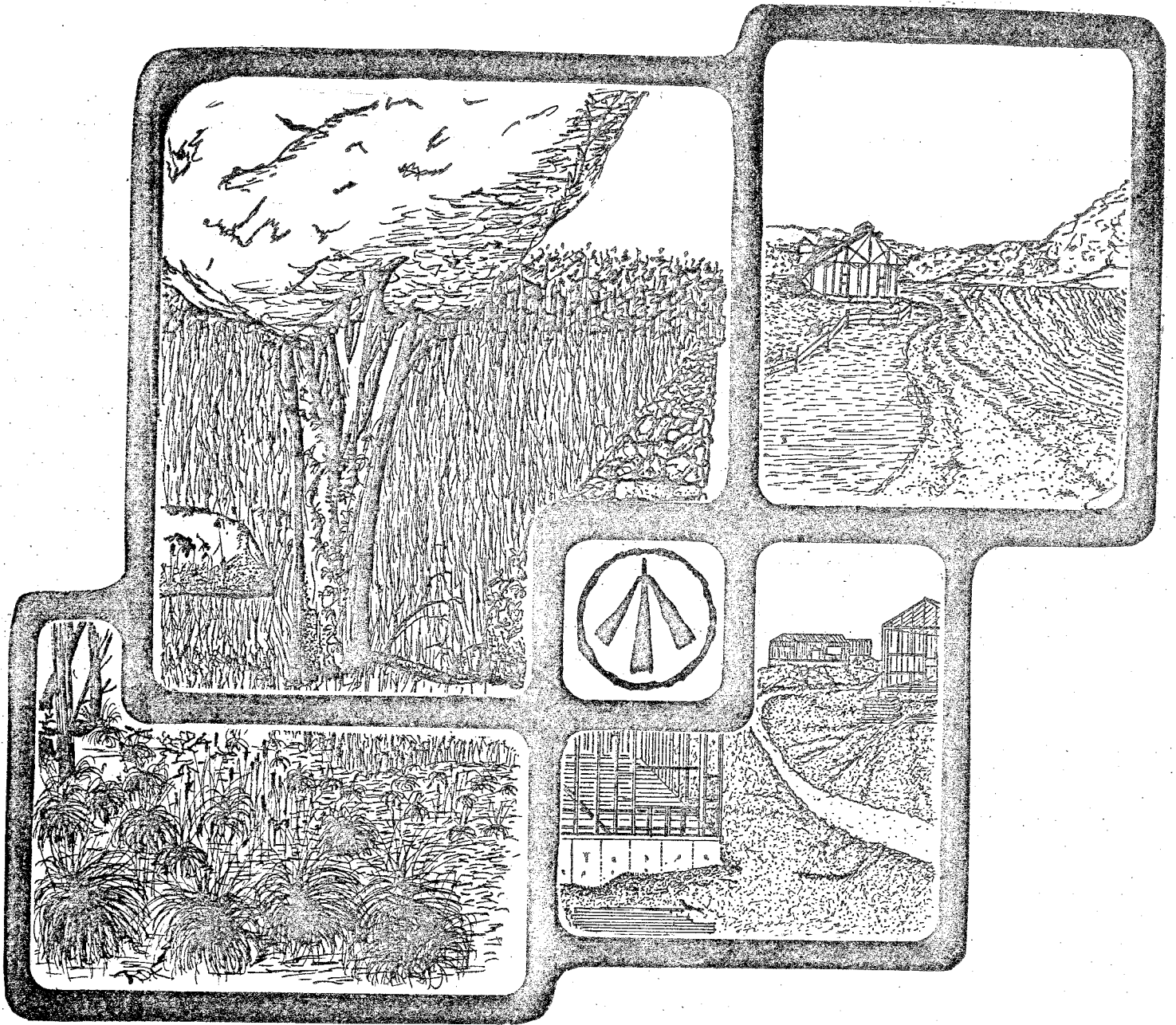


ENVIRONMENTAL REVIEW TEAM REPORT



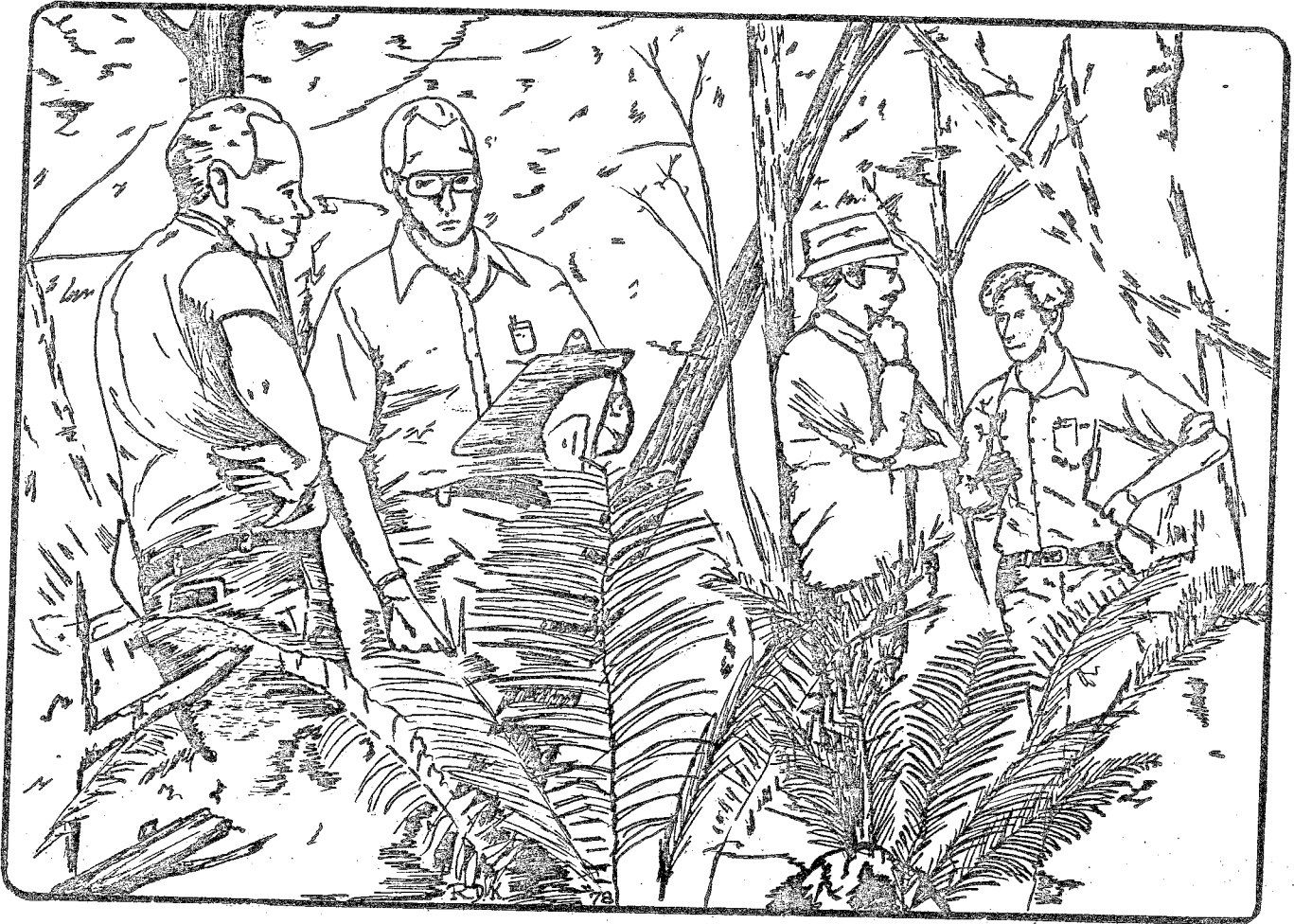
HOADLEY CREEK PROPERTY GUILFORD, CONNECTICUT

KING'S MARK
RESOURCE CONSERVATION & DEVELOPMENT AREA

KING'S MARK ENVIRONMENTAL REVIEW TEAM REPORT

ON

HOADLEY CREEK PROPERTY GUILFORD, CONNECTICUT



APRIL 1981

Kings Mark Resource Conservation and Development Area

Environmental Review Team

P.O. Box 30

Warren, Connecticut 06754

ACKNOWLEDGMENTS

The King's Mark Environmental Review Team operates through the cooperative effort of a number of agencies and organizations including:

Federal Agencies

U.S.D.A. SOIL CONSERVATION SERVICE

State Agencies

DEPARTMENT OF ENVIRONMENTAL PROTECTION

DEPARTMENT OF HEALTH

DEPARTMENT OF TRANSPORTATION

UNIVERSITY OF CONNECTICUT COOPERATIVE EXTENSION SERVICE

Local Groups and Agencies

LITCHFIELD COUNTY SOIL AND WATER CONSERVATION DISTRICT

NEW HAVEN COUNTY SOIL AND WATER CONSERVATION DISTRICT

HARTFORD COUNTY SOIL AND WATER CONSERVATION DISTRICT

FAIRFIELD COUNTY SOIL AND WATER CONSERVATION DISTRICT

NORTHWESTERN CONNECTICUT REGIONAL PLANNING AGENCY

VALLEY REGIONAL PLANNING AGENCY

LITCHFIELD HILLS REGIONAL PLANNING AGENCY

CENTRAL NAUGATUCK VALLEY REGIONAL PLANNING AGENCY

HOUSATONIC VALLEY COUNCIL OF ELECTED OFFICIALS

AMERICAN INDIAN ARCHAEOLOGICAL INSTITUTE

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ENVIRONMENTAL REVIEW TEAM REPORT
ON
HOADLEY CREEK PROPERTY
GUILFORD, CT.

