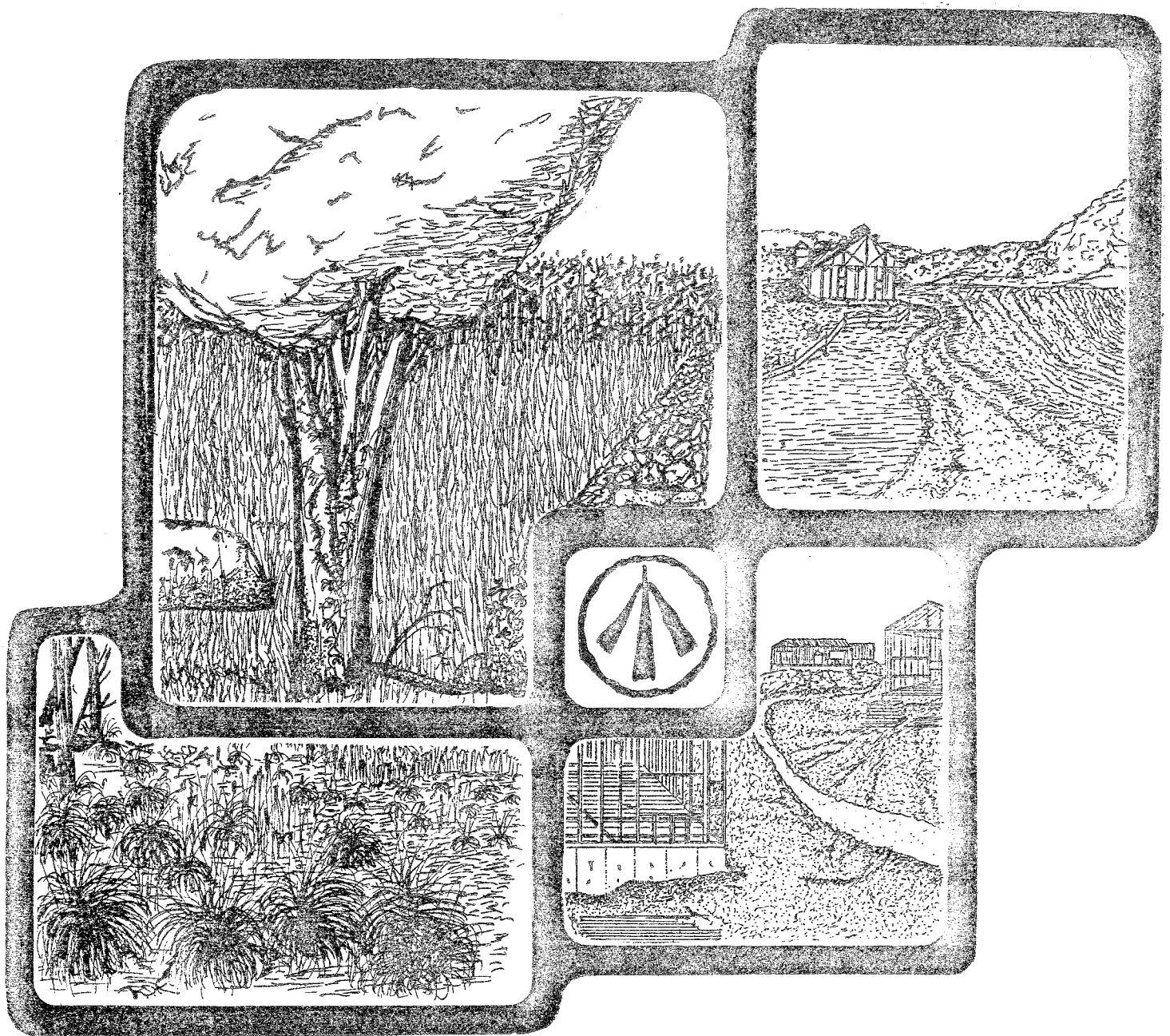


ENVIRONMENTAL REVIEW TEAM REPORT



HOP BROOK GOLF COURSE
NAUGATUCK, CONNECTICUT

KING'S MARK
RESOURCE CONSERVATION & DEVELOPMENT AREA

KING'S MARK ENVIRONMENTAL REVIEW TEAM REPORT

ON

HOP BROOK GOLF COURSE NAUGATUCK, CONNECTICUT



JANUARY 1981

King's Mark Resource Conservation and Development Area

Environmental Review Team

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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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TABLE OF CONTENTS

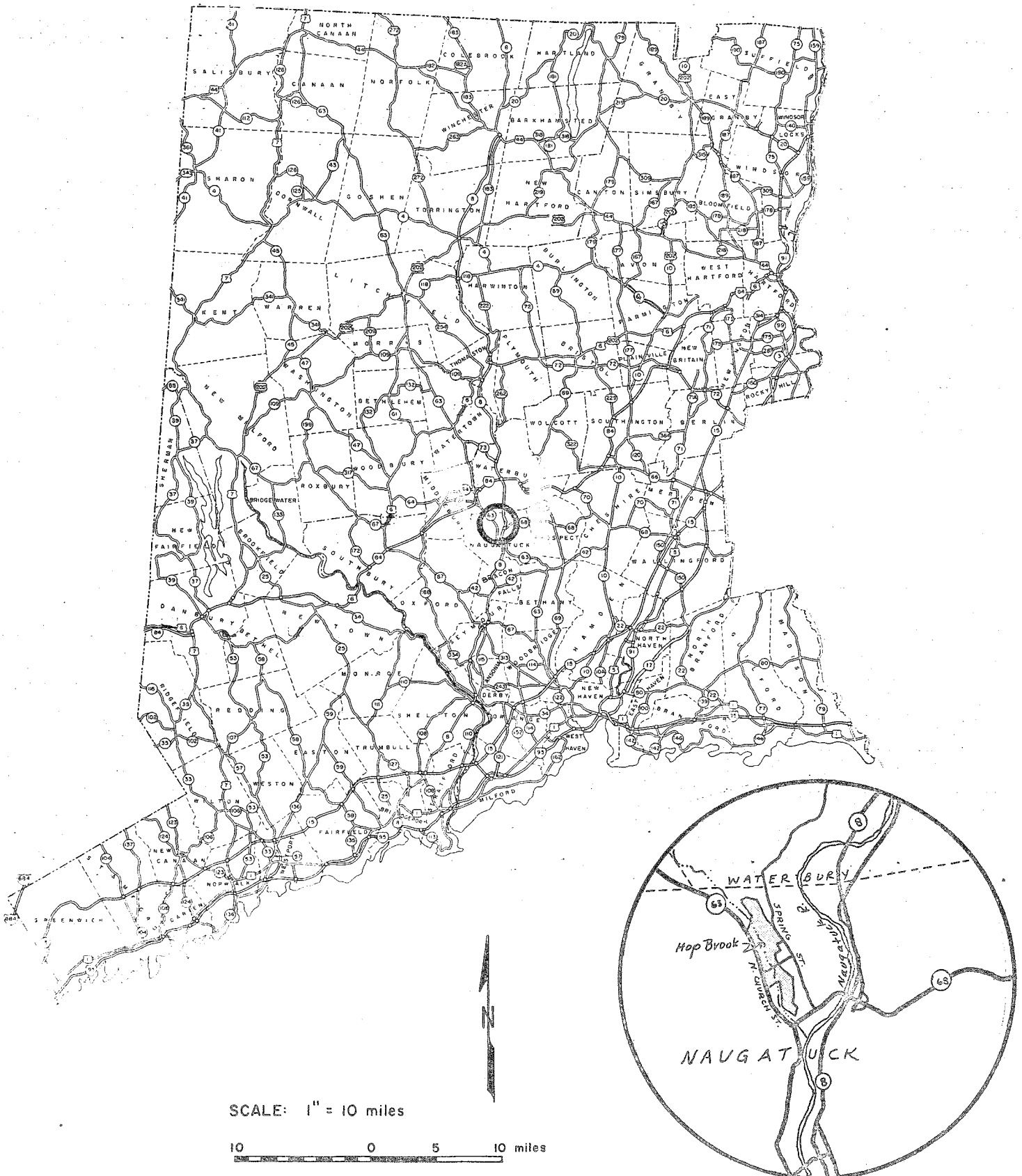
	<u>Page</u>
I. INTRODUCTION.....	1
II. DESCRIPTION OF THE PROPOSAL.....	2
III. DESCRIPTION OF THE ENVIRONMENT.....	2
A. Location and Land Use.....	2
B. Historic/Archaeological Resources.....	2
C. Fish and Wildlife.....	2
D. Vegetation.....	5
E. Geology.....	5
F. Soils.....	5
G. Climate.....	7
H. Water Resources.....	7
I. Waste Disposal.....	7
J. Transportation.....	8
IV. ENVIRONMENTAL IMPACT OF THE PROPOSED ACTION...	8
V. CONSULTATION AND COORDINATION.....	9
VI. APPENDIX.....	9
Soils Map	
Soil Descriptions	
Plant Descriptions	

