

ENVIRONMENTAL REVIEW TEAM REPORT  
ON THE  
NORWICH GOLF COURSE  
NORWICH, CONNECTICUT

JUNE, 1975

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EASTERN CONNECTICUT RESOURCE CONSERVATION  
AND DEVELOPMENT PROJECT  
Environmental Review Team  
139 Boswell Avenue  
Norwich, Connecticut 06360

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ON THE  
NORWICH GOLF COURSE  
NORWICH, CONNECTICUT

This report is an outgrowth of a request from the City of Norwich, with the approval of the landowner, to the New London County Soil and Water Conservation District (S&WCD). The S&WCD referred this request to the Eastern Connecticut Resource Conservation and Development (RC&D) Project Executive Council for their consideration and approval as a project measure. The request has been approved and the measure reviewed by the Environmental Review Team.

The soils of the site were mapped by a soil scientist of the USDA Soil Conservation Service. Reproductions of the soil survey and a table of limitations for urban development were forwarded to all members of the Team prior to their review of the site.

The Team that reviewed the golf course consisted of the following personnel: Sherman Chase, District Conservationist, Soil Conservation Service; Thomas Seidel, Planner, Southeastern Connecticut Regional Planning Agency; Barbara A. Hermann, Team Coordinator, Eastern Connecticut RC&D Project. Also providing input into the report were: Richard Hyde, Geologist, Natural Resource Center, Connecticut Department of Environmental Protection (DEP); David Miller, Climatologist, Connecticut Cooperative Extension Service.

The Team met and reviewed the site on May 2, 1975. Reports from each Team member were sent to the Team Coordinator for review and summarization.

This report is not meant to compete with private consultants by supplying site designs or detailed solutions to development problems. This report identifies the existing resource base of the golf course, as requested by the City, to be incorporated into an open space application for purchase of the course.

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

If you require any additional information, please contact: Miss Barbara A. Hermann (889-2324), Environmental Review Team Coordinator, Eastern Connecticut RC&D Project, 139 Boswell Avenue, Norwich, Connecticut 06360.

NORWICH GOLF COURSE  
DESCRIPTION OF THE ENVIRONMENT

1. Describe the site's surface and subsurface geologic characteristics. Specific reference should be made to mineral deposits with commercial value.

In terms of the surficial geology, the golf course property can be divided into two distinct areas - the stratified drift portion covering 80-85% of the course and the till and outcrop area along the extreme eastern boundary. These areas are shown on the map on the following page. There are also small areas of alluvium and swamp deposits. Alluvium is the flood plain deposits of the present-day streams consisting of silt, sand, gravel, and humus, and swamp deposits consist of partly decayed organic material, including peat, that is interlayered and intermixed with sand, silt, and gravel.

Stratified drift is those unconsolidated materials lying on top of the bedrock surface which were deposited during the decline of glacial times. The glacial ice carried large amounts of debris pick-up as it moved south. Once the weather conditions moderated, the ice began to recede and meltwater streams, flowing away from the ice front, carried huge amounts of sediments which were deposited downstream. This particular site was such a depositional area and as a result the earth materials are sands and gravels which have been sorted by grain size, and stratified in layers.

