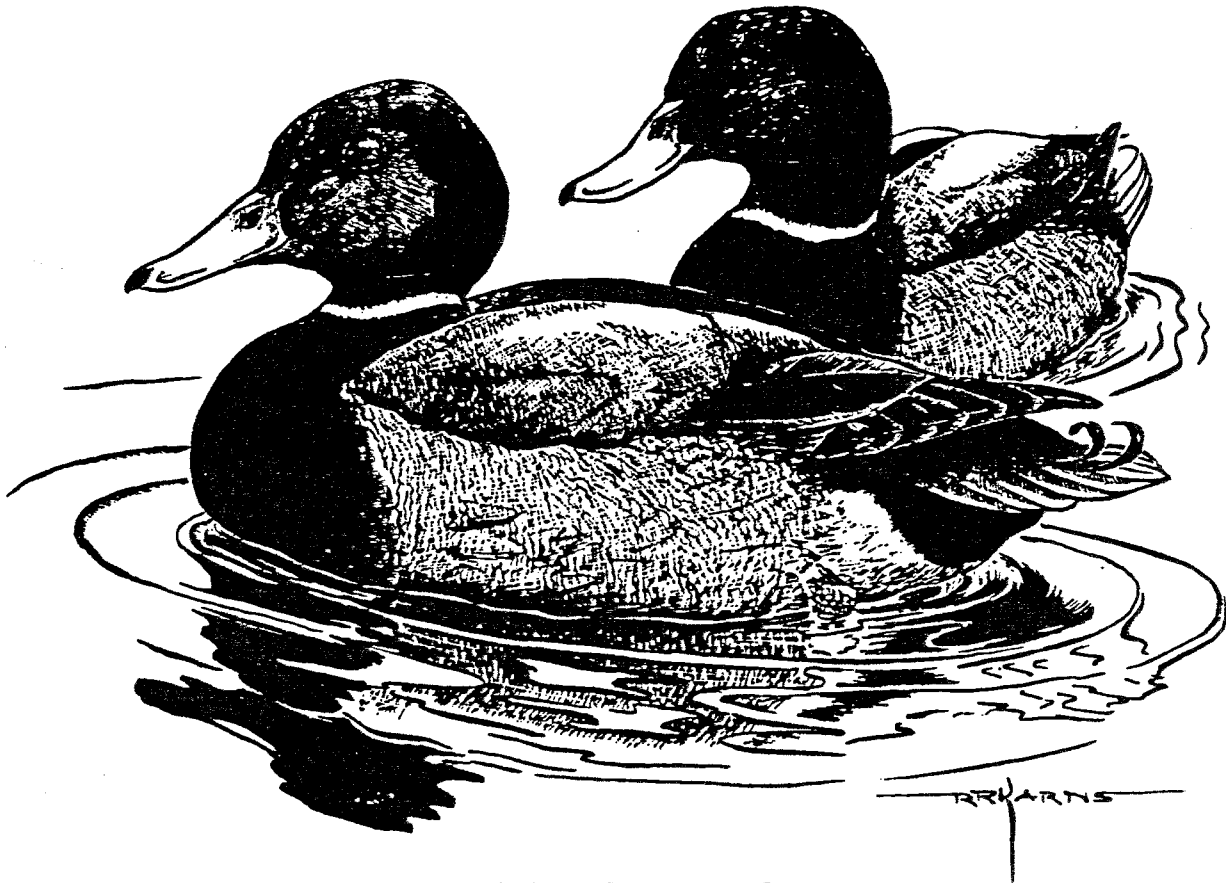


KING'S MARK ENVIRONMENTAL REVIEW TEAM



REPORT FOR

DUNHAM POND PROPERTY

NEW FAIRFIELD,
CONNECTICUT

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

DUNHAM POND PROPERTY

NEW FAIRFIELD, 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

New Fairfield First Selectman

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 First Selectman and 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.

OCTOBER 1989

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:

- * William Warzecha, Hydrogeologist
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Department of Environmental Protection - State Parks
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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 Russell Gerow, First Selectman, Julia Wasserman, Health Director, Charlene Taylor and Tim Simpkins, Assistant Sanitarians, from the Town of New Fairfield and Melanie Gray, Fairfield Soil and Water Conservation District for their cooperation and assistance during this environmental review.

EXECUTIVE SUMMARY

Introduction

The New Fairfield First Selectman has requested that an environmental review be conducted on the Dunham Pond Property, a site proposed for residential and recreational development. The 51.9-acre site contains several areas of steep slopes, a large wetland area associated with Short Woods Brook, a small section of Ball Pond Brook, a pond currently used for private recreation and several acres of old farm fields. The Town is proposing to buy the site and develop affordable/elderly housing. The housing would be located on the top of the hill off of Hillside Road. The remainder of the property, including the pond, is proposed for recreational development, perhaps swimming and ballfields. The proposed development will be served by on-site septic systems and wells. Short Woods Brook lies above a potential high yield aquifer that the City of Danbury once considered using to supplement the Margerie Lake Reservoir. This aquifer potentially could be the water supply for the site and other areas of the Town.

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. The major findings of the ERT are presented below:

Location, Zoning and Land Use

The site is bounded by single-family homes on the west and north, private, undeveloped land and Short Woods Brook on the east and commercial development and Ball Pond Brook on the south. Most of the site lies within the R-88 zone. A small portion lies within the Community Center Zone. Except for some small buildings for recreational use, the site is undeveloped.

Topography

The site is found on the top and east flank of a rock cored hill. Slopes range from gentle on the tablelands and floodplain to moderately steep on the hillside. Elevations range from 590 feet above mean sea level to 780 feet above mean sea level.

Geology

Bedrock is visible in the western parts of the site. The bedrock is dark gray fine-to medium-grained amphibolite and gneiss. Bedrock is probably not more than 10 feet deep in most places. The bedrock is the primary aquifer for the surrounding homes. It may be a viable water source for an elderly housing project, but testing is required for verification. Bedrock will be the major constraint for development on the hilltop. Blasting may be required.

The majority of the site is covered by glacial till. The Short Woods Brook Valley contains stratified drift deposits which may be as much as 39 feet deep. These deposits may be favorable for water supply wells, but testing is required for verification. Post-glacial sediments known as swamp deposits cover the eastern parts of the site.

Sewage Disposal

Since public sewers are not available for the site, any proposed development will be served by on-site septic systems. Based on the plans, the sewage effluent will be collected in a central leaching system. The most favorable location for this system is the moderate slopes on the hillside. The slopes do not appear overly restrictive for on-site systems, and if adequate depths to the bedrock and the water table are found, a small to medium sized septic system may be feasible. Subsurface conditions need to be verified by deep test holes. The size of the septic system will depend on the number of bedrooms in the residential units. Because the development will be served by a central septic system, the DEP Water Compliance Unit must issue a permit.

Water Supply

The 2 principal aquifers for the site include the stratified drift deposits and the underlying bedrock. Little is known about the aquifer potential of the stratified drift. These deposits are favorable for yielding moderate to large amounts of water, but testing is required. The bedrock aquifer is capable of yielding water for the development if no more than 8-10 gallons per minute is required. It is difficult to predict the yield of bedrock wells. According to the Connecticut Resources Bulletin No. 21, 60% of bedrock wells in the area yielded 5 gallons or more per minute. If a well on the site produced this much water, it would be capable of serving approximately 72 residents.

Properly constructed wells afford the greatest protection against pollution. Wells should be drilled on the high side of the lots away from the natural flows of groundwater pollutants. Sources of pollutants can include septic effluent, road salt and buried fuel oil tanks. Consideration should be given to prohibiting buried fuel oil tanks. The wells will require approval by the Department of Health Services and the Department of Public Utilities Control. The groundwater is classified as GAA. The natural quality of the groundwater should be good, however it may be mineralized with iron or manganese. Suitable treatment filters are available.

Hydrology

Dunham Pond was created between 1934 and 1965 by excavating unconsolidated materials below the water table. It does not appear to have any inflowing streamcourses. Except for Ball Pond Brook, surface water in the area is classified as AA water resources. Ball Pond Brook is classified as B/AA water resources, indicating that the stream has been degraded. The brook has been affected by widespread septic system failures and a #2 fuel oil spill. The State goal is to upgrade the water to Class AA.

Residential development will increase runoff from the site. There is concern for an increase in flooding and streambank erosion. Both concerns should be addressed in a detailed stormwater management plan. Moderately steep slopes and till soils have the potential to erode, if not properly controlled. A detailed erosion and sediment control plan is required for the development. Every effort should be made to protect the water resources on the site.

Recreational Potential from a Geologic Standpoint

The lower portions of the site surrounding Dunham Pond have active and passive recreational potential. Wetness is a limitation. With regrading and deepening, Dunham Pond could be used for swimming. Bathymetric information is needed to allow calculations for bathing load potential. The pond and surrounding area is an important natural feature for the site. It offers the potential for environmental education and passive recreation. If sanitary facilities are needed in the area, a small septic system might be constructed in the area west of the pond.

Soil Resources

Soils on the site consist of Charlton-Hollis complexes. These soils contain many stones and are somewhat shallow to bedrock. Wetland soils shown on the map include Ridgebury, Leicester and Whitman soils. The area around the pond was formed in glacial outwash. Soils formed in this material are called Aquents. A more detailed soil investigation is needed in this area to accurately map the wetland soils. Suitability for on-site septic systems must be determined in the field. There may be areas of Charlton soils that are suitable.

Erosion and Sediment Control

Due to steep slopes and erodible soils, a detailed erosion and sediment control plan is needed with any development. The plan should describe how the the proposed development will proceed. The description should include the selection, installation and maintenance of erosion and sediment control measures. A specific concern with the proposed elderly housing project is the proper disposal of stormwater runoff. Outlets should be tied into existing stormwater systems or be located and designed to safely release stormwater to the wetlands and watercourses. The banks of Dunham Pond should be regraded to a gradual slope and stabilized with permanent vegetation.

Wetland Considerations

According the the preliminary development plans, no development activities take place within the wetlands. The anticipated activities that take place within the wetlands are recreational and may be exempt from permit. If the Town maintains the present recreational uses, no permit will be required. Any changes or construction activities which enhance the recreational functions will require a permit. The plans indicate that a significant portion of land will be maintained between the wetlands and the developed portion. Some form of deed restriction or conservation easement should be considered to maintain this buffer.

