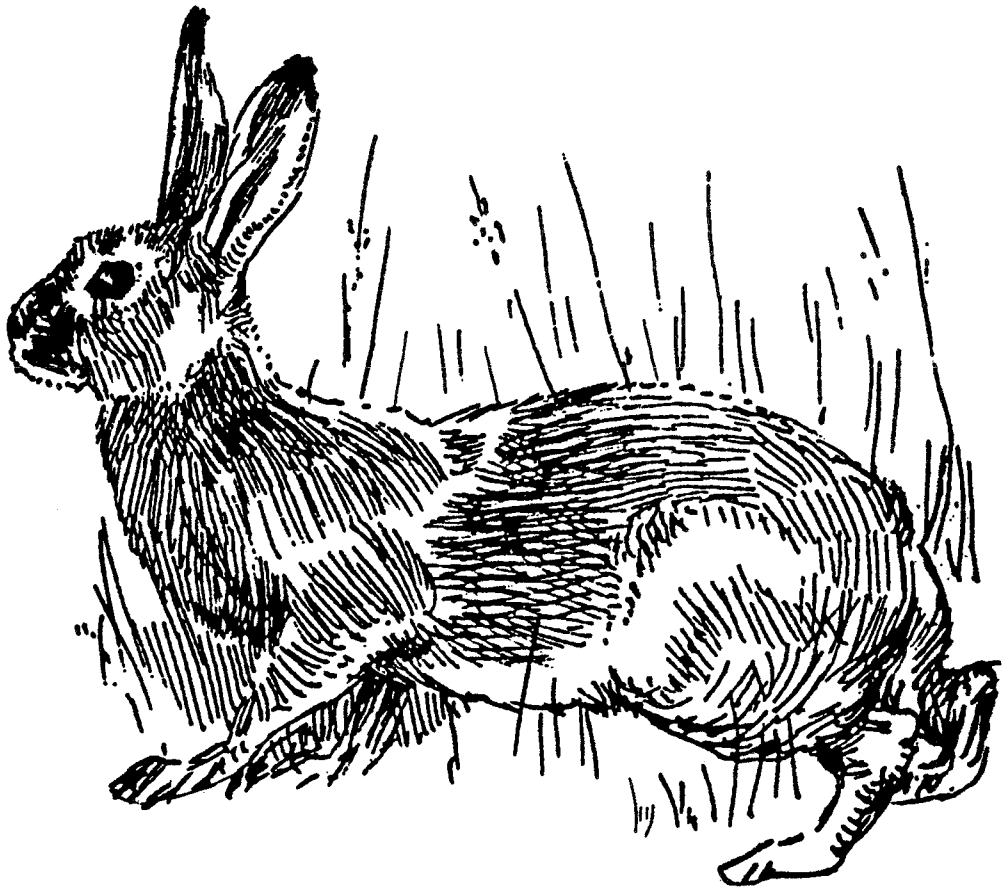
KING'S MARK ENVIRONMENTAL REVIEW TEAM



REPORT FOR

RIMMON BROOK SUBDIVISION

BEACON FALLS AND SEYMOUR,
CONNECTICUT

King's Mark Resource Conservation and Development Area, Inc.

RIMMON BROOK SUBDIVISION

BEACON FALLS AND SEYMOUR, CONNECTICUT

Environmental Review Team Report

Prepared by the King's Mark Environmental Review Team
of the King's Mark Resource Conservation
and Development Area, Inc.

Wallingford, Connecticut

for the

Beacon Falls Inland Wetlands Commission

and the

Seymour Inland Wetlands Commission

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 Inland Wetlands Commissions and the Towns. The results of the Team action are oriented toward the development of a better environmental quality and long-term economics of the land use. The opinions contained herein are those of the individual Team members and do not necessarily represent the views of any regulatory agency with which they may be employed.

MAY 1990

ACKNOWLEDGMENTS

The King's Mark Environmental Review Team Coordinator, Nancy Ferlow, would like to thank and gratefully acknowledge the following Team members whose professionalism and expertise were invaluable to the completion of this study:

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I would also like to thank Susan Anderson, Secretary of the King's Mark Environmental Review Team for assisting in the completion of this report.

Finally, special thanks to Richard Minnick of the Beacon Falls Inland Wetlands Commission, Frederic Kaiser of the Seymour Inland Wetlands Commission, Robert Peck, Beacon Falls Town Engineer, Holt McChord, McChord Engineering, Jodie Chase and Sheri Confer, environmental consultants, Bruce Laskey, soil scientist and John Fanotto, neighbor, for their cooperation and assistance during this environmental review.

EXECUTIVE SUMMARY

Introduction

The Beacon Falls and Seymour Inland Wetlands Commissions have requested an environmental review of Rimmon Brook, a 267.27-acre site proposed for subdivision development. The site straddles the Beacon Falls-Seymour Town Line and contains second growth hardwood forest with several areas of steep slopes. A large wetland system and 3 streamcourses (Rimmon Brook, Rimmon Brook North and Skokorat Brook) are found on the site. Silver Lake lies downstream of Rimmon Brook. Rimmon Brook once contained native trout.

The developer proposes 176 houselots for the site, 101 lots in Beacon Falls and 75 lots in Seymour. Also proposed are 118.606 acres of open space. The site will be served by municipal water and sewer. Sewage will be split between the 2 Towns. Several roads, which will cross wetlands in 5 locations, are proposed to serve the subdivision. Weir structures are proposed at Rimmon Brook near its confluence with Skokorat Brook, in Rimmon Brook North and at the exit of the large central wetlands. These structures are required for zero increased runoff.

The review process consisted of 4 phases: (1) inventory of the site's natural resources; (2) assessment of these resources; (3) identification of resource problem areas; and (4) presentation of planning and land use guidelines. Based on the review process, specific resources, areas of concern, development limitations and development opportunities were identified.

Location, Zoning and Land Use

The site is bounded by Skokorat Road, private, undeveloped land and single-family homes. The site will be served by public sewer and water lines. Water mains are located in Skokorat Road, while sewer lines will be extended from Seymour and Beacon Falls. Due to topographic conditions, sewage pump stations will be needed for the subdivision and grinder pumps will be needed for many individual lots. Grinder pumps should not be placed below the high groundwater table. An alternate sewer line route could eliminate a pump station, but easements from abutting property owners are needed. Gravity flow sewer lines should be used where possible. Land use in the area includes wooded land and low density residential uses.

Topography

Topography on the site is controlled by the underlying bedrock. The major land features include the central swamp and the cliffs and steep slopes lining the stream corridors. Elevations range from 240 to 540 feet above mean sea level.

Geology

The bedrock underlying the site has been mapped as the Straits schist, a dolerite dike, undifferentiated Hartland Formation and Prospect gneiss. A fault is aligned with the dolerite dike and the streamcourses. The fault is no longer active. The

primary geologic constraint is the shallow depth to bedrock. Excavations will encounter bedrock and blasting will be required. Any blasting should be done under strict supervision of persons familiar with the latest blasting techniques. A pre-blast survey of surrounding properties is recommended, especially for water quality and quantity in domestic wells. The road system should be designed to avoid deep cuts. Freshly blasted rock may be used for fill material. Some types of rock can affect the quality of water with which it comes in contact. Tests should be made on the rock to determine if it will cause any negative environmental impacts. The Straits schist has the most potential to alter water quality, but it probably will not be encountered during construction.

The bedrock is covered by till. Texture of the till is sandy and loose. Post-glacial swamp deposits cover the till in the central swamp. These wet, low strength deposits are difficult to develop and should be left untouched. Other regulated wetland soils are found along the streams. A seasonal high watertable is the major development limitation for these soils. Any activity in wetlands will require a permit from the Inland Wetlands Commission. According to the plans, 5 wetland crossings are proposed. These crossings have been designed to minimize impacts to the wetlands. A wetland crossing could be eliminated through the use of a cul-de-sac and minor road re-alignment. Although undesirable, wetland crossings are feasible, provided they are properly engineered. A stormwater management option that locates the detention basins outside of the wetlands should be considered. All stormwater discharge points should also be located outside of wetlands. A carefully developed and implemented E&S control plan is necessary to protect the wetlands.

Hydrology

The site includes 3 principal streamcourses: Rimmon Brook, Rimmon Brook North and Skokorat Brook. The surface water is considered Class A. Groundwater is Class GA. Development of the site will increase the amount of runoff. The major concerns are potential flooding downstream and streambank erosion. The applicant has proposed 4 stormwater detention basins to maintain post-development flows at pre-development flow levels. Using the wetlands and streamcourses for detention is not preferred because wetlands intrinsically play a role in flood retention. Also, construction in wetlands can cause negative impacts. Due to site conditions and the amount of land to be disturbed, the potential to degrade surface waters is high. Properly installed and maintained E&S controls are imperative. Road and driveway runoff can degrade surface water after development. BMPs should be developed to minimize problems, including catch basins with sumps. Gathering background data for Silver Lake is recommended. An alternative to the proposed subdivision is developing a low to medium density subdivision which uses on-site septic systems and wells.

Soil Resources

The site is characterized by diverse terrain with areas of bedrock outcrops and wetlands. The major soil limitations are slope and shallow to bedrock soils.

Erosion and Sediment Control

The E&S control plan for the subdivision is basically adequate. Recommendations include installing pipelines within 1 work day, removing sediment from de-watering activities before releasing water to streams, locating stockpiles on the plans, orienting silt fence across slopes, removing sediment from stormwater before discharging it to a wetland, including dates for seeding and mulching, providing more detailed dam information, providing adequate buffers around wetlands, providing control measures for road sands and salts and specifying temporary E&S control measures.

Wetland Considerations

The applicant provided a general overview of the wetlands and watercourses on the site, including a cursory description of the vegetation, an evaluation of primary wetland functions and a discussion of environmental impacts expected by the proposed subdivision. Comments include eliminating a wetland crossing by providing access by a cul-de-sac and by changing the radius of a curve, providing management of stormwater without flooding wetland areas which can change species composition in the wetlands and providing adequate E&S controls.

Wildlife Considerations

Wildlife habitat on the site includes mixed deciduous forests, deciduous forests and wetlands. The area offers a variety of food and cover to wildlife, including deer, grouse, weasel, raccoon, otter, fox, coyote, various birds, reptiles and amphibians. The site offers good to excellent wildlife habitat. The forested areas provide cover, nesting, roosting and denning sites. Wetland areas provide diversity, travel paths and edges needed by many species. Wetland use by wildlife can be preserved by implementing a 100-foot buffer. Detention basins should not be excavated in wetlands because construction and maintenance will degrade habitat. Berms should not be placed in streamcourses because they will alter wetlands permanently and interrupts wildlife corridors. Runoff from the development may affect the wetlands. Maintaining good water quality is important. If wetlands are crossed, large box culverts or bridges are preferred to round or squash culverts for wildlife movement.

As with any development, the impact on wildlife habitat will be negative. Wildlife habitat will be broken-up and lost with the construction of roads, driveways, walkways, parking areas and homes. Other impacts include the creation of lawns and the presence of humans, traffic, dogs and cats. Certain species will disappear, and other species will increase. Small houselots tend to negatively affect wildlife habitat. Large lots or cluster housing can reduce the impacts and provide opportunities for wildlife management. Recommendations include moving detention basins out of the wetlands, constructing pump stations out of the wetlands, using calcium chloride for road salt, using oil separators in catch basins, designing and maintaining proper E&S controls, eliminating several wetland crossings, using bridges instead of culverts, implementing a buffer around the wetlands and providing deed restrictions to protect the wetlands.

Islands of open space will least benefit wildlife. Open space areas should be connected by natural travelways. Measures which can make the area more suitable for wildlife include providing buffer strips, using natural landscaping techniques and maintaining forest wildlife requirements.

Fisheries Resources

Rimmon Brook and Skokorat Brook are coldwater streams. Brook trout and black nose dace were observed in the streams. Both streams should allow excellent small stream trout fishing, but the stock may be quickly depleted. Impacts on the streams may include loss of fish habitat due to the wiers and culverts, sedimentation during construction and water quality degradation from stormwater runoff. Recommendations include providing a 100-foot buffer along the streams, placing stormwater structures outside of the streamcourses, considering alternatives to culverts for stream crossings, providing proper E&S controls and restricting lawn chemicals for the subdivision.

Threatened and Endangered Plant and Animal Species

According to the DEP - Natural Diversity Database, there are no Federal Endangered Species or Connecticut "Species of Special Concern" on the site.

Archaeological Resources

Bedrock outcrops such as those along the brooks were often used by Native Americans for shelters. If there is any chance of blasting in these areas, an archaeological survey of the area should be undertaken. The area at the conjunction of the 2 brooks is considered to be highly sensitive. All archaeological studies should be undertaken in accordance with the Environmental Review Primer for Connecticut Archaeological Resources.

Planning Considerations

The site is surrounded by vacant land and single-family residences. The subdivision is compatible with surrounding land uses, but the impacts of such a large subdivision must be examined carefully. Encroachment of development on wetlands should be minimized, and the site should be developed in phases. Seymour's Plan of Development recommends "medium density" land use. The current plan meets this recommendation, although much of the open space provided is unusable wetland. The subdivision is generally consistent with the Regional Plan of Development for the Valley. The Central Naugatuck Valley Region Plan of Regional Development classifies the site as a natural area because of the slopes and wetlands. Such land is anticipated to be developed at low densities. The Seymour portion of the site is zoned R-40 with cluster provisions. The Beacon Falls portion is zoned R-1. Site design is an important consideration. Several lots encroach on the wetlands. By reducing lot sizes, these lots can be pulled out of the wetlands, and potential impacts may be reduced. Storm drainage should be reviewed carefully. Rear lots and driveways should also be reviewed carefully. Stonewalls should be preserved where possible. The site is currently used by hunters and ORVs. The open

space will be maintained along Rimmon Brook. The recreational needs of future residents should be considered. Some form of active recreation area could be included in the open space plan. Public access to the Beacon Falls portion of the open space should be considered.

