

KING'S MARK ENVIRONMENTAL REVIEW TEAM



REPORT FOR

ROUTE 202 AFFORDABLE HOUSING

LITCHFIELD,
CONNECTICUT

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

ROUTE 202 AFFORDABLE HOUSING

LITCHFIELD, 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

Litchfield Housing Partnership

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 Town. 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.

FEBRUARY 1991

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Finally, special thanks to Jeffrey Bellows, Litchfield Housing Partnership for his cooperation and assistance during this environmental review.

EXECUTIVE SUMMARY

Introduction

The Litchfield Housing Partnership requested that an environmental review be conducted on the Route 202 Affordable Housing Project, a 12.66-acre site proposed for subdivision development. The site is currently an old abandoned farm field with a small swamp fronting along Route 202. Much of the site is wet. The Town proposed building 15-25 affordable housing units on the site, if possible. The site is served by public sewer along Route 202. Public water supply is not available. The purpose of this review is to inventory and assess the natural resources of the site and comment on the suitability of the site for affordable housing development.

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 located in northeastern Litchfield and is zoned residential. Town regulations permit cluster or multi-family housing, provided public sewer and water are available. Public sewers are available to the site, but extension of the public water main may be cost prohibitive. The site contains unused open land with excavations that disrupted the natural soil and drainage. Portions of the site are wet. Land use in the vicinity includes single-family homes and agricultural uses.

Topography

The site is located on the southeast side of a drumlin. The site has been disturbed and appears to be terraced with flat areas separated by areas of steep slopes. Maximum and minimum elevations are approximately 1,120 feet above mean sea level and 1,070 feet above mean sea level, respectively. One possible access to the site is the old driveway at the eastern limits. This access point eliminates the need for a wetland crossing. The prospective road would enter the site perpendicular to the contours. There will be some cutting into hardpan soils with this entrance, but the grades are not overly steep. Deep cuts in hardpan soils are difficult to stabilize. Once the road has entered the site, it should be oriented to the southwest and travel parallel to the contours to reduce the amount of cuts and fills.

Geology

Bedrock underlying the site consists of the Hartland Formation, a coarse-grained schist. Depth to bedrock on the site is unknown, but is probably not more than 10 feet. The bedrock should not pose any development problems, provided deep excavations are not needed. Houses without basements may be needed because of the high watertable which will eliminate need for foundations. The top few feet of bedrock is usually weathered and can be ripped away by a backhoe, if necessary. If

the rock is found to be competent, blasting will be needed. The bedrock aquifer is the principal source of water to the homes in the area.

The unconsolidated material overlying bedrock is till. The texture of the till on the site ranges from sandy and loose to silty and compact. The compact variety occurs in the northern parts where the land has been disturbed. The sandier till occurs in the western parts. Swamp deposits overlie the till in the southwestern parts. The compact till has a seasonally high groundwater table. High watertables pose limitations to septic systems. There are public sewers available to the site. High watertables also pose limitations to basements and lawns. The erosion potential of these soils is high. Groundwater interception drains and footing drains will be needed for the buildings. Well-drained materials should be placed over areas that were stripped of soil.

Wetland soils parallel the stream and occupy the lower portions of the site. A soil scientist should be hired to field locate the wetlands and map them. The northern parts of the site have the greatest potential for building a small number of housing units. The planning and zoning requirements and the potential of the underlying bedrock aquifer will determine the number of units that the site can support.

Water Supply

According to Town officials, extending the public water main to the site is cost prohibitive. The water supply will probably be provided by bedrock wells. Yields from bedrock wells depend on the size and number of water bearing fractures in the rock. Bedrock such as that underlying the site has been known to supply from 1-12.5 gallons per minute. To determining the yield needed for the proposed project, the consultants must determine the water demand based on the number of bedrooms and the number of residents for each house. The yield of the bedrock can only be determined by drilling the wells. Precautions should be taken to keep the wells away from potential sources of pollution such as sewer lines, groundwater intercepting drains and agricultural runoff. The wells must be approved by the State Department of Health Services. Take over of the wells by a local or regional water supply company is desirable. The groundwater in the vicinity of the site is classified as GA. The quality of the water should be good, but it may contain excess iron and/or manganese. Treatment filters are available.

Hydrology

Surface water flows downslope to the unnamed streamcourse and wetlands along Route 202. The stream ultimately discharges into Gulf Stream. Surface waters have not been classified and are presumed to be Class A. Construction will increase the amount of runoff from the site. The main concerns are flooding, erosion and water quality degradation. To minimize the effects, the quality and quantity of water that reaches the stream should not be changed from pre-development conditions. Methods of achieving this goal include detention basins, infiltration basins and grassed swales. All stormwater discharges should be located outside of

the wetlands and protected with energy dissipaters. A detailed E&S control plan should be developed for the site.

Soil Resources

The site has been significantly altered by earth moving activities. The site is underlain by compact glacial till, and the soil overlaying the hardpan has been removed over much of the site. There is erosion of the remaining soil material and excessive ponding in some areas. Development plans must be developed carefully. The main limitation is wetness, and any development must take into consideration the waterflow across the site and E&S controls. A consulting soil scientist should be contacted for more detailed site information and to precisely locate the boundaries of the wetland soils.

Erosion and Sediment Control

Before development takes place, an E&S control plan should be submitted. Control practices that should be applied at the site include placing sediment barriers parallel to the watercourse, keeping the drainage area for silt fences to 1 acre and placing storm sewer outlets close to the wetlands.

Wetland Considerations

The majority of the site has been disturbed. The obvious wetlands are at the bottom of the slope. The wetlands are a mix of marsh, shrub swamp and ponded water. The functions of the wetlands include flood storage, pollution filtration and wildlife habitat. The cleared portion of the site may contain wetlands. Development of the site should be concentrated on the upper elevations. Slab construction should be considered.

Threatened and Endangered Plant and Animal Species

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

Archaeological Considerations

Wetlands were often the focus for Native American settlements. The lands surrounding Gulf Stream were a focus for Native American settlement and land use. No archaeological sites are known at the project area. However, the parcel is situated adjacent to a wetland and stream. Scatterings of tools might be found at the project area, but potential sites have been disturbed by recent activities. The proposed development is expected to only have a limited impact on the archaeological resources.

Planning Considerations

According to the State Plan, the site is classified as Rural Land. The strategy for Rural Land is to avoid development which exceeds the carrying capacity for on-

site water and septic. However, the existence of sewers and the high priority given to affordable housing may mitigate this inconsistency. The LHCEO housing policy encourages affordable housing, provided care is taken to minimize disturbances to the wetlands. The Litchfield Plan of Development specifies the site as an area where multi-family dwelling should be permitted.

The site is zoned RHC-40. Under the regulations, the Planning and Zoning Commission may grant a 25% reduction in lot size for good site designs. The land to the east, south and west is also zoned RHC-40. Land north of the site is zoned R-80. Existing land use includes moderate density residential development, wooded land and farm fields. The development appears compatible with existing land uses. Maintenance of a vegetative border, particularly along the northern and eastern boundaries, is desirable.

Access is available off of Route 202. The preferred access is along the eastern boundary to minimize wetland disturbances. The sight lines in this area are excellent. The small pond and open field/wetland are excellent for open space purposes. In addition, the south facing slopes provide opportunities for passive solar design.

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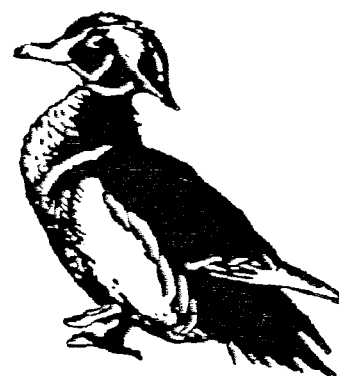
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INTRODUCTION



INTRODUCTION

The Litchfield Housing Partnership requested that an environmental review be conducted on the Route 202 Affordable Housing Project, a 12.66-acre site proposed for subdivision development. The site is located in northeastern Litchfield near the Torrington Town Line. Access is provided by Route 202.

