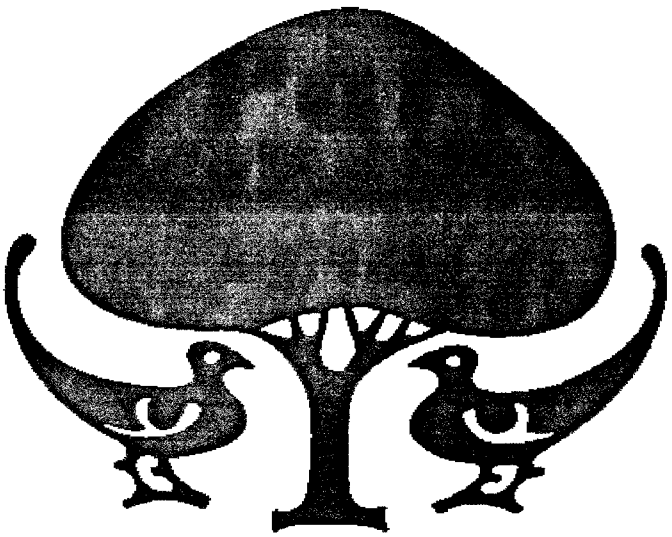
Hartman Recreational Park

Lyme, Connecticut

July 1989



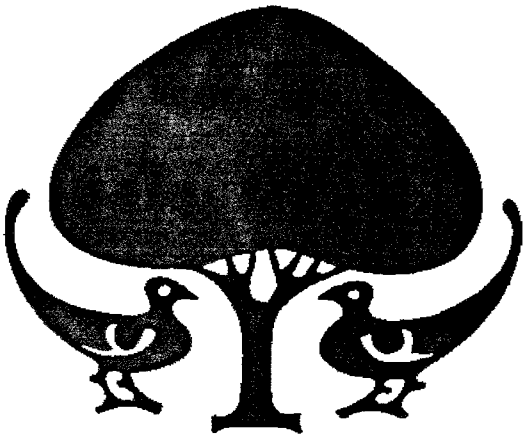
EASTERN CONNECTICUT ENVIRONMENTAL REVIEW TEAM REPORT

Eastern Connecticut Resource Conservation and Development Area, Inc.

Hartman Recreational Park

Lyme, Connecticut

Review Date: May 2, 1989
Report Date: July 1989



Eastern Connecticut Environmental Review Team

Eastern Connecticut Resource Conservation and Development Area, Inc.

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ENVIRONMENTAL REVIEW TEAM REPORT
ON
Hartman Recreational Park
Lyme, Connecticut

This report is an outgrowth of a request from Lyme Conservation and Inland Wetlands Agency to the New London County Soil and Water Conservation District (SWCD). The S&WCD referred this request to the Eastern Connecticut Resource Conservation and Development (RC&D) Area Executive Council for their consideration and approval. The request was approved and the measure reviewed by the Eastern Connecticut Environmental Review Team (ERT).

The ERT met and field checked the site on Tuesday, May 2, 1989. Team members participating on this review included:

Sharon Ashworth	***Wildlife Assistant*** ***DEP- Eastern District***
Nick Bellantoni	***State Archaeologist*** ***CT Museum of Natural History***
Patrice D'Ovidio	***Soil Conservationist*** ***USDA - Soil Conservation Service***
Emery Gluck	***Forester*** ***DEP - Cockaponsett Forest Hdqtrs.***
Joe Hickey	***State Parks Planner*** ***DEP - Parks and Recreation***
Steve Hill	***Wildlife Biologist*** ***DEP - Eastern District***
Brian Murphy	***Fisheries Biologist*** ***DEP - Eastern Distirct***
Richard Stoecher	***Regional Planner*** ***CT River Estuary Regional PLanning Agency***

Elaine Sych	*ERT Coordinator* *Eastern CT RC & D Area, Inc.*
Bill Warzecha	*Geologist* *DEP - Natural Resources Center*

Prior to the review day, each Team member received a summary of the proposed project, a list of the town's concerns, a location map, a topographic map, and a soils map. During the field review the Team members were given additional information. The Team met with, and were accompanied by the Zoning and Inland Wetlands Enforcement Officer, a member of the Recreation Commission, and members of the Inland Wetlands Agency. Following the review, reports from each Team member were submitted to the ERT Coordinator for compilation and editing into this final report.

This report represents the Team's findings. It is not meant to compete with private consultants by providing site designs or detailed solutions to development problems. The Team does not recommend what final action should be taken on a proposed project -- all final decisions rest with the Town and landowner. 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. The results of this Team action are oriented toward the development of better environmental quality and the long-term economics of land use.

The Eastern Connecticut RC&D Executive Council hopes you will find this report of value and assistance in making your decisions on this recreation park.

If you require additional information, please contact:

Elaine A. Sych
ERT Coordinator
Eastern Connecticut RC&D Area
P.O. Box 70
Haddam, Connecticut 06438
(203)345-3977

Table of Contents

Table of Maps

1. Setting. Land-Use and Topography

The ±325 acre town park facility is located in the northeast corner of Lyme. Chapman Ridge rises east of the parcel. The parcel is bordered on the west by Gungy Road, on the north by the Salem town line, on the east by the East Lyme town line and on the south by private, undeveloped land. High tension power lines traverse the central parts of the site in an east-west direction.

Except for a small open area, about 2 acres in size, near Gungy Road in the northwest corner, the site is wooded. The vegetation in a ±300 foot swath of land beneath the high tension line is maintained by the power company. A review of a 1934 air photo depicted additional pasture land at the southeast corner of the property. This area is now entirely overgrown. Land-use in the area of the parcel consists of low density residential and agricultural. Single-family homes are located mainly along the town roads in the area. The presence of numerous stonewalls transecting the site give testimony to its agricultural past. They delineate the boundaries of former farm fields and pastures.

The site is located in a RU-80 zone which allows single family residences on 2 acre lots. It is currently used by the town for passive recreation i.e., hiking, cross-country skiing, picnicking, bird watching etc. with potential for active recreational uses in the future.

Since municipal sewers and water mains are not available in this rural area, residential developments need to dispose of domestic sewage via on-site sewage disposal systems and require the installation of on-site water supply wells.

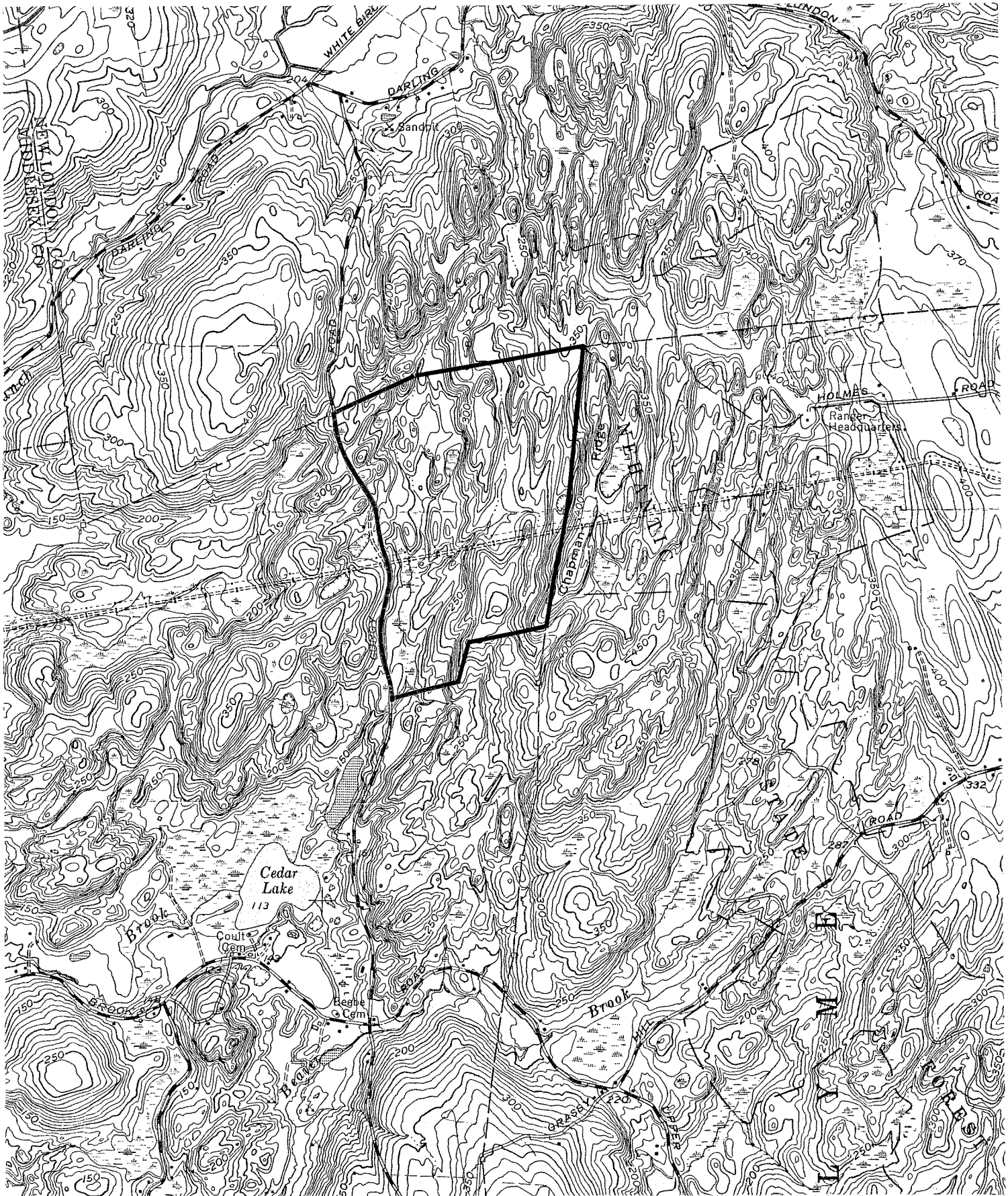
The topography of the site is highly irregular and is controlled by the underlying bedrock. Bedrock exposures or ledges are abundant throughout the parcel. The ridgelines of the hills in the area trend in a north-south direction. This is a result of geologic and erosional forces such as folding and glaciation that the underlying bedrock was subjected to during its geologic past. Where resistant units are interleaved with nonresistant rock, ridges faithfully reflect the structure of the bedrock. Because the unconsolidated materials overlying the bedrock on

the site are quite thin, topographic conditions clearly reflect the bedrock surface. Steep slopes predominantly occur on the west side of ridges, while the flat and gentle slopes occur on the tableland (top) of ridges on the site.

Site elevations range from a high of ±400 feet above mean sea level at the southeast corner (southern limits of Chapman Ridge) to a low of ±170 feet above mean sea level at the intersection of the property boundary and Cedar Pond Brook at the southern boundary.