Traffic Considerations

The proposed subdivision will generate 1,760 trip ends per day. This should not overburden the traffic flow on Skokorat Road. The site lines must be adequate. Ideally, Skokorat Road should be widened at the subdivision roads to prevent traffic slowdowns. A traffic study is required by the State Traffic Commission. At present, the proposed subdivision includes many driveways which are excessively steep. Maximum driveway grades should be 15%. Site distances should be verified on Skokorat Road for the driveways. Road profiles indicate that the subdivision roads will stay within the 10% road grade limit. Several deep cuts and fills will be needed.

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INTRODUCTION

The Beacon Falls and Seymour Inland Wetlands Commissions have requested an environmental review of Rimmon Brook, a 267.27-acre site proposed for subdivision development. The site is located in northern Seymour and southern Beacon Falls, straddling the Town Line. Access is provided by Skokorat Road.

The site contains second growth hardwood forest with several areas of steep slopes. A large wetland system and 3 streamcourses (Rimmon Brook, Rimmon Brook North and Skokorat Brook) are found on the site. Silver Lake lies downstream of Rimmon Brook. Rimmon Brook once contained native trout.

The developer proposes 176 houselots for the site, 101 lots in Beacon Falls and 75 lots in Seymour. Lots range in size from 22,335 square feet to 86,167 square feet. Also proposed is 118.606 acres of open space, including the steep slopes, the large central wetland and portions of the watercourses. The site will be served by municipal water and sewer. Sewage will be split between the 2 Towns. Several roads, which will cross wetlands in 5 locations, are proposed to serve the subdivision. Weir structures are proposed at Rimmon Brook near its confluence with Skokorat Brook, in Rimmon Brook North and at the exit of the large central wetlands. These structures are required for zero increased runoff.

The primary goal of this ERT is to inventory the natural resources of the site and provide planning information. Specific objectives include:

1) Assess the hydrological and geological characteristics of the site, including geological development limitations and opportunities;

2) Determine the suitability of existing soils to support the proposed development;

3) Discuss soil erosion and sedimentation concerns;

4) Discuss water quality concerns, including stormwater management;

5) Assess the impact of the development on wildlife and fisheries, including alternatives for consideration; and

6) Assess planning and land use issues.

THE ERT PROCESS

Through the efforts of the Beacon Falls and Seymour Inland Wetland Commissions, the developer's representative and the King's Mark ERT, this environmental review and report was prepared for the Towns. This report primarily provides a description of on-site natural resources and presents planning and land use guidelines. The review process consisted of 4 phases:

1) Inventory of the site's natural resources (collection of data);

2) Assessment of these resources (analysis of data);

3) Identification of resource problem areas; and

4) Presentation of planning and land use guidelines.

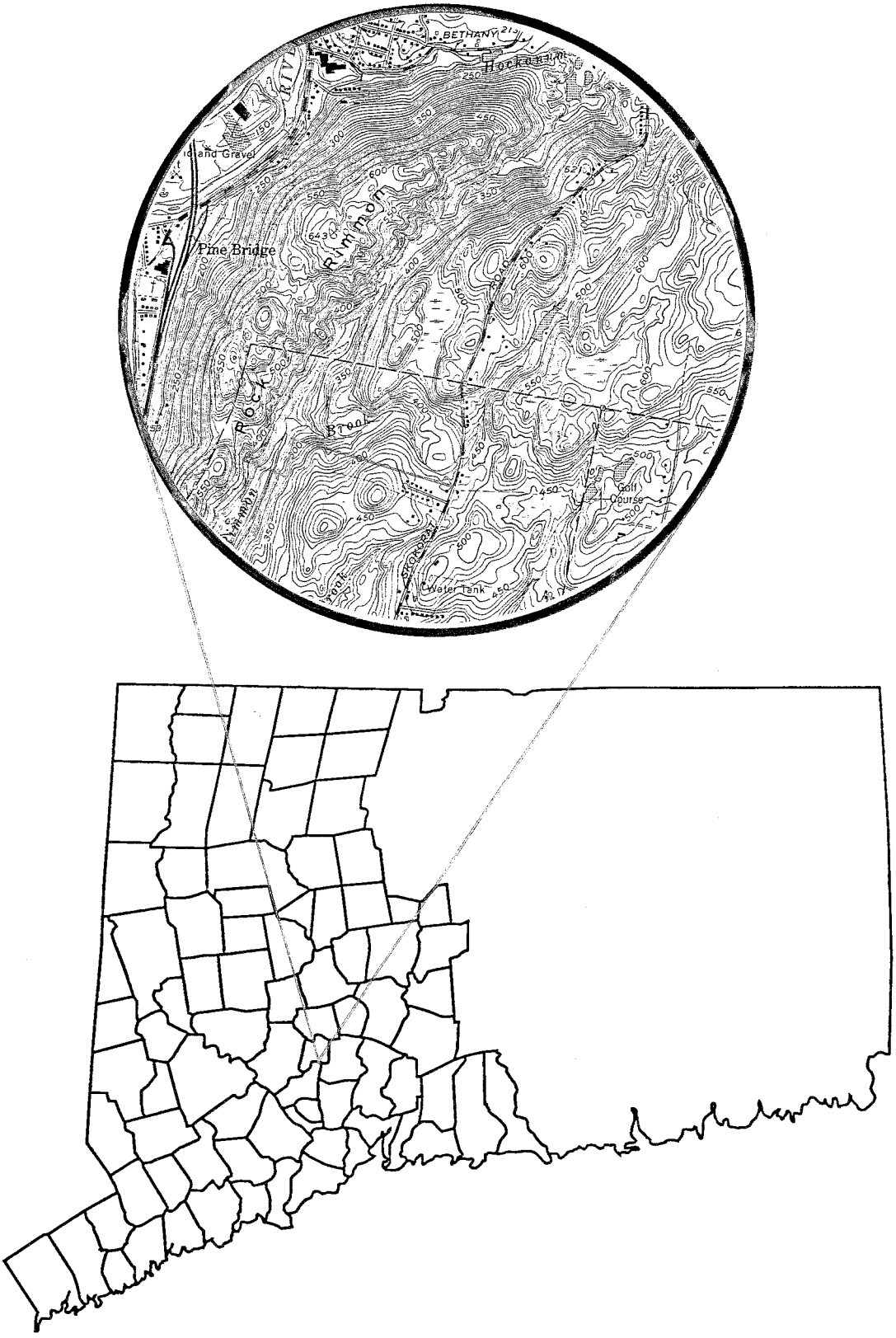
The data collection phase involved both literature and field research. The ERT field review took place on April 18, 1990. Field review and inspection of the proposed development site proved to be a most valuable component of this phase. The emphasis of the field review was on the exchange of ideas, concerns or alternatives. Mapped data or technical reports were also perused, and specific information concerning the site was collected. Being on-site also allowed Team members to check and confirm mapped information and identify other resources.

Once Team members had assimilated an adequate data base, they were able to analyze and interpret their findings. The results of this analysis enabled the Team members to arrive at an informed assessment of the site's natural resource development opportunities and limitations. Individual Team members then

prepared and submitted their reports to the ERT Coordinator for compilation into the final ERT report.

Figure 1

LOCATION OF STUDY SITE



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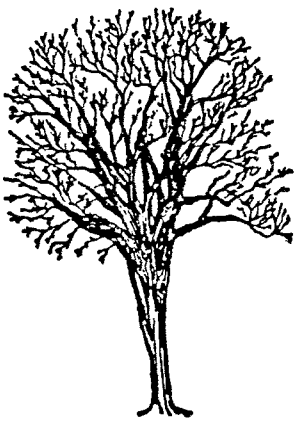

LOCATION, ZONING AND LAND USE

The proposed 176-lot residential subdivision encompasses 267.27 acres and straddles the Beacon Falls-Seymour Town Line. The northern half of the site, located in Beacon Falls, comprises 143 acres and will be subdivided into 101 lots. The southern half of the site, located in Seymour, comprises 124.5 acres and will be subdivided into 75 lots. Rock Rimmon, a ridge composed of resistant bedrock, occurs at the site's western limits. This area is characterized by east facing vertical rock cliffs. Site boundaries include Skokorat Road on the east and private, undeveloped wooded land on the north, west and south. Tracy Terrace, which is characterized by single-family homes, also borders the southern parts of the site.

The site can be divided into 2 zoning classifications. The northern half (Beacon Falls) is zoned R-1 which allows single-family homes on lots of 22,500 square feet or larger. The southern half (Seymour) is zoned R-40, which allows single-family homes clustered on lots 25,000 square feet or larger. Lots will be served by public water and public sewers tied into the Seymour and Beacon Falls municipal systems. A water main is accessible to the site. It is located in Skokorat Road which abuts the eastern limits of the site. For the part of the site located in Seymour, the municipal sewer, which consists of a 4-inch sanitary force main, will be extended northward from April Gardens, a distance of approximately 2,100 feet. The sewer line serving the Beacon Falls section of the subdivision will be extended southward a distance of approximately 1 mile from the intersection of Skokorat, Bethany, Blueberry Hill and Munson Roads.

Due to topographic conditions, 2 pump stations for the sewer lines will be necessary for the proposed subdivision. Additionally, grinder pumps will be needed for many lots to raise domestic wastes from the dwellings to the municipal sewer line due to elevation differences. All lots requiring grinder (ejector) pumps should be

noted on the subdivision plan. Careful examination of pump chamber locations and the high groundwater table condition is warranted. Groundwater may infiltrate the pump chamber if it is placed below the seasonal high groundwater level, causing the pump to run for long periods of time, which could lead to premature pump failure. Houses located in soils which have a seasonal high watertable approximately 1.5-2.5 feet below ground surface (e.g., Sutton soils) require special attention. Also, the discharge pipe for the pumps, which typically is 2 inches in diameter, must be sufficiently covered by soil to protect it from freezing. This depth may be difficult in places due to shallow bedrock.

An alternate sewer line extension route for the Beacon Falls section could eliminate a pump station. This alternate route could be located in the vicinity of the Rimmon Brook North Valley and should conform to topographic contours. However, the alternate route will require obtaining sewer line easements from abutting property owners. Every effort should be made to utilize gravity flow sewer lines where possible.

The site and vicinity are characterized by wooded land. Low density residential land uses predominate near the site. However, less than a mile north and south of the site, medium to high density residential land uses prevail. A review of air photos for the site and vicinity, which date back 50 years, indicates that there has been an increase in residential densities.

An old wood road loops through the site. In many places, the proposed interior road system will be aligned with the wood road.

TOPOGRAPHY

The site topography, which is for the most part controlled by the underlying bedrock, ranges from flat to vertical cliffs. The major land features include a 10-acre

swamp in the east central parts and the east facing rock cliffs that parallel Rimmon Brook and Rimmon Brook North located in the western limits. Vertical rock cliffs and/or steep slopes generally flank Rimmon Brook Valley and Skokorat Brook Valley. Present plans indicate these sensitive areas will be protected as open space land. Isolated areas of steep slopes also occur in the northern parts and the southeast corner of the site. Flat slopes characterize the swamp in the east central parts and on the crests of the rock-cored knolls on the site. Maximum and minimum elevations on the site are 540 feet above mean sea level and 240 feet above mean sea level, respectively (see Figure 3). The highest point occurs at the rock knoll where Lots 79-83 are located, while the lowest point is represented by the land near Rimmon Brook at its intersection with the southern property line.

GEOLOGY

The site is located entirely in the Naugatuck topographic quadrangle. A bedrock geologic map (QR-9, M.H. Carr, 1957-58) and a surficial geologic map (QR-35, R.F. Flint, 1974-75) for the quadrangle have been published by the Connecticut Geological and Natural History Survey.

Depth to bedrock throughout the site is relatively shallow, and there are several bedrock outcrops. Map QR-9 identifies 4 bedrock types beneath the site, including the Straits schist, a dolerite dike, the undifferentiated Hartland Formation and Prospect gneiss (see Figure 4). The principal bedrock type occurring beneath the central and eastern parts of the site is the undifferentiated Hartland Formation. In general, these rocks are described as gray to silvery, medium- to coarse-grained schist and granofels. The rocky knolls east of the swamp and beneath Lots 15-17 and 27-31 are comprised of Prospect gneiss, which is described as a gray to dark gray, medium-grained lineated gneiss. Running parallel to Rimmon Brook and Rimmon Brook

North is a narrow band (approximately 20 feet wide) of a rock called dolerite, which is described as a resistant dark gray, brown to gray dolerite (traprock) that is compositionally similar to basalt. This dike intruded the older surrounding rock as molten material approximately 250 million years ago. The final bedrock type is the Straits schist which occurs as a relatively narrow north-south trending band at the western limits. Because the Straits schist rocks are the most resistant, they form the highest ground such as Rock Rimmon, Beacon Cap and Hunters Mountain. The Straits schist consists of a silvery to gray, coarse-grained schist.