LIST OF FIGURES

1	TOPOGRAPHIC MAP.....	3
2	GOLF COURSE LAYOUT.....	4
3	SURFICIAL GEOLOGY.....	6

LOCATION OF STUDY SITE

HOP BROOK GOLF COURSE NAUGATUCK, CONNECTICUT



ENVIRONMENTAL REVIEW TEAM REPORT
ON
HOP BROOK GOLF COURSE
NAUGATUCK, CT.

I. INTRODUCTION

The Town of Naugatuck is applying for federal funds through the USDI Heritage Conservation and Recreation Service to install an underground sprinkler system for Hop Brook Golf Course, a town-owned facility.

Hop Brook Golf Course is 64.5 acres in size and located in the north-central portion of town. The property is bounded on the west by North Church Street (Rte. 63), and on the east by Spring Street. Hop Brook flows north to south through the central portion of the property.

The Grants Administrator for the Town of Naugatuck requested the assistance of the King's Mark Environmental Review Team to assist the Town in applying for the federal funds. Specifically, the Team was asked to prepare the environmental assessment portion of the grant application. The Town's request was considered and approved as an ERT project by the King's Mark RC&D Executive Committee.

The HCRS has prepared an "Environmental Information Outline" to serve as a guideline in preparing environmental assessments. This report follows the format suggested in that Outline.

The ERT met and field reviewed the site on October 28, 1980. Team members for this review consisted of the following:

Frank Indorf.....	District Conservationist.....	U.S.D.A. Soil Conser- vation Service
Mike Mormile.....	Grants Administrator.....	Town of Naugatuck
Bob Orciari.....	Fishery Biologist.....	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 proposed project, a checklist of concerns to address, a detailed soil survey map, a soils limitation chart, and a topographic map of the subject site. 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.

This report presents the Team's findings. 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. DESCRIPTION OF THE PROPOSAL

The Borough of Naugatuck is proposing to purchase and install a new underground sprinkler system for a Borough owned golf course known as the Hop Brook Golf Course. The underground sprinkler system is designed to provide automatic irrigation to a 64.5 acre golf course thereby reducing the number of public works staff required to manage and irrigate the lawns. Trees, fairways, and greens would be irrigated under the proposed project. Water would be withdrawn from Hop Brook at a maximum rate of 250,000 gallons per day according to town estimates.

At the present time, Hop Brook Golf Course is used only for recreation purposes. By providing underground irrigation, the Borough will be able to maintain the golf course in better condition at a lower long-term cost to the local taxpayers. It is expected that the installation will be completed within five months of project approval. This project is strongly supported by the Borough of Naugatuck and the Central Naugatuck Valley Regional Planning Agency (CNVRPA), both of which are concerned with providing recreational opportunities close to the homes of all urban residents. The CNVRPA Recreation and Open Space Element identified urban recreation as a high priority in the urbanized portion of the Region including the municipalities of Waterbury, Watertown and Naugatuck.

III. DESCRIPTION OF THE ENVIRONMENT

A. Location and Land Use

The location and topography of the subject site is shown in Figure 1. Rte 63 abuts the western border of the site and Hop Brook traverses the site from north to south. Surrounding land use is primarily residential.

The southern half of the property is mostly flat; slopes on the northern half vary from slight to steep.

The layout of the golf course is shown in Figure 2.

B. Historic/Archaeological Resources

No known historic or archaeological resources are present on this property.

