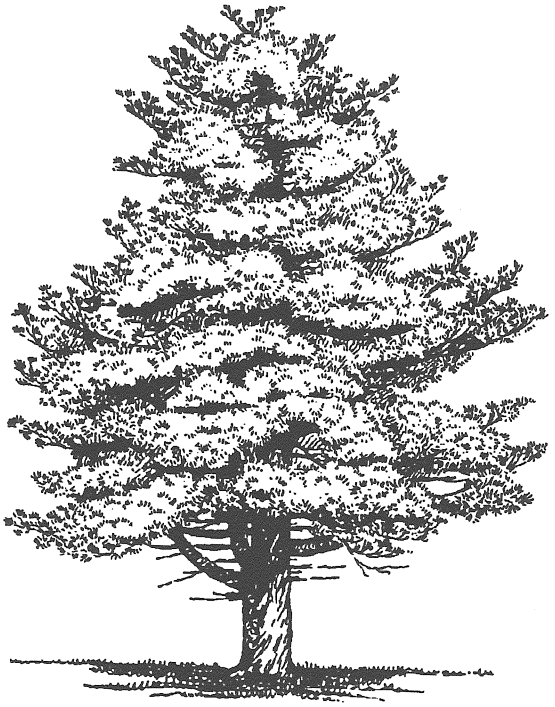
WOODLAND HEIGHTS SUBDIVISION



NEW FAIRFIELD, CONNECTICUT

King's Mark Environmental Review Team Report

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

WOODLAND HEIGHTS SUBDIVISION

NEW FAIRFIELD, CONNECTICUT

March 1993

Environmental Review Team Report

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

Haddam and Wallingford, Connecticut

for the

New Fairfield Selectman's Office

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 Commissions 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.

Acknowledgements

The King's Mark Environmental Review Team Coordinator, Elaine Sych, would like to thank and gratefully acknowledge the following Team members whose professionalism and expertise were invaluable to the completion of this report.

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I would aslo like to thank Cheryl Reedy, the First Selectman, Chris Majewski, the Environmentorcement Officer, Charlene Taylor, Sanitarian, Thomas Dube of the Public Works Department, Stuart Dickstein and Dave Erlos of the Inland Wetlands Commission and Gary Mead, the developer, for their cooperation and assistance during this environmental review.

Executive Summary

Introduction

The New Fairfield Selectman's Office have requested an environmental review for a proposed 22 lot re-subdivision known as Woodland Heights. The 37.4 acre site is located north of Ball Pond, and is bounded by Route 39, Warwick Road, Satterlee Road and properties on Columbia Drive. Two new roads are proposed, one is a through road to connect with Satterlee Road and the other is a cul-de-sac.

The site is steep, with shallow to bedrock soils and some wetlands. A portion of the site borders Ball Pond.

The Town requested the review in order to provide information to its regulatory commissions. Specific areas of concern are: stormwater management, effects on Ball Pond and wetlands, geologic concerns, fire pond development, traffic and access, and significance of natural features.

The review process consisted of four phases: 1) inventory of the site's natural features; 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.

Soil Resources, Limitations and Concerns

The site has upland soils that have severe limitations to community development. Severe limitations denote that soil properties or site features are unfavorable or difficult to overcome and that special design, significant increase in construction costs, and possibly increased maintenance are required. Septic system design will need to be carefully reviewed and installed. Erosion and sediment controls will need to be carefully planned and constantly monitored.

It is recommended that due to the steepness and erodibility of the site that an erosion and sediment control inspector be on site to ensure that controls are properly placed and maintained. The site should be monitored after construction to ensure that the site is properly stabilized and protected.

A groundwater monitoring well should be placed at the fire pond site and monitored during the summer to ensure an adequate water supply for fire department needs. The site is potentially a poor one for groundwater and it is unlikely that there is adequate surface water runoff to the pond.

The stormwater runoff to the detention basin can be expected to carry a greater nonpoint source pollution load after development so that the potential for incorporating water quality mitigation techniques into the basin's design should be investigated.

Geologic Development Concerns

A pre-construction blast survey should be conducted. This survey would be in addition to the monitoring described on the plans. If the blasting is designed by a qualified blasting consultant, the blasting should have minimal impact. Because the possibility of human error or opportunism does exist a pre-blast survey would limit the liability of the contractor and the town.

The rock seen in outcrops appears to be suitable for use as subgrade for the roads. An on-site crushing operation will create some noise and dust. Because this is likely the town may want to obtain further details concerning the rock crushing operation.

The source of water for the fire pond should be verified by measuring monitoring wells. The deep test holes on Lots 7 and 22 did not show any water or soil mottling at up to 7 feet deep, so the higher position on the landscape at the pond location suggests that the water may be perched and subject to drying up during summer drought periods.

Hydrology and Engineering Concerns

The criteria used for design of the detention basin differs from that in the Connecticut Guidelines for Soil Erosion and Sediment Control. While the detention basin as designed accomplishes the purpose of keeping post-development runoff at or below pre-development runoff there are several items that need to be addressed so that the design conforms to the "Guidelines".

A Connecticut Department of Environmental Protection Dam Construction Permit may be required for the detention basin.

The outflow structure for the detention basin is designed as a "Cipolleti" weir, it

might be more appropriate to use the flow equation for a V-shaped weir, and to re-compute the resulting stage/storage curves for the detention basin.

The plans show that all storm drainage will be conveyed through aluminum pipes. The risk for corrosion for uncoated steel is moderate for Stockbridge and Georgia soils, and this risk may be realized by aluminum as well. Also, any direct contact between concrete and aluminum pipe should be avoided because of deteriorating reactions between these two materials.

It may be desirable to install a dry hydrant to facilitate the operation of fire fighting equipment.

For the proposed rock riprap retaining walls a filter fabric should be designed and installed between the riprap and the underlaying soil surface to prevent soil movement into or through the riprap.

Potential Impacts to Ball Pond

The Woodland Heights Subdivision lies within three drainage basins; Putnam Lake, Ball Pond Brook and Ball Pond. This section focused on the impacts to Ball Pond from the subdivision. General watershed and lake management assistance are not part of this review and the DEP Lakes Management Program should be contacted for this information.

Lots 17 and 18 are completely in the drainage basin of Ball Pond and Lots 19 and 16 are partially within the Ball Pond drainage basin. All lots within this watershed are steeply sloping and will be prone to soil erosion during construction. A very stringent soil and erosion control plan should be followed, and the town should inspect the site regularly to determine if additional protection is needed due to weather or changing site conditions.

