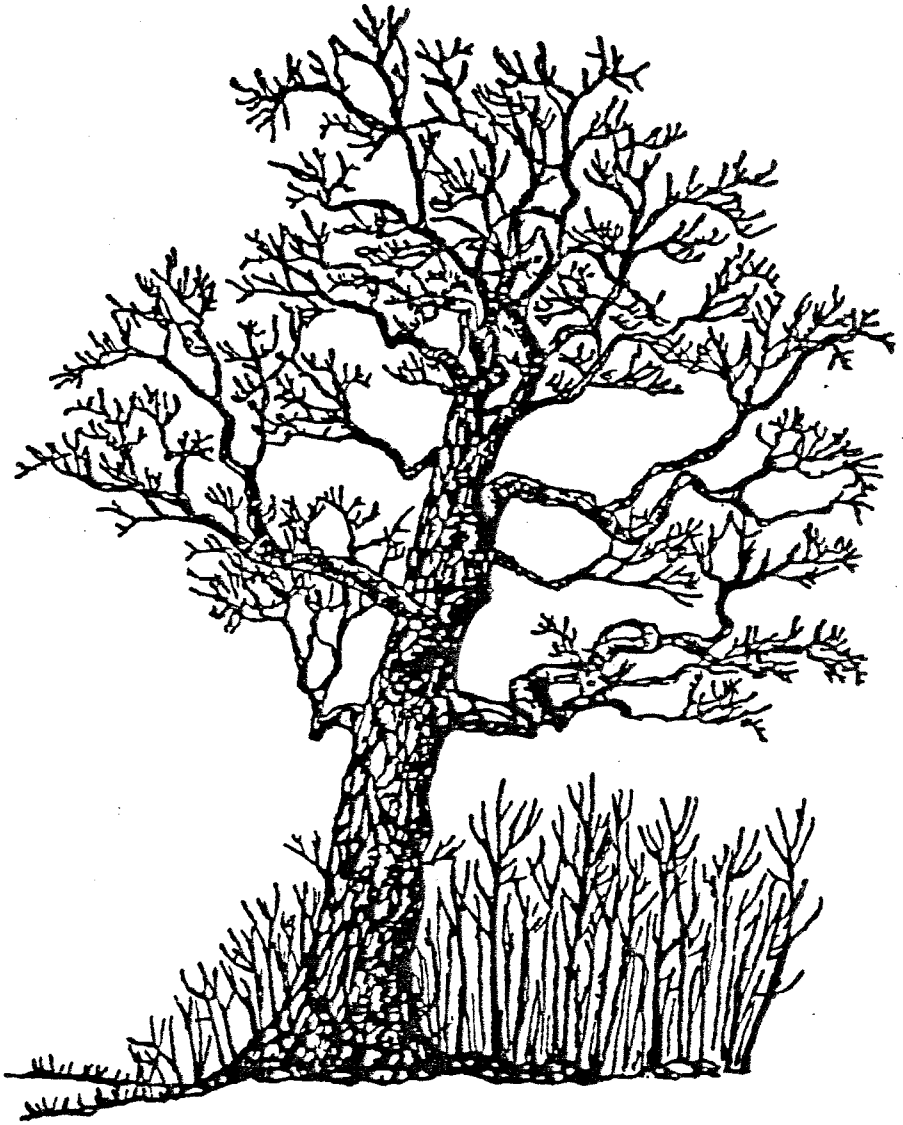
KING'S MARK ENVIRONMENTAL REVIEW TEAM



REPORT FOR

# THE CITY TRUST FACILITY

SHELTON,
CONNECTICUT

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

# THE CITY TRUST FACILITY

# SHELTON, 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

Shelton Inland Wetlands Commission

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

SEPTEMBER 1989

# ACKNOWLEDGMENTS

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

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

Finally, special thanks to John Cook, Inland Wetlands Enforcement Officer, City of Shelton, James Swift, Kasper Associates, developer, David Lasnick, Goldman, Rosen & Willinger, attorney for the developer, and Stephen Wing, environmental consultant for the developer, for their cooperation and assistance during this environmental review.

# EXECUTIVE SUMMARY

## Introduction

The Shelton Inland Wetlands Commission has requested that an environmental review be conducted on the City Trust Facility, a site proposed for commercial and residential development. The site is located in the east central section of Shelton. The site contains several areas of steep slopes, approximately 7.62 acres of wetlands, 4 ponds on-site and 2 ponds just off-site. The developer proposes 4 office buildings with associated parking garages and a condominium development for the property. The plans also include detention basins and road construction and relocation. The City is concerned with the impacts to the wetlands, ponds and surrounding ecosystems, the suitability of the soils to support such a development and planning implications.

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

## Location, Zoning and Land Use

The site is bounded by condominiums, single-family residences, a golf course, a private recreation area and private, undeveloped land. Single-family houses, commercial and office development and a multi-family residential development characterize the vicinity. The site contains a former landfill which should be assessed for environmental impacts. Several manmade ponds are located on the site. If these ponds are used for stormwater detention, the dams will need to be repaired or replaced, and the DEP Dam Safety Unit should be contacted. The site is located in a R-1 zone and will require a zone change. The site will be served by municipal sewer and water.

## Topography

Site elevations range from 240 to 390 feet above mean sea level. Slopes range from gentle to steep, with numerous rock ledges.

## Geology

The bedrock types underlying the site have been mapped as Ansonia Gneiss and 2 subunits of the Southington Mountain Schist. Bedrock is at or near the ground surface throughout the site. Glacial till overlays the bedrock on the site. The texture of the till is mostly sandy and loose. Inland wetland soils occur in drainages and depressions on the site.