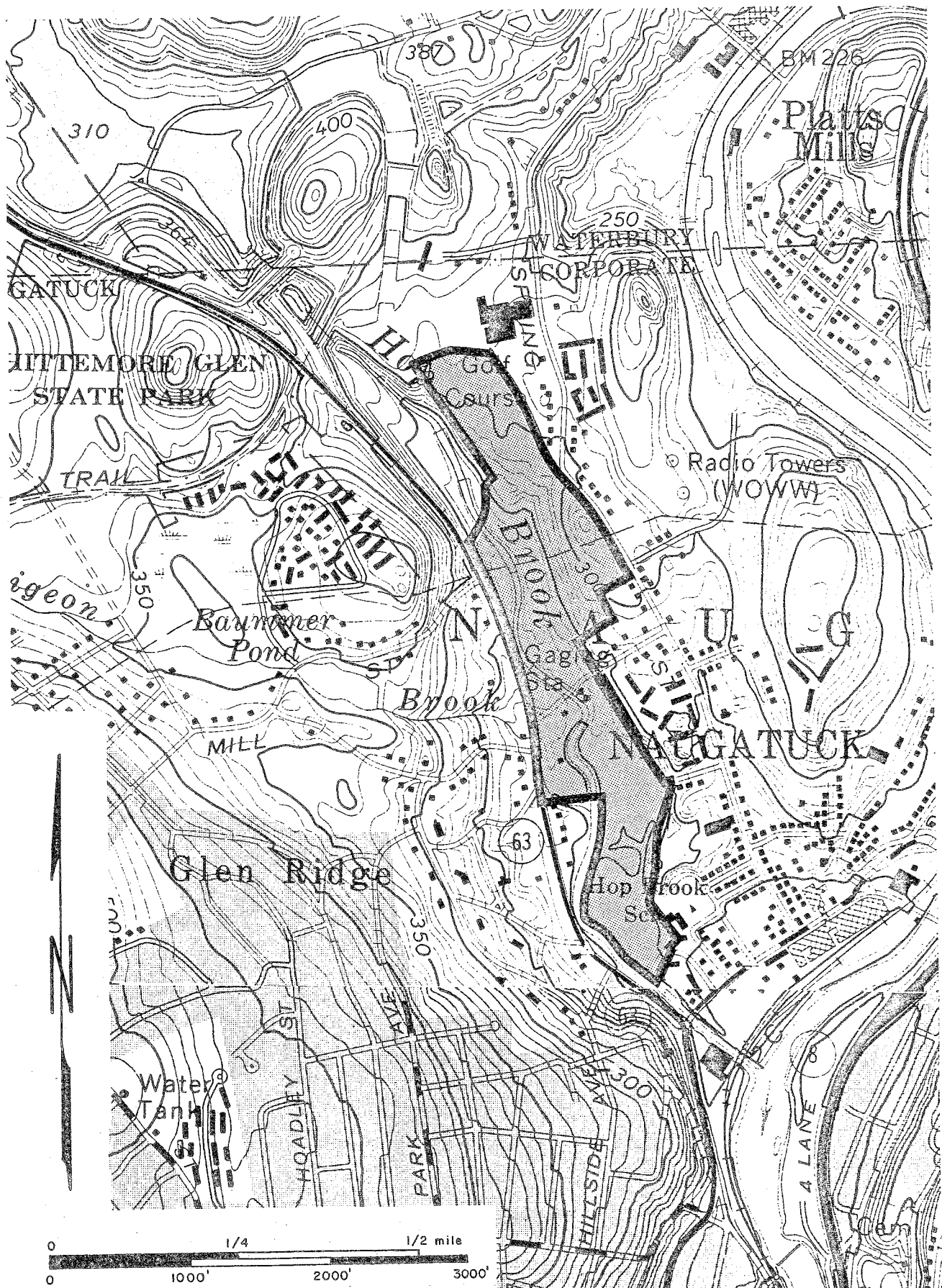
C. Fish and Wildlife

Two major types of wildlife habitat are present on this property. These include openland habitat and wetland habitat. Grey squirrels, chipmunks, rabbits, mice, and common songbirds are likely to inhabit this area.

No rare or endangered species, or unique habitat types were observed on this property. The "built-up" character of the surrounding area diminishes the potential of this land for supporting a diverse wildlife population.

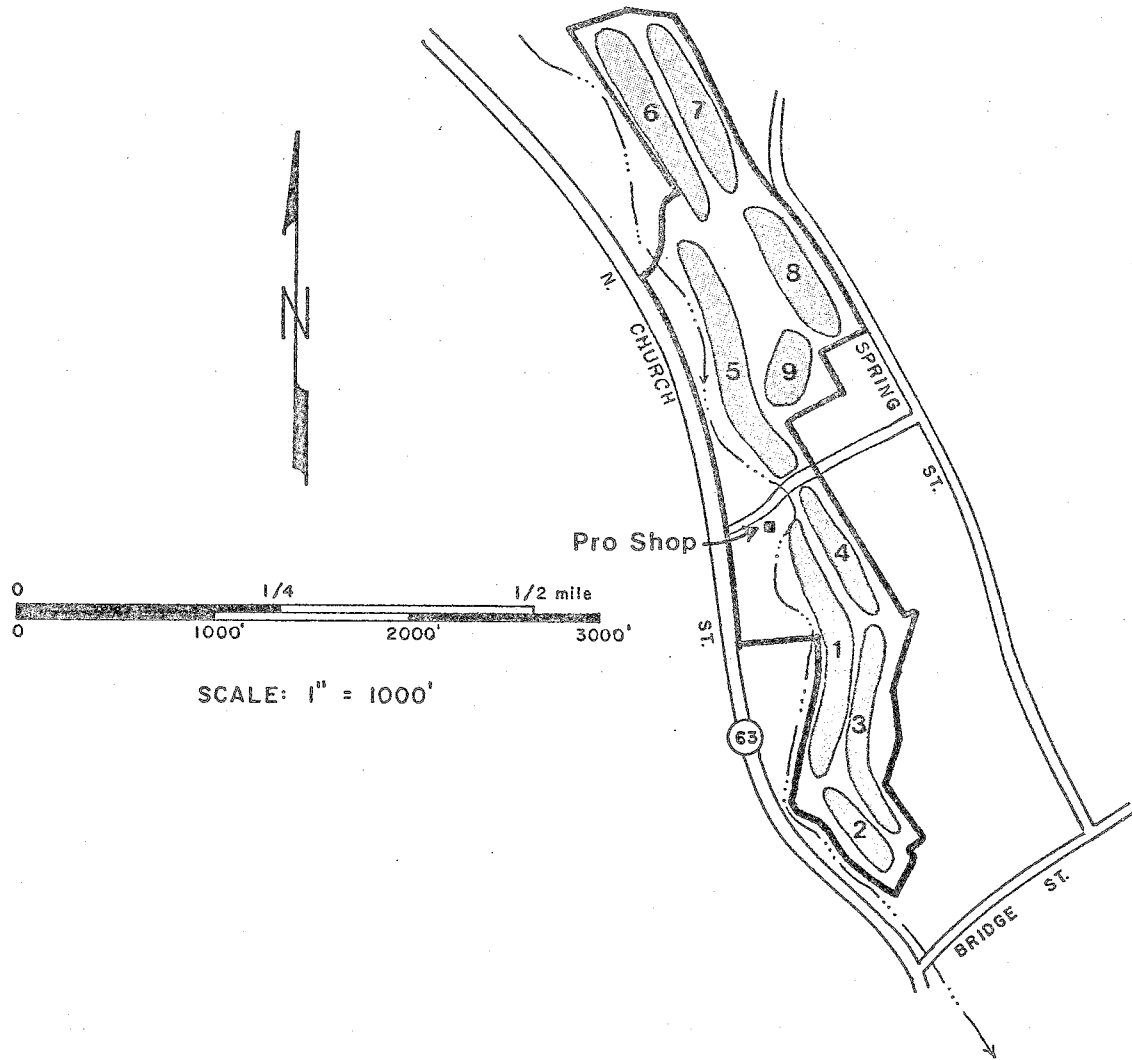
As previously mentioned, the lower portion of Hop Brook flows through the Hop Brook Golf Course. Resident fish species within this stream section would include American eel, fall fish, white sucker, blacknose dace, creek chub, and tessellated darter. Just above the golf course, Hop Brook is stocked with brown, brook, and rainbow trout by the Connecticut Department of Environmental Protection

FIGURE 1.
TOPOGRAPHIC MAP



SCALE: 1" = 1000'

FIGURE 2.
GOLF COURSE LAYOUT



and some of these trout may move down into the golf course section. Some pond species, such as yellow perch, largemouth bass, brown bullhead, bluegill sunfish, common sunfish, and redbreasted sunfish, which inhabit Hop Brook Flood Control Impoundment, may also move down into the golf course section of Hop Brook. Fishing occurs on Hop Brook, within the golf course property, but it is very limited.

Water within the Hop Brook Golf Course section of the stream is warmed during the summer by the upstream presence of the Hop Brook flood control pool. Such warming would exclude trout from being present in this section during the summer. The lower portion of Hop Brook is also adversely affected by a sewage problem entering from Baumanners Brook.

D. Vegetation

The two major types of grass found on the golf course are Kentucky bluegrass and Red fescue. The included plant descriptions (see Appendix) discuss the uses, adaptation, and proper management practices for these plants. Some trees and shrubs border the golf course. Trees present include oaks, maples, sycamores, white pines, norway spruce, and eastern hemlocks. Shrubs present include taxus, junipers and azaleas. No unique or unusual species are present.