Location Map

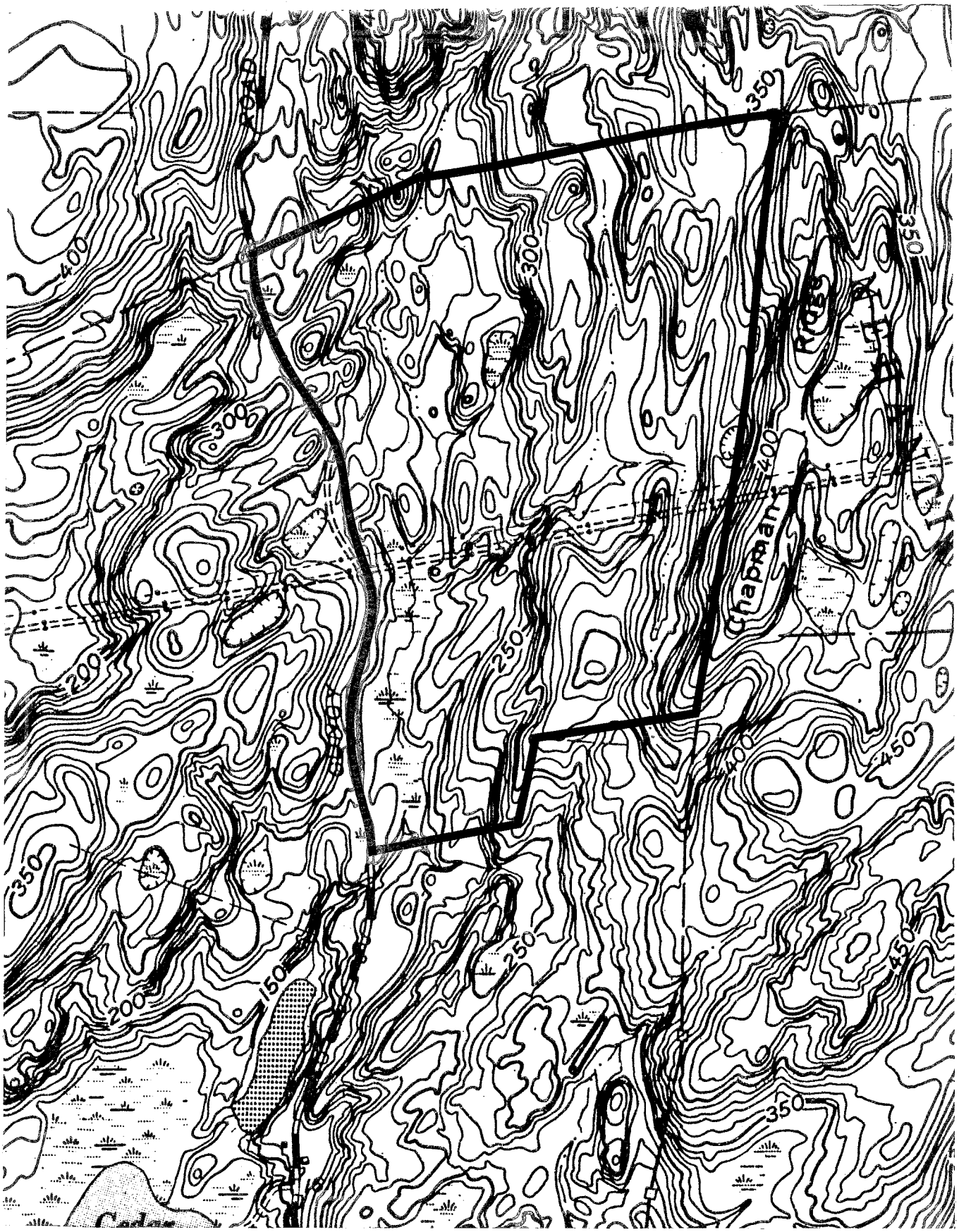
Scale 1" = 2000' —— Approximate Site Boundary



Topography

Scale 1" = 1000'

Approximate Site Boundary



2. Geology

The town park facility site lies entirely within the Hamburg topographic quadrangle. A bedrock geologic map (QR-19, L.L. Lundgren) for the quadrangle has been published by the Connecticut Geologic and Natural History Survey. John Rodgers' Bedrock Geologic Map of Connecticut, 1985, was also cited by the Team's Geologist for the bedrock geology section of the report.

No surficial geologic map has been published to date for the quadrangle. Both the Soil Survey of New London County and the unpublished Surficial Materials Map of Connecticut Stone et al., 1985, were referenced for the surficial geology section of this report.

Bedrock Geology

As mentioned earlier, there are an abundance of rock outcrops on the site. According to Rodgers' (1985), three major formations, the Mamacoke Formation, the Potter Hill Granite Gneiss and the quartzite unit in Plainfield Formation comprise most of the bedrock on the site.

The Mamacoke Formation, which underlies the western and central parts of the site is described as an interlayered light to dark gray medium grained gneiss. The eastern limits of the site consist of the Potter Hill Granite Gneiss. These rocks are described as light pink to gray, weathering, fine to medium grained foliated gneiss. The quartzite unit in the Plainfield Formation is nestled between the two formations mentioned above in the west central parts of the site. They occur as narrow, north-south trending belt of rocks consisting of light gray, glassy, generally thinly bedded quartzite.

In at least two areas on the site, outcrops of coarse grained, pink or white granitic rocks called pegmatites intrude the Mamacoke Formation. These lenses of rock are rich in the minerals quartz, feldspar, microcline and muscovite or biotite.

The terms gneiss and quartzite indicates that the rocks are metamorphic (have been altered by tremendous heat and

pressure within the earth's crust). Gneisses characteristically contain alternating bands of elongate minerals and more rounded minerals. Quartzites comprise quartz-rich sandstone which has been subjected to metamorphism. The rock, which has a sugary texture to it, is quite hard (resistant to erosion).

Brief outlines of the geologic history of the Hamburg quadrangle area are cited in QR-19 by L.L. Lundgren mentioned earlier. The outline indicates that the bedrock of the region originated as organic sediments and volcanic material. The quartzite unit in the Plainfield Formation and the Mamacoke Formation on the site was originally quartz sandstone, limestone and dolostone. The Potter Hill Granite Gneiss began as volcanic flow. Pegmatites subsequently intruded the rock units on the site as molten material in layers and lenses. The rock units on the site were deposited during the Cambrian and/or Ordovician Geologic Period (438 - 570 million years ago). Although no exact age can be ascribed to the pegmatites they are probably younger than the other rock units on the site.

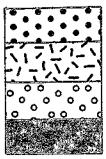
Metamorphism of the rocks occurred during a series of coastal movements known collectively as the Acadian Orogeny. This series of events culminated about 330 million years ago. Further deformation and faulting (fracturing of the bedrock) occurred during the Allegheny Orogeny which ended about 220 million years ago. Interested persons are encouraged to read QR19 by L.L. Lundgren for more detailed information.

It does not appear that any commercial value can be ascribed to the bedrock or the site. In the region the Mamacoke Formation has been quarried for building stone and crushed stone.

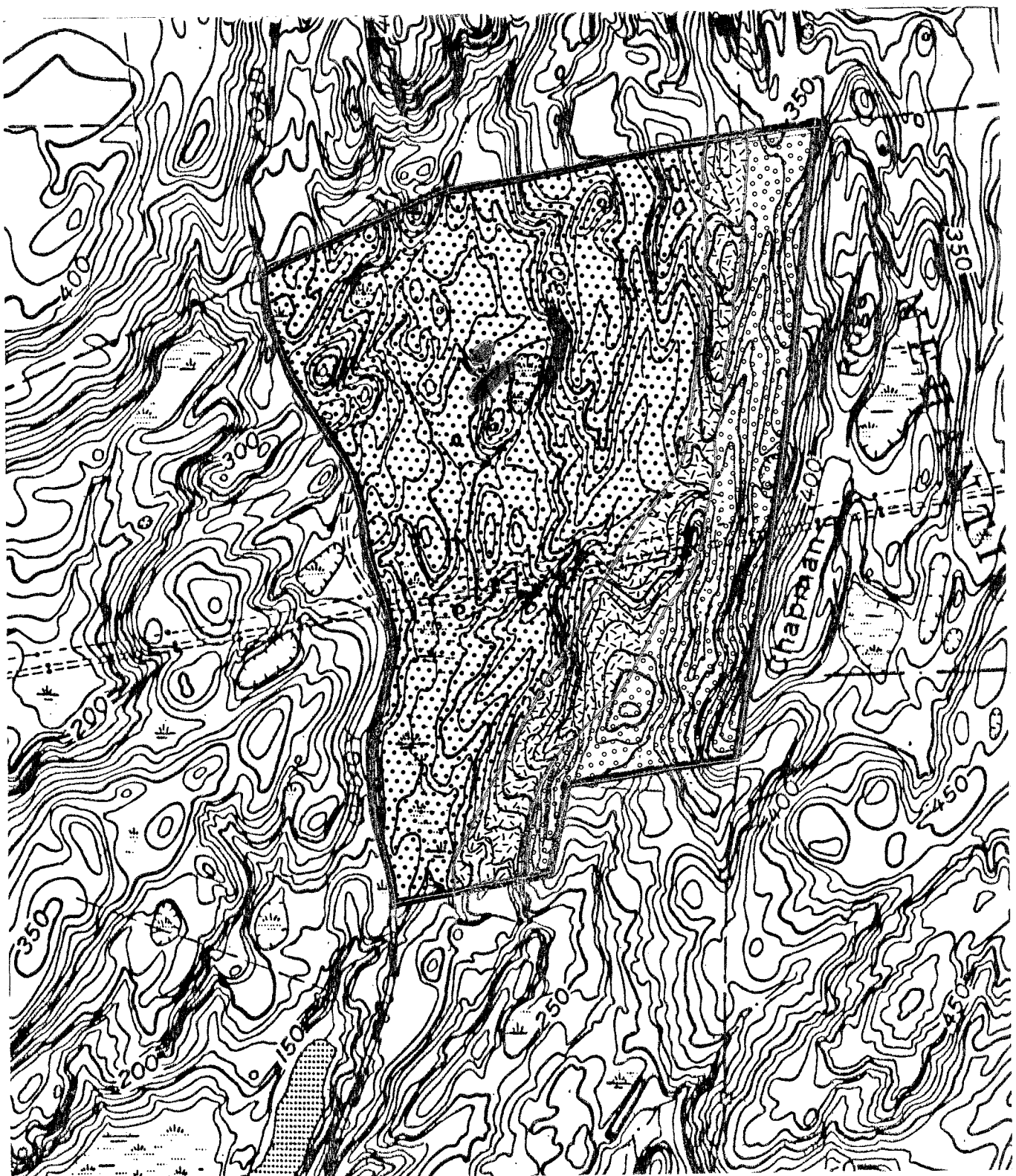
Most homes in Lyme rely on the underlying bedrock as a source of domestic water. If a water supply well is desired for the park, it seems likely that the underlying bedrock would be the major aquifer.

Bedrock Geology

Scale 1" = 1000'



Mamacoke Formation
Quartzite Unit in the Plainfield Formation
Potter Hill Granite Gneiss
Pegmatites



Surficial Geology

Overlying bedrock on most of the site is a thin blanket of unconsolidated sediments of glacial origin. As ice advanced over Connecticut one or more times during the last million years or more, it scraped and chipped bedrock outcrops and bulldozed pre-existing soils, incorporating the rock particles into the ice mass.

These particles were later plastered against bedrock ridges and knobs by the ice as it continued its advance, or were let down gently from the ice as it began to waste away. The nonsorted accumulation of rock fragments that resulted contains a wide range of sizes and shapes and is known as till. This deposit covers most of the upland areas of park. The exact thickness of the till on the site is unknown, but it probably does not exceed 10 feet in most places. Closer to Cedar Pond Brook, flat areas comprised of sand and gravel may be found. These materials, known as stratified drift, were washed out of and away from the receding ice sheet by meltwater streams. The open field area in the northwest corner of the site are situated on these deposits. The sand and gravel on the site probably ranges between 10 and 40 feet thick. Because the sediments are gravelly, groundwater drains quickly through them.

