Environmental Review Team Report

Fox Ridge Estates

Tolland, Connecticut

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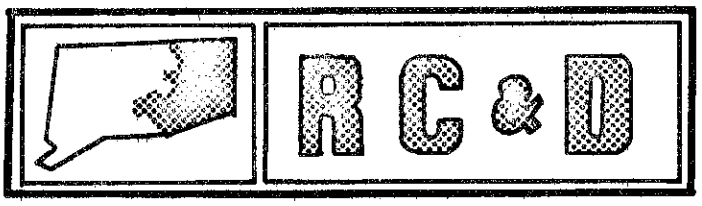
EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT AREA, INC.

Environmental Review Team Report
on

Fox Ridge Estates
Tolland, Connecticut

July 1979

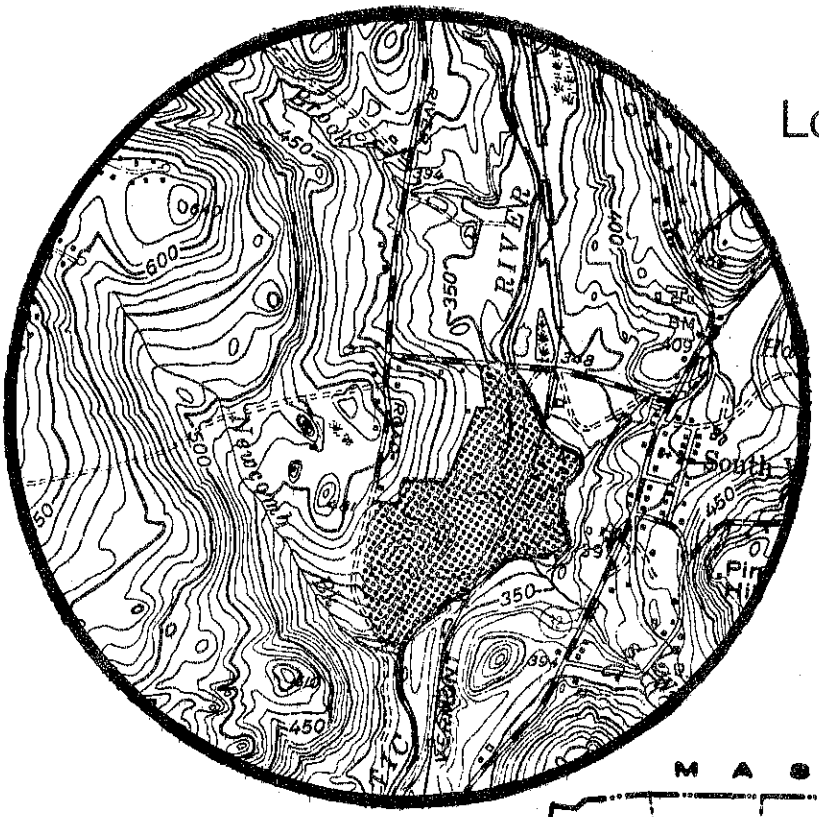


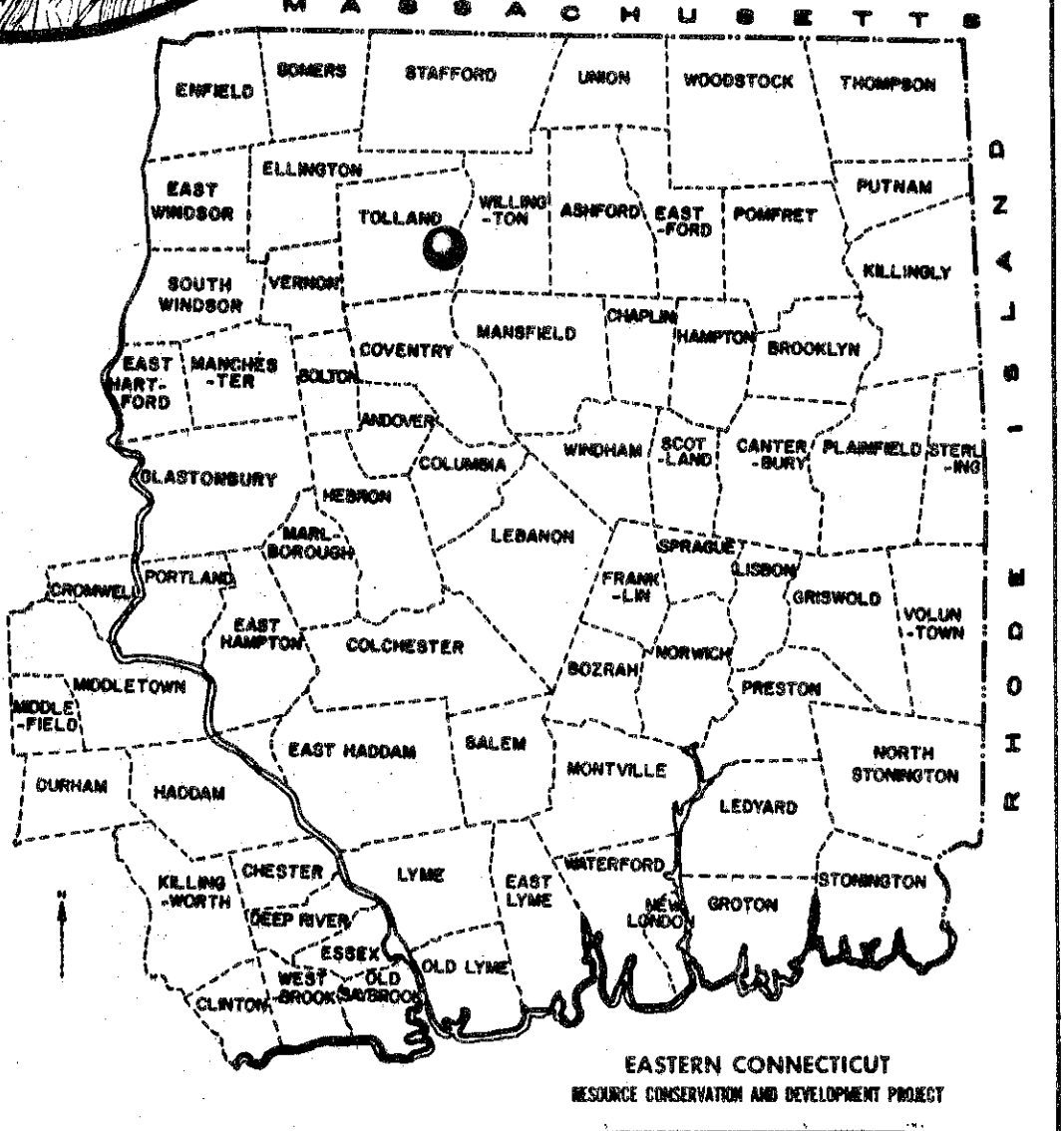
eastern connecticut resource conservation & development area

environmental review team
139 boswell avenue
norwich, connecticut 06360

Location of Study Site

FOX RIDGE ESTATES
TOLLAND, CONNECTICUT





EASTERN CONNECTICUT
RESOURCE CONSERVATION AND DEVELOPMENT PROJECT

ENVIRONMENTAL REVIEW TEAM REPORT
ON
FOX RIDGE ESTATES
TOLLAND, CONNECTICUT

This report is an outgrowth of a request from the Tolland Planning and Zoning Commission to the Tolland County Soil and Water Conservation District (S&WCD). The S&WCD referred this request to the Eastern Connecticut Resource Conservation and Development (RC&D) Area Executive Committee for their consideration and approval. The request was approved, and the measure was reviewed by the Eastern Connecticut Environmental Review Team (ERT).

The soils of the site were mapped by a soil scientist from the United States Department of Agriculture, Soil Conservation Service (SCS). Reproductions of the soil survey map, a table of soils limitations for certain land uses and a topographic map showing property boundaries were distributed to all Team members prior to their review of the site.

