

HIGHWATCH CONDOMINIUMS

WEST HAVEN, 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

West Haven Conservation Commission

This report is not meant to compete with private consultants by supplying site designs or detailed solutions to development problems. This report identifies the existing resource base and evaluates its signficance to the proposed development and also suggests considerations that should be of concern to the developer and the City of West Haven. 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.

NOVEMBER 1986

ACKNOWLEDGEMENTS

The King's Mark Environmental Review Team Coordinator, Keane Callahan, 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, Geohydrologist
 Department of Environmental Protection
- * David Lord, District Conservationist
 USDA Soil Conservation Service
- * Carolyn Westerfield, Principal Planner South Central Regional Council of Governments

I would also like to thank LaVerne Mendela, Secretary and Janet Jerolman, Cartographer of the King's Mark Environmental Review Team and Joan Froble, District Executive Manager, New Haven County Soil and Water Conservation District for assisting in the completion of this report.

Finally, special thanks to the following people for their cooperation and assistance during this environmental review: Keith Burgess, Chairperson, Conservation Commission, City of West Haven, Gloria Ireland, Administrative Assistant, Conservation Commission, City of West Haven, Michael Roark, Director of Planning, City of West Haven, Edwin Larsen, Developer, and Robert L. Jones, Engineer, Robert L. Jones and Associates.

EXECUTIVE SUMMARY

The West Haven Conservation Commission requested that an environmental review be conducted on a site proposed for condominium development. The site is located on Island Lane in the southwest section of the city.

The site is approximately 25 acres in size. It is mostly characterized by open woodland, inland wetlands, and semi-open shrub areas. A small drainage channel also exists on the site. Surrounding land uses include industrial and commercial development to the north and residential development to the south and west.

The proposed development would encompass 126 condominium units and will be served by city water and sewer. Condominium development is proposed in non-wetland areas. Proposed detention basins and one driveway crossing, however, will be constructed on or over wetlands.

The primary goal of this environmental review was to assess existing resources and environmental conditions, and determine potential environmental affects of the proposed development. Specific objectives included: (1) assess the hydrology of the site and the surrounding watershed; (2) determine soil suitabilities, and erosion and sedimentation concerns; (3) assess the environmental characteristics of existing wetlands, vegetation, and wildlife; and (4) review and discuss planning and land use concerns. The following summarizes the Team's findings and conclusions.

PHYSICAL CHARACTERISTICS

Bedrock Geology

It does not appear that the bedrock surface is at or near ground surface throughout most of the site. As a result, existing bedrock conditions should not pose any major problems in terms of site preparation and development.

Surficial Geology

Three surficial geologic deposits are found on the site. They are: (1) Till; (2) Stratified Drift; (3) Swamp Deposits.

Any trenches excavated over five feet deep for sewer, water, or electric lines should have "shorings" in order to minimize the possibility of "cutback" cave-in of soils.

Geologic Development Considerations

The condominium buildings will be serviced by public water and sewer lines. The availability of these public utilities will lessen potentially adverse hydrologic and geologic impacts which might be encountered.

Affects of Stormwater Runoff

Development of the site can be expected to lead to increases in stormwater runoff and the amount of increased runoff will depend on the density and extent of proposed development, the amount of impervious surfaces created, and the timing of development.

Two major problems associated with increased runoff are the potential for: (1) Flooding and (2) Streambank Erosion. Because of existing flooding problems on Island Lane, further flooding following the development of the site may arise if proper control measures are not implemented.

Proposed Detention Basins

The most likely resolution for controlling post-development runoff would be the construction of stormwater detention basins(s), and three detention basins are presently proposed to control stormwater drainage off and on-site. One detention basin, however is proposed in the red maple forest/swamp. During flooding conditions, water levels will be elevated to a point where it will submerge existing wetland vegetation. This may adversely impact red maple forest/swamp vegetation and the wildlife it supports.

<u>Erosion</u> and <u>Sedimentation</u> Concerns

Existing Agawam, Woodbridge, and Charlton soils have good potential for development. Excavation for buildings is easy. However, common soil erosion and sediment control measures such as sediment barriers and temporary vegetative cover should be utilized to provide adequate control of areas during construction.

BIOTA

<u>Vegetative</u> Zones

The proposed development site is encompassed by four major vegetative zones or cover types. They are: (1) Red Maple Forest/Swamp; (2) Upland Vegetation; (3) Open Field; and (4) Riparian.

Wetland Characteristics

Soil is recognized as one of the most important physical components in maintaining wetland intregity. Three wetland soils have been identified on proposed development site: (1) Raypol (Rb) silt loam; (2) Ridgebury (Rd) fine sandy loam; and (3) Udorthents (UD"w"), which are disturbed soils capable of supporting wetland vegetation.

Wetland Values and Functions

Inland wetlands perform major ecological and hydrological functions, and have intrinsic natural values such as groundwater recharge/discharge, flood storage, sediment trapping, nutrient recycling, maintaining water quality, food chain support, fish and wildlife habitat, and providing recreational opportunities. The disturbance or disruption of these wetland functions during development should be minimized as best as possible.

Wetland Mitigation

One wetland crossing is presently proposed in the development. Wetland crossings can be mitigated, provided they are properly designed and protection measures adequately implemented.

Wetlands creation and replacement research has identified three major factors that must be taken into consideration when attempting to artificially create wetland ecosystems. They are: (1) Hydrology; (2) Soils; and (3) Vegetation.

Natural Landscaping Considerations

It is encouraged that significant tree specimens such as the oaks in the eastern section of the parcel be preserved when developing the site. Not only will these large native trees provide shade during the summer and act as visual and noise buffers, but they provide shelter and forage for a variety of wildlife species.

Developing the site will have immediate negative impacts on wildlife due to increased noise and habitat disturbance. However, by retaining some of these large trees, the overall developmental impact to wildlife may be minimized.

"Naturalizing" all or portions of lawn areas can effectively eliminate or reduce costs associated with lawn or garden care while preserving or enhancing native plant communities.

Protecting and maintaining natural landscapes in development sites, coupled with footpaths and benches, conserves water supplies, reduces pesticide and ferilizer use, and creates a more liveable environment.

PLANNING AND LAND USE CONSIDERATIONS

Traffic and Access

Observation during the field review indicated that traffic along Island Lane is relatively light. However, with development of condominiums on this site, there will be an increased amount of traffic due to vehicles from condominium occupants and service vehicles.