The site is currently an old abandoned farm field with a small swamp fronting along Route 202. Much of the site is wet. The Town proposed building 15-25 affordable housing units on the site, if possible. The site is served by public sewer along Route 202. Public water supply is not available, although there is a proposal to extent the water main north on Route 202 to the Torrington Town Line.

The purpose of this review is to inventory and assess the natural resources of the site and comment on the suitability of the site for affordable housing development. This information will then be used to assist the Town in guiding conservation and development in this area. Specific objectives include:

- 1) Assessing the hydrological and geological characteristics of the site, including hydrological development limitations and opportunities;
- 2) Determining the suitability of the soils to support the proposed development;
- 3) Determining the suitability of erosion and sediment (E&S) controls;
- 4) Assessing the impact of development on the wetlands and watercourses; and
- 5) Assessing planning and land use issues.

THE ERT PROCESS

Through the efforts of the Litchfield Housing Partnership and the King's Mark ERT, this environmental review and report was prepared for the Town. 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:

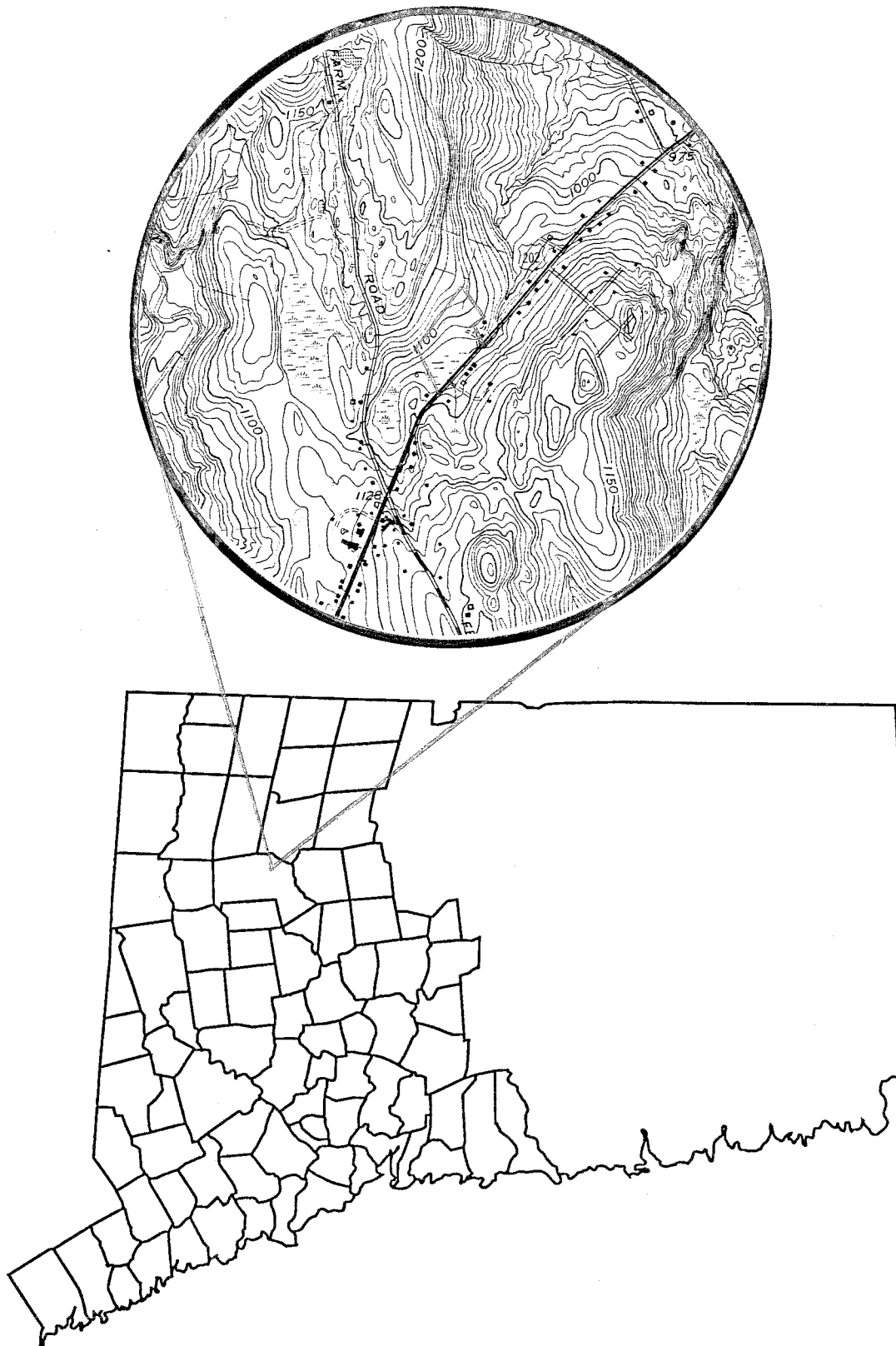
- 1) Inventory of the site's natural resources (collection of data);
- 2) Assessment of these resources (analysis of data);
- 3) Identification of resource problem areas; and
- 4) Presentation of planning and land use guidelines.

The data collection phase involved both literature and field research. The ERT field review took place on December 20, 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.

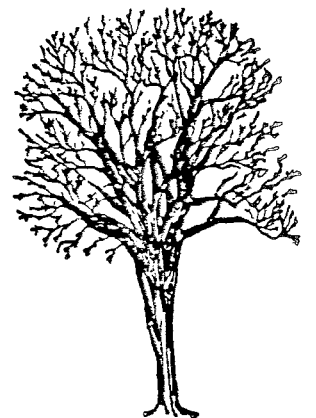
Once Team members had assimilated an adequate data base, they were able to analyze and interpret their findings. Results of this analysis enabled the Team members to arrive at an informed assessment of the site's natural resource development opportunities and limitations. Individual Team members then prepared and submitted their reports to the ERT Coordinator for compilation into the final ERT report.

Figure 1

LOCATION OF STUDY SITE



PHYSICAL CHARACTERISTICS



LOCATION, ZONING AND LAND USE

The site contains almost 13.0 acres and is located in northeastern Litchfield on the north side of Route 202. The site is bounded by Route 202 on the southeast, wooded, undeveloped land on the north, an agricultural field on the west and church property on the south. Route 202 provides primary access to the site. An unnamed streamcourse, which is tributary to Gulf Stream and its accompanying wetlands, occurs on the site mainly along Route 202.

The site is zoned residential RHC-40, which allows single-family homes with minimum lot area of 40,000 square feet (approximately 1 acre in size). Town regulations permit cluster housing or multi-family affordable housing by special exception, provided public sewer and water mains are available. According to a Litchfield Housing Partnership official, public sewers are available to the site, but extension of the public water main appears to be cost prohibitive for site development. Therefore, an on-site well or wells will probably be considered (see Water Supply section).

The site consists mainly of open land that is unused. A "cut" and "fill" operation occurred on the site in the past. Excavated earth materials have been removed from the western parts and used, in part, for fill in the lower parts of the site near the wetlands (i.e., eastern section). Also, as a result of this activity, a large area of top and subsoil materials were stockpiled in the northern parts. All of this work greatly disrupted the natural drainage on the site, resulting in poorly drained depressions and, in places, surface elevations that are closer to the existing seasonally high watertable condition. This results in soggy, wet conditions over a large portion of the site.

Land uses in the vicinity of the site include mainly single-family homes and some agricultural uses. Air photos for the site and vicinity show that over the past 50

years there has been an increase in residential land use, a decrease in agricultural land and an increase in wooded land.