I. INTRODUCTION

The Guilford Land Conservation Trust, Inc. is interested in purchasing about 90 acres of land along the Guilford/Branford town line. The subject site, known as the Hoadley Creek property, is almost entirely wooded and characterized by rugged uplands and wetlands (see Figure 1). Hoadley Creek is located along the eastern border of the property. Access to the property is available from the north off Moosehill Road and Granite Road.

The Land Trust is interested in purchasing the property to preserve the land in its natural state, and to link together two other open space parcels with trails. The two other parcels include a 310 acre open space parcel in Branford and the "Westwoods" tract to the east of the Hoadley Creek property.

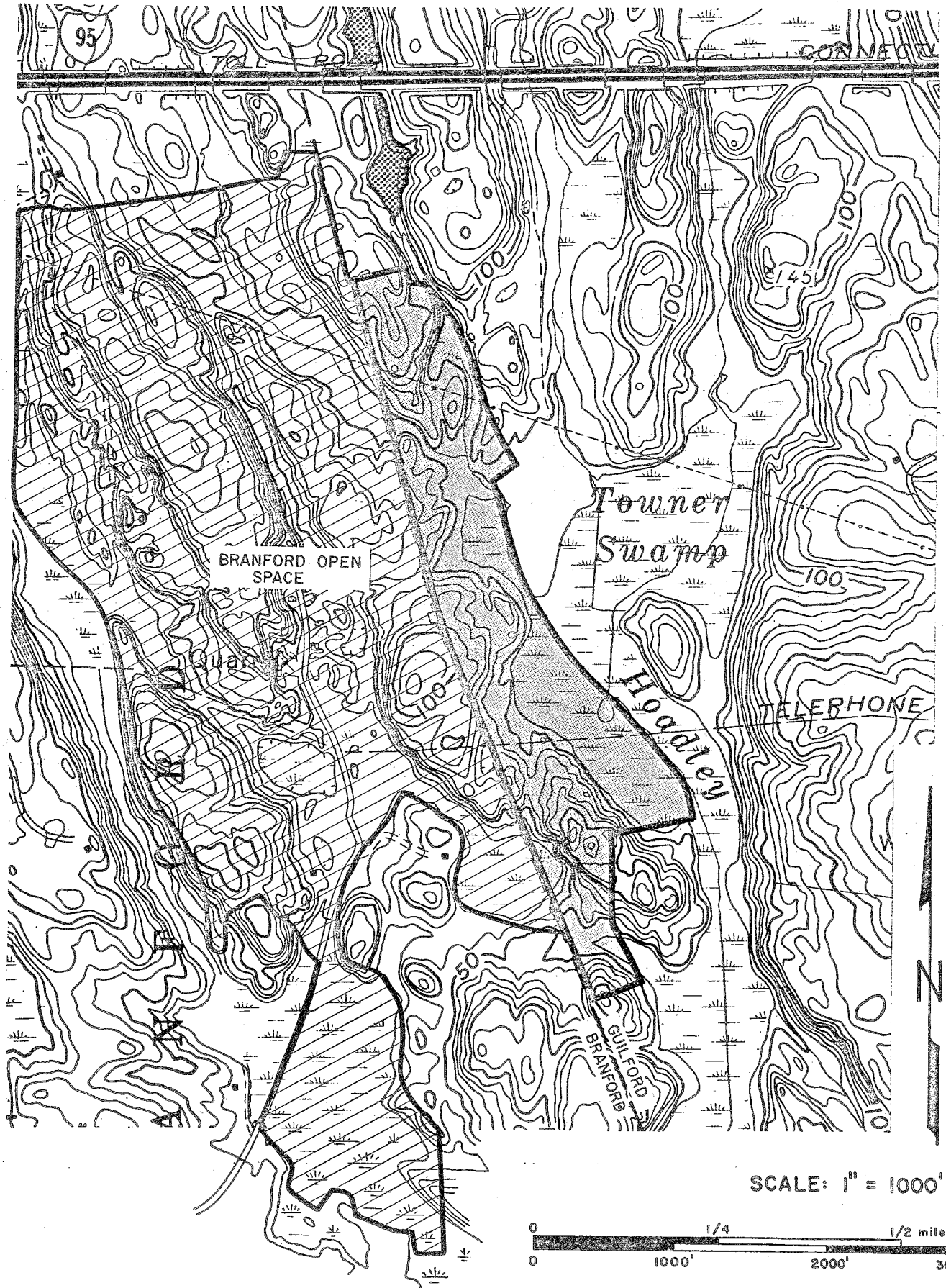
The Guilford Conservation Commission and the Guilford Land Conservation Trust, Inc. requested the assistance of the King's Mark Environmental Review Team to help them in better understanding the environmental characteristics of the Hoadley Creek Property. Specifically, the Team was asked to provide a natural resources inventory of the site and also to provide guidance on the potential for future use and management of the property.

The ERT met and field reviewed the site on February 11, 1981. Team members for this review consisted of the following:

Norris Andrews	Planner	Southcentral Connecticut Regional Planning Agency
Frank Indorf	District Conservationist	U.S.D.A. Soil Conservation Service
Chuck Phillips	Fisheries Biologist	Connecticut Department of Environmental Protection
Rob Rocks	Forester	Connecticut Department of Environmental Protection
Mike Zizka	Geohydrologist	Connecticut Department of Environmental Protection

Prior to the review day, each team member was provided with a summary of the project, a checklist of concerns to address, a detailed soil survey map, a soils limitation chart, and a topographic map of the property. Following the field review, individual reports were prepared by each team member and forwarded to the ERT Coordinator for compilation and editing into this final report.

FIGURE 1
TOPOGRAPHIC MAP



This report presents the team's findings. It is hoped the information contained in this report will assist the Town of Guilford and the Guilford Land Conservation Trust in making environmentally sound decisions.

If any additional information is required, please contact Richard Lynn, (868-7342), Environmental Review Team Coordinator, King's Mark RC&D Area, Sackett Hill Road, Warren, Connecticut 06754.

* * * * *

II. SUMMARY

- . The topography of the site is rugged and, at least in one area, may be unique in Connecticut. The gorge in the northeastern corner of the property is flanked by sheer walls of pink granite. The brook traversing this gorge disappears underneath piles of boulders in several places. These characteristics make the gorge seem like a smaller scale version of both the Flume and Lost River, two popular tourist attractions in New Hampshire's White Mountains. Near the southern end of the site is a tremendous accumulation of large boulders. It is possible to pass through spaces among the boulders, providing an interesting and enjoyable "caving" experience.
- . The wetlands in the Hoadley Creek watershed, most notably Towner Swamp, provide valuable ecological roles and hydrologic functions.
- . The ecological variation and natural beauty of this property greatly increase the value of constructing recreation trails on the property. However, the construction of these trails must be carefully planned to avoid or overcome the limitations posed by the naturally occurring soil types. The major soil limitations include steep slopes, stoniness, and wetness. An erosion and sediment control plan should be prepared and followed during trail construction.
- . The majority of the Hoadley Creek property is forested. It may be divided into seven general vegetation types including hardwood swamp, mixed hardwoods, softwoods/hardwoods, hemlock, mixed hardwoods/streambelt, old field/powerline, and open swamp. The diversity of vegetation types add to the overall pleasure and enjoyment one receives while hiking the property. Soil limitations (rockiness, steep slopes, wetness) reduce the potential for forest management of much of this site, however management of some stands is feasible, and desirable.
- . The property may be divided into five major wildlife habitat types. Acquisition of this property will help to ensure the continued utilization of this land by a wide variety of songbirds, mammals, reptiles, and amphibians. Wildlife habitat on the property can be further improved through manipulation of the vegetation to create more diversity. Such changes would result in increased use of the area by wildlife.
- . Hoadley Creek is limited in fishery potential by both its size and location. The watercourse would be expected to support redbin pickerel, brook trout, dace, and sunfish. The stream's prime value, however, lies in its visual aesthetics, particularly in the gorge area.
- . The proposed acquisition is in agreement with town, regional, and state plans. It is compatible with surrounding land use and would clearly fulfill a recreational need in the area.