Design Considerations

There are no community facilities on or near the site. Access to school bus pick-up stations or other off-site amenities such as sidewalks and pedestrian rights-of-ways should be considered in the development proposal.

The need for sidewalks is evident due to the proximity of shopping facilities which are within walking distance. These, however, are not the responsibility of the developer, but rather the city.

The proposed site plan and the field review revealed that the developer is sympathetic to the needs of the single-family residential development residents to the south by providing landscape buffers to insure the privacy of the residents. The location of the proposed condominium units also takes advantage of existing vegetation. The proposed development also will retain and enforce existing berms and vegetation to minimize the impact of noise and lights from the industrial uses to the north.

Other Land Use Issues

In the opinion of the Team's planner, single-family residential development would not be the best use of this site. Such structures would call for subdividing the land with all its inherent difficulties in providing paved roads, sidewalks, and other infrastructure. The proposed use of condominium-residential structures would serve as a good transition use.

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INTRODUCTION

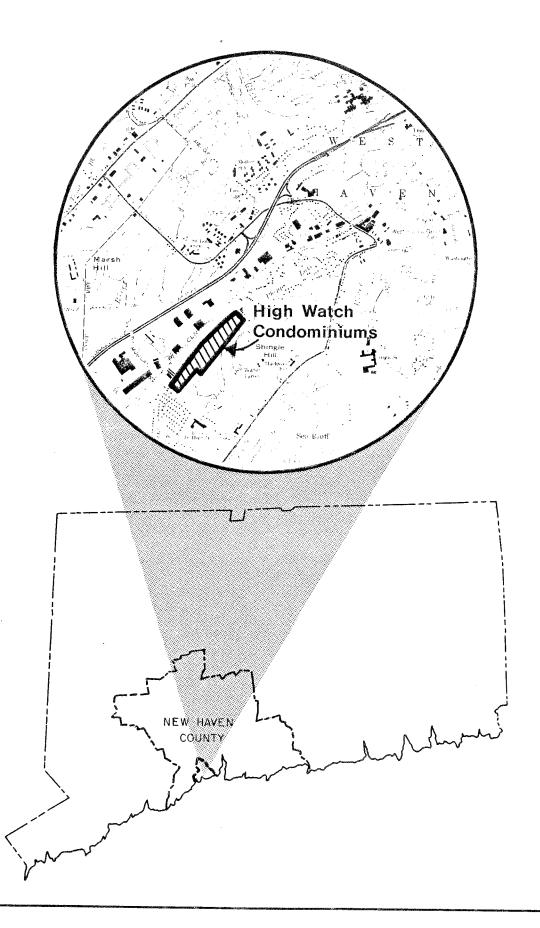


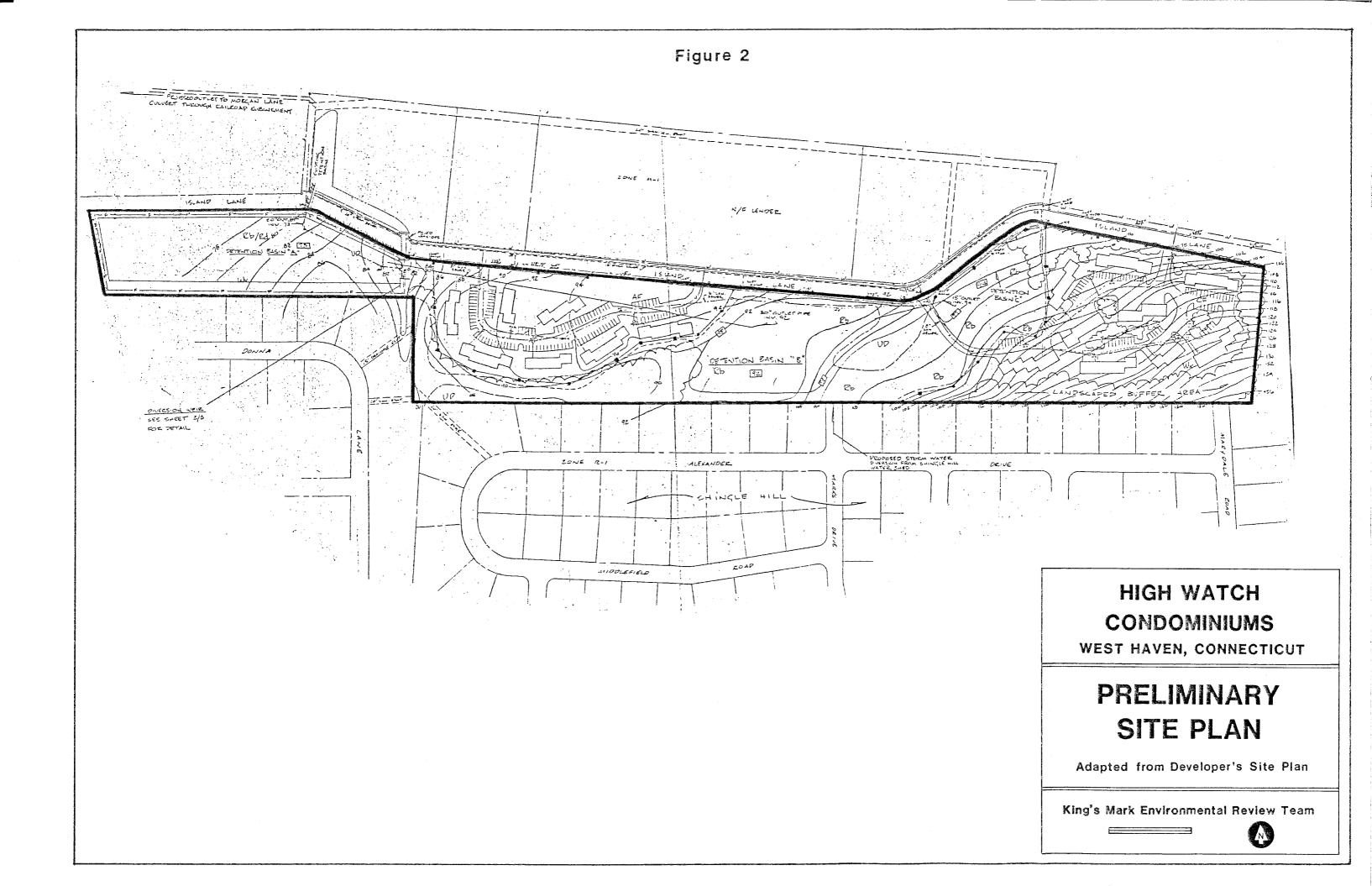
Specifically, the ERT was requested to:

- (1) Assess the hydrology of the site and the surrounding watershed, including stormwater drainage and flooding.
- (2) Determine soil suitabilities, and erosion and sedimentation concerns.
- (3) Assess the environmental characteristics of existing wetlands, vegetation, and wildlife.
- (4) Review and discuss planning and land use concerns such as traffic, access, noise, consistency with state, regional and local plans, and compatibility and/or impact on surrounding land uses.