A management and maintenance plan is needed for both the fire pond and the detention basin.

After completion of Woodland Heights, there will be only two houses and septic systems in the Ball Pond drainage basin. A limited amount of runoff is expected to be generated from these homes, therefore, little impact to Ball Pond is expected after the subdivision is complete.

Inland Wetland Review

The major impacts to the on-site wetlands will be to the portion west of the silt

fence during construction. Impacts to this area could be mitigated by the removal of accumulated sediments prior to removal of the silt fence and revegetation.

More information should be provided concerning the detention basin and whether the system allows for sufficient stormwater residence time in the drainage system to enable it to be infiltrated and what type of maintenance is proposed to keep the system in operation.

A more detailed evaluation must be done to determine the feasibility of a fire pond at the chosen site. If and when a fire pond is constructed special effort will need to be taken to stabilize 2:1 slopes to prevent erosion.

Natural Diversity Data Base

According to the information on file there are no extant populations of Federal or State Endangered, Threatened or Special Concern species occurring at the site.

Ecological Significance

After a review of the map and species information provided by the applicant the Team Biologist was unable to determine the significance of the ridgetop community on the site. Limited data was provided on the map and the use of common names to identify herbaceous species was confusing. The applicant's consultant should have used the 1991 official list for determining endangered species which was established in 1989 by Public Act 89-224, not a 1976 reference.

It is suggested that if the Town still has a concern about the environmental significance of this area that they require the applicant to provide better documentation of the existing conditions, so that adequate information would be provided on which to make a decision.

Fisheries Resources

Ball Pond is a natural waterbody about 90 acres in size. A portion of the proposed subdivision borders the pond. Land within the immediate watershed of Ball Pond has been extensively developed as residential housing. Soil erosion and sedimentation, road runoff and dissolved nutrients from developed areas in the watershed may all have factored in water quality impacts.

According to the Fisheries Division records Ball Pond has had an extensive fish

stocking history. Management has been for trout. Recent fish surveys indicate that non-trout fish species have again re-established in Ball Pond. Common species include: largemouth bass, smallmouth bass, bluegill sunfish, pumkinseed sunfish, rock bass, white perch, yellow perch, chain pickerel, golden shiner and brown bullhead. The pond is stocked annually by the State with 6,200 adult brown and rainbow trout, primarily on a "put and take" basis.

Development of Woodland Heights may allow surface runoff from the site to transport nutrients and sediments to Ball Pond. Runoff and leaching of nutrients can potentially stimulate excessive plant growth. An overabundance of aquatic plants may prevent efficient predation of forage species resulting in overpopulation, crowding, stunting or imbalance.

An overabundance of aquatic vegetation can remove substantial quantities of dissolved oxygen from the water resulting in water quality degradation which can either limit areas habitable to certain fish species or in a worst case scenario result in a fish kill.

Sediment deposition may degrade or eliminate habitat at points of entry and expand areas for the growth of aquatic plants.

To mitigate or eliminate the nutrient and sediment transport to Ball Pond the following are recommended:

- design a stormwater collection system to detain runoff;
- phase development with the stormwater collection as the initial phase;
- maintain a minimum 100 foot open space buffer along the development's closest encroachment to Ball Pond;
- establish a comprehensive erosion and sediment control plan;
- limit liming, fertilizing and the introduction of chemicals to lawns.

Planning Comments

Lots numbered 11,12,13,14,15,17 and 18 should all have deed restrictions denying direct access to Route 39 and Warwick Road.

The Team Planner disagrees with the applicant's traffic consultant concerning the adequacy of the site line at Long Hill Drive and Warwick Road. He believes that a better location should be discussed. The proposed driveway location for Lot 10 is poorly placed, especially if traffic on Long Hill Drive is busy, and this lot should also have a deed restriction placed on it denying access to Warwick Road. These deed

restrictions should ensure that the lots are developed as planned.

It is the recommendation of the Team Planner that Long Hill Drive and Satterlee Road be connected for safety reasons related to police and fire protection. The town should consider the advice of the police and fire department in making their decision.

Stonewalls are a vital part of New England history and they should be preserved where ever possible.

If the safety of the children waiting for the bus at the intersection of Satterlee Road and Route 39 is a safety problem then it should be solved immediately! Perhaps with the completion of the intersection of Satterlee Road and Long Hill Drive a more satisfactory bus stop location can be found.

A conservation easement along the subdivision's frontage on Route 39 could help with the development of a jogging trail, but the solution to the problem will not be solved by this one subdivision. If a serious problem exists with walking, jogging and bicycling in the area around Ball Pond then the Town will have to make a concerted effort to ensure safe places for these activities.

Table of Contents

Introduction

The Selectman's Office of New Fairfield has requested an environmental review for the proposed Woodland Heights Subdivision. The project is a 22 lot re-subdivision on 37.4 acres. The site is located in western New Fairfield north of Ball Pond. The property is bounded by Warwick Road, Route 39 (Ball Pond Road), Satterlee Road, and properties on Columbia Drive. The site is located in a one acre residential zone, and all but four of the lots are approximately one acre in size. The four remaining lots range in size from 2 acres to 4.6 acres. Two new roads are proposed, one is a through road (Long Hill Drive) of 1250 feet connecting with Warwick Road and Satterlee Road. The other road is a cul-de-sac (Treetop Court) which is 1550 feet in length. Both roads will have grades of up to 8%. A fire pond is proposed, as well as a detention basin for stormwater management.

The property has steep grades, is shallow to bedrock and contains a wetland which performs a significant stormwater management function. The site also borders Ball Pond, which is an aesthetic and recreational resource for the town.

