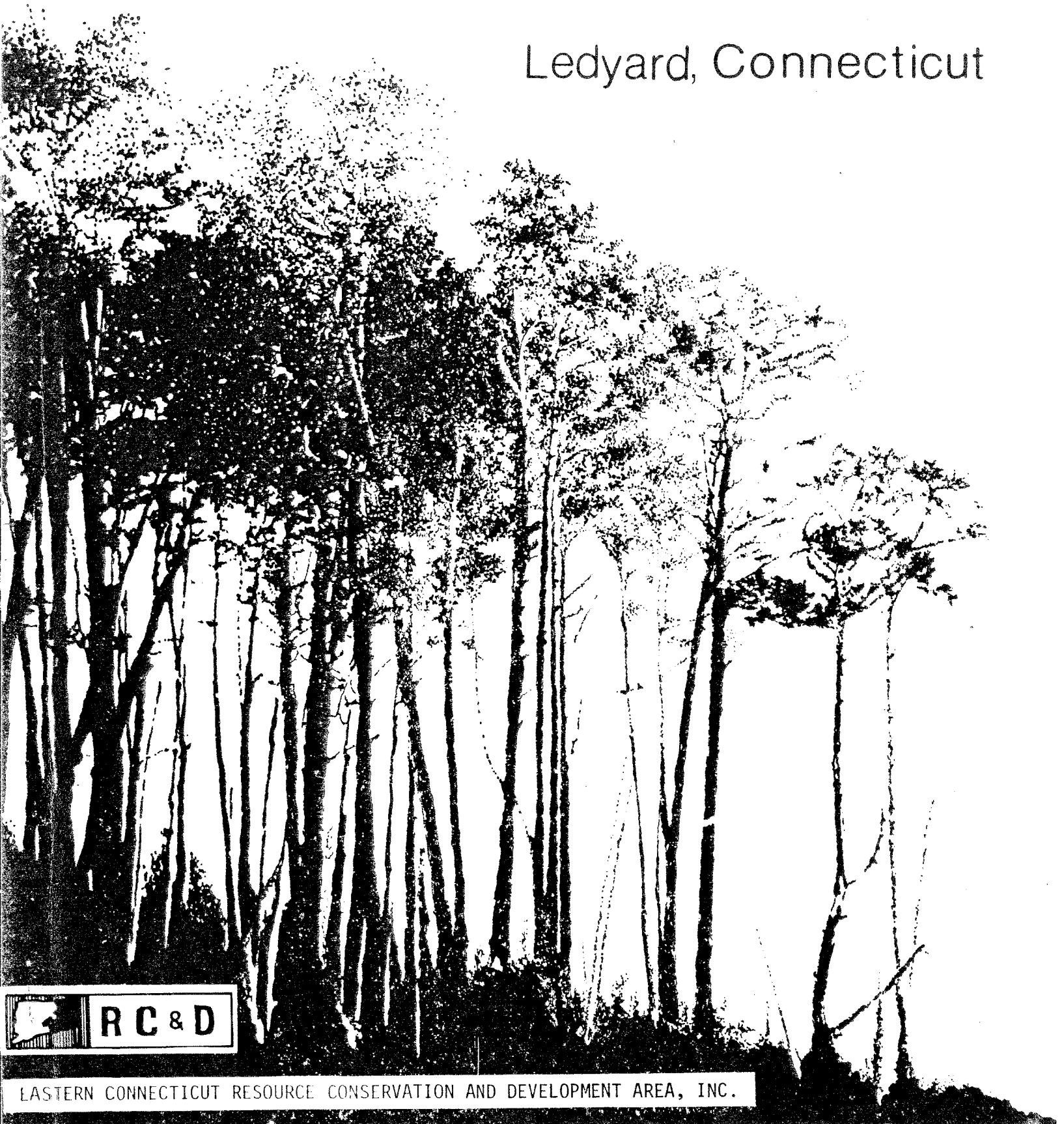
Environmental Review Team Report

AVERY PRESERVE

Ledyard, Connecticut



R C & D

EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT AREA, INC.

Environmental Review Team Report

AVERY PRESERVE

Ledyard, Connecticut

June 1985

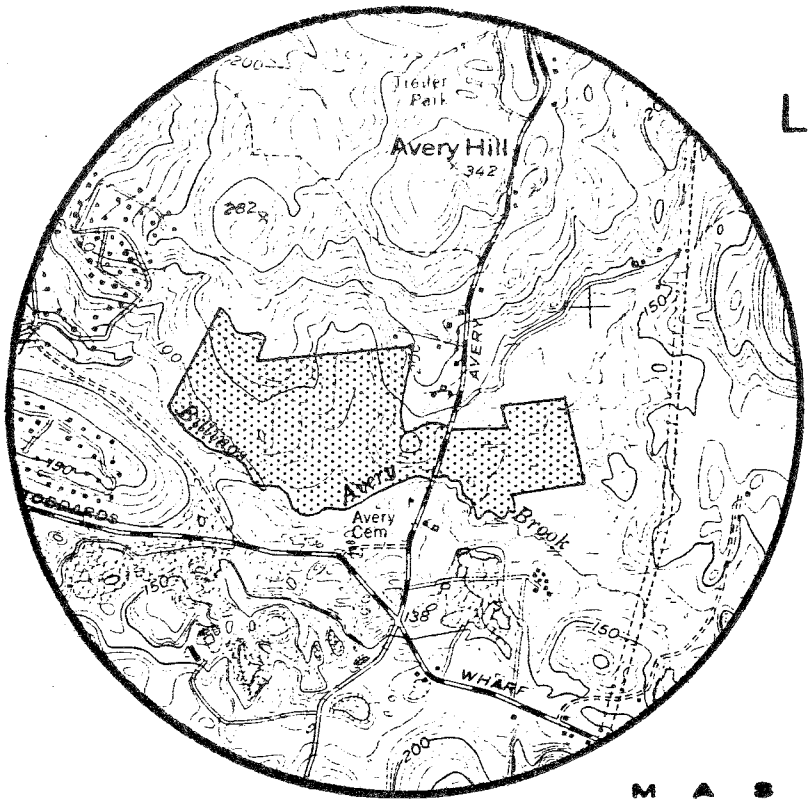
Eastern Connecticut Resource Conservation & Development Area

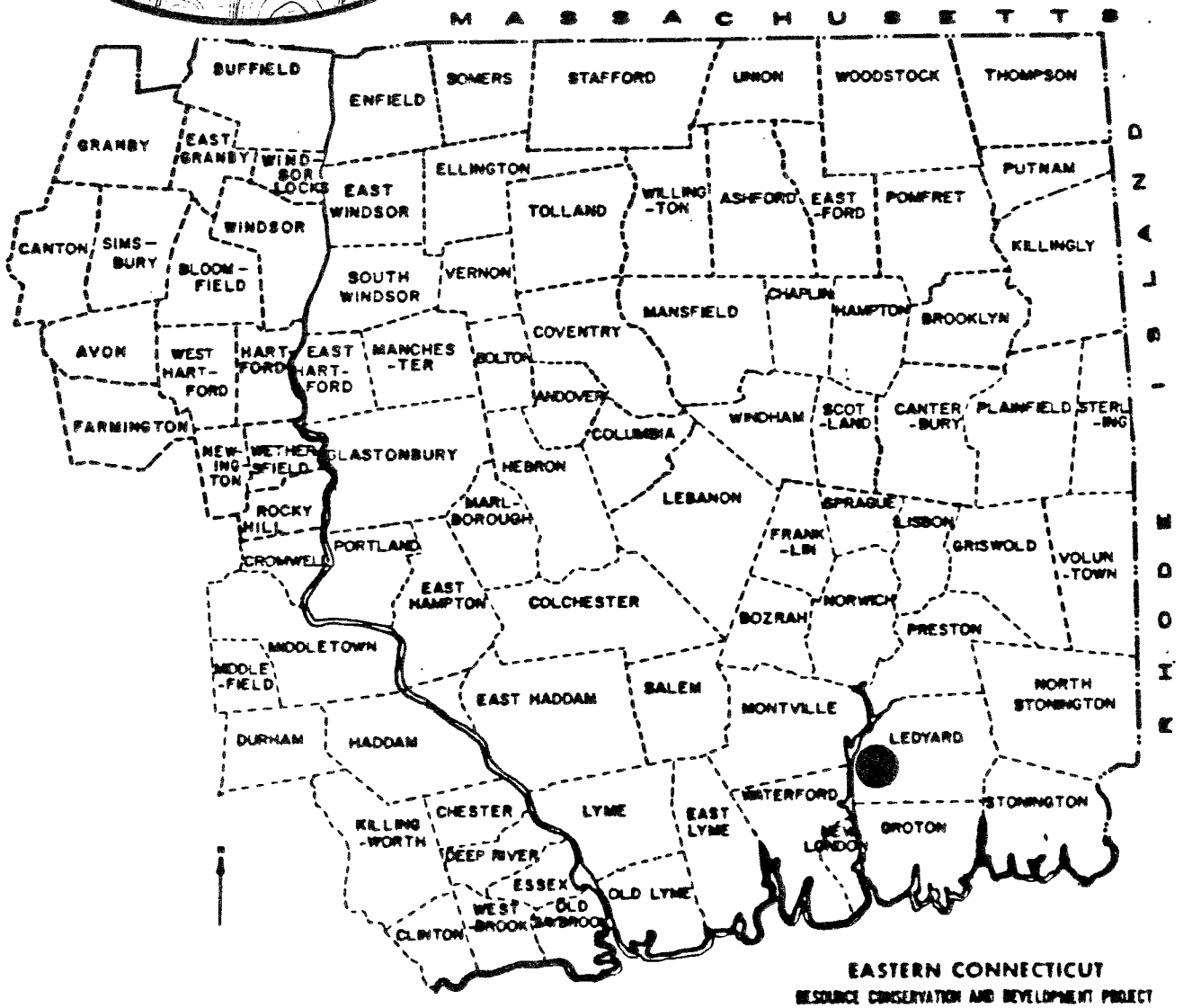
Environmental Review Team
PO Box 198
Brooklyn, Connecticut 06234