Geologic Development Concerns

Water and sewer lines will be extended to serve the project, ameliorating many of the hydrogeologic concerns. Geologic limitations to development include shallow to bedrock areas throughout the site, moderate to very steep slopes which will require substantial cuts and fills and regulated wetland soils. Shallow bedrock will require blasting for foundations, utility lines and roads. Blasting should be done under the supervision of persons familiar with the latest blasting techniques. A geotechnical survey is recommended to collect background data on the bedrock loading rates, the wells in the area and to determine the amount of blasting needed. Numerous rock cuts and retaining walls are proposed. The potential for slippage along the foliation planes exists, and blasting may increase this potential. Rock cuts on the east side are most susceptible. In order to minimize the threat, a reduction in proposed density and blasting may be needed. The rock from the site may have commercial value. However, the Southington Mountain Schist and its subunit may be chemically reactive and change the properties of the water with which it comes in contact. Experiments can determine the potential of the rock to be chemically active. Large areas of the site will be disturbed for construction. Steep slopes and possible silty soils increase the erosion hazard. A properly prepared and enforced erosion and sediment control plan should reduce the potential for erosion. Several wetland crossings are proposed. Although undesirable, wetland crossings are feasible. All disturbance to wetlands requires a permit. Buildings and parking garages are proposed on some wetland areas. A geotechnical survey should show that the soils are capable of supporting building loads. The seasonal high water tables are a concern. Underdrains, footing drains and waterstops should prevent wet basements, but building in wetlands should be discouraged.

Hydrology

Drainage from the site flows into Burying Ground Brook. The site can be divided into 3 subwatersheds. Surface waters in the area are presumed to be Class A and groundwater is Class GA. Development of the property will cause increased runoff. In order to maintain the stormwater flows at pre-development flow levels, detention basins are proposed. The calculations for stormwater flows should be available to the Commission. Increased runoff may increase streambank erosion. The potential to degrade on and off site waterbodies is high. A soil erosion and sediment control plan should be designed and enforced. Best Management Practices for stormwater management should be applied. These could include grit removal chambers, catchbasins with hooded outlets and sumps. A wastewater discharge permit should be requires.

Soil Resources

The major soil limitations on the site are shallow droughty soils, bedrock outcrops and steep slopes. Wetland soils were flagged in the field. Upland soils should appear on the plans. Test pit information about the depth to bedrock would be valuable in assessing the site.

Erosion and Sediment Control

The site has severe limitations including bedrock outcrops, shallow soils, highly erodible soils and irregular topography. Trees will be subject to windthrow, and cut and fill areas will be difficult to stabilize. Some additional items for the erosion and sediment control plan include phasing the development, testing the bedrock profile for Constitution Boulevard, using extra time and care on sediment barriers in shallow soils, orienting the controls parallel to the slopes, locating stockpiles on the plans, providing more details for the construction sequence, providing a contingency plan for disturbed areas, providing more details for seeding, having fill slopes no steeper than 2:1, using a filter layer under the rip-rap, designing a maintenance schedule, providing installation details for haybales and allowing the inspector to make changes as conditions warrant.

Wetland Considerations

The wetlands on the site consist of permanent open waterbodies, vernal ponds and intermittent wet areas. Functions include water conveyance, water renovation, stormwater storage, sediment trapping, recreation, aesthetics, educational opportunities and wildlife habitat. The wetlands exhibit fair to excellent quality and good to excellent functional values. The development will include filling approximately 1.70 acres of wetlands for roadways, buildings and landscaping. The plans indicate some wetland creation. The Commission should not consider the proposed wetlands as compensation for the wetland impacts. Also, detention ponds should not be considered as wetland creation areas. The wetland impacts other than filling are difficult to identify. Due to the extent of earthmoving proposed, significant short term impacts are unavoidable. Overall, the site does not appear to be well suited for the intensities proposed and alternative plans and densities should be considered. Recommendations include designing a detailed erosion and sediment control plan, submitting a copy of the application to the Army Corps of Engineers, submitting a copy of the dam modifications to the DEP Dam Safety Unit and designating the spoil piles on the plans including erosion and sediment controls.

Wildlife Considerations

Habitat on the site includes mixed hardwood forests, old fields and wetlands/ ponds. The area offers a variety of food and cover to wildlife including deer, grouse, various birds, reptiles and amphibians. The site offers good wildlife habitat because of the degree of interspersion of habitats including ponds, wetlands and uplands. The site contains much trash which can have negative impacts on wildlife.

As with any development, the impact on wildlife habitat will be negative. Wildlife habitat will be broken up and lost with the construction of roads, driveways, offices, parking areas and homes. Other impacts include the creation of lawns and the presence of humans, traffic, dogs and cats. Several detention basins are proposed for the site. If the detention basins are not maintained and become silted in, growth of vegetation might might be stopped or limited. Because detention basins are usually designed to have water only after periods of heavy runoff and only retain that water for a short period, they do not provide a reliable source of water for

wildlife. Unless a variety of desired species of vegetation can be provided along with water for some period of time, these basins will have little or no wildlife habitat value.

Also proposed was the "creation" of wetlands on several upland sites and the enlargement of a wetland in another area as a mitigation step. Creation of a wetland in an upland area will probably result in a net loss of wildlife habitat value for the area, rather than a gain as proposed. The presence of upland areas with their vegetation diversity usually enhances the value of the adjacent wetland. Some wetlands vegetation can be restored, but there is uncertainty as to the extent to which man can restore the various functions including wildlife habitat. Since on-site mitigation involves some elimination of other types of habitat, and the wetlands created will be of questionable value, consideration should be given to outright purchase of other wetlands in the area to compensate for the loss.