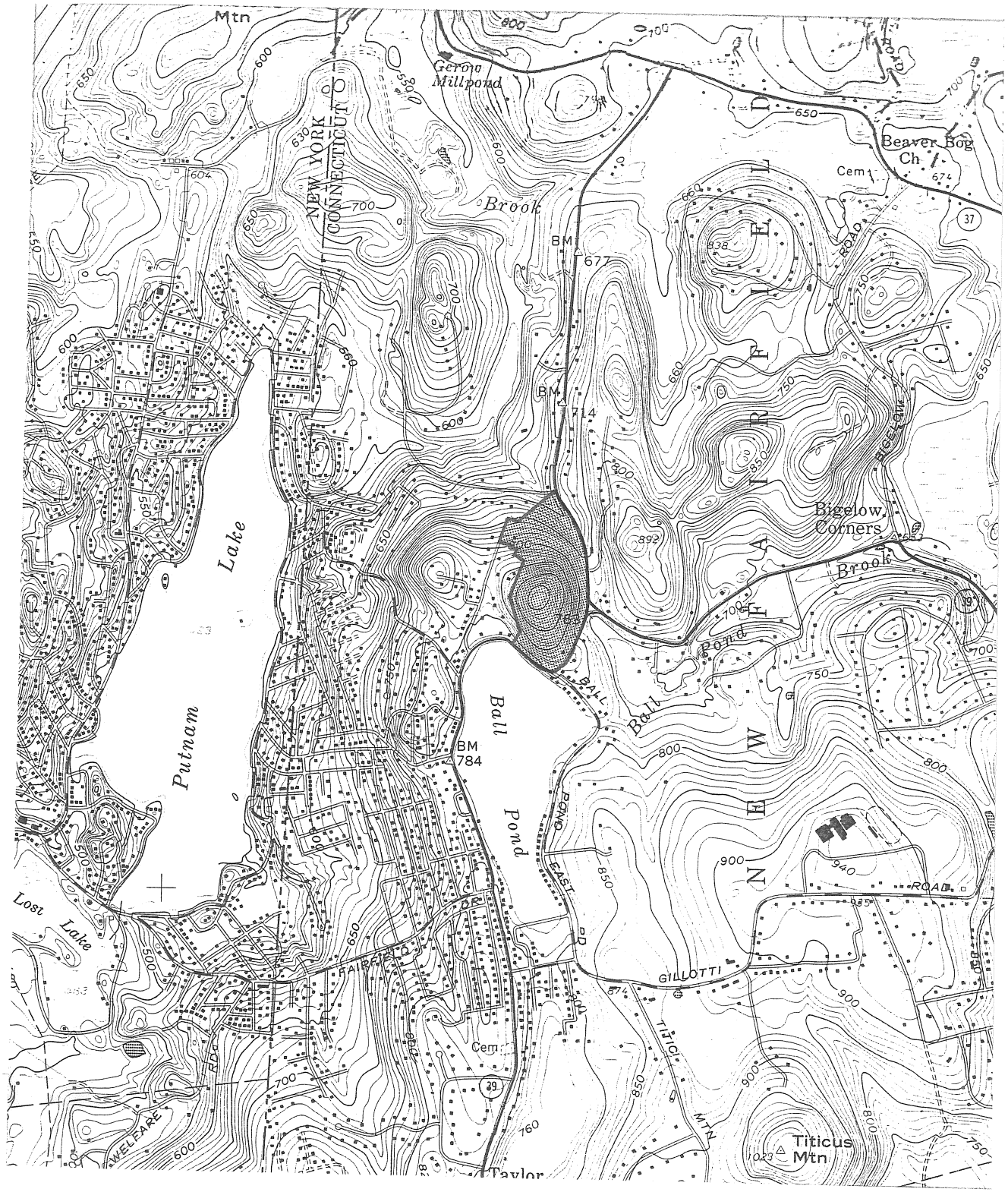
The Town has requested the environmental review in order to provide information to the town's regulatory commissions with regard to stormwater management of runoff created by the subdivision; effects on Ball Pond and wetlands; geologic concerns; fire pond development; traffic and access; and significance of natural features.

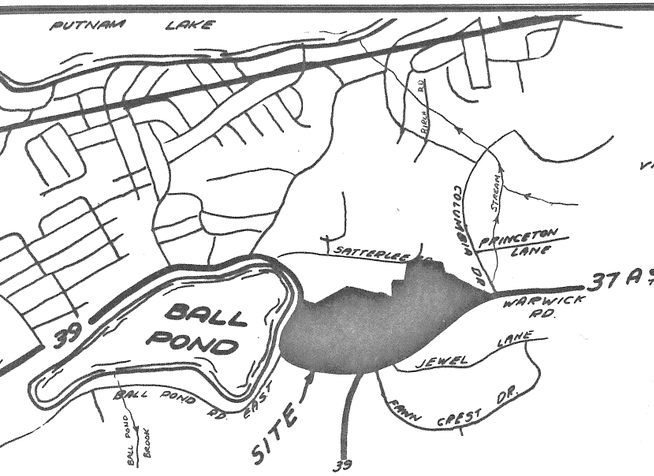
The primary goal of the review is inventory natural resources and to provide planning information.

