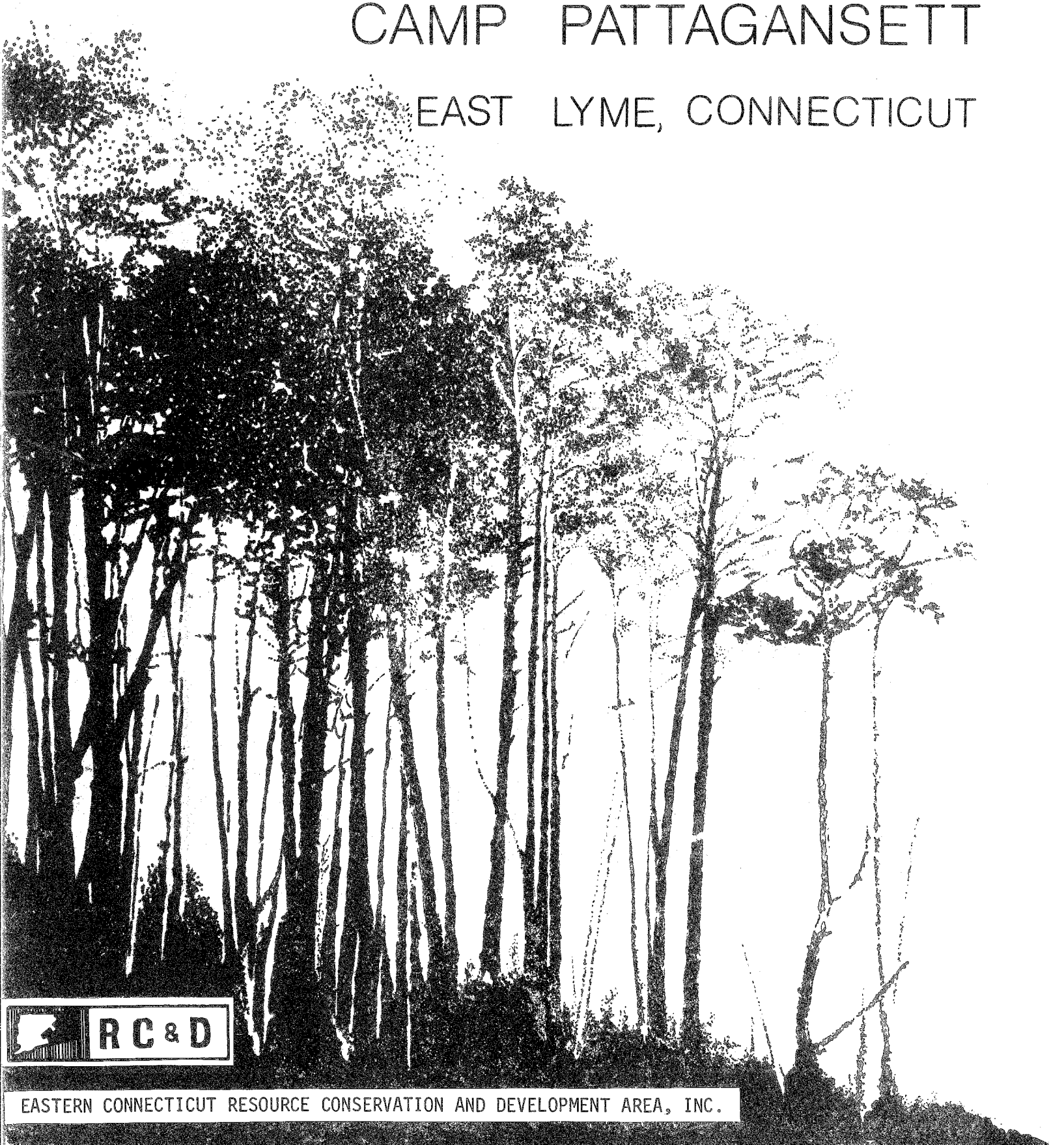
Environmental Review Team Report

CAMP PATTAGANSETT

EAST LYME, CONNECTICUT



RC&D

EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT AREA, INC.

Environmental Review Team Report

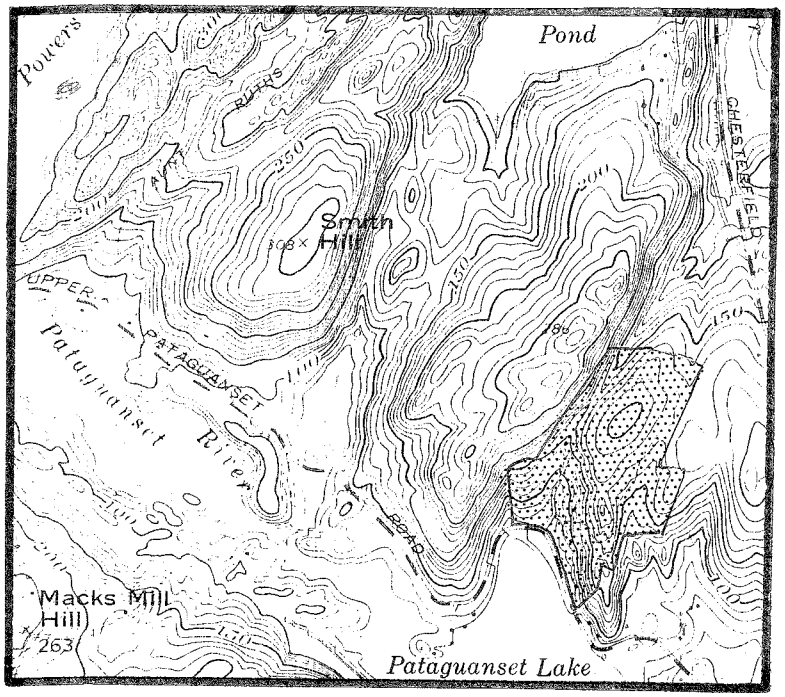
CAMP PATTAGANSETT

EAST LYME, CONNECTICUT

JULY 1985

Eastern Connecticut Resource Conservation & Development Area

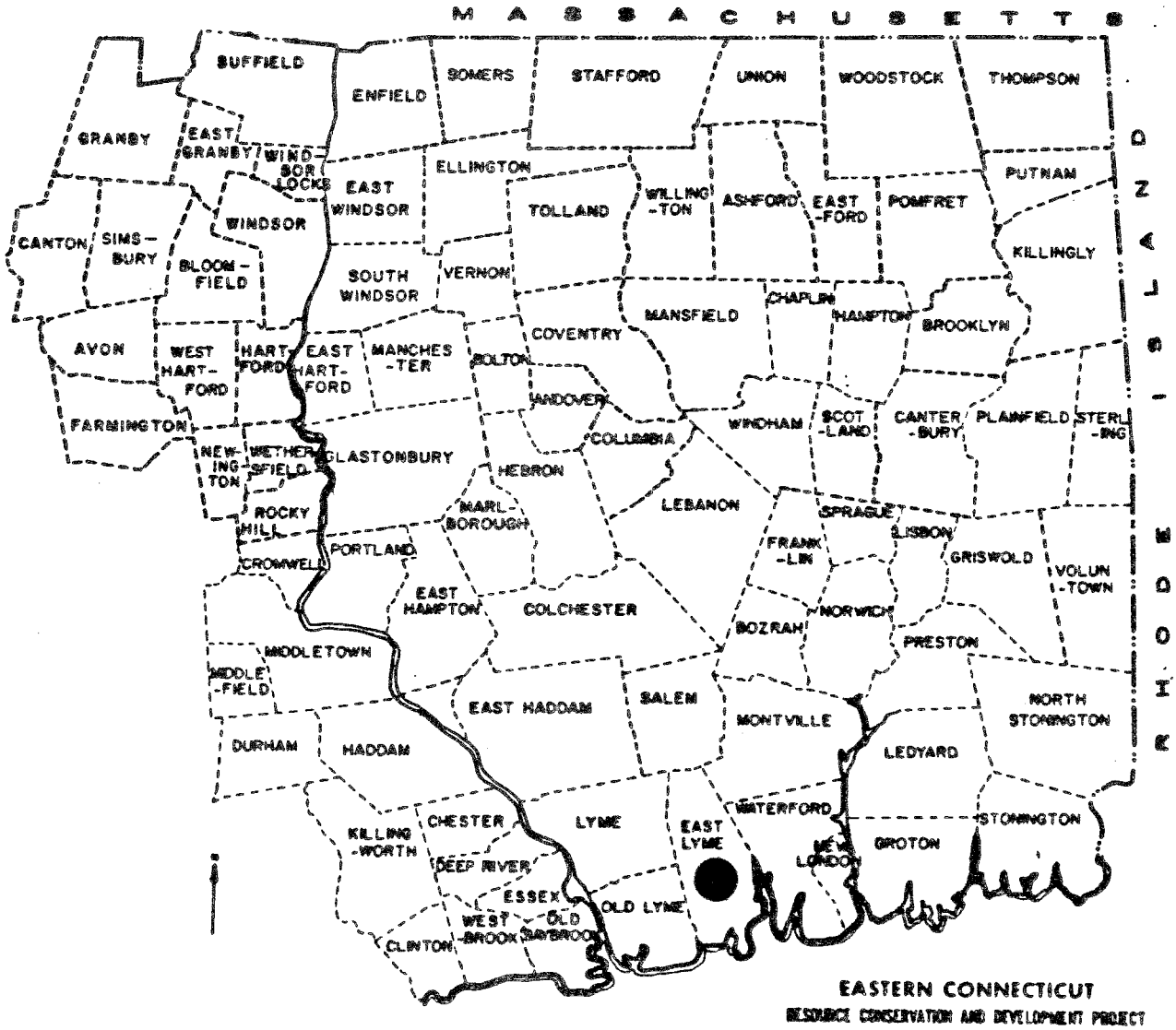
Environmental Review Team
PO Box 198
Brooklyn, Connecticut 06234