There are many steps that can be taken in order to make the area more suitable for wildlife. These include buffer strips, natural landscaping techniques, maintaining forest wildlife requirements and providing nesting boxes for birds.

Fisheries Resources

The property contains 4 small ponds and several intermittent streams. The streams are less than 5 feet wide and serve as drainageways connecting the wetlands. Given the uncertainty of the flows, the streams may not support a fishery population. The ponds are considered warmwater fisheries and may contain largemouth bass, bluegill sunfish, common (pumpkinseed) sunfish, yellow perch, chain pickerel, golden shiner and brown bullhead. The fish population appears to be in balance. In order to provide an adequate fishery, the population needs to remain in balance. Periodically checking the balance and adjusting the species angled from the ponds will keep the proper population balance. The Ponds H and K are best suited for a warmwater fishery. Trout may not survive year-round in the pond, but may be stocked for a put and take fishery if desired.

The ponds may be affected by the development of the site. Concerns include erosion and sedimentation, stormwater drainage and lawn maintenance chemicals. Impacts can be minimized through buffer strips, erosion and sediment controls, a stormwater management plan and limiting lawn care chemicals.

Threatened and Endangered Plant and Animal Species

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

Planning Considerations

The site is surrounded by mixed land uses including single-family homes, condominiums, a school and light industrial. If Shelton is committed to building Constitution Boulevard, development of this site is inevitable. The compatibility of the mixed uses of this development with surrounding land uses is questionable. The

location of the buildings and roads should be considered carefully. Erosion and sediment control is essential, and the site should be developed in phases.

Shelton's Plan of Development is under revision. A major element in the new plan is Constitution Boulevard. The Regional Plan of Development recognizes that the Constitution Boulevard and Route 8 corridor will contain mixed uses. However, a substantial portion of the site was recommended as open space because of the steep slopes and wetlands. The State Policies Plan for the Conservation and Development of Connecticut identifies the site as an urban growth area.

The site is zoned R-1 with a Special Development Area zone as an overlay. The design meets the minimum standards for the zone. Erosion control and stormwater drainage are critical factors which should be considered. The possibility of combining some parking areas should be reconsidered. Buildings that combine parking and office space could minimize impacts to the wetlands.

Traffic Considerations

Once Constitution Boulevard is connected, it will be a major arterial road for Shelton. Traffic generated by this development should be viewed in light of future traffic for the entire road. Full development of the project will generate over 13,000 trips per day. Turning lanes and control signals will be needed, as well as consideration for future widening of the road. The 8% grade from Bridgeport Avenue will require improvements which will be undertaken in conjunction with the State Traffic Commission.

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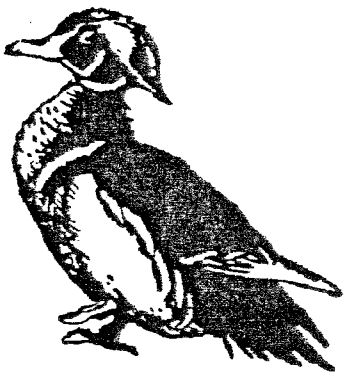
# INTRODUCTION



# INTRODUCTION

The Shelton Inland Wetlands Commission has requested that an environmental review be conducted on the City Trust Facility, a site proposed for commercial and residential development. The site is located in the east central section of Shelton. Access to the site is provided via the Walnut Avenue Extension, King's Highway, Cots Street and Bristol Drive in Shelton.

The site contains several areas of steep slopes, approximately 7.62 acres of wetlands, 4 ponds on-site and 2 ponds just off-site. The developer proposes 4 office buildings with associated parking garages and a condominium development for the property. The plans also include detention basins and road construction and relocation. The City is concerned with the impacts to the wetlands, ponds and surrounding ecosystems, the suitability of the soils to support this development and planning implications.

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

1) Assess the topographic, hydrologic and geologic characteristics of the site, including development limitations and opportunities;

2) Assess the impact of stormwater runoff;

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

4) Discuss soil erosion and sedimentation concerns;

5) Assess the impact of the development on the wetlands and watercourses;

6) Assess the impacts of the development on the wildlife and fisheries;

7) Assess planning and land use issues; and

8) Assess the traffic and access issues.

## THE ERT PROCESS

Through the efforts of the Shelton Inland Wetlands Commission, the developer's representatives and the King's Mark ERT, this environmental review and report was prepared for the City. This report primarily provides a description of on-site natural resources and presents planning and land use guidelines. The review process consisted of 4 phases:

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

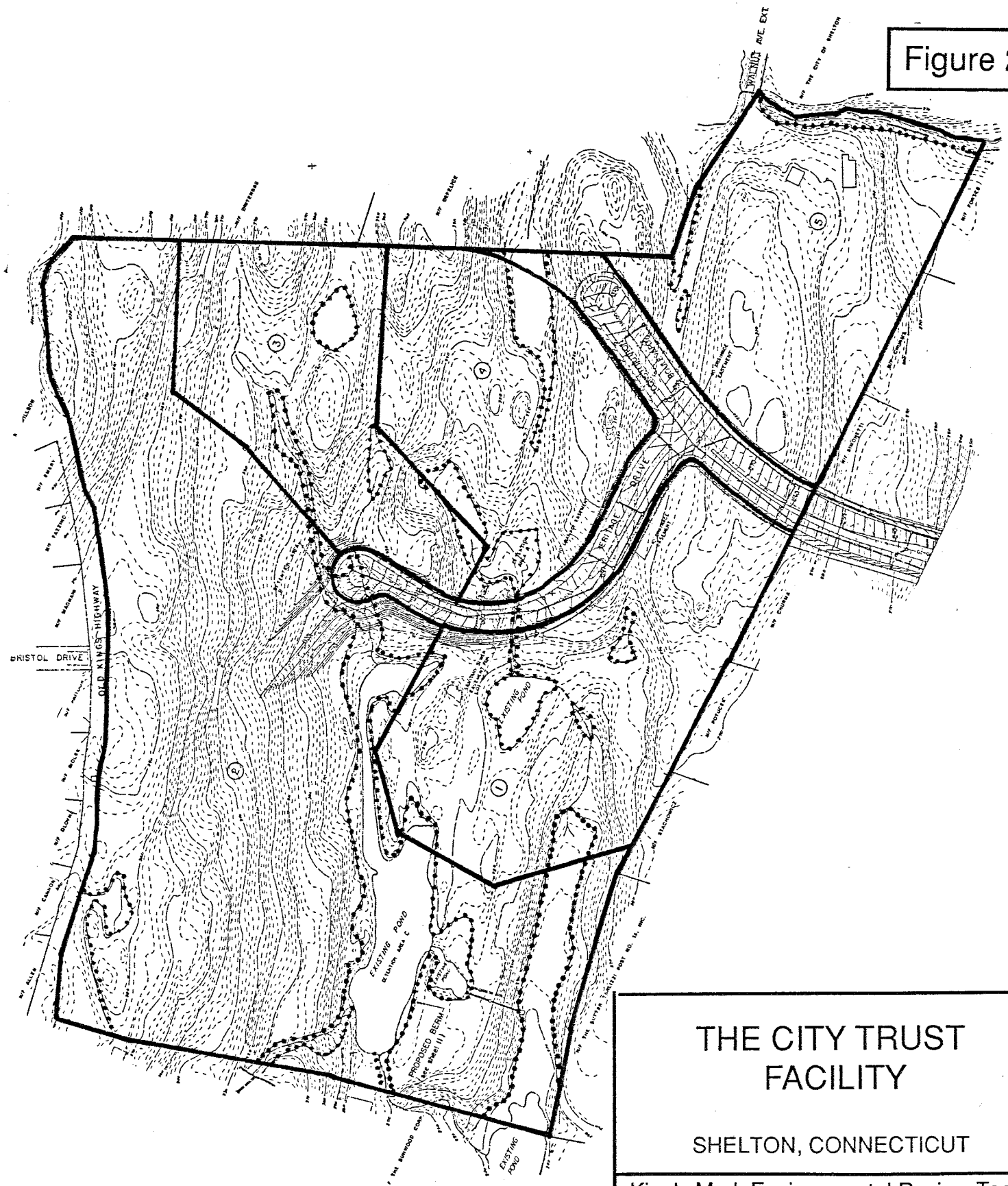
The data collection phase involved both literature and field research. The ERT field review took place on August 9, 1989. Field review and inspection of the proposed development site proved to be a most valuable component of this phase. The emphasis of the field review was on the exchange of ideas, concerns or alternatives. Mapped data or technical reports were also perused, and specific information concerning the site was collected. Being on-site also allowed Team members to check and confirm mapped information and identify other resources.

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

# Figure 1

## LOCATION OF STUDY SITE

Figure 2




# THE CITY TRUST FACILITY

SHELTON, CONNECTICUT

King's Mark Environmental Review Team

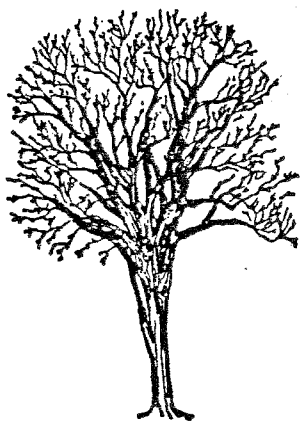
Scale: 1" = 300'

N

## Proposed Site Plan

Information from City Trust Facility Site Development Plan

# PHYSICAL CHARACTERISTICS



## LOCATION, ZONING AND LAND USE

The City Trust Facility property consists of approximately 75 acres and is located in east central Shelton, 1250 feet northwest of Route 714. It is bounded on the west by single-family residential homes, on the south by condominium units, on the east by undeveloped land and on the north by a golf course, a private recreational facility and single-family homes. Other land uses in the vicinity include commercial, industrial and office buildings, most of which occur along Route 714.

The site is currently wooded, with a dense understory in most places. A network of gravel roads exists throughout the site. Because of these uncontrolled access roads and the site's remoteness, the illegal dumping of garbage, rubbish, abandoned vehicles and demolition and construction wastes has taken place at numerous locations. A private landfill had been operated at the southern limits of the property but is now inactive. An environmental assessment should be conducted on the former landfill to determine possible impacts of leachate and methane production and whether or not the landfill will significantly impact the overall site development.

There are a few man-made ponds on the site, each less than 2 acres in size. Outlet streams for the ponds ultimately drain to Burying Ground Brook. The water levels in the surface waterbodies were raised by man-made impoundments (stone-lined or concrete dams) sometime between 1934 and 1965. The outlet structures (dams) on all ponds are in disrepair. Utilizing these ponds for detention or sediment retention will necessitate repairing or replacing the dam structures and may require a dam permit by the Department of Environmental Protection (DEP) Dam Safety Unit (566-7245). The DEP should be contacted as early as possible in the planning stage.