Schists, gneisses and granofels are crystalline rocks that have been geologically altered by great heat and pressure (metamorphosed) within the earth's crust. Dolerites are igneous rocks which formed from molten magma and which have not been metamorphosed. The terms schist, granofels and gneiss refer to the textural and structural aspects of the rocks. The stresses of deformation caused the alignment of platy, flaky and elongate minerals into thin sheets or bands. Where the alignment has resulted in a slabby rock (i.e., rock that parts relatively easily along the surface of mineral alignment or foliation planes), the rock is termed a schist. Where the alignment has resulted in a banded but more massive rock, the rock is termed gneiss. Granofels lack the compositional banding of the gneisses.

A northeast/southwest trending fault, located in the western parts of the site, is aligned with the dolerite dike, Rimmon Brook and Rimmon Brook North. Evidence suggests that the dolerite dike is Jurassic in age (144-204 million years old). Since the dolerite intruded into the fault plane, it is either the same age or older than the dike. Slickensides (polished or striated surfaces) and quartz zones are visible in the rock cliffs of Rimmon Brook, which gives testimony to this type of faulting. Near the fault the upper few hundred feet of bedrock is probably fractured, weathered or both. The fault is no longer believed to be active.

Figure 3 Topography

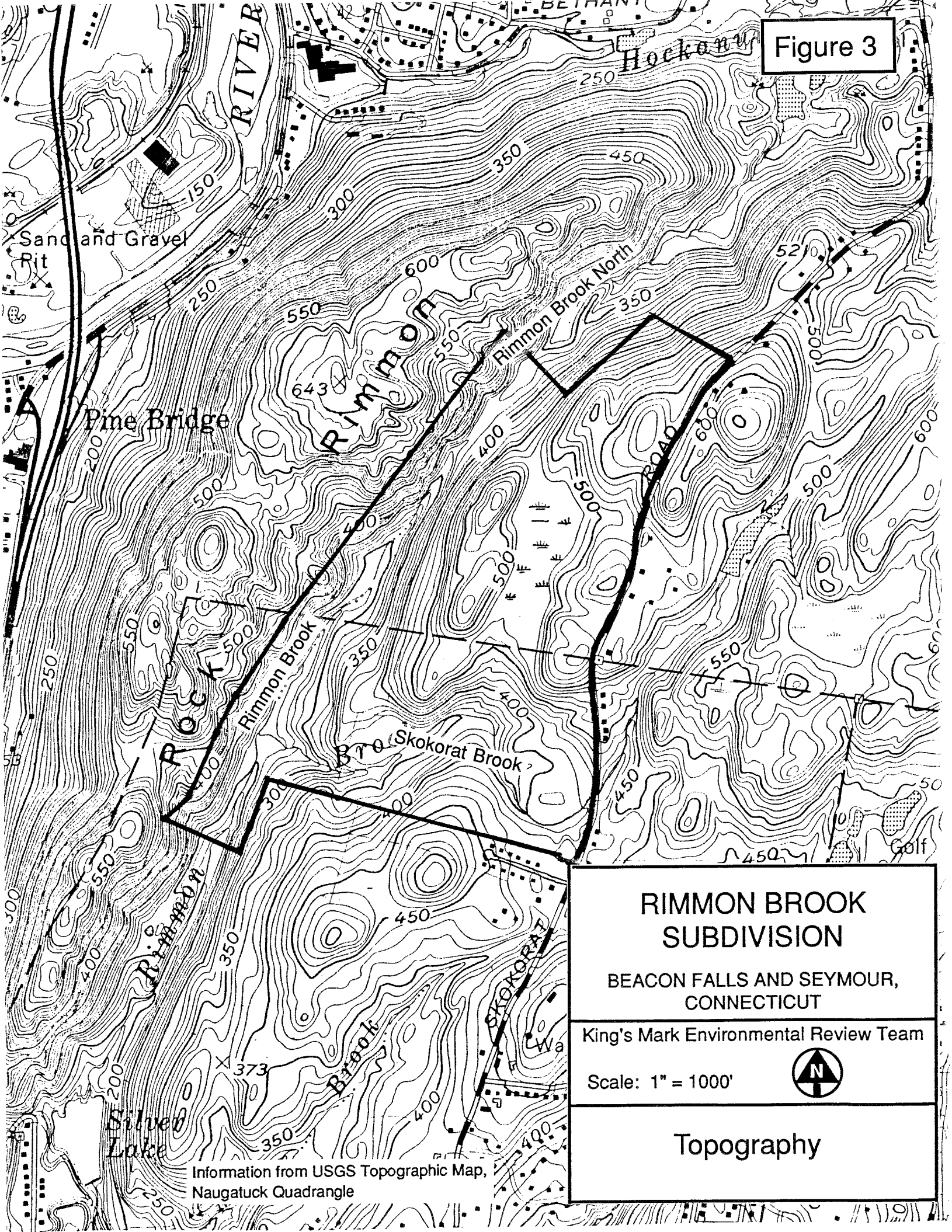
Figure 3
RIVER
Hockanum
Sand and Gravel Pit
Pine Bridge
Rimmon
Rimmon Brook North
Rimmon Brook
ROCK
Skokorat Brook
SKOKORAT
Brook
Silver Lake
Golf
RIMMON BROOK SUBDIVISION
BEACON FALLS AND SEYMOUR, CONNECTICUT
King's Mark Environmental Review Team
Scale: 1" = 1000'
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Topography
Information from USGS Topographic Map, Naugatuck Quadrangle

Figure 4 Bedrock Geology

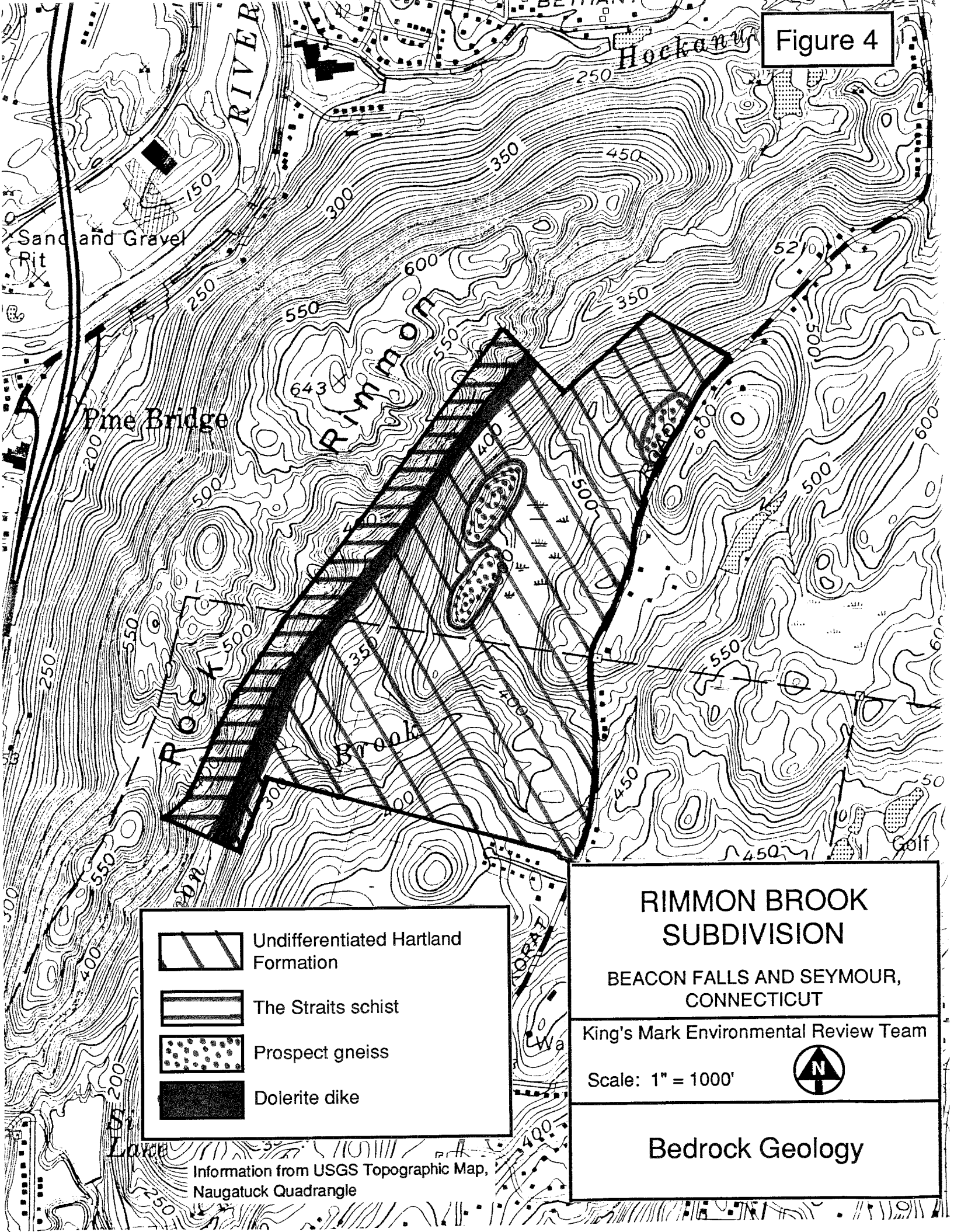
Figure 4
Sand and Gravel Pit
Pine Bridge
RIVER
Rimmon
Brook
Rock
Hockanum
Golf
Undifferentiated Hartland Formation
The Straits schist
Prospect gneiss
Dolerite dike
RIMMON BROOK SUBDIVISION
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Scale: 1" = 1000'
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Bedrock Geology
Information from USGS Topographic Map, Naugatuck Quadrangle

The primary geologic constraint for site development is the shallow depth to bedrock and distribution of unconsolidated materials. Surficial geologic and soil mapping data indicate that the depth to bedrock is relatively shallow, varying from zero in rock outcrop areas to probably not more than 10 feet at points in between the outcrops. Geotechnical information such as deep test holes was not available for the site to verify subsurface conditions. There is a potential for earth cuts, which may be deep in places for the construction of roads, driveways, utilities and house foundations. Due to the shallow soils, it seems likely that deeper excavations will encounter bedrock. Based on the bedrock types that underlie the site, any significant cuts will probably require blasting. Blasting requires great care and the strict supervision of persons experienced with modern blasting techniques to ensure no damage occurs to surrounding properties from undue seismic shock or airblast. A pre-blast survey should be implemented with the project, focusing on the homes closest to the site, which occur mainly on Skokorat Road and Tracy Terrace. If there are any domestic wells nearby, background information concerning their water quality and quantity should be collected and documented in case there are post-development changes in surface or groundwater in the area. The risk of significant groundwater contamination is reduced by the availability of public water lines. Deep earth excavations that encounter bedrock will increase site development and engineering costs. The road system should be designed to avoid deep earth cuts.

The freshly blasted rock may be used for fill material, although it may change the physical and chemical quality of the water with which it comes in contact. While the Straits schist should have the most potential for altering water quality, it does not appear to be encountered by construction. Nevertheless, if blasted rock is to be used on-site for fill and/or riprap, the applicant should test the rock (likely to be the undifferentiated Hartland Formation and Prospect gneiss) to determine if it will cause any negative environmental impacts to the surface or groundwater resources

in the area. Modification of experiments such as acid base accounting and simulated weathering experiments can be used to predict the field occurrences of acidic drainage in the bedrock underlying the site.

A relatively thin blanket of glacial sediment called till covers the bedrock on the site (see Figure 5). Till consists of sediments that range in size from clay to large boulders, but is predominantly sand, silt and gravel. Based on soil mapping data, the texture of the till is sandy or loose. The till sediments were deposited by glacial ice as it moved across the bedrock surface from north to southeast. In general, it is probably 5 feet thick or less in most places.

Overlying the till and bedrock in the east central parts of the site are post-glacial swamp sediments. They consist of silt, sand and clay mixed with organic matter in poorly drained areas. The Soil Survey of New Haven County, Connecticut identifies Adrian and Palms Muck in this area. These nearly level, very poorly drained soils are commonly found in depressions and along streams of outwash plains and glaciated uplands. Typically, the Adrian soils have an organic layer that is 33 inches thick. This layer consists of black muck over very dark grayish-brown muck. The substratum, to a depth of 60 inches, is dominated by gray, loose sand. The Palms soils have an organic layer that is 32 inches thick. This layer consists of black, very dark grayish-brown and dark brown muck. The substratum, to a depth of 60 inches, is dark gray, friable, gravelly silt loam.

The major limitations with the Adrian and Palms mucks are:

1) The high watertable is at or near the surface most of the year.

2) These soils are prone to flooding or ponding.

3) These soils are composed of organic layers that have low strength and stability.

For these reasons and others, this area is not suitable for development.