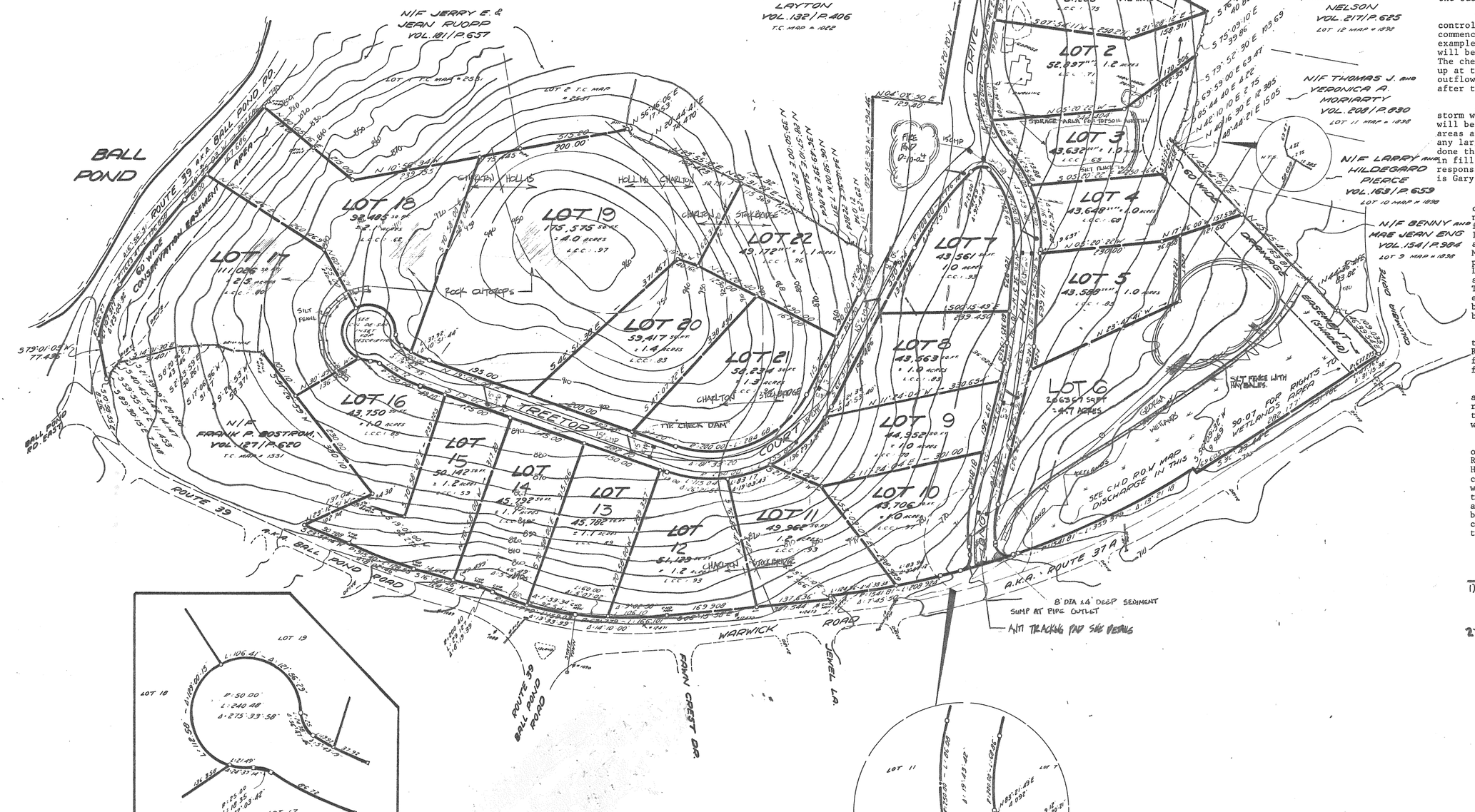
Topographic Map

Scale 1" = 2000'

Approximate Site







Narrative:

This Erosion and Sediment Control Plan addresses construction of 2 roads - Long Hill Drive (length = 1200'±) and Treetop Court (length = 1600'±), a Fire Pond and a detention basin. This construction serves the 22 lot Woodland Heights Subdivision on 37.4 Acres of undeveloped land, almost all of which is densely wooded. The total disturbed acreage for these activities is approximately 200,000 sq. ft.

Clearing of trees in the road right of way is schedule to start in May 1993 and be completed by the end of June. Road cuts and fills are scheduled to begin in June and finished by September. Road slopes will be seeded and mulched as soon as possible. The detention basin construction will be done in Summer 1993 also. Excavation of the fire pond is scheduled for July or August 1993, although enough excavation to provide a sediment basin for run-off coming down Treetop Court will be excavated before cuts and fills
begin on Treetop Court. Road drainage is scheduled for September 1993. Road gravel base is scheduled for September - October 1993. Base course of pavement and asphalt curbing is scheduled for November 1993, as is grading and seeding of road shoulders. Final course of paving will not be completed until 1994. All disturbed areas incidental to this construction are to be stabilized and seeded with perennial rye grass or Contractor's Mix grass seed and mulched with hay by October 15, 1993.

The design criteria for erosion/sedimentation control measures are found in the Connecticut Guidelines for Soil Erosion and Sediment Control January 1985 and upon field experience of the applicant. Design criteria for storm water management facilities are listed in Storm Drainage Management report prepared by Consultants and Engineers of 9 Harmony Street, Danbury, CT included in this application. Construction details are shown on the "Details" sheet of the subdivision plans.

The measures necessary for erosion, sediment and storm water control are shown on the plan. They will be in place prior to commencement of the activity they are designed to control. For example, the silt fence protecting the wetland from sedimentation will be installed before cuts and fills begin on Long Hill Drive. The check dams placed across the road rights of way will be set up at the end of work each day. The sediment sumps shown at the outflow end of each storm drainage line will be excavated immediately after the outflow pipe is installed.

To insure continued operation of the erosion, sediment and storm water control measures, an inspection and maintenance program will be implemented. All silt fence, sediment basins and retention areas are to be inspected on Thursday mornings and immediately after any large storm. Should any repair work be necessary, it will be done that day. Excavated silt from sediment basins is to be placed in fill area or in the storage area designated on Lot #3. The person responsible for maintenance of these measures during construction is Gary Mead - President of Mead Construction Co. Inc.

Some blasting of rock will be necessary for road construction. On Treetop Court blasting will be necessary from Station 4 + 20 to Station 10 + 0 and from Station 13 + 0 to Station 15 + 50. Approximately 10,000 cy of rock will be blasted. Blasting operations are to be monitored by the Town of New Fairfield Fire Marshal and seismograph measurements are to be taken periodically to assure no damage to surrounding property. Large boulders from the blasting will be used to construct the rock retaining walls shown on the plans. The remainder of the blasted rock is to be mixed with earth and used in fill areas on site. Also, if feasible, blasted rock may be crushed on site to use as a road base.

Stumps generated by the clearing operation are to be machine shredded into mulch and used on site. Rocks generated by road excavation are to be used for retaining walls or mixed with earth and used in fill areas.

Utilities serving the site, i.e., Power, Telephone and Cable TV, are to be laid in a trench dug in the road shoulders. All utilities are to be located within the road right of way. Installation of utilities will take place in August or September of 1993.

A temporary sedimentation basin is to be dug on the left side of Long Hill Drive near the Warwick Road intersection. This basin is shown on the Long Hill Drive Plan and Profile Plan. This basin will catch any storm runoff running down Long Hill Drive which is not caught by the kickbars and will filter the runoff before it runs into the intermittent stream and into the wetland. Should any additional measures be deemed necessary by the Town of New Fairfield during construction to control erosion or sedimentation, they are to be taken by the developer.

CONSTRUCTION SEQUENCE

1) ALL CONSTRUCTION TRAFFIC TO ENTER SITE FROM WARWICK ROAD HOWEVER DURING INITIAL ROAD CLEARING OPERATION SATTERLEE ROAD IS TO BE USED FOR ACCESS UNTIL A TEMPORARY ROAD CAN BE CONSTRUCTED TO WARWICK RD.