The entire site is located in a R-1 zone which permits residential homes on 1-acre lots. The proposed complex, which includes 4 office buildings with associated

parking garages and a condominium development, is not compatible with the R-1 zone and requires a zone change.

The site will be accessed by extending Constitution Boulevard, a new road, from Route 714. This road will cross and affect 3 wetland areas en route to the site and will pass under Cots Street.

The proposed development will be served by public water from the Bridgeport Hydraulic Company - Main System and by public sewers tied into the Shelton municipal system. The single-family homes north of the site are served by individual on-site wells that tap the underlying bedrock.

## TOPOGRAPHY

The site consists of an area of hummocky and irregular terrain founded on a rock core hill. Site elevations range from about 390 feet above mean sea level at the western boundary to 240 feet above mean sea level at the bottom of the long, narrow swale east of the largest pond on the site (see Figure 3). A large area of steep slopes is concentrated in the western limits where condominium development is proposed. Numerous rock ledges are visible on the crests and flanks of the steep hill at the western limits. Small rock ledges are visible in the northeast corner.

## GEOLOGY

Bedrock and surficial geologic maps of the Ansonia topographic quadrangle (GQ-426 and QR-23, respectively) show the general geology of the property and the surrounding area. It is not known if more detailed geologic mapping for the property has been prepared by the applicant.

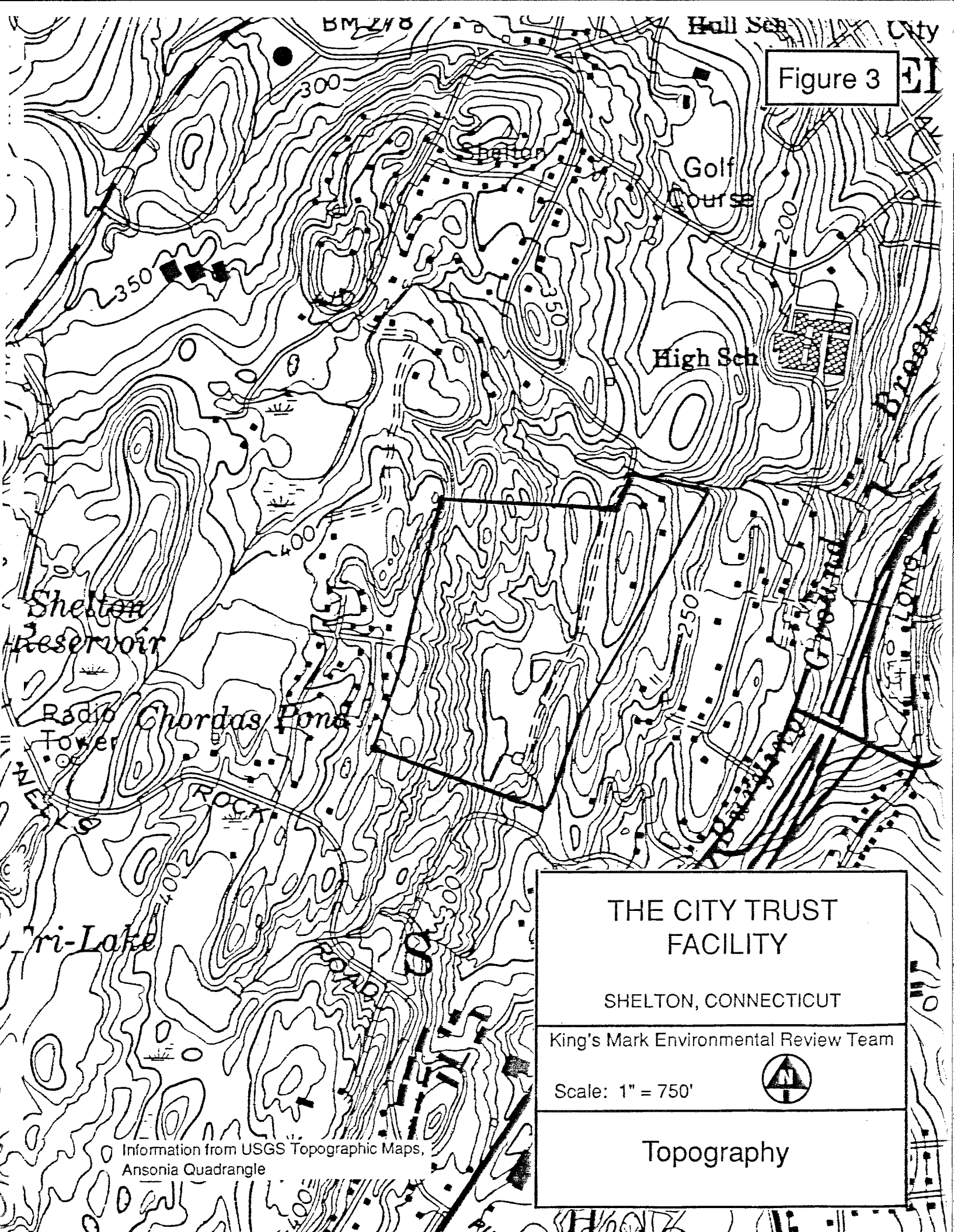


Figure 3
Golf Course
High Sch
Shelton Reservoir
Radio Tower
Chordas Pond
Tri-Lake
ROCK
300
350
400
250
200
THE CITY TRUST FACILITY
SHELTON, CONNECTICUT
King's Mark Environmental Review Team
Scale: 1" = 750'
Topography
Information from USGS Topographic Maps, Ansonia Quadrangle

The bedrock underlying or cropping out on the site can be divided into 2 major rock formations: Ansonia Gneiss and the Southington Mountain Schist. A single outcrop comprised of another Southington Mountain Schist subunit occurs in the east central parts (see Figure 4).