III. GEOLOGY

Bedrock is clearly one of the most prominent features of the Hoadley Creek property. Virtually all of the highland areas consist of bedrock outcrops or very thinly covered rock. No bedrock data specific to the Guilford topographic quadrangle has been published to date, but a preliminary bedrock map and report for the quadrangle were prepared by Stanley Bernold. They are on file at the DEP's Natural Resources Center in Hartford. Bernold classified the bedrock on all but about eight acres at the southern tip of the site as part of the Mamacoke Formation. Named for a rocky island off the west bank of Thames River in Waterford, the Mamacoke Formation normally consists of biotite schist and gneiss, quartzite, amphibolite, and/or other metamorphic rocks. However, in this portion of Guilford and in nearby sections of Branford, the "normal" rocks have been replaced almost entirely by pink biotite granite. The granite crystallized from molten material (magma) that permeated the fractures of the older rocks of the Mamacoke and surrounding formations. Bernold believes that the magma was derived from the older rocks themselves as they partially melted during a period of severe deformational stresses. It also is possible, however, that the magma rose up into the older rocks from deep within the earth's crust. In either case, the granite has overwhelmed the "normal" rocks to the extent that schists and gneisses are generally observed on the site only as scattered lenses or discontinuous thin layers within the imposing walls and ridges of granite.

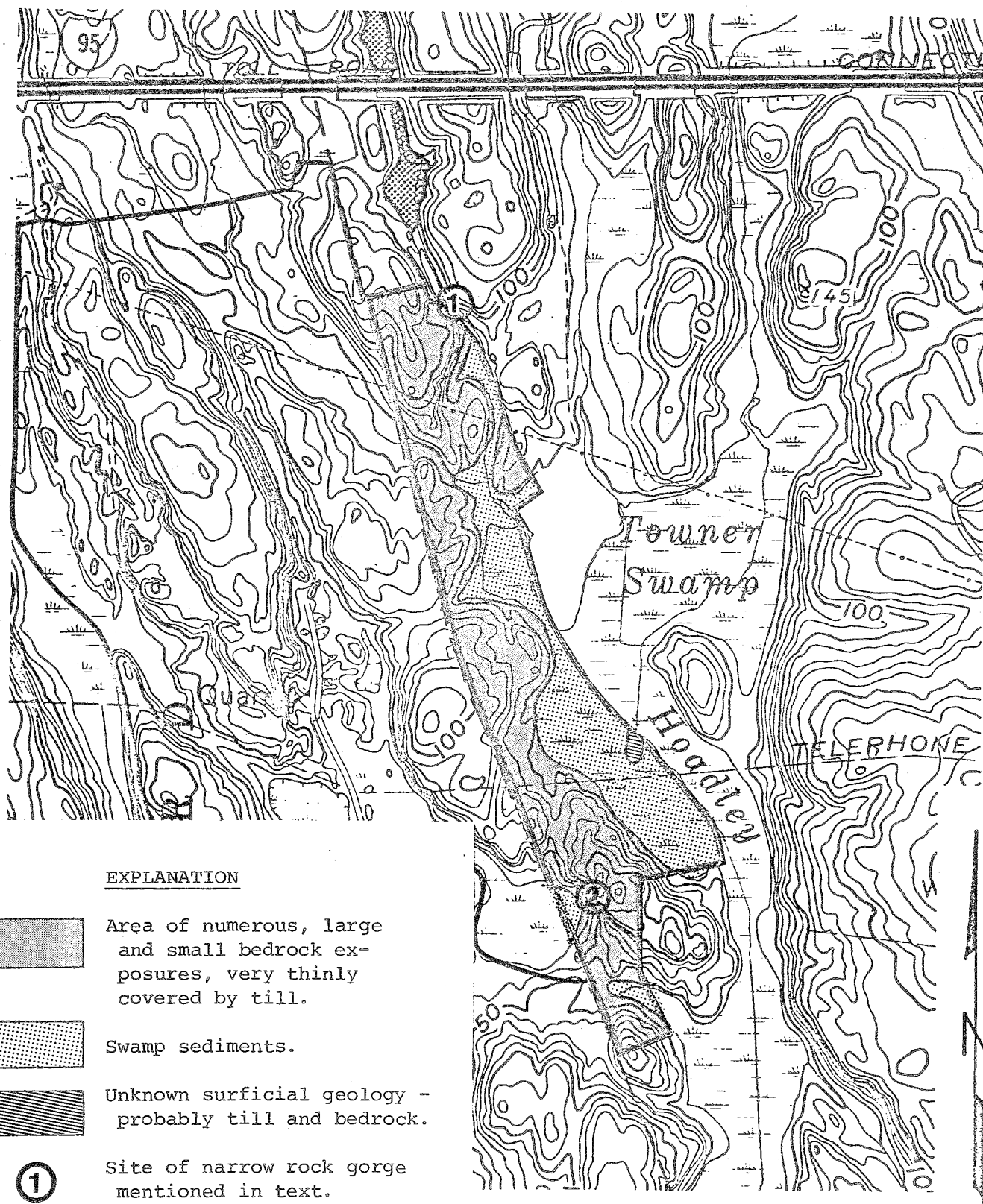
The topography of the site is rugged and, at least in one area, may be unique in Connecticut. Along the northernmost portion of the eastern boundary of the property, a narrow gorge is flanked by sheer walls of pink granite. A brook traverses the gorge, disappearing underneath piles of boulders in several places. These characteristics make the gorge seem like a smaller-scale version of both the Flume and Lost River, two popular tourist attractions in New Hampshire's White Mountains. Near the southern end of the site is a tremendous accumulation of boulders. Several of the boulders are the size of a room or even a small house. It is possible to pass through spaces among the boulders, providing an interesting and enjoyable "caving" experience.

The topography of the site may be explained in part by the fracture patterns in the local bedrock. Although other orientations exist, most of the fractures in the granite appear to be either near-vertical or near-horizontal. This has created large blocks of granite which, over time, have fallen by gravity, been "quarried" by glacier ice, or moved relative to one another by faulting. The gorge described above may have resulted from the downdropping of a block of granite between two vertical faults, or it may be the product of selective glacial quarrying. The quarrying theory has been used previously to explain the existence of other long, narrow valleys in the Guilford area, such as the one north of Indian Cove.

Differential weathering and erosion may also have played an important part in the shaping of the local landscape. The granite bedrock is more resistant to physical processes of breakdown than the older schists of the Mamacoke Formation. The low-lying, swampy areas of the site may represent sections of the older bedrock that were not as thoroughly invaded by granite as the higher areas. In the time following the emplacement of

FIGURE 2

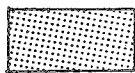
SURFICIAL GEOLOGY



EXPLANATION



Area of numerous, large and small bedrock exposures, very thinly covered by till.



Swamp sediments.



Unknown surficial geology - probably till and bedrock.

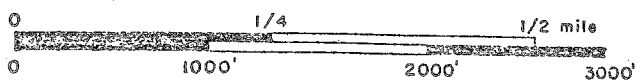
①

Site of narrow rock gorge mentioned in text.

②

Site of large boulder accumulation mentioned in text.

SCALE: 1" = 1000'



granite, the older rocks were progressively eroded while the granite remained relatively (not completely) unscathed.

The overburden on the site is thin and discontinuous. Most is of glacial origin and was deposited directly from an ice sheet. Such sediments are known as till. Till contains rock particles that range in size from clay to boulders. The particles are mixed in varying proportions. In the swamps, thick accumulations of clay, silt, sand, and decayed organic matter overlie till, bedrock, or possibly sandy and gravelly sediments. A surficial geologic map of the property is presented in Figure 2.