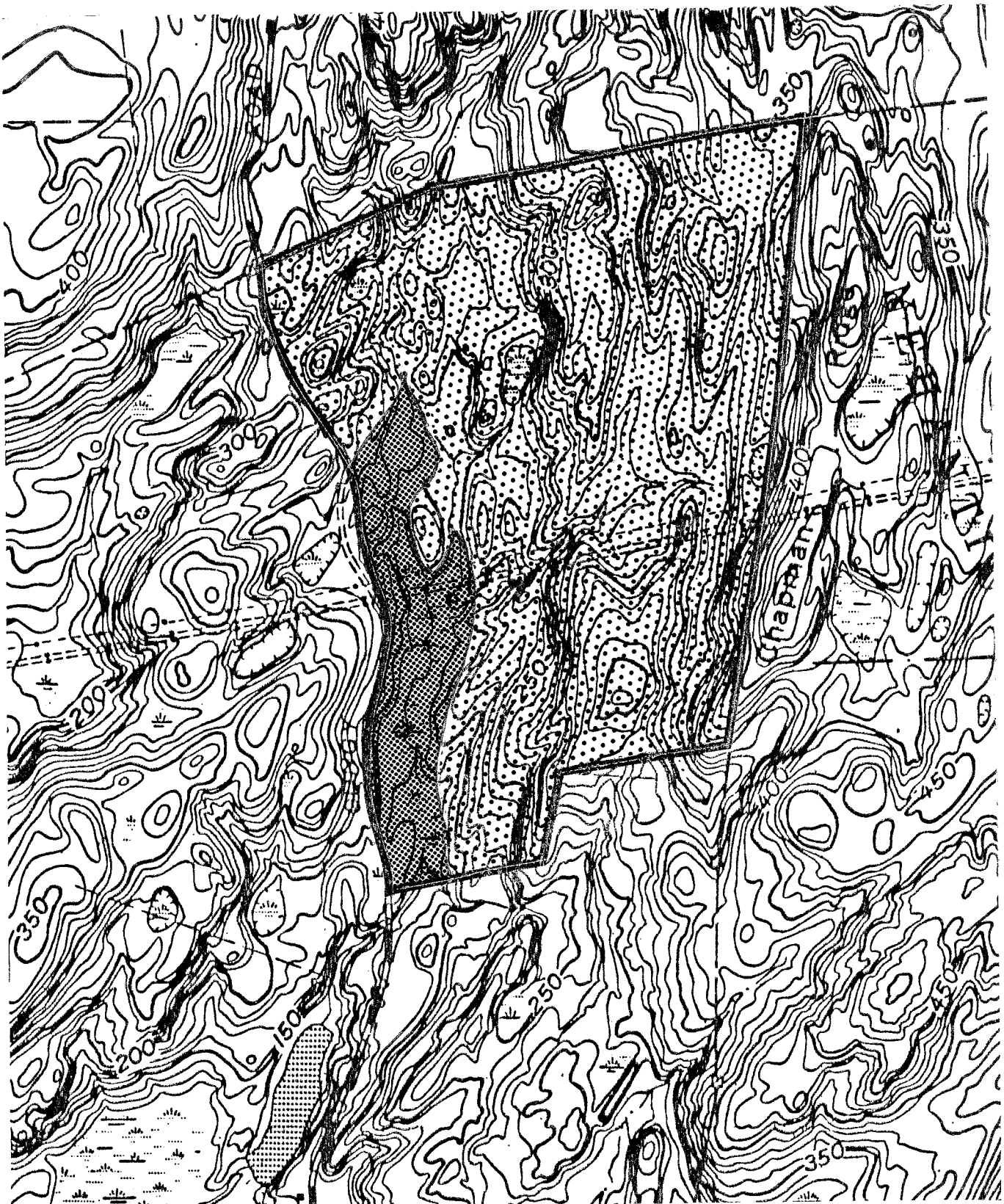
Final surficial geologic materials found on the site are swamp deposits. These post-glacially deposited sediments consist of decayed vegetative matter intermixed with differing amounts of silt, sand and a little clay which filled depressional features on the site. Based on the Soil Survey of New London County these wetland areas occur along Cedar Pond Brook in the eastern parts and in isolated pockets at the western limits. These areas are identified by the symbols **Ce** (Carlisle Muck) and **Aa** (Adrian and Palms Muck). Additionally, seasonally wet areas, which contain mostly mineral matter parallel many of the drainageways on the site.

The swampy areas of the site have several important hydrological functions, including streamflow regulation, erosion control, and surface water quality protection. They may, in addition, be a valuable ecological asset.

Surficial Geology

Scale 1" = 1000'

Till
Stratified Drift



3. Water Resources

The site lies entirely within the Cedar Pond Brook watershed area. Cedar Pond Brook flows through the western parts of the site in a southerly direction enroute to Cedar Lake. Cedar Pond Brook is tributary to Beaver Brook. At its point of outflow at Beaver Brook, Cedar Pond Brook drains an area of 2.51 square miles or 1606 acres. Several unnamed seasonal and permanent streamcourses are visible on the site. Noteworthy is the streamcourse that forms waterfalls over ledges/boulders along the high tension power line right-of-way. This affords visitors of the park scenic vistas to the east. All of these streamcourses are tributary to Cedar Pond Brook.

The general groundwater flow pattern on the site parallels the surface flow pattern to a great extent. The flow patterns of the various local watercourses are controlled by bedrock structure; the trend of the ridges and valleys parallel the streams. The shape of the water table (that level below which all spaces in the soil and bedrock are filled with water) is largely conformable with the surface topography, although minor surface features may not be reflected in the water table. Rainfall reaching the ground may pass overland as surface runoff or it may be absorbed into the ground. If absorbed, the water may either be returned to the atmosphere through evaporation or transpiration, or it may trickle down to the water table and become groundwater. Ultimately, groundwater and surface water may be discharged at the surface in the form of a spring, seep, wetland or stream.

The bedrock aquifer appears to be the best source of water on the site. The metamorphic bedrock underlying the site should be capable of providing small (less than 10 gallons per minute) yields to wells. Nevertheless, if the development of a small water supply well for active/passive recreational uses is desirable, the underlying bedrock should be adequate.

Although the sand and gravel deposits in the western parts of the site may be thick (10-40 feet), their value as a supply source is uncertain. Hydrogeologic factors such as their saturated thickness, proximity to surface water bodies, and texture of the stratified drift would need to be determined. It seems likely that if saturated thicknesses of the stratified drift on the western parts

ranged between 10-40 feet, a well yielding low to moderate yields (100 gallons per minute or less) may be possible.

Groundwater on the site is classified as **GA** by DEP. This means that it is suitable for private drinking water supplies without treatment. However, it should be noted that the Leachate and Wastewater Discharge Map for the Lower Connecticut River Basin identifies an active septage lagoon northwest of the intersection of Gungy Road and the high tension power lines. Based on the hydrogeology of this area, it seems likely that groundwater and surface water flow is eastward towards the property. As a result ground and surface water quality may be degraded in the area.

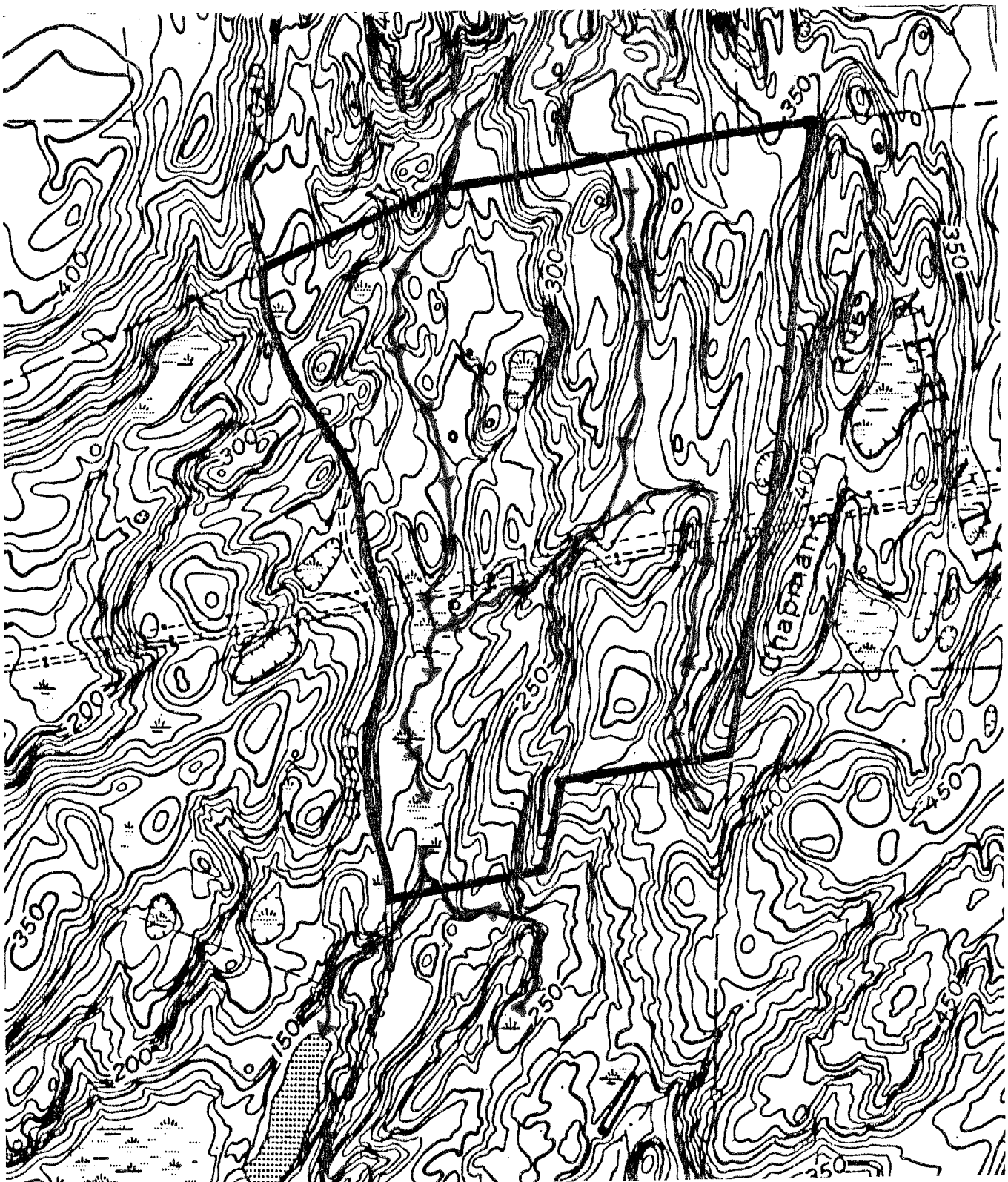
A beaver pond is visible at the western limits not far from the park's entrance. The dam itself is located in a breach of a pre-existing dam that impounded Cedar Pond Brook. As a result of the activity, the hydrology and ecology of the area has been drastically changed. The flooding of the area by the beaver has probably increased waterfowl habitat in the area. If flooding by beaver activity becomes a problem it may be possible to control it by "beaver pipes". Because of the site's undeveloped status and rural nature, any flooding that is presently occurring does not appear to be causing a problem.

Watershed Boundary

Scale 1" = 1000'

Entire site lies within the Cedar Pond Brook watershed area.