Planning Considerations

The site is located within the Preservation Area, Conservation Area, and Rural Community Center categories of the State Plan. The Preservation and Conservation designations advise the Town to develop without sewer and water lines. The Rural Community Center designation advises the Town to cluster houses and businesses with small scale wastewater and water supply lines. Rural Community Centers are appropriate for elderly housing. Only a small portion of the site falls within the Rural Community Center designation, however parcels are not always available within this designated area. The Regional Plan and the State Plan are similar. HVCEO shows the entire Town of New Fairfield within an existing or future public water supply watershed. The HVCEO planners estimated a need for 92 affordable housing units in the Town. Local zoning permits only single-family housing in residential zones. Conversion of an existing house to multi-family use is through a Special Permit. The Town Plan is considered to be outdated.

An appropriate method for changing the zoning is needed if senior citizens housing is seriously pursued. Zoning for attached senior citizen housing only is accepted in Connecticut. Maximum regulatory control over such housing can be obtained by allowing this use through Special Permits.

The site is located on the Short Woods Brook stratified drift aquifer. Protection measures should include wetland preservation, strict controls on sewage disposal and relocation of the Town salt stock piles. The area proposed for housing development is not in the primary recharge area, but it is in the secondary recharge area. Protection strategies for this area should include garages with special hazardous material storage areas, heating oil tanks within the home with a berm and deed restrictions outlining best management practices for fertilizers, water softeners and high risk home occupations. These and additional protection measures should be tailored as conditions for elderly housing development. Oil separators for parking lots and restrictions for fertilizers in recreation areas should be considered.

The Town is considering using the site for affordable housing, recreational development and water supply. The plans locate the housing on the top of the hill. The slopes will require detailed erosion and sediment controls. The housing units will abut neighboring houses closely. The minimum buffer should be expanded. The 2 rights-of-way for access may not meet the Town's requirements for roads. The elderly housing will be served by additional access to the north. The Town roads appear to have the capacity to support the traffic from the development. The site lines of this access point and Hillside Drive should be examined by a traffic engineer. The change in elevation up the hill from Town may negate the benefits from the location close to Town. The lower portion of the site is flatter and closer to Town. Consideration might be given to placing a smaller number of units on this area, just above the wetlands and floodplain.

Recreational Considerations

There are constraints on the use of the property. The hillsides tend to be steep and rocky. The valley is poorly drained and stony. The hill top appears to be the only location for housing. The hillside area should remain wooded, except for possible trails and/or ski/sledding slopes. The valley bottom has poor drainage and is very rocky which will limit ballfields. A complete hydrologic study is suggested for evaluating the potential of the pond for swimming.

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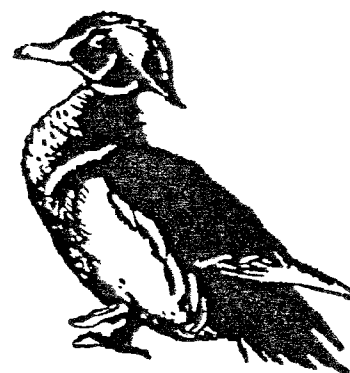
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INTRODUCTION



INTRODUCTION

The New Fairfield First Selectman has requested that an environmental review be conducted on the Dunham Pond Property, a site proposed for residential and recreational development. The site is located in the central section of New Fairfield. Access to the site is provided via Hillside Road and Route 37 in New Fairfield.

The 51.9-acre site contains several areas of steep slopes, a large wetland area associated with Short Woods Brook, a small section of Ball Pond Brook, a pond currently used for private recreation and several acres of old farm fields.. The Town is proposing to buy the site and develop affordable/elderly housing. The site location is favorable for this type of development because it is close to the center of Town. The housing would be located on the top of the hill off of Hillside Road. The remainder of the property, including the pond, is proposed for recreational development, perhaps swimming and ballfields. The proposed development will be served by on-site septic systems and wells. The Town has no municipal sewer and water facilities. Short Woods Brook lies above a potential high yield aquifer that the City of Danbury once considered using to supplement the Margerie Lake Reservoir. This aquifer could possibly be the water supply for the site and other areas of the Town.

The Town is concerned about the development potential of the site, including its ability to support a medium density development with septic systems and on-site wells, while protecting the potential aquifer, the wetlands and the recreational potential of the pond.

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 topographic, hydrologic and geologic characteristics of the site, including the development limitations and opportunities;
- 2) Assess the impact of stormwater runoff;

- 3) Assess the impact of septic system development on the site;
- 4) Determine the suitability of existing soils to support the proposed development;
- 5) Discuss soil erosion and sedimentation concerns;
- 6) Assess the impact of the development on the wetlands and watercourses;
- 7) Assess planning and land use issues; and
- 8) Assess the recreational potential of the site.

THE ERT PROCESS

Through the efforts of the New Fairfield First Selectmen 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 September 13, 1989. 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

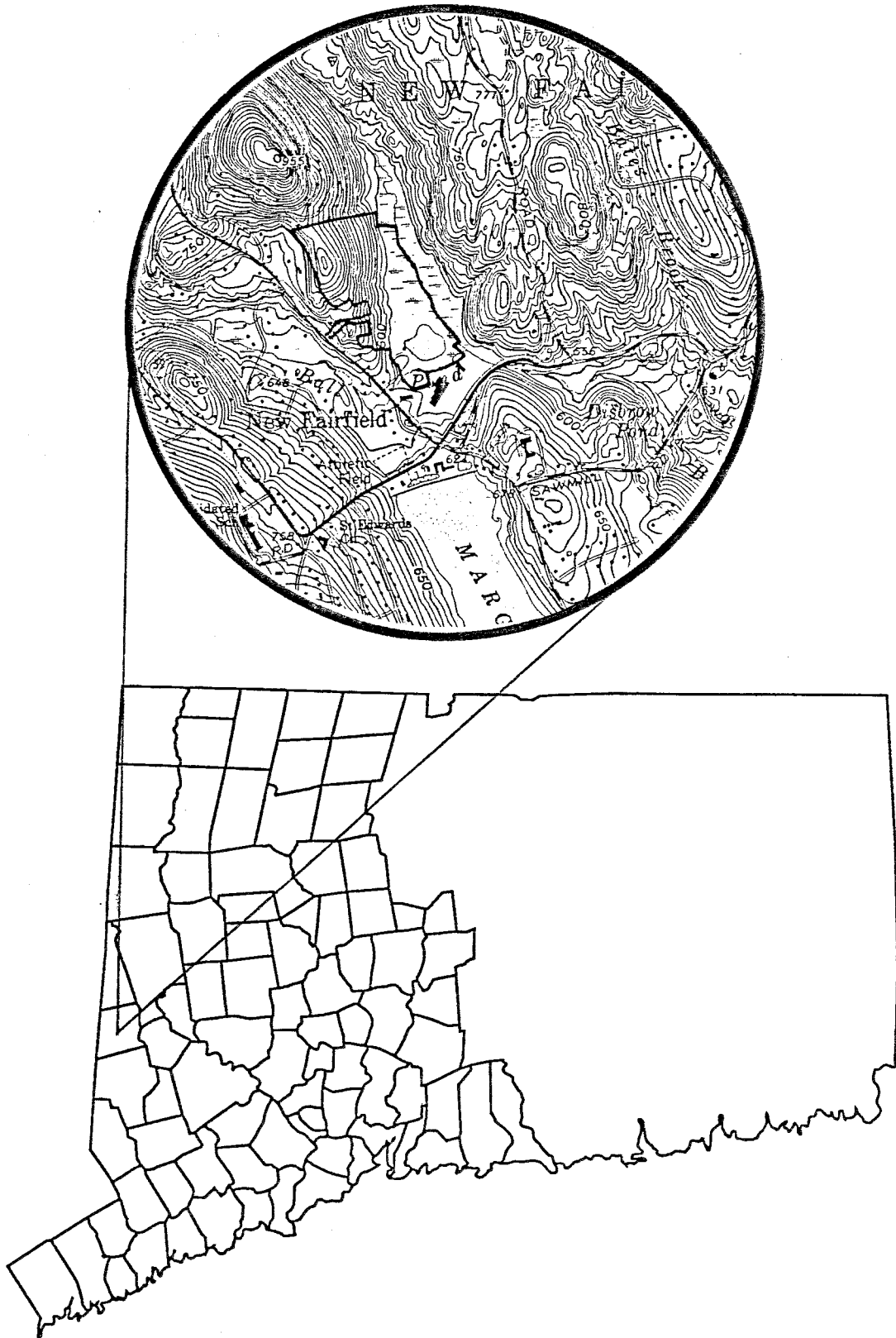
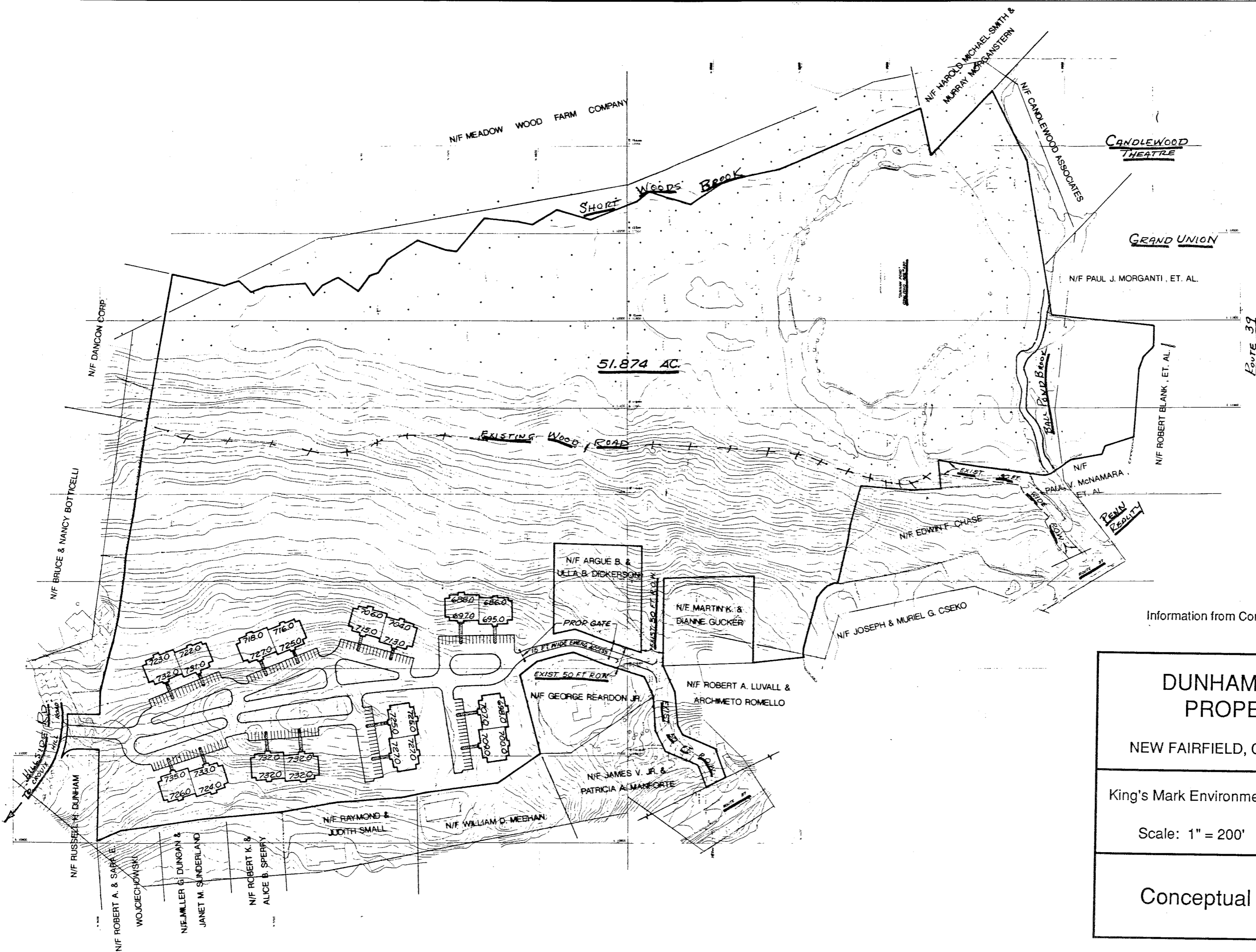