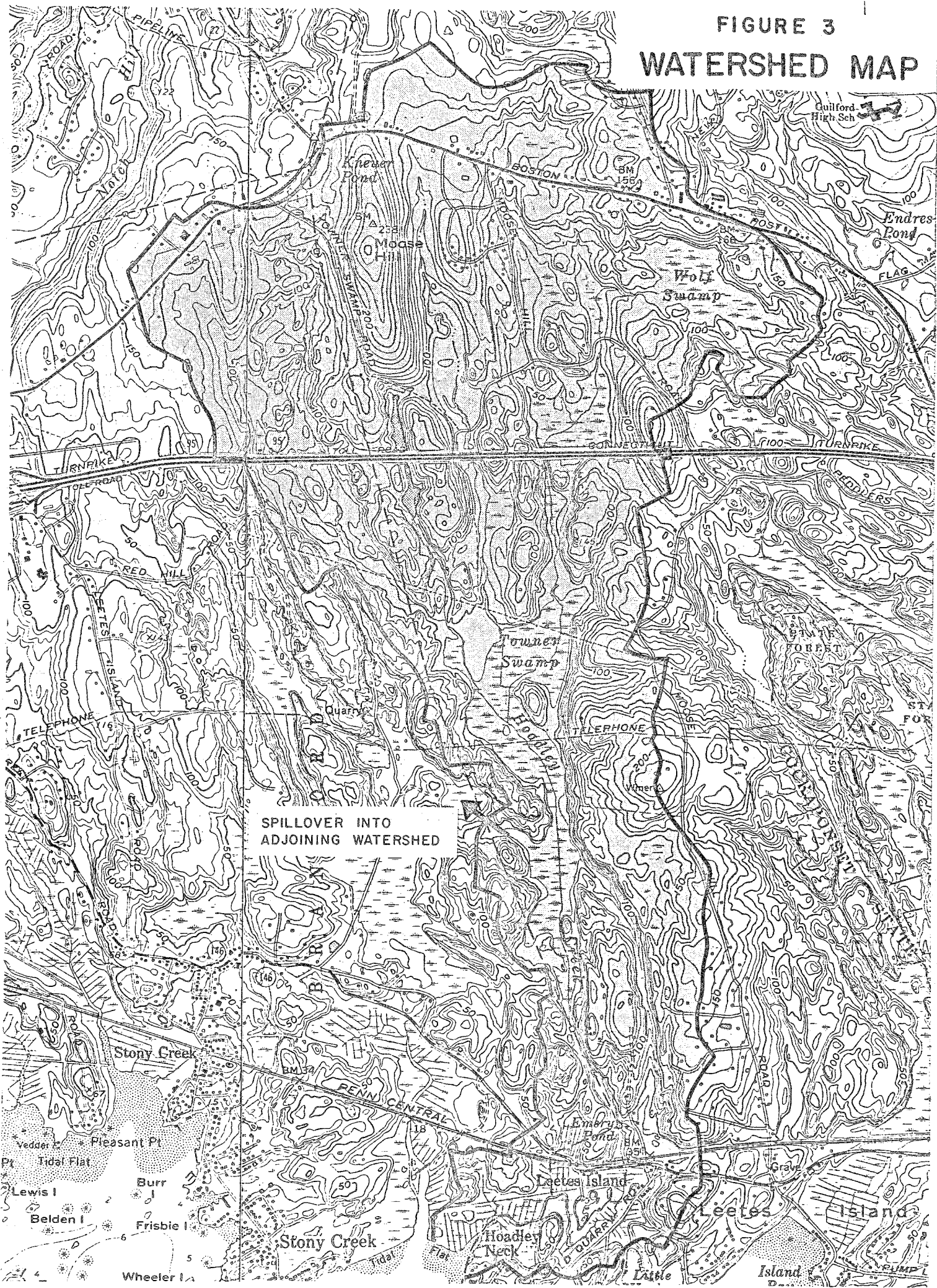
IV. HYDROLOGY

Almost all of the site drains into Hoadley Creek, a watercourse that flows directly to Long Island Sound. The overall watershed of Hoadley Creek comprises approximately 2350 acres or about 3.7 square miles. Approximately 500 acres of the watershed is located in the town of Branford. An unusual drainage pattern exists near the southern end of the property: surface waters from Towner Swamp were observed flowing westward across the apparent drainage divide into an adjacent watershed. The most likely explanation for this is that Towner Swamp in that area is only a few feet lower than the top of the divide. When the water level rises in the swamp, the low point in the normal divide becomes a temporary outlet. The water level in the swamp may tend to rise fairly readily to the level of the divide because of flow restrictions on Hoadley Creek at a bedrock gorge at the southern end of the swamp. At any rate, it is clear that Towner Swamp at least occasionally if not regularly supplies surface water to two streams.

The Hoadley Creek watershed contains a substantial amount of wetlands, the largest of which is Towner Swamp. In addition to their valuable ecological roles, these wetlands serve several hydrologic functions. One important function is storage. During times of abundant precipitation and above-normal streamflow rates, surface water disperses through the wetlands and is held there temporarily. This effectively reduces peak flow rates in local streams, minimizing the potential for erosion and flood damage. Because the site is so close to Long Island Sound, the area "protected" by the wetlands in this case is relatively small. Residences on or near Route 146 in the Leetes Island section of Guilford and along Towner Swamp's "alternate" outlet stream in eastern Branford are the major beneficiaries. In addition, Emery Pond and its neighboring pond to the north are undoubtedly protected from sedimentation to some extent by the wetlands.

The Hoadley Creek property probably does not contain any notable groundwater resources. This is not to say that groundwater wells could not be developed on the site, but only that the yields of any such wells would most likely be small. The most productive sources of groundwater are usually coarse-grained, thick glacial meltwater deposits (stratified drift). No such deposits are known to exist on the site, although there is some chance that deep sands and gravels underlie the peats and mucks of Towner Swamp.

FIGURE 3
WATERSHED MAP



V. SOILS

A soils map of the Hoadley Creek property is presented in the Appendix of this report. The Appendix also contains a chart showing the limitations of these soils for recreational purposes. Seven soil types occur on the property. These are briefly described below.

AA - Adrian and Palms Muck

This undifferentiated group consists of organic soils in low depressions on outwash terraces and glacial till plains. The organic layer of these soils is 16 to 50 inches thick. Slopes are 0 to 3 percent but are dominantly less than 1 percent. On the Hoadley site, this soil type is restricted to a narrow band in the southern portion of the property.

Adrian soils have moderately rapid permeability. Palms soils have moderately rapid permeability in the organic layer and moderate permeability in the substratum. The soils in this unit have a high available water capacity. Runoff is slow. These soils remain wet most of the year and are ponded for several weeks from fall through spring and after heavy rains in summer. Unless limed, the Adrian soils are very strongly acid through slightly acid. The Palms soils are medium acid to neutral in the organic layer and slightly acid to neutral in the substratum.

This is an inland wetland soil type. This soil has a good potential for providing wetland wildlife habitat.

The AA soil has severe limitations for most passive recreational activities due to the high water table and excess humus. Dug out type ponds are feasible in this soil.

Ce - Carlisle Muck

This nearly level, very poorly drained, deep organic soil is in low depressions on outwash terraces and glacial till plains. The organic layer range from 50 inches to more than 30 feet in depth. Slopes are 0 to 3 percent but are dominantly less than 1 percent. The extensive wetland in the eastern half of the Hoadley Creek site consists of this soil type.

This soil has moderately rapid permeability. It has a high available water capacity. Runoff is very slow. This soil remains wet most of the year and is ponded for several weeks from fall to spring and after heavy rains in summer. Unless limed, the soil ranges from medium acid through neutral.

Carlisle Muck is an inland wetland soil type according to Connecticut law, and has potential for providing wetland wildlife habitat.

Like the AA soil, this soil has severe limitations for most passive recreational activities due to a high water table and excess humus. Dug out type ponds are feasible on this soil.

CyC - Cheshire Extremely stony fine sandy loam, 3 to 15 percent slopes

This gently sloping and sloping, well drained soil is on hilltops and side slopes of hills and ridges and on foot slopes of steep slopes where the relief is affected by the underlying bedrock. Between 3 and 25 percent of the surface is covered with stones and boulders.

This soil has moderate permeability. It has a high available water capacity. Runoff is medium to rapid. This soil dries out and warms up fairly early in spring. It has a low shrink-swell potential. Unless limed, this soil is very strongly acid through medium acid.

This soil has moderate limitations for most passive recreational activities due to slope and large stones. However, the best sites for camping and picnic areas and walking trails on the property are probably located on this soil.

This soil is not well suited to pond development.

HuD - Holyoke-Cheshire complex, 15 to 35 percent slopes

This complex consists of moderately steep and steep, well drained and somewhat excessively drained soils on uplands where the relief is affected by the underlying bedrock. Slopes are concave or convex and most are 100 to 1000 feet long. The areas have a rough surface with bedrock outcrops, a few narrow intermittent drainageways, and small wet depressions. In many areas, up to 15 percent of the surface is stones and boulders. Approximately 40 percent of this complex is Holyoke silt loam, 35 percent is Cheshire extremely stony fine sandy loam, and about 25 percent is other soils and rock outcrops. This soil type is scattered throughout the upland areas of the Hoadley Creek property.