Location of Study Site

CAMP PATTAGANSETT

EAST LYME, CONNECTICUT



ENVIRONMENTAL REVIEW TEAM REPORT ON
CAMP PATTAGANSETT
EAST LYME, CONNECTICUT

This report is an outgrowth of a request from the First Selectman of East Lyme and the Connecticut Trails Council of Girl Scouts 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 Executive Committee 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, June 4, 1985. Team members participating on this review included:

Joseph Hickey	- Recreation Planner	- DEP, Parks and Recreation
Pete Merrill	- Forester	- Department of Environmental Protection
Elizabeth Rogers	- Soil Conservationist	- U.S.D.A., Soil Conservation Service
Bill Warzecha	- Geologist	- DEP, Natural Resources Center
Judy Wilson	- Wildlife Biologist	- Department of Environmental Protection

Prior to the review day, each team member received a summary of the Girl Scout's Council's concerns, a map with the layout of the camp, a topographic map and a soils map. The Team met with and were accompanied by Girl Scout officials. 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 supplying site designs or detailed solutions to development problems. The Team does not recommend what final action should be taken on a proposed project. The 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 Town and Council. The results of this Team action are oriented toward the development of better environmental quality and the long-term economics of land use.

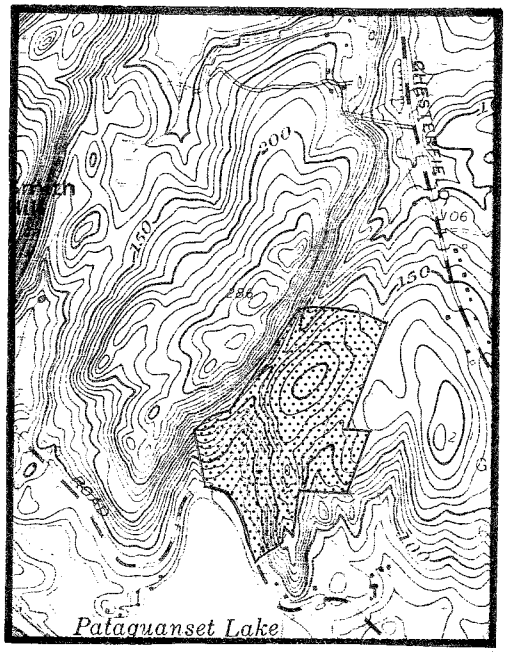
The Eastern Connecticut RC&D Project Committee hopes you will find this report of value and assistance in making your decisions on this particular site.

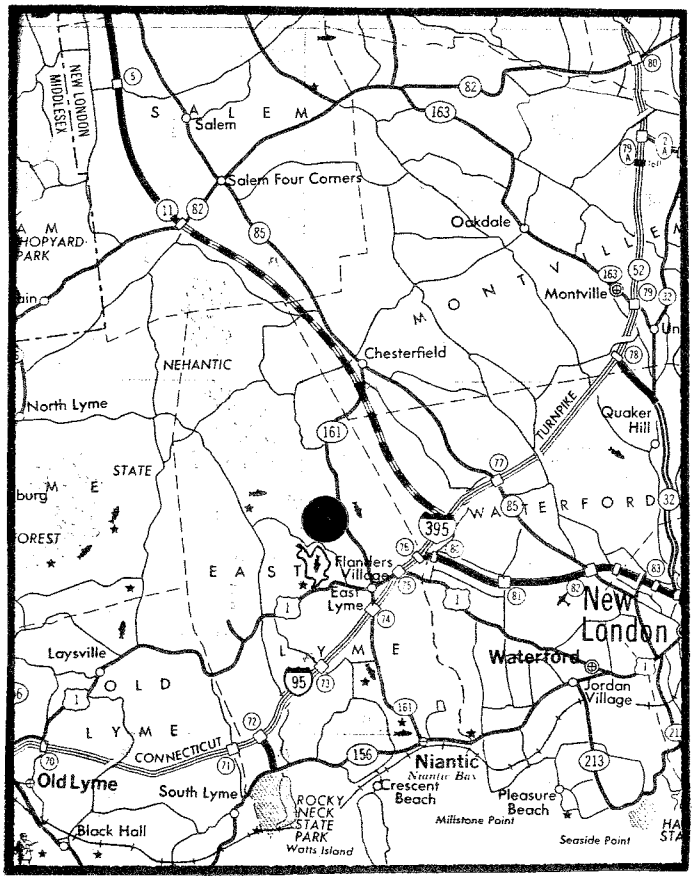
If you require any additional information, please contact: Ms. Elaine A. Sych, Environmental Review Team Coordinator, Eastern Connecticut RC&D Area, P.O. Box 198, Route 205, Brooklyn, Connecticut 06234, 774-1253.

LOCATION OF SITE

CAMP PATTAGANSETT

EAST LYME, CONNECTICUT





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I. INTRODUCTION

The Eastern Connecticut Environmental Review Team was asked to prepare a natural resource inventory and environmental assessment for Camp Pattagansett located in East Lyme. The camp is owned and operated by the Connecticut Trails Council of Girl Scouts.

Camp Pattagansett is approximately 87 acres in size and is located in the eastcentral part of East Lyme on Upper Pattagansett Road. Lake Pattagansett lies southwest of camp, and on it's north shore there is a beach and dock area for Girl Scout use. The property was formerly a resident camp, but since 1974 it has been used primarily as a summer day camp, and for weekend camping year round. The camp contains numerous buildings, camp sites with tent platforms, several fields and a blazed trail around the periphery of the camp.

The topography consists of moderately to steeply rolling upland with generally well drained, although frequently stony soils. Bedrock outcrops are common. It is forested with stands of hardwoods mixed with stands of mountain laurel. Three small streams traverse the camp on their way to larger stream courses.