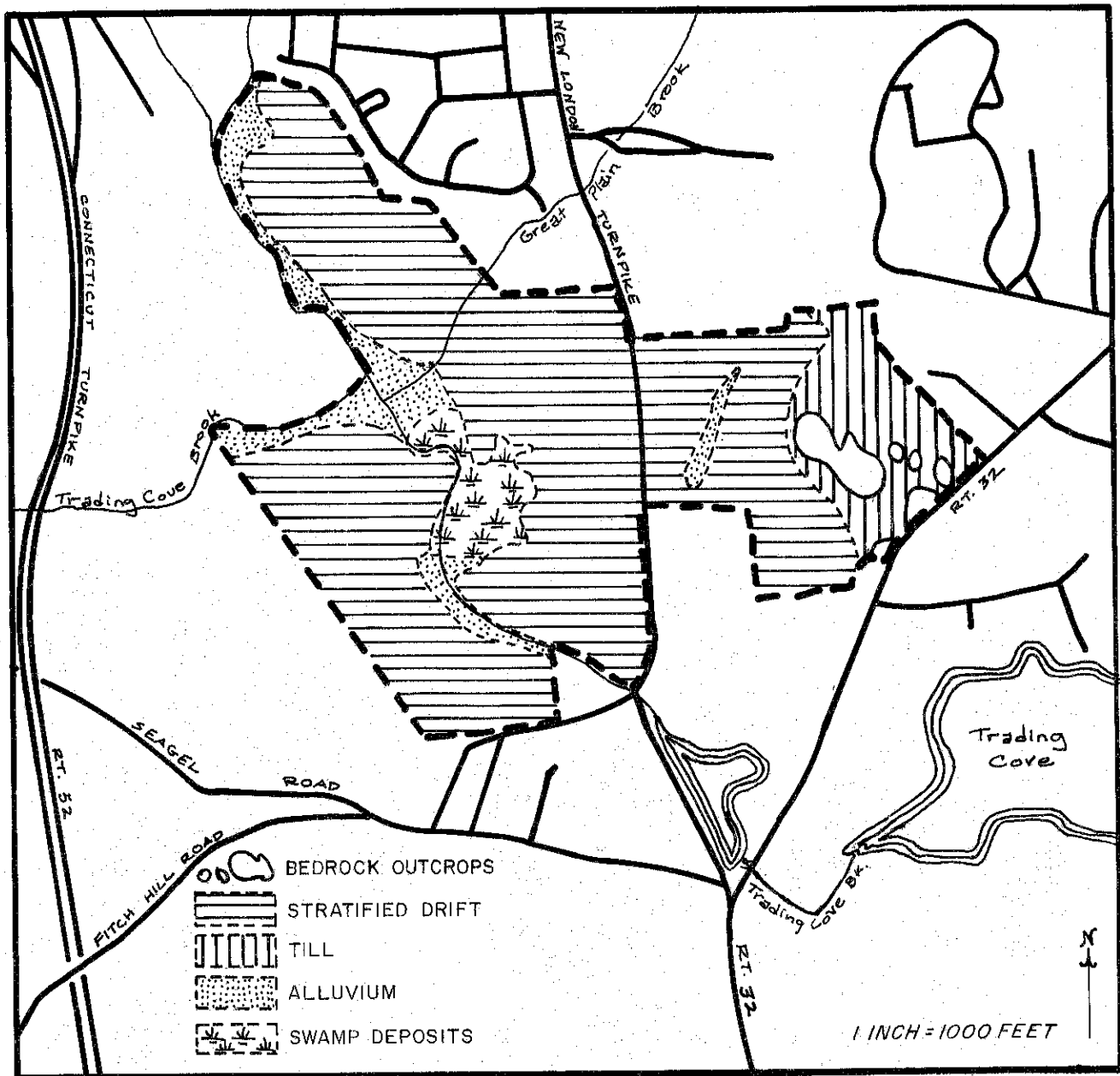
Based on a Department of Transportation survey, there appears to be only one small area along the southwestern boundary where the deposit is of sufficient thickness above the water table to be of economic importance. The significance of these sand and gravel deposits below the water table cannot be immediately known without exploratory test drilling. In Connecticut, surface deposits are so numerous, at least at this point in time, that few sand and gravel excavators extract materials below the water table economically.

The till and outcrop area located along the extreme eastern boundary is an area where the till material covers the bedrock surface in an extremely thin layer. In fact at many places the bedrock crops out and is visible at the land surface. Till is a very common material in Connecticut and is the predominant debris material remaining after all glacial ice had melted. By definition, till is that unconsolidated heterogeneous mixture of materials consisting of varying quantities of boulders, gravel, silt and clay which exhibit little or no sorting or stratification of the constituent particles. In other words, water movement had little to do with the deposition of this particular type of deposit.

2. Describe the nature of the soils in the area, particularly their fertility and susceptibility to erosion. Provide a soil survey map and an explanatory table which will indicate soil characteristics.