Watercourses showing direction of flow



4. Recreational Potential from a Geologic Viewpoint

The site has high potential for both active and passive recreational uses. Also, it is understood that the central parts of the site have an interesting and varied history. Historical artifacts observed during the field walk in this area included stonewalls and piles, stone foundations, and a stone-lined well about 20 feet deep. The history of the site should be studied by a colonial historian and/or archaeologist. (See Archaeological Review section)

The town park facility includes several natural features of importance such as (1) the beaver pond area; (2) the presence of large bedrock outcrops, which may show glacial striations; (3) waterfalls along the high tension power right-of-way; and (4) inland-wetland pockets. These important features offer a high potential for environmental educational purposes as well as passive recreational uses such as hiking, cross-country skiing, bird watching, and picnicking. Some areas may be limited for development, however, due to steep slope and wetness.

An area which appears to be suitable for athletic fields and other facilities is located in the open field area in the western parts. Sand and gravel deposits cover this area. It seems likely that one or two ballfields and/or tennis courts could be constructed in this broad, flat area. Since there are currently no homes in this area, there would probably be little objection to such a facility. Other flat areas on the site are not as close to Gungy Road as the latter site and would probably be more costly to develop. Also, there would probably be other geologic hindrances such as shallow to bedrock soils, the need to cross wetlands, etc.

If sanitary facilities (toilets & showers) were needed in this area, it seems likely that a small to medium sized septic system could be easily constructed in the open field area. The sandy, gravelly soils would be favorable for on-site sewage disposal. Detailed soil testing would need to be conducted, however, to determine subsurface conditions.

5. Soils Review

Initial investigation reveals a steep landscape with stony soils. Many soils are shallow to bedrock or wet. Because of these characteristics there are severe limitations for recreation development. Passive recreation, such as nature trails and environmental studies are best suited to this terrain. Refer to limitation charts.

Ponds and Wetlands

The New London County Soil and Water Conservation District does not advocate disturbance of the existing beaver pond. However, if the town does decide to remove the beavers and replace the dam to impound water, there are the following recommendations:

☞Protect all downstream areas from erosion. Use haybales and silt fence during construction and until area is stabilized.

☞ A maintenance schedule should be prepared for barriers. Excess sediments should be removed and spread on non-erodible sites after each major rain event or when accumulated sediments are 1/2 full.

☞Immediately stabilize all disturbed areas.

☞ An Army Corp of Engineers permit and DEP water compliance permit would be needed to impound water.

There are a number of other areas on the property that would be conducive to a pond. Areas that have been mapped wetland soils and have a viable water source could easily be transferred to a pond site.

☞Side slopes of 2:1 are a recommend minimum with 8:1 for swimming access.

☞Typically an 8' depth is desired.

☞Temperature range of 68-86.F is preferred.

☞7.4 is the ideal PH, but a range of 5.0-9.0 is acceptable.

☞ Leave no standing trees or stumps where swimming or boating will take place.

Soil Descriptions

Aa Adrian and Palms mucks

Ce Carlisle muck.

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

CdD Canton and Charlton extremely stony fine sandy loams, 15 to 35 percent slopes.

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

CrD Charlton-Hollis fine sandy loams, very rocky, 15 to 45 percent slopes.

HkC Hinkley gravelly sandy loams, 3 to 15 percent slopes.

HrC Hollis-Charlton-Rock outcrop complex, 3 to 15 percent slopes.

HrD Hollis-Charlton-Rock outcrop complex, 15 to 45 percent slopes.

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

Soils

Scale 1" =1320' ——— Approximate Site Boundary

New London County USDA-SCS
562 New London Turnpike
Norwich, CT 06360
887-4163

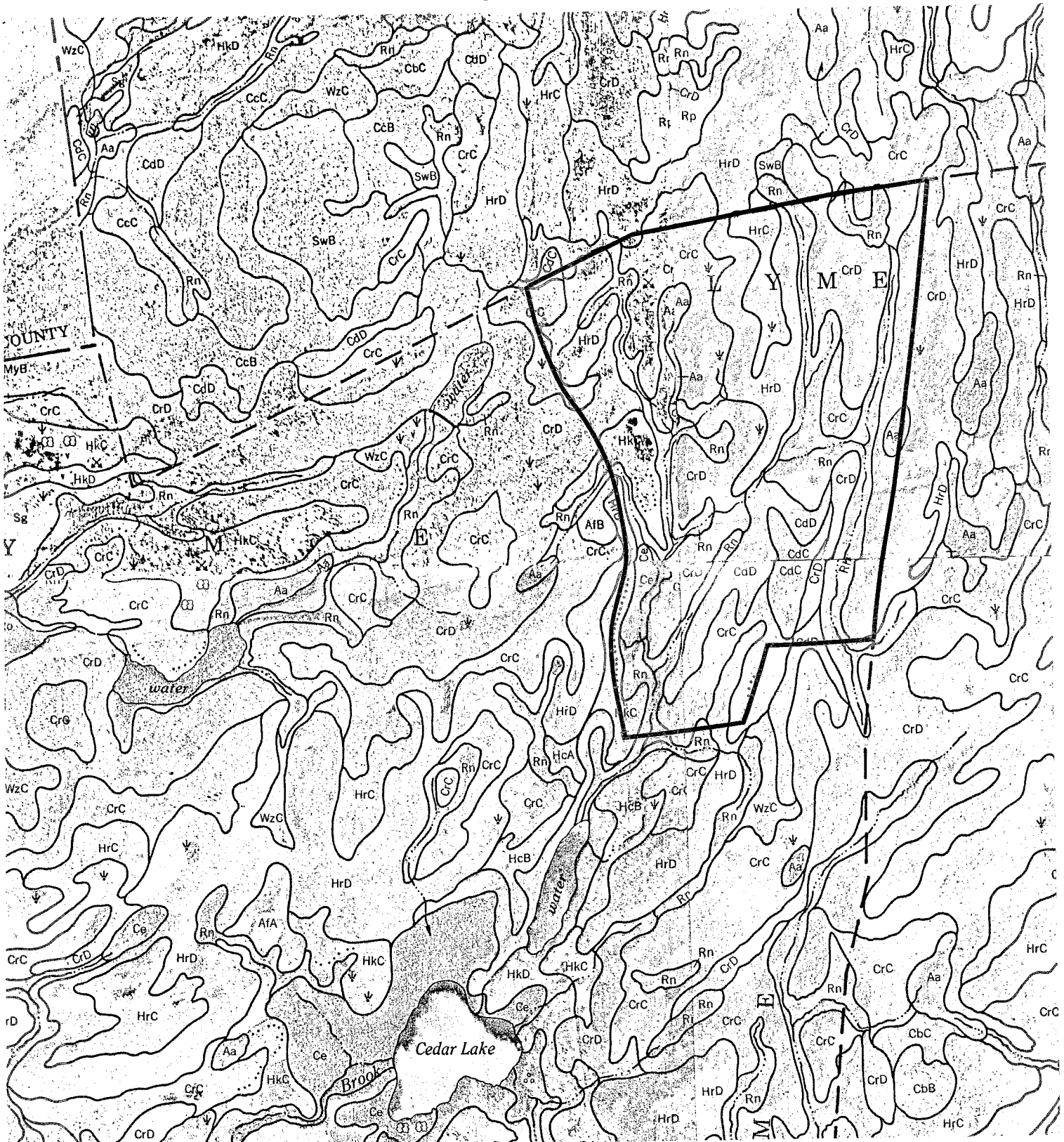


Table 1 - Recreational Development

SOIL NAME	CAMP AREAS	PICNIC AREAS	PLAYGROUND AREAS	PATHS/TRAILS
Aa Adrian	Severe Ponding	Severe Ponding	Severe Ponding	Severe Ponding
CdD Canton-Charlton	Severe Slope	Severe Stones	Severe Stones	Moderate Stones
Ce Carlisle	Severe Ponding	Severe Ponding	Severe Ponding	Severe Ponding
CrC Charlton-Hollis	Moderat Slope	Moderate Stones	Moderate Stones	Moderate Stones
CrD Charlton-Hollis	Severe Slope/ Bedrock	Severe Slope/ Bedrock	Severe Slope/ Bedrock	Severe Slope/ Bedrock
HkC Hinkley	Severe Stones	Severe Stones	Severe Stones	Slight Stones
HrC Hollis-Charlton	Severe/ Moderat Stones	Severe/ Moderate Stones	Severe/ Moderate Stones	Slight Moderate Stones
HrD Hollis-Charlton	Severe Stones	Severe Stones	Severe Stones	Severe Stones
Rn Ridgebury	Severe Lg.Stones/ Wetness	Severe Lg.Stone Wetness	Severe Lg.Stones/ Wetness	Severe Lg.Stones/ Wetness

Table 2 - Building Site Development

SOIL NAME	SHALLOW EXCAV.	DWELLINGS W/O BASEMENT	DWELLINGS W/BASEMENT	SEPTIC
Aa Adrian	Severe Ponding	Severe Ponding	Severe Ponding	Severe Ponding
CdD Canton-Charlton	Severe Slope	Severe Slope	Severe Slope	Severe Slope
Ce Calisle	Severe Ponding	Severe Ponding	Severe Ponding	Severe Ponding
CrC Charlton-Hollis	Moderat Slope	Moderate Slope	Moderate Slope	Moderate/Slight Slope,Bedrock
CrD Charlton-Hollis	Severe Slope	Severe Slope	Severe Slope	Severe Slope,Bedrock
MkC Hinkley	Severe Cutbanks/ Cave	Moderate Slope/ Lg. Stones	Moderate Slope/ Lg. Stones	Severe Poor Filter
HrC Hollis-Charlton	Severe/ Moderat Bedrock Slope	Severe/ Moderate Bedrock-Slope	Severe/ Moderate Bedrock-Slope	Severe/ Moderate Bedrock-Slope
HrD Hollis-Charlton	Severe Bedrock Slope	Severe Bedrock-Slope	Severe Bedrock-Slope	Severe Bedrock-Slope
Rn Ridgebury	Severe Ponding	Severe Ponding	Severe Ponding	Severe Percs Slowly

Trails

☞Trails will be laid out to fit the terrain with sustained grades less than 10%.

☞Pedestrian paths will be a minimum of 2-4 ft. wide with "heavy use protection" as needed.

☞Wet areas can be crossed by culverts, footbridges or board walks.

☞Remove limbs on large trees to a height of eight feet.

☞All trees, shrubs and fallen limbs shall be removed for a distance of 4 feet on each side of the trail centerline.

☞Grade areas where trails are uneven, depressed and collecting water.

☞Motorized vehicles should be prohibited from trail system.

☞Where trails slope downward to streams, a footbridge should be constructed to minimize impact on stream.

☞Where trails exceed 8% slope waterbars can be used to shift rainwater and sediment away from stream. Waterbars would also lessen severity of slope.

☞Remove limbs on large trees to a height of eight feet.

☞Trim back dangerous stubble.

Bridle Trails

☞Slopes should not have sustained grades greater than 8% and maximum of 15% for very short distances.

☞Optimum widths are 8-12' with a height clearance at least 12'.

☞ Adequate off-road parking facilities for vehicles with horse trailers should be provided.

General Trail Guidelines

	Width	Grade	Overhead
Walking	2-4'	15% max.	10'
Snowmobile	6-12'		
Bridle	8-12	15% max.	12'
Motorbike	6-12		10'
Bicycle	4-8'	5% max.	10'

Maximum grades exceeded for short distances (50-100 feet). Trail areas should be marked for distances and designated permitted uses posted at trail heads.

Access Roads

☞ To promote drainage and prevent flooding gravel fill will be added to raise the roadbed in low areas or wet spots.

☞ Repair camproads from a storm washing by installing waterbars and leak offs, especially on steeper slopes.

Campsite Creation

☞ Where possible, select sites which will be shaded in the afternoon and sunny in the morning for optimum warmth and comfort.

☞ The tent plot should be level, well drained and as far as practical from camproads.