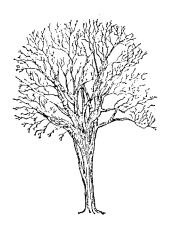
Figure 1

LOCATION OF STUDY SITE





PHYSICAL CHARACTERISTICS



PHYSICAL CHARACTERISTICS

Topography

The northeast part of the site flanks the west side of Shingle Hill. Slopes in this section of the site are gentle to moderate. The remaining areas are characterized by flat to gentle slopes. The relief in the northern sections of the site, near Island Lane have previously been altered or disturbed. Therefore, minimum and maximum elevations on the site reach approximately 50 feet and 130 feet above mean sea level, respectively (Figure 3).

Dominant Site Characteristics

According to information supplied to the ERT, the site contains approximately 8.6 acres of regulated inland wetland soils. This constitutes roughly 35 percent of the site. Proposed plans indicated that existing inland wetlands will be utilized or modified in order to accommodate three proposed stormwater detention basins (see Hydrology Section).

An unnamed streamcourse/riparian community traverses the southwestern limits of the site enroute to Oyster River and on-site inland wetlands drain to this streamcourse.

Geology

The proposed condominium site is located within the New Haven topographic quadrangle. A surficial geologic map (QR-18, by Richard Foster Flint) has been published by the Connecticut

Geological and Natural History Survey. No bedrock geologic map has been prepared for the quadrangle to date. As a result, the Team's Geologist referenced John Rodgers' Bedrock Geological Map of Connecticut (1985) for this section of the report.

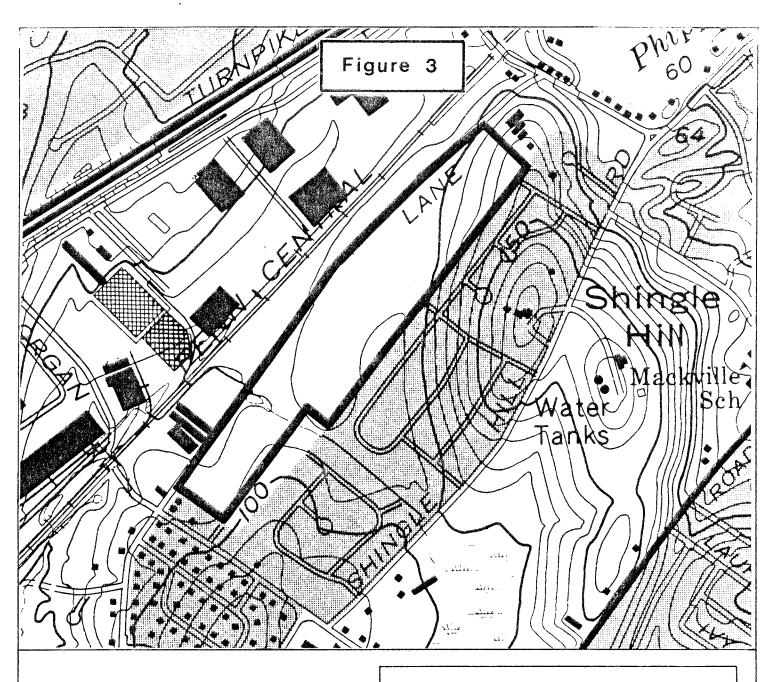
Bedrock Geology

Bedrock outcroppings were not observed on the site during the field review. Nevertheless, Rodgers identifies Oronoque Schist as the bedrock underlying the site (Figure 4). Oronoque Schist is described as a gray to silver, medium— to fine—grained schist and granofels. Both "granofels" and "schists" are textural terms given to metamorphic rocks. "Metamorphic" means rocks that have been subjected to intense heat and pressure within the earth's crust. These rocks are also very old and are complexly folded.

Schists are rich in mica minerals (i.e., muscovite and biotite), but also contain noticeable amounts of quartz. These rocks are characterized by the alignment of platy or flaky minerals. This alignment allows the rock to split relatively easily into thin slabs.

Granofels refers to a rock whose grains are not noticeably aligned. They are composed mainly of the minerals quartz and feldspar, and lack the compositional banding commonly seen in another type of metamorphic rock called gneiss.

To the best of the Team's knowledge, subsurface exploration on the site has not been conducted. Based on soils information made available to the ERT, it does not appear that the bedrock surface is at or near ground surface throughout most of the site.



HIGH WATCH CONDOMINIUMS

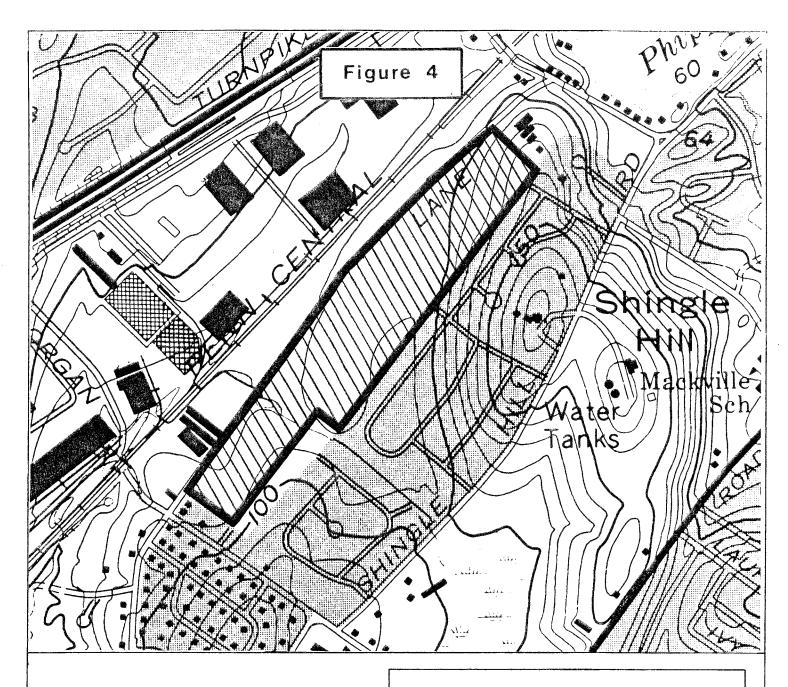
WEST HAVEN, CONNECTICUT

TOPOGRAPHY

King's Mark Environmental Review Team

0 660'





ORONOQUE SCHIST (See Geology Section of report for complete description)

HIGH WATCH CONDOMINIUMS

WEST HAVEN, CONNECTICUT

BEDROCK GEOLOGY

King's Mark Environmental Review Team





As a result, existing bedrock conditions should not pose any major problems in terms of site preparation and development.