The majority of the site falls within Natural Soil Group A-1, terrace soils overlying water deposited beds of sand and gravel. Permeability of these soils is rapid. The shallowness to sand or gravel severely limits their water holding capacity. Natural fertility of these soils is also low. Grass, trees, and

# SURFICIAL GEOLOGY



shrubs are difficult to establish and maintain because of the low moisture holding capacity and low natural fertility. The steeper slopes add further difficulty to these problems. Because the soil is droughty, reseeding disturbed areas could be a problem. Using water from the brook and/or spring, irrigation could be used to insure the success of the seeding. Without irrigation, the best time to reseed is in the spring when there is more rainfall.

The terrace soils are generally suitable for buildings and roads, though the steep slopes in areas would require extensive cut and fill. If roads and/or buildings were to be planned, it is suggested that the existing topography be considered so as to minimize cut and fill. When cuts and fills are used, the

topsoil should be spread back over the disturbed areas. Also, provisions should be made to control erosion and prevent siltation of the brooks.

Several of the soils on the site, 58, 463, and 464, are classified as inland wetland soils due to their high seasonal water table. Though the composition of these soils vary, they all have a high water table that remains within 6 inches of the soil surface during the wettest part of the year. The high water table often persists into late spring and may reappear after prolonged or heavy summer rains or during periods of high stream flow (58). Because of their wetness and flood hazard (58) these soils have severe limitations for most urban uses. Intensive and costly drainage and land fill measures would be required to overcome the high water table.

On the eastern portion of the site, in the vicinity of the inn, the soils are rocky and shallow to bedrock (Natural Soil Group D). These soils generally conform to the area of till shown on the surficial geology map. This complex consists of about 55 percent deep well drained silty soils and about 45 percent shallow and moderately deep well drained silty soils over bedrock. The capacity of the deeper soils to hold water for plant growth is good where the till is loamy and fair where the till is sandy.

It was noted that there are areas eroding on the golf course due to a combination of steep slopes, droughty soil, foot traffic, and golf carts. If this is maintained as a golf course these problems could be corrected. Sections of the stream banks are eroding and this, in conjunction with erosion from the golf course, has resulted in quite severe siltation of the stream bottom. Remedial measures could be taken to correct the problems, but should not be undertaken without first having a study made by a qualified engineer.

Although this has been a golf course for many years, it has been a problem to maintain the fairways during dry spells. This is due to the droughty nature of the terrace soils. Irrigation could solve this problem, but is is very expensive.

3. Provide data on climatic conditions, such as temperature and precipitation.

The following data was taken from The Climate of Connecticut, Connecticut Geological and Natural History Survey, Bulletin 99, 1965.

Mean Annual Precipitation:	50 inches
Annual Mean Temperature:	50° Farenheit
Average date of last occurrence of 32°F. temperature in spring:	April 15
Average date of first occurrence of 32°F. temperature in fall:	October 15
Average length of freeze-free season:	183 days