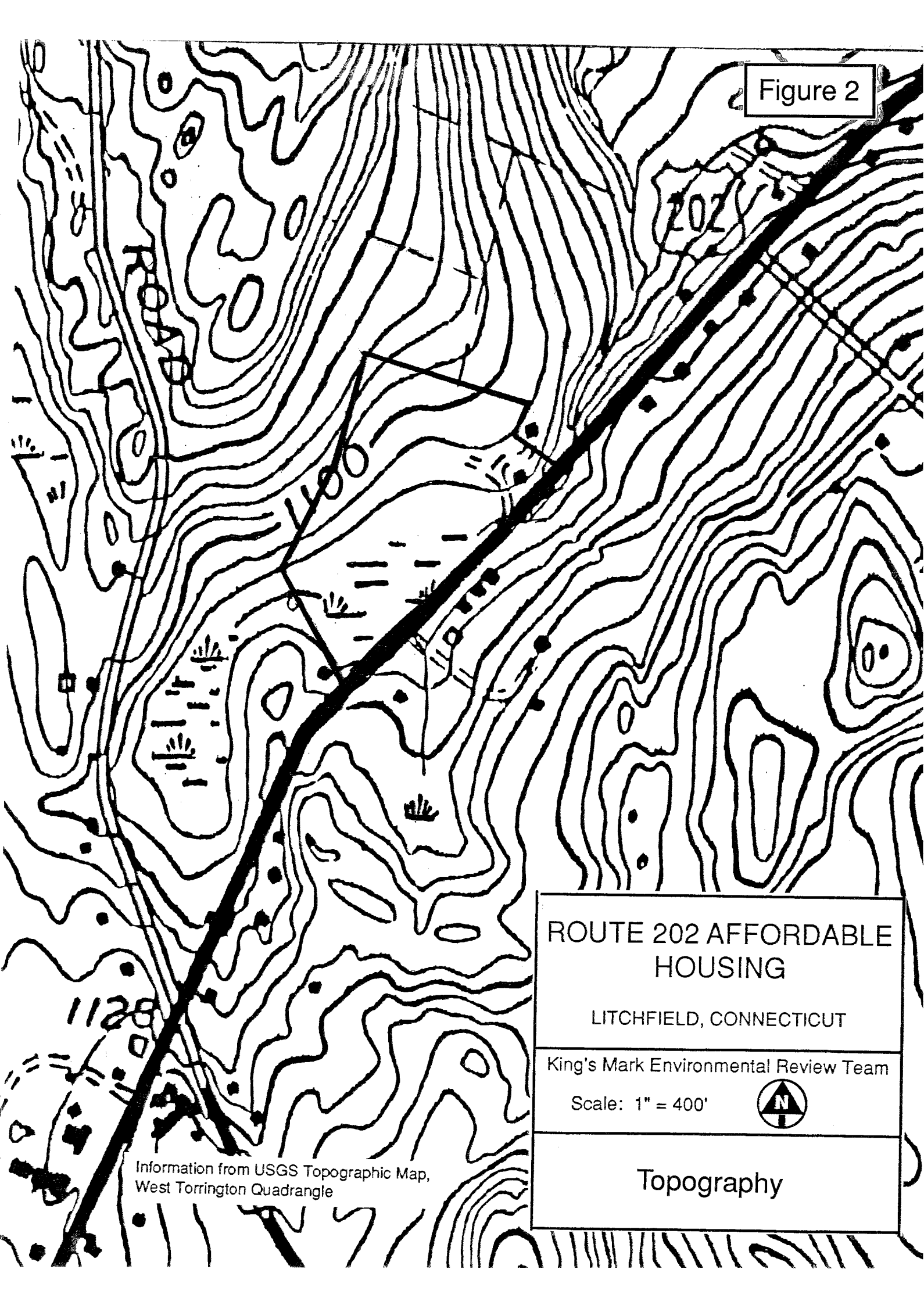
TOPOGRAPHY

The site is located on the southeast side of a drumlin (i.e., streamlined hill) whose axis is aligned in a northeast/southwest direction. The land surface on the site has been greatly disturbed due to cutting and filling. As a result, the land surface has been terraced. Along the northwest boundary, a steep "cut" embankment, artificially created, grades southeastward to a relatively flat benched area. From this bench area, the land surface drops quickly to the low-lying swampy area that parallels Route 202. Steepest slopes occur mainly in the "cut" area along the northwest boundary and bisect the central parts of the site. Generally, flat areas separate the areas of steep slopes.

Maximum and minimum elevations on the site are approximately 1,120 feet above mean sea level (along the northwest boundary) and 1,070 feet above mean sea level (swampy areas), respectively (see Figure 2).

A possible access to the site is via the former driveway at the eastern limits. Access to the site from this point eliminates the need for wetland crossing. A prospective road would trend northward into the site and be constructed perpendicular to contours. This is undesirable because some cutting of hardpan soils will probably be required. However, grades do not appear to be overly steep which will reduce the need for cutting and filling. Deep cuts or excavations in compact soils are extremely difficult to control due to the seepage of groundwater over the restrictive soil layer (i.e., hardpan) which occurs approximately 1.5-3.0 feet below ground surface. This water may create an unstable condition just below the seepage line. The weight of the unstable soil will cause it to flow downslope. Once

Figure 2



ROUTE 202 AFFORDABLE
HOUSING

LITCHFIELD, CONNECTICUT

King's Mark Environmental Review Team

Scale: 1" = 400'



Topography

Information from USGS Topographic Map,
West Torrington Quadrangle

this begins, the slope is very difficult to stabilize. The establishment of a ground vegetative cover is practically impossible on these eroding slopes. Besides the unsightly condition, the eroded soil must be removed from the base of the slope. Soil slopes usually cannot exceed 2:1 (horizontal:vertical).

Based on visual observations made during the field review, the slopes appear to be 10% or less along this route. Once the road has entered into the site, it should be orientated in a southwest direction along the site contours. This will reduce the amount of cuts and fills necessary to construct an access road, limit the amount of disturbance due to grading and minimize potential adverse impacts to the site's water and wetland resources (also see Geology section).

GEOLOGY

The site is located entirely in the West Torrington topographic quadrangle. A surficial geologic map (Map GQ-727, by Roger B. Colton) and a bedrock geologic map (Map QR-17, by R.M. Gates and N.I. Christensen) for the quadrangle have been published by the U.S. Geological Survey and the Connecticut Geological and Natural History Survey. Both maps are available at the Department of Environmental Protection (DEP) Natural Resources Center in Hartford. The Soil Survey for Litchfield County, Connecticut was also referenced.

Bedrock exposures were not observed during the field review, but bedrock geologic mapping data indicates bedrock is exposed at the ground surface north of the site. Map QR-17 identifies the principle rock type underlying the site as a Hartland Formation subunit (see Figure 3). It is described as a coarse-grained schist composed of the minerals quartz and muscovite. Large crystals of the minerals garnet, staurolite, plagioclase and biotite are set in the rock unit. The term schist refers to the structural and textural aspects of the rock. Schists are generally

recognizable by a high percentage of platy, flaky and elongate minerals that give the rock a wavy, crinkly or slabby appearance.

