the driest areas with shrubby and herbaceous growth on the wetter sites.

During development, every attempt should be made to retain as much of the area as possible in a forested state. This not only will aid in minimizing erosion during construction, but also will add to the final aesthetic appeal of the total development.

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 660'/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.

Soils most characteristic of the Elvira Heights subdivision are the Charlton-Hollis series, the Sutton series, the Adrian-Palms series and the Ridgebury-Whitman series. These soils limit development by their slope, wetness, susceptibility to frost action, excessive humus, large stones and flooding potential.

The Charlton-Hollis series (17LBC) is a gently sloping to sloping unit consisting of two soils, Charlton and Hollis, which occur in patterns too intricate to separate in mapping. About 50 percent of the unit is similar to the soil described for the Charlton series. Hollis soils make up about 30 percent of the mapping unit and occurs when soil is a few to 20 inches deep to bedrock. The

remaining part of the mapping unit is an unnamed soil that ranges from 20 to 60 inches to bedrock. This mapping unit has rock outcrops covering less than 10 percent of the surface area and few to many stones on the surface.

The Sutton series (154XB) are moderately well drained soils developed in upland till normally deeper than 5 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 the seasonal high water table and stoniness.

The Adrian-Palms series (91) are soil deposits of peats and muck not exceeding 52 inches in depth, found in poorly drained areas. They are the remains of reeds and sedges, sphagnum moss, or trees and shrubs. They are underlain by gray sand or stratified sands and gravel. These soils are regulated wetlands soils under Public Act 155. Most use limitations are related to wetness, excess humus, flooding and low strength.

The Ridgebury-Whitman series (43M) consists of poorly and very poorly drained soils. These soils occur in an intricate and complex pattern and separation of each individual soil was not practical on the scale surveyed. Each mapping unit may contain an individual soil or percentage of each of the two soils. They are similar to the soil described for their series. More than 3 percent of the surface is covered with stones. These soils are regulated wetlands under Public Act 155. Most use limitations are related to wetness, frost action and slow percolation.

As the soils limitation chart in the Appendix shows, 42 acres or 56% of the site is in Charlton-Hollis soils, which limit development by their slope. Approximately 30 percent of the soils on the site are regulated wetland soils. Due to the large percentage of wetland soils on this property, it is advised that the Town insure the installation of adequate erosion and sedimentation controls. Hay bale check dams (staked in place) will aid in preventing excessive sedimentation in wetland areas while permanent drainage ways are being developed. Development should be phased to allow as little disruption to the entire site as possible, revegetating disrupted areas immediately following construction will also minimize any sedimentation and erosion problems on the site.

FOUNDATIONS

Due to high groundwater levels in certain areas of the parcel, footing drains may be needed on several lots if full foundations are to be provided. Such drains should help to mitigate the wet basement situation which may occur during the spring and fall months. The Public Health Code requires septic tanks to be located 25 feet away from the house where foundation drains are to be provided.

WATER SUPPLY

On site wells are proposed for all lots in this development. No high-potential sand-and-gravel aquifer is believed to exist on the property, and on-site

wells almost certainly would have to tap bedrock. Yields from bedrock wells depend upon the number and size of water-bearing fractures encountered by the wells. It is estimated in Connecticut Water Resources Bulletin No. 8 that at 85 percent of the sites in the Quinebaug River basin (which includes the Elvira Heights property), a well penetrating 100 feet of bedrock could supply at least 3 gallons per minute, enough for an average home. Bulletin No. 8 also indicates that the quality of the well water is likely to be good.

WASTE DISPOSAL

On site sewage disposal systems are proposed for all lots in the Elvira Heights Development. Field inspection of the property revealed bedrock outcrops and small sporadic wet areas indicative of high ground water levels, thus it is likely that some lots on the parcel will pose problems for properly locating and designing septic systems. High groundwater levels, for instance, would tend to reduce the amount of the natural purification of the effluent that is provided by the soil; indeed, a seasonal flooding of the tile lines not only would cause back-up in the system, but it would allow sewage contaminants to enter the general groundwater flow regimen and to discharge into the pond or its brook. Bedrock near the surface poses the problems of subsurface pooling of effluent and of emergence of effluent at the surface. Such conditions also risk the introduction of contaminants into fractures that may supply wells on the development.