Surficial Geology

According to aforementioned surficial geology map, a blanket of glacial sediment known as till covers the bedrock on the site (Figure 5). Till, comprised of a non-sorted, non-stratified mixture of rock particles of widely varying shapes and sizes, was deposited directly from glacier ice without substantial reworking by meltwater. The texture of the till on the site appears to be mostly sandy with some silt and is relatively loose in the upper few feet. However, with increasing depth, the till probably becomes siltier and firmer. This firmer layer may impede groundwater percolating downward through the soil, resulting in a high water table during wet times of the year. However, since road drainage facilities are present in the intensely developed area southeast of the site, local groundwater tables may have been altered somewhat.

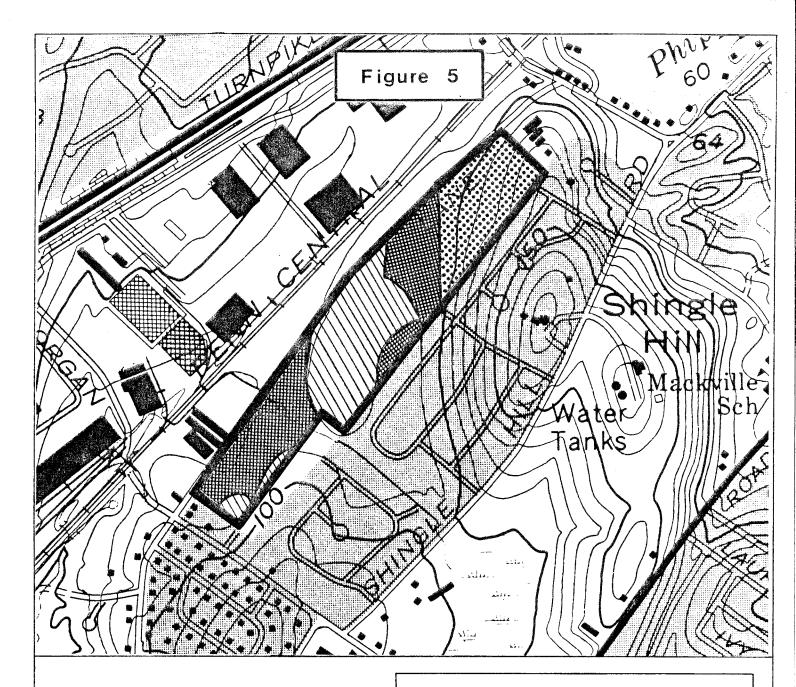
The applicant's soil scientist has identified Agawam soils (Af) occcuring in the central portions of the site. These soils were derived from another type of glacial sediment called stratfied drift (see Figure 5). Stratified drift, whose major components consist of sand and gravel, was deposited by meltwater streams during periods of glacial ice retreat. It appears that some of this material may have been removed for fill material.

Any trenches excavated over five feet deep for sewer, water, or electric lines should have "shorings" in order to minimize the

possibility of "cutback" cave-in of soils.

Seasonally wet areas comprised of regulated inland wetland soils occupy the low-lying areas of the site (see Figure 5). Wetlands are regulated and protected for a variety of ecological and hydrological reasons such as their ability to maintain water quality, reduce runoff, and provide wildlife habitat (see Wetland Section for further discussion on wetland values and functions). In order to protect these important values, the filling, disturbing, or modifying of inland wetland soils is regulated under Public Act No. 155. Any activity which involves filling, disturbing, or removing materials from a inland wetland will require a permit from the City of West Haven. The proposed site plan indicates that a small amount of inland wetlands, approximately 0.08 acres will be filled as a result of site preparation. This represents about one percent of the wetlands mapped on the site. The filling of inland wetland soils will be required in order to construct the access road to serve the condominiums proposed in the northeast of the site.

Inland wetland crossings are generally feasible, provided they are properly designed (e.g., culverts are properly sized and installed and permeable road base fill material is used). All unstable organic material should be removed before placing the permeable road base. Roads should be constructed sufficiently above the surface elevation of the wetlands. This will allow for better drainage of the roads and decrease the frost heaving potential of the road. It is advised that any road construction through wetland areas be done during the dry time of the year with adequate provisions for effective erosion and sediment control.





STRATIFIED DRIFT



TILL



SWAMP SEDIMENT

NOTE: Approximate boundaries adapted from Soil Survey for New Haven County

HIGH WATCH CONDOMINIUMS

WEST HAVEN, CONNECTICUT

SURFICIAL GEOLOGY

King's Mark Environmental Review Team





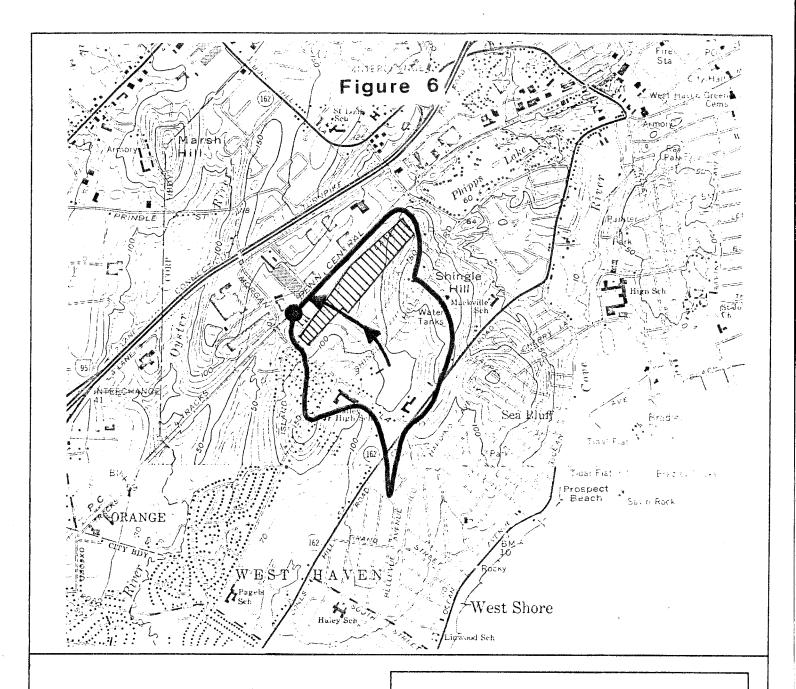
Affects of Stormwater Runoff

Development of the site as planned can be expected to lead to increases in stormwater runoff. The amount of increased runoff will depend largely on: (1) the density and extent of development on the property; (2) the amount of impervious surfaces created; and (3) the timing of development. According to present plans, approximately three acres of building and pavement cover would be created by the condominium development.