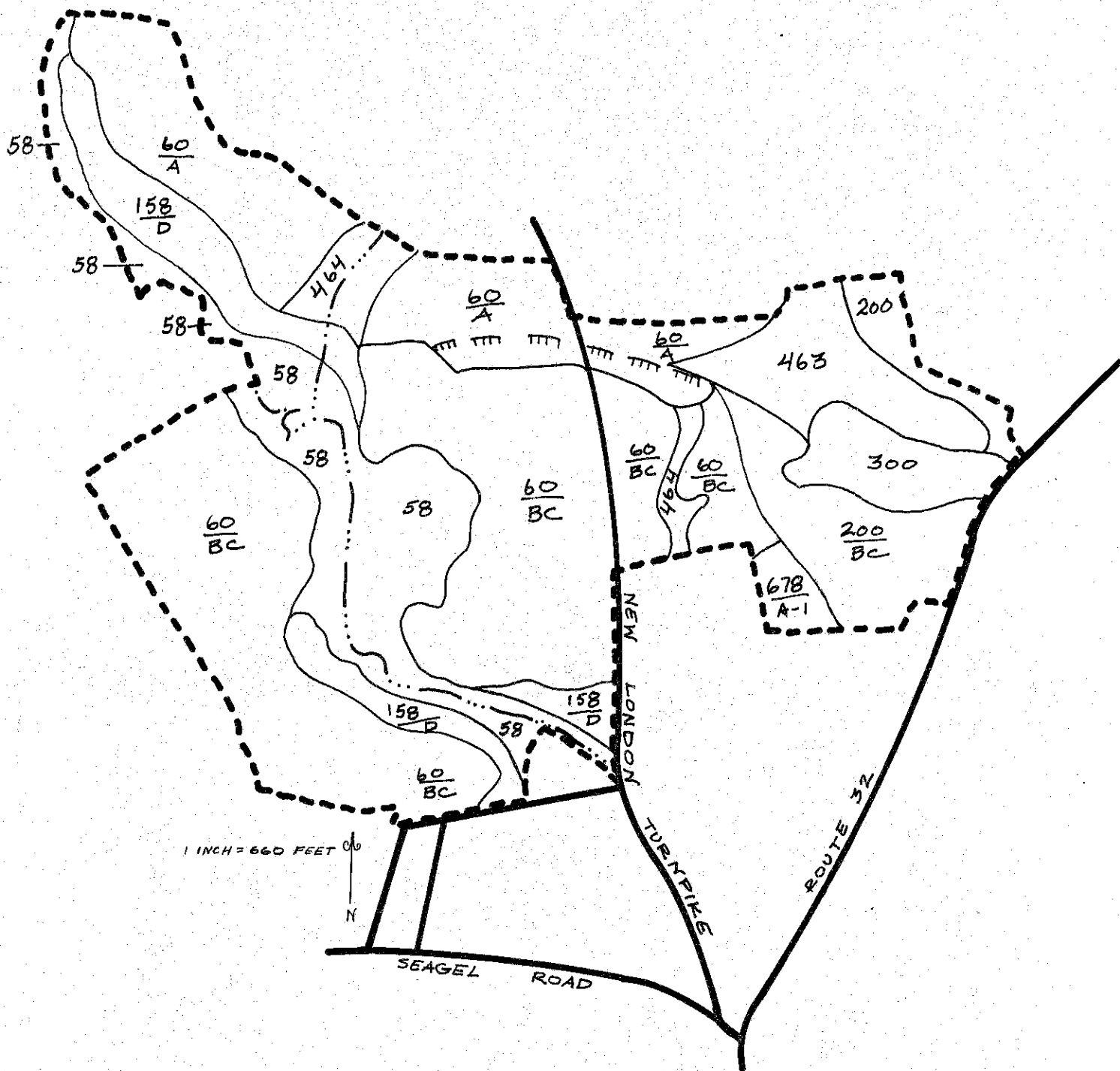
The climate should not significantly affect the golf course.

4. Describe the area's water resources, with special reference to ground water, water quality, aquifers and aquifer recharge areas and areas subject to flooding.

The sand and gravel areas of this property have been reported in two water resources studies as being areas of favorable ground water potential ("Water

# SOIL SURVEY

NORWICH GOLF COURSE  
NORWICH, CONNECTICUT



Prepared by: UNITED STATES DEPARTMENT OF AGRICULTURE,  
Soil Conservation Service

ADVANCE COPY, SUBJECT TO CHANGE

APRIL, 1975

### SOIL SUITABILITIES

<u>Natural Soil Group*</u>	<u>Mapping Symbol</u>	<u>Soil Name</u>	<u>Erosion Hazard</u>	<u>Sand &amp; Gravel Source</u>	<u>Topsoil</u>
A-1a	60A	Hinckley	low to medium	good	poor
A-1b	60BC	Hinckley	low to medium	good	poor
A-1a	678A-1	Windsor	low	good(sand)	poor
A-1c	158D	Sandy, gravelly terrace breaks	medium	good	poor
A-3a	464	Raynham	low	poor	fair
D-1	200BC, 300	Narragansett-Hollis Complex	medium	poor to very poor	poor
E-3a	58	Alluvial land	low	poor	good to fair
G-3a	463	Raynham	low	very poor	fair