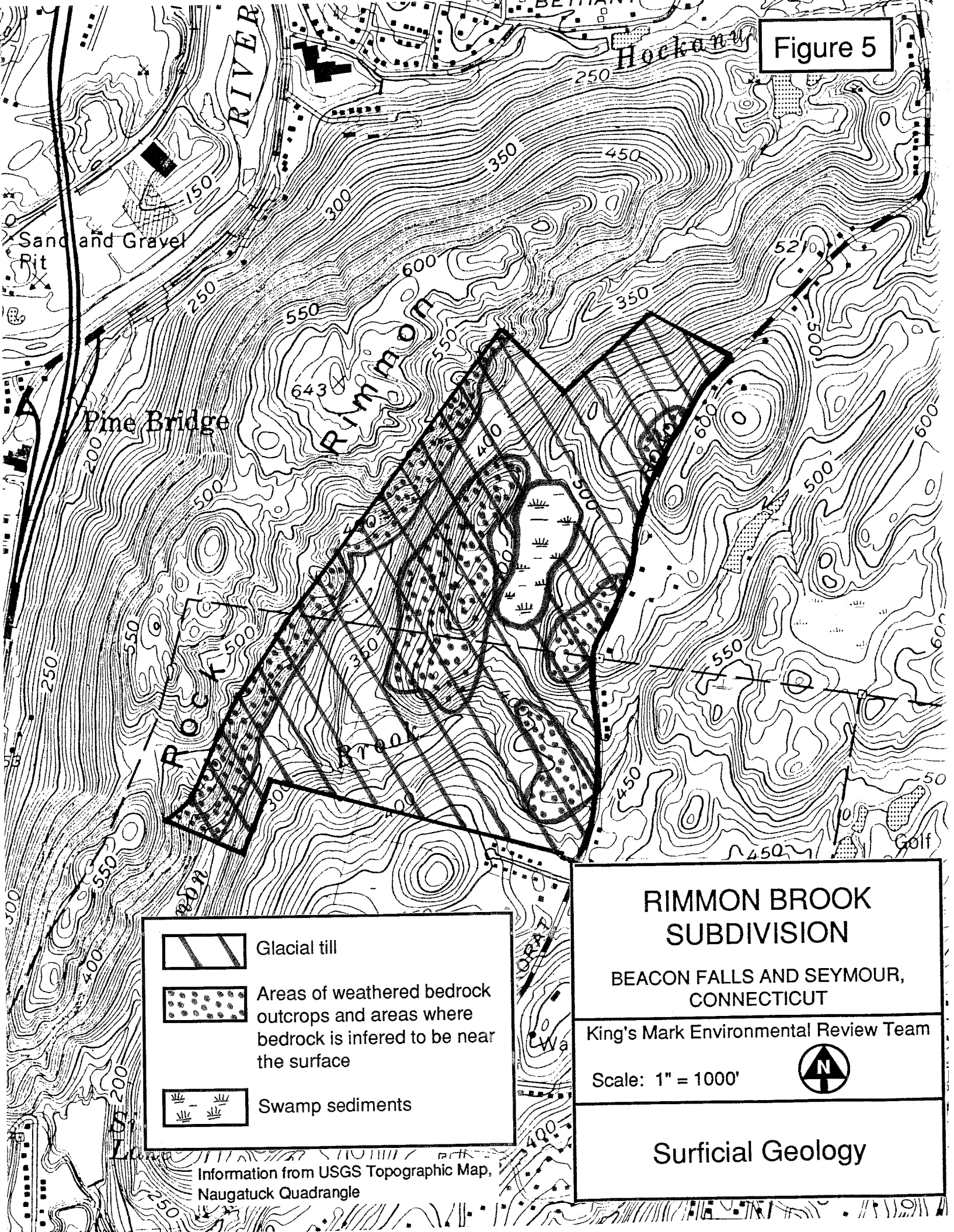
Figure 5
Sand and Gravel Pit
Pine Bridge
RIVER
Hockanum
RIMMON
ROCK
Golf
Glacial till
Areas of weathered bedrock outcrops and areas where bedrock is infered to be near the surface
Swamp sediments
RIMMON BROOK SUBDIVISION
BEACON FALLS AND SEYMOUR, CONNECTICUT
King's Mark Environmental Review Team
Scale: 1" = 1000'
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Surficial Geology
Information from USGS Topographic Map, Naugatuck Quadrangle

The other regulated soils found on the site consist generally of relatively narrow bands of Ridgebury, Leicester and Whitman extremely stony fine sandy loams that parallel Rimmon Brook, Rimmon Brook North and Skokorat Brook. This undifferentiated unit comprises very deep, loamy soils that formed in glacial till. The Ridgebury and Whitman soils developed in compact till, while the Leicester soils developed in more friable till. They range from poorly drained (Leicester and Ridgebury) to very poorly drained (Whitman). In general, the Leicester and Ridgebury soils are nearly level to gently sloping soils in drainage ways and low-lying positions of till-covered uplands. The Whitman soils occur on nearly level to gently sloping depressions and drainageways on till-covered uplands. From an engineering standpoint, the major limitation of these soils is the seasonally high watertable (wetness). A high watertable condition is at or near ground surface in the Leicester and Ridgebury soils generally between November and May. In the Whitman soils, a high watertable condition, at or above ground surface, occurs September through June.

According to present plans, regulated wetlands will be impacted (i.e., filled, modified and/or disturbed) by:

1) Road construction and accompanying grading;

2) Stormwater management measures such as the construction of 3 detention basins in the Rimmon Brook and Rimmon Brook North corridors and the swamp in the east central parts;

3) Soil erosion and sedimentation during construction; and

4) Construction of stormwater discharge points.

These activities will require a permit and ultimate approval by the Seymour and Beacon Falls Inland Wetland Commissions. In reviewing the proposal, the Commissions must determine the impact that the proposed activity will have on the wetlands. If Commissions members determine that the wetland is serving an

important hydrological or ecological function and that the impact of the proposed activity will be significant, they may deny the activity altogether, or at least require measures that would minimize the impact. All alternatives should be carefully studied and considered by the applicant and both Towns. Both Inland Wetland Commissions and appropriate staff should arrange to meet with the applicant and his technical staff to check areas where alterations to wetlands are proposed.

According to the plans, a total of 5 wetland road crossings are proposed by the interior road system. It appears that the applicant has designed the wetland crossings to avoid wetland disturbance to the greatest extent practicable by locating the crossings at narrow sections and aligning them with the old wood road. This should minimize the wetland impacts in these areas. The wetland crossing near the outlet for the swamp in the east central parts could be eliminated by utilizing a cul-de-sac and realigning Sterling Drive and Rimmon Brook Trail.

Although undesirable, wetland crossings are feasible, provided they are properly engineered. Wetland crossings should be constructed adequately above the surface elevation of the wetlands. This will allow for better drainage of the road and decrease the frost heaving potential. Road construction through wetlands should be done during the dry time of the year and should include provisions for effective erosion and sediment (E&S) control. Any unstable, organic or mucky material should be removed and replaced with a permeable road base material. Culverts should be properly sized and located to avoid altering the water levels in the wetland or causing flooding problems.

A stormwater management option that locates detention structures outside of Rimmon Brook, Rimmon Brook North and their respective wetlands and the outlet stream for the swamp in the east central parts should be considered to minimize potential adverse environmental impacts to wetlands/streamcourses. All stormwater discharge points should be located outside of regulated wetland areas

and equipped with energy dissipators or level speakers to reduce water velocities and minimize sediment loading. A carefully developed and implemented E&S control plan should be policed on a regular basis by the Towns officials to protect wetlands from unnecessary sediment loading (see Wetland Considerations section).

HYDROLOGY

The site includes 3 principal streamcourses: Rimmon Brook, Rimmon Brook North and Skokorat Brook (see Figure 6). Rimmon Brook originates in a small wetland pocket located west of Lot 83. It flows in a northeast/southwest direction from this point and ultimately discharges into Silver Lake which is approximately 2,625 feet south of the site's southern boundary. The outlet for Silver Lake flows in a southerly direction to the Naugatuck River. From its intersection with the Silver Lake dam, Rimmon Brook drains an area of approximately 730 acres. Rimmon Brook North, which originates west of Lot 84 in Beacon Falls, flows in a northerly direction enroute to the Hockanum River. At its point of outflow to the Hockanum River, it drains an area of 225 acres or 0.35 square miles. Approximately 77 acres of the Beacon Falls portion of the site drains to Rimmon Brook North. Skokorat Brook, which flows through the southern parts of the site and which enters Rimmon Brook just west of Lots 66 and 67 in Seymour, represents about 54% or 392 acres of the the Rimmon Brook Watershed. It is estimated that 186 acres of the subdivision site is located in the Rimmon Brook and Skokorat Brook Watersheds. Generally speaking, the 3 watershed areas are wooded and undeveloped, except for the single-family homes along Skokorat Road.

The surface waters on the site have not been classified by the Department of Environmental Protection (DEP) Water Compliance Unit and are presumed Class A water resources by default. Class A water resources may be suitable for drinking,

recreational or other uses and may be subject to restrictions on the discharge of wastes, although certain discharges may be permitted.

Groundwater beneath the site is classified by the DEP as GA, which means it is suitable for private drinking water supplies without treatment.

Because of the high density of residential homes presently proposed, development of the site will increase the amount of runoff during periods of rainfall. These increases will result from soil compaction, removal of vegetation and placement of impervious surfaces such as roof tops, driveways and sidewalks over otherwise pervious soils. Because of the potential for blasting, filling and grading during development, the amount of impermeable surfaces that will be created and the drainage directing measures to be employed, the character of the headwater region of Rimmon Brook and Rimmon Brook North will be altered markedly. The main concerns with regard to increased runoff are:

1) The potential for flooding problems to downstream areas; and

2) The potential for streambank erosion and surface water degradation.

The applicant's engineer is proposing 4 stormwater detention basins (3 in the Rimmon Brook Watershed and 1 in the Rimmon Brook North Watershed). The basins have been engineered to reduce peak outflow from the subdivision so that post-development flows will not exceed pre-development flows. These stormwater detention basins will be created by:

1) Throttling the flow of the streamcourse at 2 wetland road crossing locations proposed on Rimmon Brook Trail; and

2) Constructing berms across Rimmon Brook and Rimmon Brook North not far from the northern and southern property boundaries.

Utilizing the stream/wetland corridor for detention is not preferred because wetlands already have some intrinsic capacity for stormwater retention. Also,

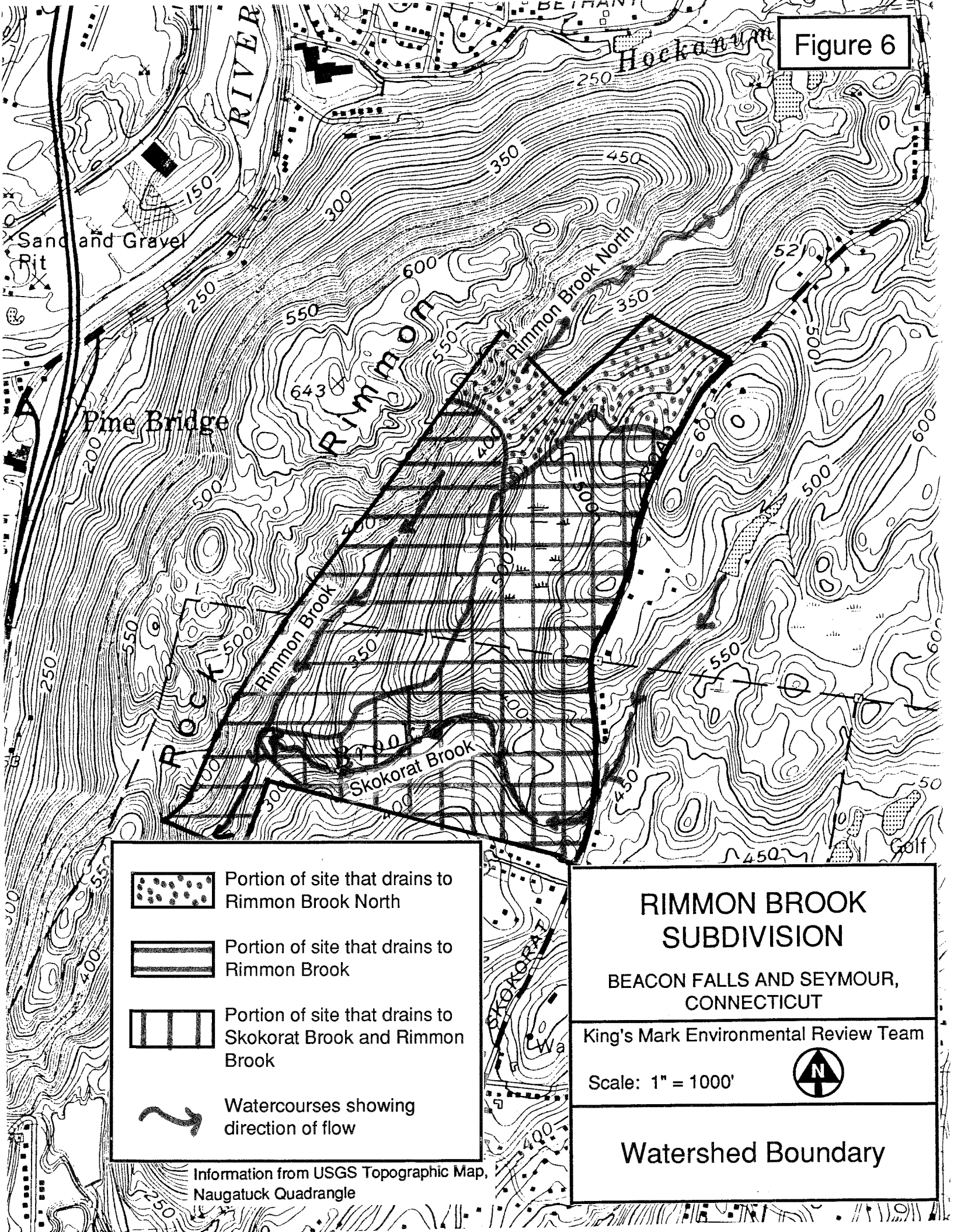


Figure 6
Sand and Gravel Pit
Pine Bridge
RIVER
Rimmon
Rimmon Brook North
Rimmon Brook
Skokorat Brook
Hockanum
BETHANY
Golf
Portion of site that drains to Rimmon Brook North
Portion of site that drains to Rimmon Brook
Portion of site that drains to Skokorat Brook and Rimmon Brook
Watercourses showing direction of flow
RIMMON BROOK SUBDIVISION
BEACON FALLS AND SEYMOUR, CONNECTICUT
King's Mark Environmental Review Team
Scale: 1" = 1000'
N
Watershed Boundary
Information from USGS Topographic Map, Naugatuck Quadrangle

constructing the berms may require a rather long dike through a healthy wetland system and could cause the death of some wetland vegetation due to change in surface hydrology. Damage to the wetlands by construction of these berms may not be mitigated by the flood control attributes realized. Also, the rear portion of many lots back up to the proposed areas for stormwater detention which are created by wetland road crossings on Rimmon Brook Trail, warranting careful examination to ensure backyards do not flood or basements do not get wet during storm events.