The contact between the 2 major rock formations is closely aligned with the unimproved road shown on the topographic map. In general, Ansonia Gneiss consists of a white to light-gray granitic gneiss and underlies the central and western parts of the site. The Southington Mountain Schist found on the site consists of interlayered gray to silvery, medium- to coarse-grained schist and fine-grained granofels and is located in the eastern parts. A single outcrop of the Southington Mountain Schist subunit occurs at the contact between the 2 major rock formations on the site. It is described as a medium- to fine-grained, medium-gray to greenish black amphibolite (rock rich in amphibole minerals).

Schists, gneisses and granofels are crystalline rocks that have undergone metamorphism (geologically altered by great heat and pressure in the earth's crust). These terms (schists, gneisses and granofels) refer to the textural and structural aspects of the rocks. The schist rocks tend to be slabby (part relatively easily along the mineral or foliation planes) due to the alignment of platy or flaky minerals. Gneisses tend to be banded rocks characterized by alternating layers of granular (light-colored) minerals and platy or flaky (dark-colored) minerals. Granofels are typically light- to dark-green, medium- to coarse-grained, massive to poorly layered rocks composed primarily of quartz and feldspar. The rock lacks the compositional banding noted in a gneiss.

Geologic mapping data indicates that the layering or foliation planes of the bedrock on the site dips moderately to moderately-steeply to the east.

According to geologic and soils mapping data, bedrock is at or near ground surface throughout the site. In most places, bedrock is 5 feet or less below the ground

surface, but there may be some deeper pockets where the bedrock surface is as much as 10 feet below ground surface.

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

According to the site plans and report entitled Biological Evaluation of Wetlands (Dr. P. Barske), regulated inland wetland soils occur throughout the site. The boundaries for the wetland soils have been superimposed onto the site plan and flagged in the field by a certified soil scientist.

The principal wetland soils occurring on the site are the Ridgebury, Leicester and Whitman extremely stony fine sandy loams (Rn). The undifferentiated group contains soils that range from poorly drained (Ridgebury and Leicester) to very poorly drained (Whitman). They occur in drainageways and depressions on the till-covered site in areas that are generally flat. The soil texture and presence of soil mottling indicates a seasonally high groundwater table condition. In general, the seasonally high water table is about 6 inches below ground surface in the Ridgebury and Leicester soils and at or near ground surface in the Whitman soils. The primary engineering concerns with these wetland soils are the seasonally high water table and a slowly permeable substratum approximately 1.5 feet below ground surface in the Ridgebury and Whitman soils. Most of these wetland areas provide good habitat for wetland plants, good habitat for wetland wildlife and perform important hydrologic functions.


Figure 4
Golf Course
High Sch
Shelton Reservoir
Radio Tower
Chordas Pond
ROCK
Southington Mountain Schist Subunit (Amphibolite)
Southington Mountain Schist (Schist)
Ansonia Gneiss
THE CITY TRUST FACILITY
SHELTON, CONNECTICUT
King's Mark Environmental Review Team
Scale: 1" = 750'
Bedrock Geology
Information from USGS Topographic Maps, Ansonia Quadrangle