2) ORDER OF HOUSE CONSTRUCTION ON INDIVIDUAL LOTS IS DEPENDANT ON SALES AND CANNOT BE DETERMINED AS YET. HOWEVER ACCESS FROM ANY NEW HOMES TO WARWICK ROAD SHALL BE KEPT IN GOOD CONDITION AND FREE FROM ANY OBSTRUCTIONS

TOTAL ACREAGE = 37.4

Gary E. Mead, P.E.

The ERT Process

Through the efforts of the Selectman's Office, town staff, the Inland Wetlands Commission 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 four phases:

1) Inventory of the site's natural resources
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 involved both literature and field research. The field review took place on February 2, 1993. Field review and inspection of the proposed development site proved to be a 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 allowed most 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 this report.

Soil Resources, Limitations and Concerns

According to the Cooperative Soil Survey for Fairfield County, upland soils on site are Charlton extremely stony fine sandy loam, 15 to 35 percent slopes (CnD), Charlton fine sandy loam, 15 to 25 percent slopes (CfD), Charlton-Hollis fine sandy loams, very rocky, 3 to 15 percent slopes (CrC), Paxton very stony fine sandy loam, 8 to 15 percent slope (PdC), and Stockbridge very stony loam, 15 to 25 percent slopes (SpD). Wetland soils on site are the Ridgebury, Leicester, and Whitman extremely stony fine sandy loams (Rn). (Reference the Soils Map) A private consultant was employed by the applicant to delineate the soils on site. His report is consistent with the Soil Survey. The consultant identifies a soil type in one portion of the landscape as a Georgia whereas the Soil Survey identifies the soil as a Stockbridge. As stated in the Soil Survey, a typical inclusion found in Stockbridge soils would be the Georgia map unit. The Soil Survey has a minimum map unit delineation size of 2.5 acres. Smaller units of contrasting soils would, for Soil Survey purposes, be included in the larger map unit.

The Charlton extremely stony fine sandy loam, 15 to 35 percent slopes (CnD) and the Charlton fine sandy loam, 15 to 25 percent slopes (CfD) make up the majority of the site. They are moderately steep to steep, well drained soils on hills and ridges. The permeability is moderate or moderately rapid. The erosion hazard is severe. Slope is the principle limitation of this soil for community development due to the potential for erosion and the need for careful design and installation of on-site septic systems to prevent effluent from seeping to the surface.

The Charlton-Hollis fine sandy loams, very rocky, 3 to 15 percent slopes (CrC) is a complex of Charlton and Hollis soils that are gently sloping and sloping, well drained to excessively well drained, and located on hills and ridges. They have an undulating topography marked with exposed bedrock that covers up to 10 percent of the surface. The Charlton and Hollis soils have moderate or moderately rapid permeability. The shallow depth to bedrock of the Hollis soils (found at about 17 inches below the surface) and the exposed bedrock are the major limitations of this complex for septic system installation and for community development.

The Paxton very stony fine sandy loam, 8 to 15 percent slopes (PdC) is sloping, well drained, and found on drumlins and hills. The permeability is moderate in the surface layer and subsoil and slow or very slow in the substratum. The hazard of erosion is severe and slopes of excavations are unstable. The slow to very slow permeability in the substratum is the main limitation to community development due to the need for special design and installation of on-site septic systems to prevent effluent from seeping to the surface.

The wetland soil identified on the Soil Survey is the Ridgebury, Leicester, and Whitman extremely stony fine sandy loams (Rn). It is a unit of soils that are poorly drained and very poorly drained and are found in depressions and drainageways on uplands and in valleys. Typically, the major soils in the unit have a seasonal high water table at or near the surface from Fall through Spring. The wetland system serves primarily to convey surface water runoff from the site towards Putnam Lake.

In summary, this site has upland soil resources that have severe limitations to community development. (See Soils Limitations Chart) Severe limitations denote that soil properties or site features are unfavorable or difficult to overcome and that special design, significant increases in construction costs, and possibly increased maintenance are required. Septic system design will need to be carefully reviewed and installed. Erosion and sediment controls will need to be carefully planned and constantly monitored.

During the meeting prior to the site walk, the town's environmental officer, Chris Majewski, noted that he had addressed the planned erosion and sediment control measures and that he was satisfied they were adequate. Therefore, no complete erosion and sediment control review was performed. Included in this section of the report is a copy of a typical Erosion and Sediment Control Worksheet that outlines what it takes to meet the standards for erosion and sediment control plans as developed in Connecticut's Guidelines for Soil Erosion and Sediment Control as revised in 1988. It is recommended that due to the steepness and erodibility of the site an erosion and sediment control inspector be on site to ensure the planned controls are installed correctly and maintained in good working order. Provisions should be made to monitor the site after construction to ensure that the plans have provided for a stabilized and protected site after development.

Of special concern are the planned fire pond and detention basin. There should be a groundwater observation well placed at the fire pond site and monitored during the summer to ensure that an adequate water supply will be available to meet the needs of the fire pond. The site is potentially a poor one to assure a continuous water supply from groundwater. It is unlikely that there will be adequate surface water runoff to the fire pond because of the small watershed draining the site location. The applicant should submit construction details for both the fire pond and the detention basin to adequately review the proposed basins.

As proposed, the detention basin is planned to accept the majority of the runoff from the site. This runoff can now be expected to carry a greater nonpoint source pollution load typically associated with urban runoff and the conversion to residential use from a forested condition. The potential for incorporating water quality mitigation techniques into the basin's design should be investigated.

Soils Limitations Chart

Woodland Heights Subdivision

Soil Name and Map Symbol	Septic Tank Absorption Fields	Dwellings	Local Roads and Streets	Lawns and Landscaping
CfD, Charlton	Severe; Slope	Severe; Slope	Severe; Slope	Severe; Slope
CnD, Charlton	Severe; Slope	Severe; Slope	Severe; Slope	Severe; Slope
CrC, Charlton	Moderate; Slope	Moderate; Slope	Moderate; Slope	Moderate; Slope
Hollis	Severe, Depth to Bedrock	Severe; Depth to Bedrock	Severe; Depth to Bedrock	Severe; Depth to Bedrock
PdC, Paxton	Severe; Percs Slowly	Moderate; Slope	Moderate; Slope, Frost Action	Moderate; Slope
Rn, Ridgebury	Severe; Percs Slowly, Wetness	Severe; Wetness	Severe; Wetness, Frost Action	Severe; Wetness
Leicester	Severe; Wetness	Severe; Wetness	Severe; Wetness, Frost Action	Severe; Wetness
Whitman	Severe; Percs Slowly, Wetness	Severe; Floods; Wetness	Severe; Floods, Wetness, Frost Action	Severe; Floods, Wetness

Geologic Development Concerns

The following comments are based on the field visit, meeting at the town hall and the documents provided by the applicant. No detailed analysis or field work was performed at the the site. These comments are given to assist both the town and developer to construct a development which has the least impact on environmental resources and the surrounding community.