Location of Study Site

AVERY PRESERVE

LEDYARD, CONNECTICUT





ENVIRONMENTAL REVIEW TEAM REPORT
ON
AVERY PRESERVE
LEDYARD, CONNECTICUT

This report is an outgrowth of a request from the Ledyard Conservation Commission to the New London County Soil and Water Conservation District (S&WCD). The S&WCD referred this request to the Eastern Connecticut Resource Conservation and Development (RC&D) Area Executive Committee for their consideration and approval. 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: Barry Cavanna, District Conservationist, Soil Conservation Service (SCS); Bill Warzecha, Geologist, Connecticut Department of Environmental Protection (DEP); Pete Merrill, Forester, DEP; Tom Seidel, Regional Planner, Southeastern Connecticut Regional Planning Agency; 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, February 21, 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 Mashantucket Land Trust and the Town of Ledyard. 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.

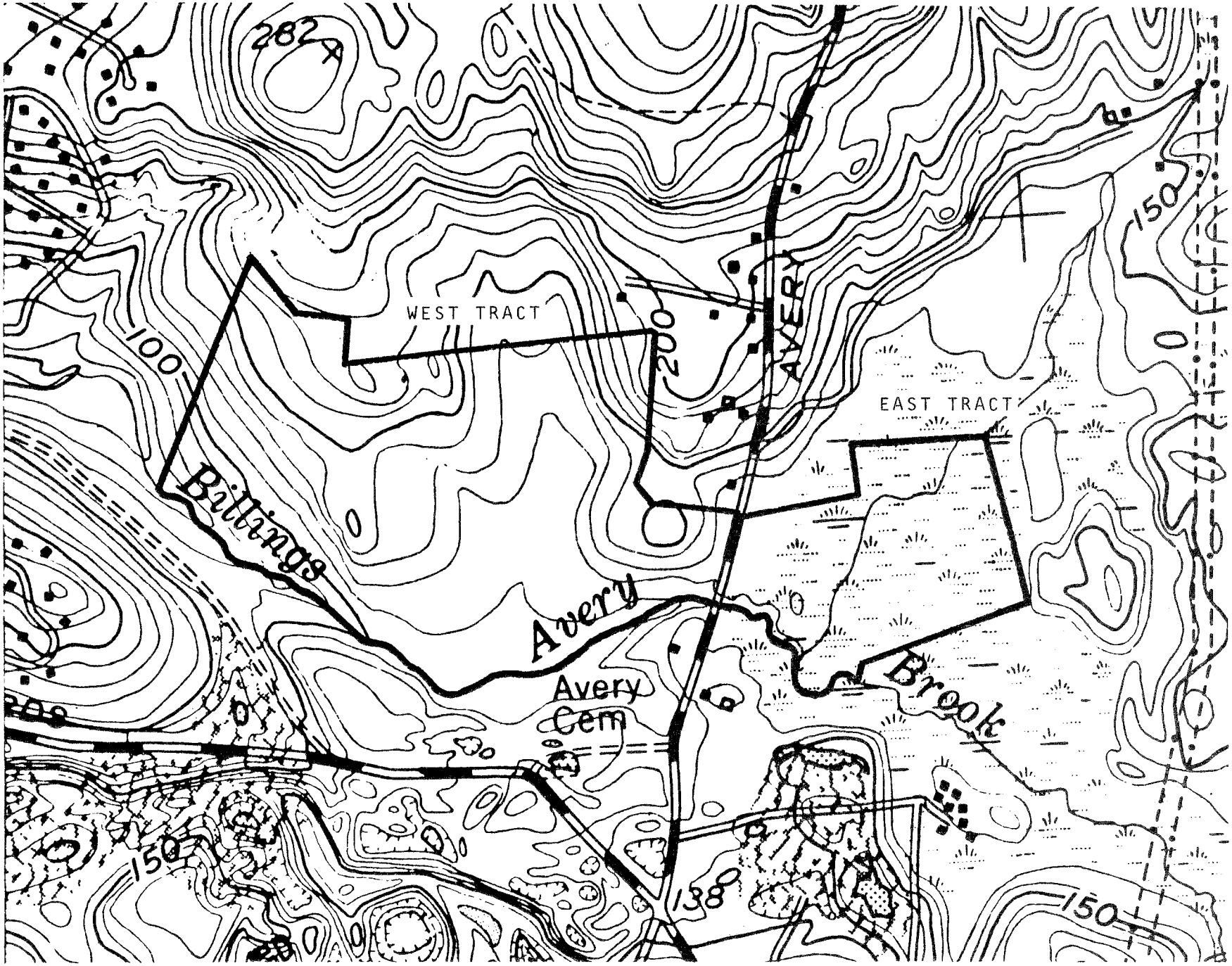
If you require any additional information, please contact Ms. Jeanne Shelburn, Environmental Review Team Coordinator, Eastern Connecticut RC&D Area, Route 205, Box 198, Brooklyn, Connecticut 06234, 774-1253.

INTRODUCTION

The Eastern Connecticut Environmental Review Team was asked to prepare a natural resource inventory for the Avery Preserve in the Town of Ledyard. The Avery Preserve is owned by the Mashantucket Land Trust and is approximately 100 acres in size. It is located in two parcels on the east and west sides of Avery Hill Road, 1/2 mile north of its intersection with Stoddard's Wharf Road.

The Avery Preserve lands have been owned by the Avery family since 1653; they were deeded to the Mashantucket Land Trust in 1970. The Preserve consists of two parcels; the western tract is 78.53 acres and the eastern tract is 22.37 acres. Both are bounded by the Billings-Avery Brook. Several trail systems have been established by the members of the Trust. Remains of an old saw mill and a sheep washing confinement add to the interest of these trails. Both sites are fully vegetated at present, including a large stand of native rhododendron on the eastern tract. The western tract is fairly steeply sloping with bouldery outcrops. The eastern tract is flat and poorly drained.

The Team describes the natural resources of these sites in detail in the following sections of this report along with suggested management practices. We hope that this information will be helpful to the Mashantucket Land Trust in future planning for the Avery Preserve.


282
WEST TRACT
EAST TRACT
100
200
150
Billings
Avery
Avery Cem
Brook
138
150
Topography
Site Boundary
0
660'
scale
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ENVIRONMENTAL ASSESSMENT

TOPOGRAPHY

West Tract

This ±78.5 acre tract of land is located in the northwest corner of town. It is bordered on the south by Billings-Avery Brook and Avery Hill Road on the east. Land slopes moderately to Billings-Avery Brook on the east and west side of the tract. The central portion slopes gently to the Brook. Elevations range from a high of approximately ±190 feet to a low of about 80 feet.