☞ Tent plots should be 12 feet in diameter.

☞A fire ring should be provided in a central location.

☞No site should be located closer than 100' to a lake or stream so the shoreline is available for trails and other use by campers.

☞If facilities are provided, they too should be at least 100' from a water source.

☞No campsite should be located closer that 75' to a toilet.

☞Mechanically clear underbrush at campsite.

☞Allow larger trees to remain.

☞Keep land disturbance to minimum.

☞Fertilize and lime area to plant hardy vegetation.

☞4-6 units per acre is recommended. 10-14 per acre in urban campgrounds. Space sites at a minimum of 60' apart.

Picnic Areas

☞Locate in open areas with scattered trees or reduced forest stand to 30-50% canopy.

☞Maximum slope 20%. Desired slope 2-8%.

☞Situate picnic areas near swimming areas, play field or hiking trails for maximum use.

☞Allow for sanitary facilities, refuse containers, water supply and fireplaces.

☞Generally parking is located within reasonable walking distance. Locate parking areas to minimize visual intrusion.

Sanitary Facilities

☞ Every beach over .5 acres needs a bathhouse or a clothes changing facility.

☞Toilets are necessary at all beaches and bathhouses.

☞Flush toilets are always preferred, however, vault toilets or chemical toilets may be used.

☞Toilet vaults are to be leak proof.

☞Sanitary facilities need to be located in a dry flood proof area, or need to be made flood proofed.

6. Vegetation Review

Vegetation

The vegetation of the property is common to the oak-hickory forest found in Southern Connecticut. The property can be divided into abandoned field type and two forest types (red maple and white oak-black oak-northern red oak). The two forest types can be broken down into 6 individual forest stands. The acreage of the forest stands were obtained from aerial photographs and should only be used as estimates.

Vegetation Description

Stand 1 (white oak-black oak-red oak) is an understocked stand 9 acres in size composed of poor and medium quality sawtimber (trees 11.1" in diameter breast height and larger) and poles (trees 6.1" to 11"). White oak is the dominant tree species. Black and white oak together account for approximately 70% of the overstory, while hickory and black birch account for the remainder. Black birch and red maple are predominant tree species occupying the understory. The shrub layer and ground cover include American hornbeam, hop hornbeam, flowering dogwood, huckleberry, high bush blueberry, low bush blueberry, shadbush, club moss, and ground cedar.

Most of the overstory trees appear to be relatively healthy even though the excessively drained soils (Hinckley Gravely Sandy loam) leads to droughty growing conditions for hardwoods. A partial harvest that took place over 20 years ago has contributed to the understocked condition of the stand. The openings created by the harvest have re-seeded to a dense shrub layer. The stand is approximately 70 years old and is considered biologically immature.

Stand 2 (white oak-black oak-red oak) is marginally stocked stand (55 acres) predominantly composed of poor and medium quality sawtimber. The stand contains a significant but minor pole component. Most of the sawtimber and large poles are approximately 60 to 80 years old. The few large sawtimber trees (20"DBH plus) are approximately 100 years old or older. These trees were present when the area was still used as pasture. It is

estimated that grazing was abandoned 70 to 80 years ago when most of the present stand seeded in. A good portion of the smaller poles seeded in after a partial harvest which took place approximately 35 years ago.

The stand's overstory is composed of the following trees in descending order of occurrence: white oak, red maple, black birch, hickory, white ash, red oak, sugar maple, beech, sassafras, black gum, and tulip poplar. The oaks collectively make up approximately 40% of the overstory. The understory includes red maple, black birch, yellow birch, beech, sassafras, black cherry and red cedar. The shrub layer and ground cover include spicebush, sweet pepperbush, American hornbeam, hop hornbeam, flowering dogwood, mountain laurel, barberry, witch hazel, highbush blueberry, lowbush blueberry, Canadian mayflower, grape, poison ivy, virgina creeper, wild geranium and anemone.

The stand is severely understocked with healthy trees as only approximately half of the trees are healthy and free of significant rot. Most of the younger poles are not vigorous because they are growing in partial shade. The well drained soils (Charlton-Hollis fine sandy loams and Canton and Charlton fine sandy loams) provide a poor to average site for growing hardwoods.

Stand 3 (white oak-black oak-red oak) - is a 15 acre understocked pole stand. Black oak is the dominant overstory tree species present. White oak, hickory and red maple make up the remaining overstory trees. Red cedar, grey birch, apple, and red maple are present in the understory. The shrub layer and ground cover are similar to that in **Stand 2** with the addition of striped pipsissewa.

Stand 4 (white oak-black oak-red oak)- Stand 4 is a 149 acre fully stocked medium quality pole and sawtimber stand. The stand is weighted more heavily to poles but the sawtimber makes up a significant proporation of the stand. The overstory is composed of black birch (20%), white oak (19%), red oak (17%), black oak (14%), hickory (8%), scarlet oak (5%), red maple (4%), beech (3%), sugar maple (3%), tulip poplar (2%), yellow birch (<1%), white ash (<1%), black gum (<1%), Sassafras (<1%), red cedar (<1%), and white pine (<1%). The shrub layer and ground

cover are similar to those of **Stand 2** with additional of patridge berry. Mountain Laurel covers a substantial amount of the area of **Stand 4**.

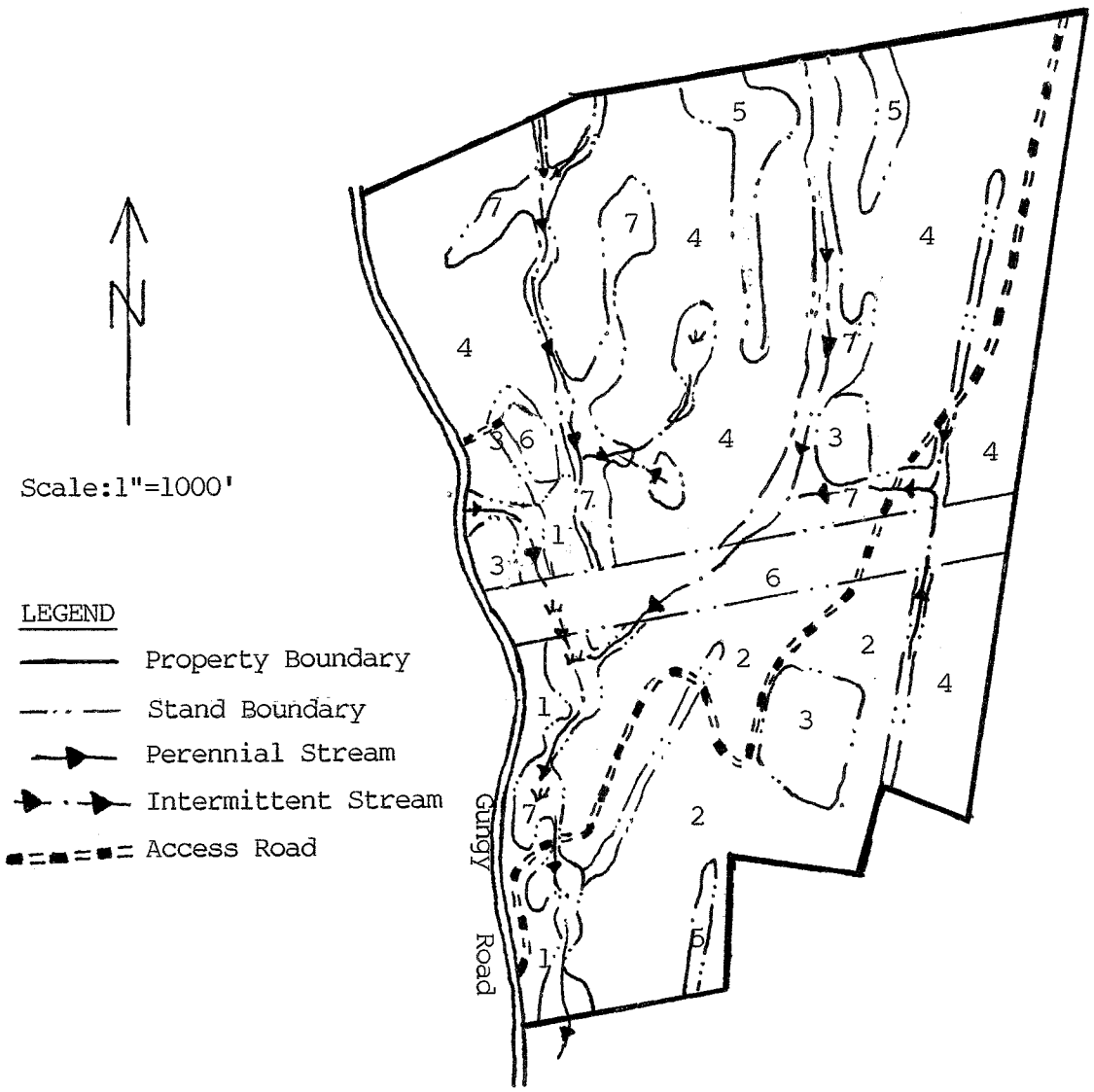
Even though the stand is fully stocked with trees, it is understocked with healthy trees. The well drained soils (Charlton-Hollis fine sandy loams and Canton and Charlton fine sandy loams) provide a poor to average site for growing hardwoods. Most of the overstory trees are 60 to 80 years old.

Stand 5 (white oak-black oak- red oak)- is a fully stocked pole and sawtimber stand composed of low quality trees. Black oak, white oak, hickory, and black birch are present. The lesser vegetation includes huckleberry and shadbush. The stand is lacking a substantial number of healthy trees. The shallow soil provides a very poor growing site for hardwoods. The stand is approximately 12 acres.

Stand 6 (abandoned field/transmission line R.O.W.)- The termination of agricultural use and the land clearing in the right of way have created advantageous conditions for the development of early successional forests. Red cedar, black cherry, oak, sassafras, and sumacs saplings have been established. The lesser vegetation include sweetfern, lowbush blueberry, highbush blueberry, shadbush, grape, hornbeam, American hop hornbeam, Canadian mayflower, and brambles. This 22 acre stand is too lightly stocked to be considered a forest type at this time.

Stand 7 (red maple)- This 39 acre pole stand varies from fully stocked in most areas to understocked in the muck areas. Red maple is the dominant tree specied. Yellow birch, black gum, and black ash make up the minor component of the stand. The lesser vegetation includes spicebush, sweet pepperbush, marsh marigold, skunk cabbage, false hellebore and poison ivy. The excessively high water table severely limits growth in the wettest sections.

Vegetation


N
Scale:1"=1000'
LEGEND
Property Boundary
Stand Boundary
Perennial Stream
Intermittent Stream
Access Road
Gungy Road

Limiting Conditions/Potential Hazards

Presently, the main limiting condition of the forest is the lack of healthy and vigorous trees that are free of significant decay. Unhealthy and low vigor trees are more susceptible to insect and disease problems which leads to a higher mortality rate. Trees growing in crowded conditions and drought-prone soils can be expected to experience greater stress and have limited growth. Mast production (i.e., acorns, hickory nuts, etc.) can be expected to be lower in a less healthy forest. Therefore, less food will be available for wildlife. Also, the long term aesthetics will be limited by the health of the forest.

Potential hazards include dead trees, dead tree parts and those trees whose roots or trunks have a high probability of failing due to excessive decay or lean. These trees become hazard trees if there is a high risk of injuring people or damaging property. All trees with the above-mentioned characteristics would be hazards if located in areas of high use such as along a recreational trail or in a picnic area.