1) A pre-construction blast survey should be performed. This survey is in addition to the monitoring described on the plans. A pre-construction survey normally includes photographing and recording concrete structures such as swimming pools and basements that are within some chosen radius of the proposed blasting. Modern blasting techniques will decrease the ground acceleration value (shock) of the blast. Pre-splitting and delayed charges decrease the chance for damage. If designed by a qualified blasting consultant, the blasting will have minimal impact. The opportunity does exist for either human error or opportunism. Pre-existing fractures in basement walls are oftentimes blamed on blasting. A pre-blast survey limits the liability for the contractor and the town. The survey also will document any damage that is truly attributable to the blasting. This is a good security blanket.

As part of the survey, all wells and their reported yield within the chosen radius should be recorded. There is a slight possibility that changes in well yield or failures of wells could occur. Again, these are general precautions to be taken, the existing wells were not surveyed. Generally, cased, drilled wells are unaffected by blasting. Proper monitoring of the blasting operation includes making a few test blasts to determine the maximum safe blast that can be used. Once this pattern has been determined blasts can be monitored on a set schedule at locations of concern, such as the nearest concrete foundation or pool.

2) The rock seen in outcrops appeared to be suitable for use as subgrade for the roads. The crushing operation will likely create some noise and dust. The town may wish to explore the details of the rock crushing (such as length of time needed for blasting operations, amounts of rock being blasted and crushed, methods to be

used, hours of operation, and how the noise and dust will be controlled) with the developer.

3) The source of water for the fire pond should be verified by measuring the installed monitoring wells monthly throughout the spring and summer. Percolation test deep holes up to 7 feet deep did not show water or soil mottling indicative of high groundwater levels at lots 7 and 22. These lots are located about 100 to 150 feet from the proposed pond. The higher position on the landscape at the pond location suggests the water may simply be perched and subject to drying up during summer drought periods.

Hydrology and Engineering Concerns

The purpose of this report is to address the hydrology concerns raised by the proposed subdivision. After reviewing the subdivision application, the final set of plans, as well as the site, the following comments were generated:

1) The proposed detention basin is required to keep post-development runoff at or below pre-development runoff. The detention basin as designed accomplishes this, based upon assumptions and methods used by the designers. However, the criteria used for design differs from that of the "Connecticut Guidelines for Soil Erosion and Sediment Control". For example, the detention basin is classified as an embankment detention basin. Therefore, the minimum top width of the embankment should be 8.0 feet, not 4.0 feet as shown on the plans. Also, the combined upstream and downstream side slopes of the settled embankment should not be less than 5:1, with a maximum slope steepness of 2:1. The plans show a combined side slope of 4:1.

Additionally, the minimum capacity of the detention basin's emergency spillway shall be that required to pass the peak flow expected from a design storm of 100-year frequency, 24-hour duration, type III distribution. The method the designers used did not reflect this type of model storm. Also, the required freeboard shall be 1.0 feet above the water surface in the basin with the emergency spillway flowing at design depth. From the plans, only 0.5 feet of freeboard is shown.

Also, the plans show a foundation cut-off trench, but does not address the requirement of extending this trench up both abutments to a height equal to the emergency spillway crest elevation.

2) Water can be temporarily impounded against the detention basin at a height of 6 feet, as measured to the original low point in the dam at its centerline. Therefore, a CT Department of Environmental Protection Dam Construction Permit may be required.

3) The outflow structure for the detention basin is designed as a "Cipolletti" weir. The crest length of the weir as designed is 2 inches. It is recommended that a weir crest length of 3 to 4 times the head be used. This would imply that at a head of 6 feet, a weir crest length of 24 feet be used to justify using the "Cipolletti" weir flow equation. Instead, it might be more appropriate to use the flow equation for a V-notched weir, and re-compute the resulting stage/storage curves for the detention basin.

4) The plans show that all storm drainage will be conveyed through aluminum pipe. From the soil survey of Fairfield County, it indicates that the risk of corrosion for uncoated steel is moderate for Stockbridge and Georgia soils. This risk may be realized by aluminum as well.

Additionally, any direct contact between concrete and the aluminum pipe should be avoided to avoid deteriorating reactions of the two materials, such as what would be found at headwalls and catch basins.

5) Regarding the proposed fire pond, it would be desirable to install a dry hydrant to facilitate the operation of fire fighting apparatus.

6) Regarding the proposed rock riprap retaining walls, a filter blanket should be designed and installed between the riprap and the underlying soil surface to prevent soil movement into or through the riprap.

Potential Impacts to Ball Pond

The area currently proposed to be developed as the Woodland Heights Subdivision lies within three drainage basins; Putnam Lake, Ball Pond Brook and Ball Pond. This section of the review will concentrate on the potential impacts to Ball Pond. It is assumed that inland wetland and erosion control regulations will serve to protect Ball Pond Brook and that a representative from Putnam Lake in New York will have the opportunity to review the proposed subdivision plan. General watershed and lake management assistance is not part of this review. Parties interested in obtaining more information on watershed management for recreational lakes should contact the DEP Lakes Management Program at 566-6691 for assistance.

The plans provided to Team members do not include all the information required to completely ascertain potential impacts to the water resources. However, a number of concerns do become evident and should be addressed before the Town approves the subdivision.

Lots 17 and 18 are completely within the drainage basin of Ball Pond and Lots 19 and 16 are partially within the Ball Pond drainage basin. All lots within the Ball Pond watershed are steeply sloping and will be prone to soil erosion throughout the construction phases of the project. At the time of the review meeting, a detailed erosion control plan was not available. Due to the apparent difficulty of developing these lots, a very stringent soil erosion control plan should be provided that allows increasing protection during construction if needed. To assure that the soil erosion control plan is effective and to determine if weather conditions or unforeseen site conditions merit changing the soil erosion control plan, the Town of New Fairfield should regularly inspect the site during construction.