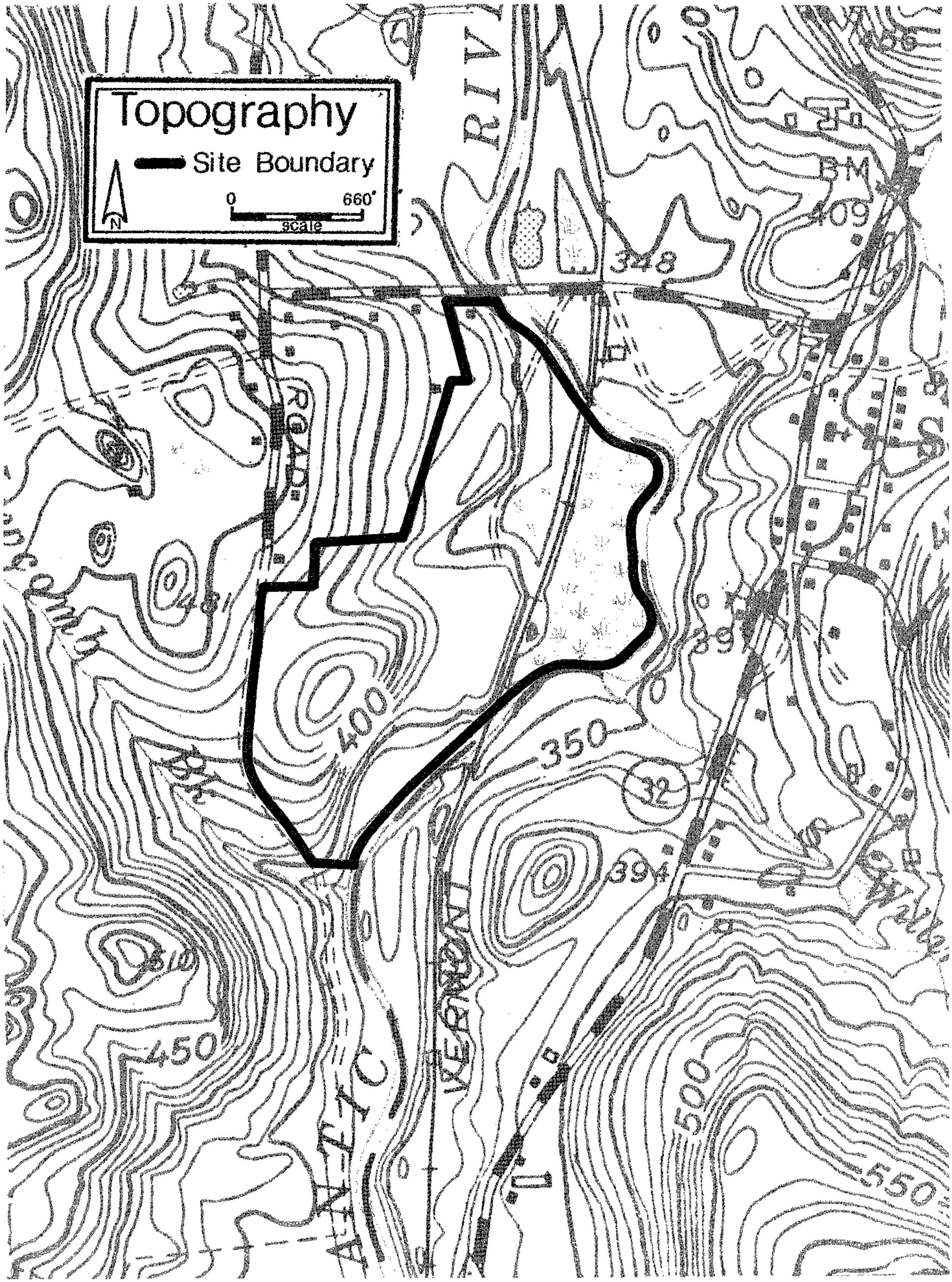
The ERT that field-checked the site consisted of the following personnel: Timothy Dodge, District Conservationist, Soil Conservation Service (SCS); Dwight Southwick, Engineer, (SCS); Michael Zizka, Geologist, Connecticut Department of Environmental Protection (DEP); Rob Rocks, Forester, (DEP); Tom Furgalack, State Department of Health; Chuck Phillips, Fisheries Biologist, (DEP); and Jeanne Shelburn, ERT Coordinator, Eastern Connecticut RC&D Area.

The Team met and field checked the site on Thursday, May 31, 1979. Reports from each contributing Team member were sent to the ERT Coordinator for review and summarization for the final report.

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 and evaluates its significance to the proposed development and also suggests considerations that should be of concern to the developer and the Town of Tolland. The results of this Team action are oriented toward the development of a better environment quality and the long-term economics of the land use.

The Eastern Connecticut RC&D Area Committee hopes that this report will be of value and assistance in making any decisions regarding this particular site.

If you require any additional information, please contact: Ms. Jeanne Shelburn, Environmental Review Team Coordinator, Eastern Connecticut RC&D Area, 139 Boswell Avenue, Norwich, Connecticut 06360, 889-2324.


Topography
Site Boundary
0
660'
scale
N
ROAD
348
409
BM
400
350
32
394
450
500
550

INTRODUCTION

The Eastern Connecticut Environmental Review Team was asked to review a subdivision proposal for a 60± acre parcel in the town of Tolland, owned by Joseph Mihaliak, a Stafford resident. This development, to be known as Fox Ridge Estates, is located in southeastern Tolland on South River Road and extends east to the Willimantic River. Preliminary plans have been prepared by Stanley Szeztowicki, R.L.S. Engineering for interior roadways has been developed by Lenard Engineering of Storrs.

Preliminary plans show the area divided into 29 lots of one or more acres in size. These lots will be served by on-site septic systems and on-site wells. Access to interior lots in the subdivision will be provided by a single road extending south from South River Road terminating in a cul-de-sac.

A portion of the site is currently in use as a gravel mining operation. The remainder of the site is vegetated. A large wetland lies east of the area to be subdivided. This area has been set aside as open space, possibly to be deeded to the town of Tolland in the future. Several lots in this proposed subdivision are partially within the flood hazard boundaries as shown on the FIA Flood Hazard Boundary Map. The site is also crossed by the Central Vermont Railroad.

The Team is concerned with the impact of this proposed development on the natural resource base of the site, specifically on the Willimantic River, its flood plains and tributaries. Although the site has certain limitations many of them can be overcome with proper engineering. These engineering practices, however, may be financially unfeasible for the developer. Due to the nature of the soils on this site and the interior access roadway location, a sediment and erosion control plan should be included in the final development proposal. Excessive sedimentation of the Willimantic River and its flood plain may occur during construction unless precautions are considered.

Location of the proposed interior roadway follows a natural drainage way/ intermittent stream for portions of its length. Soils in this area should be mapped by a soil scientist to determine the extent of designated wetland soils. The developer should give some consideration to the complex engineering involved in locating the access road in this area and the associated sedimentation which may occur.

Other site limitations which became obvious during the on-site investigation include several lots which are unsuitable for on-site septic disposal systems and the potential for well pollution from septic system effluent. Wells located in sands and gravels on the site have the potential for this type of pollution to occur whereas wells drilled into bedrock on this site may produce water with high mineral concentrations. Consideration should be given to the comments from the State Department of Health Sanitarian before final approval is given for this proposal.

ENVIRONMENTAL ASSESSMENT

GEOLOGY

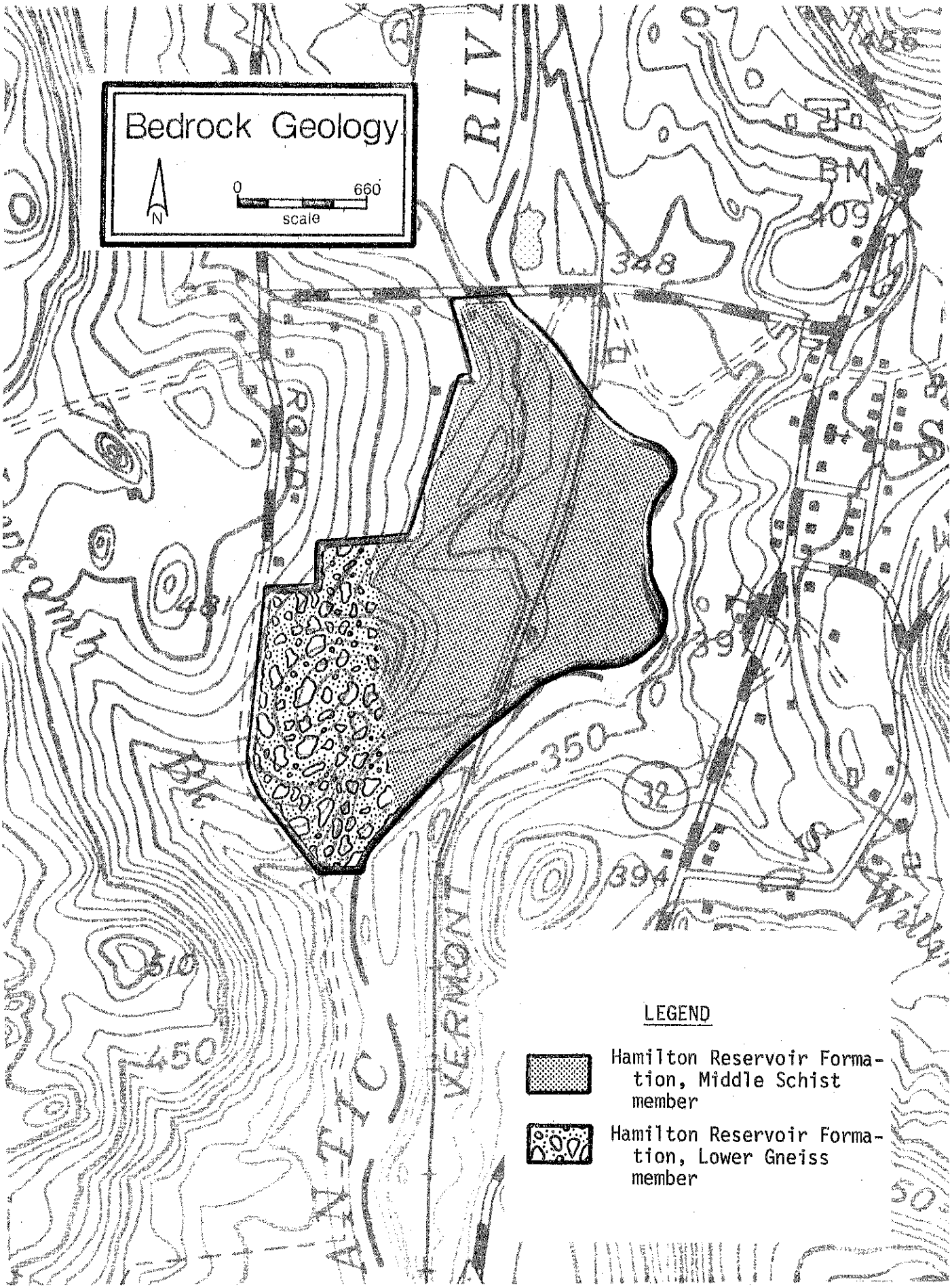
The Fox Ridge Estates site lies within the South Coventry topographic quadrangle area. No publications of the geology of that quadrangle have been made to date, but open-file maps of the bedrock and surficial geology are available for study at the Natural Resources Center, Department of Environmental Protection, in Hartford.