The sporadic nature of bedrock outcropping on the property (except for the fairly continuous ledge near the shoreline of the pond) may mean that the bedrock surface is highly irregular. If this is the case, soil zones that are suitably deep for septic systems may exist on most lots. The two-acre size of the lots is beneficial in this regard. Nevertheless, it would be prudent to analyze thoroughly the overburden characteristics and the groundwater levels on each lot before siting any septic systems. Groundwater levels should be monitored during the wettest times of the year. Artificial groundwater-lowering techniques such as curtain drains should not be used as a substitute for proper natural conditions unless they can be proven to work on the property; such techniques may be ineffective in till. Testing witnessed by the Northeast District Department of Health indicates that lots 19, 22, 24, 25 and 30 would require engineering design before the lots could be approved for on site subsurface sewage disposal. In addition to these lots, the State Department of Health recommends that all lots with a water table at less than 4 1/2 feet have septic systems designed by a qualified professional engineer. This would include lots 12, 15, 17, 18, 23 and 31.

Extreme caution should be used in siting septic systems in lots 30-33 as problems or failures in this area would directly affect the quality of the pond at the south-east corner of the property.

HAZARDS

The gas and power lines present special construction problems. The respective companies should be contacted for proper precautions to take during construction.

SITE DESIGN/PLANNING CONSIDERATIONS

Although all lots conform to the dimensional standards set forth in the zoning regulations (i.e., lot size, frontage, and setbacks), when one considers the minimum facilities and structures required for each lot, locational problems are anticipated. Our information is inadequate to pinpoint those lots which are unbuildable, if indeed any. It is adequate, however, to identify those areas which very well might falter. Problems are most severe in the northwest (lots 19-27) and southeast (lots 29-33). In sections at the subdivision's center, (lots 12-18, 28), problems are not as evident. Particularly in the northeast section (lots 19-27), problems are magnified due to the combined presence of the gas right-of-way and electric transmission easement. On all of these lots with the possible exception of #19, dwellings will of necessity have to be placed in close proximity to the dual gas mains. Although we are not aware of the inherent dangers of daily exposure to the 24 and 30 inch natural gas pipelines, and large overhead electrical transmission lines in the backyards of these residences, we do feel that prior to construction commencement these potential problems should be investigated. State Public Utilities Control Authority staff have indicated there are no current state regulations governing development setbacks from these facilities.

The utility rights-of-way and easements place severe limitations on the area in which a property owner can locate his house, well, and septic system. Typically, the most likely place for their location is in the lot's front section beyond the building setback line, somewhat short of the gas right-of-way. On most of the affected lots this limits the useable area to a rectangle approximately 50 feet by 150 feet in size. Placement of a house, septic system, and well on such a parcel may be possible; however, careful site planning would be imperative. Lot #24 will pose additional problems due to the presence of a small wetland.

In the southeast section (lots 29-33) problems primarily concern drainage, although development of lot 29 is hindered due to excessive slopes. Lots 30-33 drain directly into an existing pond, thus requiring the cautious design of septic systems so as to preclude the uncontrolled transport of untreated effluent towards the pond. Wetlands and intermittent watercourses are found on lots 30, 31, and 32. We recommend deed restrictions on these properties to prohibit the dumping of any material that might impede the flow of water in these natural drainage ways. Lot 32 is an especially difficult lot to build on, due to the presence of wetland in conjunction with steep slopes. Cautious site planning will be necessary in the location of the dwelling, well, and septic system.

On all lots the final grading should be such that water will flow away from the foundations. This is especially important on lots where the house may be at the foot of a long slope (e.g., #13, #14). On lots where the water table is within 6 feet of the surface at anytime of year, perimeter and interior drains should be included in the foundation and footings.

TRAFFIC/ROADS

No major problems are apparent. Line-of-sight appears to be adequate given that these are to be local roads and traffic speeds and volumes should be low. The S-curve on the southeast road could cause some problems if traffic travels at high rates of speed. The curve should be signed to warn motorists of the nature of the

curve and roads should be posted for speeds not in excess of 25 miles per hour.

The southeast road is to be constructed over a wetland (approval already obtained from the Wetlands Commission). Proper drainage should be provided so as not to cause problems for lots 13, 14, 30, 31, 32.