If a recreational facility or building is proposed for the property, construction activities should be planned and conducted to minimize disturbances around the trees and in sections of the forest that are to be saved. Road building, filling, excavation and soil compaction (from heavy machine use) may adversely affect the moisture and aeration balance within the soil. This could lead to the decline in tree health and vigor and may eventually lead to the death of the tree within three to five years. Physical damage to the root system and trunk of the tree by machinery may also result in the decline of individual trees and/or the introduction of decay. Picnic areas and other high-use activity areas should not be placed around sugar maples as their shallow roots are very sensitive to soil compaction.

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

breakage. Windthrow is also more prevalent in areas where a large percentage of the trees have been removed.

Aesthetic Considerations

The aesthetics of a forest depends upon numerous characteristics of the individual trees, the forest as a whole, and the landscape. Some of these characteristics include- size of the trees, density of the forest, variety of forest scenes, unique or interesting features, amount of dead and down material, depth of view into the forest; and the visual attractiveness of the bark texture and leaf and flower color. Generally, forests with large trees and a deep unobstructed view into the woods are the most desirable. A forestry operation could promote this type of setting by harvesting smaller understory trees that limit or obstruct visual penetration. A forestry operation could also improve long term aesthetics by giving healthy overstory trees more growing space. This will result in an increased diameter growth rate and therefore a larger tree in a shorter period of time. The amount of down material created by a forestry operation could temporarily impact the forest aesthestics. This could be minimized by controlling the intensity of the harvest, timing harvest to correspond with good fuelwood markets (to improve cull and top wood ultilization), require lopping of tops to a certain height. These steps plus the decomposition process will aid in making the down material less noticeable within a few years.

The development of a variety of forest stands are usually more visually interesting than a homogeneous forest. A variety of species and age classes would also safeguard the long term aesthistics by minimizing the impact of infestations of insects and diseases on a particular species or on older trees. A good balance of seedlings stands, sapling stands, pole stands, and sawtimber stands would make the forest less vulnerable to catastrophic hurricanes. Devastating hurricanes flatten the sawtimber stand of southern New England approximately every one hundred years. The next major hurricane will probably be more devastating than the last major one since approximately 90% of our forests are in the vulnerable older age classes as opposed to predominantly younger and less vulnerable forests that withstood the 1938 Hurricane. The concept of "not putting all your eggs in one basket" is an effective management method of

reducing the high risk of growing forests over an extended time period. Forest stands of different age classes can provide visual counterparts to one another and give the sense the forest is growing.

Management Considerations

The maintenance and development of healthy vigorous forests should be a major concern in the management of the property. Forest management can help achieve this by reducing crowding in densely stocked stands and regenerating stands that have detoriated significantly in health.

Currently, two stands would benefit from forestry operations that reduce crowding. **Stand 4** has a reasonable number of healthy trees that would respond to a fuelwood thinning. The thinning should remove 1 or 2 of the main competitors of each of the best trees. Approximately 50 trees per acre should be released by the thinning. Even though the overall stocking in **Stand 2** is not excessively crowded, the healthiest younger poles are constricted and could benefit from being released from less vigorous poles and strangling grape vines. This type of operation would probably be done at a cost. The forest may benefit from additional thinnings as it becomes more crowded in the future.

In order to assure the presence of healthy stands of large trees over a long period of time, only part of the forest can be composed of mature or overmature trees. There needs to be some areas of newly regenerated stands (seedlings and saplings stands), to provide healthy, mature forests for the future. Seedling and sapling stands provide necessary habitat for many species of wildlife. Oak forests can be regenerated by performing patchcuts or shelterwood harvests where all trees are harvested in one or more harvests. These regeneration harvests are most successful after a good acorn crop. Oak forests can not be successfully regenerated by selection harvesting since oak (along with white ash, hickory and tulip poplar) are intolerant of shade. Group selection harvests, which resemble small patchcuts, have limited success in perpetuating these shade intolerant species. Selection harvests favor shade tolerant sugar maple, beech and black birch. The use of selection harvests or the absence of any harvesting for an extended time period will eventually transform

an oak forest to one dominated by beech-birch-maple. Selection harvest would only be recommended in a few acres of **Stand 2** where sugar maples already makes up a significant amount of the stand. An alternative to patchcuts and shelterwood harvests is a deferment cut. This consists of harvesting all the trees except 10 to 15 of the best trees per acre. The removal of most of the trees will allow enough sunlight to perpetuate shade intolerant species but some trees are left for aesthestic purposes. If an objective is to grow 100 year old trees, 26 acres per decade would have to be completely regenerated in order to create a forest of balanced age classes.

Forestry operations can manipulate the species composition of the forest. Red oak and tulip poplar should be favored to grow the largest trees. The reduction of the oak component to approximately 20% will reduce the forest vulnerability to gypsy moth defoliation. Hickory, white ash, and tulip poplar compenent could be increased to compensate for a decrease in the oaks. White pine can be planted to introduce a conifer compenent. Since white pine can only survive for a limited time period in partial shade, it would best to underplant it in a understocked stand that will eventually be completely harvested or in the open. The gravelly soil of **Stand 1** will provide the best site for white pine to compete with hardwood. If white pine is protected from deer browse, released from brushy vegetation and overtopping hardwoods, it will eventually outgrow the hardwoods.

7. Wildlife Review

Wildlife Habitat Description

The ±300 acres of undeveloped land deeded to the town of Lyme includes a variety of habitat types and has great potential for wildlife diversity and richness. Ridges consisting of upland forest and rock outcroppings run north to south on the property. Several brooks follow the lowlying areas between ridges into a larger stream at the powerline right-of-way. The major habitat types are mixed hardwood forest, riparian zones, forested marsh and old fields. There are also numerous stone walls, some building foundations and old road beds.

Wildlife Use of Habitat

Mixed Hardwood Forest: This habitat consists of a variety of hardwood species including red maple, red oak, beech, white oak and scattered white pine and cedar. There is a cedar patch south of the powerline and east of the dirt road. Understory vegetation includes mountain laurel, witch hazel, elderberry, grape, blackberry and hardwood regeneration. Wildlife frequenting such habitat types include deer, fox, raccoon, gray squirrel, woodpeckers (hairy, downy and pileated), scarlet tanangers, ovenbirds, veeries, black-throated blue and green winged warblers, barred owls, broadwing hawks and various nongame species such as porcupine, voles and shrews.

Wetland/Riparian zone: A brook runs along the western edge of the property, and includes marshy areas and a beaver pond. There are several small brooks that run north to south in the low lying areas. Associated vegetation includes highbush blueberry, oak, red maple, alder, skunk cabbage, false helebore and dogwood. Wildlife using such sites include deer, fox, raccoon, skunk, muskrat, mink, red-winged blackbirds, grackles, kingbirds, cedar waxwings, hooded and Wilson's warblers, woodpeckers and numerous amphibians and reptiles. The pond is an active beaver site at the present time.

Open Field: The powerline right-of-way divides the property east to west and creates an old field habitat type. There is also a

clearing with a few cedars near Gungy Road that is presently used for bike paths.

Open land habitat is very beneficial to wildlife. Vegetation provides the obvious food items as well as structural diversity which creates cover for a great array of wildlife ranging form mice and shrews to deer. The fields also attract numerous insects which are a major food item of various wildlife species including birds, small mammals and bats. Another value of these fields is the edge which is created where field meets forest. This valuable zone for food and cover consists of dense berries, shrubs and grasses.

Wildlife using open field habitat includes deer, woodchuck, fox, raccoon, mourning doves, eastern kingbirds, mockingbirds, woodcocks, flycatchers, blue and golden-winged warblers, robins, bluebirds, kestrels, red-tail hawks, eastern screech owls and cottontail rabbits.

Stone Walls and Foundations: Loose stone structures provide cover for numerous amphibians, reptiles and small mammals.

Because of the large size and diversity of the property and the town's desire to make the best use of the area for recreation and natural history education, an inventory of the site's unique and sensitive areas, vegetation and wildlife species is recommended.

During a field inspection of the area the following species were noted: broad-winged hawk, ovenbirds, woodpeckers, bluewinged warbler, chickadees, rufous-sided towhee, song sparrows, scarlet tananger, red-winged blackbirds, bluebird, white-throated sparrow, titmice, catbirds and cardinals.

Management of an Open Space Tract

In a small, but heavily developed and highly populated state like Connecticut, where available habitat continues to decline on a daily basis, it is critical to maintain and enhance existing wildlife habitat.

Management of wildlife resources is in a large part dependent upon habitat management. The manipulation of vegetation is a major part of wildlife management. Sustaining wildlife populations means regulating on a continual basis the kind, the amount, and the spatial arrangement of food and cover plants to provide the needs of wildlife. Wildlife management and protection goals for the site should include production of optimum habitat diversity to maximize production of wildlife species. This can be done by creating and/or maintaining a diversity of food and cover with a mosaic of nesting, resting, and loafing sites scattered throughout the area.

The diversity of this property can be enhanced with a timber management plan which creates stands of different age classes. A variety of successional stages in a forest is not only good for wildlife but is an excellent and important educational opportunity.

The town has specific concerns regarding the beaver pond. It has been suggested that it be drained and cleared for a recreational swimming hole. As it stands now, the beaver pond is excellent wildlife habitat. In most cases, natural marshes are of more value than constructed ponds and ditches because of vegetative composition, gentle sloping edges and shallow water depths. Consideration could be given to constructing a swimming pond in another area, but the beaver pond in its natural state is valuable wildlife habitat and provides an excellent educational opportunity.

Early successional stage vegetation is essential to many species of wildlife and is limited in Connecticut. Where possible, this habitat type (i.e. clearings, grass plots, native reverting fields) should be encouraged. Fields should be cut every one to three years to maintain early successional stage vegetation. Cutting should be scheduled on a staggered basis and not prior to July lst to avoid disturbing nesting birds. A 15-foot wide border between fields and forestland should be established and maintained on a staggered basis every three to five years after July lst. This 15-foot zone provides an additional edge component to the site.

Planting of white pine seedlings within openings and as underplantings will increase the amount and distribution of conifer cover. Bluebird boxes should be placed along field edges.

It should be recognized that for optimum wildlife habitat potential, a variety of successional stage vegetation must be encouraged. Proper maintenance of openings and field borders must be conducted. If neglected, native vegetation will progress to less desirable stages, lowering the wildlife potential of the area.

Natural History - Education Trails

The property is well suited for passive recreational activities. The variety of terrain, vegetation and wildlife offers opportunities for birding, hiking and education through the use of trails.

Trails are the key to bringing people and wildlife together. They should be located to take advantage of terrain and existing habitat. Effective trail planning and layout can enhance the learning and aesthetic aspects of outdoor recreation by providing easy access to varied habitats. The property in question already contains numerous road beds which can function as trails. Some things to consider when planning a trail system:

☞ A nature trail which includes informational signs will allow the general public to appreciate the value of the area they are viewing. It will also help them to recognize habitat types, trees, flowers, birds, etc. in areas other than the nature trail. An accompanying, informational pamphlet on a well-marked trail, will allow interested individuals, not just organized groups to have an educational opportunity.

☞ Know the characteristics of the property and plan the layout so that the trail passes by or through a variety of habitat types.

☞ Make sure the trail is safe, as well as exciting. If feasible, a trail accessible to the handicapped can be a valuable, and much appreciated, addition to the educational scope of the area.

☞ Follow a closed loop design, beginning and ending at the same point.

☞ Avoid long, straight stretches. Trails with curves and bends are longer, add an element of surprise and anticipation and seem more natural.