Two major problems associated with increased runoff are the potential for: (1) Flooding and (2) Streambank Erosion. Because of existing flooding problems on Island Lane, further flooding following the development of the site may arise if proper control measures are not implemented. The most likely resolution for controlling post-development runoff would be the construction of stormwater detention basins(s), and three detention basins are presently proposed to control stormwater drainage off and on-site. Since hydrologic figures were not made available to Team members for analysis, computations for the 2-year, 10-year, and 100-year storm should be prepared and submitted by the developer for review by city officials.

Proposed Detention Basins

Present plans indicated that the proposed basin will detain
the maximum volume of stormwater that is physically possible. The
project hydrologist indicated that the basins are designed for a
50-year storm event. It is the Team's Geologist understanding
that stormwater detained on the site not only includes



WATERSHED BOUNDARY AND POINT OF OUTFLOW OF THE UNNAMED DRAINAGE-WAY ON THE SITE AT ITS INTERSEC-TION WITH ISLAND LANE

WATERCOURSES SHOWING DIRECTION OF FLOW

NOTE: The watershed boundary shown may not account for possible drainage re-routing through man-made structures

HIGH WATCH CONDOMINIUMS

WEST HAVEN, CONNECTICUT

WATERSHED BOUNDARY

King's Mark Environmental Review Team

0 2000'



The proposed site plan depicts a few buildings in close proximity to detention basins B and C (see Figure 2). The applicant should assure that problematic backup in these areas do not occur as a result of culvert sizing.

During active construction phases, particularly if detention basins are excavated, fine soil particles become mobilized and cause siltation problems to watercourses on the site and downstream. As a result, it will be necessary to contain and filter fine soil particles so that environmental damage on and off site is minimized. Public Act No. 83-388 (Soil Erosion and Sediment Control Act) requires developers to prepare and implement a detailed erosion and sediment control plan. It is advised that city officials actively monitor and enforce the erosion and sedimentation plan during construction (see discussion below).

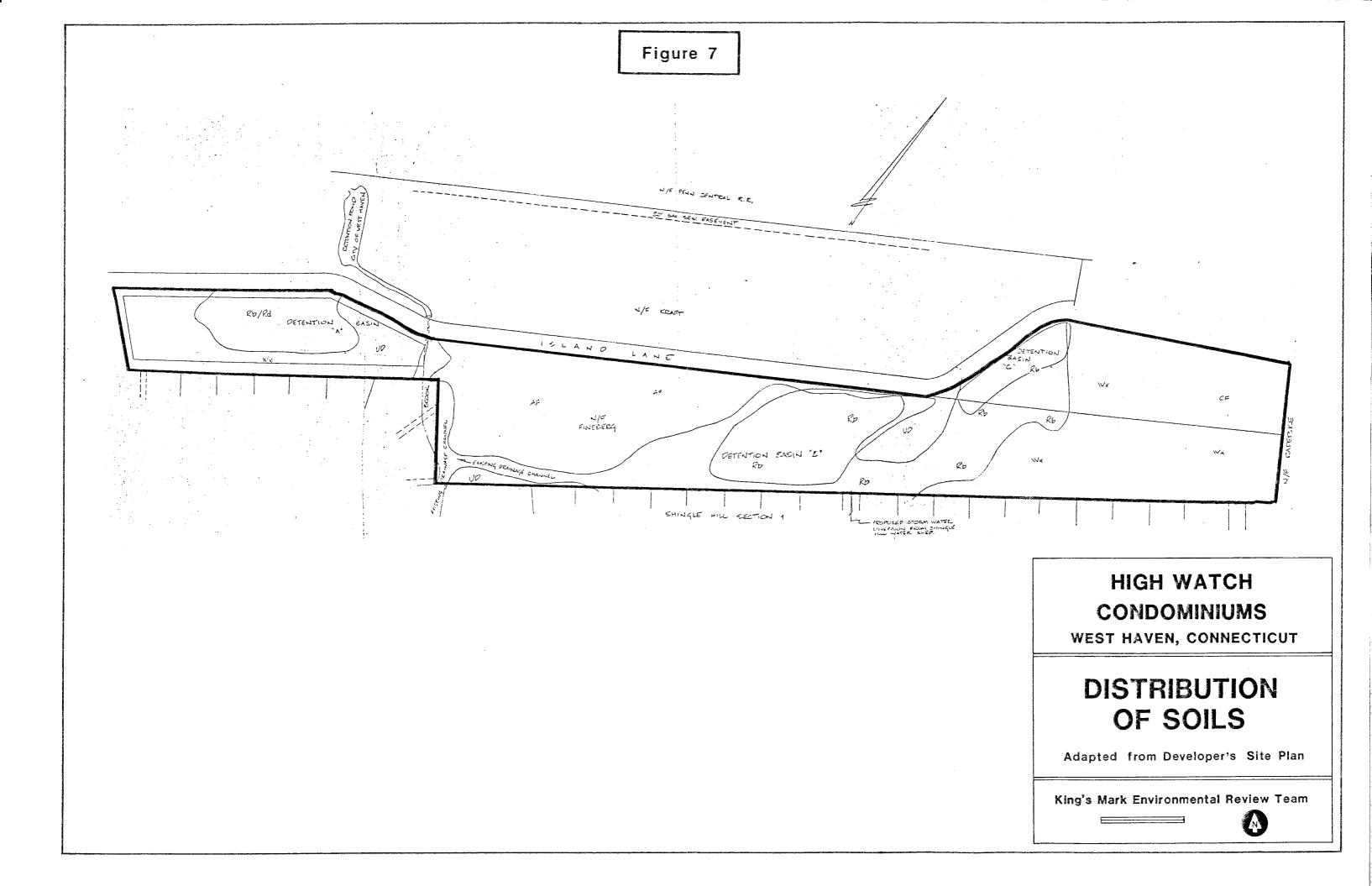
Inland Wetland Soils

The inland wetland soils on this site are poorly-drained.