E. Geology

The Hop Brook Golf Course is situated on the stratified drift and alluvial deposits of the Hop Brook valley. Stratified drift consists of layered, relatively well-sorted rock materials that were washed from stagnant, melting glacier ice masses during a period of glacial retreat. The deposits are composed primarily of sand and gravel but occasional layers of silt or clay may be interspersed. Alluvial sediments consist of materials that were deposited postglacially by modern streams which in this case were Hop Brook and, possibly in the southern portion, Naugatuck River. To a great extent, alluvium is made up of stratified drift that has been eroded and redeposited. The alluvium itself is generally less than 10 feet thick and overlies stratified drift. The highest elevation on the golf course is the crest of a small, elliptical hill. The hill is made up of another glacial sediment called till. Till consists of rock materials that were deposited directly from glacier ice. Because there was little opportunity for sorting in this depositional process, till is a complex mixture of particles ranging in size from clay to boulders. The texture of the upper few feet of the till appears to be coarse and not substantially different from the stratified drift. Below the coarse zone, the till may become very silty and compact.

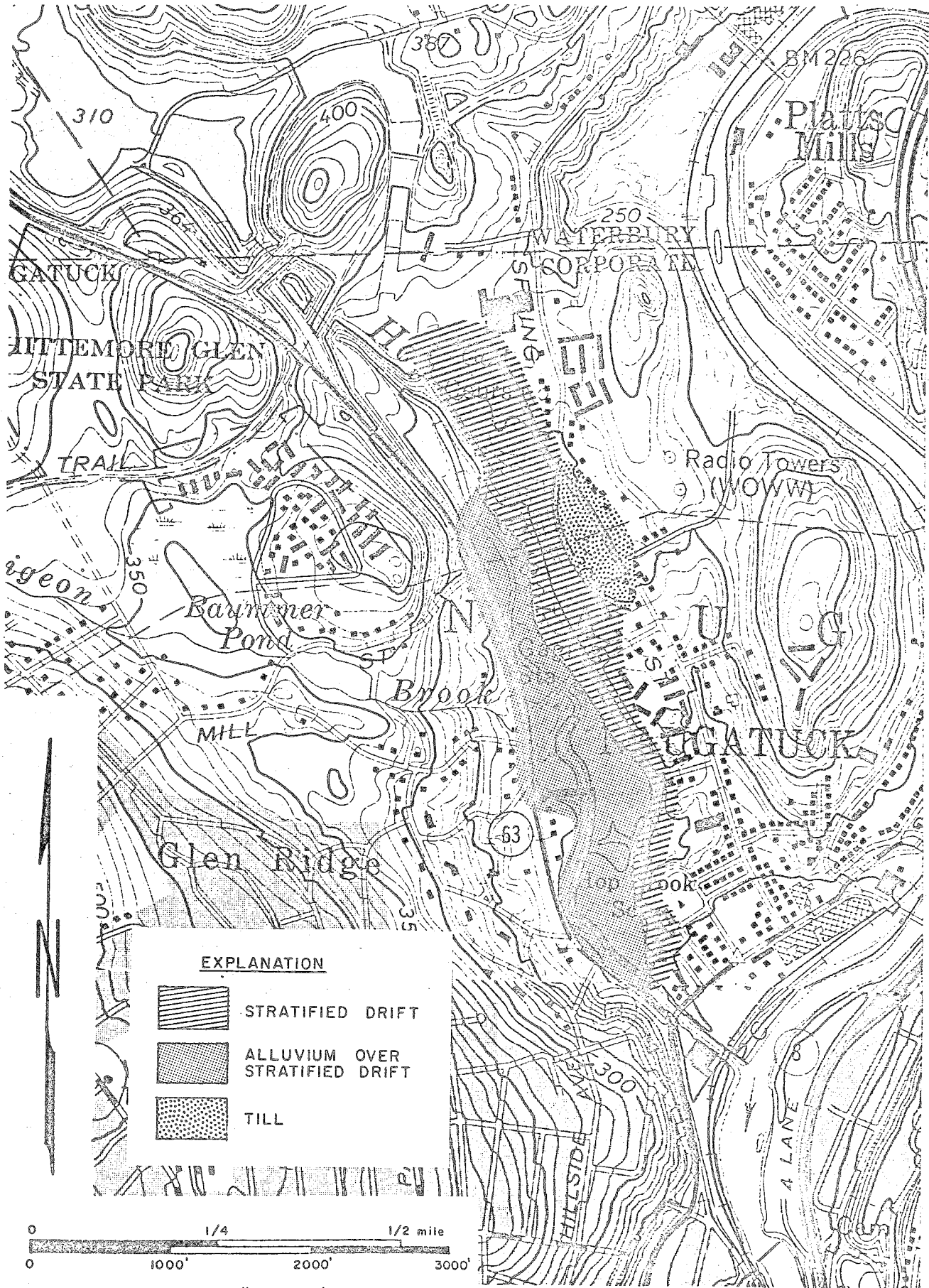
The thickness of the stratified drift-alluvial deposits ranges from less than 10 feet in the northern portion of the golf course to 40 feet or more in the southern portion. The thickness of the till is not known but it may exceed 30 feet. No clear-cut exposures of bedrock were observed on the site.

The surficial geology of the site is shown in Figure 3.

F. Soils

The soils on this site are Agawam fine sandy loam, 3 to 8 percent slopes (AfB); Charlton fine sandy loam, 3 to 8 and 8-15 percent slopes (CfB) (CFC); Hinckley gravelly

FIGURE 3.
SURFICIAL GEOLOGY



sandy loam, 3 to 8 percent slopes (HKB); Hinckley and Manchester soils, 15 to 35 percent slopes (HmE); and Podunk fine sandy loam (Ps). The soils map presented in the Appendix of this report shows the geographical location of these soils. The soil descriptions, also presented in the Appendix, discuss the soil properties and suitability for different uses.

G. Climate

According to the publication "Rare and Endangered Species of Connecticut and their Habitats" by Dowhan and Craig (the Natural Resources Center, Ct. DEP, 1976), the Hop Brook Golf Course is located in the "Southwest Hills" ecoregion. The climate characteristics of this ecoregion, as described in the Dowhan and Craig report, are as follows:

"The mean annual temperature is 49.5°F. The average winter temperature (December-February) is about 29.5°F., with a monthly mean minimum temperature in the coldest month of about 19°F. Mean annual minimum temperature is about -5°F. Seasonal snowfall accumulation averages 40 inches. The average frost-free season is about 160 days. The average summer temperature (June-August) is about 70°F., with a monthly mean temperature for the warmest month of 85°F., one of the highest in the state. Average annual precipitation is about 45 inches."

H. Water Resources

The chief water resources of the golf course site are Hop Brook and the groundwater flowing through the adjacent stratified drift deposits. Water quality in the brook appears to be good. Connecticut Water Resources Bulletin No. 19 indicates that the maximum dissolved solids concentration in the brook during a low-flow period in 1965 was moderate to low. Hardness was not seen to be a problem, but high iron or manganese concentrations were an occasional nuisance. At the present time, Hop Brook and its stratified-drift aquifer are not used for public water-supply purposes in Naugatuck. However, public water is available in this section of the town.

A flood-control dam on Hop Brook is located less than a half-mile upstream from the golf course. Records maintained at this dam indicate that the brook's average flow during the summer is 5 - 7 cubic feet per second (cfs), or about 3.2 million - 4.5 million gallons per day (gpd). The lowest flow measured at the dam reportedly was about 1.3 million gpd. The irrigation project would utilize a maximum of 250,000 gpd, according to estimates provided by town officials. Hence, the project would be able to reduce flows in the brook by an estimated maximum of 20 percent. The average flow reduction would be approximately 6 - 8 percent.