☞ If management practices are conducted (i.e. openings, plantings, bluebird boxes, etc.) they should be discussed in accompanying information. The major wildlife topics to emphasize should be the value to wildlife of vegetation types/succession and wetland areas.

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8. Fish Resources

Site Description

The parcel contains three small intermittent streams that eventually merge on the western portion of the property and flow into the beaver pond. Wetlands on the property are associated with the beaver pond and its outlet stream. Small streams on this property are best characterized as "intermittent-headwater" streams. Their primary function is to provide clean, unpolluted waters to lower sections of the watershed on a seasonal basis. This is especially true of Cedar Lake. Its water quality is dependent upon receiving clean water from allochthonous (outside the lake) sources. Surface waters on the parcel are classified by the Department of Environmental Protection as "Class A". Designated uses for a "Class A" watercourse are: potential drinking water supply, fish and wildlife habitat, recreational use, agricultural and industrial supply, and other legitimate uses. (Also refer to Water Resources section)

Aquatic Resources

Since the streams on the parcel are seasonal, they are unlikely to support fish populations throughout the year. More suitable fish habitat was observed immediately upstream from the Gungy Road crossing. The stream in this area and lower sections (south of Gungy Road) is expected to support native brook trout, blacknose dace, longnose dace, white sucker, fallfish, and American eel. It is possible that warmwater species that have moved upstream from downstream ponded areas inhabit this stream reach. These fish would include: largemouth bass, golden shiners, bluegills, and pumpkinseeds.

Recommendations

1. Leave the beaver pond undisturbed. The town is considering draining the beaver pond and constructing a small pond in this area for swimming. The beaver pond in its present condition has created a large marsh wetland complex. This wetland in its

present condition serves to trap runoff from upstream sections of the watershed and control flood waters. Creating a pond in this area will be an expensive and major undertaking. Areas along the pond would have to be dredged which would require local inland wetland approval. Additionally, grading and clearing of trees in adjacent areas will disturb inland wetland soils and possible result in soil runoff and sedimentation.

2. Create a man-made pond for active and passive recreation on the parcel that will not involve the disturbance of existing wetlands. This is a more viable alternative than renovation of the beaver pond. If this alternative is pursued, the teams' fisheries biologist can provide technical assistance concerning appropriate fish stocking and pond management practices. He can be contacted at 295-9523.

9. State Park Planner Recreation Review

This handsome ±325 acre tract is located at the extreme northeastern corner of the town and has severe use limitations. Basically it consists either of:

1. rocky and often steeply sloping upland or

2. wetland, either stony or mucky in character. There are several pockets of sand/gravel soils along its western edge, most notably a small level area just to the north of the powerline (**A** on map).

Because of its isolated location within the town and especially because of its physical character, this property should not be considered for intensive development. Instead it should be managed primarily as a piece of bulk open space which adjoins the similarly steep and ledgy Nehantic State Forest and which together help to preserve a large wild area which is not conducive to development.

Utilizing the existing woods roads as a base, a system of hiking/cross country skiing and possibly equestrian trails could be developed, perhaps as part of a larger system encompassing the state forest also. The property may also be suitable for development of a youth group camp area in a secure location away from Gungy Road.

Reportedly the town of Lyme is considering a pond at the site of an old dam (**B** on map) along the brook draining the property. The site is feasible, especially if coupled with repair of the dike westerly of the dam proper. However the proposed pond area is underlain with muck, apparently at least 4-5 feet deep. Unless this material is excavated down to hardpan, any pond developed here is apt to be a shallow muck pond with little potential for swimming and of use only for wildlife and perhaps some fishing. However should such excavation be undertaken, a suitable spoil site will need to be provided, preferably in proximity to the pond site to minimize the cost of transport.

The watershed is largely undeveloped and, using an SCS standard of 1 1/2 acres of watershed / 1 acre foot of storage, should be able to provide 300-350 acre feet of potential storage in an impoundment. Therefore development of a pond of some size is hydrologically feasible.

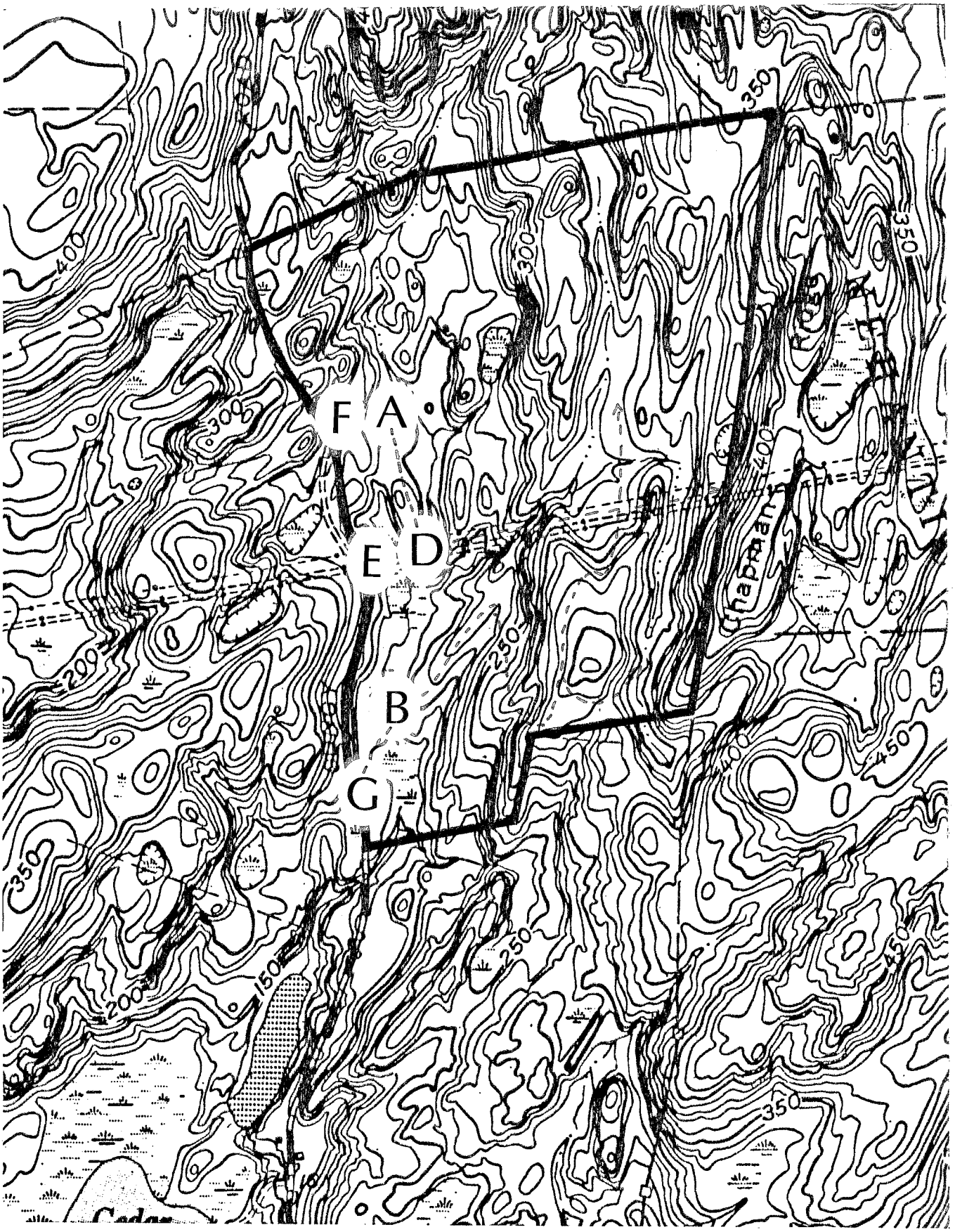
The brook feeding the proposed pond is a point of interest as the major water feature on the property, providing variety and scenery to the park. A tributary stream beneath the powerline also contains a handsome cascade (**C** on map).

The upland portion of the park shows evidence of motorbike use and abuse, especially along the powerline. As the brook has flooded the powerline maintenance road at point **D**, motorbikers have developed a bypass off Gungy Road to **A** and thence south around **D** and onto the powerline again. Both because the deed to the land prohibits such motorized use and because it is incompatible with its use as a park, effective management must include control of access. Stone walls and roadside post and cable fences generally block access off Gungy Road. However gaps exist at points **E** and **F**, the latter partially controlled by the moat-like conditions at point **D**. Therefore, it is strongly recommended that these gaps be blocked, perhaps with a gate at point **E**, installed cooperatively by the town of Lyme and Northeast Utilities.

A final consideration involves parking. Most of the road frontage along Gungy Road is too steep or rough to permit development of an off road parking lot. The best location is the relatively level roadside area (**G** on map) which fortunately is at the start of the main access route into the park and in proximity to the proposed pond. This should be the entry into the park and should involve a small unpaved roadside lot for ready police surveillance at night and with a gate to prevent vehicular access beyond the parking lot.

Recreation Review Map

Scale 1" = 1000'



10. Planning Review

Location

The undeveloped parcel of land that is being reviewed lies in the NE corner of the Town of Lyme on Gungy Road bordering Salem to the north and East Lyme to the east. The zoning district in which the parcel lies is zoned RU-80 in Lyme bordered by RU-A (2 acre) in Salem. This rural large lot zoning along with restrictive permitted uses should adequately safeguard the parcel from imcompatible neighboring land use. The Chapman Ridge line (East Lyme open space) abuts the Hartman parcel to the east, bordered by the Nehantic State Forest further east. This location allows for continuation of trail systems into both neighboring town and state open space properties. Overhead power lines run through the property from east to west with a well defined trail in the utility easement. This trail is well used by motorcross riders who travel the power line easements.

Transporation

The parcel is accessed from Gungy Road which is a main arterial town road which runs in a north/south direction for 1.87 miles between Beaver Brook Road and Route 82 in the Town of Salem. The site can be accessed easily from all parts of the limited road network in the Town of Lyme. Presently the site is undeveloped, although an informal trail network traverses the property. Current parking is limited to the cleared entrance access to the main trail right off Gungy Road. Abandoned cars are scattered throughout the trail in various forms of disassembly. From a regional vantage point the site is within close proximity to the growing residential corridor of Route 82 in Salem, which has seen a spurt of development recently partially due to the anticipated extension of the Route 11 expressway connecting I-95 to Route 2 in Colchester.

Population Growth

The Town of Lyme's population growth has historically been one of the slowest in the Connecticut River Estuary planning region. In the 1950-60 decade, Lyme increased its population rate by 38%. In the 1960-70 decade, the rate dropped to 25%. During the 1970-80 decade the growth rate dropped still further to 18%. The 1986 population estimate for Lyme from the Department of Health (DOH) statistics was 1860 for a growth rate of 12% from 1980-86. The 1964 Plan of Development was based on an estimated town population in 1990 of 5,000 people. Accurate projections of future population growth are quite difficult to make. The factors which affect population growth are both economic and sociological. The number of housing units built is greatly influenced by the regional economy, price of land and current mortgage rates. The birth rate and family size is determined largely by society's attitude towards having children. The 1970's and early 1980's was a time of high interest rates and low birth rates which was a factor in the slowing of the population growth. In the past few years, lower interest rates have once again stimulated new construction and led to a building boom all along the northeast corridor. During the past few decades, the town of Lyme has been largely dependent upon in-migration for their population growth. The median age of the town residents is currently 38.3 years which is well above the median age of the State which is 34.4. Connecticut is ranked third behind New Jersey and Florida for the highest median age in the country. Because of Lyme's smaller and older population base, Lyme can expect to continue to experience its population growth through in-migration. The future rate of growth will depend upon various planning policies and decisions which influence in-migration, i.e., transportation and accessibility, property values, housing availability, labor markets. Population estimates for the Estuary Region were prepared for CRERPA in 1988. The projections used a cohort-survivor method to track specific age groups as they move from one time period to another (5 year intervals). A table for the Town of Lyme has been included primarily based upon the population migration rates for each age group.