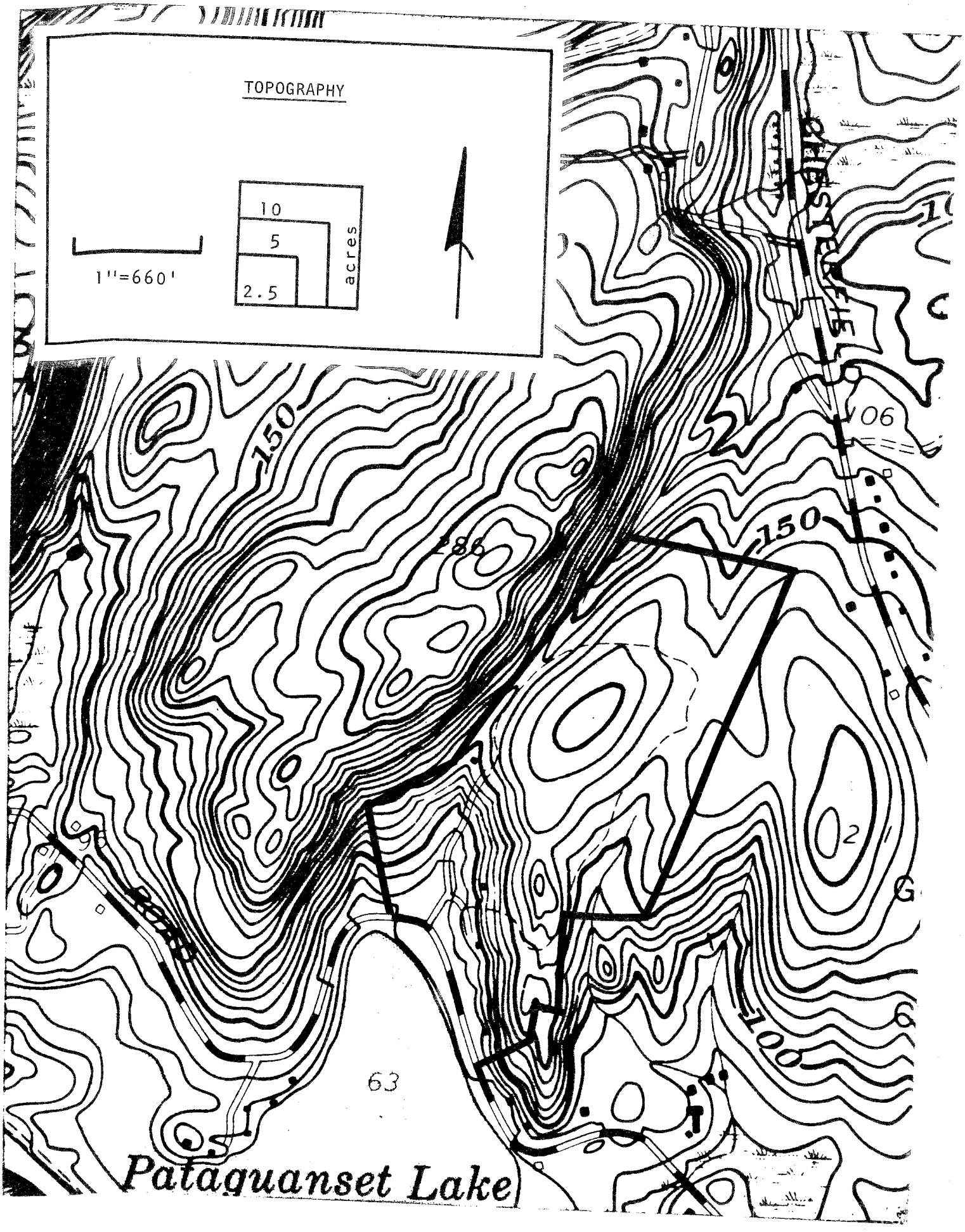
The Girl Scouts are seeking to develop a Master Plan for Camp Pattagansett, and to expand their program potential. They are seeking an evaluation and recommendations pertaining to the topography, geology, soil, wetlands, woodlands, wildlife. Other concerns were soil erosion and compaction on service roads and camp sites, encroachment from development and problems with lake eutrophication.

This information should help the Girl Scouts correct and modify present problems, as well as plan future use in an environmentally sound manner.

II. TOPOGRAPHY AND GEOLOGY

Camp Pattagansett is about 87 acres in size and is located in the eastcentral part of East Lyme. Lake Pattagansett lies southwest of the camp. The camp operates a bathing area for campers at the northern end of the lake. Some physical characteristics of the lake include the following: (1) surface area, 123 acres; (2) maximum depth, 34 feet; (3) mean depth, 12.4 feet; (4) volume, about 49.7 million gallons; and (5) drainage area, 3.91 square miles or about 2,500 acres.

The western and southern parts of the camp are dominated by a rough and rocky terrain, which contain moderate to very steep slopes. Two major ridgelines traverse these areas orientating themselves in a southwesterly and southerly direction, respectively. Each ridgeline contains striking outcrops and in places these outcrops are continuous. In many spots, the outcrops are precipitous and offer vantage points for other parts of the camp. The "Blue Trail" system, which circumvents the campgrounds, takes advantage of the ridgelines.


TOPOGRAPHY
1"=660'
10
5
2.5
acres
150
150
100
63
Pataguanset Lake

Gently to moderately sloping areas which also contain some flat areas prevail on the hill in the central parts of the camp as well as in the eastern parts.

Maximum and minimum elevations on the site are about 200 feet and 70 feet above mean sea level, respectively. At least three small streams, two of which flow in a northerly direction, and the other in a southerly direction, traverse the camp property enroute to larger streamcourses.

The site lies entirely within the Montville topographic quadrangle. A bedrock geologic map (GQ-609) and a surficial geologic map (GQ-140) for the quadrangle by Richard Goldsmith have been published by the U.S. Geological Survey.

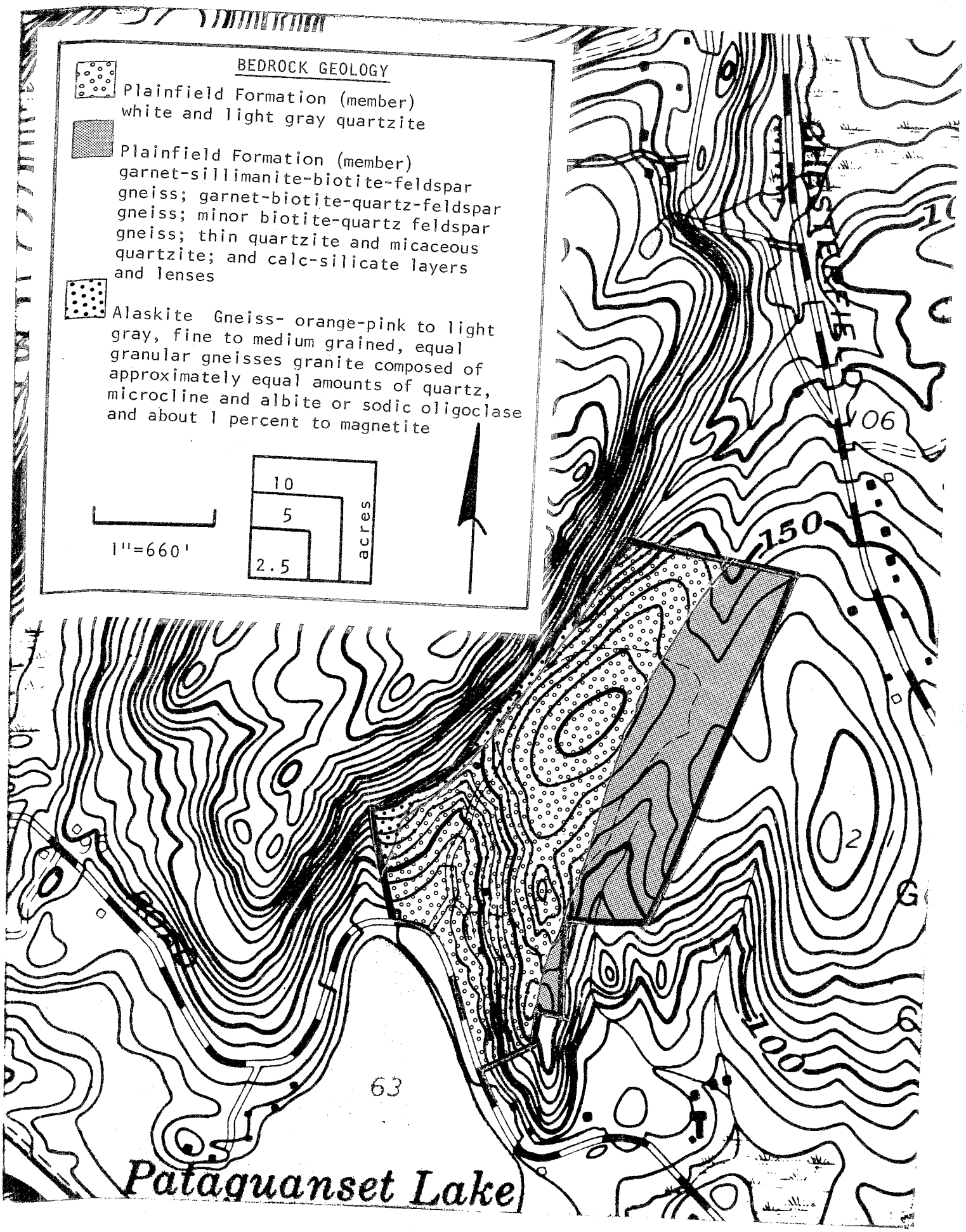
Three different rock types, an Alaskite gneiss and two subunits of the Plainfield Formation, comprise the bedrock underlying the site.