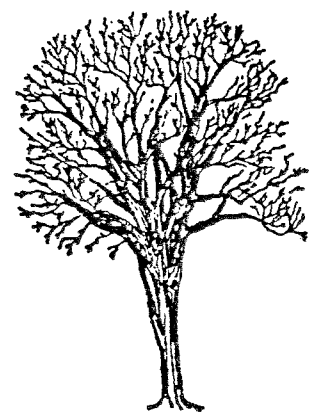
Figure 2



Information from Conceptual Site Plan.

<p>DUNHAM POND PROPERTY</p> <p>NEW FAIRFIELD, CONNECTICUT</p>
<p>King's Mark Environmental Review Team</p> <p>Scale: 1" = 200'</p> 
<p>Conceptual Site Plan</p>

NATURAL RESOURCE CHARACTERISTICS



LOCATION, ZONING AND LAND USE

The 51.9-acre Dunham Pond site is located approximately 1,250 feet northwest of New Fairfield Center. The site is mostly wooded, except for some mowed areas on the southwest side of Dunham Pond. Access to the site is provided by Hillside Road and Route 37. The site is bounded by single-family homes on the west and north, private, undeveloped land and Short Woods Brook on the east and commercial/office properties and Ball Pond Brook on the south.

The majority of the site lies within the R-88 (residential) zone. This zone allows single-family dwellings with a minimum lot size of 2 acres. Other permitted uses include farms, schools, churches, municipal buildings, certain recreational uses, non-profit museums, cemeteries, country clubs, non-profit hospitals and nursing homes. A small portion of the property (southern limits) lies within the Community Center Zone. Permitted uses in this zone include office and professional buildings, banks, retail stores, post offices, fire houses, etc.

Except for some small buildings on the west side of Dunham Pond, the site is undeveloped. The perimeter of the pond is well maintained, probably for recreational uses (i.e., fishing, hiking and picnicking). During the field review, several paths, which appear to have been worn down by trail bikes and/or motorcycles, were visible at the western limits.

TOPOGRAPHY

The site encompasses the top and east flank of a rock cored hill that, for the most part, slopes to Short Woods Brook Valley. The main axis of the hill is orientated in a north-south direction. Except for the Short Woods Brook floodplain area along the east side of the property and the tableland of the hill in the western parts, topography

of the site is characterized predominantly by moderate slopes. From Short Woods Brook Valley, which is at about 590 feet above mean sea level, the site rises about 190 feet westward to the top of the hill at the western limits (see Figure 3).

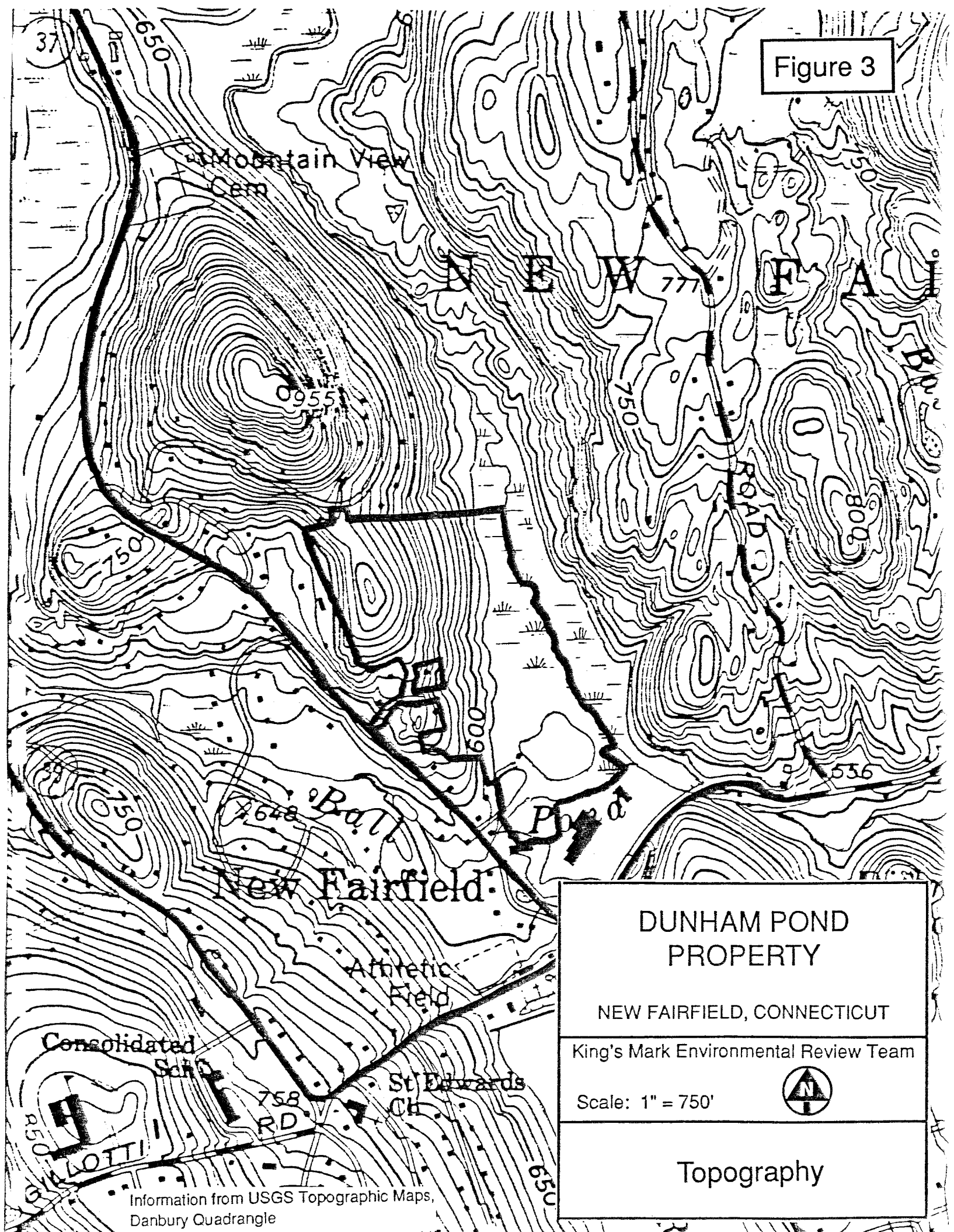
GEOLOGY


The entire site lies within the Danbury topographic quadrangle. A bedrock geologic map (QR-7, James W. Clarke, 1958) has been published for the quadrangle by the Connecticut Geological and Natural History Survey. An open file report for the surficial geology of the quadrangle is available at the Department of Environmental Protection (DEP) Natural Resources Center. The Soil Survey of Fairfield County, Connecticut, Fault Zones and Seismicity in Western Connecticut and Southeastern New York, (J. Edward Tillman, 1981) and the Bedrock Geological Map of Connecticut, (Rodgers, 1985) were also referenced.

Bedrock is visible at ground surface in many areas of the site's western limits. According to the Soil Survey for Fairfield County, shallow to bedrock soils prevail on the site. In general, the bedrock underlying the site consists of dark gray fine- to medium-grained amphibolite and gneiss (see Figure 4). Based on the published bedrock geologic information available for the area, no faults have been mapped near the site.

The terms gneiss and amphibolite refer to the textural aspects of the rock. Both are crystalline, metamorphic rocks, having been altered by great heat and pressure within the earth's crust. Generally speaking, gneisses are coarse-grained rocks characterized by the relatively parallel orientation of mineral grains with massive to platy appearance. Amphibolites are generally dark-colored fine- to coarse-grained, massive to poorly layered rocks, containing amphibole and plagioclase with little or no quartz.