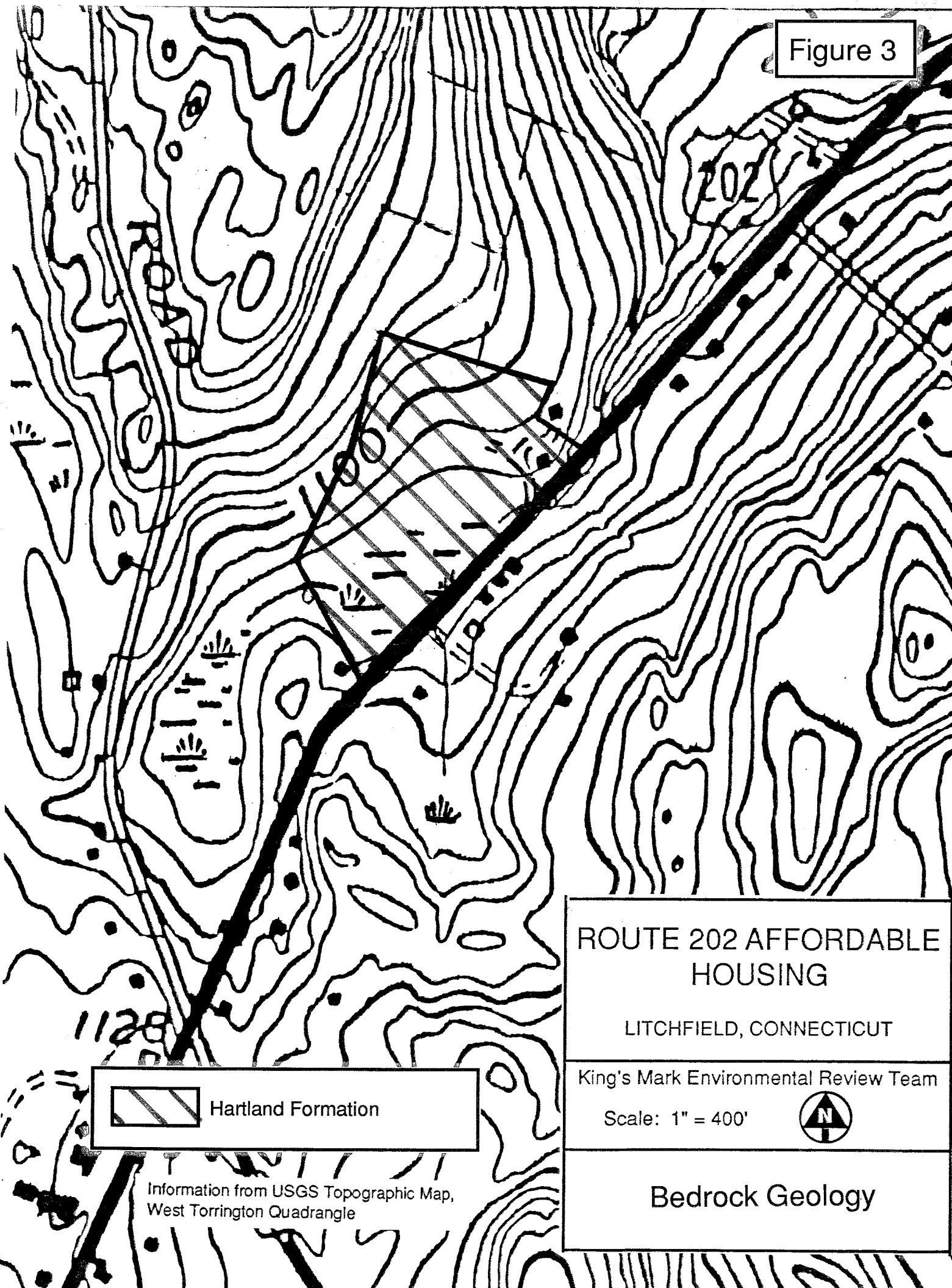
The exact depth to the bedrock surface on the site is unknown, but it is probably not much more than 10 feet. Bedrock is at or near ground surface west of the site. Deep test holes are required to verify depth to the bedrock surface.

The bedrock geology of the site should pose no major problems in terms of development, provided deep excavations (greater than 10 feet) for road construction, utility trenches and/or house foundations are not necessary. Because topography is not steep in the area of the prospective road (east side), deep cuts that may possibly encounter bedrock are not anticipated. Additionally, houses without basements may be needed on the site due to the high watertable condition. This will eliminate the need for foundations. Even if bedrock is encountered, there is a good chance that a backhoe may be able to rip away at least the top few feet of the schistose rock. Due to its texture, the rock is commonly weathered (i.e., rotten) in the top few feet. Conversely, if the rock is found to be competent, blasting may be required in some places. Obviously, significant blasting will raise site development and engineering costs.

The bedrock aquifer is the principal source of domestic water to most homes in the area. Bedrock underlying the site will probably be the principal aquifer serving a well or wells drilled for the affordable housing units (see Water Supply section).

The unconsolidated material overlying bedrock on the site is a glacial sediment called till (see Figure 4). Till was deposited directly from an ice sheet onto the bedrock surface with little or no working by glacial meltwater. Because the ice sheet indiscriminately collected and transported rock particles and fragments of widely ranging sizes as it advanced through the region, the till is a non-sorted mixture of sand, silt, gravel, clay and boulders. The texture of the till on the site varies, ranging from sandy, somewhat stony and loose to silty, less stony and very compact. The


Figure 3



ROUTE 202 AFFORDABLE HOUSING
LITCHFIELD, CONNECTICUT

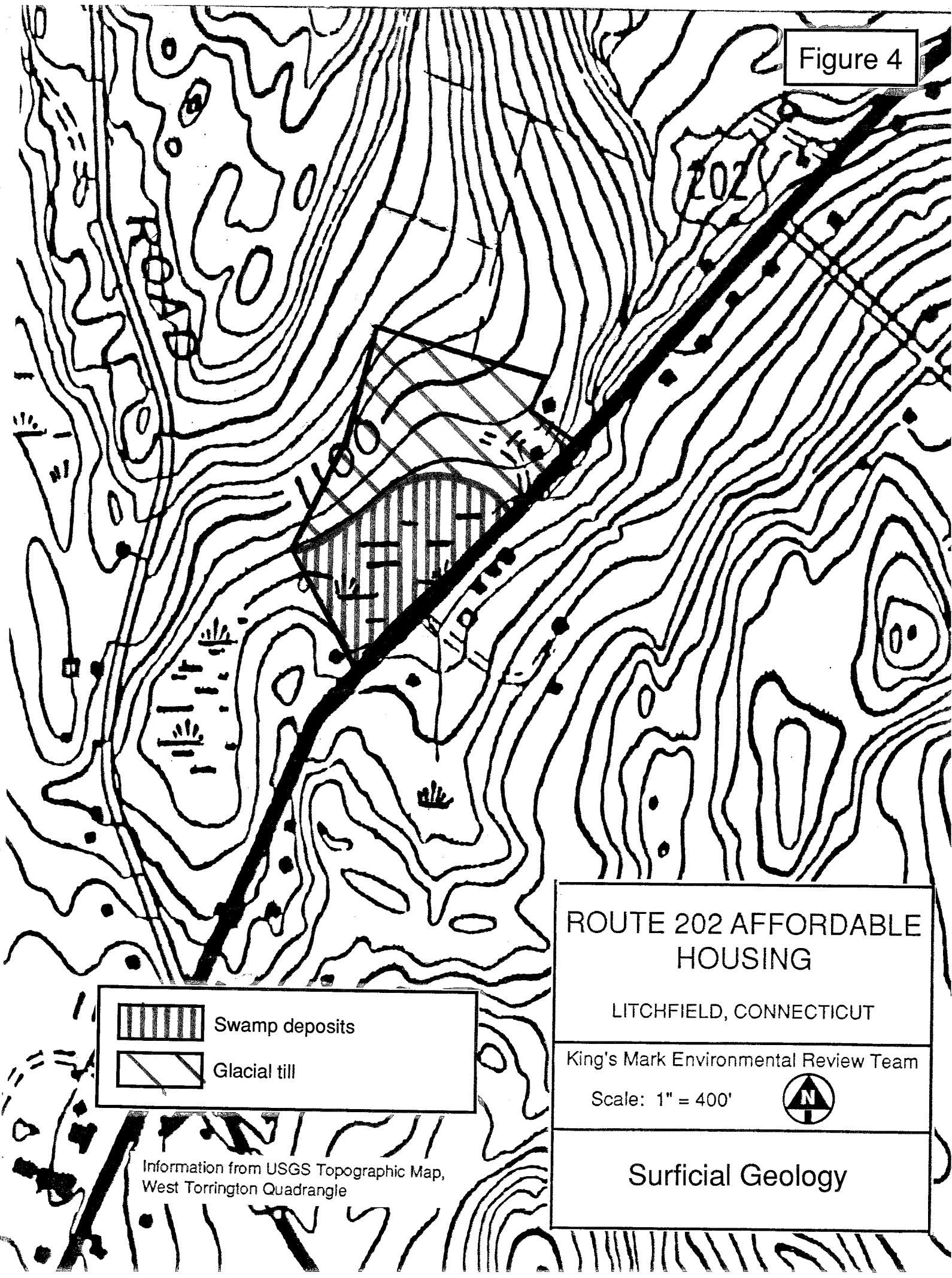
King's Mark Environmental Review Team
Scale: 1" = 400' 