Due to the site conditions (e.g., steep slopes), the amount of land disturbance anticipated and the proposed density of the development, the potential to degrade surface water on- and off-site during and following development is high. Therefore, it is imperative that E&S control measures be properly installed and maintained. Both Towns must police E&S control measures on a regular basis. E&S controls should be left in placed until each phase of construction is stabilized through 1 growing season. A detailed E&S control plan that is properly enforced will minimize the potential adverse impacts to water resources on- and off-site.

During the construction period, control measures, including silt fences, haybales, temporary/permanent sediment basins which permit settling time for suspended solids, anti-tracking devices and minimizing land disturbance, should be used to minimize environmental damage to on- and off-site wetlands and watercourses. The Connecticut Guidelines for Soil Erosion and Sediment Control (1985, as amended) should be closely followed with respect to the E&S control plan.

A high potential exists for degrading surface water on- and off-site following development by road and driveway runoff, floating solids, road salt, oils, greases and road sand. Best Management Practices (BMPs) which are consistent with the DEP Water Compliance Unit should be developed and implemented to minimize problems. Consideration should be given to using catch basins equipped with hooded outlets and sumps for trapping sediments and floatables. Responsibility for

maintaining the structures should be assigned. The owner of Silver Lake, which is fed by Rimmon Brook and Skokorat Brook, expressed concern that water quality in Rimmon Brook will be noticeably lowered by the proposed subdivision, ultimately impacting Silver Lake. Groundwater/surface water flowing through the blasted bedrock fill probably will pick up significant amounts of suspended and dissolved solids and transmit them to Skokorat, Rimmon Brook or Rimmon Brook North. This may result in strong coloration, as well as a substantial increase in turbidity in the streamcourses. Also, the rock may react chemically with the water. Debris from the roads, including sand and salt used in winter, spilled hydrocarbons, other automobile residue and lawn fertilizers, will be carried directly by surface and road runoff through the new drainage channel into stormwater detention structures. Although litter and sand should be trapped within the basins, salt and other dissolved materials and some suspended particles may be transmitted into the streamcourses. For these reasons, precautions should be taken to ensure that on- and off-site water quality is not diminished during and after construction. Also, background water quality data should be compiled for Silver Lake as part of the stormwater management plan. Therefore, if water quality problems do arise, background data will have been documented.

In view of the site's physical constraints, the distance required to extend the municipal sewer line, site preparation costs and potential adverse environmental impacts to on- and off-site water resources, consideration might be given to a low to medium density residential subdivision that utilizes on-site septic systems and public water mains. This alternate subdivision layout would minimize the amount of land to be disturbed, eliminate the sewer line extension and reduce the amount of blasting expected. Subsurface exploration for on-site sewage disposal is needed to determine site suitability for on-site septic systems. Shallow to bedrock conditions will be the major design constraint on most lots.

SOIL RESOURCES

The soils map generated by Northeast Soils should be used for evaluation of the site due to the greater mapping intensity. The boundaries of the inland wetland areas should also be taken from these maps.

The site is characterized by a diverse terrain punctuated with islands of bedrock outcrops and wetland soils. The eastern side of Rimmon Brook is a very steep rock outcrop which creates a dramatic visual effect.

A soils table has been prepared which outlines the various soil map units found on the site and their limitations for the proposed uses (see Appendix A). The primary limitations to development are the slopes and shallow depth to bedrock found over a major portion of the site. If municipal sewers are not made available to the development, a much lower density and development pattern would be dictated by the soil limitations.

EROSION AND SEDIMENT CONTROL

In 1983, Public Act No. 83-388, "An Act Concerning Soil Erosion and Sediment Control" was passed to "reduce the danger from storm water runoff, minimize non-point sediment pollution from land being developed and conserve and protect the land, water, air and other environmental resources of the state." Under this law, most applications for development must have a comprehensive E&S control plan, including a map and narrative. While the proposed subdivision has an E&S control plan, additional elements which minimize erosion and sedimentation during and after construction include:

1) A note should be included which addresses E&S control during the installation of pipelines such as that planned behind Lots 40-42 of the

Seymour section. The entire pipeline should be completed within 1 work day or no more than 20 linear feet of ditch be left exposed for an extended period of time.

2) Any de-watering activities taking place during the installation of structures in or near wetland areas should employ measures to remove sediment prior to release of the water into wetlands and watercourses.

3) The locations of stockpiles should be identified. Organic materials such as tree stumps should not be buried unless there is an approved location identified by local officials. Filling in slumped soil areas over burial sites and dealing with foul smelling exudate from these areas can be a costly item for a landowner.

4) Sediment fence should not be oriented up and down slope because this can cause rather than prevent erosion problems. Silt fence should not be extended across streams. Sediment barriers are designed for drainage areas of 1 acre or less.

5) When wetlands are used for stormwater detention, measures to remove sediment from the runoff water prior to its entering the wetland should be employed.

6) Detailed specifications for seeding and mulching should be provided on the plans. For example, there are specific seeding periods which should be adhered to for successful establishment of ground cover. The Connecticut Guidelines for Soil Erosion and Sediment Control is a useful source for this information.

7) Location of dams directly in Rimmon Brook is not a recommended approach for control of stormwater runoff because dams on streams interfere with the passage of aquatic life and soon fill with sediment and debris. The roads to these structures also provide ready access for soil damaging off-road vehicles (ORVs) to the open space area. If allowed, dam construction plans should be more detailed and have individual planning for E&S control.

8) There are inadequate upland buffers around most wetland areas. Because the lots are small, the open space areas are likely to receive intensive use by future residents. Already there is serious damage to wetland areas along Rimmon Brook due to ORV use. A management plan should be developed for these areas to prevent further degradation. Also, a group should be assigned responsibility for carrying out this management plan.

9) Sanding of roads and driveways and the movement of this sand into wetlands and watercourses will be an on-going problem. Appropriate measures for control of this sediment load and responsibility for maintenance of the measures should be assigned.

10) Temporary E&S control measures should be specified when time of year or weather prohibit establishment of permanent vegetative cover.

BIOLOGICAL RESOURCES

WETLAND CONSIDERATIONS

The applicant provided a general overview of the wetlands and watercourses on the site, including a cursory description of the vegetation, an evaluation of primary wetland functions and a discussion of environmental impacts expected by the proposed subdivision. Following careful review of this information, observations made on-site and a substantial review of the available literature, comments and suggestions include:

1) The wetland crossings do not appear to represent a major impact because of the narrow size of the wetland and watercourses at the chosen locations and the existence of previous crossings for logging purposes. However, it is possible to eliminate a crossing of Rimmon Brook Trail by providing access to Lots 29-31 and 68-70 with a cul-de-sac, by changing the radius of the curve east of the proposed crossing and by combining Lots 23 and 101 to accommodate this change.

2) Considering the extent of development proposed, the topography, soil conditions and hydrology on-site, management of stormwater is critical. The use of the wetlands and watercourses to detain the large volume of runoff generated by this subdivision may substantially impact the vegetation of both the wetlands and adjacent upland areas. Impacts may include increased stress or even death of the herbaceous and woody vegetation, depending upon timing, frequency and duration of flooding. Although the proposed structures are designed to release all retained water over a period of 15-30 hours (time period varies with the location of the proposed detention), these periods of inundation are based upon single events and do not take into consideration the probability of successive storms or other unforeseen factors. Flooding large areas with depths of 2-9 feet of standing water for even short periods of time can create poor soil aeration which is clearly associated with the physiological changes in woody plants that variously influence their growth and long-term composition in forest stands. With few exceptions, the growth of non-wetland adapted trees is adversely affected by flooding for a few weeks or more during the growing season. This effect is generally the result of the disruption of aerobic respiration of plant roots and soil microorganisms which require oxygen for survival. The deoxygenation of soil by flooding also can result in the accumulation of toxic substances which are formed in soils in a reduced state. In either case, prolonged flooding will result in permanent root damage or even death in species not adapted to such conditions, and short-term flooding will cause stress which may lower a species tolerance to disease, insect infestation and possibly its reproductive potential.

It has been well-documented that older trees are generally more tolerant of flooding than saplings or seedlings of the same species. Also, the deposition of silt on foliage during the vegetative season can have disastrous effects. Flooding during the vegetative season has been shown to cause the most damage to vegetation, and summer floods are quite possible and should even be expected in the area of the site. Flooding at the wrong time may kill the above ground portions of herbaceous plants and woody saplings and seedlings, which must rely on underground reserves to continue growth. Over time, these factors may affect the species composition and ecology in the proposed detention structures.

A number of tree species found in the proposed detention area and documented effects of flooding on these species are listed below. Although these observations were made in other parts of the country, the overall response of these species to flooding under similar conditions is probably the same.

Sugar Maple (Acer saccharum): Defoliation after 90 hours of flooding, but trees appeared alive.

Northern Red Oak (Quercus rubra): A 5% survival rate after 70 days of flooding.

Eastern Hemlock (Tsuga canadensis): Short periods of flooding (1-2 days) resulted in complete defoliation and probably death.

American Beech (Fagus grandifolia): All died when flooded more than 16% of the growing season (25 days).

Tulip Tree (Liriodendron tulipifera): Healthy if flooded less than 6 days during the growing season.

Yellow Birch (Betula lutea): Defoliation after 90 hours during the growing season.

Other species which are found on the site exhibit various other tolerances to flooding with root death observed in Alder (Alnus rugosa), Black Oak (Quercus velutina) and Black Cherry (Prunus serotina) when flooded for less than 1 month during the growing season.

3) E&S control is extremely important for this subdivision, especially considering the rugged topography, the number of cuts and fills and the natural basin that the central red maple swamp in Beacon Falls provides. Without proper design, implementation and careful monitoring, the potential impacts to the wetlands and watercourses far outweigh the public benefit of providing housing on this site.

WILDLIFE CONSIDERATIONS

Description of Area/Habitats

The site is 267.27 acres in size and contains mixed deciduous woodland, deciduous woodland and a variety of wetlands, including a fairly large wetland located in the central portion of the site, Rimmon Brook, Rimmon Brook North and Skokorat Brook. The site also contains steep slopes and many places with rock outcroppings.

The proposed subdivision includes 176 houselots. Lots range in size from 1/2 acre to 1.9 acres. There are 118.6 acres of open space proposed, including some steep slopes, the large central wetland and portions of the watercourses.

Wildlife habitat is the complex of vegetative and physical characteristics that provide for all the requirements of wildlife, including food, shelter, resting, nesting and escape cover, water and space. Generally, the greater the habitat diversity and degree of interspersion of various habitat types, the greater the variety of wildlife there is using an area. Although habitat types are somewhat limited, the abundance and variety of wetlands on the site increases its value for wildlife. The surrounding area offers good to excellent deciduous wetland habitat that is further enhanced by the riparian habitat found on the site. The site provides good to very good wildlife habitat because of the abundant and fairly diverse wetlands connected by the streams.

A wide variety of wildlife species is expected to utilize this area to serve all their needs, while many other species find it a place to meet some requirements. These species include deer, ruffed grouse, weasel, raccoon, otter, fox, coyote, hawks, owls, ducks, wading birds, warblers, woodpeckers, sparrows and a variety of reptiles and amphibians. See Appendix B for a complete list of the potential species that might use the site.

Forestland: Most of the site is covered by mixed hardwood forest. Species include various types of oaks, beech, sugar maple, shagbark hickory, ash and birch. There are small stands of hemlocks, found mainly on the steeper slopes, interspersed within hardwood forest. Understory species include viburnum, spice bush, birch, cherry, blueberry and ironwood.

Forests provide wildlife with cover, food, nesting places, denning sites and roosting places. Softwood stands provide important year-round cover for species, including turkey, grouse and various songbirds. Stands of hemlocks are preferred nesting sites for species such as the veery and junco. The winged seeds produced by the hemlock are readily sought by red squirrel, pine siskin and chickadees. In addition, oak trees provide a source of acorns or mast for a variety of species. Beech and hickory trees provide nuts. Birch trees provide catkins and seeds which are utilized by ruffed grouse, chickadees, pine siskins and tree sparrows. Deer browse on the twigs. The snag trees (dead trees) in the area are a source of insects which serve as food for many species such as woodpeckers and chickadees. Den trees (trees with cavities) can serve as a nesting or denning place for animals such as squirrels and raccoons.