The Holyoke soil has moderate permeability above the bedrock. It has a low available water capacity. Runoff is rapid. The Cheshire soil has moderate permeability. It has a high available water capacity. Runoff is rapid. The Holyoke and Cheshire soils have a low shrink-swell potential. Unless limed, they are medium acid through very strongly acid.

This soil complex has severe limitations for recreational development due to the steep slopes. Some walking trails should be feasible on this soil however, where slopes are not excessive. Many areas within this mapping unit provide very scenic and picturesque settings for trails.

This soil complex is not well suited to pond development.

Ru-Rumney fine sandy loam:

This nearly level, poorly drained soil is on the lower flood plains of the major streams and their tributaries. Slopes are 0 to 3 percent. Only a small patch of this soil type is present on the property.

This soil has a seasonal high water table at a depth of about 8 inches from late fall until mid-spring. Permeability is moderately rapid in the surface layer and subsoil and rapid or very rapid in the substratum. This soil has a moderate available water capacity. Runoff is slow. This soil

dries out and warms up slowly in spring. It has a low shrink-swell potential. Unless limed, it is very strongly acid through medium acid.

This is an inland wetland soil type. It has good potential for providing wetland wildlife habitat.

This soil has severe limitations for most recreational activities due to the high water table and frequent flooding. The flooding duration is brief and usually occurs between November and May.

Dug out ponds are feasible on this soil. However, dug out ponds should be diked to help prevent flooding. Floods can deposit sediment and unwanted fish species in ponds.

Sc-Saco Silt Loam

This nearly level, very poorly drained soil is on low flood plains of the major streams. Slopes are 0 to 3 percent. On the Hoadley Creek property, this soil occupies a ± 9 acre area in the northeastern portion of the site.

This soil has a high water table at or near the surface most of the year. It is subject to frequent flooding. It has moderate permeability above a depth of 40 inches and moderate to rapid permeability below that. This soil has a high available water capacity. Runoff is very slow. The shrink-swell potential is low. Unless limed, this soil is strongly acid to slightly acid in the upper part and medium acid to neutral in the lower part.

Due to the high water table and frequent flooding of this soil it is similar to Ru in its limitations for recreational development and pond construction.

It has a good potential for providing wetland wildlife habitat.

VI. RECREATION TRAIL POTENTIAL

The ecological variation and natural beauty of this property greatly increase the value of constructing recreation trails on this property. However, the construction of these trails must be carefully planned to avoid or overcome the limitations posed by the naturally occurring soils.

Trails should be planned for areas where slopes are not excessive to decrease erosion hazards. An erosion and sediment control plan should be prepared and followed during trail construction. This plan will serve to protect nearby streams and wetlands from sediment deposition and decrease trail maintenance costs.

Streams and wetlands provide interesting environments to view from trails. However, foot traffic through wetlands can cause serious erosion damage. Also, flooding may prevent trail use during brief periods. In general, trails should be kept out of wetlands wherever possible. If a wetland crossing is necessary however, artificial walkways or raised embankments may facilitate the crossing.

The following guidelines should be followed for trail construction:

1. A general plan showing the approximate line, grade and width of trails and erosion and sediment control measures should be prepared.
2. All trees, shrubs and fallen timber should be removed for a distance of 2 feet each side of the trail centerline. Stumps should be cut close to the ground. All protruding limbs should also be removed for a distance of 2 feet each side of the trail center line. Where other than foot traffic is planned, protruding limbs should be removed to a height of 10 feet. Limbs removed should be cut off as close to the trunk as possible.
3. All undesirable material such as soil high in organic matter, stumps and large stones should be removed from the tread area of the trail.
4. All grading should be to the lines shown on the plan. All culverts, bridges, turnouts, handrails, grade dips and erosion control measures should be installed as shown on the plan.
5. The trail surface should be finished to a uniform firm surface and free of loose material.

A typical trail section is shown in the Appendix of this report.

VII. VEGETATION

The majority of the 90 ± acre "Hoadley Creek Property" is forested. It may be divided into seven general vegetation types. These include hardwood swamp, 24 ± acres; mixed hardwoods, 23 ± acres; softwoods/ hardwoods, 22 ± acres; hemlock, 15 ± acres; mixed hardwoods/streambelt, 3 ± acres; oldfield/ powerline, 2 ± acres, and open swamp, 1 ± acre. A description of these vegetation types is offered below. The location of the various vegetation types is depicted in Figure 4. Vegetation type boundaries and acreages are only approximate. In some places the vegetation types gradually grade into one another, causing wide transition zones where tree species dominant in one type are present in the other. These conditions cause difficulty in mapping.

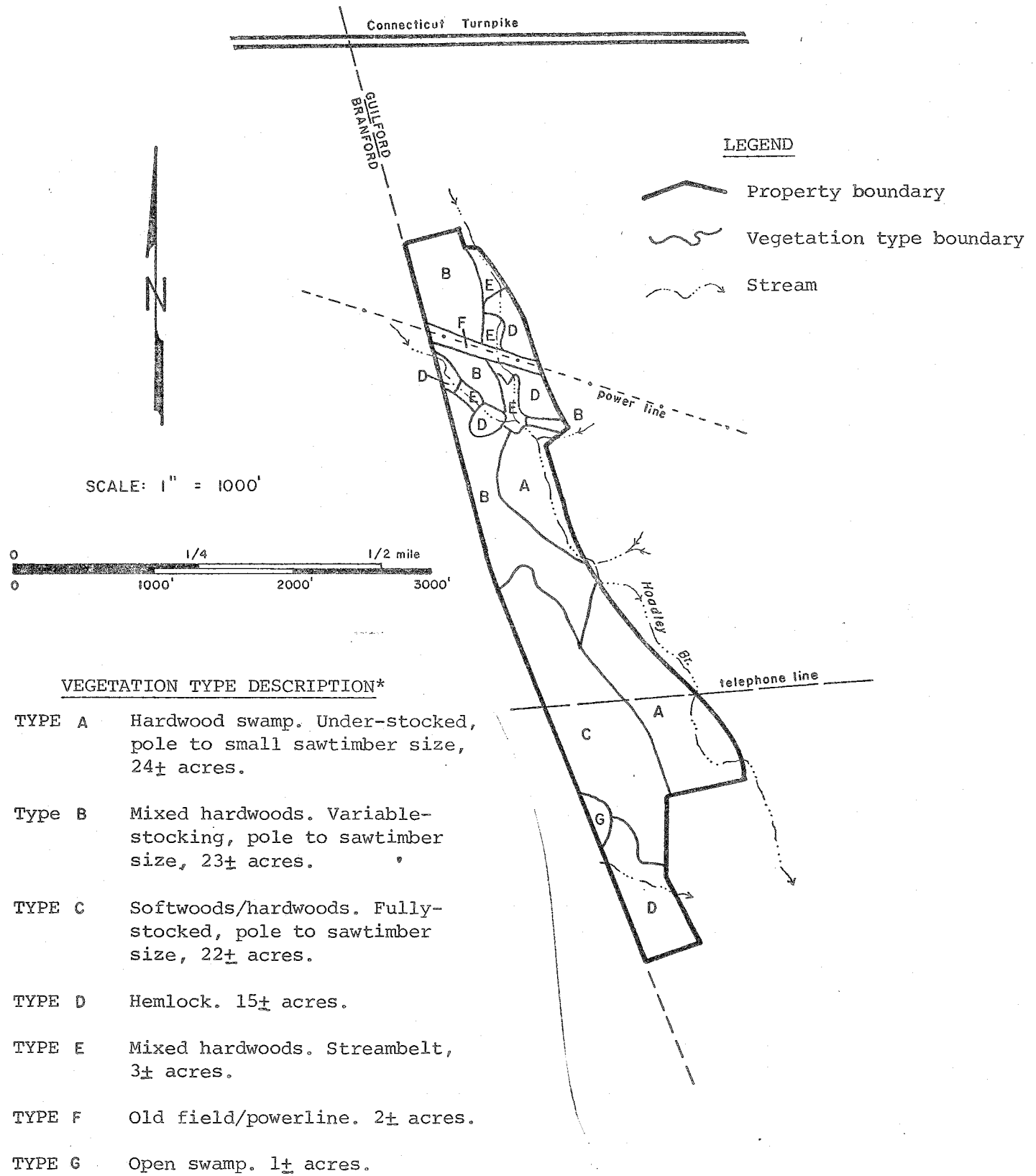
In depth information on the herbaceous wild flower and weed species present on this property is lacking due to the time of year of the ERT's field investigation.