East Tract

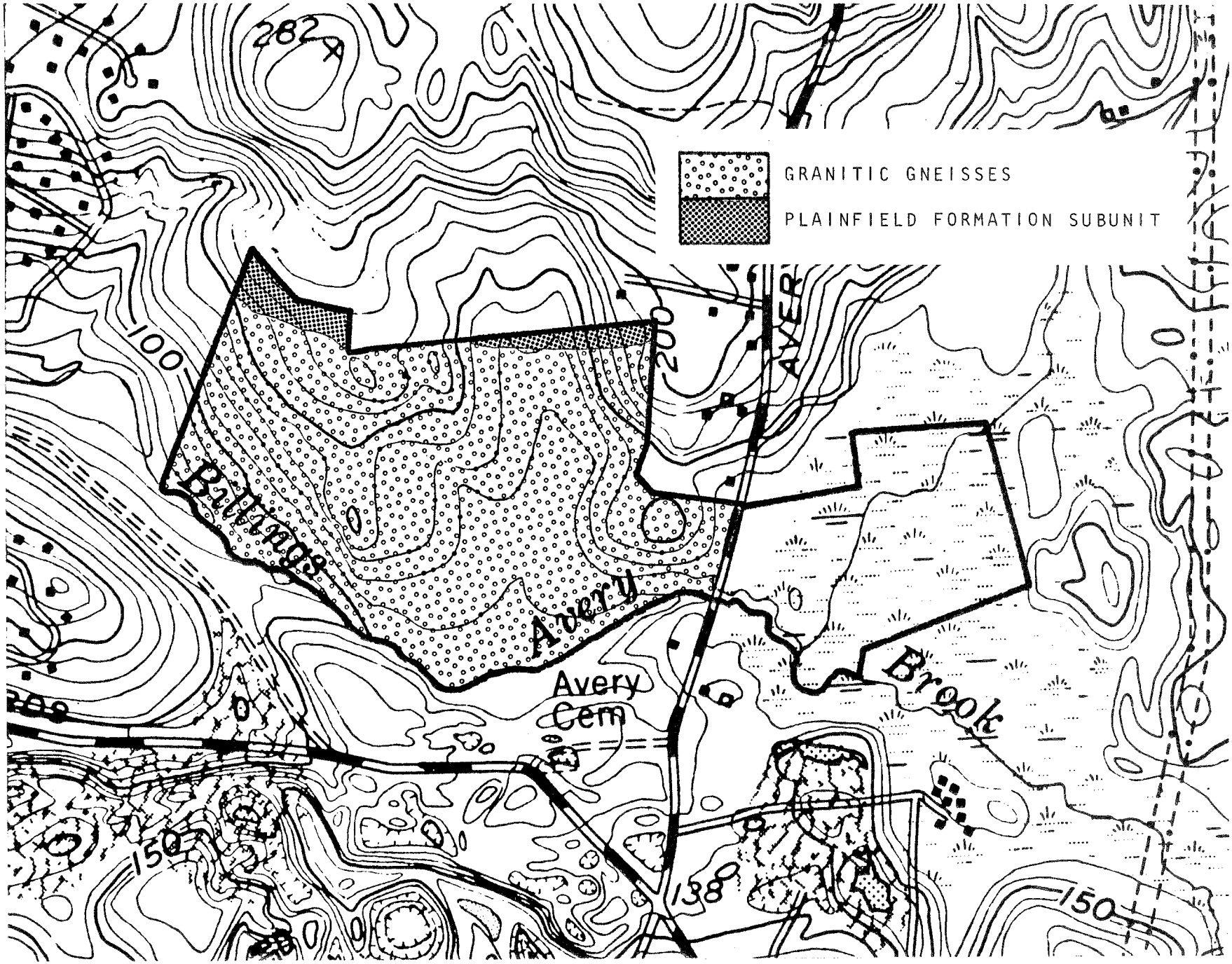
The eastern tract which comprises ±22 acres is located on the east side of Avery Hill Pond. Billings-Avery Brook also borders the southern boundary of the east tract. An unnamed tributary to Billings-Avery Brook bisects the central portion of the tract in a southwesterly direction enroute to the brook. Slopes throughout the tract are relatively flat throughout.

GEOLOGY

The Avery Preserve (west tract) lies within the Uncasville topographic quadrangle. A bedrock geologic map (GQ-576) and a surficial geologic map (GQ-138) for the quadrangle have been prepared by Richard Goldsmith and published by the U.S. Geological Survey. Both maps are available for purchase or review at the Department of Environmental Protection's, Natural Resource Center in Hartford.

Most of the bedrock found on the site consists of a granitic (rocks with a granite composition, i.e., quartz and feldspars) gneiss. The rock unit trends in an east-west direction on the site and dips moderately (60° and 45°) to the north. The rock consists of a gray, fine to medium grained granite-like gneiss composed largely of the minerals quartz and feldspar (oligoclase and microcline) with lesser amounts of the mineral biotite. "Gneiss" is a term given to metamorphic (geologically altered) rocks in which thin bands of elongate or flaky minerals are separated by layers of granular minerals.

The other rock type underlying the northern edge of the Preserve is a subunit of the Plainfield Formation. These rocks consist of a dark green gneiss composed of the minerals hornblende, biotite, quartz and plagioclase; a dark biotite-quartz-plagioclase gneiss with variable amounts of microcline; garnet-biotite-quartz-feldspar-schist and gneiss; amphibolite; light-gray sugary texture gneiss composed of the minerals biotite, feldspar and quartz; and a thin gray quartzite.



Bedrock Geology

0 660
scale

N

The terms gneiss, schist, amphibolite and quartzite refer to metamorphic rocks; that is, rocks which have been altered structurally or mineralogically from previous forms. Gneisses were described above. "Schists" are rocks in which elongate or flaky minerals are predominant and aligned giving the rocks a distinctly layered structure. "Amphibolites" are rocks consisting predominantly of the minerals amphibole, plagioclase and hornblende. Finally, the term "quartzite" refers to a rock which is composed essentially of the mineral quartz. All of these rocks, i.e., quartzites, schists, gneisses and amphibolites may grade into one another in the rock unit. They all are extremely old and have a long and very complex history.

A generally thin (less than 10 feet thick) layer of glacial till covers bedrock in most parts of the tract. Till consists of varying proportions of clay, silt, sand, gravel, and boulders. The individual components were collected and redeposited directly by glacier ice without substantial sorting. Consequently, till may range in texture from sandy and loose to silty and very compact. Stones and boulders are usually more common in the upper few feet of a till deposit. Since the till on the site is generally thin, it is probable that the typical texture is sandy and very stony. The bedrock surface underlying the till deposit is irregular, with basins adjoining ridges and knobs of rock. The till deposit smoothed out these irregularities to a minor extent. As a result, relatively deep pockets of till may be scattered among the bedrock exposures on the property.

Overlying the till along Billings-Avery Brook are post-glacial sediments called alluvium. Alluvial deposits consists of silt, sand, and gravel in floodplains.

East Tract

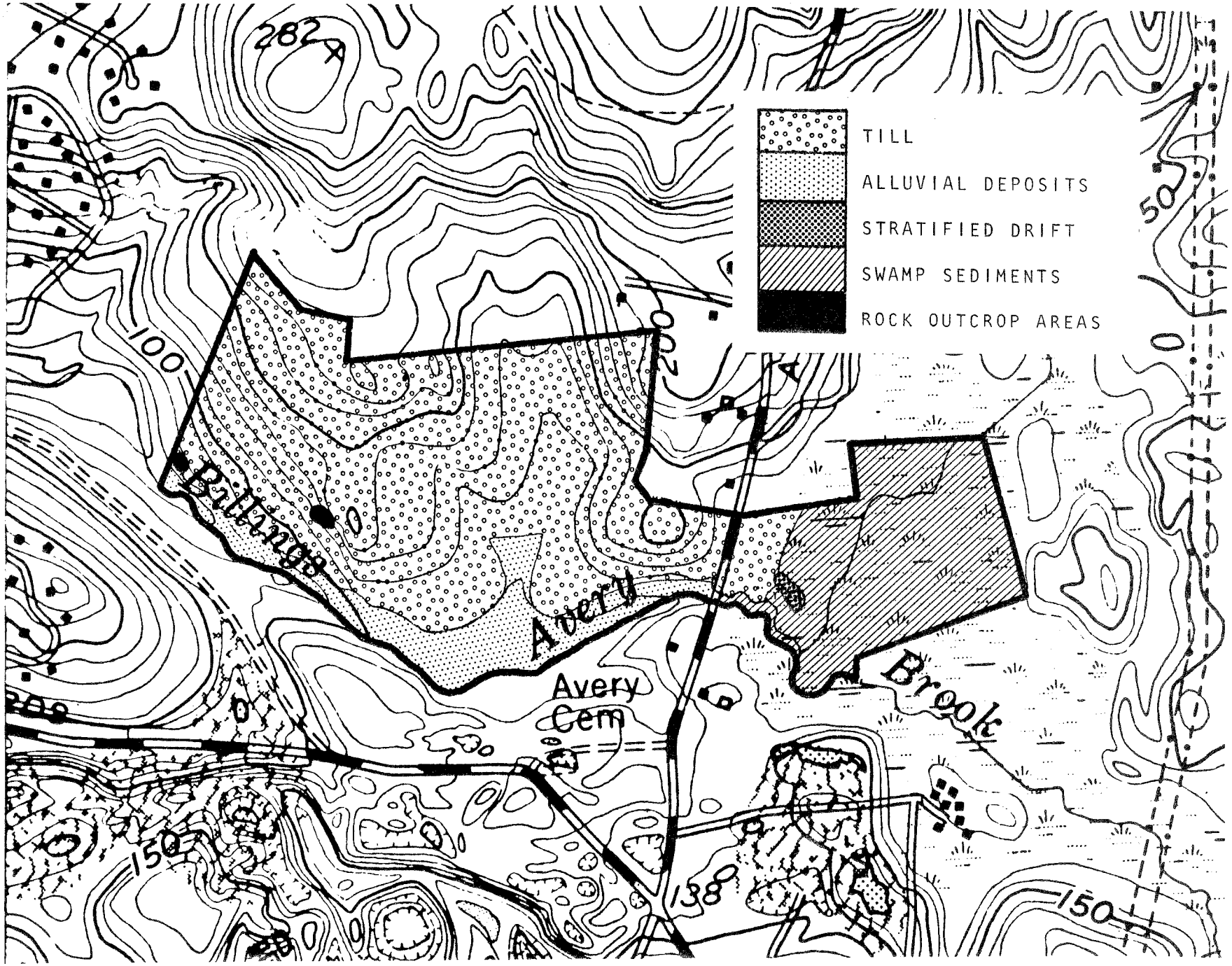
With the exception of a generally small area in the western parts near Avery Hill Road, the tract is comprised of inland wetlands.