The western portion of the golf course lies within an area that is subject to occasional flooding by Hop Brook. Nothing in the proposed project would affect this condition in any way.

I. Waste Disposal

The clubhouse at Hop Brook Golf Course is served by public water lines but relies on a septic system for the disposal of waste effluent. Solid wastes from the site are disposed of by the Borough of Naugatuck's Public Works Department.

J. Transportation

Principal access to the site is over Rte 63 in Naugatuck. The Hop Brook Golf Course has approximately 100 parking spaces.

IV. ENVIRONMENTAL IMPACT OF THE PROPOSED ACTION

No impact on geological resources or groundwater resources is foreseen. As mentioned in the Water Resources section, low flows in Hop Brook may be reduced by 20 percent. This should not affect local water supplies since Hop Brook joins Naugatuck River 1000 feet downstream from the site and no surface-water or groundwater withdrawals are presently being made from that area.

The proposed withdrawal of water from Hop Brook will have a slight negative impact on the fisheries in this area. The production of all fish can be expected to be reduced somewhat by the water withdrawal, particularly during periods of low flow. This portion of Hop Brook is not a significant fisheries resource however (see discussion in Fish and Wildlife section), and the proposed project will not noticeably affect recreational fishing opportunities. Nevertheless, water withdrawal during periods of low flow should be sensitive to possible fisheries impact and efforts should be taken to minimize withdrawal during low flow periods if feasible.

The proposed irrigation system should benefit the growth of grass on the site. This should lead to increased use of the facility by local residents.

The effect of the proposed action on local flora, fauna, and microclimate will be negligible.

Some silt will enter Hop Brook during the construction of the pumping station. This can be minimized by doing the construction during the summer while the water level in Hop Brook is low, by completing the work as quickly as possible, and by stabilizing the area with permanent vegetation after final grading is completed.

Some increase in energy use will be noted. However, this impact can be mitigated by off-period use of irrigation pumps.

Traffic can be expected to increase somewhat in the area as a result of the project, but this is not viewed as a significant concern.

Finally, it should be noted that a resource conservation plan will be developed for the entire golf course by the Soil Conservation Service assisting the New Haven County Soil and Water Conservation District.

To summarize, no significant adverse environmental impacts or concerns are anticipated with implementation of the proposed project if: 1) the resource conservation plan prepared for the project by the Soil Conservation Service is implemented, and 2) efforts are taken to minimize the withdrawal of water from Hop Brook during periods of low flow.

There will be no irreversable or irretrievable commitment of resources by the Town with implementation of the project.

V. CONSULTATION AND COORDINATION

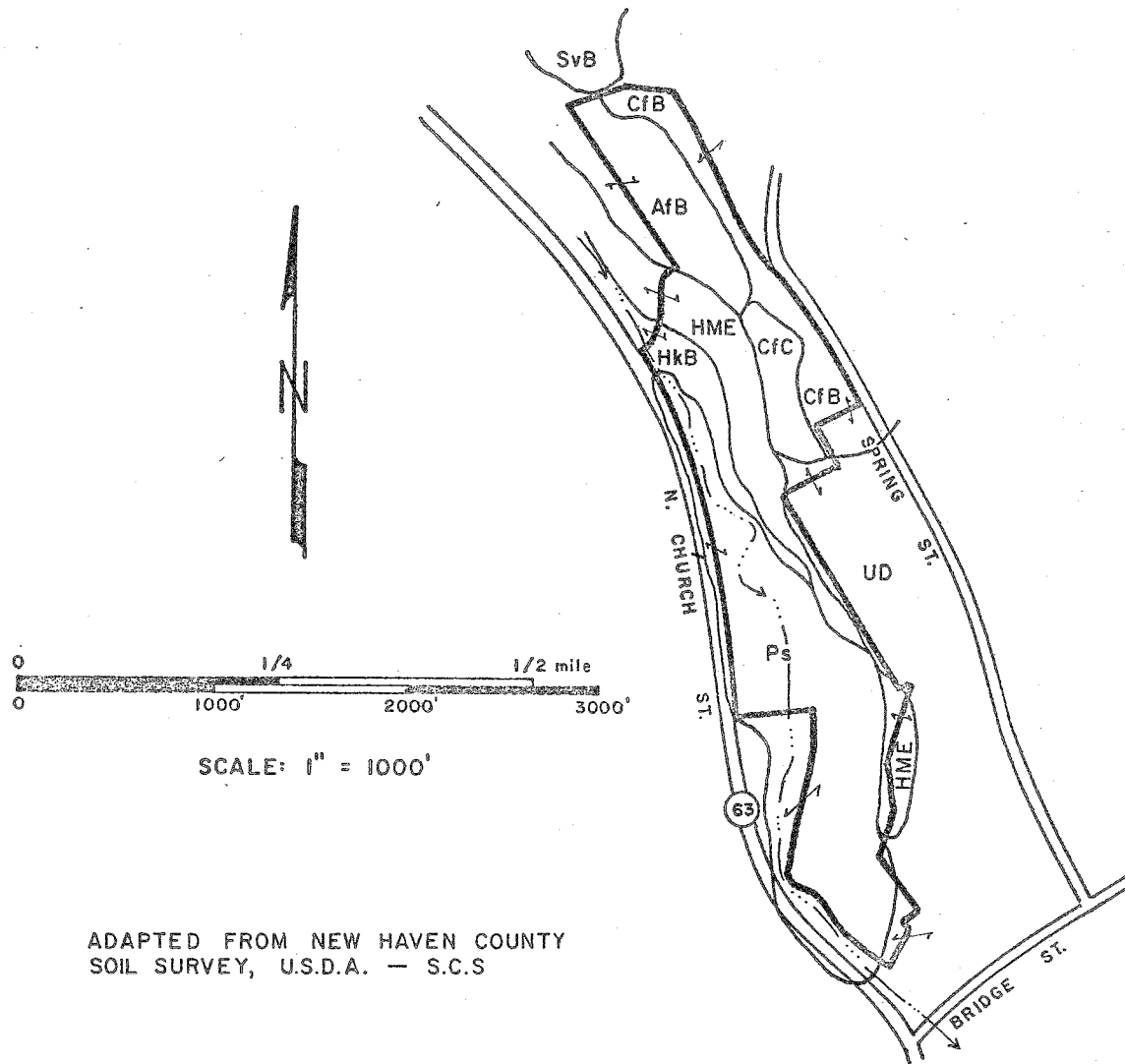
The public has been informed of the proposed action through newspaper coverage of the proposed project carried in the Naugatuck Daily News (e.g. see article of September 25, 1980). In addition, the Borough's transportation coordinator, the Public Works Department, the Naugatuck Zoning Commission and the Central Naugatuck Valley Regional Planning Agency have been consulted in developing the proposal.

There has been no controversy regarding the proposed project and it is not anticipated that there will be any controversy in the future. The lack of controversy to date reflects the fact that this is a project which is strongly supported by many different organizations and departments of local government in Naugatuck.

* * * * *

VI. APPENDIX

SOILS MAP



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

SOIL DESCRIPTION

AfB - Agawam fine sandy loam, 3 to 8 percent slopes.

This gently sloping, well drained soil is on outwash terraces of stream valleys. Slopes are smooth and up to 400 feet long. The areas are dominantly irregular in shape and are mostly 5 to 70 acres in size.