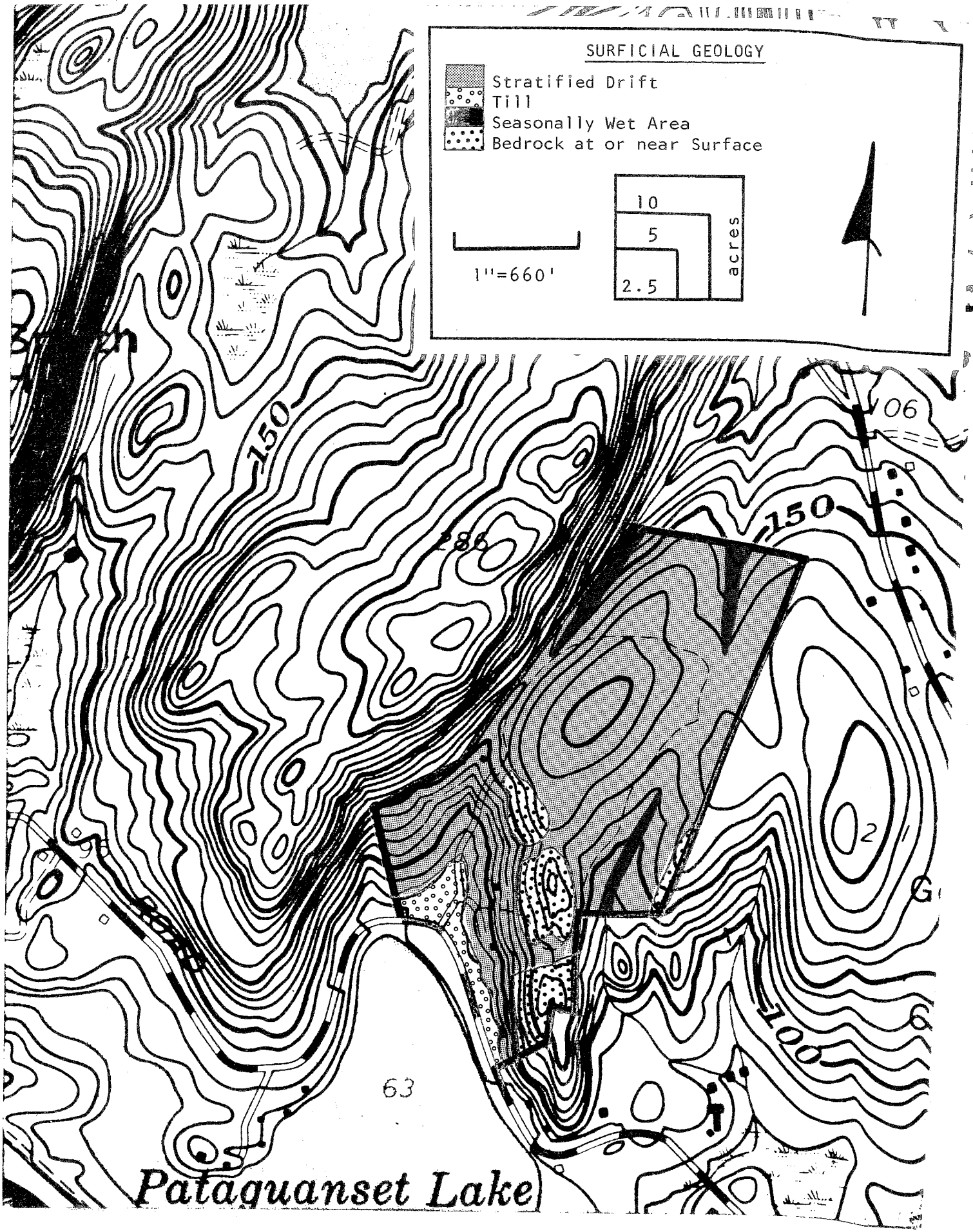
The most extensive rock type which underlies and/or breaks the ground surface in the central parts of the site is a member of the Plainfield Formation. These rocks consist mainly of white and light-gray quartzites. The term "quartzite" refers to a metamorphosed (process by which rocks have been geologically altered due to tremendous heat and pressure) sandstone which is composed primarily of the mineral quartz. These intensely folded rocks are very old--probably formed during the Cambrian geologic period 570-510 million years ago--and, as a result have a very long and complicated history.

The next most abundant rock type found in the camp is also a member of the Plainfield Formation. It underlies and/or outcrops throughout the eastern part of the camp. These rocks consist mainly of gneisses of varying composition but also includes layers of quartzite and calc-silicate rocks. "Gneisses" are also metamorphic rocks (geologically altered by great heat and pressure), but which characteristically contain alternating bands of elongate minerals and more rounded mineral. This mineral arrangement gives the "gneiss" rocks a banded appearance.

The final rock type, an Alaskite gneiss, found within the camp underlies the western edge of the campground. Goldsmith describes these rocks as an orange-pink to light-gray, fine to medium grained gneissic granite. The rock is composed mainly of the minerals quartz and feldspar, i.e. microcoline, albite and/or sodic oligiclase, but also contains the minerals biotite and magnetite. The term "Alaskite" preceding the word gneiss above refers to a rock which has a granitic (granite-like) composition; hence, rocks with a high percentage of light-colored minerals such as quartz and feldspar. Examples of this rock type are visable in a continuous outcrop along the western boundary and also comprise numerous surface boulders strewn throughout the western parts. These scattered boulders are mainly products of glaciation, which quarried and/or plucked them out of nearby outcrops. Geologists believe these rocks are of igneous origin. "Igneous" rocks are formed from the cooling of molten magma. As a result of subsequent periods of metamorphism following their formation, these rocks were changed from igneous rocks to the metamorphic rocks we see today.

Close examination of the bedrock outcrops within the camp may yield certain mineral treasures to ambitious rock hounds.


BEDROCK GEOLOGY
Plainfield Formation (member) white and light gray quartzite
Plainfield Formation (member) garnet-sillimanite-biotite-feldspar gneiss; garnet-biotite-quartz-feldspar gneiss; minor biotite-quartz feldspar gneiss; thin quartzite and micaceous quartzite; and calc-silicate layers and lenses
Alaskite Gneiss- orange-pink to light gray, fine to medium grained, equal granular gneisses granite composed of approximately equal amounts of quartz, microcline and albite or sodic oligoclase and about 1 percent to magnetite
1"=660'
10
5
2.5
acres
150
100
63
Pataguanset Lake


SURFICIAL GEOLOGY
Stratified Drift
Till
Seasonally Wet Area
Bedrock at or near Surface
1"=660'
10
5
2.5
acres
150
150
100
63
Pataguanset Lake

A bedrock map showing the distribution of the various rock types within the camp and a description of each rock type is included with this report.

Overlying bedrock throughout most of the camp is a generally thin blanket (less than 10 feet thick) of unconsolidated sediments of glacial origin. As the glacier 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. Because the till on the site is relatively thin, it is probably sandy and very stony. Numerous surface boulders are visible throughout the camp. It should be pointed out that deeper pockets of till may have been deposited in the basins adjoining ridges and knobs of rock within the camp. This deposit covers nearly all of the camp except in the northern parts near the entrance of the camp where deposits 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. Based on visual inspection of this area, sand and gravel has been excavated probably for local fill and/or road base material for the camp.

Seasonally wet areas parallel the intermittent streamcourses within the camp.