The bedrock underlying and cropping out on the site is part of a unit known as the Hamilton Reservoir Formation. Two subunits, or members, of this formation are found on the site. The Middle Schist Member consists largely of light gray to rusty brown and reddish orange, medium-grained schist. Schists are crystalline rocks in which platy or flaky minerals have aligned to form structural layers, along which parting commonly occurs. The principal minerals in the Middle Schist Member are quartz, feldspar, biotite, sillimanite, garnet, and muscovite. A highly sulfidic, garnetiferous, sillimanite-rich schist is included in and characteristic of this member. The Lower Gneiss Member is predominantly a thinly layered, fine-grained, granular, light brownish gray to olive brown, biotite-rich schist interlayered with medium-grained, light to dark gray gneiss. Gneisses are crystalline rocks in which elongate minerals alternate in thin layers with more rounded minerals. Quartz, oligoclase, and biotite are principal minerals in the gneiss. Additional information about the local bedrock may be found in the open-file map of the bedrock geology of the South Coventry quadrangle, by R.J. Fahey and M.H. Pease, Jr. (1977).

The surficial geologic materials on the site consist primarily of stratified sand and gravel, which were deposited by glacial meltwater streams. In the eastern section of the property, a relatively thin layer of recent stream deposits overlies the glacial sand and gravel. These deposits consist of sand, silt, and gravel, occasionally intermixed with decomposed organic material. The stratified materials in the central part of the site have been extensively excavated; in some areas, the floor of the pit is slightly deeper than the local groundwater table (as determined by the presence in those areas of year-round standing water). In the southwestern section of the site, a rounded, relatively steep hill and numerous small bedrock outcrops indicate that the overburden is generally shallow. In this section, the predominant sand and gravel deposits are intermixed with a silty, stony, relatively compact material known as till. Till consists of rock particles and fragments which accumulated on, within, or beneath glacier ice as it moved across the land surface, and which were deposited directly from the ice without being sorted by meltwater.

HYDROLOGY

The Fox Ridge Estates site is bounded on the east by Willimantic River. Most of that portion of the site that lies east of the railroad and a narrow strip west of the railroad are located within the Special Flood Hazard Area in the town of Tolland, as identified in a 1975 publication of the U.S. Department of Housing and Urban Development, Federal Insurance Administration. The boundary between the identified floodprone area and the "safe" area to the west is marked by a generally distinct topographic change from flat to moderate or steep slopes.


Bedrock Geology
N
0
660
scale
RIVER
ROAD
VERMONT
BM
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32
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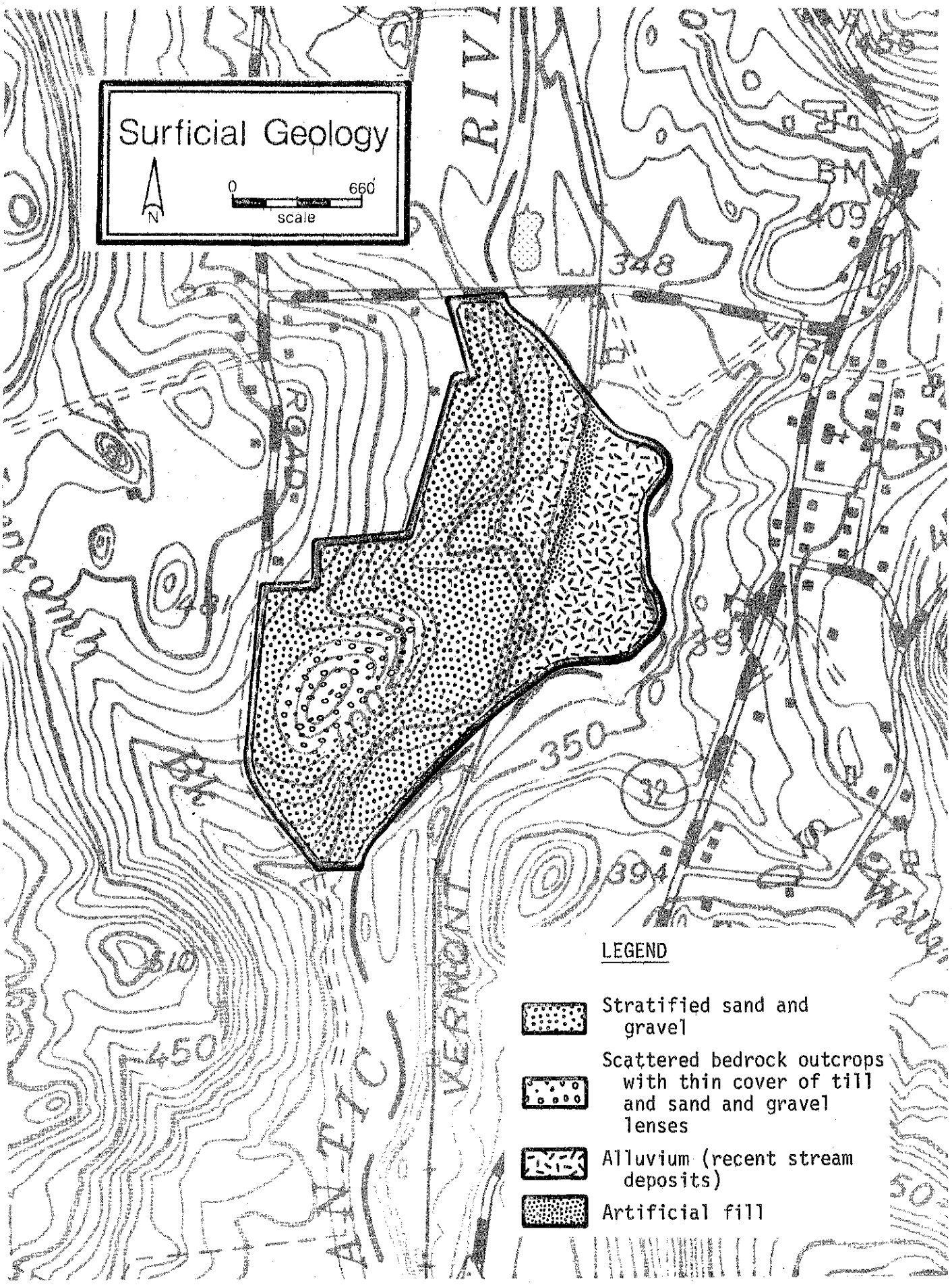
LEGEND
Hamilton Reservoir Formation, Middle Schist member
Hamilton Reservoir Formation, Lower Gneiss member