The proposed subdivision plan includes a fire pond and stormwater detention pond. However, the subdivision plan does not provide information concerning management needs, maintenance requirements or design of these waterbodies. Often ponds are designed without consideration to management objectives, future maintenance needs, and liability considerations. These concerns should be addressed through the town's review process. If additional information is needed to assist with

review of the proposed ponds, the Litchfield County Soil and Water Conservation District has a manual that addresses planning and designing ponds.

After completion of the subdivision, Woodland Heights will have only two houses and two septic systems within the Ball Pond drainage basin. Additionally, the conservation easement between Route 39 and the subdivision will protect Ball Pond from the limited amount of runoff expected to be generated from these homes. Therefore, little impact to Ball Pond is expected after the subdivision is complete.

Inland Wetland Review

There are minimal wetlands on the site, and the detention basin has been kept, as much as site constraints allow, out of the wetlands. The major impacts to the on-site wetlands will be to the portion of the wetlands west of the silt fence during construction. This area may be cleared, receive heavy traffic, and sediment loading. These impacts could be mitigated by the removal of accumulated sediments prior to removal of the silt fence, and revegetation. The long term impacts will be those typically experienced by wetlands in close proximity to road traffic, increased human intrusion, and discontinuity of the wetland with surrounding upland areas. Given the ongoing impacts to the wetland, its size, location and type of wetland on the site these additional impacts should be minimal. If all erosion and sediment controls are installed and maintained as indicated on the plans they should function adequately to protect the wetland and watercourses both on site and remote.

The Wetland Specialist's main concerns regarding the plans are as follows:

1) First Flush: Does the proposed system account for sufficient stormwater residence time in the drainage system to enable it to be infiltrated? Additionally, what type of maintenance would be necessary to maintain continued operation of the system given the quantities of sand applied to the roads in the winter.

2) Fire Pond: The applicant indicated at the field meeting that there was water at four feet below the surface during the dry season, this alone is not sufficient to substantiate the feasibility of a pond at the site. Lacking a detailed evaluation of the availability of water to the pond, and a general reliance upon surface runoff of adjacent land and groundwater it is difficult to determine if the pond will be viable. If/when the pond is constructed special effort must be taken in permanently stabilizing the 2:1 slopes along the south side of the fire pond to prevent erosion into the fire pond.

The Natural Diversity Data Base

The Natural Diversity Data Base maps and files regarding the project area have been reviewed. According to our information, there are no known extant populations of Federal or State Endangered, Threatened or Special Concern Species occurring at the site in question.

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. Such new information is incorporated into the Data Base as it becomes available.

Habitat Significance

The vegetation map and report for the Woodland Heights Subdivision was reviewed. After reviewing the map and species information the Team Biologist was still unable to determine the ecological significance of the ridgetop community on-site. This is partially the result of the limited data provided on the map and partially from the confusion in recognizing some of the herbaceous species identified by the common names used. However, what troubles the Team Biologist the most is the reference to Dowhan and Craig (1976) for the determination that there are no endangered or threatened species on-site. In 1989 the Connecticut Legislature passed P.A. 89-224 "An Act Establishing a Program for the Protection of Endangered Species" and in1991 an official list was implemented. In the Team Biologist's opinion this does not reflect well upon the credibility of the applicant's consultant, whose biological recommendations, again in his opinion, are therefore suspect.

It is suggested that if the habitat and the environmental significance are still of concern to the town, the applicant be required to provide better documentation of the existing conditions on-site. This would provide adequate information which can then be used in making a knowledgeable decision on this proposed project.

Fisheries Resources

1) Site Description

The proposed Woodland Heights Subdivision is on property which in part borders Ball Pond. Ball Pond is a natural waterbody and, according to Fisheries Division survey data, has a surface area of 89.9 acres, a maximum depth of 52 feet, and an average depth of 22.7 feet. Ball Pond undergoes thermal stratification with dissolved oxygen deficiencies occurring during summer months in water depths greater than 25 feet.

Land within the immediate watershed of Ball Pond has been extensively developed as residential housing. Soil erosion and deposition, roadway runoff, and dissolved nutrients originating from developed areas within the Ball Pond watershed may have factored in water quality impacts. The Department of Environmental Protection had reported Ball Pond as being of Class B/AA surface waters in 1987. The classification of B/AA designates the use of the waterbody as suitable for recreation and wildlife as well as bathing or agricultural uses, but the surface water has been impacted and the water quality goal is achievement of Class AA. Designated uses for Class AA includes existing or proposed drinking water supply; fish and wildlife habitat; recreational use; agricultural, industrial supply and other purposes. Degradation of the surface water is the result of spillage of 1000 gallons of #2 fuel oil on the northeast side of Ball Pond, and additionally there are widespread septic system failures in the southern watershed area. Nutrient enrichment is believed to be a significant factor in promoting growths of submergent and emergent aquatic plants in shallow water areas.

2) Fisheries Resources

Fisheries Division records indicate Ball Pond as having an extensive fish stocking history. Ball Pond has been stocked in past years with land-locked salmon, lake trout, yellow perch, walleye, largemouth bass, smallmouth bass, chain pickerel, black crappie, golden shiners, brook trout, brown trout, and rainbow trout.

Ball Pond was treated with fish toxicants on six occasions within the 17 year

time period of 1957 to 1974. Commonly referred to as reclamation, treatments were intended to remove the existing fishery population to allow specifically for trout management. Recent Fisheries Division surveys indicate that non-trout fish species have again reestablished in Ball Pond. Largemouth bass, smallmouth bass, bluegill sunfish, pumkinseed sunfish, rock bass, white perch, yellow perch, chain pickerel, golden shiner, and brown bullhead are now found to be common in occurrence. The Fisheries Division continues to manage Ball Pond for trout with approximately 6,200 adult brown and rainbow trout stocked annually. Trout are managed primarily on a put-and-take basis as water quality conditions are not always present to allow for year round survival of this species.

3) Impacts

Although a portion of the Woodland Heights site borders the shoreline, development will not encroach into Ball Pond. However, topography is such that surface runoff from the development site may cause the transport of nutrients and sediments to Ball Pond.

Runoff and leaching of nutrients from soils exposed during site development or from fertilizers applied to manicured lawns can potentially stimulate excessive plant growth. In moderate amounts, aquatic plants provide shallow water dwelling fish species escape cover and in some instances spawning habitat. However, an overabundance of aquatic plants may prevent efficient predation of forage species resulting in population overcrowding, stunting, or imbalance.