### LIMITATIONS FOR URBAN DEVELOPMENT

<u>Natural Soil Group*</u>	<u>Mapping Symbol</u>	<u>Limitations for:**</u>					<u>Principal Limiting Factors</u>
		<u>Septic Systems</u>	<u>Base-ments</u>	<u>Land-scaping</u>	<u>Streets &amp; Parking</u>	<u>Athletic Fields</u>	
A-1a	60A	1	1	2	1	2	Droughtiness
A-1b	60BC	2	1	3	2	3	Droughtiness, slope 3-15%
A-1a	678A-1	1	2	3	1	2	Texture, droughtiness
A-1c	158D	3	3	3	3	3	Slope over 15%, droughtiness
A-3a	464	3	3	3	3	3	High water table
D-1	200BC, 300	3	3	3	3	3	Shallowness, slope 3-15%, stoniness
E-3a	58	3	3	3	3	3	Variable drainage and texture
G-3a	463	3	3	3	3	3	

\* Refer to Know Your Land, Natural Soil Groups for Connecticut, Soil Conservation Service, USDA Connecticut Cooperative Extension Service, for further explanation of the natural soil groups.

\*\* Limitations: 1-slight; 2-moderate; 3-severe.

Resources Inventory Part 3, Lower Thames and Southeastern Coastal River Basins," Connecticut Water Resources Bulletin #15, and "Connecticut Water Resources Planning Program: Hydrogeology of Southeastern Connecticut"). Based on field surveys, test hole drillings, and grain size analysis of sediment samples taken from these test holes, transmissivity is an indication of the ease with which an aquifer transmits water. In this particular area the saturated thickness of sediments range from 10 to 80+ feet with transmissivity values ranging between 2,000 and 8,000 feet squared per day. These values indicate this area to be of significant importance in terms of potential ground water supplies. Little information is available on subsurface water quality and if this site were developed for municipal supplies, water quality would depend on the specific characteristics of the aquifer as well as the extent of pumping. Additional management studies would have to be initiated to determine proper development of this potential water supply.

There is a spring on the golf course which previously supplied water for the inn. It is a valuable resource and could be used for irrigation and/or a water supply in the future.

5. Describe the area's vegetation, including species composition, distribution, commercial utility, and aesthetics.
- 

The majority of the golf course consists of large expanses of grassland, comprising the fairways and greens. Most of the forested areas are located in the wetlands and consist of mixed hardwoods, primarily oak, red maple, and diseased black birch. These stands do not have commercial value, but are providing some cover for wildlife, serving as water courses for surface water from the golf course, and contributing to the aesthetics of the area by breaking the monotony of the grassland. The hardwood stands could be improved by cutting the poor quality trees and also underplanting hemlock.