Surficial Geology
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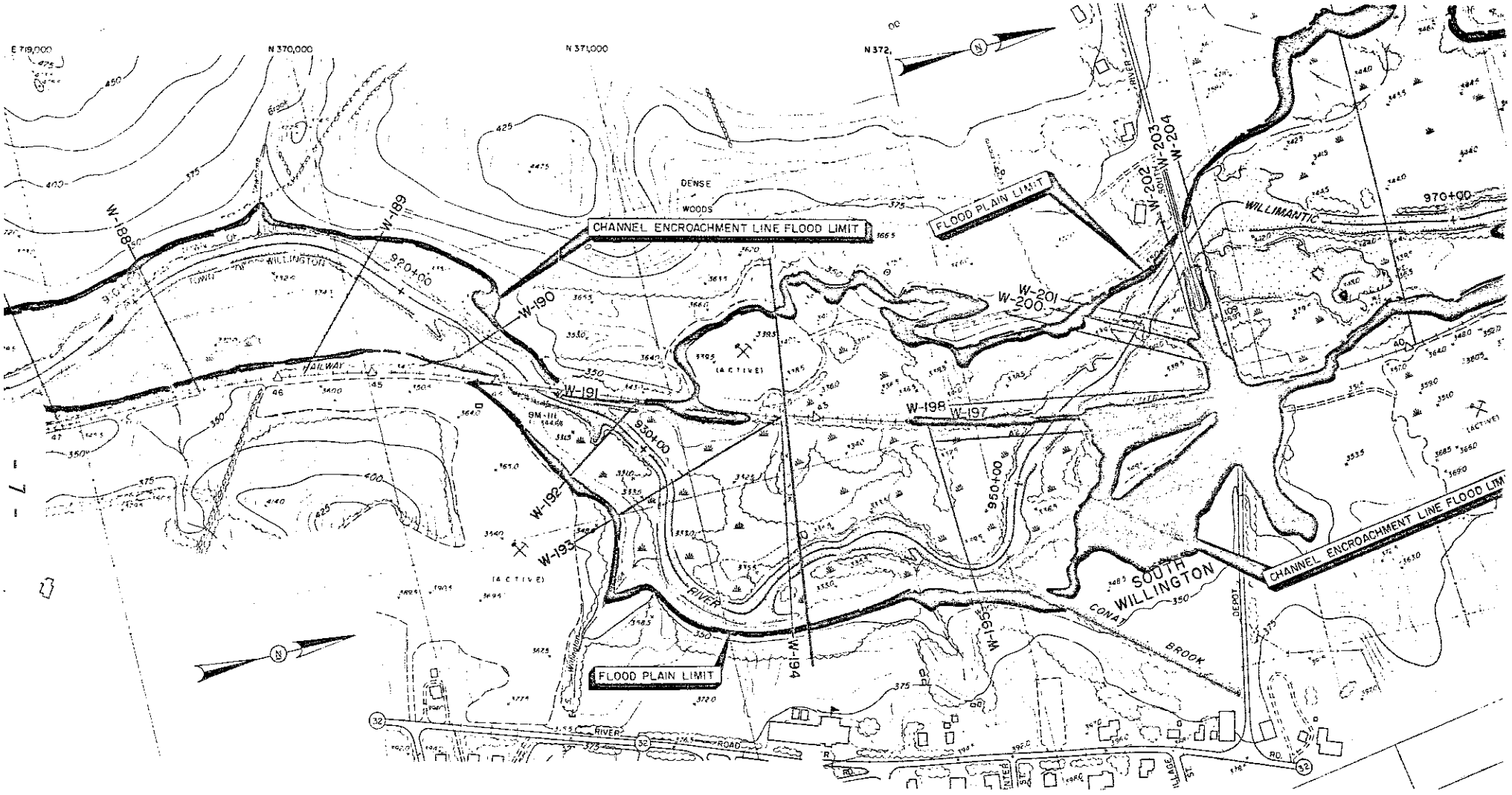
LEGEND
Stratified sand and gravel
Scattered bedrock outcrops with thin cover of till and sand and gravel lenses
Alluvium (recent stream deposits)
Artificial fill



Encroachment area for the 100-year flood (flow rate equals five times mean annual flow). Also shown is the floodplain limit for a flow equal to seven times the mean annual flow. Taken from "Report on Establishment of Channel Encroachment Lines and Flood Plain Delineation - Willimantic River - Towns of Tolland, Willington, Ellington", prepared by Degan and Kropper Engineers for State of Connecticut Water Resources Commission, May, 1971.

Hence, the floodplain acts as a type of natural basin during high flow periods, with water being temporarily stored in the floodplain.

A report prepared in 1971 for the State of Connecticut Water Resources Commission recommended the establishment of flood encroachment lines along Willimantic River, including that stretch bordering the site (see accompanying illustration). In theory, the prevention of development within the encroachment area would assure a reasonable channel for the passage of the 100-year-frequency flood. Floods of greater magnitude are possible, also; such floods would affect additional areas outside of the designated encroachment lines, but the probability of their occurrence in a given year would be less than one percent.

It is possible that the gravel excavation has lowered the surface elevation of some parts of the site within or bordering the encroachment area. This could mean that the design flow (that flow rate used to calculate the location of the encroachment lines) would presently be accommodated in either a greater or lesser area than that delineated in the accompanying illustration. For instance, excavation within the encroachment area, by increasing the storage depth available, would decrease the surface area needed; on the other hand, excavation on land bordering the encroachment area could allow the flood flow to spread further within the site. In order to assure protection of lots within the subdivision as well as downstream locations, no filling should occur in the encroachment area designated in the 1971 report. However, filling should be sufficient to allow houses, driveways, and other structures to be higher than the flood elevations given in the 1971 report. Paul Biscuti, an engineer with the Water Resources division of the Department of Environmental Protection, has reviewed the proposed subdivision plans and believes that they allow sufficient protection of both the subdivision and downstream areas.

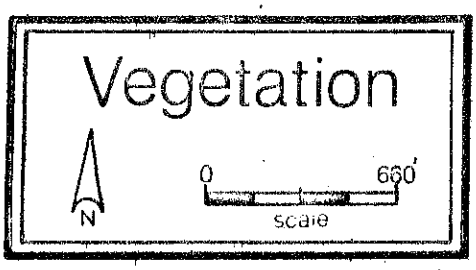
Development of the site will increase the amount of runoff during periods of precipitation. The areas of most concern are the steeper portions of lots 9-17 and lot 29, and the discharge point for the proposed cul-de-sac. In these areas, runoff may lead to erosion problems, such as gullying. Appropriate erosion-control plans should therefore be included with the final design.

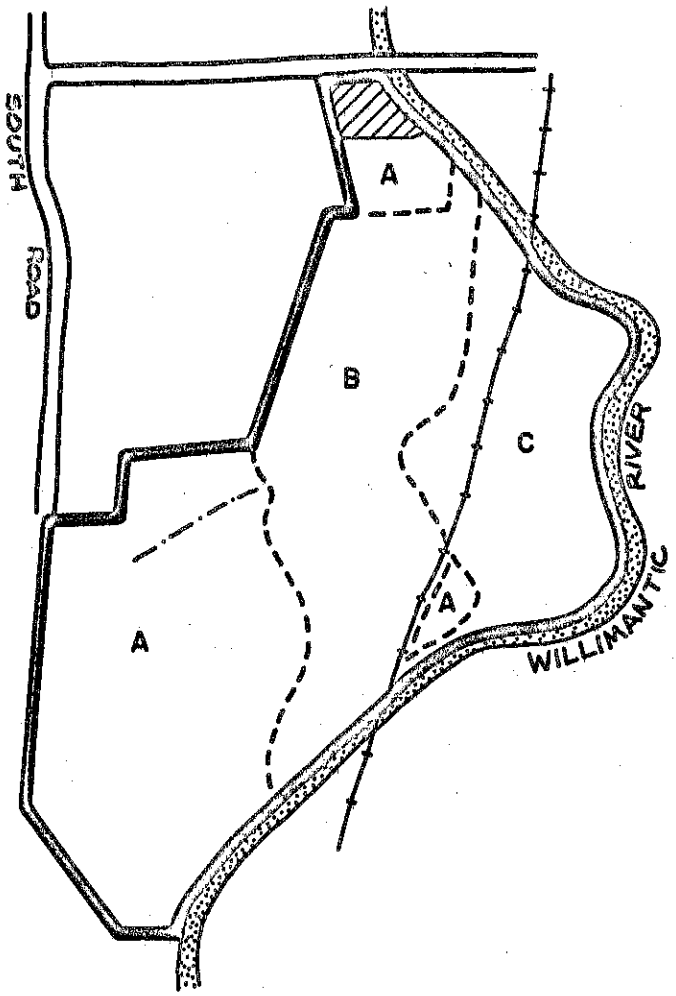
VEGETATION

Approximately 32 acres of this 60± acre tract are occupied by mixed hardwoods; 16 acres are seasonally flooded and vegetated by swamp shrub species; the remaining 12 acres support little or no vegetation (see vegetation type map). A fuelwood thinning in stand A (mixed hardwoods) should, in time, improve the health and vigor of the residual oak trees. Shade and/or flowering trees should be established on houselots which presently have no vegetation.