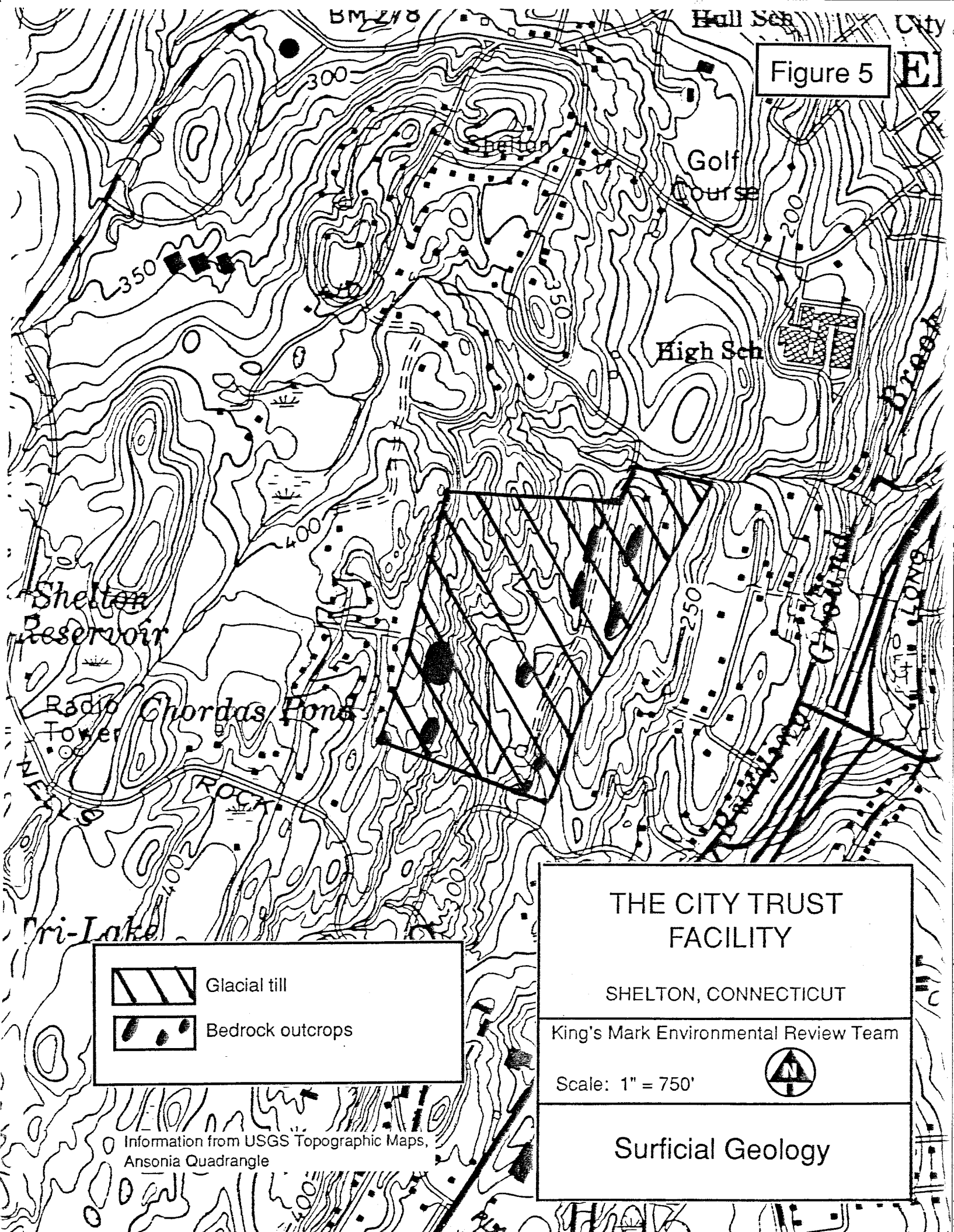


Figure 5
Golf Course
High Sch
Shelton Reservoir
Radio Tower
Chordas Pond
ROCK
Tri-Lake
Glacial till
Bedrock outcrops
THE CITY TRUST FACILITY
SHELTON, CONNECTICUT
King's Mark Environmental Review Team
Scale: 1" = 750'
N
Surficial Geology
Information from USGS Topographic Maps, Ansonia Quadrangle

## GEOLOGIC DEVELOPMENT CONCERNS

The availability of municipal water and sewer lines will help to allay the principal hydrogeologic concerns ordinarily associated with a development of the proposed magnitude. Nevertheless, from a geologic perspective, there are several areas of special concern on the site which warrant careful examination. These geologic limitations, which will make site development costly, include:

1) The widespread presence of shallow to bedrock soils;

2) The presence of moderate to very steep bedrock controlled slopes that will require substantial cuts and/or fills to accommodate the development; and

3) The presence of regulated inland wetland soils that range from poorly drained to very poorly drained.

The presence of shallow to bedrock soils throughout the site suggests that a tremendous amount of blasting will be required for construction of foundations, utility lines, roads, parking areas and parking garages. Any blasting that takes place on the site should proceed only with great care and under the strict supervision of persons experienced with modern blasting techniques. It is strongly recommended that detailed geotechnical soil, rock and foundation studies be conducted on the site.

The major concerns with blasting in the area are the potential for undue seismic shock and airblast, especially considering the proximity of residential homes to the site. The applicant's blasting contractor should conduct a pre-blast survey of the area which includes collecting background water quality data for nearby domestic wells. Also, yield tests for these wells should be considered. If groundwater contamination occurs, the municipal water, which will be made available to the site, could be extended to the affected residences. When blasting is conducted without regard to the potential environmental effects, there can be

problems for surrounding properties.

Certain blasting techniques can be employed to minimize the impacts of blasting, depending upon the blasting requirements and geology of the site. A sufficient number of bedrock borings are needed in order for the blasting contractor and geotechnical consultant to study the local bedrock. Also, the bedrock cores should be examined to determine the probable surface bearing load values of the bedrock and till, especially with regard to the multi-story office buildings, parking structures and the residential buildings constructed on or near steep slopes. These values are expected to differ across the site due to the varying lithology of the underlying bedrock. For example, massive gneissic rock usually tends to have a higher loading rate (tons/square foot) than foliated rock such as schist.

Numerous rock cuts and retaining walls are proposed for the development. This work will occur in the areas proposed for condominiums as well as in the area of office buildings and parking garages. In many cases, the rock cuts will be close to proposed buildings, roads and parking areas. The potential exists for rock slabs to slip along the foliation planes resulting in a failure or rock slide. Large amounts of blasting will probably weaken these foliation planes, further aggravating the potential for failure. The foliation planes or layering in the rock on the site dip moderately to moderately steeply to the east. Rock cuts that occur on the east side of the project are most susceptible to failure because of the location of the proposed cuts with respect to the attitude of planar features in the bedrock on the site and steeply sloping terrain. It is strongly suggested that this concern be thoroughly investigated by a competent geotechnical engineer familiar with this type of work. The potential for rock slides to occur on the site is a definite public safety concern that must be addressed in detail. In order to reduce the threat of rock slides, there may be a need to reduce the proposed residential densities, the amount of land disturbance and the amount of blasting.

The bedrock underlying the site may have value for commercial uses such as building stone, rip-rap or fill material. However, because of the mineralogy of the bedrock, especially the Southington Mountain Schist and its subunit, freshly blasted rock may change the physical and chemical quality of water with which it comes in contact. The potential exists for acid mine drainage problems to affect the aquatic environments of surface or groundwaters on- or off-site. If the rock is found to have acid production potential, every effort should be made not to deposit the rock materials near surface waterbodies or close to the groundwater table to prevent adverse water quality changes. Modification of experiments such as acid/base accounting and simulated weathering experiments can be used to predict the field occurrences of acidic drainage in the bedrock underlying the site.