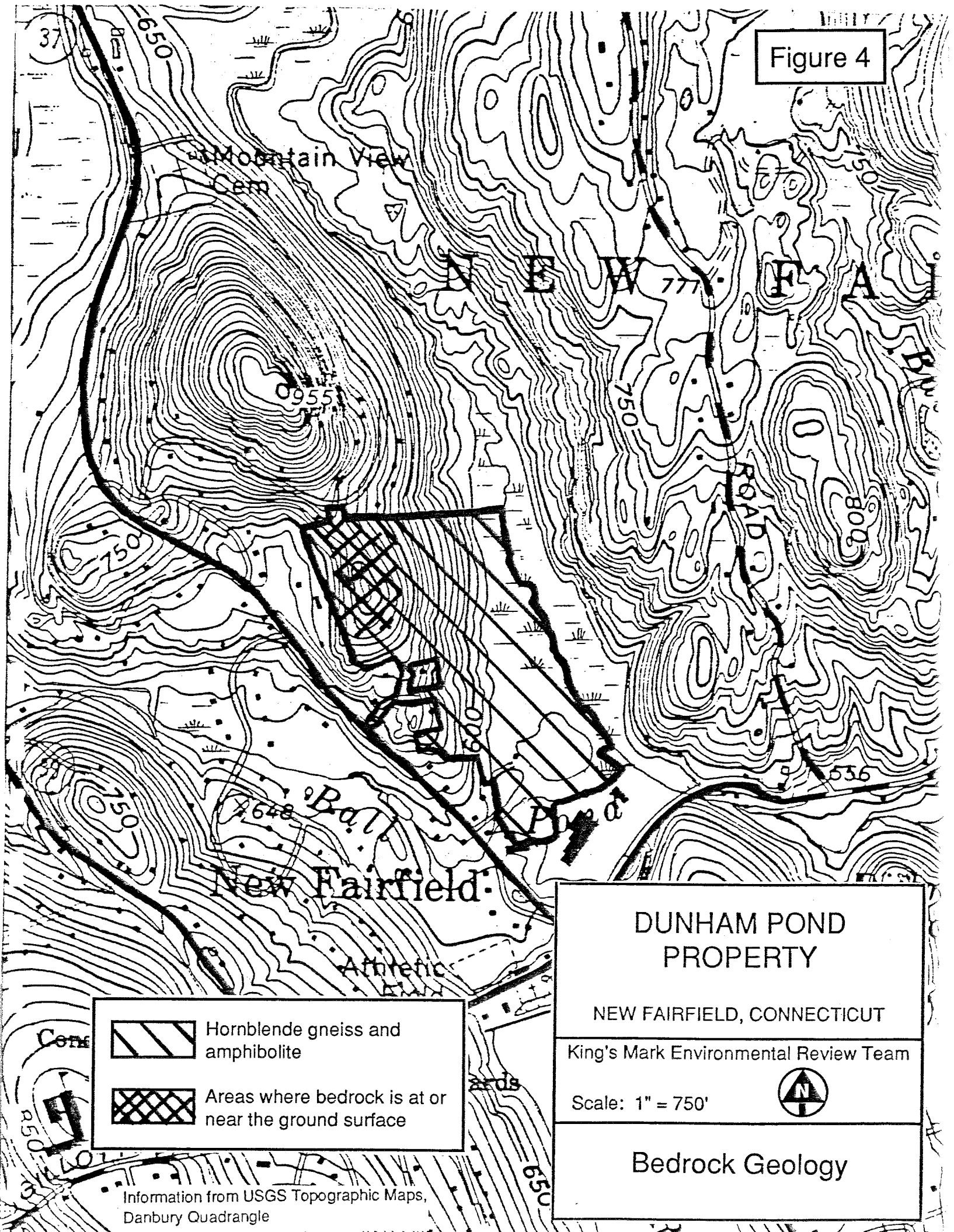
Figure 3






<p>DUNHAM POND PROPERTY</p>	
<p>NEW FAIRFIELD, CONNECTICUT</p>	
<p>King's Mark Environmental Review Team</p>	
<p>Scale: 1" = 750'</p>	
<p>Topography</p>	

Information from USGS Topographic Maps, Danbury Quadrangle

Figure 4



	Hornblende gneiss and amphibolite
	Areas where bedrock is at or near the ground surface

DUNHAM POND PROPERTY	
NEW FAIRFIELD, CONNECTICUT	
King's Mark Environmental Review Team	
Scale: 1" = 750'	
Bedrock Geology	

Information from USGS Topographic Maps, Danbury Quadrangle

Bedrock is probably no more than 10 feet deep in most places on the site, but subsurface exploration is required for verification. The underlying bedrock appears to be the major aquifer for domestic water in the area. It may be a viable water supply source for the proposed affordable/elderly housing units, but testing is required (see Water Supply section).

Because residential buildings and roads are presently planned for the western limits and because bedrock exposures are widespread, the bedrock is the major constraint for development in this area. Blasting, which raises development and engineering costs, may be required in this area. Geotechnical studies should be conducted to determine the bedrock profile and the amount of blasting needed.

The majority of the site is covered by a glacial sediment called till (see Figure 5). Based on observations made on-site and a review of available hydrogeologic mapping data, the swampy deposits in the eastern parts may be underlain by sandy, gravelly materials that were deposited by melting blocks of glacier ice that occupied the valley. These deposits are called stratified drift.

The till deposits consist of an unsorted mixture of rock fragments and particles that range in size from clay to boulders. When moist, the color of most of the till on the site ranges from light olive-brown to olive and light-olive gray. In general, the till has a friable, sandy texture. It is probably not more than 10 feet thick in most places on the site. The till soils on the site are relatively thin (close to bedrock), especially in the western portions. Deeper pockets may exist on the moderate slopes in the central parts.

Stratified drift deposits, mainly composed of permeable sands and gravels, have filled Short Woods Brook Valley on the site. The stratified drift deposits may be as much as 39 feet thick on the site. These deposits may be favorable for water supply wells, but hydrogeologic testing of the aquifer will be required.

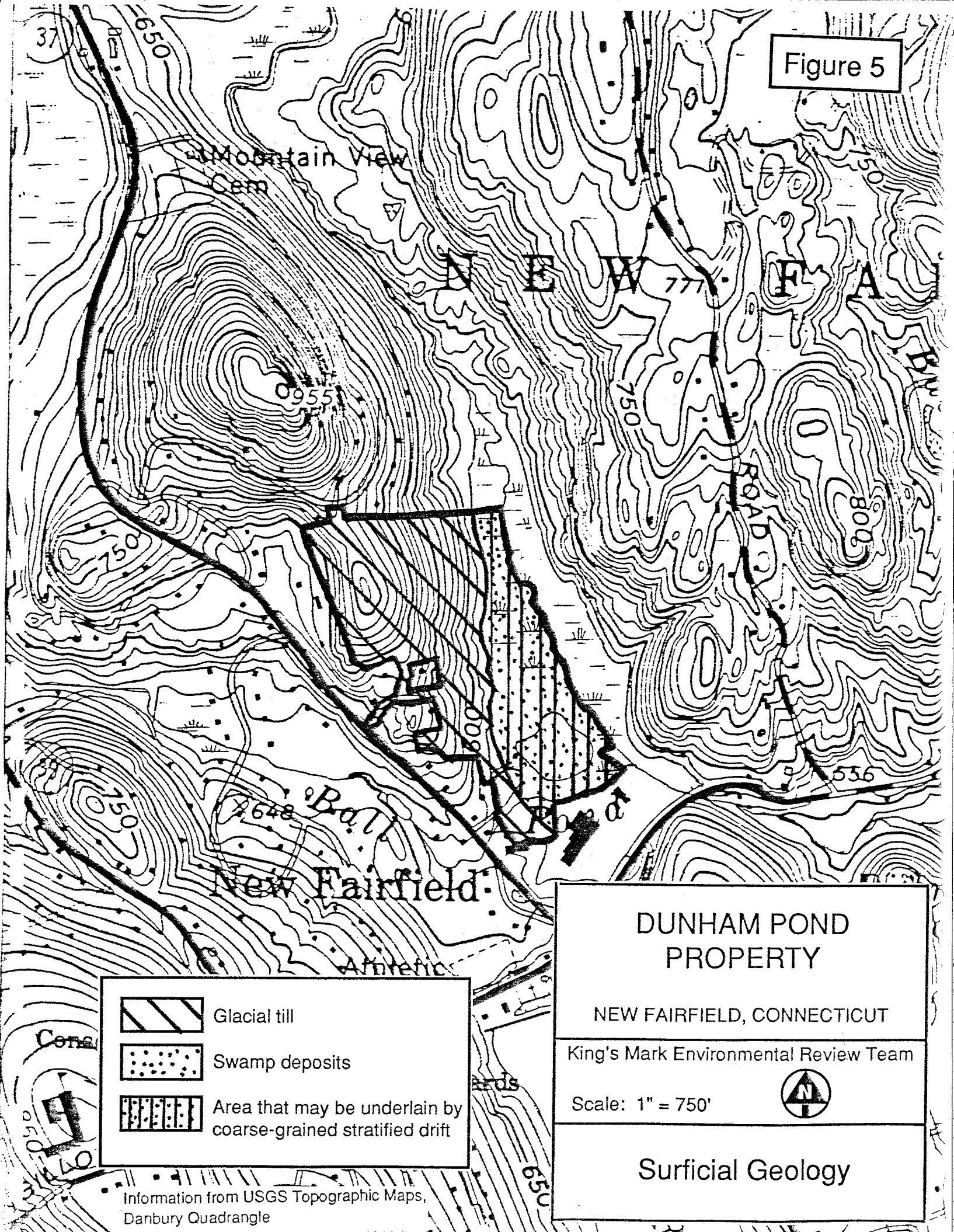
Post-glacial sediments known as swamp deposits overlie stratified drift and till in the eastern parts of the site. These deposits consist of peat, silt and sand in poorly drained areas and typically are less than 15 feet thick. Swamp deposits cover approximately 31 acres on the site. Regulated wetland soils will need to be delineated and flagged on the site. It appears that the wet areas of the site will not be disturbed.

SEWAGE DISPOSAL

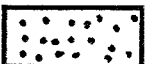
Since public sewers are not available in New Fairfield, the proposed development will be served by on-site subsurface sewage disposal systems. Exploration for on-site sewage disposal has not been conducted on the site to date. Therefore, geologic and soils maps and visual observations made during the field review were used to assess the feasibility of the site to support an on-site sewage disposal system.

Based on the plans and available topographic, geologic and soils mapping data, residential development of the site will occur on the tableland in the western parts. Because of site limitations in the area (shallow to bedrock soils), sewage effluent would probably have to be collected from each residential unit and piped to a central leaching system. The most favorable areas for subsurface sewage disposal on the site appear to be the moderately steeply sloping areas in the central parts. Visual inspection of the central parts revealed no bedrock exposures. Slopes in this area do not appear to be overly restrictive for on-site sewage disposal. If adequate depths to bedrock (10 feet or more) and the local water table occur in this area, the construction of a small to medium sized septic system may be feasible. Subsurface conditions in this area must be verified by on-site testing (deep test holes). The size of the septic system will depend on the final number of bedrooms in the residential units.

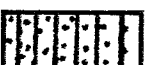
Figure 5



Glacial till



Swamp deposits



Area that may be underlain by coarse-grained stratified drift

DUNHAM POND PROPERTY

NEW FAIRFIELD, CONNECTICUT

King's Mark Environmental Review Team

Scale: 1" = 750'



Surficial Geology

Information from USGS Topographic Maps, Danbury Quadrangle

Since the proposed development will be served by a central septic system, the DEP Water Compliance Unit must issue a permit. Before the DEP reviews the permit application, the Town must provide detailed technical information on the hydrogeologic conditions in the disposal area, the design of the sewage disposal system, a thorough hydraulic analysis of the disposal areas and analysis of the probable impact on any nearby water resources and the underlying aquifer from a drinking water quality standpoint, including an analysis of bacterial travel, virus removal and nitrate and phosphate transport. The Town must show that the proposed sewage disposal system(s) will function properly and not pose a threat to the environment or public health. Every effort should be made to protect the Short Woods Brook sand and gravel aquifer. The applicant should make arrangements for ownership, operation and maintenance of the sewage disposal system.

The Town sanitarian will play an important role in the permit application, review of the plans and inspection of the sewage disposal system(s) during installation. Any testing conducted on the site should be witnessed by engineer(s) of the DEP Water Compliance Unit (Land Disposal Section) in Hartford (566-2154).