III. HYDROLOGY

The northern half of Camp Pattagansett lies within the watershed area of an unnamed tributary to Latimer Brook. A "watershed" may be defined as the area that includes all land from which runoff ultimately drains into a streamcourse, river, lake, etc. The stream originates in the western parts of the camp and flows northward towards Chesterfield Road (Route 161) ultimately discharging into Latimer Brook. Latimer Brook ultimately empties into the Niantic River.

Surface runoff in the southern half of the camp can be divided into two drainage areas: (1) drainage emanating from the western portions flows southward via topographic swales directly into Pattagansett Lake, and (2) drainage from the eastern portion flows to a small unnamed stream, which feeds an unnamed tributary to Pattagansett River. Pattagansett River ultimately empties into Long Island Sound (See Drainage Area Map).

There are no particularly significant groundwater supply sources (aquifers) on the site. Bedrock is the most important local aquifer. Bedrock is ordinarily capable of yielding small but reliable yields of groundwater. A survey of selected bedrock-based wells in southeastern Connecticut indicated that 90 percent of the wells were able to supply 3 gallons per minute or more of groundwater.*

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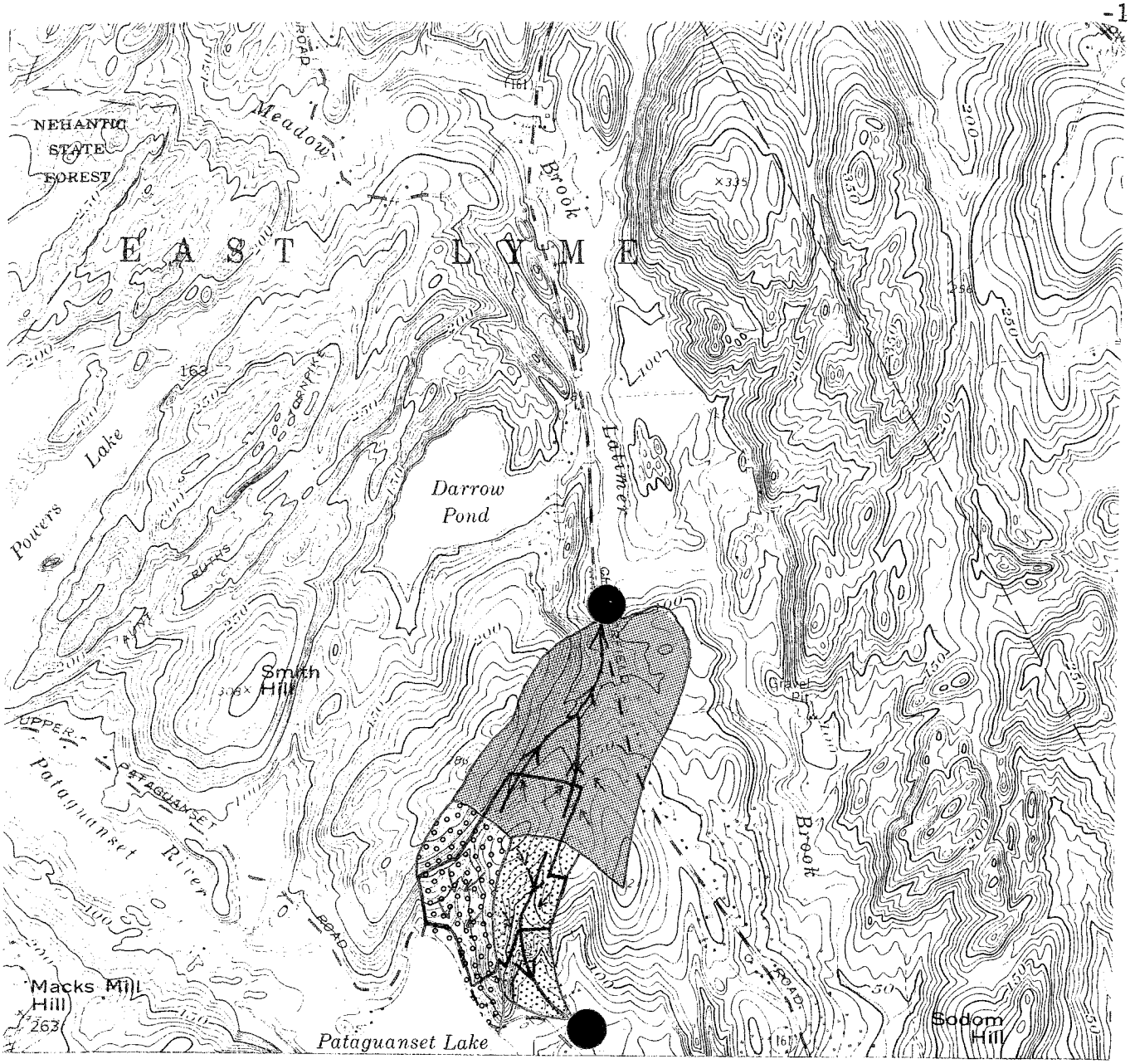
*Connecticut Water Resources Bulletin No. 15 Lower Thames and Southeastern Coastal River Basin.

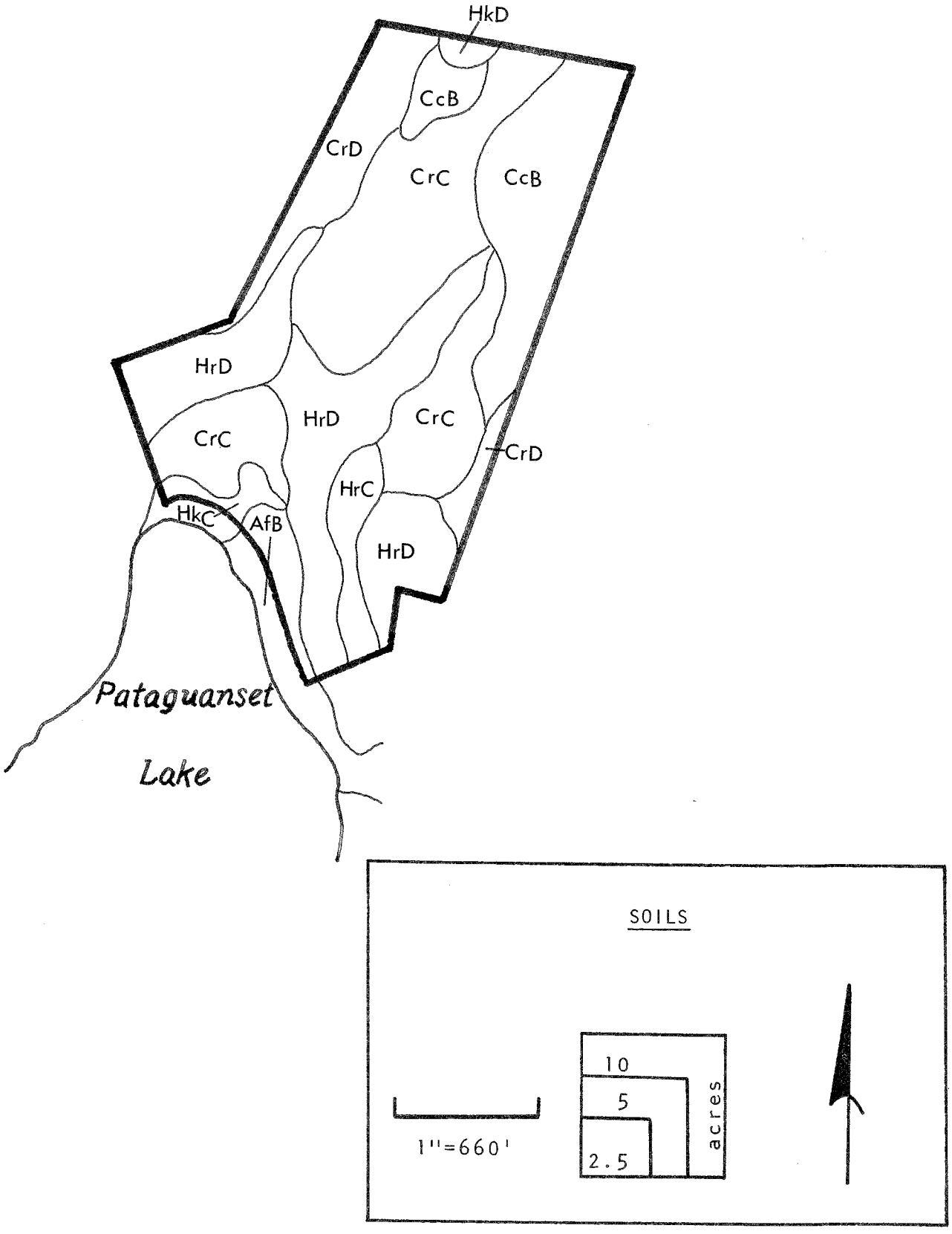


DRAINAGE AREA

- Site Boundary
- Design Points
- Watershed Boundary - unnamed stream which drains the northern part of the camp
- Watershed Boundary - unnamed stream which drains the southeast corner of the camp
- Portion of camp which drains directly to Lake Pattagansett
- Watercourses showing direction of flow
- Direction of surface flow

Scale: 1" = 2000'

*Soil boundary lines were derived from a smaller scale map and should not be viewed as precise boundaries but rather as a guide to the distribution of soils on the property.