Vegetation Stand Description

Stand A. (Mixed Hardwoods) - This 32 acre, two-age stand contains medium quality sawlog-size white oak and black oak with sapling to pole-size white oak, black oak, hickory, and red maple. The oaks in this fully-stocked stand are becoming crowded and are declining in health and vigor. The understory species present in this stand are eastern white pine seedlings, blue beech, hardwood tree seedlings, and mapleleaf viburnum. Huckleberry, club moss, Canada Mayflower, and several species of ferns make up this area's ground cover.





LEGEND

- Road
- Property Boundary
- Vegetation Type Boundary
- Residential Area
- Intermittent Brook
- Central Vermont Railroad

VEGETATION STAND DESCRIPTION

STAND A Mixed Hardwoods, fully stocked, Two Aged, Sapling to Sawlog, 32 acres

STAND B Open land, 16 acres

STAND C Open swamp/Brush species, 12 acres

Stand B. (Open Land/non vegetated) - Gravel has been removed from this 22-acre site. Grasses, sedges, aspen seedlings, gray birch seedlings, steeple bush, and brambles are becoming established around the edges of this area.

Stand C. (Open Swamp) - Approximately 12 acres of this site are frequently flooded by the Willimantic River. Low growing speckled alder, spirea, several species of willow, viburnums, and red maple seedlings are present along with skunk cabbage, marsh fern, cinnamon fern, sensitive fern, and wild geranium. Honeysuckle, gray-stemmed dogwood, aspen, gray birch, black cherry, and multiflora rose have become dense along the edges of this site.

The inland wetland located on this site (Stand C) has high value as wildlife habitat. The brushy vegetation present produces large quantities of fruit and offers excellent cover. Preservation of this area as open space will help to protect the quality of wildlife habitat present and also ensure public access for fishing and nature study.

Seasonal flooding and the permanent high water table in the open swamp (Stand C) limit vegetative growth to shrub species which are tolerant of excessive moisture conditions. At present this stand is not suitable for timber management.

During construction in forested areas, efforts should be made to preserve and protect the largest, healthiest trees from direct mechanical injury and soil disturbances in the area under their crowns. Research has shown that trees that provide shade and increase aesthetics also enhance houselot value as much as twenty percent.

If excavating, filling, or grading take place for the construction of roadways, septic systems, or buildings, care should be taken not to disturb the soil within the root zones of trees that are to be saved. The root zone corresponds to the entire area under a tree's crown. Trees are very sensitive to direct mechanical injury and to alterations in the balance between soil aeration, moisture level, and physical composition. Trees that are mechanically injured or have the soil disturbed under their crowns may decline in health and vigor and may die within three to five years. Dead trees lower aesthetic value and may become a hazard when they are in danger of falling near roads, utility lines, and buildings.

Ideally, trees that are to be saved for aesthetic and shade purposes should be temporarily but clearly marked, and where possible preserved in small groups or "islands" so they can be easily avoided during construction.

Suggested Management Techniques

At this time the oaks in Stand A appear to be under stress and are declining in health and vigor. This condition is probably due, in part, to crowding, soil moisture conditions, and damage by forest insects. A fuelwood thinning removing approximately one-third of the stems from each size class may help to increase the stability and future health of this stand by reducing competition between residual trees for space, light, water, and nutrients. This thinning, if implemented, should be focused on removing the poor quality, unhealthy trees and trees which are directly competing with high quality, healthy trees.

If this thinning is agreed to, a state-employed service forester or a consultant forester should be contacted to mark the trees to be removed. Revenues generated from the sale of the fuelwood harvested will cover the cost of hiring a consultant.

If this thinning is not agreeable, future home owners may decide to thin this area for fuelwood on an individual lot basis.

The following tree species are recommended for planting on house lots which are at present unvegetated:

Small trees - 30 feet or less in height

Japanese Dogwood, Cornus kousa
Cornelian Cherry Dogwood, Cornus mas
Flowering crabapples, Malus cultivars (most species)

Medium trees - 30 to 50 feet in height

Bradford pear, Pyrus calleryana "Bradford"

Large trees - 50 feet or more in height

Thornless honey locust, Gleditsia triacanthos var. inermis
pin oak, Quercus palustris
red oak, Quescus rubra
Norway maple - Acer platanoides
Scotch pine - Pinus sylvestris

These trees will grow best on well-drained soils and in full sunlight. For best survival these trees should be at least two inches in diameter at breast height (4 1/2 feet above the ground) when planted. Ideally, they should be planted during the spring between April 1 and May 15.

In order to grow properly, trees should be planted far enough away from structures so that tree growth will not be restricted, even when the tree is approaching maturity.

WILDLIFE

Wildlife habitat provided by this parcel is primarily of a woodland and wetland nature.

The area which has been excavated is lacking vegetation; however, it does have habitat values for certain birds including killdeer, which use the bare earth for courtship and some nesting activities.

The westernmost portion of the site is woodland composed of mixed hardwoods including red maple, oaks, hickory, white ash, and scattered conifers. The woodland has a moderately dense understory of shrubby growth. This type of habitat has good values for wildlife such as raccoon, white-tailed deer, ruffed grouse, seasonal woodland songbirds and birds of prey, gray squirrel, small mice, and micelike mammals. Its natural values are enhanced by low disturbance factors.

It is part of a relatively undisturbed area extending to the south along the Willimantic River and west to Route 195 in the vicinity of Norwegian Wood Apartments.

The 12-acre parcel east of the railroad has high values to many types of wildlife. The preservation of this area as proposed by the developer is extremely important. Wildlife which use this type habitat include white-tailed deer, fox, raccoon, ruffed grouse, striped skunk, gray squirrel, numerous seasonal songbirds, as well as the kingfisher; other animals closely associated with the river, such as muskrat, mink, otter and weasel, woodducks, black ducks, and possibly mallards, will use the association of river and the wetland vegetation. In addition, this area is an integral part of the Willimantic River streambelt. As such, it provides a buffer to the river, protecting it from sedimentation and providing an area for natural flooding to occur. Recreation (fishing, hiking, and canoeing) values as well as nature study are high.

The wetland area west of the railroad, mapped as Podunk and Saco soils, is of value to wetland animals; however, it does not have patterns of vegetation and open water to make it of high value to waterfowl or fur bearers. The northerly portion which borders the river north of the railroad trestle is densely vegetated with a mix of shrubs and small trees: wild cherry, dogwood, alder, willow, and red maple are taller species present. Wild grape, ferns, jewelweed, raspberry, deer tongue, honeysuckle, rugosa rose, blackberry, hardhack, and other low-growing vegetation make up the understory vegetation. The southerly portion of this wetland has a more open character. Reed canary grass and low shrubs dominate. There is some standing water along the westerly border. Its major connection with the river is through a culvert opening (5 feet‡) under the Central Vermont Railroad. Use of the area for dumping and the location of the railroad and excavated areas lower somewhat the value of this wetland for wildlife. Wildlife, including furbearers, may use this wetland as part of their seasonal or daily range. It is unlikely they depend totally on it for their habitat needs.

Access to this 12-acre parcel should be assured for public use. Development of the proposed area will limit access to the wetland by some animals such as the white-tailed deer which are sensitive to free-roaming pets and disturbance by humans. Development will have its greatest impact on native vegetation in the woodland portion west of the excavated area. A plan which removes as little vegetation as necessary for construction and uses native fruit-bearing shrubs for landscaping would be beneficial to wildlife. Generally, habitat values will be reduced by increased disturbance and loss of vegetative elements of habitat.

FISH RESOURCES

The Fox Ridge property borders a stretch of the Willimantic River which supports heavy recreational pressures from fishermen. Fishermen gain access to this stretch of the river by foot from the Depot Road bridge area.

The Willimantic River contains excellent trout habitat; it has deep pools, riffle areas, and is fairly well-shaded. Besides native and stocked trout the river contains white suckers and a variety of minnow species which supply forage for the gamefish. Aquatic insects are abundant.

A large part of the Fox Ridge Estates property has steep slopes which would be prone to erosion if the vegetation were removed. Sediments resulting from this erosion would decrease the aquatic insect population, eliminating the primary food source for the trout population. Possible mitigating measures are discussed in the Soils section of this report. Another protective measure for the fish would involve planting rows of hemlock and red maple along the river's bank behind lots 1, 2, and 3 to provide additional shade for the river.