WATER SUPPLY

The 2 principal aquifers (a geologic formation capable of yielding usable amounts of groundwater to a well) that have potential for serving the prospective residential development and recreational facilities on the site include the sand and gravel deposits which occur in the eastern parts and the underlying bedrock. The till soils are generally too thin and too slowly permeable to provide a reliable, adequate water supply.

Little is known about the aquifer potential of the sand and gravel deposits in the eastern parts. According to the Groundwater Availability in Connecticut (D.B.

Meade 1978), these deposits are believed to be favorable for yielding moderate to very large amounts (50-2,000 gallons per minute) of water to individual wells, but hydrogeologic data are incomplete, and verification requires further investigation. The potential for withdrawing large volumes of groundwater yields from the sand and gravel deposits to a well or wells will depend upon many hydrogeologic characteristics such as thickness and texture of deposits, the saturated thickness of the deposits, proximity to and size of watercourses and hydraulic conductivity.

Although not a prolific aquifer, the underlying metamorphic bedrock is also probably capable of serving the prospective development, if no more than 8-10 gallons of water per minute is required.

Obtaining water from any given bedrock well is dependent upon the number and size of water bearing fractures that are encountered by the well. Since fractures in bedrock are irregular, there is no practical way of predicting the yield of a bedrock well drilled in a specific location. Even with geophysical exploration, it is extremely difficult to predict yields. The yield of a well tapping crystalline rock cannot be estimated with any certainty before drilling.

The metamorphic bedrock underlying the site responds to geologic forces by fracturing and forming distinct open joints. If the underlying rock contains continuous and interconnected fractures and joints, then the availability of groundwater for domestic uses should be good, provided the well intersects these joints.

In the Upper Housatonic River Basin (the site is encompassed by this area), numerous wells were surveyed for Connecticut Resources Bulletin No. 21. Of the 734 wells surveyed that tapped a type of bedrock similar to that underlying the site, approximately 60% yielded 5 gallons per minute or more, 80% yielded 3 gallons per minute or more and 90% yielded 2 gallons per minute. A yield of 5 gallons per minute is equivalent to 5,400 gallons per day (18-hour pumping period). Assuming

the average person consumes 75 gallons of water per day, a well yielding 5 gallons per minute would be capable of serving 72 people.

Properly constructed drilled (bedrock) wells generally afford the greatest degree of protection against possible sources of pollution. Also, they usually allow for more flexibility in actual site placement.

Drilled wells should be located toward the high side of lots in a direction away from the normal expected flow of groundwater from any source of subsurface pollution. They must be properly separated from on-site sewage disposal systems and other potential sources of pollution which could affect the quality of the water. In addition to sewage, other concerns include any buried fuel storage tanks, on-site disposal for any waste water associated with water softening equipment utilizing salt and road/driveway drainage in residential developments. Consideration should be given to prohibiting buried fuel storage tanks on the site.

All types of wells must be constructed by persons who are State licensed for this profession. Proposed well site(s) should be inspected by the Town sanitarian or appropriate sanitation official before a permit of approval is issued and wells are actually constructed. The sanitarian should ensure that provisions of the State Public Health Code, State Well Drilling Board and local regulations have been complied with.

Since the proposed well or wells will serve either at least 2 residences or 25 residents throughout the year, approval by the State Department of Health Services (Public Water Supply Section) and the Department of Public Utilities Control will be required.

Information on projected needs of the development in terms of water quantity, water quality testing and plans for pumpage, storage, treatment, if necessary, and the distribution system is also necessary for a community water supply.

Consideration should be given in advance to providing for proper operation and

maintenance of the community water supply system (i.e., establishment of a homeowner's association or takeover by a private water supply company or the municipality).

The natural quality of groundwater should be satisfactory. However, it may be mineralized with iron and/or manganese. Elevated levels of these minerals may lower the overall aesthetic quality of the water. There are suitable treatment filters available.

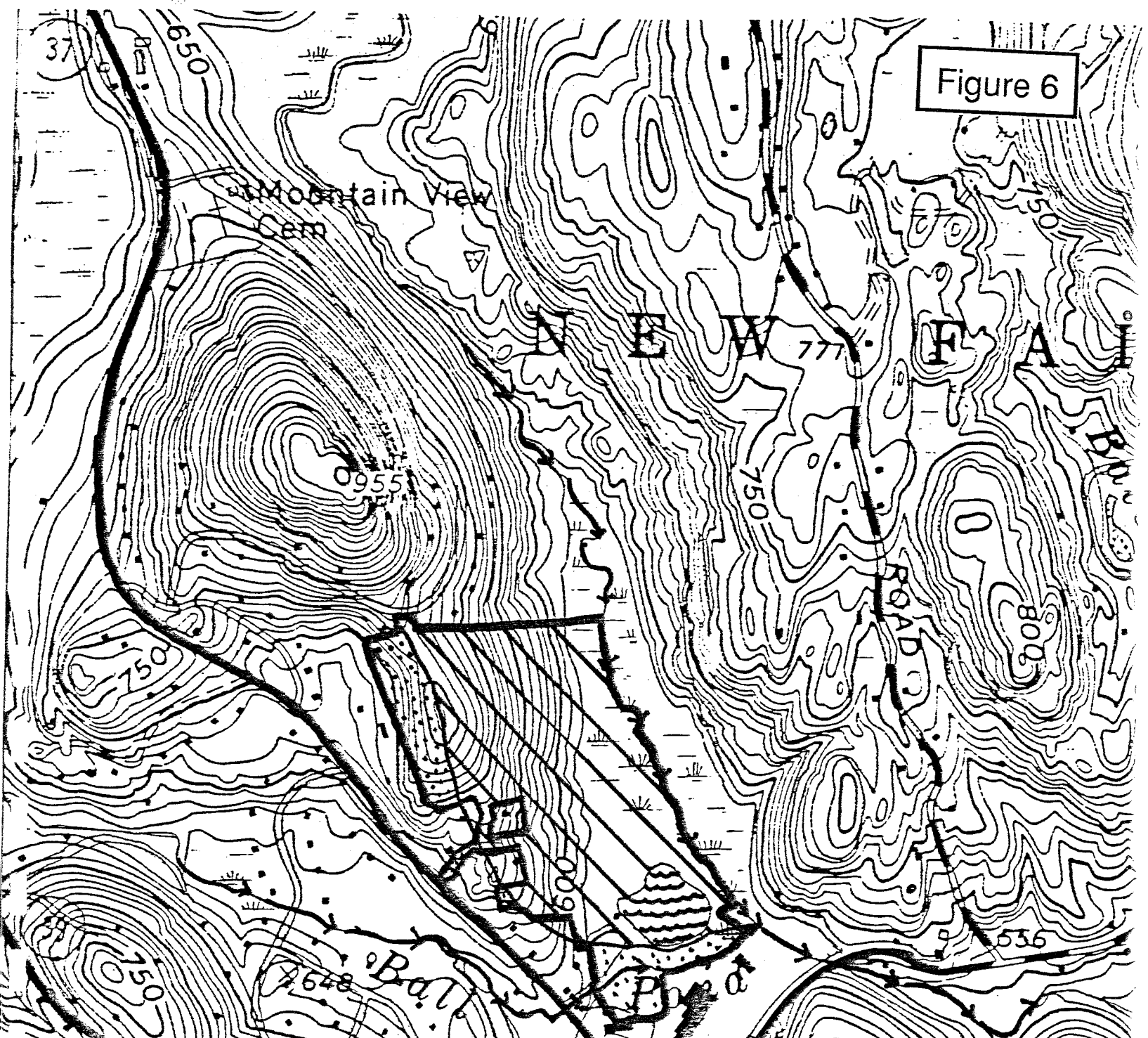
According to the map entitled Water Quality Classifications of Connecticut (Murphy 1985), groundwater beneath the site is classified as GAA. Class GAA groundwaters are located within the primary watershed of a public water supply reservoir or well(s), and the groundwater is presumed suitable for direct human consumption.




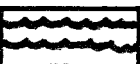
HYDROLOGY


Short Woods Brook flows into Ball Pond Brook east of Dunham Pond on the site. Except for the western limits of the site which drain to Ball Pond Brook, the majority of the site flows down slope to the Short Woods Brook Valley (see Figure 6). At its point of outflow to Lake Candlewood, Ball Pond Brook drains an area of 7.49 square miles or approximately 4,800 acres. Short Woods Brook drains an area of 2.64 square miles or 1,690 acres.

Dunham Pond encompasses approximately 4 acres and was created sometime between 1934 and 1965 by excavating the unconsolidated material (swamp deposits, stratified drift and till) in the area below the water table. The exact depth of the pond is unknown. It does not appear to have any inflowing streamcourses.

Figure 6



	Portion of site that drains to Ball Pond Brook
	Portion of site that drains to Short Woods Brook
	Watercourses showing direction of flow
	Dunham Pond

DUNHAM POND PROPERTY	
NEW FAIRFIELD, CONNECTICUT	
King's Mark Environmental Review Team	
Scale: 1" = 750'	
Watershed Boundary	

Information from USGS Topographic Maps, Danbury Quadrangle

Except for Ball Pond Brook, the surface waters (Short Woods Brook, Dunham Pond, etc.) on the site are classified as AA water resources. Class AA surface waters are within the primary watershed for Margerie Lake Reservoir. The reservoir is a Class AA resource, indicating that it is an existing or proposed public drinking water supply. Ball Pond Brook is classified as B/AA, indicating that currently the water quality is known or inferred to be degraded. B/AA resources are generally suitable for recreational uses, agriculture and, in some cases, certain industrial uses such as process or cooling water. The State goal is to improve, through best management practices, the water quality to Class AA. Ball Pond Brook has been adversely impacted by widespread subsurface sewage system failures in the watershed, salt storage facilities and a #2 fuel oil spill of 1,000 gallons.

Residential development of the site will increase the amount of runoff during periods of rainfall. These increases result from soil compaction, removal of vegetation and placement of impervious surfaces.

The 2 major concerns with increased runoff are the potential for flooding and streambank erosion. Both concerns should be addressed in a detailed stormwater management plan. Connecticut Guidelines for Soil Erosion and Sediment Control should be followed closely with respect to stormwater management on the site.

The presence of moderately steep slopes and till soils, which may contain clay and silt-sized particles, suggests a potential for erosion and siltation problems, if not properly addressed. Therefore, it is critical that a detailed erosion and sediment control plan be prepared for the site. The plan should be properly enforced by the Town and checked regularly. Every effort must be made to protect the water resources of the site, especially Dunham Pond, from silt laden runoff. Road drainage should not be routed to the pond.