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

These soils in this complex are not suited to cultivated crops. Stoniness and the Rock outcrop make the use of farming equipment impractical. The hazard of erosion is severe. These soils in this complex are in capability subclass VIIs.

HkD-Hinckley gravelly sandy loam, 15 to 35 percent slopes. This moderately steep and steep, excessively drained soil is on stream terraces, outwahs plains, kames, and eskers. Permeability of the Hinckley soil is rapid in the surface layer and subsoil and very rapid in the substratum. The available water capacity is low. Runoff is very rapid. Hinckley soil warms up and dries out rapidly in the spring. It is strongly acid or medium acid. This soil is poorly suited to cultivated crops because of the steep slopes. Hinckley soil is droughty. The hazard of erosion is severe. This soil is in capability subclass VIIs.

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. This soil is capability subclass IIIw.

LAND AREA - CAMP PATTAGANSETT, EAST LYME, CONNECTICUT

SOIL LEGEND

AfB	Agawan fine sandy loam, 3 to 8 percent slopes.
CcB	Canton and Charlton very stony fine sandy loams, 3 to 8 percent slopes.
CrD	Charlton-Hollis fine sandy loams, very rocky, 15 to 45 percent slopes.
CrC	Charlton-Hollis fine sandy loams, very rocky, 3 to 15 percent slopes.
HrC	Hollis-Charlton-Rock outcrop complex, 3 to 15 percent slopes.
HkC	Hinckley gravelly sandy loam, 3 to 15 percent slopes.
HrD	Hollis-Charlton-Rock outcrop complex, 15 to 45 percent slopes.
HkD	Hinckley gravelly sandy loam, 15 to 35 percent slopes.
Rc*	Raypol silt loam.

*Designated Inland Wetland Soil by Public Act 155.

B. SOILS DESCRIPTIONS

AfB-Agawam fine sandy loam, 3 to 8 percent slopes. This gently sloping, well drained soil is on stream terraces and outwash plains. Permeability of the Agawam 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. Unless limed, the soil is strongly acid or medium acid. This soil is well suited to cultivated crops. This soil is in capability subclass IIe.

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. These soils are in capability subclass VIs.

CrD-Charlton-Hollis fine sandy loams, very rocky, 15 to 45 percent slopes. This moderately steep to steep 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. Permeability of the Charlton soil is moderate or moderately rapid. The available water capacity is moderate. Runoff is rapid or very 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 rapid or very rapid. Hollis 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. Stoniness and rock outcrops make the use of farming equipment impractical. The Hollis soil has a shallow rooting depth and is droughty. These soils are in capability subclass VIIs.

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 sils 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.

These soils are not suited to cultivated crops. Stoniness and rock outcrops generally make the use of farming equipment impractical. The Hollis soil has a shallow rooting depth and is droughtly. The hazard of erosion is moderate to severe. These soils are in capability subclass VIs.

HrC-Hollis-Charlton-Rock outcrop complex, 3 to 15 percent slopes. This gently sloping to sloping complex consists of somewhat excessively drained and well drained soils and Rock outcrop on glacial till uplands. Stones and boulders cover 1 to 8 percent of the surface. The soils and Rock outcrop in 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 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.

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.

These soils are not suited to cultivated crops. Stoniness and the Rock outcrop make the use of farming equipment impractical. The hazard of erosion is moderate to severe. These soils are in capability subclass VIIs.

HkC-Hinckley gravelly sandy loam, 3 to 15 percent slopes. This gently sloping and sloping, excessively drained soil is on stream terraces, outwash plains, kames, and eskers. Permeability of the Hinckley soil is rapid in the surface layer and subsoil and very rapid in the substratum. The available water capacity is low. Runoff is medium or rapid. Hinckley soil warms up and dries out rapidly in the spring. Unless limed, it is strongly acid or medium acid. This soil is suited to cultivated crops. Hinckley soil is droughty, and irrigation is needed.

HrD-Hollis-Charlton-Rock outcrop complex, 15 to 45 percent slopes. This moderately steep to very steep complex consists of somewhat excessively drained and well drained soils and Rock outcrop on glacial till uplands. Stones and boulders cover 1 to 8 percent of the surface. These soils and Rock outcrop in this complex are so intermingled on the landscape that it was not practical to separate them in mapping at the scale used.

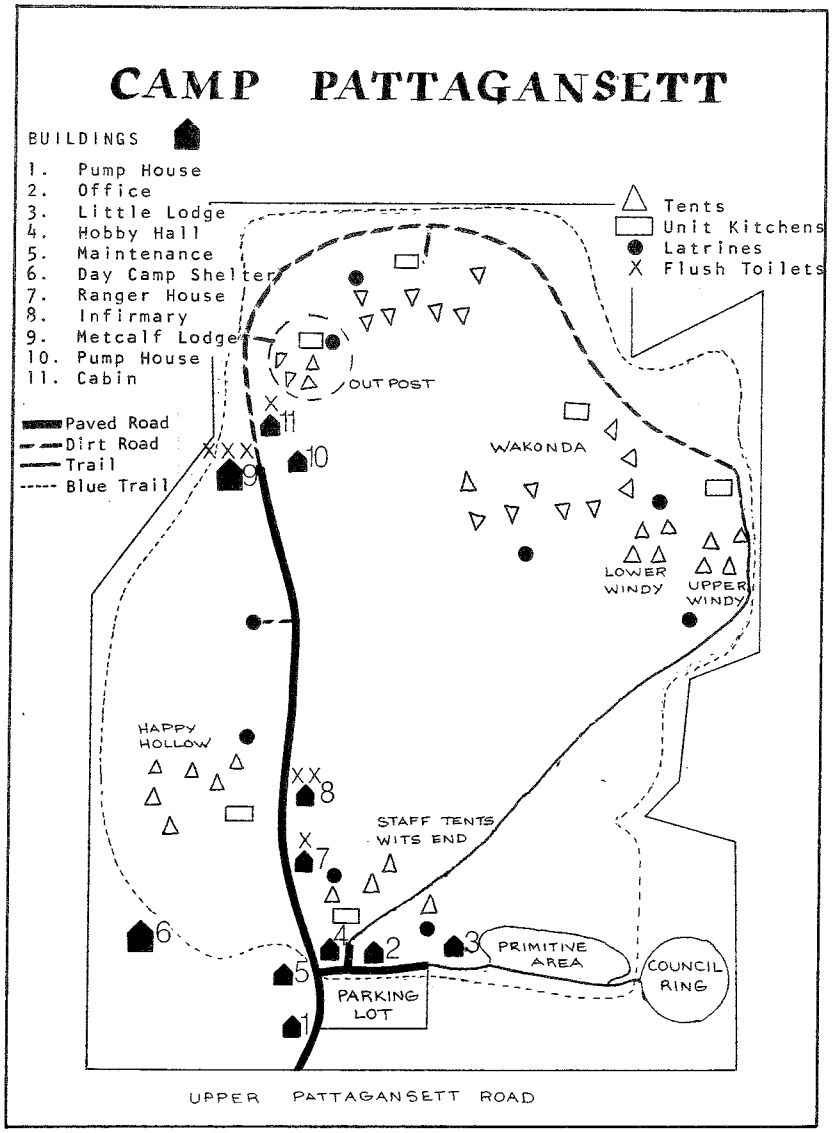
Permeability of the Hollis soil is moderate or moderately rapid above the bedrock. The available water capacity is low. Runoff is rapid or very rapid. Hollis soil warms up and dries out rapidly in the spring. It is strongly acid or medium acid.