A major concern in the development is insuring access to this area for the future. Parcel A, proposed to be deeded to the town would insure continued recreational access to the Willimantic River and will represent a valuable contribution to the town's open space program.

SOILS

The soils for this development site are shown on a map in the appendix of this report. This soil map should be used as a guide to the existing soil types; however, it does not show the absolute boundaries of each soil type. Further on-site investigation would be necessary to determine the absolute boundaries. A chart of limitations of each soil for certain land uses, such as septic tank filter fields, homes with basements, streets and parking lots, and lawns and landscaping accompanies the soils map. Severe limitations imply increased financial expenditures for the land to be adequately developed. The limitations chart also notes soils designated as inland wetlands and prime farmlands on this site.

There are eight soil series represented on this site: Charlton, Hinckley, Merrimac, Podunk, Saco, Sudbury, Sutton, and Terrace Escarpments. Some of these soils have been formed in glacial till or glacial outwash, while others are from recent alluvial material. Some of the characteristics of these soils which can cause problems for housing development are flooding, a potentially high water table, excessive drainage, stoniness, and steep slopes. The surface runoff for each soil type increases with disturbances, development of impermeable surfaces, and increasing slope.

The Charlton soil series are deep, well-drained soils formed in glacial till. The depth to bedrock is commonly greater than 6 feet. Runoff from these soils is medium to rapid. Internal drainage is medium. The permeability is moderate to moderately rapid. Two soils from this series are represented. The Charlton very stony fine sandy loam (CrC) with 3 to 15 percent slopes occupies 27 percent of the site area. Even though it is very stony, the principal limiting factor for development is the slope. The Charlton very stony fine sandy loam (CrD) with 15 to 35 percent slopes, which occupies 4 percent of the total acreage, has more severe development problems due to steeper slopes.

The Hinckley series of soils are deep, excessively drained soils formed in water-sorted materials. Typically they are very friable gravelly loamy sand underlain by gravelly and very gravelly sand. Runoff is slow. Internal drainage is rapid. The permeability is rapid in the upper layers and very rapid in the substratum. The Hinckley gravelly sandy loam (HkC) with 3 to 15 percent slopes comprises 32 percent of the total acreage. The principal limiting factor for development of this soil is its slope. Care must be taken to assure no pollutants leach from the septic fields in this excessively drained soil. Much of

the Hinckley soil was mapped in an area which is currently being excavated for gravel, and the soil classification may need to be changed due to this excavation.

The Merrimac series of soils are deep, somewhat excessively drained soils formed in glacial outwash. Runoff is slow to medium. The internal drainage is rapid. The permeability is moderately rapid or rapid in the upper layers and rapid in the substratum. The two on-site representatives of this soil series are Merrimac fine sandy loam (MrA) with 0 to 3 percent slopes (8 percent of the total area) and Merrimac fine sandy loam (MrB) with 3 to 8 percent slope (8 percent of total area). Merrimac soils are considered prime farmland as defined by USDA National Cooperative Soil Survey.

The Podunk soil series are deep, moderately well-drained soils formed in recent sandy alluvial sediments. These soils are found in flood plains of rivers and streams. Runoff is medium to slow. The permeability is moderately rapid or rapid. Most of these soils flood for short periods in spring. The Podunk fine sandy loam (Po) occupies 3 percent of the total area. It has a seasonal high water table which restricts internal drainage. Its principal limiting characteristic is wetness and flooding which makes severe limitations for development. It is considered prime farmland and an inland wetland as defined by P.A. 155 as amended.

The Saco soil series are deep, very poorly drained soils on flood plains. These soils are nearly level and formed in recently deposited silty alluvium. Runoff is slow or very slow and water stands on the surface in places from late fall through early spring. Internal drainage is very slow. The permeability is moderate. Flooding is common in early spring after heavy rains. The Saco silt loam (Sb) occupies 6 percent of the site area. There are severe limitations to development due to wetness and flooding and this soil is classified as an inland wetland. Part of lot 5 is on Saco soil.

The Sudbury soil series are deep, moderately well-drained and somewhat poorly drained soils on outwash plains and high terraces. Runoff is slow to moderate. The internal drainage is restricted by the seasonal high water table, which is shown by mottling within 12 to 24 inches of the surface. The permeability is moderately rapid in upper layers and rapid in the substratum. The Sudbury fine sandy loam (SsA) with 0 to 6 percent slope occupies 2 percent of the total acreage. It is formed on terraces over stratified sand and gravel. Most of the problems for development in this soil are due to the high water table, which can adversely affect a septic tank filter field or cause wet basements. Wet soils are also subject to frost action which can crack concrete structures. The Sudbury soil is considered prime farmland.

The Sutton soil series are deep moderately well-drained soils formed in glacial till. The depth to bedrock is commonly greater than 6 feet. Runoff is slow to medium. It has a seasonal high water table. The permeability is moderate to moderately rapid. The Sutton very stony fine sandy loam (SxB) with 3 to 8 percent slopes occupies 8 percent of the total site area. The greatest limitations for development on this soil are for basements and septic tank filter fields due to the seasonal high water table. An intermittent stream runs through the Sutton soil along the proposed road site. An on-site determination of its extent and boundaries, and verification of the soil type should be required.

Terrace Escarpments are sandy or sandy and gravelly material on slopes greater than 15 percent. This land type can occur on terrace breaks, along waterways, in highly dissected areas, and on kames and eskers. The texture ranges from gravelly sandy loam to sand. The steep slope causes severe problems for development. Terrace Escarpments occupy 2 percent of the total area.

The proposed road will go through Charlton, Hinckley, Sutton, and Merrimac soils and a small section through Terrace Escarpment. The Charlton and Merrimac soils have slight limitations for roads. The Hinckley and Sutton soils have moderate limitations. The area of Terrace Escarpment would pose severe limitations for road construction, slope stability, and vegetative treatment.

Erosion and Sediment Control:

Due to the nature of the soils and topography and the need for extensive grading, an erosion and sediment control plan should be developed and implemented during construction. The plan should be developed along with other necessary engineering during design stages. It should not be viewed as something requiring detailed engineering input after all other planning is completed.

The Erosion and Sediment Control Handbook for Connecticut, published by the Soil Conservation Service, can aid both the developer and the Town in preparing an adequate erosion and sediment control plan. Standards and specifications for both mechanical and vegetative practices listed within the handbook are available through the Tolland County Soil and Water Conservation District office in Vernon.

Specific items which a plan should address include the types of vegetation to be used on the site, particularly on excessively drained soils, and finish grades with respect to slope steepness and slope stability, taking into consideration the sandy soils which need special attention. A maximum slope of 2:1 (but preferably 3:1) is necessary to establish vegetation.

Pipe outlets and the land below them should be adequately protected from erosion. The use of rock riprap and/or energy dissipators may be required. Energy dissipators located at the top of a slope are of limited value. Treatment of surface runoff should continue along slopes until a stable outlet can be achieved.

In areas where the surface runoff is directed from the site toward the wetlands and/or river, either a low containment dike or hay bales may be the best treatment to contain sediment within the construction area. Final grading operations and the construction of roads, storm drains, and catch basins will have the greatest impact in generating sediment. Each should be adequately treated. The location of the proposed road shows it to be in a natural drainage area. Surface runoff during construction would naturally collect in this area and may create construction problems and contribute to erosion and sedimentation.

Action should be taken to help control the velocity of the water drained from the road between lots 6 and 11. A measure which can be taken to avoid this problem is to place a drainage facility between each lot, 6 through 11. This action would disperse the water more evenly and reduce the chance of erosion.

It is probable that some of the land adjacent to the stream in the proposed road location is wetland. If so, further investigation and need for engineering practices to handle subsurface and surface water may be necessary.

Shallow-to-bedrock soils are apparent in some lots. Septic systems installed in these areas would probably require special design.

WATER SUPPLY

It is proposed that the subdivision be served by individual on-site wells and septic systems. The sand and gravel deposits on the site are probably capable of supplying adequate amounts of water to a dug well, assuming sufficient well depth. However, since the coarse nature of the deposits makes them a relatively poor filter for septic system effluent, a definite possibility of well contamination from the system would exist. This possibility would be especially significant in lots 2-7, which lie in a direct hydraulic path from lots 23-28. One alternative might be to establish a community well for the subdivision within the stratified deposits. However, the proposed configuration of the subdivision leaves little room to locate such a well without some measure of risk. A more practical alternative would be to overcome the temptation to use dug wells, and to establish drilled wells in the bedrock with proper casing above. This alternative would allow for wells with much smaller, but nevertheless adequate, yields in most cases. One problem that may be encountered with bedrock-based wells might be undesirably high iron or manganese concentrations, owing to the peculiar mineralogy of the rock. These potential problems may be overcome in many cases by the use of special filters. Those parts of the site underlain by the Middle Schist Member of the Hamilton Reservoir formation are the most likely to encounter iron or manganese problems if bedrock-based wells are established on them.