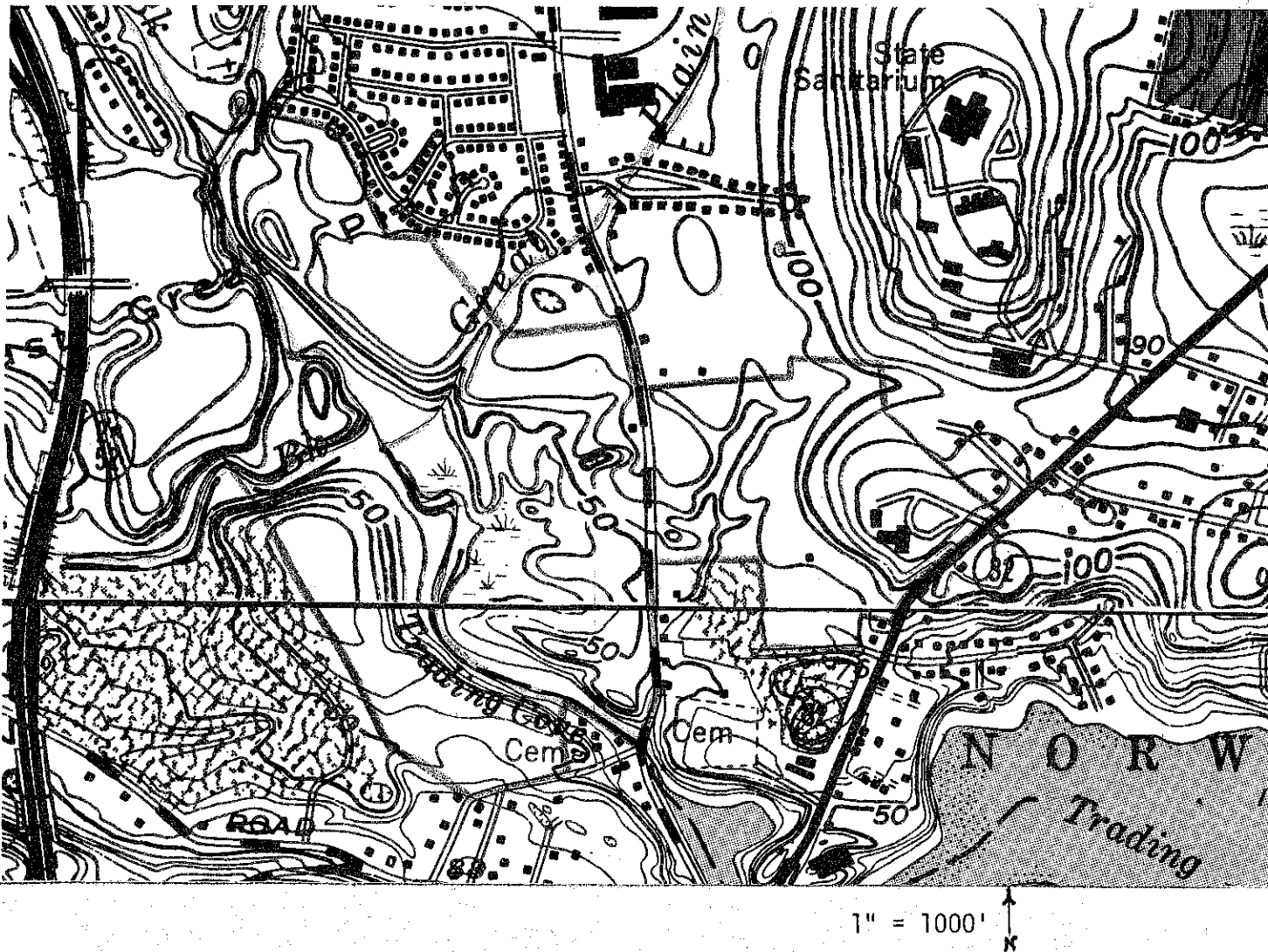
There are two areas of red pine on upland portions of the golf course which are in need of thinning. This species is not well suited to this climate, so it would be advisable to have a professional forester plan and supervise all cutting and planting operations. (A forester could probably be obtained from the State Department of Environmental Protection, Region IV, Voluntown.)

6. Describe the fauna of the area, commenting on food chains and relative abundance of species. Special reference should be made to rare or endangered species.
- 

The golf course is not a very good wildlife habitat. The areas of grassland are poor habitat because of a lack of cover. The wooded areas provide some cover for wildlife, but cannot be considered high in quality. The area as a whole has little potential as a wildlife habitat due to the low fertility of the terrace soils and the seasonal high water table of the wetland soils.



7. Provide a topographic map of the area.



8. Comment on any special topographic feature which may be present.

There are several areas of steep terrace breaks along the brooks (soil 158D). Because of their steepness, they have severe limitations for most urban uses, and with their droughtiness they present difficult problems for reseeding disturbed areas. They do, however, provide contrast in the landscape and overlook the brooks, thereby enhancing the environment.

9. Comments on the regional aspect of the proposal.

The present use of the site as a golf course is recommended in both the Regional Development Plan and the Norwich City Plan. The Norwich City Plan recommends that private recreation areas be acquired by the City if they are placed on the market.

In terms of the northern half of the Southeastern Connecticut Planning Region, there is only one 18-hole course and one 9-hole course other than the Norwich

Golf Course. The 18-hole course is a private club and is not open to the general public. Thus, if the Norwich course were to be eliminated and converted to another use, this would leave only one 9-hole course in the northern half of the region serving a population of about 75,000 persons. This means that in addition to serving Norwich residents, the Norwich course could also serve citizens of surrounding towns.