VEGETATION TYPE DESCRIPTIONS

TYPE A. HARDWOOD SWAMP. This 25 ± acre understocked stand is extremely uniform. It is made up of predominantly poor quality pole to small sawtimber-size red maple with occasional white ash and yellow birch present around its perimeter. Spice bush and highbush blueberry form a dense understory throughout this stand. Ground cover vegetation consists of cinnamon fern, sensitive fern, skunk cabbage, sphagnum moss, tussock sedge and scattered patches of swamp loose strife.

FIGURE 4

VEGETATION TYPE MAP



*Seedling size: Trees less than 1" in diameter at 4½' above the ground (d.b.h.)
 Sapling size: Trees 1 to 5 inches in d.b.h.
 Pole size: Trees 5 to 11 inches in d.b.h.
 Sawtimber size: Trees 11 inches and greater in d.b.h.

TYPE B. MIXED HARDWOODS. Pole with occasional sawtimber-size white oak, black oak, chestnut oak, shagbark hickory, black birch and occasional american beech are present in this 23 + acre stand. The stocking levels in this stand are quite variable. Areas where soils are droughty and shallow to bedrock are understocked; areas with soils that have high moisture holding capacities are fully-stocked and even becoming crowded. The understory in this stand is made up of hardwood tree seedlings, flowering dogwood, sassafras, mountain laurel, witch-hazel, blue beech, chestnut sprouts and maple leaved viburnum. The ground cover vegetation which was observed includes: grasses, club moss, striped pipsissewa, rattlesnake plantain, indian pipe, huckleberry, partridge berry, christmas fern, evergreen wood fern, bracken fern and hairy cap moss.

TYPE C. SOFTWOODS/HARDWOODS. This 22 + acre stand is very much like vegetation type B, however eastern white pine and eastern hemlock are as abundant in the overstory as the other hardwood tree species combined. Red maple and sugar maple are also present in the overstory along with a slightly greater occurrence of american beech. This stand is fully stocked rather than variably stocked as is vegetation type B. Understory and ground cover vegetation is almost identical to that found in vegetation type B.

TYPE D. HEMLOCK. This 15 + acre fully-stocked stand is made up of pole and occasional sawtimber-size eastern hemlock, black birch, black oak, american beech and red maple. Hemlock seedlings, mountain laurel and witch hazel are present in this stand's understory. Ground cover vegetation present includes canada mayflower, club moss and christmas fern.

TYPE E. MIXED HARDWOODS/STREAMBELT. The ravine areas present within this property total 3 + acres and are over-stocked with pole size red maple, black birch, yellow birch and hemlock. Understory vegetation in these areas is made up of mountain laurel, blue beech, spice bush, high bush blueberry and scattered witch-hazel. Ground cover consists of club moss, cinnamon fern, sensitive fern, christmas fern, rock polypody, grasses and skunk cabbage.

TYPE F. OLD FIELD/POWERLINE. Approximately two acres of this property have been cleared for the powerline right of way. This strip is presently vegetated with grasses, goldenrod, hemlock seedlings, black birch seedlings and shrub species including mountain laurel, speckled alder and high bush blueberry.

TYPE G. OPEN SWAMP. Approximately 1 acre of open swamp is present on the southwestern boundary of this property. Sapling-size red maple and hemlock are present along the perimeter of this swamp along with sweet pepper bush, spice bush and high bush blueberry. Leather leaf and swamp loose strife are present within the swamp itself. Clumps of tussock sedge and sphagnum moss are also present.

AESTHETICS AND PRESERVATION

During the February 11th ERT field investigation no rare or endangered plant species were observed. Reinvestigation of this site for compiling a complete list of plants and also herbaceous wild flower and weed species should be undertaken during the spring, summer and fall seasons.

Although many of the vegetation types present within this site are very uniform in terms of vegetation composition, there is considerable contrast and variety between vegetation types. The changes between vegetation types add to the overall pleasure and enjoyment one receives while hiking the property.

The flowering shrubs which are present near the trails which run through the property, including flowering dogwood and mountain laurel, have high aesthetic value. The flowering of these shrubs may be stimulated by allowing direct sunlight to reach them. This may be accomplished by complete or partial removal of the overstory trees above these shrubs.

LIMITING CONDITIONS

The high water table and saturated soils present in the hardwood swamp (vegetation type A) and open swamp (vegetation type G) limit vegetative growth to species that are able to tolerate excessive moisture conditions. The red maple and occasional yellow birch and white ash that are able to survive in the hardwood swamp areas are generally slow growing, shallow rooted and of poor quality. The high water table is more critical in the open swamp areas where no tree species are able to survive at present. These areas have little value for timber production, however their value for wildlife habitat is high.

Rockiness and steep slopes limit operability for forest management purposes on much of the dry land to the south of the telephone line. These same conditions limit operability on approximately 50% of the area to the north of the powerline. These areas correspond to the areas covered by HzE soils (see Soils Map). Tree growth rates are limited in these areas because the shallow to bedrock soils are somewhat excessively drained. Moisture deficiencies occur during the spring rapid-growth season which reduces tree growth rates and causes trees to become stunted.

POTENTIAL HAZARDS

Wind throw is a potential hazard in the hardwood swamp area (Vegetation Type A) and also areas where the soils are very shallow to bedrock (HzE Soil Type).

The high water table present in the hardwood swamp area restricts tree root depth. As a result the trees are unable to become securely anchored and are very susceptible to wind throw.

Restricted root depth caused by shallow to bedrock soils creates a high wind throw hazard in areas where the soil type is predominantly HzE. Where the bedrock is highly fractured tree roots may be able to penetrate fissures and become more stable.

Dead trees along recreational trails may become a hazard to area users. These trees, especially in areas where soils are saturated or shallow to bedrock, should be removed to lower the potential of injury to trail users. Trails should be inspected annually to identify and remove hazards.

SUGGESTED MANAGEMENT TECHNIQUES

A major obstacle to management of the vegetation on this tract is the lack of adequate access. Management of portions of this parcel would be feasible if right of ways were secured and access roads to and through the property were improved.

At the present time fuelwood thinnings would be beneficial in the areas of vegetation type B (Mixed Hardwoods) where trees are becoming crowded (lower slopes with somewhat deeper soils) and in the northern half of vegetation type C (Softwoods/hardwoods) where operability is not limited by slope or rockiness (see Vegetation Type Map). The trees in these stands are beginning to decline in health and vigor. Removal of approximately one third of the trees from the overstory, focusing on the poorest quality trees would reduce the competition between the best trees for sunlight, space, water and nutrients. Over time these trees should grow more vigorously, become healthier and more stable and increase in value. At this time these thinnings will provide between 5 and 8 cords of fuelwood per acre.

The increased sunlight reaching the forest floor following these harvests should stimulate the growth of shrubs and herbaceous vegetation. This together with the sprouting from cut trees should improve food and cover for wildlife for up to five years. The additional sunlight will also improve the flowering of the mountain laurel and flowering dogwood, thus helping to improve the aesthetics of the area.

These harvests could also remove the trees that are along the trail systems which are a potential hazard to trail users.

If fuelwood thinnings are not desirable at this time or not feasible due to inadequate access, waiting for a sawtimber harvest to become feasible is an option. Of course with no management the trees will continue to decline in health and vigor and growth will be slow. Either way, re-evaluation of these stands for forest health and management opportunities in 10 to 15 years would be advisable.

If management of part or all of this tract is desired for multiple uses such as wildlife, recreation and the production of timber or fuelwood, a public service forester or private forester should be contacted. A forester could give advice on the preparation of an indepth management plan and also help to mark and oversee the above mentioned thinnings.

VIII. WILDLIFE

The 90 + acre tract proposed for acquisition by the Guilford Conservation Land Trust may be divided into five major wildlife habitat types. These include wetland habitat, upland woodland with a dense evergreen component, upland woodland habitat without a significant evergreen component, openland habitat, and open wetland habitat (please see Figure 4 and vegetation type descriptions in preceding section).

The wetland habitat type (hardwood swamp and mixed hardwood swamp/streambelt) present on this tract totals approximately 28 acres. As stated earlier, the vegetation in this habitat type is very uniform. This uniformity detracts from the areas value for wildlife. Many bird species, some small mammals, amphibians and reptiles do however utilize these areas for nesting and breeding purposes. The dense understory of shrub species offers high value cover for many species of birds. Animals present in other habitat types including whitetail deer will use these areas for escape cover. Animals such as foxes and raccoons will utilize the perimeter of these areas for hunting.

The upland woodland habitat type (mixed hardwoods) comprises approximately 23 acres of this property. These areas, which are somewhat more diverse than the wetland areas, provide good food and moderate cover for many species of wildlife. Utilization of this area by whitetail deer and gray squirrel is high. Some signs of utilization of this habitat type by raccoon, ruffed grouse, and woodchuck were observed. Non-game species including song birds, woodpeckers, creepers, small rodents, reptiles and amphibians are probably abundant throughout this habitat type during different seasons of the year.