Bedrock Geology

 Hartland Formation

Information from USGS Topographic Map,
West Torrington Quadrangle

Figure 4



Legend:

- Swamp deposits
- Glacial till

ROUTE 202 AFFORDABLE HOUSING

LITCHFIELD, CONNECTICUT

King's Mark Environmental Review Team

Scale: 1" = 400'

Surficial Geology

Information from USGS Topographic Map, West Torrington Quadrangle

silty, compact variety of till occurs primarily in the northern parts of the site where the land surface has been disturbed by land grading and soil excavation. The western parts of the site are generally characterized by the sandy, somewhat stony and loose variety of till. According to the Soil Survey of Litchfield County, Connecticut, the low-lying areas in the southern parts largely comprise swampy (i.e., wetland) soils derived from glacial till.

The compact variety of till is a potential limitation to site development due to a seasonally high groundwater table condition. This condition is caused by a slowly permeable soil zone that usually occurs 15-30 inches below the ground surface. The presence of the compact soil zone impedes the downward movement of percolating groundwater. Seasonally high watertables commonly pose the greatest problem in terms of on-site septic system installation. However, with the availability of public sewers, on-site septic systems will not be needed. On the other hand, the potential for wet basements, soggy lawns and E&S control problems is high for the compact till soils, if not properly addressed. The installation of groundwater intercepting drains and building footing drains are measures that should probably be installed so that buildings with basements and site conditions are not adversely impacted by a seasonally high groundwater table condition. Also, well-drained material should be placed over the areas that were stripped of top and subsoil. The combination of building foot drains and groundwater intercepting drains and placement of well-drained fill material should prevent wet basements and soggy lawn conditions. The presence of wet conditions, till soils with a high silt/fine sand content and proximity to local water resources/wetlands indicates the need for a comprehensive soil E&S control plan for any development which occurs on the site.

Based on the Soil Survey of Litchfield County, Connecticut, the principal areas of regulated wetland soils generally parallel the streamcourse and occupy the low-lying areas of the site. A more detailed investigation of the site's wetlands by a certified

soil scientist may result in some changes in the distribution and surface area of the wetlands as shown by the soil survey. The Town should have the regulated wetland soils field checked by a certified soil scientist and their boundaries superimposed onto the site plan. This will allow Town officials to establish building "foot prints" with respect to wetland setback requirements and determine potential densities.

From a geologic standpoint, it appears that the upland (northern half) parts of the site have the greatest potential for housing units. Seasonally wet conditions will be the major obstacle to overcome, but with the availability of public sewers, installation of ground and surface water drains and placement of suitable fill material, the northern parts of the site could probably support a low to medium density housing development. Other factors such as planning and zoning requirements and aquifer potential of the underlying bedrock must be considered to determine the exact number of dwellings that the site can support. No development should occur in the low-lying parts of the site.

WATER SUPPLY

According to Town officials, extension of a public water supply main to the site will probably be cost prohibitive, and an on-site water supply well or wells will be needed to serve the prospective affordable housing development. The water supply will probably be provided by bedrock floored wells. Yields from bedrock wells depend upon the number and size of water bearing fractures that are penetrated by the well or wells. Because the distribution of the fractures in the local bedrock is irregular, it is difficult to predict what the yield of a well or wells drilled on the site might be without drilling the well(s) first. Nevertheless, according to Water Resources Bulletin No. 19 (Lower Housatonic River Basin) which includes the site, 90% of the 68 bedrock (schist) wells surveyed for the report yielded a little over 1 gallon per minute

or more, 80% yielded 2 gallons per minute or more and 10% yielded approximately 12.5 gallons per minute or more.

To determine whether or not the yield of potential bedrock well(s) drilled on the site will be adequate for the housing units, the project consulting engineer/architect must determine water demand. This figure will depend upon the number of bedrooms constructed and number of persons residing in each dwelling unit. For example, if there are 4 persons per dwelling (2 bedrooms) and 10 dwellings are constructed on the site, the projected water demand for the project is approximately 3,000 gallons per day. This figure is based on 75 gallons of water per person per day or 150 gallons of water per bedroom per day. Based on an 18-hour pumping period, a well yielding approximately 3 gallons per minute is necessary. This figure is an estimate and should not be used for design purposes. The local bedrock (schist) is not known to be a prolific aquifer, but is generally capable of yielding at least a few gallons of water per minute to a well. Water Resources Bulletin No. 19 indicates that 64% of the 68 wells surveyed that tapped a schist bedrock aquifer were capable of yielding 3 gallons of water per minute. However, the yield of a bedrock well can only be determined by drilling the well. More than one well may be necessary.

Ample precaution should be taken to keep the well or wells safe from sewer lines, surface and groundwater intercepting drains and agricultural runoff from the abutting property to the northwest. Precautions include placing wells upgradient from potential sources of pollution and maintaining conservative separation distances. Consideration should be given to locating home heating fuel tanks above the ground surface.

The well or wells serving the site must be approved by the State Department of Health Services Public Water Supply Section in cooperation with the local health district. Information on projected needs of the housing development in terms of water quantity, water quality testing and plans for pumpage, storage, treatment, if

necessary, and the distribution system will be required for the water supply system. Takeover of the potential water supply system by a local or regional water supply company is desirable and probably will be a condition for approval by the Department of Health. The Department of Health Public Water Supply Section (566-1253) should be contacted early in the planning stages of the water supply system.

In terms of natural quality, the water beneath the site should be fairly good. Water Resources Bulletin No. 19 indicates that the bedrock beneath the site may contain excessive concentrations of iron and/or manganese. Treatment by filtration may be required for the prospective water supply system. According to the Water Quality Classification Map of Connecticut (Murphy, 1987), groundwater beneath the site and vicinity is classified by the DEP as GA, which means that it is suitable for private drinking water supplies without treatment.