RECREATIONAL POTENTIAL FROM A GEOLOGIC STANDPOINT

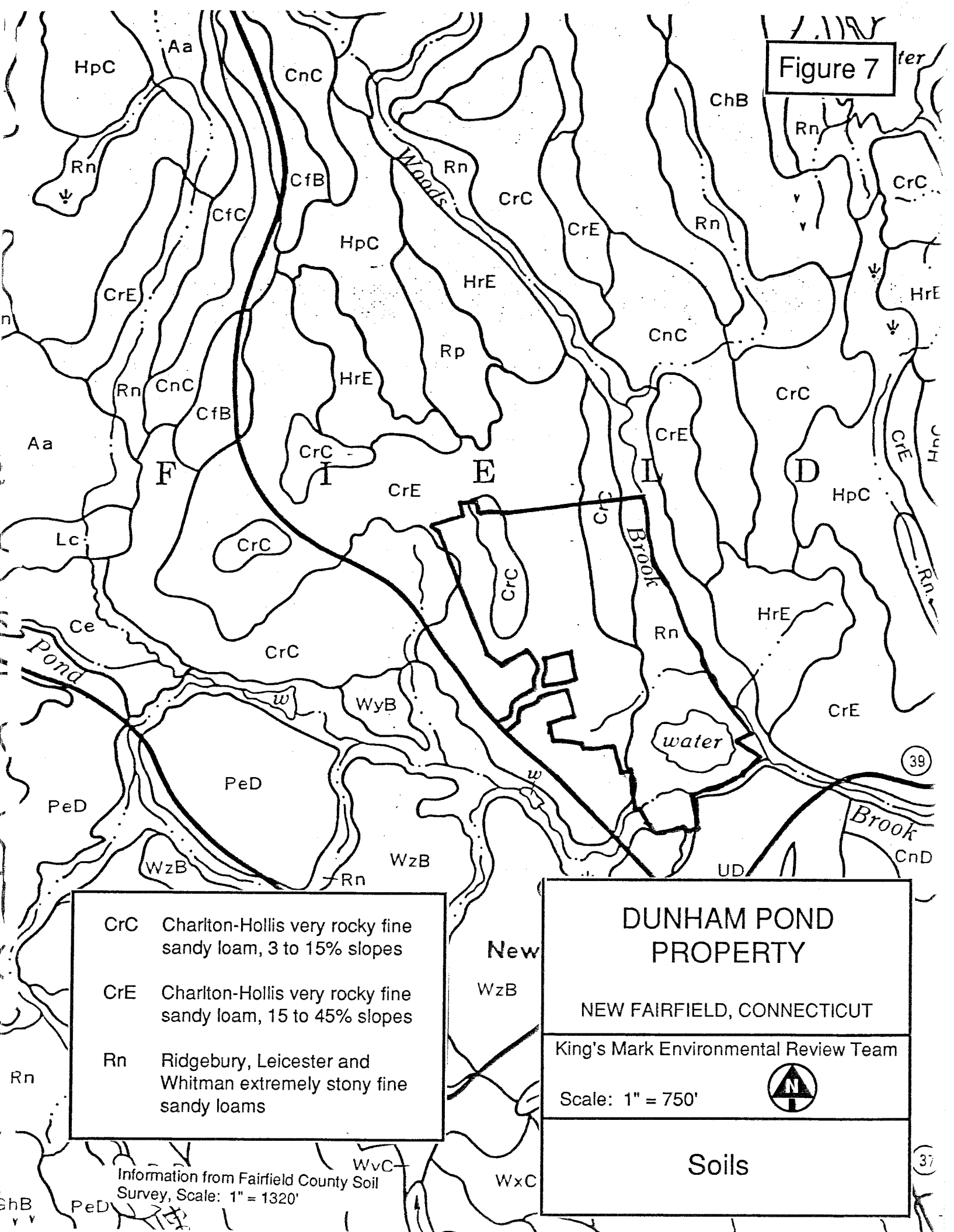
The lower portions of the site, particularly in the area of Dunham Pond, have obvious active and passive recreational benefits. However, wetness is a limitation during the late winter and early spring months, especially where wetland soils occur. Nevertheless, with re-grading and deepening or enlarging, Dunham Pond could be used for swimming. Bathymetric information that would allow calculations for bathing load potential should be determined for the pond. With this information, the Town should contact the State Department of Health Services, Environmental Health Division for technical assistance regarding development of swimming areas.

Dunham Pond and the surrounding area offer a potential for environmental education as well as passive recreational uses such as hiking, cross-country skiing, bird watching and picnicking. Also, some unique wildflowers were observed in this area during the field review. If sanitary facilities are needed in this area, a small sized septic system could be constructed in the area west of the pond, but detailed soil testing should be conducted to determine subsurface conditions.

SOIL RESOURCES

Upland soils consist of very rocky Charlton-Hollis fine sandy loams. Slopes range from 3-15% (CrC) along the top and toe of the hill and 15-45% (CrE) in the midslope section. The Charlton and Hollis soil series were grouped together in this map unit because the soils occur in such an intricate pattern on the landscape that it is impractical to map them separately. The Charlton-Hollis complex consists of well drained and somewhat excessively drained soils on hills and ridges. Stones and boulders cover 1-5% of the surface, and exposed bedrock comprises up to 10% of the surface (see Figure 7).

Figure 7



CrC Charlton-Hollis very rocky fine sandy loam, 3 to 15% slopes

CrE Charlton-Hollis very rocky fine sandy loam, 15 to 45% slopes


Rn Ridgebury, Leicester and Whitman extremely stony fine sandy loams

DUNHAM POND PROPERTY

NEW FAIRFIELD, CONNECTICUT

King's Mark Environmental Review Team

Scale: 1" = 750'



Soils

Information from Fairfield County Soil Survey, Scale: 1" = 1320'

The Charlton series consists of very deep, well-drained soils formed in glacial till. The Hollis series consists of shallow, well drained and somewhat excessively drained soils formed in a thin mantle of glacial till. Bedrock occurs at a depth of 10-20 feet.

Wetland soils are shown on the map as Ridgebury, Leicester and Whitman extremely stony fine sandy loams (Rn), which are formed in glacial till. They occur along both sides of Short Woods Brook and in the level area around and near Dunham Pond. During the field review, the area around the pond was observed to consist of glacial outwash material, not glacial till as the soil map indicates. Consequently, either the entire Rn map unit is in error or there are major inclusions of water sorted material in this unit. The poorly and very poorly drained soils formed in the outwash deposits would be classified as Aquepts. A more detailed soils investigation is needed in this area to accurately map the wetland soils.

The suitability of the parcel for on-site sewage disposal must be determined by soil testing in the field. There may be suitable sites within the Charlton soils where stones and boulders do not predominate. Numerous test holes will be needed to determine suitability of the site for sewage disposal systems.

A table showing soil limitations for various uses is included in Appendix A. Additional information is available upon request from the USDA Soil Conservation Service in Bethel (743-5453).

EROSION AND SEDIMENT CONTROL

Due to the steep slopes and erodible soils present on the site, a detailed erosion and sediment control plan is needed with any development proposal of the site. This plan is required in accordance with Public Act 83-388, "An Act Concerning Soil Erosion and Sediment Control." This State law was passed by the legislature in 1983

to "reduce the danger from stormwater runoff, minimize nonpoint source pollution from land being developed, and conserve and protect the land, water, air and other environmental resources of the state." The plan should carefully describe how the proposed development will proceed. This description should include the selection, installation and maintenance of erosion and sediment control measures.

A specific concern with the proposed elderly housing project which should be addressed is the proper disposal of stormwater runoff from a development which is on the top of a hill. Outlets should either be tied into existing stormwater systems or located and designed to release stormwater safely to wetlands and watercourses. The banks of Dunham Pond should also be regraded to a 2:1 or more gradual slope and stabilized with permanent vegetation.

The Connecticut Guidelines for Soil Erosion and Sediment Control, 1985 (as revised), issued by the Connecticut Council on Soil and Water Conservation, should be referred to in development of an erosion and sediment control plan. This handbook is available through the DEP Natural Resources Center. A worksheet useful as a guide in preparation of a erosion and sediment control plan is included in Appendix B along with a sample construction sequence narrative in Appendix C.

The Fairfield County Soil and Water Conservation District (743-5453) is available to assist the developer in preparation of a erosion and sediment control plan.

WETLAND CONSIDERATIONS

According to the preliminary development plans, no construction or development activities will take place within the wetlands. The anticipated uses which might affect the wetlands are recreational in nature and probably exempt from a permit. Within the Inland Wetlands and Watercourses Act, reference is made to those activities which are considered permitted operations and uses, Section

22a-40 of the Connecticut General Statutes. Subsection "b," (22a-40b), specifies those operations which the Town of New Fairfield could perform without requiring a permit or posing unreasonable risk to the wetlands and watercourses found on-site.

- (b) "The following operations and uses shall be permitted, as non-regulated uses in wetlands and watercourses, provided they do not disturb the natural and indigenous character of the wetland or watercourse by removal or deposition of material, alteration or obstruction of water flow or pollution of the wetland or watercourse:
 - (1) Conservation of soil, vegetation, water, fish, shellfish and wildlife; and
 - (2) Outdoor recreation including play and sporting areas, golf courses, field trials, nature study, hiking, horseback riding, swimming, skin diving, camping, boating, water skiing, trapping, hunting, fishing and shellfishing where otherwise legally permitted and regulated."

If the Town maintains the present recreational uses which exist on the property, no permit is required. However, changes or construction activities which enhances the recreational functions of this area require a permit from the Inland Wetlands Commission.

The conceptual plans indicate that a significant portion of land will be maintained between the wetlands and rear of the developed portion of the site. The Commission might consider establishing some form of deed restriction or conservation easement for this area to preserve a visual and vegetative buffer around the wetlands.

Overall, the project as proposed does not contain any significant impacts or risks to the wetlands found on-site. If this project remains sensitive to the environmental constraints and limitations of the site, no significant impacts to the water resources will occur.

LAND USE AND PLANNING CONSIDERATIONS



PLANNING CONSIDERATIONS

State Perspective

New Fairfield is located in western Connecticut, bordering New York State. The State Policies Plan for the Conservation and Development of Connecticut designates all of the land areas of New Fairfield into the categories of "Conservation Areas," "Preservation Areas," "Existing Preserved Open Space" and "Rural Land." The New Fairfield Center area is designated as a "Rural Community Center." Most of the site is located within "Conservation" and "Preservation" designated areas. A very small portion of the southern area of the site is located within the area of New Fairfield Center designated as a "Rural Community Center."