Typically, the surface layer of this soil is dark brown fine sandy loam 8 inches thick. The subsoil is dominantly dark brown and dark yellowish brown fine sandy loam 24 inches thick. The substratum, to a depth of 60 inches, is yellowish brown gravelly sand.

Included with this soil in mapping are small intermingled areas, generally less than 1 acre in size, of moderately well drained Ninigret soils, well drained Haven soils, and excessively drained Hinckley soils. In a few areas in the Quinipiac River Valley, the soils have a redder color in the substratum. Included areas make up 5 to 15 percent of this map unit.

Permeability is moderately rapid in the surface layer and subsoil and rapid in the substratum. This soil has a moderate available water capacity. Runoff is medium. This soil tends to dry out and warm up fairly early in spring. It has a low shrink-swell potential. If it is not limed, the soil is strongly acid or medium acid.

This soil is mostly cropland, or it is idle. The commonly grown crops are corn or hay; a few areas are used for vegetables or nursery stock. A rapidly increasing acreage is being used for community developments, mainly in the southern and more urban parts of the county. A small acreage is in woodland.

This soil has good potential for community development. It is easy to excavate, but the steep slopes of the excavations are unstable. Waste disposal systems, such as onsite septic disposal systems, will function satisfactorily with normal design and installation; however, the rapidly permeable substratum requires that caution be taken in some areas to prevent pollution of ground water. This soil has good potential for landscaping. Conservation measures are needed during construction of community developments to prevent excessive runoff, erosion and siltation.

This soil is well suited to cultivated crops. It is easy to maintain in good tilth. The hazard of erosion is moderate. Major concerns in managing this soil are controlling runoff and erosion and maintaining fertility, organic matter content, and tilth. If this soil is cultivated, minimum tillage, the use of cover crops, and including grasses and legumes in the cropping system are practices that help reduce runoff and control erosion.

This soil is well suited to trees; however, only a small acreage is in woodland. Productivity is moderate. Trees to favor in woodlots are eastern white pine, sugar maple, and northern red oak. Trees to plant are eastern white pine, white spruce, and Norway spruce.

The included Ninigret soil is not so well suited to community development as this Agawam soil. It has poor potential for onsite septic disposal systems because of the seasonal high water table. Haven and Hinckley soils have good potential for community development. Hinckley soils have poor potential for landscaping because they are droughty. Capability subclass 11e; woodland suitability subclass 40.

SOIL DESCRIPTION

CfB -- Charlton fine sandy loam, 3 to 8 percent slopes.

This gently sloping, well drained soil is on broad hilltops, ridge tops, and glacial till plains. Slopes are smooth and convex, and are up to 500 feet long. The areas are dominantly irregular in shape and are mostly 5 to 80 acres in size.

Typically, the surface layer is dark brown fine sandy loam 8 inches thick. The subsoil is yellowish brown and light olive brown fine sandy loam 18 inches thick. The substratum, to a depth of 60 inches, is grayish brown gravelly fine sandy loam that has a few firm lenses up to 4 inches thick.

Included with this soil in mapping are small intermingled areas, generally less than 1 acre in size, of moderately well drained Sutton and Woodbridge soils, well drained Paxton soils, and somewhat excessively drained Hollis soils. A few small areas have stones and boulders on the surface. In a few areas in West Haven and Guilford, the soils have a redder color in the substratum. Included areas make up 5 to 15 percent of this map unit.

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

In most areas, this soil is used for hay and corn. In a few areas it is used for vegetables, nursery stock, and orchards. A significant and rapidly increasing acreage is in community development or is idle. The remaining acreage is woodland.

This soil has good potential for community development. It is fairly easy to excavate but commonly has stones and boulders. Waste disposal systems such as onsite septic systems generally function satisfactorily with normal design and installation. This soil has good potential for landscaping. During construction of community developments, conservation measures are needed to prevent excessive runoff, erosion and siltation.

This soil is well suited to cultivated crops. Good tilth is easy to maintain. The hazard of erosion is moderate, and controlling runoff and erosion is a major concern. Maintaining good fertility and good organic matter content are also concerns. If this soil is cultivated, minimum tillage, use of cover crops, and including grasses and legumes in the cropping system can help reduce runoff and control erosion. Stones and boulders near the surface are an annoyance when using some tillage equipment.

This soil is well suited to trees. Most of the soil was once cropland, but few areas have been left to grow back to woodland. Productivity is moderate. Machine planting is practical in open areas. Trees to favor in existing woodlots are eastern white pine, red maple, and northern red oak. Trees to plant in open areas are eastern white pine, European larch, white spruce and eastern hemlock.

SOIL DESCRIPTION

CfB -- Charlton fine sandy loam, 3 to 8 percent slopes. Page 2

The included soils are not so well suited to community developments. They have poor potential for onsite septic systems; the Paxton soils because of a slowly permeable substratum, the Sutton soils because of a seasonal high water table, the Hollis soils because of bedrock at a depth of 10 to 20 inches, and the Woodbridge soils because of a seasonal high water table at a depth of about 20 inches and a slowly permeable substratum. Capability subclass 11e; woodland suitability subclass 4o.

SOIL DESCRIPTION

HkB - Hinckley gravelly sandy loam, 3 to 8 percent slopes.

This gently sloping, excessively drained soil is on outwash terraces of stream valleys. Slopes are smooth or complex and are mostly less than 200 feet long. The areas dominantly are irregular in shape and 3 to 45 acres in size.

Typically, the surface layer is dark brown gravelly sandy loam 8 inches. The upper part of the subsoil is strong brown gravelly sandy loam 5 inches thick, and the lower part is brown gravelly loamy sand 3 inches thick. The substratum, to a depth of 60 inches, is yellowish brown stratified sand and gravel.

Included with this soil in mapping are small intermingled areas, generally less than 1 acre in size, of the well drained Agawam and Haven soils and the moderately well drained Ninigret soils. In a few areas, the soils are not so gravelly. Included areas make up 5 to 15 percent of this map unit.

Permeability is rapid in the surface layer and subsoil and very rapid in the substratum. This soil has a low available water capacity. Runoff is medium. This soil dries out and warms up rapidly in spring. It has a low shrink-swell potential. Unless the soil is limed, the reaction ranges from medium acid through very strongly acid.

Most areas of this soil have been cleared and are used as cropland. Much of the acreage is now idle. A small acreage is woodland. A rapidly increasing acreage, mainly in the southern part of the county, is used for community development.

This soil has good potential for community development. It is easy to excavate; however, the steep slopes of excavations are unstable. The droughtiness of this soil is a major concern in landscaping. Irrigation or sprinkling is needed in summer. Waste disposal systems, such as septic tank absorption fields, will function satisfactorily with normal design and installation; however, the very rapid permeability requires that caution be taken to prevent the pollution of ground water. This soil has fair potential for use as sites for commercial buildings and is limited mainly by steep slopes. During periods of construction, simple conservation measures generally are adequate to prevent excessive runoff, erosion and siltation.

This soil has poor potential for most crops because it is droughty. Irrigation is needed to insure a productive crop. Good tilth is easy to maintain; however, the gravel content hinders the use of some farming equipment. Good organic matter content needs to be maintained. Many areas can be used to grow hay and for pasture. Controlling runoff and erosion requires simple conservation measures.

This soil is fairly well suited to growing trees. Productivity is low because this soil is droughty. Seedling mortality is severe because the soil lacks sufficient moisture to sustain the seedlings. Trees to favor in existing woodlots are eastern white pine, northern red oak, and sugar maple. Trees to plant in open areas are eastern white pine and European larch.