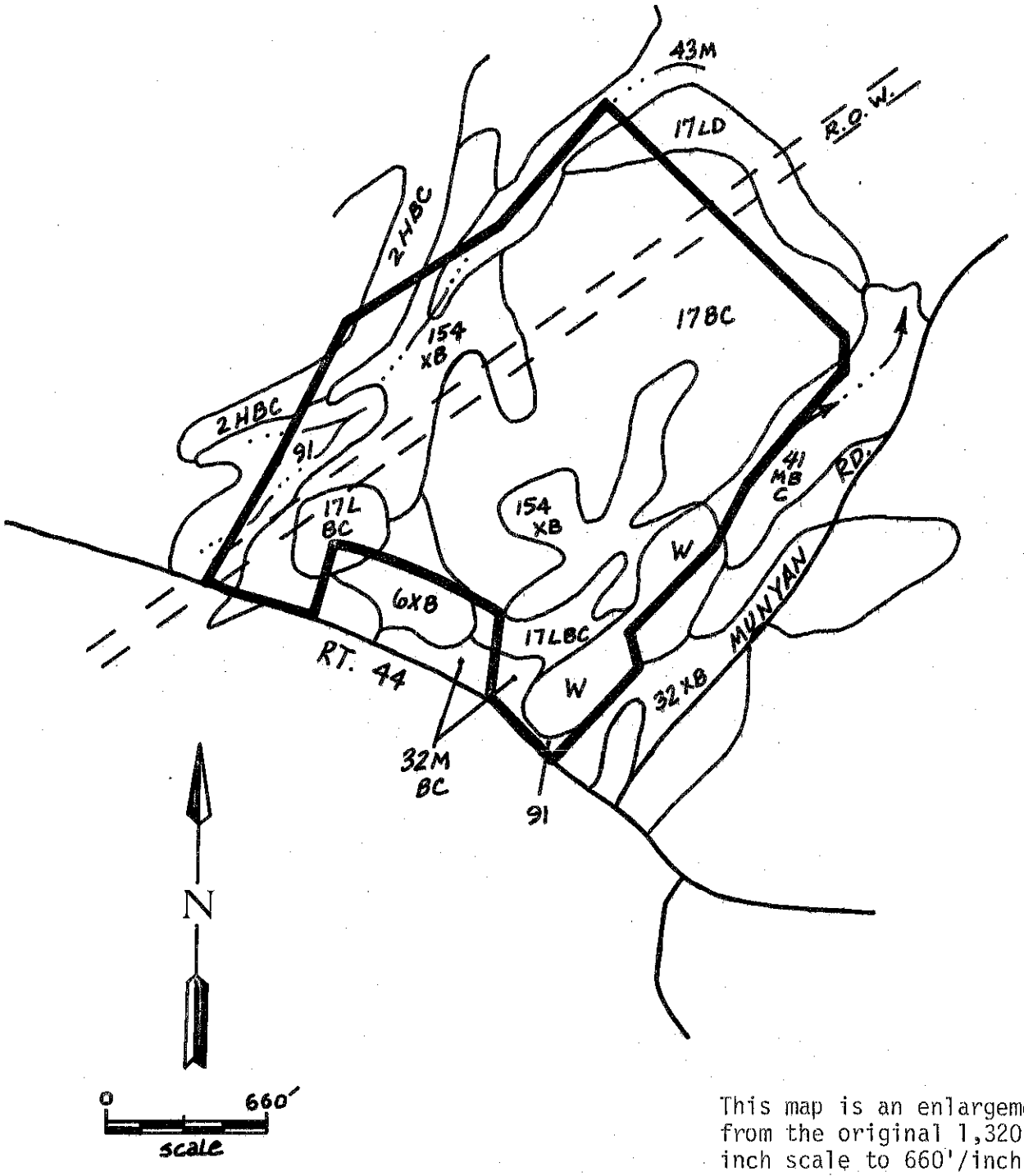
Sidewalks are not necessary given the nature of the development. The volume of automotive traffic on the roads will be very low and speeds should also be low. Pedestrian traffic should be safely accommodated on the road.

Appendix

SOILS

ELVIRA HEIGHTS

PUTNAM, CONNECTICUT



This map is an enlargement from the original 1,320'/ inch scale to 660'/inch.

Information taken from: Soil Interpretations, Windham County Connecticut, 1975; Soil Survey Sheet No. 3050; prepared by United States Department of Agriculture, Soil Conservation Service. Advance copy, subject to change.

ELVIRA HEIGHTS
PUTNAM, 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	Dwellings without Basements	Dwellings with Basements	Roads and Streets	Landscaping and Lawns
Charlton-Hollis#	2HBC	3	4	Slope	2	2	2	2	2
Charlton	6XB	2	2.6	Large stones	2	2	2	1	2
Charlton-Hollis#	17LBC	42	56.0	Slope	2	2	2	2	2
Charlton-Hollis#	17LD	4	5.3	Slope	3	3	3	3	3
Canton & Charlton	32MBC	2	2.6	Large stones	3	3	3	3	3
Sutton	41MBC			Wetness, large stones	3	3	3	2	3
Ridgebury & Whitman *	43M	5	6.5	Wetness, percs. slowly, frost action	3	3	3	3	3
Hinckley	60BC			Slope, sandy	2	2	2	2	2
Adrian & Palms	91	3	4	Wetness, excess humus, floods, low strength	3	3	3	3	3
Sutton	154XB	15	19.1	Wetness, frost action, large stones	3	2	3	2	2

Limitations: 1-slight, 2-moderate, 3-severe.

* Designated wetlands by Public Act 155.
\# In some areas, depth to rock may change the interpretations.

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.