SOILS LIMITATIONS CHART
FOR
CAMP PATTAGANSETT
UPPER PATTAGANSETT ROAD
EAST LYME, CONNECTICUT

Soil Symbol	Soil Name	Recreational Development: Limitations for Paths and Trails	Recreational Development: Limitations for Picnic Areas	Recreational Development: Limitations for Camp Areas
AfB	Agawam	Slight	Slight	Slight
CcB	Canton	Slight	Moderate: large stones	Moderate: large stones
CcB	Charlton	Slight	Moderate: slope, large stones	Moderate: slope, large stones
CrD	Charlton	Moderate: slope	Severe: slope, large stones	Severe: large stones, stones
CrD	Hollis	Slight	Severe: depth to rock	Severe: depth to rock
CrC	Charlton	Slight	Moderate: slope, large stones	Moderate: slope, large stones
CrC	Hollis	Moderate: slope	Severe: depth to rock	Severe: slope, depth to rock
HrC	Hollis	Slight	Severe: depth to rock	Severe: depth to rock
HkC	Hinckley	Slight	Severe: small stones	Severe: small stones
HrD	Hollis	Moderate: slope	Severe: slope, depth to rock	Severe: slope, depth to rock

Soil Symbol	Soil Name	Recreational Development: Limitations for Paths and Trails	Recreational Development: Limitations for Picnic Areas	Recreational Development: Limitations for Camp Areas
HrD	Charlton	Moderate: slope	Severe: slope	Severe: slope
HkD	Hinckley	Slight	Severe: small stones	Severe: small stones
Rc*	Raypol	Severe: wetness	Severe: wetness	Severe: wetness

*Rc is a designated wetland regulated under P.A. 155.



NOT TO SCALE

V. RECREATION PLANNING CONCERNS

A. BACKGROUND

This 87 acre tract basically consists of moderately to steeply rolling upland with generally well drained although frequently stony soils. Bedrock outcrops are also common. The property also contains some beachfront on the lake across Upper Patagansett Road.

It is nearly entirely forested with an almost pure hardwood cover mixed with stands of mountain laurel. With the exception of a few old field cedars, no native conifers are evident. Two small clearings have been developed just off Upper Pattagansett Road for softball, volleyball, etc., and the generally rough topography and stoniness of the soil pretty well rules out development of further clearings for field games.

The property was formerly used as a residential camp, but since 1974 it has been used primarily as a summer day camp for 120-150 children daily. However, weekend camping is done both in summer and winter, using the various tent platforms and buildings available.

In addition to the developed facilities of the camp (buildings, tent platforms, fields), the property also features a blue blazed loop trail running around the periphery of the tract.

B. PROBLEMS

Girl Scout representatives cited the following problems:
1. Some erosion on service roads and trails.
2. Some soil compaction in camping areas.
3. Weed and organic accumulation problems in beach area.

In addition, the ERT Team noted probable boundary line problems at the northern and southwestern bounds of the camp. At the north end either the perimeter trail strays onto private land or cutting on adjacent private property has encroached into Scout property. At the southwest boundary, it appears that the perimeter trail goes into private property on which a home has recently been built.

C. RECOMMENDATIONS

1. Following the Forester's suggestion, the gravel service roads should be graded properly with a crown to prevent erosion. However, there is no adequate supply of gravel on site and any additional needed gravel will need to be purchased.

2. Campsite compaction cannot be handled by rotation of use, as all camping areas are actively used in season and topography rules out large scale development of substitute sites. However, it may be possible to develop several new sites and use of wood chips as ground cover on compacted sites may be a palliative. It is suggested that Northeast Utilities be contacted to provide such chips as a public relations gesture.

3. The beachfront problem will require substantial attention to provide a usable and attractive beach. Whenever the lake can be drawn down substantially, weeds, organics and sediments should be removed to a depth of 5-6 feet, if possible. Information obtained subsequent to the field inspection indicates that DEP owns the dam and water rights. Also, the pond can reportedly be drawn down up to 6 feet. Thus, there should be no legal or physical constraints on drawing down the pond to a level which would make such beach reclamation feasible. However, the same source (Tom Smith of DEP) did say that Pattagansett Lake is also used for racing crew practice and any drawdown would have to be coordinated with them so as not to conflict with their training schedule. As there is a good sand base at the beach, no new sanding should be needed following reclamation. Also, regular drawdown of the lake in the winter is recommended to forestall future weed growth in the shallows. Some manual raking also will be needed periodically, as floating organic materials seem to collect on a portion of the camp's waterfront.

4. To correct encroachment problems, the Girl Scouts are urged to pin down their northern and southwestern boundaries and to relocate their perimeter trail inside said boundaries if necessary.

5. In future years, development of surrounding private land may occur. In such an event, it may be desirable to relocate at least portions of the present perimeter trail in from the boundary to maintain its present wild character and to lessen interaction with neighbors.

VI. VEGETATION

A. FOREST COVER TYPES

The camp area can be broken down into three general forest cover types.

Area #1 (See Vegetation Map) This is a steep easterly facing slope along the westerly side of the property. There are many outcroppings of ledge but most of the area is not that droughty. The overstory is mostly 8-14 inch oaks (white, black, and some scarlet) and pignut hickory. Near the bottom of the slope more of the oak is red oak. There is also a scattering of black birch, especially near the north end of the area and at least one butternut tree was noted.

There is an intermediate level of vegetation which is mostly flowering dogwood with some black birch, red maple, and hickory saplings. The understory is quite light, mostly viburnums (arrow-wood and mapleleaf).

Area #2 This is the most northern portion of the lot. The area slopes gently to the northwest and northeast. The overstory trees are generally larger than in Area #1 with some trees of 16 and 18 inches in diameter. There is less white and scarlet oak but more red maple and black birch than in Stand #1. There is also some hemlock and American beech.

The intermediate canopy level has a few flowering dogwood, but more saplings of hop-hornbeam, black birch, American beech, and red maple are present. The understory is dominated by mountain laurel.