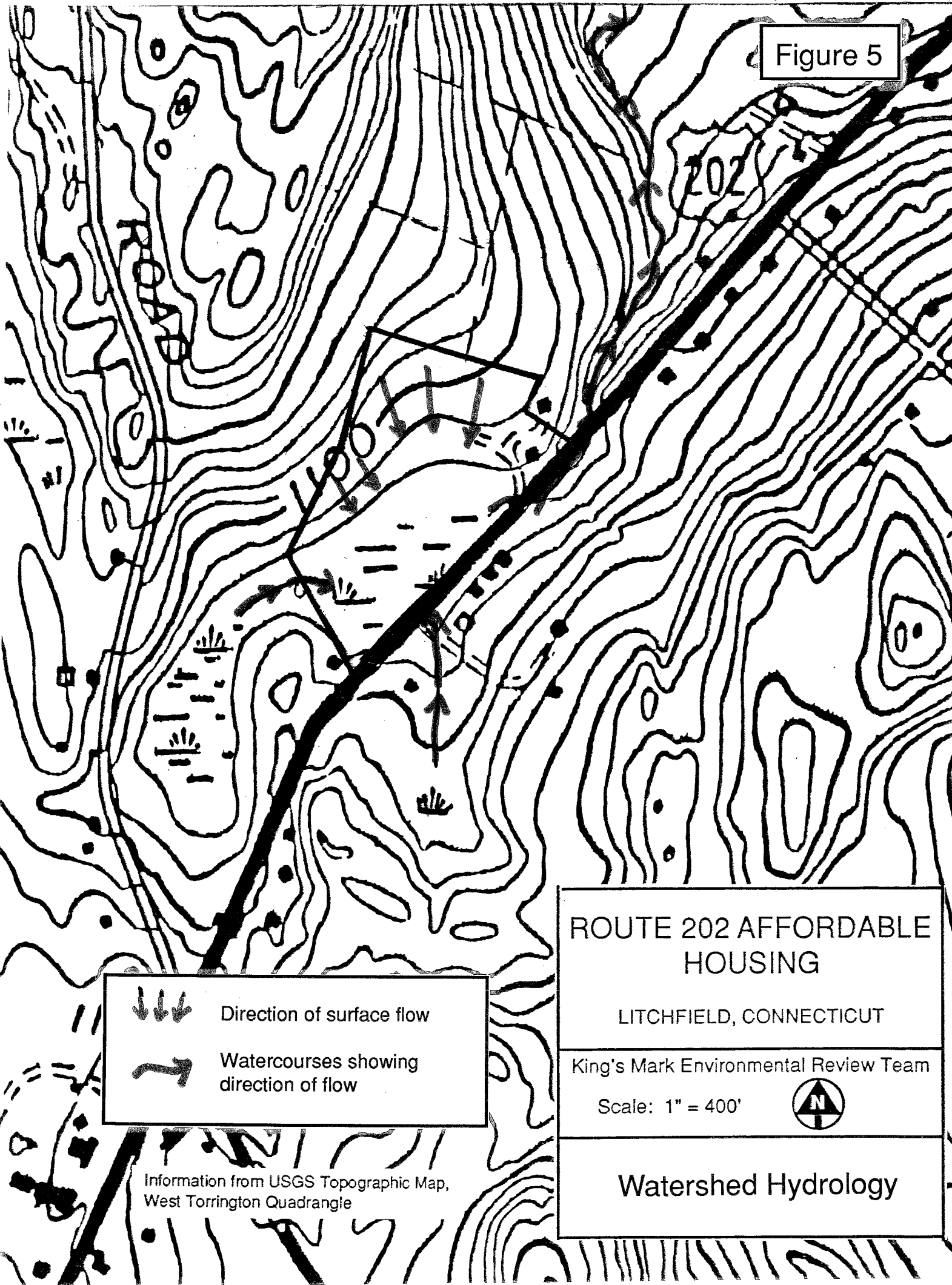
HYDROLOGY

Surface runoff on the entire site flows downslope to the unnamed streamcourse and wetlands which occur in the southern parts (see Figure 5). This streamcourse/wetland system acts as a discharge point for ground and surface water. Once it leaves the site, the streamcourse flows generally northeasterly and ultimately discharges to Gulf Stream in Torrington.

Surface waters on the site have not been classified by the DEP and are considered Class A water resources by default. Class A water resources may be suitable for drinking, recreational or other uses and may be subject to absolute restrictions on the discharge of pollutants, although certain discharges may be allowed.

The construction of residential buildings, an access road and driveways will increase the amount of runoff during periods of rainfall. Also, runoff increases can

Figure 5



↓ ↓ ↓ Direction of surface flow

↪ Watercourses showing direction of flow

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LITCHFIELD, CONNECTICUT

King's Mark Environmental Review Team

Scale: 1" = 400'

Watershed Hydrology

Information from USGS Topographic Map, West Torrington Quadrangle

result from soil compaction, removal of vegetation and placement of other impervious surfaces such as sidewalks and patios.

The main concerns with increased runoff from the site are the potential for flooding problems, erosion and water quality degradation, each of which may adversely impact on- and off-site water resources. To minimize the effects of the proposed development, the quantity and quality of stormwater which reaches local surface water resources during and after development should not be altered from pre-development conditions. There are a variety of structural and non-structural measures which may be used to control and alleviate the adverse impacts of stormwater runoff. These measures include, but are not limited to, detention basins, infiltration basins and/or trenches and grassed swales. Also, it may be possible to utilize the site wetlands, but only if the stormwater is pre-treated and not discharged directly to the wetlands. Wetlands are known to provide water quality benefits by filtering and trapping suspended solids, including sediment, chemical absorption, biological assimilation and chemical decomposition. The wetlands on the site should be used only for final polishing after pre-treatment such as infiltration, retention or extended detention. All stormwater discharge points should be located outside of wetlands and should be properly protected with energy dissipators.

The release of stormwater runoff from the proposed development should not exceed pre-development conditions. To accomplish this, stormwater runoff should be controlled so that during and after development the site will generate no greater peak than prior to development for a 2-year, 10-year and 100-year 24-hour storm event. Special attention should focus on the adequacy of existing culverts and storm drain systems serving Route 202.

A detailed and site-specific soil E&S control plan should be developed and implemented to protect wetlands and watercourses on- and off-site. The presence of silty soils, moderately steep slopes and wet conditions will increase the potential for

soil E&S problems. The E&S control plan should include a narrative report that describes the phasing and scheduling of clearing, grading and stockpiling of earth materials, limits of disturbed areas and land restoration. Utilizing silt fencing, haybales, anti-tracking pads and filter berms will prevent off-site transport of sediments, turbid water and complaints from neighboring property owners.

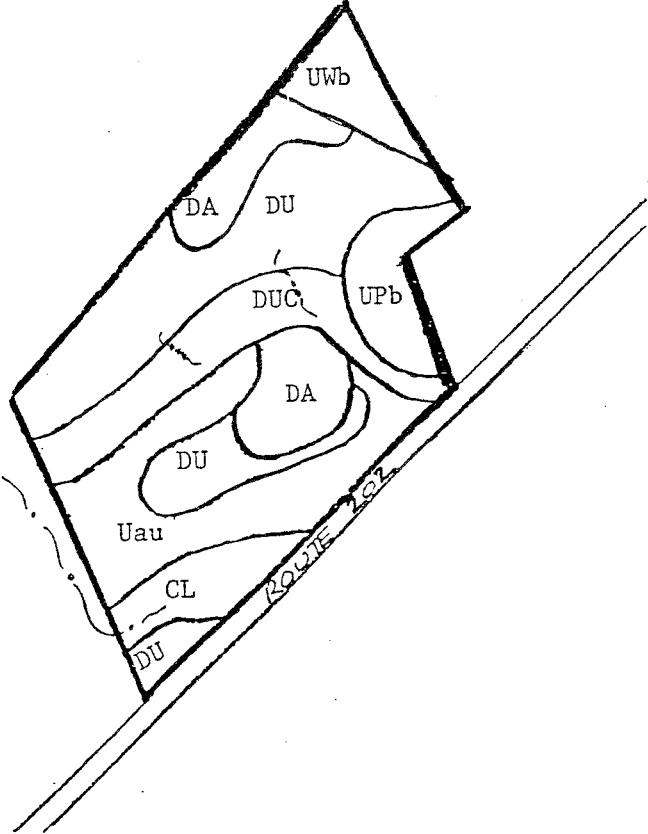
SOILS RESOURCES

The site has been significantly altered by earth moving activities. Through on-site investigation, it was determined that the site is underlain by compact glacial till (i.e., hardpan soils). On much of the site, the soil material overlying the hardpan layer has been removed. Surface water infiltration is inhibited by the compact till layer, and ponding results.