Bedrock does not appear to be exposed on the eastern tract. Nevertheless, GQ-576 classifies the bedrock underlying the site as a granitic gneiss. This rock unit is the same underlying most of the western tract. See Geology section in the western tract report for description.

Till overlies bedrock in the western parts of the tract. The average thickness of the till is probably less than 10 feet. The texture of the till is generally sandy, very stony and friable.

Another glacial deposit found on the site which comprises two small, low knolls in the western part of the tract is ice contact stratified drift. These materials, whose major components include sand and gravel were deposited by meltwater streams in contact with or near a chunk of wasting ice. The two small knolls may be "kames," a glacial feature that resulted from the deposition of glacial rock debris by meltwater plunging through an irregular opening in the ice.

The remaining portions of the tract are covered by post-glacial sediments called swamp deposits. These sediments consist of partly decomposed organic material mixed or interbedded with silt and sand. No test-hole data was available for the swamp, but it is likely that the organically rich materials are ten or more feet thick in most places.



Surficial Geology

Permanently wet conditions throughout the wetlands will limit the use of the tract for hiking unless elevated trails and/or a boardwalk system were to be constructed.

HYDROLOGY/WATER RESOURCES

The Avery Preserve (west tract) is bordered on the south by Billings-Avery Brook. Surface runoff from the tract drains into Billings-Avery Brook. The Brook is a very attractive topographic feature on the tract. Unfortunately, access to the Brook is very difficult because of the wet soils paralleling the Brook in most places within the site. However, there may be some areas along the Brook where the land is drier. If so, it may be possible to develop a trail route so that hikers can enjoy this attractive feature. Billings-Avery Brook empties into the Thames River about 3,000 feet west of the site. Based on its watershed area, which is shown in an accompanying map, Billings-Avery Brook drains an area of about 1,660 acres or 2.60 square miles.

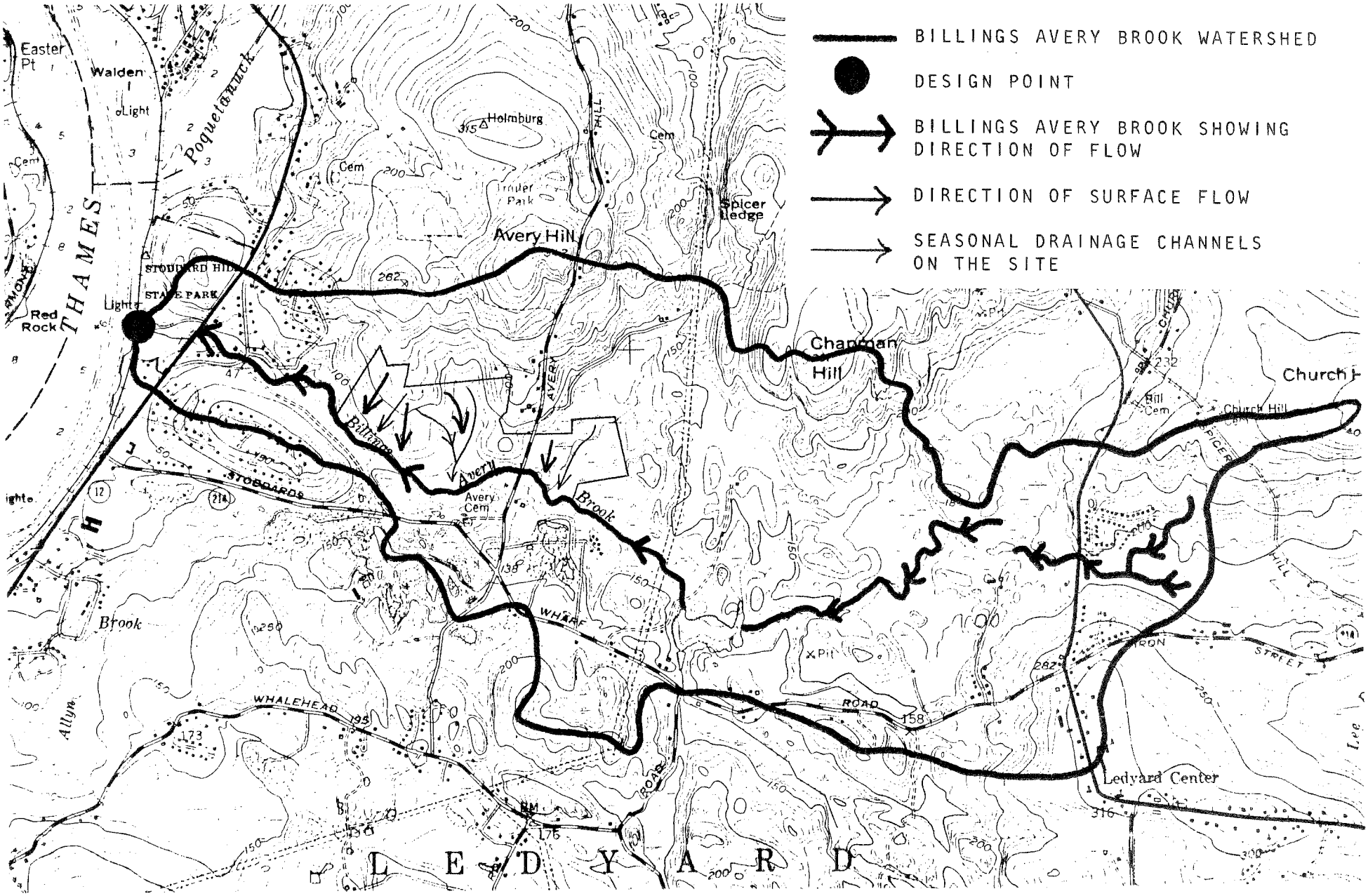
Bedrock is the only aquifer of significance on the site. Bedrock is ordinarily capable of supplying small but reliable yields of groundwater. A survey of selected bedrock based wells in southeastern Connecticut showed that 90 percent of the wells that saturated bedrock yielded 3 gallons per minute (gpm) or more. Although the yields of bedrock wells are relatively small, it would probably be adequate for most recreation purposes.

Water moves through metamorphic rocks chiefly by way of fractures. The success of a well drilled at any specific location depends upon the number and size of water-bearing fractures that the well intersects. Since fractures are distributed irregularly in bedrock, there is no practical way to predict the suitability of a particular location for a drilled well. It is known, however, that the probability of obtaining additional water from a drilled well decreases with depth.

The eastern tract drains southward towards Billings-Avery Brook. Inland wetlands soils comprise approximately 95 percent of the tract. As a result, these soils are saturated most of the year, with standing water during the winter and spring.

Wetlands serve many valuable ecologic and hydrologic functions. Some of which include (1) maintaining water quality through natural biochemical processes; (2) reducing runoff; and (3) providing wildlife habitat. For these reasons, every effort should be made to keep the wetland on the tract in its natural state.

Because there is no test pit information for the stratified drift covering the site, little is known about the potential of the stratified drift for a groundwater supply. The Groundwater Availability in Connecticut, map by Daniel Meade suggests that the stratified drift deposits underlying the swamp deposits in the eastern parts are known or inferred to be capable of yielding moderate to very large amounts of water (50 - 2,000 gpm). The bedrock underlying the site may also be a source of water for a low-yielding or even moderately yielding well, suitable for most recreational uses.



Drainage Areas

0 2000'

Scale

N

SOILS

Soils typical of the Avery Tract include the Canton-Charlton series, the Charlton-Hollis series, the Carlisle series, the Ninigret series, the Raypol series, the Rippowam series, the Ridgebury, Leicester and Whitman complex, and the Woodbridge series. These soils and their limiting characteristics are described in detail below.

CcB-Canton and Charlton very stony fine sandy loams, 3 to 8 percent slopes.

These gently sloping, well drained soils are on glacial till upland hills, plains, and ridges. Stones and boulders cover 1 to 8 percent of the surface. These soils were mapped together because there are no major differences in use and management. Permeability of the Canton soil is moderately rapid in the surface layer and subsoil and rapid in the substratum. The available water capacity is moderate. Runoff is medium. This soil warms up and dries out rapidly in the spring. The soil is strongly acid or medium acid.

Permeability of the Charlton soil is moderate or moderately rapid. The available water capacity is moderate. Runoff is medium. This soil warms up and dries out rapidly in the spring. It is strongly acid or medium acid.

These soils are not suited to cultivated crops. Stones and boulders make the use of farming equipment difficult.