Wetlands: Because wetlands increase the habitat diversity of an area and offer a variety of food and cover to wildlife, they are important areas to consider for protection. Acre for acre, wetlands and their associated riparian zones exceed all other land types in wildlife productivity. In addition to their value as wildlife habitat, wetlands serve other valuable functions, including water recharge, sediment filtering and flood storage. For these reasons, the development of, filling in and/or crossing of wetlands should be avoided or limited whenever possible.

Ideally, a buffer of undisturbed vegetation should be left all along the stream corridor and associated wetland. A minimum of 100 feet of undisturbed vegetation left along the brook/riparian zone between the perimeter of the wetland and any

development, including lawns, is recommended. This preserves the usefulness of the brook or riparian habitat for wildlife.

Skokorat Brook is contained within steep slopes for much of its length. The portion of Skokorat Brook which runs through the site offers excellent upper perennial type riverine habitat. The brook is characterized by boulder/rock strewn substrate in the steeper areas and a rocky gravelly bottom in areas where the topography flattens out. Most of the wetland area is confined to the brook, but there are 3 areas of wetlands (i.e., the southwestern area, the area just downstream of southwestern area and the area of wetlands associated with Skokorat Brook before it enters Rimmon Brook) where the topography broadens enough to have allowed for some wetland formation. These 3 wetland areas are characterized by shrubs such as spice bush and various dogwoods, along with an overstory of red maple and birch. The growth of shrubs and trees is fairly thick, offering adequate cover in places. This palustrine forested wetland habitat offers a variety of food, cover and nesting sites to various species of wildlife.

The portion of Rimmon Brook that flows through the site is characterized by a slower flowing stream because the gradient overall is less steep. The bottom is characterized by rocks, gravel and mud. The topography allows for a broader wetland area to be associated with the brook, although the wetland is still fairly contained, especially on the western border where the rocky ridge rises abruptly. Moist rocky outcroppings host a variety of mosses, ferns, shrubs and trees and offer a type of habitat that is limited yet important to some species. This wetland is characterized by herbaceous plants such as skunk cabbage and an overstory of species, including spice bush, yellow birch and red maple. The vegetation is fairly diverse and in areas where it is thick offers excellent cover.

In Rimmon Brook North, there is a small flooded area that offers a variety of vegetation types and structures for wildlife. Emergent vegetation, shrubs such as

button bush and sweet pepper bush and various dead and living trees offer good habitat for reptiles, amphibians and waterfowl at certain times of year. Although limited in value by its size, this area increases the entire brook/wetlands system's value for wildlife in general.

There is a fairly large area of palustrine forested wetlands in the central portion of the site. This forested type wetland is dominated by larger trees such as red maple and yellow birch and also contains a thick growth of other trees and shrubs, including ironwood, sassafras and sweet pepper bush. Water was flowing through this area at the field review, and it appears that this might be a year-round flow. This area also contains sedges, skunk cabbage and other herbaceous vegetation. Because of the diversity of vegetation and structure, availability of water and the adjacent forested upland habitat, this area is a valuable area of forested/shrub-scrub type habitat which serves the needs of a variety of wildlife species.

Although the evaluation for these types of wetlands may not be as "high" as for some other types of wetlands such as marsh or emergent type habitat, these wetlands are sensitive areas important to wildlife. Because they are often viewed as "less valuable" allowances are often made that tend to impact on these wetlands. Many times these wetlands are used for ponds and detention/retention basins, resulting in a net loss of wildlife habitat and degradation of remaining habitat.

As proposed, detention basins, riprapped channels, berms and the pump house are located within wetlands for the most part. In general, it is never preferable to excavate detention basins or construct pump stations, etc. in wetlands because these activities result in a net loss of wetlands, represent a long-term change/disturbance to the wetlands and can alter wetland vegetation by the fluctuating water levels caused and by the addition of silt, salts and oils from the roads and fertilizers from lawns. Also, detention basins require regular maintenance or cleaning out which means that equipment must have access. If detention basins are excavated in

wetlands, the wetland vegetation and soils will be disturbed each time equipment is brought in to clean out the basins.

Berms should not be constructed within streamcourses. This represents a long-term permanent change to the wetlands. No matter how well the detention basins work to settle out sediments, some sediments will end up in the wetlands and settle out behind the berms. The sediments cannot be cleaned out without greatly disturbing the wetlands, creating a real problem in the long-run. In addition, some amphibians and reptiles such as the wood turtle travel up and down streams. Construction of berms in streams can make this difficult, if not impossible, especially if there is no way around either side of the structure. If possible, all detention basins, berms, riprap channels and pump stations should be located outside of the wetlands.

Maintaining good water quality in wetlands is important. Silts and oils from runoff can smother invertebrate life forms and, thereby, effect the food chain in the wetland. Siltation can cause a change in vegetation. Road salts can alter water chemistry, thereby altering what types of wildlife can ultimately utilize a wetland area. All precautions should be taken to insure that any water entering the wetlands during and after development is of acceptable quality.

Streams and brooks provide travel corridors for many species of wildlife to travel within the site and to and from the site. Streams are often easier to travel along, especially in the winter. Streams can also offer a variety of food items such as fish and various invertebrates. Many species of wildlife will utilize some or all of these wetland/stream corridors. Large mammals, including mink, otter, fox and coyote, often travel along streams because there can be an abundant source of prey. Smaller forms of wildlife such as amphibians and reptiles may travel in and along streams to feed and breed.

There are 5 wetland crossings proposed which will require filling to place culverts. These wetland crossings represent a loss of wetlands, but more importantly offer an impediment to wildlife using the wetlands. Bridges are preferable to culverts if a wetland must be crossed, because bridges require less filling and maintain a natural substrate bottom and flow of water, even during low flow periods, thus offering less of an impediment to wildlife travel.

Wildlife Habitat/Recommendations

As with any development, the impact on wildlife habitat will be negative. The impact at this site will probably be fairly extensive, because of the density of the development, addition of roads and proximity to wetlands. Large portions of the site will be broken up and lost in the construction of homes, roads, parking lots and walkways. Habitat will be lost where cover is cleared for lawns and landscaping. Another impact is the increased human presence, vehicular traffic and number of free roaming children, dogs and cats. This could drive the less tolerant species from the site even in areas where there has been no physical change. The value of the site for wildlife habitat correspondingly decreases as the amount of development on the site increases.

Certain species which are adaptable man's activities may increase due to his presence, and associated nuisances may occur. Typical species which can become a nuisance include pigeons, starlings and raccoons. Species sensitive to man's presence or the changes made at the site will either move away or perish.

The design of this subdivision contains many small lots (ranging in size from 1/2 acre to 1.9 acres) and will augment the negative impacts to wildlife habitat. Large houselots of 10 acres or more can lessen the impact of development because more habitat is preserved. Alternatively, clustering houses (providing density is not significantly increased) on suitable land well away from wetlands will leave more habitat undisturbed.

Site Specific Recommendations:

1) Detention basins should be excavated outside of the wetland boundaries, including rip-rap channels.

2) The pump stations should be constructed out of the wetlands, if possible.

3) To insure that the quality of water draining into the wetland is as good as possible, road salt should be limited to calcium chloride.

4) Oil separators should be installed in catch basins.

5) Proper E&S controls should be maintained throughout construction.

6) Ideally, both the wetland crossings by Rimmon Brook Trail in SV3 and SV5 should be eliminated to preserve the majority of wetlands. Without these road crossings, the wetlands will maintain more of their value because they will remain connected without the impediment of road crossings and culverts, and the need for berming will be reduced.

7) Use bridges where possible instead of culverts.

8) A buffer of 100 feet of undisturbed vegetation should be maintained around all wetlands and streamcourses to preserve some usefulness of the wetlands to wildlife.

9) Some provision such as a deed restriction or conservation easement should be made to restrict activities such as pasturing animals in a wetland or filling wetlands for extra lawn and/or garden space after development.

Open Space Areas: Whatever types of areas are set aside, whether wetlands or forestland, setting aside an "island of open space" surrounded by development is the least desirable for wildlife. Open space areas should be connected and, ideally, should be connected with open space areas outside of the development site. Open space areas should have natural travel pathways (i.e., streams, valleys and ridgetops) for wildlife to enter and exit to other open space areas outside the subdivision. The open space area is more valuable to wildlife if not traversed by roads which may impede the movements of wildlife. Setting aside a combination of habitat types in conjunction with wetlands is desirable.

Despite the amount of open space to be set aside, development close to wetlands represents a substantial impact to the value of wildlife habitat. Development of the site will negatively impact the wetland areas by increased disturbance to wildlife habitat from residents, siltation into the wetlands, increased runoff of water of questionable quality (i.e., water from roads containing salt, water from lawns containing fertilizer) and loss of upland habitat close to valuable wetland and stream habitat.

Additional Considerations

In a small but heavily developed and populated State like Connecticut, where available habitat continues to decline on a daily basis, it is critical to maintain and enhance where possible existing wildlife habitat.

In planning and constructing a development there are measures that should be considered to minimize adverse impacts on wildlife. Despite these measures, wildlife habitat will increasingly be adversely impacted as the amount of development increases on a site. These measures include:

1) Maintain a 100-foot (minimum) wide buffer zone of natural vegetation around all wetland/riparian areas to filter and trap silt and sediments and to provide some habitat for wildlife.

2) Utilize natural landscaping techniques (avoiding lawn and chemical runoff) to lessen acreage of habitat lost and possible wetland contamination.

3) Stonewalls, shrubs and trees should be maintained along field borders.

4) Early successional stage vegetation (i.e., field) is an important habitat type and should be maintained if possible.

5) During land clearing, care should be taken to maintain certain forest wildlife requirements:

    a) Encourage mast producing trees (i.e., oak, hickory, beech). A minimum of 5 oaks/acre, 14 inches dbh or greater, should remain.

    b) Leave 5 to 7 snag/den trees per acre because they are used by birds and mammals for nesting, roosting and feeding.

c) Exceptionally tall trees, used by raptors as perching and nesting sites, should be encouraged.

d) Brush debris from tree clearing should be piled to provide cover for small mammals, birds, amphibians and reptiles.

e) Shrubs, vines and trees which produce fruit should be encouraged (or can be planted as part of the landscaping in conjunction with the development), especially those that produce fruit which persists through the winter (winterberry). See Appendix C for a list of suggested shrub and tree species that can be encouraged and/or planted to benefit wildlife.

FISHERIES RESOURCES

Site Description

The proposed Rimmon Brook Subdivision site contains 2 perennial watercourses, Rimmon Brook and Skokorat Brook. Both brooks are coldwater streams with steep to moderate gradients producing flows predominated by shallow riffle interspersed with moving pool. There are 2 distinct areas of Skokorat Brook which contain cascades. Rimmon Brook, the larger of the 2 streams, ranges in width from 10-20 feet and averages approximately 1.5 feet in depth. Skokorat Brook, tributary to Rimmon Brook, is approximately 6 feet in width and averages 1 foot in depth. The streams have similarities, including substrate of small boulder, cobble, gravel, coarse sand and sand/silt fines, riparian vegetation of mature hardwoods and woody shrubs, instream fisheries habitat composed of small boulders, undercut banks, over hanging vegetation and accumulations of fallen debris.

Rimmon Brook and Skokorat Brook are presumed to be Class A surface waters. Designated uses for Class A surface waters include potential drinking water supply, fish and wildlife habitat, recreational use, agricultural and industrial supply and other purposes. Lying almost entirely within an undisturbed area, the watersheds of both Rimmon Brook and Skokorat Brook have been protected from development and

subsequent water quality degradation. Alterations to the streams have to date been from forest road/trail crossing(s), which have not altered water or habitat quality.

Aquatic Resources

The Inland Fisheries Division does not have a recorded fisheries investigation of either Rimmon Brook or Skokorat Brook. Both streams have the physical characteristics of a coldwater stream. Anticipated fish species include brook trout, blacknose dace, longnose dace, tessellated darter and white sucker. Brook trout were observed in Skokorat Brook, while brook trout and blacknose dace were observed in Rimmon Brook. The species observed are presumed to be of naturally reproducing stocks. Fish were not observed in the section of Rimmon Brook upstream of the Skokorat Brook confluence. Both streams should allow for excellent small stream trout fishing. However, increased angling pressure may quickly deplete the existing population of fish and may require supplemental stocking.

Impacts

The proposed subdivision may have impacts on both Rimmon Brook and Skokorat Brook, including:

1) The placement of weir structures to control flood waters will result in the loss of existing stream habitat and become a barrier to the free movement of stream fish. Because the weir structures will impound and slow stream currents, they have the potential to precipitate sediments carried by the stream(s), creating deposits which can overtop and subsequently eliminate the existing stream habitat.

2) The installation of culverts to allow for roadway stream crossings will eliminate existing stream habitat and may create a barrier to the free movement of stream fish.

3) During construction the potential for sedimentation of the watercourses caused by the overland flow of water over scarified soils, recently excavated/filled areas or stockpiled materials following storm events can cause habitat degradation. There exists a great potential for increased surface runoff, considering the topography of the site. Siltation of the brook can fill gravel interstices and impact native brook trout reproduction.

4) The introduction of sand and oils to the stream may occur during site development and future usage. Surface drainage from roads, driveways and other impervious areas within the proposed subdivision may allow these pollutants to enter the streamcourses. This will result in long-term water quality degradation. In the short term, contaminants from impervious areas may enter the stream and cause fish kills. These contaminants are most evident after the "first flush" following a precipitation event.

5) Runoff and leaching of nutrients from lawn fertilizers will stimulate excessive aquatic plant growth, while the introduction of lawn chemicals may result in fish kills and water quality degradation.