WASTE DISPOSAL

A Sanitarian from the State Department of Health served as Team Sanitarian in evaluating the suitability of this site for the proposed development. The generalized soil type information provided in the Soil Conservation Service "Soils Survey Tolland County, Connecticut" was supplmented by on-site soil exploration data conducted by Lenard Engineering, P.C. (1/18/79, 4/2/79, 4/4/79, 5/11/79). No percolation testing information was made available at the time of the field review.

Lots #1 through #6 lie partially within the flood plain/stream belt and special flood hazard area and lot #5 falls partially within wetland. Is was pointed out by Mr. Szestowicki, R.L.S., at the pre-review conference, that the critical elevation for flooding on these lots is elevation 348.0 (based on mean sea level). It was further explained that all foundations and systems on these lots are to be set above this critical elevation.

It should be noted that the Public Health Code (Sec. 19-13-B20f) does reference the fact that subsurface sewage disposal systems shall not be laid out in areas where flooding will interfere with the effective operation of such systems. The concern is for periodic (annual) and/or long term flooding conditions which would impact upon the satisfactory operation of these systems. It is not

intended to indicate the 100-year flood hazard would have this effect. Regardless, according to Mr. Szestowicki the systems are to be set above this flood hazard area.

Soil evaluation for septic system installation potential on a lot by lot basis has been included in the Appendix to this report. Unfortunately, due to the fact that percolation test information was not made available at the time of the review, it was not included in this evaluation. Obviously this information will be crucial in a final determination as to suitability of lots for this purpose.

The Team Sanitarian has concern for rapid transmission of effluent in the main area of the gravel bank operation located on the site of this proposed subdivision. As a point of reference, it should be mentioned that proposed changes to the Public Health Code provide for more stringent requirements in areas with rapidly percolating soils. Should the percolation rates for this area (in general, lots #1-6 and #23-28) be in excess of one minute/inch, it is recommended that the State Department of Health be consulted for recommendations. In any rapid percolating soil it is recommended that well separation distances from subsurface sewage disposal systems be increased, and that wells be cased to bedrock with provision of a high quality grout seal.

In addition it must be noted that proposed wells for lots 21 and 22 must be relocated. Also, lot #29 is indicated as not being a building lot and therefore is not considered herein.

It is suggested that those lots designated as "not building lots at this time" could be combined with other lots.

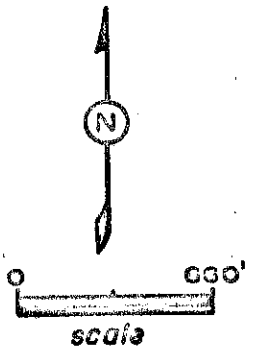
Summary of Septic System Suitability

Unsuitable	Design Required	Additional Testing Required	Satisfactory With Additional Testing	Satisfactory
Lots #	Lots #	Lots #	Lots #	Lots #
8 & 13	9, 10, 11, 12, 14, 19, 20, 23	1, 4, 17, 18, 24, 25, 26, 27, 28	2, 3, 5, 6, 7, 21, 22	15 & 16

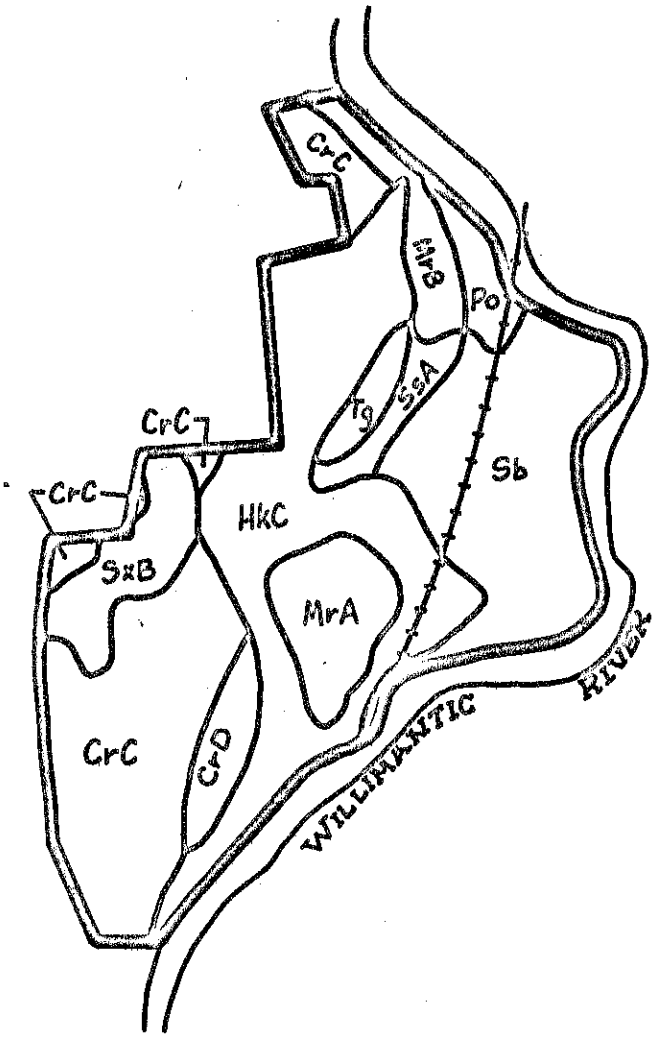
Appendix

Soils

FOX RIDGE ESTATES
TOLLAND, CONNECTICUT



This is an enlargement from the original 1,320'/inch scale to 660'/inch.



SOIL LEGEND

Symbol	Soil Description	Slope
CrC	Charlton very stony fine sandy loam	3-15%
CrD	Charlton very stony fine sandy loam	15-25%
HkC	Hinckley gravelly sandy loam	3-15%
MrA	Merrimac fine sandy loam	0-3%
MrB	Merrimac fine sandy loam	3-8%
Po	Podunk fine sandy loam	
SsA	Sudbury fine sandy loam	0-6%
SxB	Sutton very stony fine sandy loam	3-15%
Sb	Saco silt loam	
Tg	Terrace Escarpment	

Information taken from: Soil Survey, Tolland County Connecticut; 1966; soil survey sheet no. 30; prepared by the United States Department of Agriculture, Soil Conservation Service, advance copy, subject to change.

PARCEL B

FOX RIDGE ESTATES

TOLLAND, CONNECTICUT

SOILS AND THEIR LIMITATIONS FOR CERTAIN LAND USES

Soil Series and Map Symbol	Acres	Approx. % Total Acres	% Slope	Principle Limiting Factor	Septic Tank Filter Field	Home with Basements	Streets & Parking Lots	Lawns and Landscaping
Charlton, CrC	15.6	27	3-15	Slope	Moderate	Moderate	Slight	Moderate
Charlton, CrD	2.5	4	15-35	Slope	Severe	Severe	Severe	Severe
Hinckley, HkC	18.7	32	3-15	Slope	Moderate	Moderate	Moderate	Moderate
**Merrimac, MrA	4.4	8	0-3	-	Slight	Slight	Slight	Slight
**Merrimac, MrB	4.4	8	3-8	-	Slight	Slight	Slight	Slight
* **Podunk, Po	1.9	3	-	Wetness Floods	Severe	Severe	Severe	Severe
*Saco, Sb	3.7	6	-	Wetness Floods	Severe	Severe	Severe	Severe
**Sudbury	1.2	2	0-3	Wetness	Severe	Severe	Moderate	Slight
Sutton, SxB	5.0	8	3-8	Wetness	Severe	Severe	Moderate	Slight
Terrace Escarpment, Tg	1.2	2	-	Slope	Severe	Severe	Severe	Severe

*Inland Wetlands as defined by P.A. 155 as amended

**Prime Farmlands as defined by the USDA National Cooperative Soil Survey

FOX RIDGE ESTATES

Tolland, Connecticut

PARCEL A

Soil	Approx. Acres	% of Total
HkC, Hinckley	1.2	10
* Po, Podunk	0.6	5
* Sb, Saco	10.0	85

* Inland Wetlands as defined by P.A. 155 as amended

SOIL INTERPRETATIONS FOR URBAN USES

The ratings of the soils for elements of community and recreational development uses consist of three degrees of "limitations:" slight or no limitations; moderate limitations; and severe limitations. In the interpretive scheme various physical properties are weighed before judging their relative severity of limitations.