CdC-Canton and Charlton, extremely stony fine sandy loams, 3 to 15 percent slopes.

These gently sloping and sloping, well drained soils are on glacial till upland hills, plains, and ridges. Stones and boulders cover 8 to 25 percent of the surface. These soils were mapped together because there are no major differences in use and management. Permeability of the Canton soil is moderately rapid in the surface layer and subsoil and rapid in the substratum. The available water capacity is moderate. Runoff is medium or rapid. The Canton soil warms up and dries out rapidly in the spring. It is strongly acid or medium acid.

Permeability of the Charlton soil is moderate or moderately rapid. The available water capacity is moderate. Runoff is medium or rapid. The Charlton soil warms up and dries out rapidly in the spring. It is strongly acid or medium acid.

These soils are not suited to cultivated crops. Stones and boulders make the use of farming equipment impractical.

CrC-Charlton-Hollis fine sandy loams, very rocky, 3 to 15 percent slopes.

This gently sloping to sloping complex consists of somewhat excessively drained and well drained soils on glacial till uplands. Rock outcrops cover up to 10 percent of the surface. Stones and boulders cover 1 to 8 percent of the surface. The soils of this complex are so intermingled on the landscape that it was not practical to separate them in mapping at the scale used. Permeability of the Charlton soil is moderate or moderately rapid. The available water capacity is moderate. Runoff is medium or rapid. Charlton soil warms up and dries out rapidly in the spring. It is strongly acid or medium acid.

Permeability of the Hollis soil is moderate or moderately rapid above the bedrock. The available water capacity is low. Runoff is medium or rapid. Hollis soil warms up and dries out rapidly in the spring. It is strongly acid or medium acid.

Ce-Carlisle muck.

This nearly level, very poorly drained soil is in pockets and depressions of floodplains, stream terraces, outwash plains, and glacial till uplands. Slopes range from 0 to 2 percent. The Carlisle soil has a high water table near or above the surface for most of the year. Permeability is moderately rapid. The available water capacity is high. Runoff is very slow. The soil is strongly acid through slightly acid. This soil is not suited to cultivated crops because of wetness.

Nn-Ninigret fine sandy loam.

This nearly level to gently sloping, moderately well drained soil is on outwash plains and stream terraces. Slopes range from 0 to 5 percent.

The Ninigret soil has a seasonal high water table at a depth of about 20 inches. Permeability is moderately rapid in the surface layer and subsoil and rapid in the substratum. The available water capacity is high. Runoff is slow or medium. Ninigret soil warms up and dries out slowly in the spring. Unless limed, it is strongly acid or medium acid. This soil is well suited to cultivated crops.

Rc-Raypol silt loam.

This nearly level, poorly drained soil is on stream terraces and outwash plains. The Raypol soil has a seasonal high water table at a depth of about 6 inches. Permeability is moderate in the surface layer and subsoil and rapid or very rapid in the substratum. The available water capacity is high. Runoff is slow. Raypol soil warms up and dries out slowly in the spring. It is very strongly acid or strongly acid above a depth of 40 inches and strongly acid through slightly acid below a depth of 40 inches. This soil is suited to cultivated crops.

Ro-Rippowam fine sandy loam.

This nearly level, poorly drained soil is on flood plains of major streams, river, and their tributaries. The Rippowam soil has a seasonal high water table at a depth of about 6 inches. It is subject to frequent flooding. Permeability is moderate or moderately rapid in the surface layer and subsoil and rapid or very rapid in the substratum. The available water capacity is moderate. Runoff is slow. Rippowam soil warms up and dries out slowly in the spring. It is strongly acid or medium acid but has a medium acid layer within a depth of 40 inches. This soil is suited to cultivated crops.

Rn-Ridgebury, Leicester, and Whitman extremely stony fine sandy loams.

These nearly level, poorly drained and very poorly drained soils are in drainageways and depressions of glacial till upland hills, ridges, plains, and drumloidal landforms. Stones and boulders cover 8 to 25 percent of the surface. These

soils were mapped together because there are no major differences in use and management. The Ridgebury soil has a seasonal high water table at a depth of about 6 inches. Permeability is moderate or moderately rapid in the surface layer and subsoil and slow or very slow in the substratum. The available water capacity is moderate. Runoff is very slow or slow. Ridgebury soil warms up and dries out slowly in the spring. It is strongly acid through slightly acid.

The Leicester soil has a seasonal high water table at a depth of about 6 inches. Permeability is moderate or moderately rapid. The available water capacity is moderate. Runoff is very slow or slow. Leicester soil warms up and dries out slowly in the spring. It is very strongly acid through medium acid.

The Whitman soil has a high water table at or near the surface for most of the year. Permeability is moderate or moderately rapid in the surface layer and subsoil and slow or very slow in the substratum. The available water capacity is moderate. Runoff is very slow, or the soil is ponded. Whitman soil warms up and dries out very slowly. It is very strongly acid through slightly acid.

These soils are not suited to cultivated crops. Stoniness makes the use of farming equipment impractical.

WyB-Woodbridge very stony fine sandy loam, 0 to 8 percent slopes.

This nearly level to gently sloping, moderately well drained soil is on drumloidal, glacial till, upland landforms. Stones and boulders cover 1 to 8 percent of the surface. The Woodbridge soil has a seasonal high water table at a depth of about 18 inches. Permeability is moderate in the surface layer and subsoil and slow or very slow in the substratum. The available water capacity is moderate. Runoff is medium. This Woodbridge soil warms up and dries out slowly in the spring. It is strongly acid or medium acid in the surface layer and subsoil and strongly acid through slightly acid in the substratum. This soil is not suited to cultivated crops because of stoniness.

WILDLIFE

The presence of, and abundance of wildlife in an area is dependent on the physical features of the land, the fertility of the soil, the available water and the type and quality of vegetation present. Each species has specific requirements for survival which are provided for by certain vegetative classes or different stages of succession. If the animal's requirements are not met, the animal will move to another area.

To attract and/or increase the number and type of wildlife in an area the requirements of each species must be determined and these requirements provided for. By providing different types of habitat or habitat diversity these needs can be met. Food, cover, a water source, nesting and roosting and brood rearing sites must be within reach of the daily movements of the animals. The greater the interspersion or degree to which different habitats are mixed or repeated, the greater the wildlife use of the area will be.

Often times, an animal's requirements can be met in a small area. Sometimes a species has a large home range and requires much space for survival. Neighboring land adjacent to that under management can sometimes supply a habitat requirement which is lacking.

Each animal must have all the requirements for survival within its home range or it will migrate to a new area. The home range can vary with seasonal and migratory needs.

All species need a certain amount of space to call their own. They need space for nesting, breeding, feeding and rearing young. Some species have a high tolerance to crowding within their own species and with other species, while others do not. Others need large areas with little competition with their own kind or with other species. This is why a fertile piece of land will not produce unlimited amounts of wildlife.

If a certain factor which a species requires is lacking, or in short supply, it is said to be a "limiting factor." The lack of it will limit the population or perhaps even the presence of the species itself.

Within the limitations imposed on an area by the quality and quantity of natural physical features, management can ensure the maximum production of sustained wildlife populations through manipulation or vegetative types and age classes.

One can concentrate on providing the requirements for certain specific or "target species." Ideally, this will allow these species to proliferate to their maximum within the limits of the habitat provided. This may incidently benefit other wildlife, but could also be detrimental and lead to their emmigration of the area. A species not being managed for may have the same requirements as the target species and may become an unwanted pest.

By providing a number or variety of habitats or different vegetative classes in different successional stages in a desirable mix or interspersion for the individual, good wildlife habitat can be provided for a variety of species.

Mature woodlands often make up more than half a management area. Ideal habitat can be managed for by having approximately three-fourths of the property in even-aged stands (trees all the same age, but not necessarily the same size) and one-quarter is uneven aged stands. Eventually the management unit would approximate one-quarter seedling sapling stands, one-quarter pole stands, one-half sawtimber stands. If these stands of different ages were well mixed, optimum wildlife habitat will result and it will be sustained. Open areas are very useful to wildlife for feeding, brood rearing and nesting sites. About two percent of an area should be kept in permanent grass/legume plots. Approximately 5% should be kept in early successional native vegetation.

This area, known as the Avery Preserve, was donated to the Mashantucket Land Trust by Amos Avery. It is about 100 acres in size. The area is separated by Avery Hill Road into two tracts. The east tract which is 22 acres in size, and the west tract which is 78 acres in size, ar both banded on the south by the Billings-Avery Brook. The area is covered by mature hardwoods with some stands of eastern red cedar also.

At present, the overall habitat for a variety of wildlife is only fair to good. There is a lack of diversity of habitats, interspersion and edge. There is a definite lack of herbaceous and brushy openings. The species using the area now are those that require a mature hardwood forest type of habitat. Diversity can be increased by small clearcuts, regeneration of pine stands, and thinning and/or clearcutting. These timber stand improvement practices should be small in area and placed throughout the area to increase interspersion. Edge would be greatly increased by these procedures.