6) Any water quality problems and habitat degradation to Rimmon Brook and Skokorat Brook due to increased sedimentation, road and stormwater drainage and lawn pesticides and fertilizers will eventually be observed in downstream areas of Rimmon Brook.

Recommendations

The impact to the aquatic resources of Rimmon Brook and Skokorat Brook from the proposed subdivision can be minimized by implementing these measures:

1) Maintain at a minimum a 100-foot open space buffer zone along the subdivision's closest encroachment to both streams. No construction or alteration of riparian habitat should take place within this zone.

2) The proposed stormwater management plan involves storage within streamcourses by the installation of weirs. The stormwater management system should not be designed to rely on the creation of impoundments within either stream channel. The stormwater system should be designed to:

   a) Adequately hold stormwater runoff from the site and be placed outside of the stream(s) floodplain;

   b) Not allow the direct entry of stormwater to the streamcourses; and

   c) Adequately permit access for periodic maintenance.

3) Consider alternatives to the proposed culvert roadway crossings such as span bridges and/or culverts designed with specific fish passage capabilities.

4) A comprehensive E&S control plan should be developed and installed prior to the start of construction and maintained through all construction phases. Mitigative measures should include, but not be limited to, above ground detention/retention basin(s), catch basins, silt fences and haybales.

Surface runoff should not be allowed to directly enter either streamcourse. Once construction is initiated, officials from the Towns of Beacon Falls and Seymour must regularly police this subdivision to ensure that all E&S controls are properly implaced and are being regularly maintained with provisions to address corrective measures in case of emergency situations. In addition, a regularly scheduled maintenance of all detention/retention basins and catch basins should be required.

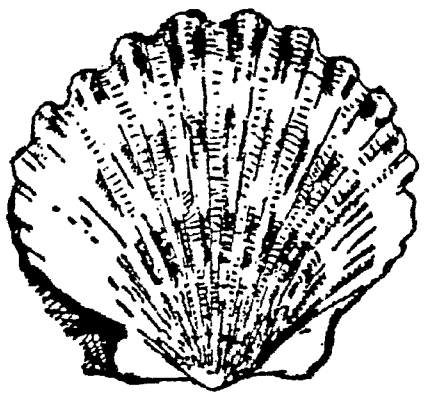
5) Establish restrictions for liming, fertilizing and the introduction of chemicals to manicured lawns of the proposed subdivision. This restriction will abate the amount of additional nutrients entering the waterbodies on the site.

THREATENED AND ENDANGERED PLANT AND ANIMAL SPECIES

According to the Natural Diversity Data Base, there are no Federally Endangered or Threatened Species or Connecticut "Species of Special Concern" on the site.

Natural Diversity Data Base information includes all information regarding critical biologic resources available at the time of the request. This information is a compilation of data collected over the years by the Natural Resources Center's Geologic and Natural History Survey and cooperating units of DEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultation with the Data Base should not be substituted for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of and locations of habitats of concern, as well as enhance existing data. New information is incorporated into the Data Base as it becomes available.

ARCHAEOLOGICAL RESOURCES



ARCHAEOLOGICAL RESOURCES

A review of the State of Connecticut Archaeological Site Files and Maps shows no archaeological sites within the subdivision site. However, prehistoric Indian settlements have been identified in the western section of Bethany and southern Beacon Falls. Field review of the site indicates that the eastern section along Rimmon and Skokorat Brooks has a series of very dramatic bedrock outcroppings. These outcroppings were often utilized by prehistoric Native Americans as shelter sites for small hunting and gathering groups migrating throughout the region. Close proximity to the brook systems enhances the probability that these rockshelters contain archaeological sites. Current development plans designate this area as open space, which will preserve these features. However, if any changes to the original design occur and blasting is proposed, an archaeological survey of potential rockshelter sites should be undertaken to locate and identify these cultural resources.

In addition, the southwestern portion of the site where the 2 brooks converge should be considered highly sensitive to prehistoric archaeological resources. If this area does not have conservation easement protection, an assessment should be made to locate any archaeological resources effected by the proposed subdivision.

The Office of State Archaeology is prepared to offer the Towns of Beacon Falls and Seymour and the developer technical assistance in preserving these potential archaeological resources. All archaeological studies should be undertaken in accordance with the Connecticut Historical Commission's Environmental Review Primer for Connecticut Archaeological Resources.

LAND USE AND PLANNING CONSIDERATIONS

PLANNING CONSIDERATIONS

Land Use

The site is surrounded mostly by vacant land and single-family residences. To the north and west of the site is forestland. To the east of the site, along Skokorat Road, there are scattered single-family dwellings. To the south, several residential subdivisions have been developed over the past 2 decades. A large condominium development, planned for future northward expansion, is located near the southeast corner of the site.

Although the proposed subdivision is compatible with surrounding land uses, a large subdivision of this size (176 houses) merits close examination. The actual location and arrangement of the roadways and dwelling units should be considered carefully. Encroachment of development on the wetlands and watercourses should be minimized where possible. Lack of adequate drainage and runoff control may create problems, both during and after construction. The entire site should be developed gradually in phases to allow the ability to handle any unforeseen problems and lessen the initial environmental impacts.

Plan of Development

Seymour's Plan of Development (1988) recommends medium density residential land use for the site. Technically, the proposed subdivision (a cluster subdivision) meets this "medium density" recommendation when considering the open space on the site. However, the Plan also recommends "revise the design standards for subdivisions to require open space that is usable to a greater proportion of the residents of the development." In a cluster subdivision, common open space is intended to compensate for the higher density of the developed portion (smaller individual building lots). Much of the proposed open space on the site is unusable wetlands.

The Regional Plan of Development for the Valley (1988) recommends most of the site for single-family residential use, but also indicates that open space should be preserved as much as possible with this type of subdivision. The Map of Future Land Use recommends open space along the length of Rimmon Brook. This map is a generalized interpretation of present and future development areas and is not always specific down to the level of individual properties. The proposed subdivision is generally consistent with the Regional Plan.

The Central Naugatuck Valley Region Plan of Regional Development, adopted in 1975, classifies the site as existing open space. At that time, the land was designated Public Act 490 forestland area. This plan classifies the surrounding area on the west side of Skokorat Road as a "natural area," unsuitable for development because of steep slopes, shallow bedrock, wetlands or other restraints to growth. The land development suitability map used in the preparation of this plan classifies most of the site as unsuitable for development. Land with wetlands, slopes of 15% or more or shallow bedrock were placed in this category. Such land is anticipated to be developed at very low densities in pockets suitable for development.

Zoning Regulations

Surrounding zoning in Seymour includes Residence R-40 (40,000 square feet minimum lot size), Residence R-15 to the south along Skokorat Road and a TH Townhouse District (April Garden Condominiums) to the east. In the Seymour portion, the 75 building lots are proposed as a Controlled Density Development or cluster subdivision. Smaller lot sizes are permitted if portions of land are kept as permanent open space. Lots average 38,000 square feet in the developed portion, which is well above the 25,000 square feet minimum standard for cluster development in an R-40 zone.

The proposed subdivision generally conforms with the Beacon Falls zoning regulations. The zoning for the area is R-1, which specifies minimum lot sizes of

22,500 square feet with both public water and sewer available. Stormwater and sanitary sewer lines are shown, but water lines do not appear on the utility plans reviewed.

The Beacon Falls-Seymour municipal boundary splits Lots 68 and 69 in the Beacon Falls section of the proposed subdivision. The boundary passes through the building footprint on Lot 68. The Beacon Falls Planning and Zoning Commission has discretion in permitting such lots (Section 4.3.F, Beacon Falls Subdivision Regulations, June 1983), and Commission members should consider the impact of municipal lot splits.

Site Design Compatibility

Site design is an important consideration for the proposed subdivision. Although most of the wetland areas are proposed as open space, inadequate drainage will create problems for property owners both on-site and downstream. Several building lots encroach upon the wetlands. By reducing the lot sizes further so the average is closer to the 25,000 square feet minimum, the road network can be realigned in some places to be farther away from wetlands. This will pull lots located on the wetlands side of the road away from the wetlands and increase the amount of open space. The harmful effects of household wastes and dumpings may be reduced with a greater distance form the wetlands.

Lots 68-70 in Beacon Falls show the potential for increasing runoff onto Lots 29-31 in Seymour. Stormwater drainage and other runoff impediments should be reviewed carefully for their adequacy on this segment of Rimmon Brook Trail Road (Section 4.7, Beacon Falls Subdivision Regulations, June 1983). Lot 100 will receive runoff from riprap at the north end of the cul-de-sac. This must be addressed.

Rear lots (flag lots) meet the requirements of the Beacon Falls zoning ordinance by maintaining a minimum 20-foot wide access drive to the lot (Section 8.9, Beacon Falls Zoning Ordinance, October 20, 1989). Changing the access of Lots 5, 8 and 9 to

enter off Rimmon Brook Trail Road could reduce the number of driveways on Skokorat Road (Section 3.4.D, Beacon Falls Subdivision Regulations, June 1983). This may require eliminating 1 lot in section SV6 to maintain the minimum lot size requirements of Lots 37-41.

Whether the access drives to Lots 24 and 100 (rear lots) are intended to be used for future extension of Rimmon Brook Trail Road should be clarified.

Lots 46 and 47 of section SV6 show no building footprint as required by Section 8.2.1 of the Beacon Falls Zoning Ordinance, October 20, 1989 and Section 4.15.A of the Beacon Falls Subdivision Regulations, June 1983.

The numerous and well-preserved stonewalls found on the site should be maintained and incorporated, where possible, into the overall development and landscape plans of the proposal (Section 4.12.B, Beacon Falls Subdivision Regulations, June 1983). The stonewalls not only have aesthetic and historic value, but over the years, they have functioned in slope stabilization and erosion control.

Commission members must consider the impacts of the proposed subdivision on the Beacon Falls sewer treatment facility. The existing facility should be able to accommodate the proposed subdivision. How this development will effect other Town development plans and how it will impact sewage treatment facility expansion plans, if any, should be addressed.

Recreation Opportunities

The site is currently being used by hunters, dirt bikes and other ORVs. Shotgun shells and several abandoned vehicles were discovered on the site. As proposed, the open space along Rimmon Brook will be maintained, and the area could still be used for recreation such as hiking. The open space areas encircled by the streets (Skokorat Brook and the maple swamp) will be much less usable for recreational purposes, since they are virtually all wetlands.

The Seymour Zoning Regulations state that the open space in a cluster subdivision "shall be in such condition, size and shape as to be readily usable for outdoor recreation and/or conservation." Cluster zoning is favored by many developers because it allows them to keep land in open space that may be unbuildable. However, with a large subdivision, recreational needs of future residents (especially children) are important in addition to the conservation of environmentally sensitive land. While this subdivision addresses both the conservation and recreation aspects of open space to a degree, the ideal cluster subdivision contains open space land better suited to parks and playgrounds.

Consideration should be given to providing a public access easement to the large open space tract (45+ acres) on the west side of the Beacon Falls portion of the proposed subdivision. This section has outstanding natural characteristics and could serve well as a passive recreation area (e.g., hiking trail) for area residents. There is currently no common access shown on the Beacon Falls portion of the subdivision. (Reference Sections 4.12.B-C of the Beacon Falls Subdivision Regulations, June 1983.) The site plan should also note that this vacant parcel will be used for open space.

TRAFFIC CONSIDERATIONS

The proposed subdivision will be accessed by Skokorat Road. Traffic generated by the subdivision should be viewed in the context of future traffic volumes for the entire length of this road. The following table defines projected traffic generation for the dwelling units.

RIMMON BROOK SUBDIVISION
PROJECTED TRAFFIC GENERATION

Total Single-Family Dwelling Units = 176

		Average Trip Rate	Trip Ends @ 176 Units
Average Weekday Vehicle Trip Ends		10.00	1,760
A.M. Daily Peak Hour	Enter	0.21	37
	Exit	0.54	95
	Total	0.75	132
P.M. Daily Peak Hour	Enter	0.64	113
	Exit	0.36	63
	Total	1.00	176

As shown by the table, full development of this site will generate over 1,760 trip ends (i.e., trips entering or leaving). At an average trip rate of 6.5 per vehicle, at least 270 cars will use this subdivision on a daily basis. At a combined trip rate of 1.2 per vehicle at peak hours (18.5% of 6.5 trips per vehicle), approximately 50 of these vehicles will make trips in the A.M. and the P.M. peak hours.

Skokorat Road has not yet experienced a significant amount of traffic congestion or accidents. The road is used mainly by local traffic, serving as a collector street for all the subdivisions in the northern tip of Seymour. Improvements to the road (and its intersection with Route 67) will be made in the future with the expansion of April Garden Condominiums. The proposed subdivision should not overburden traffic flow on Skokorat Road at this time.

Road geometrics, including sightlines, must be adequate. Ideally, Skokorat Road in the vicinity of the subdivision roads should be widened to create a northbound bypass area for through traffic and a southbound deceleration right turn lane for subdivision-bound traffic to prevent vehicles stopped or slowing down to turn into the subdivision from impeding the flow of through traffic.

A traffic study should be performed to address these issues and possible improvements to adjacent intersections along Skokorat Road (i.e., intersection widening, signalization, etc.). Because of the size of the proposed subdivision, a major traffic generator traffic study will be required by the State Traffic Commission.