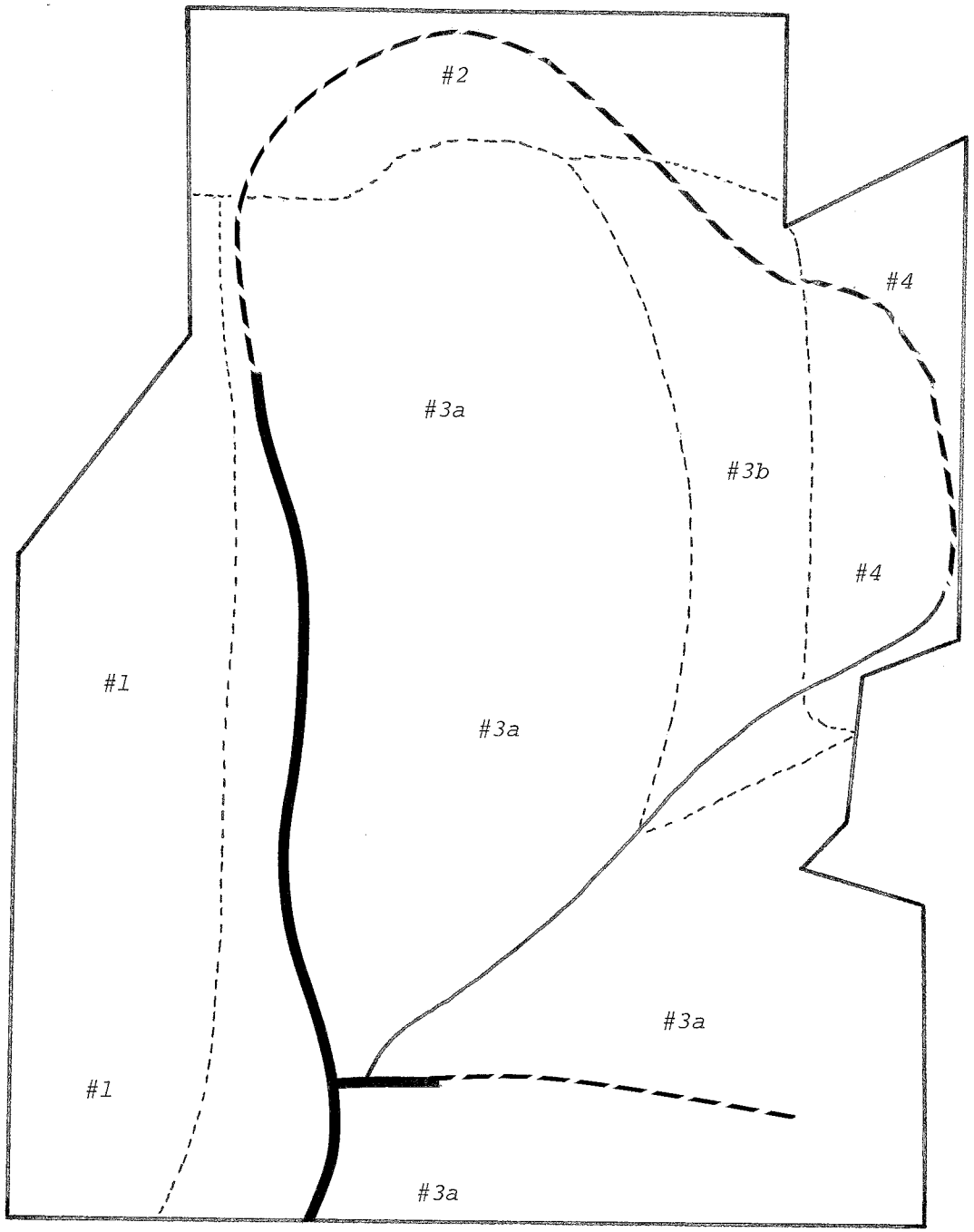
Area #3a This is higher, rocky ground with some exposed ledge. The trees are smaller and somewhat stunted especially near the exposed bedrock areas. There is very little white oak. Most of the oak is either scarlet or black oak with black birch, American beech, and red maple being common. Most of the intermediate canopy is hop-hornbeam and floering dogwood with some saplings of black birch, American beech, and red maple. The understory in this section of Area #3 is pretty well dominated by mountain laurel. In the open patches the viburnum (mapleleaf and arrow-wood) are the most prevalent woody shrubs.

Area #3b This is similar to Area #3a except the soil is deeper and the trees are larger. The overstory species are esentially the same. The intermediate level is the same with flowering dogwood being more prevalent. The biggest change is in the lack of mountain laurel in the understory. The understory appears very light with a light covering of viburnums.

CAMP PATTAGANSETT

VEGETATION

------- *FOREST TYPE BOUNDARY*



UPPER PATTAGANSETT ROAD

Area #4 This is a rather steep southeast facing slope. The overstory has a high percentage of pignut hickory with black and scarlet oak and some black birch. The intermediate stand is a rather dense stand of flowering dogwood, much of which is dying. The area has a park-like appearance with the ground cover almost entirely with grasses, sedges, and wildflowers.

The whole camp area does not appear to be very much overstocked, although there are a few areas of high density. Cutting should be restricted to thinning a few of the co-dormant trees with narrow crowns and removal of dead and dying trees. The flowering dogwood appears to be declining due to the increased attack of the dogwood borer, but patches of it may be rejuvenated by removing all of the overstory to provide it with full sunlight. This will enhance the flowering and if individual stands die, the increased sunlight will encourage vigorous resprouting.

The most urgent need is to establish, mark, and maintain proper property boundaries. As more development and/or timber harvesting occurs on adjacent lands, these boundaries are going to be more important.

B. STATE LISTED RARITY

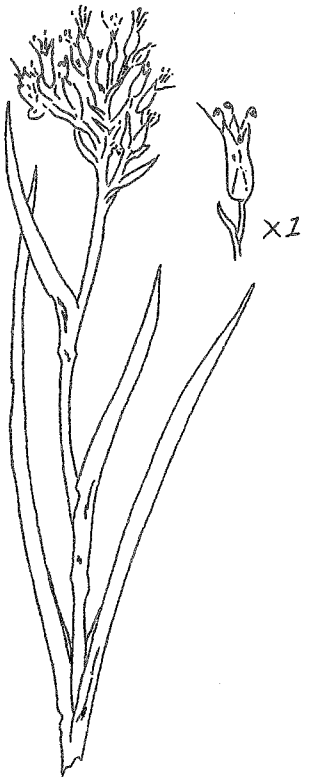
There are no extant populations of rare and endangered species located at Camp Pattagansett but there is one historic record. Lachnanthes Caroliana Ell.-Redroot--a state-listed rarity was collected from the margins of the Lake. This species is found at sandy and peaty shores and swamps. It is a more southern species and reaches its northern limits in Connecticut. It has not recently been observed at this site. Any questions should be directed to Nancy Murray at 566-3540, DEP, Natural Resource Center.

VII. WILDLIFE HABITAT

A. WILDLIFE MANAGEMENT PRINCIPLES

The presence of an 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.



REDROOT *(Lachnanthes caroliniana)*

This is a plant of sandy swamps and peat bogs, which gets its name from its bright red roots. It has a stem 1 to 2½ feet tall which is woolly toward the top; terminating in a dense and nearly flat-topped cluster of narrowly bell-shaped, dull yellow flowers which are about a half inch long. They are densely woolly outside but smooth within, and have 3 stamens which are longer than the corolla tube. The narrow grass-like leaves are in a basal cluster, with only a few small ones along the stem. It blooms between June and September in the coastal plain.

Range: Massachusetts and Delaware, south to Florida, and west to Texas.

Source: How to Recognize Wild Plants
William Carey Grimm
Castle Books, New York, 1968.

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 in 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 2% of an area should be kept in permanent grass/legume plots. Approximately 5% should be kept in early successional native vegetation.

B. MANAGEMENT/NON-ACTIVE MANAGEMENT

Camp Pattagansett directors should be 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 the area 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 usccession 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 vegetation 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.

C. 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 1 acre in size.

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

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 raccoons.

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.

VIII. SUMMARY OF MAJOR POINTS

TOPOGRAPHY AND GEOLOGY (SECTION II): The terrain of the camp consists of moderately to steeply rolling uplands with two major ridgelines that contain numerous rock outcrops. The beach area is located at the north end of Lake Pattagansett, which has a surface area of 123 acres.

The bedrock under the site is composed of three rock types, an Alaskite gneiss and two subunits of the Plainfield Formation. In areas where the bedrock is exposed, certain mineral "treasures" may be found.

Surficial geology consists of till, and near the entrance to the camp there are sand and gravel deposits.

HYDROLOGY (SECTION III): The northern half of the camp lies within the watershed area of an unnamed tributary to Latimer Brook. The southern half is divided into two drainage areas, one into Lake Pattagansett and the other into a small unnamed stream.

There are no particularly significant groundwater supply sources on the site.

There is a relatively high risk of groundwater pollution from wastewater discharges and septic effluent because of the thin soils.

SOILS (SECTION IV): Most of the soils located on the property have either slight to moderate limitations for trail development.

If trails are built, care should be taken to reduce erosion and runoff.

RECREATION PLANNING CONCERNS (SECTION V): The Camp offers a range of recreational activities and appears to be used pretty much to its capacity in terms of resource capability. Little, if any, additional developments seems needed or desirable. A number of simple corrective and maintenance issues are recommended.

VEGETATION (SECTION VI): The Camp can be broken down into three general forest types. It does not appear to be overstocked, so cutting should be restricted to thinning a few of the co-dormant trees with narrow crowns, and the removal of dead and dying trees.

A state listed rarity--Redroot--was found along the shores of the Lake, but has not recently been observed there.

There is an urgent need to establish, mark and maintain proper property boundaries.

WILDLIFE HABITAT (SECTION VII): At present, the Camp offers fair to good habitat for some species of wildlife. If properly managed, the area could support and attract a greater variety of wildlife, which would greatly increase people's enjoyment of the area.