Through respiration, an overabundance of aquatic vegetation can remove substantial quantities of dissolved oxygen from water. Diminished dissolved oxygen levels, specifically resulting from plant respiration, commonly occur twice yearly; during summer months when plant growth is greatest and during the winter months under prolonged ice and snow cover. Water quality degradation, due to dissolved oxygen decreases, can either limit areas habitable to certain fish species or, in a "worst case scenario", result in a kill of fish.

Sediment deposition may degrade or eliminate habitat at points of entry. Substantial sediment deposition may expand areas available for the growth of aquatic plants and serve to further promote impacts associated with excessive

aquatic plant growth.

4) Recommendations

To eliminate or curtail the nutrient and sediment transport to Ball Pond, the following are recommended:

- design a stormwater collection system to detain runoff in an effort to remove sediments and nutrients prior to any off-site discharge;

- phase development with installation of a stormwater collection system as an initial phase;

- maintain at a minimum a 100 foot open space buffer zone along the development's closest encroachment to Ball Pond; no construction, or alteration of habitat should take place within this zone;

- establish a comprehensive erosion and sediment control plan with mitigative measures (hay bales, silt fence, etc.) to be installed prior to and maintained through all development phases;

- limit liming, fertilizing, and the introduction of chemicals to manicured lawns.

Planning Concerns

1) Lot Design and Access

Lots numbered 11,12 ,13, 14, 15, 17 and 18 have slopes which come down to Route 39 and Warwick Road and can be measured at approximately 30% slope or more. This is a severe situation which has been recognized by the designer of the subdivision and many of the associated problems have been addressed in the design. For the safety of the individuals purchasing these lots and to try to ensure safe traffic flow on Route 39 and Warwick Road these lots should have a deed restriction placed denying direct access to Route 39 and Warwick Road. Any driveway exiting from these lots to these roads would be at such a severe angle that any vehicle would have difficulty in stopping or if a reasonable grade were constructed high bankings would result denying reasonable site lines in either or both directions. This would be the case as some lots are only 280 to 290 feet deep. This short distance does not allow sufficient grading for drives and all the amenities of a home site. Lots 17 and 18 have much more area within which to place drives with reasonable grades, but they meet Route 39 in a place where the right-of-way is severely restricted by the edge of Ball Pond and the property boundaries.

Lots 10 and 11 share a problem with the proposed Long Hill Drive. The location at which this new road and the driveways from the two lots meet Warwick Road is on the inside of a long horizontal curve with some vertical variation in it. If the Planning Commission can recommend a better location for Long Hill Drive it should suggest it to the developer to attempt to have a safer intersection. In this analysis there is a disagreement with the traffic consultant concerning the adequacy of the site line. Although the driveway from Lot 10 is shown to be intersecting with Long Hill Drive on the site plan, there is no assurance that it will be built this way. Also, if traffic is heavy on Long Hill Drive the driveway location for Lot 10 is poorly placed. A deed restriction is recommended so that driveways will not have access to Warwick Road. Although the Planning Commission approves a plan that they feel will ensure safety once the property is privately owned, many changes can take place that do not show up on the plans. That is why a deed restriction is recommended.

2) Long Hill Drive Intersection with Satterlee Road

Some fear has been expressed that if Long Hill Drive is constructed, as shown on the plans, its intersection with Satterlee Road will be an open invitation for drivers to use this route as a thoroughfare, avoiding Route 39 in that location. Any Planning Commission in the performance of its duty must make multiple and complex decisions. The decision to allow the connection of Long Hill Drive with Satterlee Road or to make Long Hill Drive a dead end is one of those decisions. The issues involved are vitally related to police and fire department activities and their advice should be sought in making this decision.

Using the adjacent subdivision as an example, (Princeton Lane, Cornell Road and Columbia Drive) one can easily imagine what would happen if an accident occurred on Warwick Road at the entrance to this subdivision blocking any access for an emergency vehicle. These roads are lengthy and contain many homes. If the entrance were blocked no emergency vehicle would be able to get into that subdivision. This subdivision would be better served if there were an alternate access to it.

Planning Commissions are also sensitive to the privacy issue. Many people desiring to buy houses in this market value areas where there is not a lot of traffic on their road. Builders make an effort to sell homes in their developments with this as a selling point. A dead end road ensures more privacy. In a perfect situation all roads connect with others and the traffic would be evenly distributed, but this area has traditional New England road patterns which lend themselves only to difficult decisions. The Team Planner's recommendation would be to build the subdivision as planned and connect the roads.

3) Stone Walls

A third comment is concerning the existing stone walls. New England has a rich history of stone walls, and the proposed subdivision has many that are still quite evident. To remove any of these walls unnecessarily is not recommended since they are slowly disappearing from the landscape. If the Planning Commission is satisfied with the removal of these walls where the developer has marked them for removal, then they will disappear forever. The Planner would recommend that they be

preserved where ever possible.

The report of the sanitarian was satisfying in that it requires that all of the lots have engineered septic systems. The grades in this area would dictate such a decision. Comment #1 concerning Lot 4, that stone walls must be removed for a reserve system, should be amended to say "if it is absolutely necessary."

4) Bus Stop Safety

It was mentioned at the site walk meeting that there is a problem with the safety of children waiting for school buses at the intersection of Satterlee Road and Route 39. Any place in the community where a bus stop for children becomes a safety problem should be solved immediately. It may be possible with the completion of the intersection of Satterlee Road and Long Hill Drove that a more satisfactory location for a bus stop can be found.

5) Walking/Hiking Trail

Comments about walkers, joggers, hikers and bikers using this area for exercise have come from many quarters and certainly it must be a problem. The solution is not in the approval of this subdivision with a conservation easement along the frontage of Route 39, although that could help. The Town would have to take measures to ensure that there are safe areas for these activities. Traditionally, people have provided their own recreation areas for the sake of privacy and thereby limited the budgets that Towns apply to the solution of these problems. If this problem becomes aggravated enough the Town should take steps to improve the situation.

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 the purposes of review and a statement identifying the specific areas of concern the Team members 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 reviews per month depending on scheduling and Team members.

For additional information regarding the Environmental Review Team, please contact your local Soil and Water Conservation District or the King's Mark ERT Coordinator, King's Mark RC&D Area, Inc., P.O. Box 70, Haddam, CT 06438. The ERT telephone number is 203-345-3977.