These State Plan categories advise that New Fairfield should develop without suburban infrastructure such as extensive water and sewer distribution systems. Also, that Short Woods Brook and its adjacent watershed should be developed with uses compatible with water supply watershed functions, generally allowing residential uses limited in density to those that do not necessitate sewers and discouraging higher pollutant risk industrial and commercial activities. The watershed designation on the State Plan includes the entire Ball Pond Brook drainage area, including Short Woods Brook and the site.

The State Plan encourages clustering in the Rural Community Center designation to meet the Town's needs for more intensive housing, shopping and employment. In this location, only small scale community systems for water supply and waste disposal are appropriate, as long as they are not the forerunners of larger scale public utility systems. The State Plan advises that Rural Community Centers are particularly appropriate for siting elderly housing due to the difficulty of public transportation and the desirability of access to local services.

While most of the site is not actually within the State designated Rural Community Center, appropriate vacant parcels are not always readily available entirely within such centers, and adjacent parcels capture some of the advantages of the center due to proximity.

According to the Connecticut Population Projections produced by the Office of Policy and Management, the population of New Fairfield is projected to reach 12,450 persons by 1990. During the following 20 years, the Town is expected to experience very little growth in its overall population and is projected to level-off at approximately 13,000 persons by the year 2010. During the past 10 years, New Fairfield experienced a 10.6% increase in its population, from 11,260 to 12,450 persons. During this same period, the number of the Town's residents 65 years of age or over more than doubled from 1,030 to 2,150 persons. Although little overall population growth is projected for the next 20 years, the Town's population is projected to continue to age, with the 65 years and over population estimated to increase to 2,330 persons.

Regional Perspective

The Town of New Fairfield is located within the Housatonic Valley Region. It is bordered on the south by the City of Danbury, on the east by the Towns of Brookfield and New Milford, on the north by the Town of Sherman and on the west by New York State. New Fairfield encompasses a major portion of Lake Candlewood, Connecticut's largest lake. In many ways the Regional and State Plans are similar for New Fairfield. Housatonic Valley Council of Governments' (HVCEO) "Remote Area" designation for the northern 2/3 of the municipality is designed to encourage a distribution of residential densities in the Town, lower to the north and higher to the south, with neither exceeding on-site soil constraint capabilities. The site is on the border of HVCEO's Remote Area designation, implying that planning for the site may be more flexible than the Remote designation might initially imply.

HVCEO shows all of New Fairfield as existing or potential water supply watershed because HVCEO categorizes Candlewood Lake as a potential water supply reservoir, while the State does not.

The 1988 HVCEO Planning Bulletin No. 54 entitled Regional Housing Needs Assessment estimated a need for 92 affordable rental housing units within New Fairfield. There are no publicly assisted rental housing units within the Town presently. A survey designed to identify the housing needs of the Town's senior citizens is currently underway. The results are not available for this analysis.

Local Perspective

As of January 1, 1989, New Fairfield had 5,117 housing units. Single-family homes comprised 96% of these housing units. During the past 5 years, the Town has seen the addition of nearly 400 new housing units. At present, Town zoning regulations permit only the construction of single-family detached homes in residential zones. Zoning regulations, through a Special Permit, allow for the conversion of an existing housing unit to multi-family use for a maximum of 4 housing units per existing dwelling.

New Fairfield's last Plan of Development was prepared in 1976. The primary goal of this plan was to maintain the Town's rural character. The Town Plan indicates 2 distinct characteristics. The area to the south and east of Route 39 is primarily suburban in character. The area north and west of Route 39 is primarily rural in character. The 1976 Town Plan is considered to be outdated and inadequate locally and needs updating.

New Fairfield has no Town sanitary sewer or Town water system. The DEP has mandated that plans be developed for sewer service to the areas of the Town experiencing groundwater problems. The cost and extent of these plans are an issue of vigorous local debate. Portions of New Fairfield are served by 8 private water companies. According to the 1988 State water supply planning documents, the site is

included in the Rural Water Company's description of its "Future Service Area" in New Fairfield. The timing to extend water service into this area is unknown.

Community Planning Considerations

New Fairfield has rejected the idea of multi-family housing in the past, primarily due to concern over the potential for dramatic change in the character of the Town, which is seen locally as semi-rural and low density suburban. State and Regional Plans provide objective support for that local perception.

Still, if a small complex of attached housing for senior citizens is pursued seriously, and since the State and Regional Plans do not contradict this, then an appropriate mechanism for zoning change must be studied. Zoning for attached senior housing only, avoiding authorizing attached housing for all other age groups in numerous other locations in Town, is now well accepted in Connecticut.

The Town of Monroe provided the legal test case for an elderly housing zone in 1979 when the court found that such exercise of local zoning power is within the public interest and legitimate due to the special needs of the elderly. Thus New Fairfield has limited growth capacity, and a small amount of attached housing can be legitimately authorized that is expressly targeted for the elderly, the group with the greatest need for such housing.

Maximum regulatory control over this type of housing would best be achieved by making it approvable only by special permit in the R-88 zone. This creates possible conditions of approval or even initial denial, rather than making elderly housing a permitted use requiring only the test of adequate site planning for approval.

The extent of stratified-drift aquifer deposits, which provide much higher well yields than the more common bedrock well aquifer, are quite limited in New Fairfield. Of the 26 major aquifers in the 10-Town Housatonic Valley Region, only a single aquifer is located in New Fairfield. It is known as the Short Woods Brook Aquifer, and an important part of it is located on this site. This aquifer is linear in

shape with a north-south axis along Short Woods Brook. On the western side of the aquifer, the contact line between till and stratified drift in the vicinity of the site was estimated in 1972 by the Connecticut Water Resources Bulletin No. 21 to be at approximately the 590-foot contour line.

According to a 1979 HVCEO planning bulletin A Policy Direction for Groundwater Protection, "this narrow and shallow site of 0.4 square miles lies along a brook valley just north of the Town Center. Except for a retail business center and a small number of homes in the center, the direct recharge area is entirely undeveloped, and mostly wetland (zoned for 2-acre residential). Composition of this aquifer is favorable - coarse-grained. Although very close in location to the north end of Margerie Reservoir, USGS maps do not show a hydraulic connection. Basic protection measures should focus on wetland preservation and strict controls on sewage disposal. The nearby Town road salt stockpile should also be relocated or controlled to prevent groundwater contamination. By virtue of location, this small aquifer could potentially provide a small central area water supply source for the Town."

While the area of the site proposed for housing development is not the primary recharge area (actual stratified-drift deposit), much of it is on a secondary recharge area, or land area adjacent to the primary area and predominantly composed of till and bedrock. From this secondary area, precipitation travels as surface and groundwater runoff downgradient to the primary area. Thus it is important for protecting the aquifer.

Protection for these areas generally consists of the banning of high risk uses such as commercial establishments using hazardous materials and conditions upon other more benign uses such as residential, minimizing or eliminating even the smaller risks.

Since 1979, local awareness of this particular aquifer and its need for protection has increased substantially. Late in 1988, a New Fairfield Aquifer Task Force was created and has been active. A recent subdivision application near Beaver Bog Road at the northern end of this aquifer had special protection features incorporated before approval. Garages were required to have special hazardous material storage areas, heating oil tanks were required to be inside the home with an impervious berm around tanks, deed restrictions for home buyers required best management practices for fertilizers and water softeners and high risk home occupations were discouraged.

Similar or additional protection measures must be tailored as conditions for any approval of the elderly housing and even recreational activity proposed for this tract. Simple gravity operated oil-water separator devices could be incorporated into roadway and parking lot drainage plans for the entire parcel. Conditions involving fertilizer use, etc., should also be applied to the recreational component.

At present, no water utility has formally declared that the Short Woods Brook Aquifer is needed for future supply plans. However, the City of Danbury is seeking to divert surface waters from Ball Pond Brook for water supply purposes. Short Woods Brook is tributary to Ball Pond Brook. Since the Short Woods Brook Aquifer recharges Short Woods Brook, the relationship of any future local use of well water from this Aquifer to the Danbury claim upon nearby surface water is an issue.

Site Analysis and Design Considerations

The site is a 51.9-acre parcel located adjacent to New Fairfield Center north of Route 39 and east of Route 37. The site is located between the business center of New Fairfield on the south and a developing single-family residential area to the north. A community shopping center borders the site on the south, containing a Grand Union supermarket and numerous other tenants. The Candlewood Playhouse also borders the site on the south, and Ball Pond Brook passes through and borders the southern portion of the site. Several commercial properties fronting on Route 37 border the

southwestern portion of the site. The western and northern portions of the site are bordered by single-family detached homes. The eastern portion of the site borders Short Woods Brook.

The property is zoned R-88. This is a "One Family Residence District" which permits the development of single-family detached houses on lots with a minimum area of 2 acres. A small portion of the southwest area of the site is located within the Town's "Business District" and "Community Center" Zones. Most of this portion of the site is classified as wetlands and floodplain. The eastern section of the site, which constitutes approximately 1/2 of the site, is wetlands or is located within the 100-year flood plain and subject to Town regulations.

The Town is considering the site for 3 types of uses: a site to accommodate affordable housing (primarily elderly housing), a site to support recreational activities and a site to support the possible future development of a municipal water supply.

In this proposal, affordable housing is in the form of multi-family housing. The conceptual site plan locates 72 multi-family units around the top of the upland portion of the property. This upland portion is characterized as having slopes averaging approximately 11%. These slopes will require careful attention to erosion and stormwater runoff controls for any type of housing proposed for this area. The site plan indicates the proposed multi-family units will be developed adjacent to existing single-family detached housing with minimal distances for buffering. An increase to this minimum buffering should be considered.

The site does not front on any public roadway. The site is accessed via 2 rights-of-way which connect the property to the east side of Route 37. Both rights-of-way pass between improved properties. The southern most right-of-way is only 30 feet wide and does not meet the Town's minimum road width requirement. The northern existing right-of-way connecting the site to the east side of Route 37 has

several curves and changes in grade elevation which may affect its ability to be used as a public roadway. Additional access to the site from Hillside Drive has been indicated on the plans. This access point passes over property presently held by the spouse of the site's owner.

Access to the 72 multi-family housing units is proposed via Hillside Drive, connecting to Croix Hill Road, connecting to Route 37. This connection would increase the traffic volumes on the 2 Town roads. Based upon the Trip Generation manual of the Institute of Transportation Engineers, 72 elderly housing units, as proposed in the concept site plan, would generate daily traffic equal to that generated by approximately 24 single-family homes. The affected Town roads probably have adequate capacity to effectively handle the additional traffic. The point of connection from the site to Hillside Drive is on a curve on a hill. The sight lines at this proposed access are limited and should be examined by a qualified traffic engineer. Negotiations to expand the site's southern most right-of-way should receive priority because it has several advantages over the other points of access.