Natural soil horizons were observed in few locations. Evidence of hillside cutting for levelling purposes was observed along the northwest perimeter of the site. Near vertical cuts through the hardpan layer have accelerated the lateral movement of water, resulting in hillside seepage. Extensive ponding and small intermittent watercourses were observed. The end result is erosion of the remaining poor quality soil material and deposition of soil to the small area to the south mapped as DA (see Figure 6). The stripped topsoil has been stockpiled along the northern portion of the site. The lower half of the site has been altered by the addition of fill material.

Due to the previous topographic manipulation of the site, development plans must be evaluated carefully. The most prominent feature limiting development is wetness. Though only a portion of the site is mapped as State regulated wetlands (DA), the entire area has problems associated with a perched watertable. The water problem has been worsened by removal of the topsoil. Any development proposed for

Figure 6



UPb	Paxton fine sandy loam, 2-3% slopes
UWb	Woodbridge fine sandy loam, 2-4% slopes
Uau	Woodbridge Aquic Udorthent complex, 2-4% slopes
DU	Udorthents, 2-4% slopes
DUC	Aquic Udorthent, 2-4% slopes
DA	Aquents, 1-2% slopes
CL	Carlisle muck
	Perennial Stream
	Intermittent Stream

ROUTE 202 AFFORDABLE HOUSING
LITCHFIELD, CONNECTICUT
King's Mark Environmental Review Team
Scale: 1" = 400'
Soils

the site must take into consideration waterflow across the site as well as E&S control measures.

Because the soil resources on the site have been significantly altered by man's activities, the soil map from the Soil Survey of Litchfield County, Connecticut (1972) could not be used. The soil map in Figure 6 was created from an on-site investigation with spade and auger and air photo interpretation. This map can be used for a general discussion of soil limitations on this site. A consulting soil scientist should be hired for more detailed site specific information or to precisely locate the boundaries of wetland soils.

Appendix A contains a chart of important soil features and interpretations based on Figure 6. Specific information for the unique map units used include:

- 1) **UPb** - This unit is comprised mainly of Paxton fine sandy loam. This is a well-drained undisturbed soil which formed over compact glacial till. Slopes range from 1-3%. Only minor surface erosion has occurred, and no major profile alteration was evident. Typic Dystrochrept.
- 2) **UWb** - This unit is composed of Woodbridge fine sandy loam. This soil is moderately well-drained and was formed over compact glacial till. The hardpan layer was observed at depths ranging from 15-20 inches. Slopes are 2-3%. Aquic Dystrochrept.
- 3) **Uau** - This unit is a complex of disturbed soils (Aquic Udorthents) and undisturbed soils. The area appears to have been dominated by Woodbridge soils prior to alteration. This soil unit is presently a mixture of natural soils, scraped areas and small areas of fill. Slope is 2-4%.
- 4) **DU** - This unit has been significantly altered by earth moving activities. The topsoil and subsoil have been stripped and stockpiled. The remaining material is dense glacial till substratum. Significant ponding was observed. Slope is 2-4%. Because natural soil characteristics have been altered, the soil is classified as a Udorthent.
- 5) **DUC** - This unit is dominated by Udorthents and is similar to the DU unit, except slopes of 6-7% are present. The topsoil has been manipulated, and numerous hillside seeps were present.
- 6) **DA** - This unit has been disturbed. The area is naturally wet for significant portions of the year and is dominated by somewhat poorly drained to poorly drained Aquents.

- 7) **CL** - This unit consists of very poorly drained organic Carlisle soils intermingled with mineral soils.

EROSION AND SEDIMENT CONTROL

Before development takes place, an E&S control plan should be submitted. This plan should be closely reviewed and supervised, and should include:

- 1) A narrative describing the project, the conservation measures planned, the sequence of installation and the maintenance plan;
- 2) A map locating the conservation measures proposed and adequately showing the natural features and proposed activities; and
- 3) E&S control details which show how each measure is to be installed.

During the field review, there was no occurring problematic erosion identified. If construction activities take place, the wetlands and watercourses on the site should be protected from potential loading of sediments. For more information on how to develop an efficient E&S control plan, refer to the Connecticut's Guidelines for Soil Erosion and Sediment Control (revised - 1988). This manual is a publication of the Connecticut Council on Soil and Water Conservation and can be purchased through the local Soil and Water Conservation District. Some E&S control practices that should be applied at this site are:

- 1) Placing sediment barriers parallel to the watercourse;
- 2) Keeping the drainage area for silt fences and sediment barriers to a maximum of 1 acre or 150 feet of slope; and
- 3) Placing stormwater sewer outlets at the bottom of the hill as close to the wetlands as possible.

BIOLOGICAL RESOURCES



WETLAND CONSIDERATIONS

The 12.66-acre site is located on the west side of Route 202 near the Torrington Town Line in northern Litchfield. An affordable housing subdivision to be served by public sewers and on-site wells is proposed on this site.

The majority of the site has been heavily disturbed in previous years by agricultural activities and site excavation. The site slopes moderately from northwest down to Route 202. The obvious wetland areas on the site are located at the bottom of the slope and probably result from natural and artificial draining of the upper portion of the site. The wetlands consist of a mixed marsh/shrub swamp region, with areas of ponded water and forested swamps interspersed. A small beaver dam located on the southwest side of the site has resulted in additional ponding. The wetlands, while located within close proximity to Route 202, provide several valuable functions, including flood storage during periods of heavy rainfall or snowmelt, pollution filtration from upland runoff prior to its entrance into the small watercourse that carries flows off-site and wildlife habitat for resident and migratory birds, beaver, other small mammals and amphibians.

The cleared portion of the site, which appears to be upland, may contain wetland soils based on observation of the poor drainage conditions. The entire site is extremely wet, even on the hillside, which could significantly hinder development. The site, in general, is an acceptable location for a small affordable housing subdivision (5-10 lots) provided the physical constraints of the site can be overcome.

The most important resources on-site to protect are the wetlands located at the lower elevations adjacent to Route 202. In addition to providing some important natural functions, they will be an amenity to any development at the site. Development of this site should be concentrated on the upper elevations, and if possible, a cul-de-sac option should be addressed rather than the loop road that was

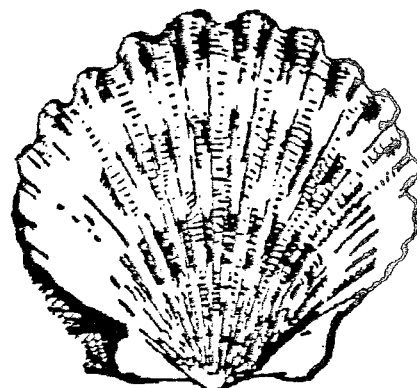
discussed during the field review. The cul-de-sac alternative involves less construction and reduces the potential for adverse impact to the functional wetlands. Additionally, because of the wetness of the entire site, the potential for basement flooding exists. Therefore, slab construction should be considered. The wetlands should be flagged by a soil scientist to determine the actual wetland boundaries.

THREATENED AND ENDANGERED PLANT AND ANIMAL SPECIES

According to the Natural Diversity Data Base maps and files, there are no known extant populations of Connecticut "Species of Special Concern" or Federal Endangered and Threatened Species occurring at the site.

Natural Diversity Data Base information includes all information regarding critical biologic resources available to us at the time of the request. This information is a compilation of data collected over the years by the Natural Resources Center's Geological 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 species 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

The northeastern section of the Town of Litchfield has never been systematically surveyed by archaeologists. Consequently, only a few prehistoric sites have been recorded from the area. However these data, together with several small collections at the American Indian Archaeological Institute and the work of avocational archaeologists, provide information sufficient to characterize the research potential of the project area.