Management/Non-Active Management

Mashantucket Land Trust officials are probably aware they have two routes of action they can follow: conservation of the area, or preservation of the area. Both involve setting priorities and making decisions and, therefore, both should be considered management.

If Mashantucket Land Trust were simply left alone, nature would take over the "management" of the area. The same types of overall changes would occur to the area, but at a much slower rate. Production of wildlife might not be as great as under conservation or active management.

Openings would be created by blowdowns, diseases, and fire, in some cases. Herbaceous openings and brushy to seedling sapling stages would be created following these changes. Older trees in the forest would die and form snags and cavity trees. Many trees would fall to the ground and serve as hiding places for small mammals like moles, voles and shrews. Certain species would leave the area because requirements would not be met, while others might immigrate because of the changes that had occurred.

It should be kept in mind that most changes brought about by nature are suppressed by man. Fire is a good example. Most fires are put out and not allowed to burn, thus the natural cycle of succession being set back is interrupted. In general, the area would be less productive in the number and variety of wildlife species found there.

Conservation or wise use of a resource under management would bring about vegetational changes much more quickly. Results could be seen in the near future, not in the next lifetime. Greater production and a richer variety of wildlife would result due to management.

Recommendations

The following general recommendations will create diversity of habitats in the area, and thus will increase interspersion and edge. Because more general wildlife requirements will be supplied, a greater variety of wildlife will be able to utilize the area. Both the kind and abundance of most species of wildlife will increase.

Clearcuts - clearcutting sets back succession and provides a greater variety of vegetation for use by wildlife. Where slope and soil permit, clearcuts should

be made to provide cover and food. Two types of habitat can be produced from clearcuts. The type produced depends on what is done after the cut, and also what type of vegetation was there previously.

1) Brushy areas are produced by clearcutting and allowing the native shrubs and vines to come back in. The seedling sapling stage follows this.

Approximately 12 acres for every 50 acres of forestland should be maintained in a brushy/seedling sapling stage. Openings will last in a brush stage from 8 to 12 years (the seedling sapling stage follows) with the greatest wildlife potential being around 6 to 8 years.

2) The second type of habitat that can be produced from clearcutting is a permanent herbaceous opening. These areas are created by clearcutting, bulldozing to clear stumps, disking, fertilizing and then seeding the soil. Plants most commonly used include ladino clover, birdsfoot trefoil, perennial rye grass, millet, sorghum, buckwheat and timothy grass. These openings provide food and cover for a variety of birds and small mammals. Game and nongame birds utilize the edges for nesting areas.

Nonseeded openings usually result in blackberry, pokeweed and elderberry and greenbriar along the southern coastal areas of Connecticut.

Herbaceous plants are made up of annuals and perennials. Annuals are preferred by seed eating wildlife, but are crowded out by perennials in two or three years. Disking every 2 to 3 years alleviates the crowding out syndrome.

Openings should be irregular in shape to provide maximum edge. If possible, they should be oriented in an east/west direction and be approximately one acre in size.

Approximately 1 to 3 acres per every 50 acres of forestland should be kept in a herbaceous stage (or 2 percent).

Evergreen Stands - the value of evergreens to wildlife is dependent on their age and nearness to other cover and feeding sites.

Mature evergreen stands provide roosting sites for some species of wildlife, especially birds. In general, younger stands of evergreens ranging in heights from approximately 6 to 15 feet provide the densest cover to most wildlife. The most effective evergreen cover is located near brushy areas and herbaceous openings.

Evergreen stands should be planted in irregular stands rather than blocks to provide maximum edge.

Evergreens can be topped (the leader cut back) when they reach a height of approximately 15 to 20 feet high. This will prevent them from getting any taller and thus losing their bottom branches by shading. Keeping the evergreens dense with branches from the ground to a height of about 20 feet provides the most valuable cover.

Cedar can be cut and bent over to provide cover close to the ground where it is needed. Where they are abundant, it might be possible to drop 3-4 trees to

a common center to create a living brush pile.

Laurel also serves as useful cover for wildlife if not overly mature. Small stands of younger laurel is ideal because it offers the densest cover close to the ground. Large extensive stands are not needed since laurel has little value as food. Small laurel stands interspersed over a large area serve wildlife needs the best.

Ten percent of a 100-acre forestland in 2 to 5 acre conifer patches provides a good supply of shelter and escape cover and roosting sites for many species of wildlife.

The most effective evergreen cover is located near brushy areas or small herbaceous openings.

Any snag or cavity trees should be left around the pond for use by cavity nesting birds such as woodpeckers, owls and mammals like squirrels and racoons.

Brush Piles - tree tops and slash left from some types of forestry cutting operations should be piled. Brush piles are used by a variety of animals such as cottontails, mice and birds for cover.

At present, Mashantucket Land Trust offers fair to good habitat for some species of wildlife. If properly managed, the area could support and attract a much richer variety of wildlife. This would probably greatly increase people's enjoyment of the area.

FISHERIES

A natural resource inventory for fish species was carried out on Billings-Avery Brook utilizing electrofishing techniques. Fish species captured included brown trout, chain pickerel and American eel. Minnow species and suckers would also be expected to inhabit the stream, although none were captured during sampling. The presence of brown trout in the 7-8" size range in this stream is interesting since the state has stocked only yearling brook trout in recent years in Billings-Avery Brook.

Sampling was confined to the portion of the brook west of Avery Hill Road because of the unstable (swamp ooze) bottom present throughout much of the stream's eastern reach. Within the sampling area, the brook demonstrated great diversity of habitat which included a steep gradient bouldered portion, a series of riffles and pools in a moderate gradient area and a long slow reach with almost no gradient.

As a result of its diverse habitat types, the stream is visually pleasing and provides habitat for a variety of stream fish. It is of prime value as a resource on the land trust property.

VEGETATION

West Tract

Area #1 Old Field Type - This area varies from small openings of grass and sedges to 30 year old oaks and red cedar. This area represents a different habitat than the rest of the tract in that it is in a transitional stage from field or pasture to a nearly pure hardwood stand.

Species found in this area include: red cedar, white, scarlet and black oaks, red maple, black cherry and a few pignut hickories. Most of the woody understory is either blueberry, ironwood, azalea or one of the viburnums (mapleleaf, arrow-wood and nannyberry).

Management of the area allows several choices: (1) do nothing, and allow natural succession to take place; (2) release the red cedars from competing hardwood to maintain this area in as much of an evergreen stand as possible. It is the only evergreen stand on this tract; (3) keep the area cut back and maintain in as much of an old field condition as possible.

Area #2 Oak-Hickory Type - This main canopy trees are in the 8-14 inch diameter class making this a large pole-small sawlog class. In general, this stand is overstocked in the small 6"-8" size trees, and should be thinned with this size tree as the main target.

A light "understory" type thinning will not change the light intensity, i.e., the amount of understory brush that develops, but it will put all the remaining growth potential onto the remaining larger trees.

Species in this area include: oaks (black, white and scarlet), hickory (mostly pignut) with some white ash, black birch, red maple, and American beech. The understory is fairly light but there are seedlings of red maple, black cherry, flowering dogwood, blueberry, and an occasional azalea.

Area #3 - Mixed Hardwood Type - This is also a mixed hardwood type in the large pole-small sawlog size category; however, the species composition is different. More of the oak is red oak, with some black oak and white oak and very little scarlet oak. There is a good deal of American beech, some black and yellow birch, red maple and, in places, a good deal of sugar maple. Most of the understory is beech sprouts, but there are seedling-saplings in the overstory species, plus some flowering dogwood, mapleleaf viburnum, and at least one patch of mountain laurel.

This stand is also overcrowded, and although this appears to be a better growing site, it should be handled the same as Area #2; that is, it should be thinned by removing selected smaller or deformed trees, allowing growth to be put on the sound, better quality stems.

Area #4 - This is also a mixed hardwood stand, but the area is much flatter and quite moist. It has a high component of red maple, but there is also a lot of tulip poplar, or whitewood, and to a lesser extent white ash, yellow birch and black gum or tupilo.

The understory varies according to how wet the particular area is and how open the overstory is. Species include spicebush, azaleas, highbush blueberry, ironwood (blue beech), witch hazel, mapleleaf viburnum, arrowwood, and seedling-saplings or red maple and birch.

This stand needs only light thinnings to release some of the white ash and tulip poplar.

Area #5 - Red maple-White cedar Type - This area along the brook is a typical red maple swamp with very wet ground conditions. The white cedar component may be the natural balance between cedar and maple, but it is suspected that the stand is becoming more and more red maple. In colonial times, the cedar was highly prized for house shingles and for making lightweight rowing work boats. Because of its value, most of these areas were carefully weeded of competing hardwood, but without that care they are now reverting to a minor component of white cedar.

About the only other species in the overstory are a few sycamore and black gum trees. The understory is quite a dense tangle of spicebush, nannyberry, and arrowwood. It would be interesting to try to bring this area back into a nearly pure white cedar stand. Very little work is being done in these stands because the fragile ground condition would require a high amount of hand labor.

Area #6 - This is the same type as Area #4, but there are very few white cedars. Other than the cedar, the same species of tree and shrubs are present.