The upland woodland with evergreen present in the overstory and understory (softwood/hardwoods and hemlock) totals approximately 37 acres. This habitat type is much like the above upland woodland type however the presence of evergreen vegetation improves cover conditions for wildlife greatly. This available cover is especially valuable during the winter months when shelter from adverse weather conditions is needed.

The openland habitat (old fields/power line) is two acres in size. Although not large in comparison to the above habitats this area has high value for wildlife. Typically this habitat type is utilized by many small mammals including cottontail rabbit, meadow voles, field mice, and woodchucks. It is also utilized by many species of songbirds. Several other species frequently utilize this habitat type for hunting and/or grazing. These species include, but are not limited to, hawks, owls, foxes, raccoons, skunks, and whitetail deer.

A small amount (1 + acre) of open wetland habitat (open swamp) is present on this property. This area is part of a five acre open swamp which is extremely valuable to waterfowl including wood ducks, black ducks and mallards. Several species of amphibians and reptiles utilize the open water which is present. Many small mammals are attracted to this habitat type to hunt its edges.

It should be noted that the transition zones and edges between these habitat types are of great value to wildlife. These areas have the greatest plant diversity and are therefore utilized by a great number of wildlife species.

EFFECT OF PROPOSED ACTIVITY ON WILDLIFE POPULATIONS

Acquisition of this tract by the Guilford Land Trust for preservation in its present state will have little if any negative or positive impact on the wildlife populations which are present.

Other uses of this property, such as residential or commercial subdivisions (including quarrying operations) would disrupt the wildlife habitat that is present. Reductions in wildlife habitat or greatly increased use of this area would most likely result in the displacement of wildlife species to less developed areas.

Practices which are designed to enhance the habitat for wildlife such as increasing the diversity of vegetation will attract new species of wildlife and improve the overall carrying capacity * of this tract.

MANAGEMENT CONSIDERATIONS

Wildlife habitat can best be improved in both the long and short run by creating more diversity of habitat through manipulation of the vegetation which

*carrying capacity is the maximum number of animals a unit of land can support during the most unfavorable time of year.

is present. In many cases, timber or fuelwood harvesting operations are the most cost-effective way to manipulate the vegetation for the benefit of wildlife populations.

Thinnings which remove enough of the overstory to allow sunlight to reach the forest floor will stimulate the growth of herbaceous vegetation. The new vegetation can be used by the area's wildlife for food and cover. These thinnings should take place from the end of summer through the end of winter so as not to disturb nesting birds and mammals. It is important that dead trees (often called snags) are left behind for wildlife utilization. These snags provide nesting, perching, and feeding sites for vary species of birds and some species of mammals. Ideally 2-4 snags suitable for wildlife utilization should be retained per acre.

Access and fire roads and yarding areas constructed during harvest operations could be planted to grasses and herbaceous vegetation that is beneficial to wildlife. Clearing the vegetation from small patches up to an acre in size would be extremely desirable for wildlife habitat improvement on this tract. These openings in the wooded areas have the most value if they are large enough or oriented in such a way that they receive full sunlight for at least part of the day. The value of these clearings will deteriorate for wildlife over time as the area grows back to woodland. Periodic control of the woody vegetation will extend the usefulness and value of any openings made.

The creation of one or several open water ponds of any size within this tract would be very beneficial to wildlife. Waterfowl species including wood ducks, black ducks, and mallards utilize open water impoundments near wooded areas for nesting, breeding and resting. Shallow water ponds may attract other species of waterfowl and also small mammals, song birds, birds of prey, reptiles and amphibians.

Localized changes in the vegetation should improve this area's diversity and structural complexity. These changes would also result in increased use of the area by wildlife. Such improvements need not be implemented all at once. Management practices which are carried out through the years and provide long term habitat improvements are more valuable than quick, short term improvement. If wildlife habitat improvement is a major priority for this tract, then a comprehensive wildlife management plan should be drafted. State and federal personnel are available to assist in the drafting of such management plans.

IX. FISHERIES

Hoadley Creek is limited in fishery potential by both its size and location. The watercourse would be expected to support redbfin pickerel, brook trout, dace and sunfish. The stream's prime value lies in its visual aesthetics particularly in the gorge area.

Fishery resource value could be improved by construction of a pond which would encourage more "catchable" size fish to inhabit the area, but construction feasibility and cost factors may preclude development of such a pond. Such a pond would have to be placed so as to provide easy access for anglers; another possible drawback.

X. PLANNING CONSIDERATIONS

Town Plan

The proposed acquisition would be consistent with the Town Plan and Town goals which in The Comprehensive Plan of Development and Conservation calls for the "provision of a network of natural environmental corridors and linkages, and protection of open space areas having special conservation features". The Town Plan also specifically mentions the need for a "connector between Westwoods and Stony Creek Quarry". This proposal will provide the necessary link between the 310 acre Stony Creek Quarry open space parcel in Branford and the "Westwoods" tract in Guilford. While zoned as R-8 (under 1 f/acre), the tract itself includes rugged uplands and wetlands and is bordered by Hoadley Creek, rendering most of the property unsuitable for residential construction.

The Regional Plan

The Proposed Land Use Plan - 2000, South Central Connecticut Planning Region, adopted 1968, recommends the area in question as open space. Regional goals stress the need to preserve our natural resources through the "acquisition of more land for the specific purposes of swimming, golfing, hiking, boating and other sports".

The State Plan

The State of Connecticut Conservation and Development Plan - 1979-1982, "Locational Guide Map" indicates the area as a "conservation area". The State Action Strategy calls for the need to "Plan and manage for the long term public benefit the lands contributing to the state's need for food, fiber, water and other resources, open space, recreation and environmental quality...". The proposal to acquire this parcel of land would definitely meet such criteria and action strategy.

Adjacent Land Use

The tract is primarily bounded by undeveloped land and the plan to preserve the land in its natural state is compatible with the adjacent land uses. The proposal to develop a network of trails on site to link the existing adjacent open space parcels (i.e. "Westwoods" and "Stony Creek Quarry Property") is also compatible with the surrounding land uses.

Projected User Population

As there is a demonstrated need for the passive recreational use this site would provide, the number of people actively using this area, if acquired, will undoubtedly increase. As the parcel will complement the variety of landscapes now available on the adjacent parcels, an increase in interest in the total open space area can also be expected to develop. It is not foreseen that the user population will increase to such a degree that the quality of the site for "open space recreation" will be degraded. Guilford and Branford both presently contain areas developed for swimming, picnicking, and active recreational sports and there is no interest in developing this property for such purposes.