The lands surrounding Gulf Stream, its tributaries and wetlands were periodically a focus for prehistoric Native American settlement and land use. Artifacts representative of sites between 6,000 and 3,000 years old have been reported from several locations along Richards Road between Newberry Corner and Route 118. Other materials have also been found on the landforms north of Gulf Stream, including formerly cultivated fields along Wilson Road. Systematic archaeological surveys elsewhere in Litchfield County have demonstrated that wetland systems were an important focus for Native American settlement, perhaps even more important than river terraces and floodplains. Thus, archaeological resources are expected in northeastern Litchfield, including the project area.

No archaeological sites are known from the specific project area. However, the parcel is situated adjacent to a narrow wetland and ephemeral stream and was probably the locus of hunting and collecting activities. Amorphous scatters of fragmentary stone tools (i.e., projectile points, knives and scrapers) might be found at the project area. However, such potential archaeological resources have been disturbed by recent activities. Land clearing, together with the scraping and piling of topsoil undertaken earlier in the 1980s, has largely destroy the integrity of any sites which may have been present. Consequently, the proposed development is expected to have only a limited impact, if any, on the archaeological resources.

It is important that local commissions and regional planning agencies recognize the archaeological potential of wetlands in northwestern Connecticut. Despite the 20th century losses in some Towns (i.e., Southbury, Brookfield and New Milford), many important sites remain. By limiting and controlling development and destructive land uses, some of the archaeological heritage of local Indian peoples will be preserved and protected for future study.

LAND USE AND PLANNING CONSIDERATIONS



PLANNING CONSIDERATIONS

Consistency of Project with State, Regional and Local Plans

The State Policies Plan for the Conservation and Development of Connecticut 1987-1992 is a statement of the growth, resource management and public investment policies of the State. The Plan was prepared by the Office of Policy and Management (OPM) and adopted by the Connecticut General Assembly in 1987. The objective of the Plan is to give a balanced response to human, environmental and economical needs in a manner which best suits the future of Connecticut. Regional planning organizations and local governments have been encouraged by OPM to foster implementation of the Plan at the local level.

According to the Locational Guide Map which accompanies the State Plan, the site is classified as Rural Land. The State strategy for Rural Land is:

"avoiding support of structural development forms and intensities which exceed on-site carrying capacity for water supply and sewage disposal on a permanent basis, which are inconsistent with open rural character or conservation values of adjacent areas and which are more appropriately located in Rural Community Centers."

Although the proposed development does not entirely conform with this State strategy for rural land, it should be noted that:

- 1) The existence of sewers is a mitigating factor for locating the proposed development at the site; and
- 2) The State Plan places a high priority on the development of additional affordable housing throughout the State.

The Litchfield Hills Council of Elected Officials (LHCEO) has adopted a preliminary housing policy which, among other objectives, supports housing development that accommodates natural environmental limitations, promotes the provision of open space and recreation areas with future residential development and

specifically encourages the development of more affordable housing. The proposed development is consistent with the goals of LHCEO's preliminary housing policy, provided care is taken to minimize disturbance to wetlands with project implementation. The need for additional affordable housing units in Litchfield and throughout the regional area is addressed in LHCEO's Regional Planning Bulletin No. 2 entitled, "Housing Needs Assessment" (March, 1988).

The 1984 Litchfield Plan of Development establishes a number of housing policies and goals. These include development of a housing mix (particularly for senior citizens and young couples or individuals) and the use of a sewer corridor area to achieve the housing mix. The site is specifically defined in the Plan as an area where multi-family development should be permitted.

The proposed development is not entirely consistent with the State Plan, but is consistent with regional and local land use plans and policies.

Zoning and Compatibility of Project with Surrounding Land Uses

The site is zoned RHC-40 (Residence Highway Corridor District) which allows single-family dwellings by right with a minimum lot area of 40,000 square feet where either public water or sewer service is available (60,000 square feet if neither public water or sewer service is available). Under the RHC-40 regulations, the Planning & Zoning Commission may grant as a special exception a 25% reduction in the minimum lot size requirements to encourage good site design.

If both public sewer and water service are available at the site, it may be appropriate to pursue project design and approval under the Affordable Housing provisions of the Litchfield Zoning Regulations. This approach is particularly desirable if multi-family housing units are being considered or if there is interest in a greater density of development than is allowed under the RHC-40 zoning regulations.

The land to the east, south and west of the site is also zoned RHC-40. The land to the north of the site is zoned R-80. Existing land use in the vicinity is characterized by moderate density residential development and wooded land to the east, south and west of the site, with a church located on the southwestern boundary. North of the site, the land is characterized by a wooded buffer strip and hayfield. The proposed development appears to be compatible with adjacent land uses and zoning. Maintenance of a vegetative buffer is particularly desirable along the northern and eastern borders of the site to soften the transition between the proposed development and existing or potential residential development. Provisions should be made through conservation easements or other controls to protect any designated open space in perpetuity.

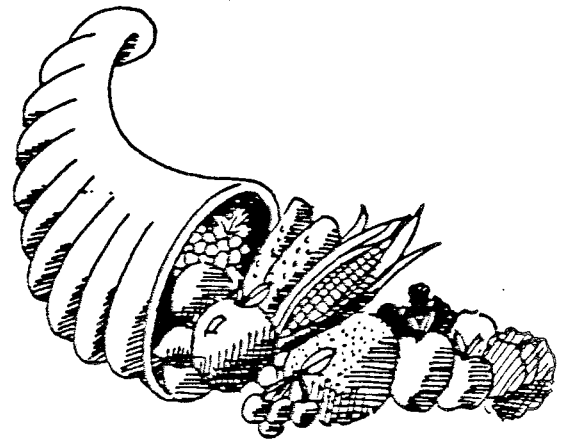
Access and Design Considerations

Vehicular access to the site is available directly off Route 202. The preferred access point is at the eastern boundary to avoid or minimize wetland disturbance. The sight line distances are excellent at this location and will facilitate traffic safely entering and exiting the site.

Section 6.54 of the Litchfield Subdivision Regulations specify that permanent dead end streets shall provide sole access to not less than 2 nor more than 20 building lots. This provision may influence site design.

Consideration should be given to taking full advantage of the small pond, watercourse and open field/wetland area in the southern portion of the site for recreational and open space purposes. In addition, the south facing slopes on the northern half of the site offer an excellent opportunity for incorporating passive solar design principals in the construction of the project. To facilitate solar design, housing units should be oriented so that they have a direct southern exposure along the roof line wherever possible.

APPENDICIES



Appendix A: Soil Limitations Chart

MAJOR LIMITATIONS FOR DEVELOPMENT

Map Unit	General Soil Properties	Drainage Class and Depth to High Watertable	Basements	Recreation
UPb - Paxton fine sandy loam, 2-3% slopes	Compact glacial till formed in loamy material	Well-drained 1.5-2.5 ft. Perched watertable	Wetness	Wetness
UWb - Woodbridge fine sandy loam, 2-4% slopes	Compact glacial till formed in loamy material	Moderately well-drained 1.5-2.5 ft. Perched Watertable	Wetness	Wetness
Uau - Woodbridge Aquic Udorthent complex, 2-4% slopes	Disturbed and natural compact glacial till formed in loamy material	Moderately well-drained 1.5-2.5 ft. Perched watertable	Wetness	Wetness
DU - Udorthents, 2-4% slopes	Disturbed compact glacial till formed in loamy material	Variable at surface for unknown length of time Perched watertable	Wetness	Wetness
DUC - Aquic Udorthent, 2-4% slopes	Disturbed compact glacial till formed in loamy material	Variable at surface for unknown length of time Perched watertable	Wetness	Wetness
DA - Aquepts, 1-2% slopes	Formed in compact glacial till and loamy materials, areas of fill within unit	Somewhat poorly to poorly drained 0-1.5 ft. Perched watertable	Wetness	Wetness
CL - Carlisle muck	Organic deposits, unit intermingled with mineral soils	Very poorly drained +0.5-1.0 ft.	---	---

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.