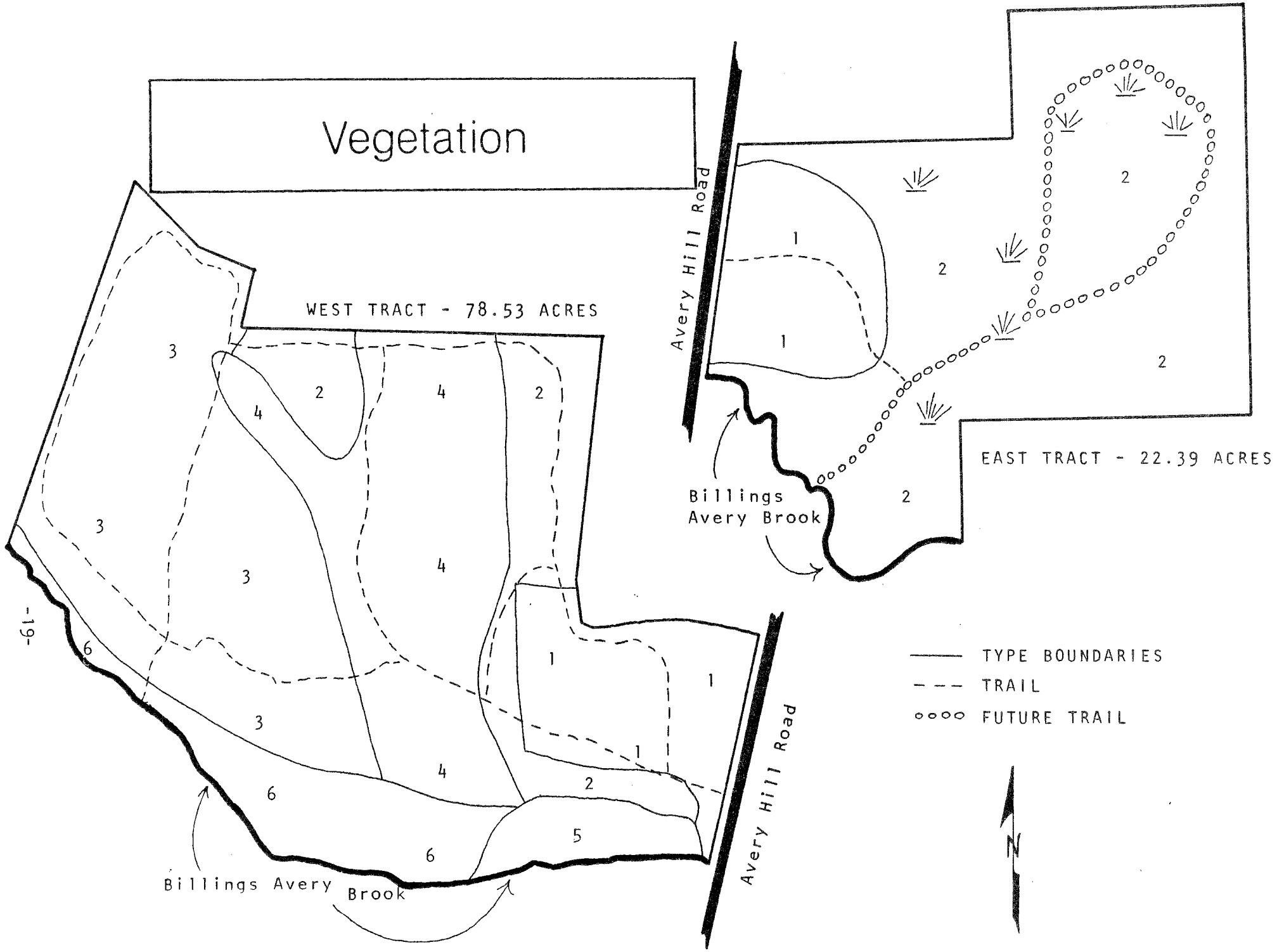
East Tract

Area #1 - Mixed pine-Hardwood Type - This is the only high ground on this side of the road. The overstory consists of 6-12" scarlet oaks, white oaks, red maple, white pine, and a few black birch. The understory is a mixture of mountain laurel, black and yellow birch saplings, and sweetpepper bush, with a few greenbriars to make the tangle complete.

From a forestry standpoint, the white pine should be released from the competing hardwoods as the pine is a far better timber species on this site than the hardwoods.

Area #2 - Red Maple Swamp Type - This is not a pure red maple stand as there are also yellow birch, black birch, black gum, white cedar, and white pine mixed in. There is a heavy understory of sweetpepper bush, spicebush, mountain laurel, great rhododendron, greenbriars, and a small section of blackberries.

Most of this area is not commercially operable and should be pretty much left as is. Some noncommercial cutting or killing of the overtopping hardwoods would enhance the flowering on the laurel and rhododendron.


Vegetation
WEST TRACT - 78.53 ACRES
EAST TRACT - 22.39 ACRES
Avery Hill Road
Avery Hill Road
Billings Avery Brook
Billings Avery Brook
TYPE BOUNDARIES
TRAIL
FUTURE TRAIL
N

PLANNING CONCERNS

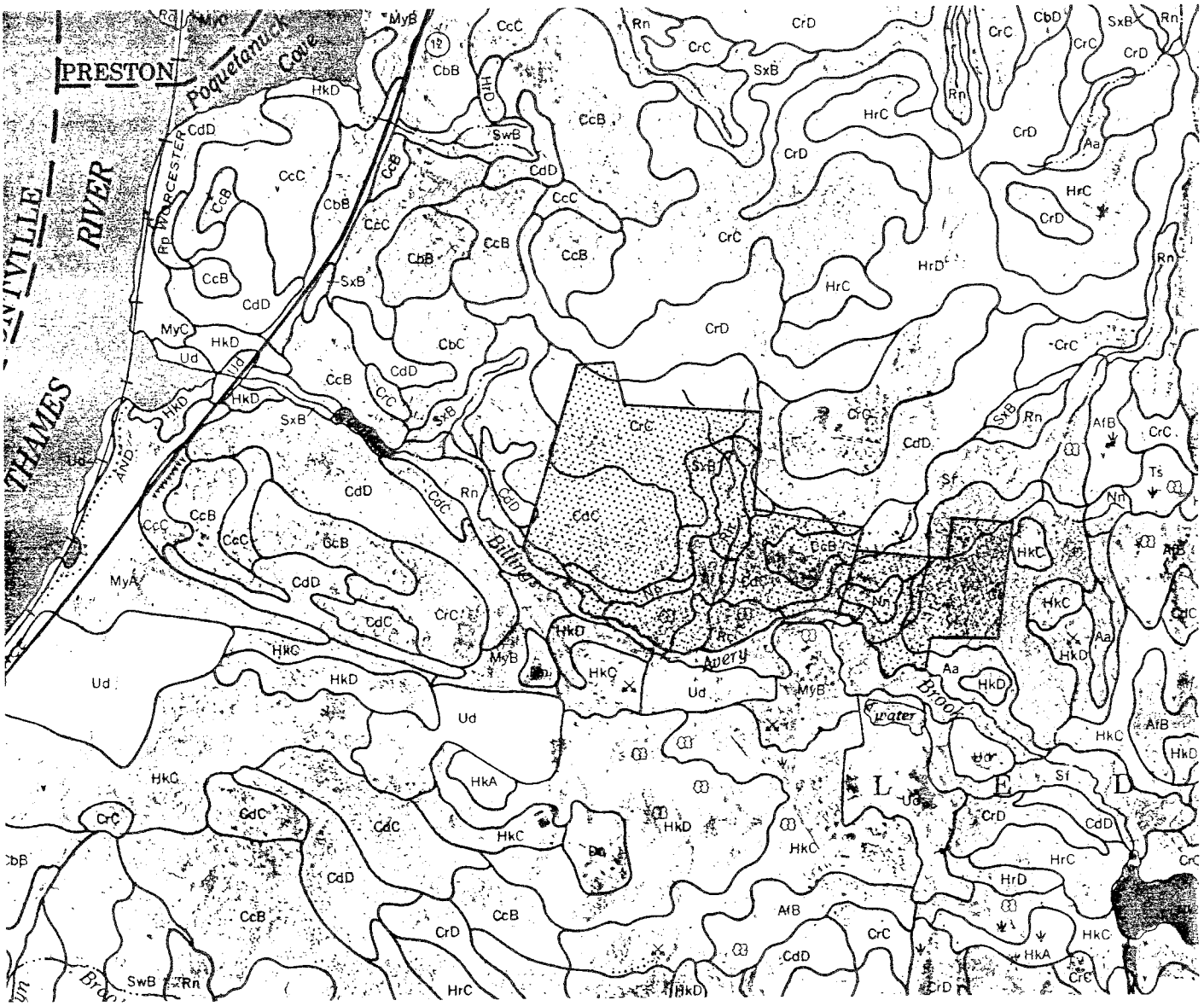
The Avery Preserve is the northern most of a series of geologic natural areas-open spaces in the western portion of Ledyard. These include the Ledyard Oak Park, pine swamp, the moraines or boulder trains, the Kettleholes, and the town-leased ballfields. It would be desirable to link these areas by trails wherever possible and to provide convenient parking areas to gain easier access to these areas.