The user is cautioned that the suitability ratings, degree of limitations and other interpretations are based on the typical soil in each mapping unit. At any given point the actual conditions may differ from the information presented here because of the inclusion of other soils which were impractical to map separately at the scale of mapping used. On-site investigations are suggested where the proposed soil use involves heavy loads, deep excavations, or high cost. Limitations, even though severe, do not always preclude the use of land for development. If economics permit greater expenditures for land development and the intended land use is consistent with the objectives of local or regional development, many soils and sites with difficult problems can be used.

Slight Limitations

Areas rated as slight have relatively few limitations in terms of soil suitability for a particular use. The degree of suitability is such that a minimum of time or cost would be needed to overcome relatively minor soil limitations.

Moderate Limitations

In areas rated moderate, it is relatively more difficult and more costly to correct the natural limitations of the soil for certain uses than for soils rated as having slight limitations.

Severe Limitations

Areas designated as having severe limitations would require more extensive and more costly measures than soils rated with moderate limitations in order to overcome natural soil limitations. The soil may have more than one limiting characteristic causing it to be rated severe.

Appendix B

Soil evaluation by lot, for establishment of on-site septic disposal systems, prepared by Team Sanitarian from the State Department of Health.

Lot #1

Soil data indicates a sandy-gravelly material to 90" with no indication of ground water or ledge encountered. The primary and reserve areas are significantly removed from the lone test pit for this lot. Therefore, additional test pits in the exact primary and reserve area must be provided. Preliminary plans show a proposal for cut and fill in the primary area, a practice which is not recommended.

Lot #2

Two test pits indicate a mix of sandy-gravelly material with some silt in the upper soil layers. No indication of ground water or ledge was encountered to at least 91". Test hole 2A is located proximal to the proposed primary and reserve areas.

Lot 3#

The three test pits show the soil material to be essentially a medium-coarse sand and gravel material. No ledge was observed, however mottling (an indication of maximum high ground water) was noted at maximum height of 50".

Lot #4

While test hole information reveals no problems in terms of limitations, they are significantly removed from the location of the proposed system area. Therefore, additional testing must be provided.

Lot #5

Two deep holes provided, one in proximity of the proposed system area. Medium to coarse grain sand and gravel predominates with the main limiting factor being the depth to groundwater which was observed at 64". This in itself should present no problems in the placement of a system on this site.

Lot #6

Again, sand and gravel soils in the area of the proposed system was observed with ground water encountered at 60".

Lot #7

No major soils limitations noted in soil exploration report based on test pits in primary and reserve area.

Lot #8

One test hole in vicinity of (but not exact location of) proposed system reveals severe site limitations due to shallow groundwater and ledge observed at 24". This site is unsuitable for purposes of subsurface sewage disposal based on this information and would require additional extensive testing.

Lot #9

Seven test holes were provided on this lot with varying results seen in depths to ledge and groundwater. The three test holes located in the proximity of the system area are referred to as test holes 9B, 9F and 9G, the shallowest depth to ledge noted among these three was 70" at test hole 9F (area of primary system). In addition, groundwater was found at shallow depth in this vicinity. An engineered plan for this site should consider ledge and groundwater restrictions in relation to design criteria.

Lot #10

Six observation test pits were provided for this lot with two located directly in the primary and reserve area. A medium compact fine to coarse sand characterizes the type of soil that predominates. Ledge and groundwater conditions vary across the lot.

In the proposed system area the ledge elevation appears to be at approximately 72" with perched groundwater encountered at 36". This factor warrants the requirement for an engineered design for this lot.

Lot #11

Eight test holes are provided with three in, or adjacent to, the proposed system area. Ledge varies in the vicinity of the system from 56" to 96" with mottling noted at 48" at the shallowest depth. Unless additional testing is conducted in the primary area the most restrictive soil conditions should be utilized in the development of an engineered design for this site.

Lot #12

An engineered plan is required due to the presence of groundwater as evidenced by mottling shallow to the surface (36"-50"). A till layer is noted in both observation pit reports.

Lot #13

Two of the four test pits provided are within the proximity of the proposed system. Additional test pits at the opposite end (within the system area) of the system should be provided.

Ledge varies on the lot from 36" to greater than 84" with 42" to ledge reported adjacent to the proposed system area. Ground water was found to be high in several locations.

Based on the information provided the site is unsuitable for purposes of subsurface sewage disposal.

Lot #14

Three of the four observation pits provided are within or in close proximity to the proposed systems.

The minimum depth to ledge noted is 75" with groundwater found at 26" in one test hole slightly below the proposed reserve area. An engineered design for this system must take into account these limitations unless additional testing in the primary area suggests differing results.

Lot #15

One test hole, of the three provided, is in the primary system area. It indicates that the soil material is a dense fine-medium sand with mottling at 60".

Although additional testing must be conducted to determine suitability of the reserve area the site does appear satisfactory based on the information provided.

Lot #16

Although neither test hole is in the exact location of the proposed system, test hole #16A is proximal to the system. Based on this test hole the site appears satisfactory. However, in that the uphill test hole revealed ledge at 72" more exactly located holes should be provided.

Lot #17

Two of the four test pits provided for this lot are located either in or proximal to the reserve area with no test holes in the proposed primary area.

A dense (compact) silt sand layer is noted in the reserve area with groundwater at 60" - 78" (on 1/19/79). Another test hole located further uphill (#17D) indicates mottling at 42" with groundwater at 44". Additional testing in the primary area is required to determine suitability, however, it is suspected an engineered design will be necessitated.

Lot #18

Only one test hole is provided at a location midway between the primary and reserve areas. Medium compact fine sand and silt to till was noted with high groundwater observed at 54". Additional testing would be necessary to provide for development of an engineered design for this lot.

Lot #19

Two of the three test pits for this lot are located within the primary and reserve area. The test hole far removed from the system area was extremely limiting.

It appears this system should be provided with an engineered design based on ledge at 84" and groundwater at 38" (as evidenced by mottling).

Lot #20

Again two of the three observation test pits are located within the primary and reserve areas. The limitations in the primary area included ledge at 80" and mottling at 48", which should be addressed in an engineered design for this system.

Lot #21

Soils profile information obtained in the proposed system area appears to present no problems to the placement of a subsurface sewage disposal system. However, the proposed well site must be relocated so as to provide minimum separation from the subsurface sewage disposal system.

Lot #22

Only one of the three test holes is located in the area of the system with the other two being significantly remote from this location. Based on the soils information provided the area presents no problems for the installation of a system, however, again the proposed well must be relocated to provide ample separation.

Lot #23

The lone test pit located in the primary area indicates the need for an engineered design due to groundwater at 48" along with additional testing of the reserve area.

Lots #24-28

Extensive regrading (cutting and filling) is planned for these lots. Therefore, these lots will require retesting once this operation (excavation) is completed in order to better facilitate valid review of this proposal. It appears the lot least affected in this process would be lot #27. Consideration must be given to proper placement, compaction and type of fill (where required) along with efforts to effect erosion control.

The only soil exploration data available at this time for these lots is one test pit on lot #24 which seems to present no indication of problems due to site limitations.

In order to provide an accurate determination of the conditions on lots #24-28 before and after soil testing should be provided.

Lot #29

No observation test holes provided and plan indicates that this lot is "not a building lot at this time".

About the Team

The Eastern Connecticut Environmental Review Team (ERT) is a group of professionals in environmental fields drawn together from a variety of federal, state, and regional agencies. Specialists on the Team include geologists, biologists, foresters, climatologists, soil scientists, landscape architects, archeologists, recreation specialists, engineers and planners. The ERT operates with state funding under the supervision of the Eastern Connecticut Resource Conservation and Development (RC&D) Area.

The Team is available as a public service at no cost to Connecticut towns.

PURPOSE OF THE TEAM

The Environmental Review Team is available to help towns and developers in the review of sites proposed for major land use activities. To date, the ERT has been involved in reviewing a wide range of projects including subdivisions, sanitary landfills, commercial and industrial developments, sand and gravel operations, elderly housing, recreation/open space projects, watershed studies and resource inventories.

Reviews are conducted in the interest of providing information and analysis that will assist towns and developers in environmentally sound decision-making. This is done through identifying the natural resource base of the project site and highlighting opportunities and limitations for the proposed land use.

REQUESTING A REVIEW

Environmental reviews may be requested by the chief elected officials of a municipality or the chairman of town commissions such as planning and zoning, conservation, inland wetlands, parks and recreation or economic development. Requests should be directed to the Chairman of your local Soil and Water Conservation District. This request letter should include a summary of the proposed project, a location map of the project site, written permission from the landowner 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 Eastern Connecticut RC&D Executive Council, the Team will undertake the review on a priority basis.

For additional information regarding the Environmental Review Team, please contact Jeanne Shelburn (889-2324), Environmental Review Team Coordinator, Eastern Connecticut RC&D Area, 139 Boswell Avenue, Norwich, Connecticut 06360.