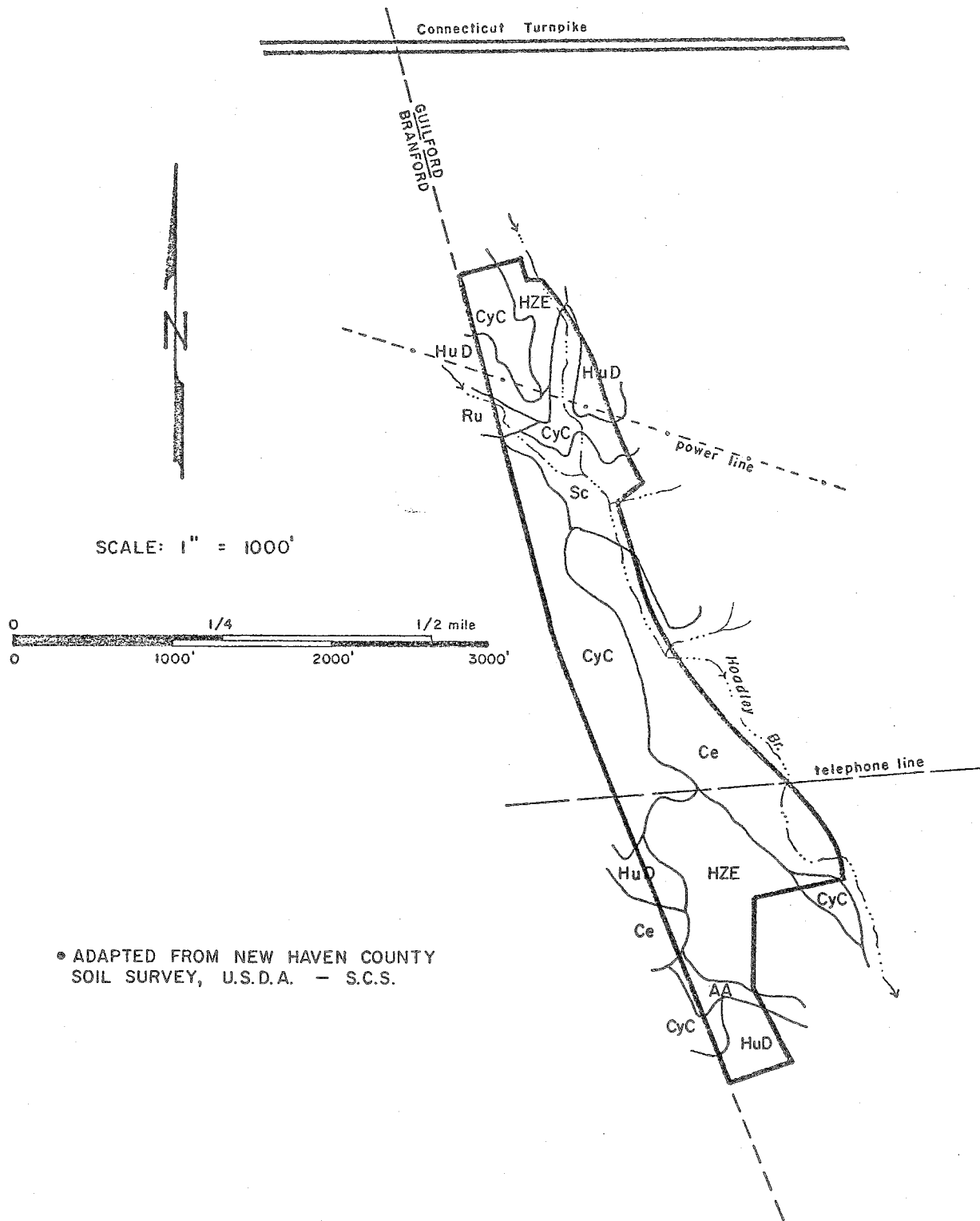
Access and Parking

Access to the parcel is available from the west through the Branford open space parcel and from the north via Granite Road. Granite Road is an unimproved, unmaintained town road and can be reached either via Moose Hill Road from the north or Old Road from the east. Vehicular access along the lower portion of Granite Road is restricted to 4-wheel drive vehicles. As a result, it may be necessary for many to walk by foot along at least a portion of Granite Road to reach the property. A small parking area is available along-side Granite Road about 1/4 mile north of the property line. At this time, most visitors to the site may find parking at this point and hiking south into the property the easiest access. Discussions with the Chairman of the Guilford Land Conservation Trust, Inc. indicate that future access to the property may be available off Hoadley Creek circle to the east of the site. In any event, due to restrictive on-site conditions, access through the Hoadley Creek site should be limited to trails. The linkage of the two adjacent open space parcels should be of prime consideration in designing the trail network.

* * * * *

APPENDIX

SOILS MAP



• ADAPTED FROM NEW HAVEN COUNTY SOIL SURVEY, U.S.D.A. - S.C.S.

SOILS LIMITATION CHART - HOADLEY CREEK PROPERTY

RESTRICTIVE FEATURE FOR
POND CONSTRUCTION

PATHS AND
TRAILS

PICNIC
AREAS

CAMP
AREAS

MAP
SYMBOL

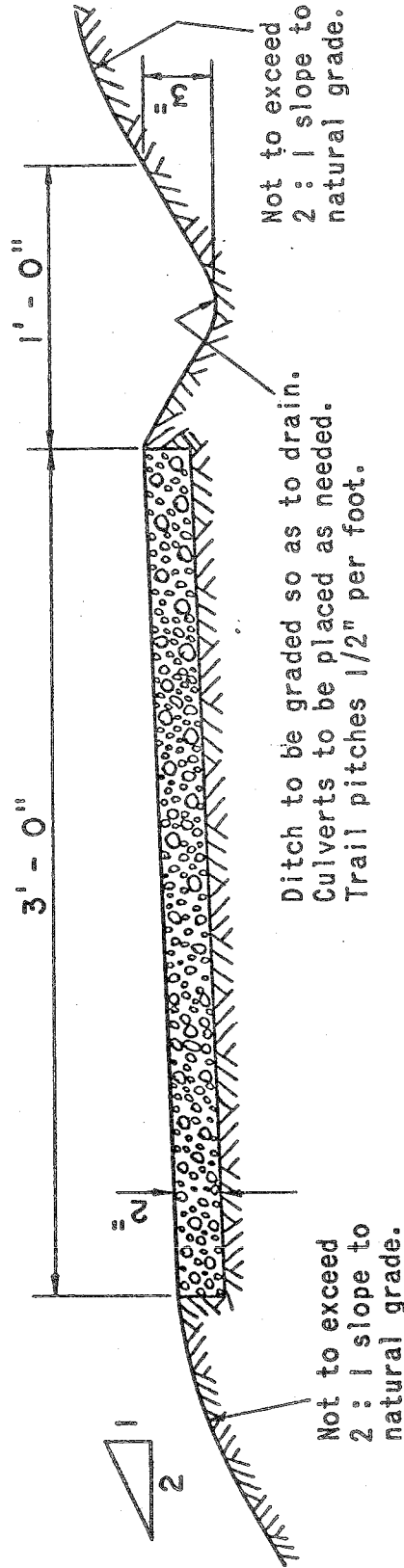
SOIL NAME

MAP SYMBOL	SOIL NAME	CAMP AREAS	PICNIC AREAS	PATHS AND TRAILS	RESTRICTIVE FEATURE FOR POND CONSTRUCTION
AA	Adrian and Palms Muck	Severe: wetness excess humus	Severe: wetness excess humus	Severe: wetness excess humus	Seepage
Ce	Carlisle Muck	Severe: wetness excess humus	Severe: wetness excess humus	Severe: wetness excess humus	Seepage
CyC	Cheshire extremely stony fine sandy loam. 3-15 percent slopes	Moderate: large stones slope	Moderate: large stones slope	Moderate: large stones	Seepage slope
HuD	Holyoke-Cheshire Complex 15-35 percent slopes	Severe: slope	Severe: slope	Severe: slope	Slope depth to bedrock
HzE	Holyoke-Rock outcrop complex, 15-35 percent slopes	Severe: slope	Severe: slope	Severe: slope	Slope depth to bedrock
Ru	Rumney fine sandy loam	Severe: floods wetness	Severe: floods wetness	Severe: floods wetness	Floods seepage
Sc	Saco silt loam	Severe: floods wetness	Severe: floods wetness	Severe: floods wetness	Floods

- EXPLANATION OF RATING SYSTEM
1. SLIGHT LIMITATION: indicates that any property of the soil affecting use of the soil is relatively unimportant and can be overcome at little expense.
 2. MODERATE LIMITATION: indicates that any property of the soil affecting use can be overcome at a somewhat higher expense.
 3. SEVERE LIMITATION: indicates that the use of the soil is seriously limited by hazards or restrictions that require extensive and costly measures to overcome.
- NOTE: Limitation Ratings Based Upon U.S.D.A. Soil Conservation Service Criteria.

NOTE: Unsuitable material should be excavated and the trail filled with aggregate not exceeding 1" in diameter. Depth of filled aggregate may vary from 0" to 6" according to the soil and its trafficability. In very wet areas artificial walkways or raised embankments may be needed.

Width of trail may be increased in accord with traffic load.



SCS-REC-110
3-71

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

TYPICAL TRAIL SECTION

FROM ORIGINAL DESIGN BY
NEVADA STATE PARK SYSTEM

ABOUT THE TEAM

The King's Mark Environmental Review Team (ERT) is a group of environmental professionals drawn together from a variety of federal, state, and regional agencies. Specialists on the team include geologists, biologists, foresters, climatologists, soil scientists, landscape architects, recreation specialists, engineers, and planners. The ERT operates with state funding under the aegis of the King's Mark Resource Conservation and Development (RC&D) Area - a 47 town area in western Connecticut.

As a public service activity, the team is available to serve towns and developers within the King's Mark Area --- free of charge.

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 the review of a wide range of significant activities including subdivisions, sanitary landfills, commercial and industrial developments, and recreation/open space projects.

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 an administration agency such as planning and zoning, conservation, or inland wetlands. Requests for reviews should be directed to the Chairman of your local Soil and Water Conservation District. This request letter must include a summary of the proposed project, a location map of the project site, written permission from the landowner/developer allowing the team to enter the property for purposes of review, and a statement identifying the specific areas of concern the team should address. When this request is approved by the local Soil and Water Conservation District and the King's Mark RC&D Executive Committee, the team will undertake the review. At present, the ERT can undertake two reviews per month.

For additional information regarding the Environmental Review Team, please contact your local Soil Conservation District Office or Richard Lynn (868-7342), Environmental Review Team Coordinator, King's Mark RC&D Area, P.O. Box 30, Warren, Connecticut 06754.