Driveways

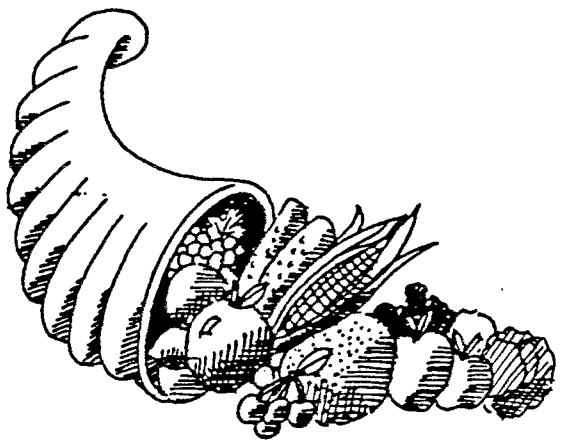
As the subdivision is presently laid out, driveway grades for many lots are excessively steep. According to the Connecticut Department of Transportation (ConnDOT) Guidelines for Subdivision Streets (January 1987), the maximum allowable grade for a paved driveway is 15%. Many driveways for lots in Beacon Falls, were found to be in excess of this 15% standard. The layout of the subdivision should be seriously re-examined.

The ConnDOT Guidelines also recommend minimum sight distances from driveways should be at least 200 feet for residential streets within the subdivision and at least 285 feet for driveways along Skokorat Road, a residential collector road. Sight distances should be verified on Skokorat Road at the boundary of Beacon Falls and Seymour and at the driveways of Lot 1 in Beacon Falls and Lot 12 in Seymour (both of which also have excessively steep grades).

Road Grades

According to the ConnDOT Guidelines, a 10% road grade is the maximum that should be allowed, although a 12% grade "may be considered on short sections of streets and in hilly terrain." The road profiles indicate that roads will stay within the 10% limit, although cuts and fills will be necessary. The deepest cut will be needed in the vicinity of Lots 81 and 82, a cut as much as 11 feet with a 100% grade (45° slope).

APPENDICIES



Appendix A: Soil Limitations Chart

MAP UNIT NAME	GENERAL SOIL PROPERTIES	DRAINAGE CLASS AND DEPTH TO SEASONAL HIGH WATER TABLE	MAJOR LIMITATIONS TO THE DEVELOPMENT OF: HOMES WITH BASEMENTS	ROADS AND STREETS	ON-SITE SEWAGE DISPOSAL SYSTEMS
*AA - Adrian and Palm Muck	Soils formed in organic material 16-50 inches thick overlying sandy deposits	Very poorly drained +1.0-1.0 ft.	Subsides, ponding, flooding	Subsides, ponding, frost action	Extremely low potential
CrC - Charlton-Hollis fine sandy loams, 3-15% slopes	Charlton are very deep soils formed in friable or firm glacial till on uplands.	Well drained soils >6.0 ft.	Slope	Slope	Medium potential
	Hollis are shallow soils formed in a thin mantle of glacial till	Well and somewhat excessively drained >6.0 ft.	Shallow depth to bedrock	Shallow depth to bedrock	Very low potential
HrC - Hollis-Rock outcrop complex, 3-15% slopes	Hollis are shallow soils formed in a thin mantle of glacial till	Well and somewhat excessively drained >6.0 ft.	Shallow depth to bedrock	Shallow depth to bedrock	Very low potential
*RN - Ridgebury, Leicester and Whitman extremely stony fine sandy loams	Soils formed in glacial till	Very poorly and poorly drained Ridgebury - 0-1.5 ft. Leicester - 0-1.5 ft. Whitman - +1-0.5 ft	High water table, ponding	Ponding, frost action	Very low potential
RP - Rock Outcrop-Hollis complex	Hollis are shallow soils formed in a thin mantle of glacial till	Well and somewhat excessively drained >6.0 ft.	Shallow depth to bedrock	Shallow depth to bedrock	Very low potential
Sv - Sutton fine sandy loam	Upland soils formed in glacial till	Moderately well drained 1.5-2.5 ft.	Wetness	Frost action	Low potential

* Inland wetland soils

Appendix B: Species List By Habitat for New Haven County

CONNECTICUT SPECIES DATABASE
WILDLIFE BUREAU
WESTERN DISTRICT HEADQUARTERS

SPECIES LIST BY HABITAT FOR NEW HAVEN COUNTY

The following is a list of the potential or possible species that could occur in the habitat types found in the proposed development site. The general habitat types are: Deciduous Woodland, Mixed Woodland, Riverine Upper Perennial Wetland, Palustrine Forested Wetland and Palustrine Scrub/Shrub Wetland. It should be noted that this listing does not guarantee that those species will be present, but that they may occur there. Many factors, in addition to habitat type, help to determine a species presence, although species presence based on habitat type is both a practical and sound method for many evaluational/informational purposes. Remember that some of the species listed, if present at all, may only use the area on a temporay or sporadic basis.

SPECIES	DW	MXW	RUP	PSS	PFO
Marbled Salamander	X				
Jefferson Salamander	X	X			X
Blue-spotted Salamander			X		X
Spotted Salamander	X	X	X		X
Red-spotted Newt	X				
Northern Dusky Salamander			X		X
Redback Salamander		X			
Slimy Salamander	X	X			
Four-toed Salamander					X
Northern Spring Salamander	X	X	X		X
Northern Two-lined Salamander	X	X			X
Eastern Spadefoot	X	X			
American Toad	X	X			
Fowler's Toad	X	X			X
Northern Spring Peeper	X	X	X	X	X
Greater and Lesser Grey Treefrog		X			
Green Frog				X	
Wood Frog	X	X			X
Northern Leopard Frog			X	X	X
Pickerel Frog			X		
Bull Frog				X	
Spotted Turtle			X		

SPECIES	D W	M X W	R U P	P S S	P F O
Wood Turtle	X			X	X
Eastern Box Turtle	X			X	X
Five-lined Skink	X	X			
Northern Water Snake			X		
Northern Brown Snake	X	X	X	X	X
Northern Redbelly Snake	X	X			X
Eastern Garter Snake	X	X	X	X	X
Eastern Ribbon Snake	X	X	X	X	X
Eastern Hognose Snake	X	X			X
Northern Ringneck Snake	X	X			
Eastern Worm Snake	X	X	X		X
Northern Black Racer	X	X		X	X
Eastern Smooth Green Snake	X			X	X
Black Rat Snake	X	X			X
Eastern Milksnake	X	X		X	X
Great Blue Heron			X		
Green-backed Heron (Green)			X	X	X
Black-crowned Night Heron			X	X	X
Wood Duck			X		X
American Black Duck			X	X	X
Mallard			X		X
Common Merganser			X		
Turkey Vulture	X	X	X	X	X
Northern Harrier (Marsh Hawk)			X	X	X
Sharp-shinned Hawk	X	X			
Cooper's Hawk	X	X		X	X
Goshawk	X	X			
Red-shouldered Hawk	X	X			X
Broad-winged Hawk	X	X			
Red-tailed Hawk	X	X		X	X
Ruffed Grouse	X	X			
Eastern Wild Turkey		X			
Common Snipe				X	
American Woodcock				X	
Mourning Dove	X	X			
Black-billed Cuckoo	X	X			
Yellow-billed Cuckoo	X	X		X	X
Screech Owl	X	X			
Great Horned Owl	X	X			X
Barred Owl	X	X			X
Long-eared Owl	X				X
Northern Saw-whet Owl	X	X			X
Whip-poor-will	X	X			

SPECIES	D W	M X W	R U P	P S S	P F O
Ruby-throated Hummingbird		X			X
Belted Kingfisher				X	X
Red-headed Woodpecker	X	X			X
Red-bellied Woodpecker		X			
Downy Woodpecker		X			X
Hairy Woodpecker	X	X			X
Northern Flicker	X	X			
Wood Pewee	X	X			
Acadian Flycatcher	X				X
Alder Flycatcher				X	
Least Flycatcher	X				
Eastern Phoebe	X	X			
Great Crested Flycatcher	X	X			X
Eastern Kingbird				X	
Tree Swallow				X	X
Northern Rough-winged Swallow				X	
Bank Swallow				X	
Blue Jay	X	X			
Common Crow	X	X			
Common Raven			X		
Black-capped Chickadee	X				X
Tufted Titmouse	X	X			X
Red-breasted Nuthatch		X			
White-breasted Nuthatch	X	X			
Brown Creeper	X	X			X
Carolina Wren				X	
House Wren					X
Winter Wren					X
Blue-gray Gnatcatcher	X	X	X	X	X
Eastern Bluebird				X	
Veery	X			X	X
Swainson's Thrush	X				
Wood Thrush	X	X			X
American Robin	X				
Gray Catbird				X	
Cedar Waxwing	X				X
White-eyed Vireo				X	
Yellow-throated Vireo	X		X	X	X
Warbling Vireo	X	X			
Red-eyed Vireo	X				
Golden-winged Warbler	X				
Nashville Warbler	X			X	X
Yellow Warbler			X	X	

SPECIES	DW	MXW	RUP	PSS	PFO
Chestnut-sided Warbler		X			
Cerulean Warbler	X		X		
Black-and-white Warbler	X	X			
American Redstart	X	X	X	X	
Worm-eating Warbler	X				
Ovenbird	X	X			
Northern Waterthrush					X
Louisiana Waterthrush			X		X
Common Yellowthroat			X	X	
Hooded Warbler				X	
Canada Warbler	X	X	X	X	X
Yellow-breasted Chat				X	
Scarlet Tanager	X	X			X
Rose-breasted Grosbeak			X	X	
Indigo Bunting			X		
Chipping Sparrow		X			
Henslow's Sparrow				X	
Song Sparrow				X	
Swamp Sparrow				X	
Red-winged Blackbird				X	
Common Grackle				X	
Brown-headed Cowbird	X				
Northern Oriole (Baltimore)			X		
Purple Finch		X			
American Goldfinch				X	
Virginia Opossum	X	X	X		X
Masked Shrew	X				X
Water Shrew			X	X	X
Smoky Shrew	X	X	X		
Short-tailed Shrew	X	X	X	X	
Hairy-tailed Mole	X	X			
Eastern Mole		X			
Star-nosed Mole		X	X	X	
Snowshoe Hare	X	X			
Eastern Chipmunk		X			
Little Brown Myotis		X	X		X
Keen's Myotis		X			
Silver-haired Bat	X	X			X
Eastern Pipistrelle	X	X	X		X
Big Brown Bat	X	X			
Red Bat	X	X			
Hoary Bat	X	X			
Eastern Cottontail	X	X		X	X

SPECIES	DW	MXW	RUP	PSS	PFO
New England Cottontail	X	X		X	X
Grey Squirrel	X	X			
Red Squirrel	X	X			
Southern Flying Squirrel	X	X			
Beaver			X		
White-footed Mouse	X	X	X	X	
Meadow Vole			X	X	X
Woodland Vole	X				
Southern Bog Lemming	X	X			
Meadow Jumping Mouse				X	
Woodland Jumping Mouse	X		X		
Red Fox		X			
Gray Fox	X	X			X
Raccoon		X	X	X	
Short-tailed Weasel		X		X	
Long-tailed Weasel		X	X	X	
Mink			X	X	X
River Otter			X	X	X
Bobcat	X	X		X	X
White-tailed Deer	X	X		X	X

Habitat selections for New Haven County

DW	Deciduous Woodland
MXW	Mixed Woodland
RUP	Riverine Upper Perennial Wetland
PSS	Palustrine Scrub/Shrub Wetland
PFO	Palustrine Forested Wetland

Appendix C: Suitable Planting Materials for Wildlife Food and Cover

SUITABLE PLANTING MATERIALS FOR WILDLIFE FOOD AND COVER

Herbaceous/Vines	Shrubs	Small Trees
Panicgrass	Sumac	Hawthorn
Timothy	Dogwood	Cherry
Trumpet creeper	Elderberry	Serviceberry
Grape	Winterberry	Cedar
Birdsfoot trefoil	Autumn olive	Crabapple
Virginia creeper	Blackberry	
Switchgrass	Raspberry	
Lespedeza	Honeysuckle	
Bittersweet	Cranberrybush	
Boston ivy		

NOTES

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, soil scientists, foresters, climatologists, landscape architects, recreational 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 - an 83-town area serving western Connecticut.

As a public service activity, the Team is available to serve towns and/or developers within the King's Mark RC&D Area - free of charge.

Purpose of the Environmental Review Team

The Environmental Review Team is available to assist towns and/or developers in the review of sites proposed for major land use activities. For example, the ERT has been involved in the review of a wide range of significant land use activities including subdivisions, sanitary landfills, commercial and industrial developments and recreational/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 site and highlighting opportunities and limitations for the proposed land use.

Requesting an Environmental Review

Environmental Reviews may be requested by the chief elected official of a municipality or the chairman of an administrative agency such as planning and zoning, conservation or inland wetlands. Environmental Review Request Forms are available at your local Soil and Water Conservation District and through the King's Mark ERT Coordinator. This request form must include a summary of the proposed project, a location map of the project site, written permission from the land owner/ developer allowing the Team to enter the property for purposes of review and a statement identifying the specific areas of concern the Team should investigate. When this request is approved by the local Soil and Water Conservation District and King's Mark RC&D Executive Committee, the Team will undertake the review. At present, the ERT can undertake approximately two (2) reviews per month.

For additional information regarding the Environmental Review Team, please contact your local Soil and Water Conservation District or Nancy Ferlow, ERT Coordinator, King's Mark Environmental Review Team, King's Mark RC&D Area, 322 North Main Street, Wallingford, Connecticut 06492. King's Mark ERT phone number is 265-6695.