These soils play vital roles in detaining stormwater runoff, which in turn regulates flood waters to downstream areas (Figure 7).

Map Unit Rb

Raypol silt loam soils are poorly-drained and found in depressions on broad glacial lake and outwash terraces. It has a seasonal high water table to about eight feet. Permeability is moderate in the surface layer and subsoil, and rapid or very rapid in the substratum. It has poor potential for development due to the seasonal high water table which can inundate excavations. The



proposed use of Raybol soils for detention basins is consistent with their capability.

Map Unit Rd

This map unit is composed of Ridgebury soils on slopes ranging from 0 to 3 percent (see Figure 7). These soils are poorly-drained and found in drainageways or depressions on glacial uplands. These soils have a seasonal high water table at a depth of about eight feet from late fall until mid-spring. Permeability is moderate to moderately rapid in the surface layer and slow or very slow in the substratum.

Development potential on Ridgebury soils is limited due to the high water table and slowly permeable substratum. These soils are planned for detention basins where the high water table and slow permeability will not be limiting factors.

Non-Wetland Soils

Map Unit Af

This map unit is composed of Agawam fine sandy loam soils on 3 to 8 percent slopes (see Figure 7). Permeability is moderately rapid in the surface layer and rapid in the substratum.

This map unit has good potential for development. Excavation for buildings is easy. Commonly used soil erosion and sediment control measures such as sediment barriers and temporary vegetative cover should be able to provide adequate control of these areas during construction.

Map Unit Wx

This map unit consists of Woodbridge fine sandy loam on 3 to 8 percent slopes (see Figure 7). These soils are moderately well drained and are found on the top of drumlins and on slight depressions on hills and ridges on glacial uplands. From late fall to mid-spring, this soil has a water table at a depth of about 20 inches. Permeability is moderate in the surface layer and slow in the substratum.

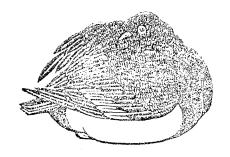
This map unit has fair potential for development. The main limitation is the seasonal high water table. Soil erosion and sediment control measures such as sediment barriers, temporary diversions, and vegetative cover are necessary to prevent excessive runoff, erosion, and sedimentation.

Map Unit Cf

This map unit is composed of Charlton soils on 8 to 15 percent slopes (see Figure 7). Charlton soils are very deep and well-drained. They are formed in loose glacial till overlying dense basal till. Depth to the dense till is generally greater than 5.5 feet. These soils have fine sandy loam textures in the topsoil and subsoil, and fine sandy loam to loamy sand textures in the substratum. Depth to the high water table is generally greater than five feet.

These map units have good potential for site development. Soil erosion and sediment control measures such as sediment barriers, temporary diversions, and vegetative cover are very important in controlling excessive runoff, erosion, and sedimentation.

BIOLOGICAL RESOURCES



BIOTA

Description of Vegetative Characteristics

Introduction

The proposed development site is encompassed by four major vegetative zones or cover types. They are: (1) Red Maple Forest/Swamp; (2) Upland Vegetation; (3) Open Field; and (4) Riparian (Figure 8). A description of natural characteristics of each vegetative zone is discussed below.

Vegetative Zones

Red Maple Forest/Swamp

According to the Soil Conservation Service publication, Soil

Survey of New Haven County (1979), the soils underlying this vegetative zone are referred to as Rb/Rd or Raypol and Ridgebury silt loam soils. These soils influence tree growth and vigor due to their wetness. The most dominant tree species in this zone is red maple (Acer ruburm). Other tree species include swamp white oak (Quercus bicolor) and willow (Salix spp.). Due to a dense tree canopy, which restricts sunlight from reaching the forest floor, herbaceous or understory vegetative species have difficulty in establishing themselves. Skunk cabbage (Symplocarpus foetidus) and various fern and moss species, however, exist in wetter areas of this vegetative zone. A variety of sedges (Carex spp.) and grasses are also established in this zone. Phragmites (Phragmites communis), a

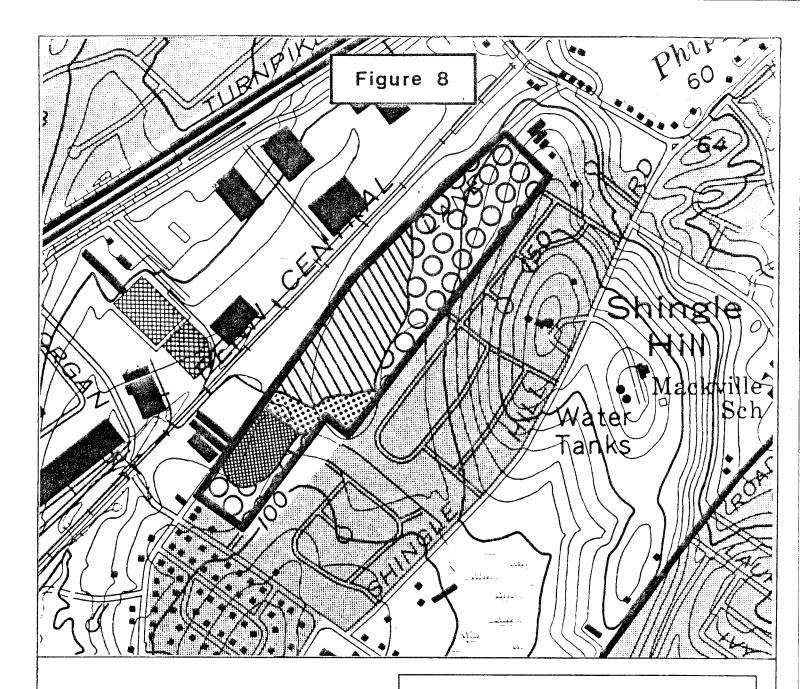
tall exotic species adjacent to the red maple forest/swamp, occurs along Island Lane. This species has little or no wildlife value.

Red maple forests/swamps provide important habitat for a variety of wildlife species. Though many mammal and bird species are commonly found in red maple forests/swamps, only two bird species were observed during the field review. They were: blue jay (Cyanocitta cristata) and black-capped chickadee (Parus atricapillus). This zone is probably used by migrating warblers as well.