Route 37 is identified on the Regional Plan as a minor collector road. HVCEO Planning Bulletin No. 56 entitled Action Plan for Traffic Accident Reduction in New Fairfield did not identify any problem areas along Route 37 in the vicinity of the site

The Town is considering senior citizen housing for the site because of its proximity to the New Fairfield Center. The change in grade elevation from the commercial center of New Fairfield to the portion of the site proposed for elderly housing development represents a substantial hill for senior citizens to walk up, possibly negating a benefit of locating senior citizen housing on the upland portion of the site.

Because the lower portion of the site is close to the commercial and institutional services located within the Fairfield Town Center area, consideration should be given to locating a smaller number (20-30) of senior citizen housing units in this area of the

property (instead of the uplands area indicated on the concept site plan), just above the floodplain and wetlands. Access to this area of the site could be achieved over the existing lower right-of-way, if it could be widened to Town road standards. This would mitigate some of the problems of buffering and access associated with the housing development proposed on the concept site plan.

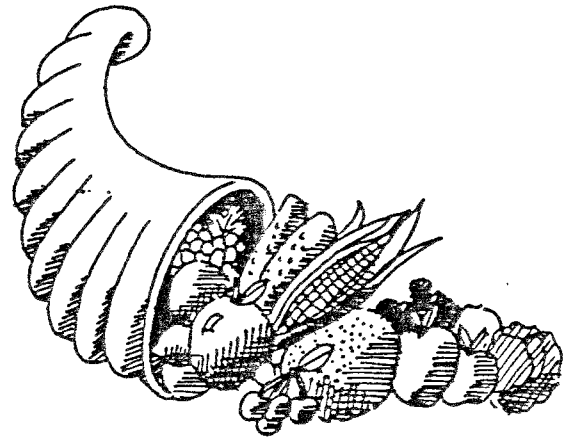
RECREATIONAL CONSIDERATIONS

Use constraints are likely to be severe because the site is largely either: (1) steep and very rocky hillsides or (2) poorly drained and extremely stony valley bottom. The sole significant advantages include a central location within the community and some onsite water resources.

Use recommendations include:

- 1) HILLTOP OFF HILLSIDE ROAD - This is the only feasible location for housing, if the site can support on-site septic systems.
- 2) HILLSIDE AREA - This area should be left in existing wooded condition, except for possible development of trail and informal ski slope and/or sliding/tobogganing run.
- 3) VALLEY BOTTOM - Poor drainage and stoniness seem to rule out development of ballfields in this area. However, the Short Woods Brook is a visual asset and probably can support some sport fishing. Development of a Town recreation pond is debatable. Dunham Pond is the result of excavation below the water table. Rn soils have moderate to severe limitations for supporting an aquifer-fed excavated pond. Perhaps a bypass pool, fed by the brook and involving a weir on the brook, could be considered. Nonetheless, the DEP's experience with bypass pools has not been fully successful, and no further pools of this type are contemplated. Therefore, a thorough hydrologic/engineering study is recommended to determine the physical and fiscal feasibility of a pond proposal before any further action is taken.

APPENDICIES



Appendix A: Soil Limitations Chart

LIMITATIONS TO THE DEVELOPMENT OF:

MAP UNIT NAME	HOUSES	ON-SITE SEWAGE DISPOSAL SYSTEMS	ROADS & STREETS	LAWNS/ LANDSCAPING
CrC - Charlton-Hollis fine sandy loam, 3-15% slopes				
Charlton Hollis	Slight-Moderate Severe	Moderate Severe	Slight-Moderate Severe	Slight-Moderate Severe
CrE - Charlton-Hollis fine sandy loam, 15-45% slopes				
Charlton Hollis	Severe Severe	Severe Severe	Severe Severe	Severe Severe
*Rn - Ridgebury, Leicester & Whitman extremely stony fine sandy loams	Severe	Severe	Severe	Severe

* Inland wetland soil regulated under Public Act 155, as amended

Appendix B: Plan Review Worksheet

PLAN REVIEW WORKSHEET

This worksheet is designed to facilitate the development and review of erosion and sediment control plans. Local commissions should be consulted for regulatory requirements concerning erosion and sediment control planning.

Checked () items are those that have been provided on the current erosion and sediment control plan. Items identified with an asterisk (*) should be incorporated into final plans.

Name or Development _____

Materials received _____

Total Area _____ Location _____

Total Number of Lots _____

Engineer _____

Date Received _____ Site Visit _____ Reviewed by _____

Submitted by _____

NARRATIVE SECTION DESCRIBING:

- _____ The development
- _____ Major land uses of adjoining areas
- _____ The number of total acres and acres to be disturbed in the project
- _____ The schedule of grading and construction activities including start and completion dates
- _____ Application sequence of all E&S control measures
- _____ The design criteria for all proposed E&S control measures
- _____ Construction details and installation procedures for all proposed E&S control measures
- _____ The operations and maintenance program for all proposed E&S control measures
- _____ The name of the person or organization that will be responsible for the installation and maintenance of the E&S control measures
- _____ Organization or person responsible for maintenance of permanent measures when project is completed. Measures include: _____

Adopted from the Connecticut Guidelines for Soil Erosion and Sediment Control, published by the Connecticut Council on Soil and Water Conservation, January 1985.

A SITE PLAN AT A SUFFICIENT SCALE SHOWING:

Natural Features

- ___ Existing topography
- ___ Existing vegetation
- ___ Soils information, including test pit data, if available
- ___ Identification of wetlands, watercourses, major drainageways, and water bodies on the site
- ___ Name of soil scientist who performed wetlands delineations and flag numbers
- ___ Rock outcrop areas
- ___ Seeps, springs
- ___ Major aquifers
- ___ Floodplains (100 year) and floodways
- ___ Channel encroachment line (DEP permit required)
- ___ Coastal zone boundary
- ___ Public water supply watershed boundaries
- ___ Possible Army Corps Sec. 404 or Sec. 10 Permit Areas (Contact Corps at 1-800-343-4789).

Project Features

- ___ The location of the proposed development
- ___ A plan legend
- ___ Adjacent property
- ___ Property lines
- ___ Lot lines and setback lines
- ___ Lot and/or building numbers
- ___ Planned and existing roads
- ___ Proposed structures
- ___ Location of existing and planned utilities
- ___ Location of wells and septic systems
- ___ Proposed topography
- ___ North arrow

Clearing, Grading, Vegetative Stabilization

- ___ The sequence of grading, construction, and sediment and erosion control activities
- ___ The location of and construction details for all proposed E&S control measures
- ___ Recommended measures include _____
- ___ _____
- ___ Limits of disturbed areas
- ___ Extent of areas to be graded
- ___ Disposal procedure for cleared material
- ___ Location of stockpiled topsoil and subsoil
- ___ Temporary erosion control in method for protection of disturbed areas when time of year or weather prohibit establishment of permanent vegetative cover
- ___ Seeding mixture, rates, and seeding dates

- ___ Seedbed preparation (including topsoiling specifications)
- ___ Fertilizer and lime application rates
- ___ Mulch application rate
- ___ Mulch anchoring measures

Drainage System

- ___ Existing and planned drainage pattern
- ___ Drainage areas used in design of stormwater management system
- ___ Size and location of culverts and storm sewers
- ___ Drainage calculations for review by town engineer
- ___ Stormwater management measures and construction details
- ___ Groundwater control measures (footing drains, curtain drains)
- ___ Planned water diversions and dams (DEP permit may be required)

House Site Developments

- ___ Sediment and erosion control measures for individual lot development

Additional Comments

Appendix C: Sample Construction Sequence

MATERIALS FOR USE IN IMPROVING
EROSION AND SEDIMENT CONTROL PLAN IMPLEMENTATION
October 1988

IV. CONSTRUCTION SEQUENCE

A construction sequence or schedule is a chronological listing of the construction activities necessary to install the development according to the developers plan. The sequence should be developed on the "first things first" and "last things last" premise with proper attention given to the inclusion of adequate erosion and sediment control measures.

A properly developed construction sequence which is followed will do two basic things:

1. Provide for efficient use of labor, material and equipment.
2. Minimize on-site disturbance and off-site impacts.

Scheduling of construction activities should include considerations such as sequence of construction, construction techniques, landscaping, and future operations and maintenance. By properly sequencing the construction, both the extent of exposed ground and the duration of exposure can be minimized. Phasing, which allows for clearing, grading, and the stabilization of one portion of the site before clearing and grading begins on another, will limit the number and severity of erosion problems.

Erosion and sediment control starts during the planning and design process for the development. Incorporation of a construction sequence in the erosion and sediment control plan facilitates the implementation of the plan resulting in improving erosion and sediment control. Items to consider in developing a construction sequence and schedule include:

1. Install the erosion and sediment control measures that will exist during the life span of projects as soon as possible.
2. Clear only what is necessary.
3. Stockpile topsoil and spoil when appropriate. Establish temporary cover if the material will remain unspread for longer than one month.
4. Establish permanent streets, roads, underground utilities, and drainage systems as quickly as possible.
5. Establish final grades as rapidly as possible and establish permanent cover.
6. Maintain vegetative buffer strips along streams.
7. Establish temporary cover on all disturbed areas where final grade or vegetation will not be established until the following construction season.

8. Clean out and maintain all sediment control structures on a regular basis to ensure proper operation and storage capacity.

A model construction sequence is provided to help illustrate a typical sequence of construction developed to minimize erosion and sedimentation. It is important to recognize that all plans and proposals are site specific and are, therefore, unique. There are certain operations and events that are characteristic of nearly all plans and can serve as the milestones for enforcement. The model provided is intended as a guide for developing construction sequences. It is not intended to be standard language for all erosion and sediment control plans, but rather to serve as a starting point on which to develop a construction sequence. For a specific development, milestone dates for all or major items can be shown to make construction scheduling and monitoring easier.

TYPICAL CONSTRUCTION SEQUENCE

Pre-construction review - discuss erosion and sediment control requirements; sensitive areas; requirements for field adjustments; procedures for modifications to construction sequence; bonding and coverage; pre-blast surveys; limits of clearing; erosion and sediment control language.

Site Work:

- Install construction entrance(s).
- Flag the limits of clearing for the phase, if appropriate, in the field.
- Install temporary erosion and sediment controls for all critical areas not planned for grading changes.
- Clear, grub, chip, or log the site to the limits of clearing.
- Disposal of stumps and boulders should occur in accordance with approved plans.
- Inspect the condition of temporary erosion and sediment control measures.
- Prepare dewatering, stilling, and settling basins.
- Install permanent drainage and erosion control features: swales, splash pools, detention or retention basins. Permanently stabilize prior to use.
- Place rip-rap lining where required.
- Install underground utilities and storm drainage system to the phase limits, if appropriate.
- Install outfall mechanism(s) - maintain erosion and sediment control measures.

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.