The included Agawam and Haven soils are similarly suited to community development. They are better suited to landscaping than this Hinckley soil because they are not droughty. The included Ninigret soil has poor potential for septic tank absorption fields because it has a seasonal high water table at a depth of about 20 inches. Capability subclass 111s; woodland suitability subclass 5s.

SOIL DESCRIPTION

HME -- Hinckley and Manchester soils, 15 to 35 percent slopes.

This map unit consists of moderately steep to very steep, excessively drained soils on outwash terraces. These soils are on breaks at the edge of terraces, along ravines, and in steep areas where the terrace joins the glacial till uplands. Slopes are smooth and mostly less than 300 feet long. The areas are dominantly long and narrow in shape. They are mostly 3 to 50 acres in size. Approximately 65 percent of the total acreage is Hinckley soils and other similar soils and about 35 percent is Manchester Soils and other similar soils.

The more extensive areas of Hinckley soils are in the eastern and western parts of the county. The redder colored Manchester soils are in the central part of the county. These soils were not separated in mapping because they react similarly to expected uses. The Hinckley soil typically has a dark brown gravelly sandy loam surface layer 3 inches thick. The upper part of the subsoil is strong brown gravelly sandy loam 10 inches thick, and the lower part is brown gravelly loamy sand 3 inches thick. The substratum, to a depth of 60 inches, is yellowish brown stratified sand and gravel. The Manchester soil has a reddish brown gravelly sandy loam surface layer 3 inches thick. The upper part of the subsoil is yellowish red gravelly sandy loam 7 inches thick, and the lower part is yellowish red gravelly loamy sand 6 inches thick. The substratum, to a depth of 60 inches, is reddish brown very gravelly sand.

Included with these soils in mapping are areas, up to 5 acres in size, of other soils. Included with the Hinckley soil are the well drained Agawam and Charlton soils and a few small bedrock outcrops. Also included are a few small areas of soils that are not so gravelly. Included with the Manchester soil are the well drained Branford and Cheshire soils, the excessively drained Penwood soils, and a few small bedrock outcrops. Also included in this map unit are Podunk, Rumney, and Saco soils in small areas that are mainly less than 50 feet wide along streams in ravines and very narrow valleys. A few areas include slopes that are as much as 80 percent.

The Hinckley and Manchester soils have rapid permeability in the surface layer and subsoil and very rapid permeability in the substratum. Runoff is rapid. The available water capacity is low. Unless limed, these soils are medium acid through very strongly acid.

The soils of this unit are mostly wooded. A few areas are idle or are cleared and used for pasture. A small acreage is being used for community development.

The soils of this unit have poor potential for community development. They are limited mainly by the steep slopes. These soils are easy to excavate; however, the steep slopes of excavations are unstable. Waste disposal systems, such as septic tank absorption fields, need very careful and often unusual design and installation to insure that effluent does not seep to the surface in areas downslope from the leaching system. Because of the very rapidly permeable substratum, care must be taken in some areas to prevent the pollution of ground water. The soils in this unit can provide sites for unusually designed buildings or houses. Intensive conservation measures generally are needed to prevent excessive runoff, erosion, and siltation during periods of construction.

SOIL DESCRIPTION

HME -- Hinckley and Manchester soils, 15 to 35 percent slopes. (Con't)

The soils in this unit are poorly suited to crops because of the steep slopes. A few areas can be used to grow hay. The hazard of erosion is severe, and these soils should be kept in permanent vegetative cover.

These soils are not well suited to trees because they are droughty; however, this may be one of the best uses of these soils. Productivity is low. The droughtiness makes the establishment of tree seedlings difficult. The steep slopes hinder the use of most harvesting and planting equipment. Trees to favor in existing woodlots are eastern white pine and northern red oak. Trees to plant in open areas are eastern white pine and European larch.

The included Agawam, Charlton, Branford, Cheshire, and Penwood soils have similar limitations for community development because of their steep slopes. The included Podunk, Rumney, and Saco soils have poor potential for septic tank absorption fields because they have a high or seasonally high water table all or part of the year and are subject to flooding. Capability subclass Vlls; woodland suitability subclass 5s.

SOIL DESCRIPTION

Ps-PODUNK FINE SANDY LOAM. This nearly level, moderately well drained soil is on the flood plains of the major streams and their tributaies. Slopes are 0 to 3 percent. They are smooth and mostly 50 to 200 feet long. The areas are dominantly long and narrow or irregular in shape. They are mostly 3 to 60 acres in size.

Typically, there is 3 inches of decomposed and undecomposed litter on top of the surface layer. The surface layer is very dark grayish brown fine sandy loam 5 inches thick. The subsoil is 29 inches thick; it is 9 inches of brown fine sandy loam over 20 inches of dark brown, mottled sandy loam. The substratum, described to a depth of 60 inches, is yellowish brown sand with a few layers of gravel 2 inches thick.

Included with this soil in mapping are small intermingled areas, generally less than 1 acre in size, of somewhat excessively drained Hichkley soils, well drained Agawam soils, and poorly drained Rumney and Walpole soils. A few areas have a sandy loam surface layer and subsoil. A few areas in the central part of the county have redder colors. A few small areas are well drained and have a seasonal high water table at a depth of 50 inches. Included areas make up 5 to 15 percent of this map unit.

The Soil has a seasonal high water table at a depth of about 20 inches from late in fall until mid-spring. It is subject to frequent flooding, especially from fall through spring. Permeability is moderately rapid in the surface layer and subsoil and rapid in the substratum. This soil has a moderate available water capacity. Runoff is slow. This soil dries out and warms rather slowly in spring. It has a low shrink-swell potential. Unless limed, it is very strongly acid through medium acid.

This soil is mostly in woodland. A few areas are cleared and used for hay, corn, and pasture. A few areas are cleared and are idle. A small acreage is used for community development.

This soil has poor potential for community development. It is limited mainly by its susceptibility to flooding. It is easy to excavate; however, the water table inundates the excavations. The steep slopes of excavations are unstable. This soil has poor potential for waste disposal systems, such as tank absorption fields, because of the seasonal high water table and the susceptibility to flooding. In addition, the septic system may pollute the ground water. This soil is poorly suited to homesites because of the flooding. It is poorly suited to landscaping because it floods and because sediment is often deposited by the floodwaters.

This soil is suited to crops. Wetness is a major limiting factor for growing crops, and drainage is generally needed for best crop production. Even with drainage, this soil may remain wet for a few days after heavy rains, restricting the use of many kinds of farming equipment. Crops may be damaged or lost when this soil floods during the growing season. Runoff and erosion are easy to control with simple conservation measures.

This soil is well suited to trees. Productivity is moderately high. This soil

SOIL DESCRIPTION

Ps-PODUNK FINE SANDY LOAM: (Con't)

has no major limitations for growing or harvesting trees. Machine planting is feasible in open areas. Wetness or flooding may restrict the use of equipment during the wetter parts of the year. Trees to favor in existing woodlots are eastern white pine. Trees to plant are eastern white pine and white spruce.

The included Hinckley and Agawam soils have good potential for community development. The Rumney and Walpole soils have poor potential for community development because they have a seasonal high water table at a depth of about 8 inches. Rumney soils are also subject to frequent flooding. Capability subclass IIw; woodland suitability subclass 3o.