Though red maples can endure very wet soil conditions, this species is impacted if its roots are totally submerged in water for a prolonged period of time. This area is presently proposed to serve as a detention basin to alleviate flooding, and during flooding conditions, water levels will be elevated to a point where it will submerge existing wetland vegetation. This may adversely impact red maple forest/swamp vegetation and the wildlife it supports.

Upland Vegetation

Both the eastern and a small portion of the western section of the the site is characterized by upland vegetation. Woodbridge soils having seasonally high water tables and moderate permeability underlie most of this vegetative zone. The forest cover is dominated by the red oak group such as northern red oak (Quercus rubra) and black oak (Quercus velutina). Other tree spcies occurring in this vegetative zone include red maple (Acer ruburm), striped maple (Acer pensylvanicum) and sugar maple (Acer saccharum), willow (Salix spp.), mockernut hickory (Carya tomentosa), and speckled alder (Alnus





UPLAND VEGETATION



OPEN FIELD



RIPARIAN COMMUNITY



RED MAPLE FOREST SWAMP

HIGH WATCH CONDOMINIUMS

WEST HAVEN, CONNECTICUT

VEGETATIVE ZONES

King's Mark Environmental Review Team





for these and many other species.

Riparian Community

Though limited in extent and diversity, the existing riparian/brook community is an important asset to this property. Vegetative species included red maple (Acer ruburm), sassafras (Sassafras albidum), aspen (Populus tremuloides), with an occassional hickory (Carya spp.), willow (Salix spp.), and multiflora rose (Rosa multiflora) occupying and stablizing the streambank. This moist habitat is also ideal for ferns and a variety of fern species were observed in this area. Riparian habitats also provide important wildlife habitat and it is encouraged that this area be protected as best as possible under the proposed development scheme.

Discussion

It is encouraged that significant tree specimens such as the oaks in the eastern section of the parcel be preserved and taken into consideration when developing the site. These large trees can create an attractive development by providing a more natural setting and environment. Not only will these large native trees provide shade during the summer and act as visual and noise buffers, but they provide shelter and forage for a variety of wildlife species.

Developing the site will have immediate negative impacts on wildlife due to increased noise and habitat disturbance, but by retaining some of these large trees, the overall developmental impact to wildlife may be minimized.

If individual tree specimens are to be preserved, it is important

that these tress are not damaged during site construction.

Therefore, it is advised that an adequate area surrounding the tree specimen be delineated and earth moving equipment be restricted from entering that designated area. This will hopefully minimize any damage to the tree such as compacting the tree root system and scaring of trees by equipment.

Contemporary landscapes, with manicured lawns are becoming increasingly expensive to maintain. It is estimated that there are 40 million lawn mowers consuming 200 million gallons of gasoline annually. Sprinkling of lawns often triples water consumption during the summer. As much as one-sixth of all commercial fertilizers are manufactured solely for lawn use. Finally, at a cost measured more in health than in dollars, nearly 40 percent of all pesticides are applied to lawns and gardens to control "weeds" and to maintain green lawns.

According to Natural Landscaping: Designing With Native Plant

Communities (Dickelman and Schuster, 1982), "naturalizing" all or

portions of lawn areas can effectively eliminate or reduce costs

associated with lawn or garden care while preserving or enhancing

native plant communities. Such plantings do not require large areas

but can be accomodated with limited space. But it advantages are not

limited to economics; protecting and maintaining natural landscapes

with appropriate native species in development sites, coupled with

footpaths and benches, conserves water supplies, reduces pesticide

and ferilizer use, and creates a more liveable environment.

Discussion on Existing Inland Wetlands

Introduction

Wetland communities essentially formed within the last 10,000 years and the ecological development of these areas is associated with late Pleistocene ice scouring, desposition, and disruption of drainage patterns. In many instances, these wetlands were not static ecosystems, but demonstrated dynamic and progressive change over this period of time.

Inland wetlands are commonly referred to areas where the saturation of water is the dominant factor in determining the nature of soil development and the types of plant or animal communities living in the soil and on the surface.

Soil is recognized as one of the most important physical components of wetlands. The following soil characteristics are considered important in maintaining wetland intregity: depth, mineral composition, organic matter content, moisture, temperature and chemistry. In reference to the proposed development site, three wetland soils have been identified. They are: (1) Raypol (Rb) silt loam; (2) Ridgebury (Rd) fine sandy loam; and (3) Udorthents (UD"w"), which are disturbed soils capable of supporting wetland vegetation (see Figure 7). The characteristics of these soils and of wetland vegetation have been described earlier in this report and will not be discussed here.

Wetland Values and Functions

Inland wetlands perform major ecological and hydrological functions, and have intrinsic natural values. Seven of these functions and values are briefly described below. It must be emphasized that these functions or values may not necessary apply to wetlands on the proposed development site. The discussion is intended primarily to provide a general description of wetland functions and values in order to assist the Conservation Commission assess the proposed development site.

Groundwater Recharge/Discharge

Wetlands perched above the main zone of saturation are in a position to recharge the groundwater while those in contact with the main groundwater zone serve as a discharge area for the aquifer. However, groundwater discharge is considered more important than recharge. The wetlands on the proposed development site perform this function to a very limited extent, if at all.

Flood Storage

Wetlands ameliorate flood peaks by: (1) having an above-ground basin storage capacity; (2) by frictional resistance due to wetland vegetation and relief; and (3) by having soils with a high water holding capacity (i.e, below-ground basin storage capacity). The red maple forest/swamp to the west and the wetland soils in the central portions of the proposed development site have an intrinsic capacity to store flood waters. However, artificially storing flood waters in the proposed detention basins for an extended period of time may

adversely impact existing vegetative stability of the wetland.

Sediment Trapping

Wetland vegetation tends to bind or "cement" fine silt and sediment, thus reducing the potential of erosion and sedimentation. Soil properties have little direct influence on sediment trapping but non-eroding wetland soils provide the conditions whereby sediment accumulation can take place. Being located in the lower end of the watershed, the wetlands on the proposed development site perform a valuable function in collecting and trapping sediment moving through the watershed.

Nutrient Retention and Removal/Water Quality

Wetlands play important roles in filtering and converting ecologically or socially harmful compounds or pollutants into safe forms which are then assimilated into the environment with little or no impact. Not all pollutants, such as road salt, hydrocarbons, or toxic substances are removed by wetlands. Nevertheless, wetlands are important in maintaining water quality within natural systems. Existing on-site wetlands do perform is valuable function of pollutant removal and maintenance of water quality but not a great extent because of its limited size.