Table 3

	1980	1985	1990	1995	2000	2005	2010
Age Group							
0-4 years	103	116	131	148	167	190	217
5-19 years	345	323	336	405	460	515	581
20-34 years	384	407	432	434	401	422	498
35-64 years	688	786	851	907	1030	1130	1138
65+ years	302	261	430	474	501	517	575
Total	1822	1893	2180	2368	2559	2774	3009

Age - Sex Characteristics

The age distribution of a town shapes the town's needs and general interests. The educational, social and recreational needs will be different for a town comprised mostly of young adults and children than for a town where a large number of its citizens are retired or facing retirement. The 1980 Census showed that there were more men than women living in the Town of Lyme. Roughly 51% of the total population was male. A table has been developed based on the 1980 Census which shows the population characteristics for the Town of Lyme.

Table 4

Ages	Female	Male
0-14 years (children	138	167
15-24 years (school-age, young workers)	108	129
25-44 years (prime workers)	246	268
45-64 years (mature workers)	217	235
65+	398	139

The current school enrollment figures also reveal some interesting trends. The records show a high enrollment figure of 25 Lyme students in the third grade and a total of only 8 students in the 9th grade. This may be a result of Lyme students

of High School age either attending local private day schools, technical schools or boarding schools.

Almost 64% of Lyme men over the age of 15 were married, less than 1% were separated from their wives, 28% were single, 4% divorced and 3% were widowed. On the other side 66% of the Lyme women over age 15 were married, just over 1% were separated from their spouse, 8% were divorced, 18% were single and 9% were widowed. The statistics were derived from the 1980 Census results.

Recreational Preference of Citizens

In the 1964 Plan of Development a citizen survey was distributed to 405 households, roughly 90% of the residents. Opinions concerning recreational needs for the Town is indicated in the following table:

Table 5

Favoring	Percent
More beach facilities	30
More boat landings	25
More swimming	24
More athletic facilities	18

A recent 1989 citizen survey was distributed to a random sample of 287 Lyme households (40% of Town) with a response rate of 62%. Some of the questions were directed towards recreation facilities in the Town. The majority (65%) of the households polled felt there were adequate recreational facilities for the foreseeable future. Areas available for passive recreation such as nature trails, outdoor environmental education facilities were felt to be very important by 50% of the respondents, while only 255 felt that area for active recreation facilities for athletics should be made available. A question was asked "What recreation facilities should be considered for implementation over the next 20 years." The answers are arranged in the following order of preference:

Table 6

Category	Number	Percent
Swimming areas/Pools	34	14
Hiking/Walking/Nature trails	29	12
Tennis courts	27	11
None	23	9
Develop Hartman Park	17	7
Park/Playground	16	7
Access for boating	12	5
Baseball/softball field	10	4
Rec./Comm. Center	10	4
Skating/Hockey rink	6	2
Cross country	5	2
Misc.	13	5
N/A	43	18

The Connecticut Statewide Comprehensive Outdoor Recreation Plan 1987 -1992 (SCORP) initiated a citizen survey in 1985 to gain insight about preferences and priorities for outdoor recreation and open space among state residents. Responses from the Estuary Region were disaggregated from the statewide poll of 5,000 Connecticut residents. The following abridged list shows the relative importance of various activities which the Estuary Region citizens felt the Town Government should provide. The ranking is based on a list of 59 categories.

Table 7

	Rank
Preserve open space	1
Protect natural beauty	2
Swimming areas	3
Ice skating	4
Playgrounds	5
Tennis	6
Interpretive services	10
Hiking	11
Walking	13
Cross country skiing	27
Archery	44
Hunting	47
Biking trails	48

The SCORP Plan found that the Estuary Region residents placed a great deal of importance on Town sponsored ice skating facilities in relation to other Planning Regions. The Estuary Region respondents also attached a special degree of importance to the role the private sector should play in preserving the nature beauty of the area.

The Hartmans had expressed interest in having the land set aside for a combination of passive and active recreational activities (hiking, cross country skiing, playground equipment, tennis courts and baseball diamonds), however, based on the above cited opinion surveys and site characteristics, it would seem appropriate at the present time to maintain the region in the natural state for educational programs and upgrade the trail systems for hiking, skiing and trail riding.

Open Space

The Town of Lyme is very fortunate that it lies in a planning region which has a large amount of land (11%) held in open space. According to the State SCORP 1987-1992 Plan, present Regional Municipal ownership of open space (excluding the

Hartman gift) accounts for .7% of the Regional land area which is an average rate for towns in the 5,000-10,000 population range. The Town of Lyme presently (including the Hartman gift) has 366 acres of municipally owned open space, which accounts fo 1.7% of the Town land area. The State DEP owns 2848 acres in Lyme accounting for 13.4% of the public land in Lyme. Using current CRERPA land use data and 1986 DOH population figures for the Town of Lyme, there are .46 persons per acre of public/private open space in Lyme. This ratio is by far the lowest in the region and well below the statewide figure of 5.92 persons per acre of open space. The SCORP Plan had projected a ratio of .80 persons per acre of open space in the year 2000 (based on 1985 figures). The same projection for statewide figures indicate that in the year 2000 there will be 13.54 persons per acre of publicly owned space.

11. Archaeological Review

The parcel of land (Hartman Park) given to the Town of Lyme along Gungy Road has a series of historic structures associated with the early occupation of Lyme. These historic structures, located north and south of the existing power lines, consist of houses barns root cellars, pounds, and walling. These features may date to the mid-to-late 19th century. In addition, an early 19th century cemetery (ca. 1800-1830) was located on a knoll overlooking the brook and the beaver dam (See Map).

The cemetery consists of head and foot stones made of locally available field stones. They are not inscribed and are, in some cases, only a few inches above the ground surface. This type of ancient burying ground is usually associated with slaves, poor farming families, and historic Native Americans. In any case, the ancient burying ground is a sacred site and could not be moved without permission from the Connecticut General Assembly.

The houses, barn, cellar and pound ruins should be maintained for their historic integrity. These structures can provide an important source of information on the earlier inhabitants of Lyme, especially, the poorly known lower socio-economic status of black and/or Indian residents.

The Office of State Archaeology strongly recommends to the Town of Lyme that the areas of the cemetery and historic structures be maintained for passive recreation (i.e., hiking, camping, picnicking) and avoid any landscaping or destruction of these cultural resources.

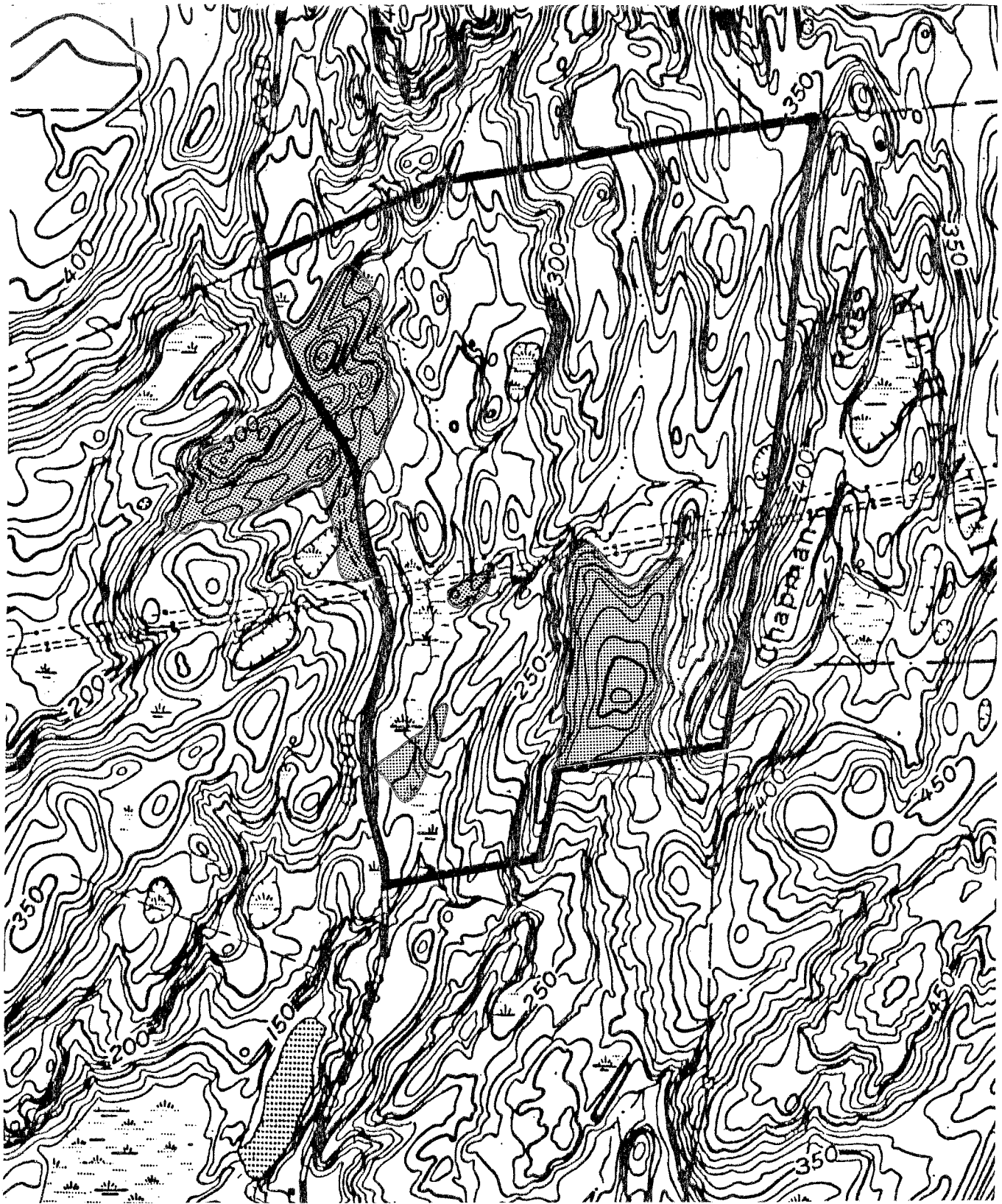
The Office of State Archaeology is prepared to work with the Town of Lyme in an effort to avoid any ruination of these historic properties.

In summary, the park facility has important historic stone structures associated with the early farming history of the Town of Lyme and an early 19th century burying ground. All feasible efforts should made to avoid impact on these cultural resources.

Historic preservation is in the interest of the people of Lyme and the State of Connecticut.

Areas of Archaeological Significance

Scale 1" = 1000'



ABOUT THE TEAM

The Eastern Connecticut Environmental Review Team (ERT) is a group of professionals in environmental fields drawn together from a varety of federal, state and regional agencies. Specialists on the Team include geologists, biologists, foresters, soil specialists, engineers and planners. The ERT operates with state funding under the supervision of the Eastern Connecticut Resource Conservation and Development (RC&D) Area — an 86 town region.

The services of the Team are 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, landfills, commercial and industrial developments, sand and gravel excavations, 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 official 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 and the ERT Coordinator. A request form should be completely filled out and should include the required materials. 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 and request forms regarding the Environmental Review Team please contact the ERT Coordinator: **203-345-3977, Eastern Connecticut RC&D Area, P.O. Box 70, Haddam, Connecticut 06438.**