There is currently no off-street parking for the Avery Preserve; one must pull off the edge of Avery Hill Road which is not desirable for safety reasons. It might be possible to develop a small off-street parking area in the vicinity of the trail heads for the east and west tracts. The open fields south of the Avery House also offer potential off-street parking, but these are privately owned and would necessitate walking along Avery Hill Road to reach the trail heads.

The Pfizer land located north of Route 214 which is leased by the town for ball-fields, would provide good off-streat parking. This land abuts or is in very close proximity to the Avery Preserve western tract. The southern hiking trail in the western Avery tract could easily be connected to this Pfizer tract by one or two short north-south trails. Near the southwestern corner of the western Avery tract access is already provided off of the old road that led at one time from the current Route 214 to Stoddard's Ferry. This road enters Route 214 about four-tenths of a mile west of Avery Hill Road. Parking in the area of the Pfizer tract would provide access for the northern portion of the natural areas referred to above. The only off-street parking for these areas now is the 5-6 spaces provided at the town-owned glacial Kettlehole Park on Avery Hill Road Extension.

Appendix

Soils


PRESTON
Poquetanuck Cove
THAMES RIVER
Billings
Avery
Brook
Water
L E D
0 1320'
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N

MANSHANTUCKET LAND TRUST - AVERY PRESERVE
LEDYARD, CT.

Soil Symbol	Recreational Development: Limitations for Paths and Trails	Soil Name	Potential for Habital Elements: Hardwood Trees	Coniferous Trees	Potential as Habitat for: Openland Wildlife	Woodland Wildlife	Wetland Wildlife
CcB*	slight	Canton	Good	Good	Poor	Good	Very poor
CdC	slight	Canton					
CrC*	slight	Charlton	Good	Good	Poor	Good	Very poor
Ce	severe: ponding, excess humus	Carlisle	Poor	Poor	Very Poor	Poor	Good
Nn	moderate: wetness	Ninigret	Good	Good	Good	Good	Poor
Rc	severe: wetness	Raypol	Fair	Fair	Fair	Fair	Good
Rn* 2	severe: wetness	Ridgebury	Fair	Fair	Poor	Fair	Fair
Sf 2	severe: ponding, excess humus.	Scarboro	Poor	Poor	Poor	Poor	Good
SxB	moderate; wetness	Sutton	Good	Good	Poor	Fair	Very poor

* = See description of the map unit for composition and behavior characteristics of the map unit.
2 = Rn and Sf are designated wetlands regulated under P.A. 155.

East Tract Trail: Consists of an old woodland which enters from the road and currently terminates abruptly. This will be extended as shown on map. A maple swamp and upland with some white cedar, a rhododendron thicket, and wildflowers including the orchid species.

Points of Interest: Remains of stone bridge and former sawmill site on West Tract. Sheep wash confinement on land owned by Mr. Avery on the South side of the Billings-Avery Brook adjacent to the West Tract. This is an old stone enclosure into which sheep were herded before being taken one at a time into the brook to be bathed.

Further Information: Mashantucket Land Trust Inc., P. O. Box 49, Old Mystic, Conn., 06372 or nature books in the Ledyard libraries.

LEDYARD CONSERVATION COMMISSION - 1984

Merlin L. Evered, Chairman

David F. Foltz
Charles Gerke
Edmund H. Lamb, II
Edward F. Lange
Harry O. Tobiassen
Jerry Trotta

THE AVERY PRESERVE

History: This 100.9 acre preserve was donated to the Mashantucket Land Trust Inc. by Amos Avery, whose family had owned it and the surrounding land since the 1600's. The Mashantucket Land Trust is now caretaker for the land and trails.

The preserve consists of two parcels. A West Tract of 78.53 acres and an East Tract of 22.37 acres. Both are bounded on the South by the Billings-Avery Brook and are located 0.75 miles North of Route 214 on Avery Hill Road in Ledyard.

Permitted use of the preserve: Restricted to hiking, bird-watching and nature study.

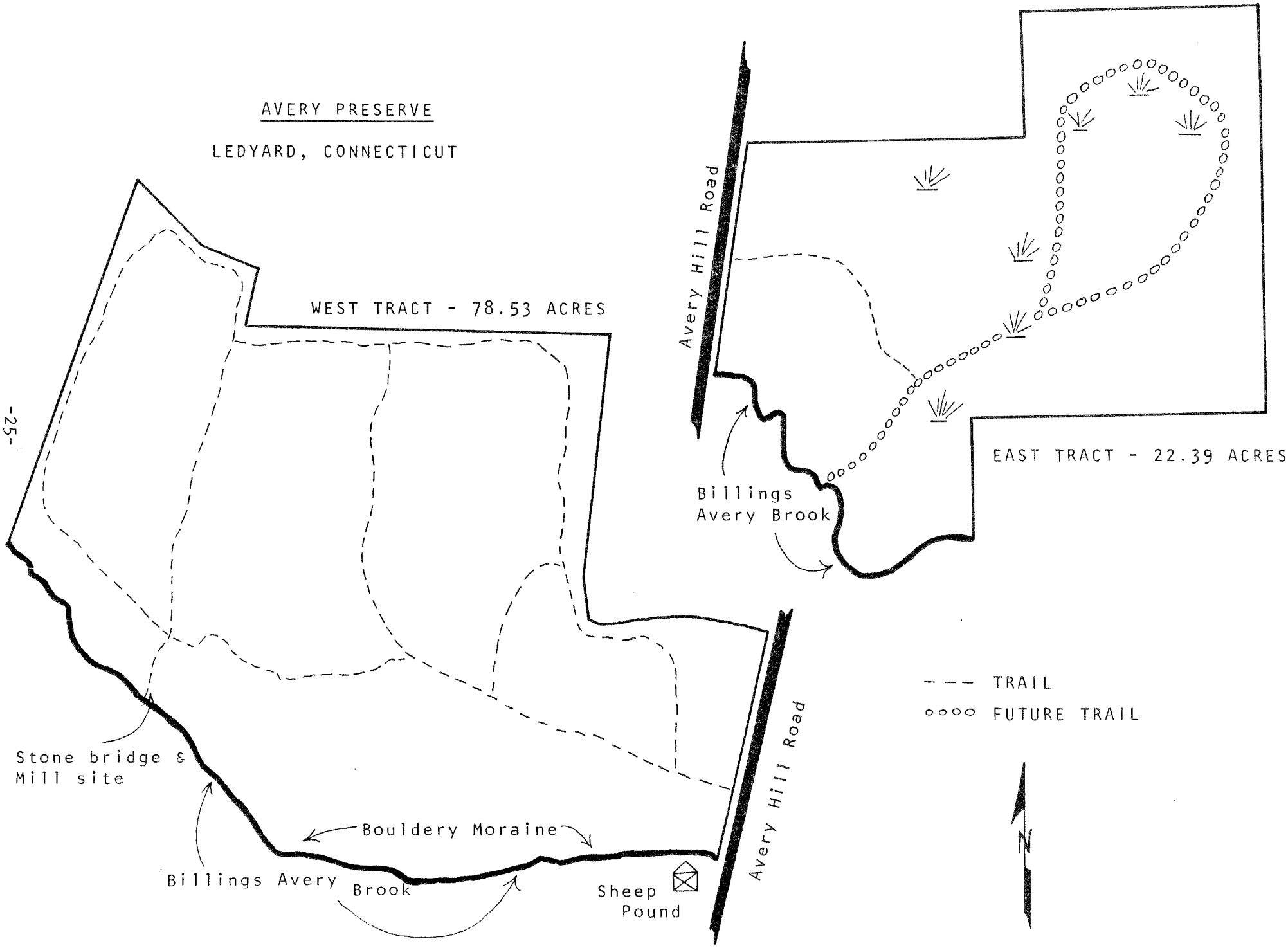
West Tract Trails: The orange blazed trails lead from a central lane to the right continuing around the perimeter of the preserve to the remains of a stone bridge-former sawmill site on the brook in the rear portion and then returning to the starting point.

There are several cross trails.

Vegetation and geology: Upland woodland with glacial boulder deposits, a brook and some swamp. Formerly portions of the land were cleared pasture or under cultivation, evidenced by piles of small stones on large rocks, and not by the high-bush blueberry bushes and red cedars that are dying out as the canopy of trees closes overhead.

Trees: tulip poplar, American beech, oaks, yellow birch, stump sprouts of American chestnut.

Many shrubs and wildflowers.


AVERY PRESERVE
LEDYARD, CONNECTICUT
WEST TRACT - 78.53 ACRES
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Avery Hill Road
Avery Hill Road
Billings Avery Brook
Billings Avery Brook
Stone bridge & Mill site
Bouldery Moraine
Sheep Pound
TRAIL
FUTURE TRAIL
N

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.