Food Chain Support

Wetland soils and vegetation, including aquatic vegetation provide the primary nutrients required to maintain viable macrophytic, fish, and wildlife food webs and inter-relationships.

Habitat for Fish and Wildlife

Wetlands containing a diversity of habitats such as open water provide the necessary food and cover requirements for a variety of fish and wildlife populations. Soils are important to wetland fisheries because they moderate water quality and quantity, and provide substrate for cover and spawning. Soils also maintain vegetation which wetland flora are dependent upon for forage, escape cover, and shelter. The ERT field review indicated that on-site wetlands provided important, though limited wildlife habitat. No viable fish habitat or populations were identified.

Recreation

All types of wetlands provide outdoor recreational opportunities such as birdwatching and nature study. However, many wetland soils have low bearing strength and cannot support active recreation uses. The wetlands on the proposed development site provide only a few recreational opportunities due to their limited geographic extent. However, if the proposed detention basin in the the central portions of the development site is excavated to a significant depth, it may provide an area for winter ice skating. Additional recreational activities, primarily dirtbiking, currently takes place in other areas on the proposed development site.

Wetland Mitigation

During the ERT field review, city officials expressed the possibility of wetland mitigation to minimize potential environmental impact of the proposed development site. Since wetlands are highly

dynamic ecological communities, it is difficult to identify specific wetland impacts. They lie at the interface between aquatic and terrestrial ecosystems and are hydrologically controlled; vegetation can thus change with flood frequency, water quality, or flow rate making impact assessment difficult.

There are, however numerous wetland mitigation techniques available ranging from entirely avoiding a wetland area during development to actually creating and replacing disturbed natural wetlands by artificial means. Mitigation techniques could be employed on the proposed development site, but the decision whether to mitigate or not rests with the city and the developer.

Wetlands creation and replacement has received much attention lately, and a general description of wetlands replacement and creation is discussed below.

Wetlands Replacement and Creation

Wetlands replacement research has identified three major factors that must be taken into consideration when attempting to artificially create wetland ecosystems. They are: (1) Hydrology; (2) Soils; and (3) Vegetation.

Reconstructing or replacing a wetland disturbed by development requires an understading of wetland hydrology and functions arising from the physical characteristics of the wetland, and its geologic and topographic environment. Wetland hydrologic responses are the result of the interaction of many factors including physical character of the wetland, geologic environment, topographic setting, relationship to groundwater, proximity to streams, and possibly

wetland size and shape. The vegetative community in an replacement wetland is also very important and will need to be integrated with the hydrologic and edaphic conditions of the created wetland. These factors must be throughly assessed before wetland replacement or creation takes place.

LAND USE AND PLANNING CONSIDERATIONS



PLANNING AND LAND USE CONSIDERATIONS

Introduction

The development proposes to use two sections of the site for the construction of 126 condominium units. The area is presently zoned for M-2 and R-1. R-1 Districts are designed to provide for single-family, detached dwellings and community facilities. Use group 2, which includes apartment buildings, are not permitted "as of right" in R-1 Districts, but are permitted "as of right" in the General Residence Districts. Residential uses are not permitted in Manufacturing Districts (M-2).

Surrounding Land Use

The site is presently surrounded by commercial and residential development. A livery service and a bagel factory are located on Island Lane and just north of the proposed development site.

Supportive parking and loading facilities are also present. There is a certain amount of traffic on a 24-hour basis with ingress and egress from the livery service during the day, with distribution networking for transport delivery from the bagel factory during the night. There is a slight embankment on the south side of Island Lane, and trees and shrubs partly obscure activity on the north side of the road from an observer on the proposed development site.

Immediately to the south of the proposed condominium site is an area of single-family residential development. The ERT field review indicated that the proposed site is used mainly for dirthiking and trash dumping. Development of the site would thus have to address

such uses and adequately separate proposed on-site accessory uses from the single-family yards by strategically placing landscape buffers or fences.

Traffic and Access

Observation during the field review indicated that traffic along Island Lane is relatively light. However, with development of condominiums on this site, there will be an increased amount of traffic due to vehicles from condominium occupants and service vehicles. There is a lack of sidewalks in the area and Island Lane, a long, relatively straight road would be conducive to speeding. For public safety, it is suggested that any development of this site be monitored by the city for need for traffic and speed controls as well as the construction of sidewalks or pedestrian rights-of-way. The proposed development site plan addressed the need for limited access cuts into Island Lane and the locations suggested on the site plan shows sensitivity to the placement of these cuts.

Design Considerations

According to the Team's planner, the development and siting of detention ponds or other drainage amenities could be a positive enforcement of the development use through sympathetic design standards and placement of paths through the site.

There are no community facilities on or near the site. Access to school bus pick-up stations or other off-site amenities such as sidewalks and pedestrian rights-of-ways should be considered in the development proposal. The need for sidewalks is evident due to the

proximity of shopping facilities which are within walking distance.

These, however, are not the responsibility of the developer, but rather the city.

Route 1 is a densely developed commercial and industrial corridor within walking distance from the proposed development. Therefore, future residents of this development would not have to be entirely dependent upon automotive transport to reach Route 1. However, there will be a given number of automobile traffic exiting the proposed condominium site during peak commuter hours. Controls may have to be addressed by the city to minimize any possibility of accidents.

The proposed site plan and the field review revealed that the developer is sympathetic to the needs of the single-family residential development residents to the south by providing landscape buffers to insure the privacy of the residents. The location of the proposed condominium units also takes advantage of existing vegetation. The proposed development also will retain and enforce existing berms and vegetation to minimize the impact of noise and lights from the industrial uses to the north.

Other Land Use Issues

In the opinion of the Team's planner, single-family residential development would not be the best use of this site. Such structures would call for subdividing the land with all its inherent difficulties in providing paved roads, sidewalks, individualistic drainage preferences in individualized landscaping and yard uses.

Also, single-family structures usually require more community facilities such as schools and recreation sites. Single-family

structures would need to be more adequately buffered from the lights, noise, and traffic from the industrial uses to the north.

Other, more dense uses are permitted "by right" on the site due to the M-2 District. This is a difficult site develop due to its position between single-family residences and industry. The proposed use of condominium-residential structures would serve as a good transition use.

Conclusions

Development of this site should be encouraged in the near future as there is evidence of dumping and use by surrounding residents. For the safety of the residents to the south, development is preferred. However, environmental concerns raised by the Team should be taken into consideration in the location of roads, parking facilities, vegetation, berms, and detention basins.

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 - a 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 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 landowner/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 two (2) reviews per month.

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