PLANTS FOR CONSERVATION IN THE NORTHEAST
USDA - SOIL CONSERVATION SERVICE

CONSERVATION PLANT SHEET NE-10

KENTUCKY BLUEGRASS
(*Poa pratensis* L.)

Uses: This grass is used for pastures and turf for lawns, athletic fields, golf - courses, and playgrounds. It is also used for stabilizing waterways, slopes, banks, cuts, and fills. Kentucky bluegrass is the most common pasture grass in the Northeast, covering millions of acres. It is not generally used for hay. It is a choice food for ruffed grouse, turkeys, deer, and rabbits.

Description: It is a long-lived perennial grass that forms a dense sod. Seedhead stems grow 18 to 24 inches tall, but will head at 4 to 6 inches in height when used for intensive grazing. It has an open panicle shaped like a pyramid and produces many small seeds. Leaves are 4 to 12 inches long and boat-shaped or keeled at the tips. Leaves are smooth, soft, and about 1/8 to 1/4 inch wide. It becomes dormant during heat of summer, but regains or maintains its green color in fall. Growth starts early in the spring. Tiller buds develop into stems or rhizomes. New rhizomes also arise from nodes of older rhizomes. Most rhizomes penetrate 2 to 4 inches into the soil, but some will go down for more than 5 inches.



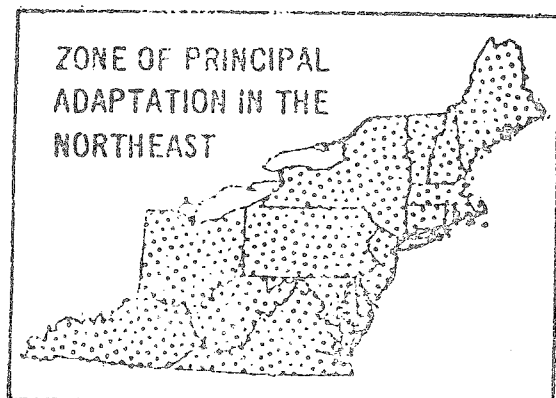
Varieties: Many varieties have been developed by federal and state experiment stations. Most of these are released primarily for turf seedings. No varieties are known to have been developed exclusively for farm use. Two of the more important varieties used in the Northeast

are Merion and Windsor. Names and points of origin of other varieties sometimes used in the Northeast are: Fylking (Sweden); Kenblue (Kentucky); Delta (Ontario, Canada); Newport (Oregon and Washington); Pennstar (Pennsylvania); Park (St. Paul, Minnesota); and Prato (Holland).

Sources: Most of these varieties are available from commercial sources.

Adaptation: Kentucky bluegrass occurs in all states of the Northeast. It is best adapted to well-drained, fertile, and medium textured soils of limestone origin. It performs satisfactorily on poorer drained and heavy textured soils. Favorable pH level for this grass is 6.0 to 6.5. Kentucky bluegrass grows best in the humid areas. Optimum temperatures

for forage production are between 60°F. and 90°F. Although the grass is essentially dormant during dry or excessively hot weather, it survives severe droughts. It prefers sunlight, but will do well in light shade with ample moisture and nutrients.



Kentucky bluegrass

Establishment: Kentucky bluegrass is not often seeded for pasture. It occurs spontaneously in most permanent pastures. Seedlings are made mostly for soil conservation and non-agricultural uses. When this grass is planted

it usually is part of a mixture of other grasses and legumes. The seedbed should be firm, weed-free, and limed and fertilized as necessary. Follow directions of the state agriculture experiment station for seeding rates, dates of seeding, fertility requirements, etc., as these vary with the kinds of seedlings to be made.

Management: Proper fertilization and liming are the most important phases of Kentucky bluegrass management.

In pastures, grazing should begin when grass is about 5 inches tall and should not be grazed shorter than 1 - 1/2 to 2 inches. Without this treatment, Kentucky bluegrass sod will become weedy and unproductive. When overgrazed, poor root and rhizome development occurs and weeds and shrubs may invade the pasture.

When used as turf, frequency and height of mowing will vary depending on the specific use. Lawns are mowed to a minimum height of 1 - 1/2 inches and frequently enough so that no more than 1/3 of the total leaf surface is removed. For critical areas, one mowing per year may be sufficient for weed control and appearance.

PLANTS FOR CONSERVATION IN THE NORTHEAST
USDA - SOIL CONSERVATION SERVICE

CONSERVATION PLANT SHEET NE-8

RED FESCUE
(*Festuca rubra* L.)

Uses: This grass is used as a turf for lawns, athletic fields, golf courses, and playgrounds. It is an excellent soil binder and used extensively for stabilizing waterways, slopes, banks, cuts, and fills. It is also used as a cover crop in orchards.

Description: Red fescue occurs in two forms, creeping and bunch-type. Creeping red fescue spreads by short underground stems that make a tight uniform sod. Chewings fescue is tufted and spreads by developing new shoots. Leaves of red fescue are bright green, wiry, and narrow. They are pressed together in V shape and appear nearly round. Stems are usually bent at the reddish or purplish base and grow about 2 feet tall. Panicle seedhead is contracted or narrow.

Varieties: Improved varieties of red fescue in the Northeast region are Illahee and Pennlawn. Uncommon varieties are Rainier, Golfrood, Trinity, Clatsop (Oregon), Duraturf (Canada), Olds (Canada), and Jamestown (Rhode Island). Pennlawn and Illahee are superior varieties for the Northeast. No improved varieties of Chewings fescue are on the market.

Sources: The common varieties are readily available from commercial sources.

Adaptation: This grass is hardy, wear - resistant, and shade tolerant. It is drought-resistant after establishment, and adapted to sandy and acid soils. It

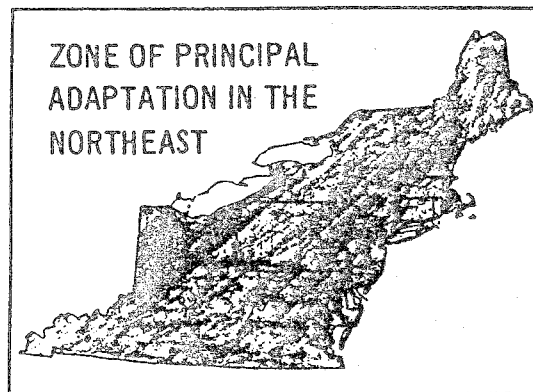


Red fescue

prefers well-drained soils, but requires ample moisture for establishment. Its prime area of use in the Northeast is New York, Ohio, West Virginia, Pennsylvania, and the New England States. In the other states of the Northeast region, the grass is adapted to the cooler zones. In areas of high temperatures and humidity, the grass may turn brown or deteriorate during the summer. It will generally recover in the fall when temperature and moisture conditions are more favorable.

Establishment: Red fescue is rarely seeded in pure stands. It is used, instead, with grasses and legumes for specific purposes, such as for lawns, erosion control, or recreational areas. Seedbed preparation, fertilizing, liming, rate and dates of seeding, and weed control requirements are generally governed by the companion grasses in the mixture. When red fescues are added to a mixture they usually constitute 25 to 60 percent of the mixture by weight. In shaded areas, red fescue is often the key grass in the mixture.

Management: To maintain stand vigor and density on lawns and recreational areas, apply fertilizers annually. For critical erosion areas, less frequent use of fertilizers may be satisfactory. When red fescue dominates a stand, mowing consistently below 1-1/2 inches can cause severe damage to the stand.



Red Fescue

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.