The presence of moderate to steep slopes will be a problem with regard to cut embankments for the construction of roads, parking lots, condominiums, parking garages and office buildings. In order to develop the site as intensely as proposed, a large land area will be disturbed. The steep slopes, the amount of disturbance and presence of till soils, which may have a high silt and clay content, can create erosion and siltation problems unless proper control measures are implemented and enforced. The costs for site engineering will escalate in order to accommodate slope retention and foundation design. Careful planning is required in these areas to minimize the potential impacts to water resources on- and off-site.

According to the site plans, regulated wetlands will be affected (i.e., filled, modified, etc.) due to road and building construction. Present plans indicate crossing wetland soils in several areas in order to develop the site. In addition, Constitution Boulevard, the main access road to the proposed development, will cross wetlands in 3 areas.

Although undesirable, wetland crossings are feasible, provided they are properly engineered. Wetland crossings should be constructed adequately above the

surface elevation of the wetlands. This will allow for better drainage of the road and decrease the frost heaving potential. Road construction through wetlands should be done during the dry time of year and should include provisions for effective erosion and sediment control. Any unstable, organic or mucky material should be removed and replaced with a permeable road base material. Culverts should be properly sized and located to avoid altering the water levels in the wetland or causing flooding problems.

Classified inland wetland soils are regulated under Public Act No. 155, "An Act Concerning the Inland Wetlands and Watercourses." Any activity which involves modification, filling, removal of soils, etc. will require a permit and ultimate approval by the Shelton Inland Wetland Commission. In reviewing a proposal, the Commission needs to determine the impact that the proposed activity will have on the wetlands. If Commission members determine that the wetland is serving an important hydrological or ecological function and that the impact of the proposed activity will be significant, they may deny the activity altogether, or at least require measures that would minimize the impact. Every effort should be made to determine whether or not feasible and prudent alternatives exist. If alternatives exist, they should be carefully studied and considered by the applicant and City.

Buildings and parking garages are proposed on some Rn (Ridgebury, Leicester and Whitman soils) soils where a seasonally high water table is at, near or above ground surface. The presence of seasonally high water tables in these areas is an engineering concern in terms of building construction. If office buildings or parking garages are constructed on the Rn soils, a geotechnical person should investigate the potential of these soils to support these buildings.

Soil testing in the wetland areas is warranted to determine soil textures, composition, depth to the water table and the loading rate of the soil. If buildings and garages are permitted on the wetland soils, all foundations should have both exterior

footing drains and an interior underdrain system. Water stops should be placed between walls and footings. This should keep basements dry. Even with utilizing these engineering measures, the construction of buildings or garages on wetland soils should be discouraged. The destruction of a wetland due to grading and filling takes away any of the natural hydrological or ecological functions that it presently performs.

## HYDROLOGY

The entire site lies within the Burying Ground Brook drainage area. Surface runoff on the site can be divided into 3 subwatershed areas. The majority of the site (about 70%) drains to the long, narrow drainageway located in the southeast corner. The outlet streams for the 3 major surface waterbodies on the site also drain to this area. Water in the drainageway ultimately flows into the unnamed outlet stream for Tri-Lake, which is tributary to Burying Ground Brook. Surface runoff arising in a small area in the northeast corner flows generally northward to the unnamed outlet stream for Chordas Pond, which is tributary to Burying Ground Brook. Finally, about 10 acres in the eastern limits drains eastward towards Cots Street. Road drainage eventually intercepts the water and routes it to Burying Ground Brook (See Figure 6).

The surface waterbodies and streams on the site have not been classified by the DEP Water Compliance Unit and are presumed to be Class A water resources. This means that the water resources may be suitable for drinking, recreational or other uses and may be subject to absolute restrictions on the discharge of wastes, although certain discharges may be permitted. With regard to the proposed development, stormwater discharges may require a discharge permit from DEP Water Compliance Unit. Groundwater in the area is classified by the DEP as GA, which

means it is suitable for private drinking water supplies without treatment.

Due to the proposed density and amount of land disturbance for the development, surface drainage on- and off-site is expected to increase dramatically following development. In order to maintain post-development flows at pre-development flow levels, the stormwater management system for the project includes control structures (detention basins). Hydrologic calculations for the project should demonstrate that increased stormwater runoff will not cause flooding problems on- or off-site. The applicant's engineer should reference Chapter 9 of the Guidelines for Soil Erosion and Sediment Control - Connecticut 1985 for estimating peak flows, runoff volumes and detention basin design. A narrative and summary report that includes supporting calculations should be provided for Commission members.

Another concern with increased runoff is the potential for streambank erosion and siltation problems. Due to the site conditions (e.g., steep slopes), the amount of land disturbance and the proposed density of the development, the potential to degrade surface water on- and off-site during and following development is high.

During construction, it is imperative that erosion and sediment control measures be properly installed and maintained. The City should police erosion and sediment control measures on a regular basis. A detailed erosion and sediment control plan that is properly enforced will minimize the potential adverse impacts to water resources on- and off-site.

Following development, there is great potential of degrading surface water on- and off-site by parking lot, road and driveway runoff, by floating solids, road salt, oils, greases and road sand. Best Management Practices (BMP's) which are consistent with the DEP Water Compliance Unit should be developed and implemented to minimize problems. Consideration should be given to grit removal chambers, catch basins equipped with hooded outlets and sumps for trapping sediments and floatables. Responsibility for maintenance of the structures should be assigned. The

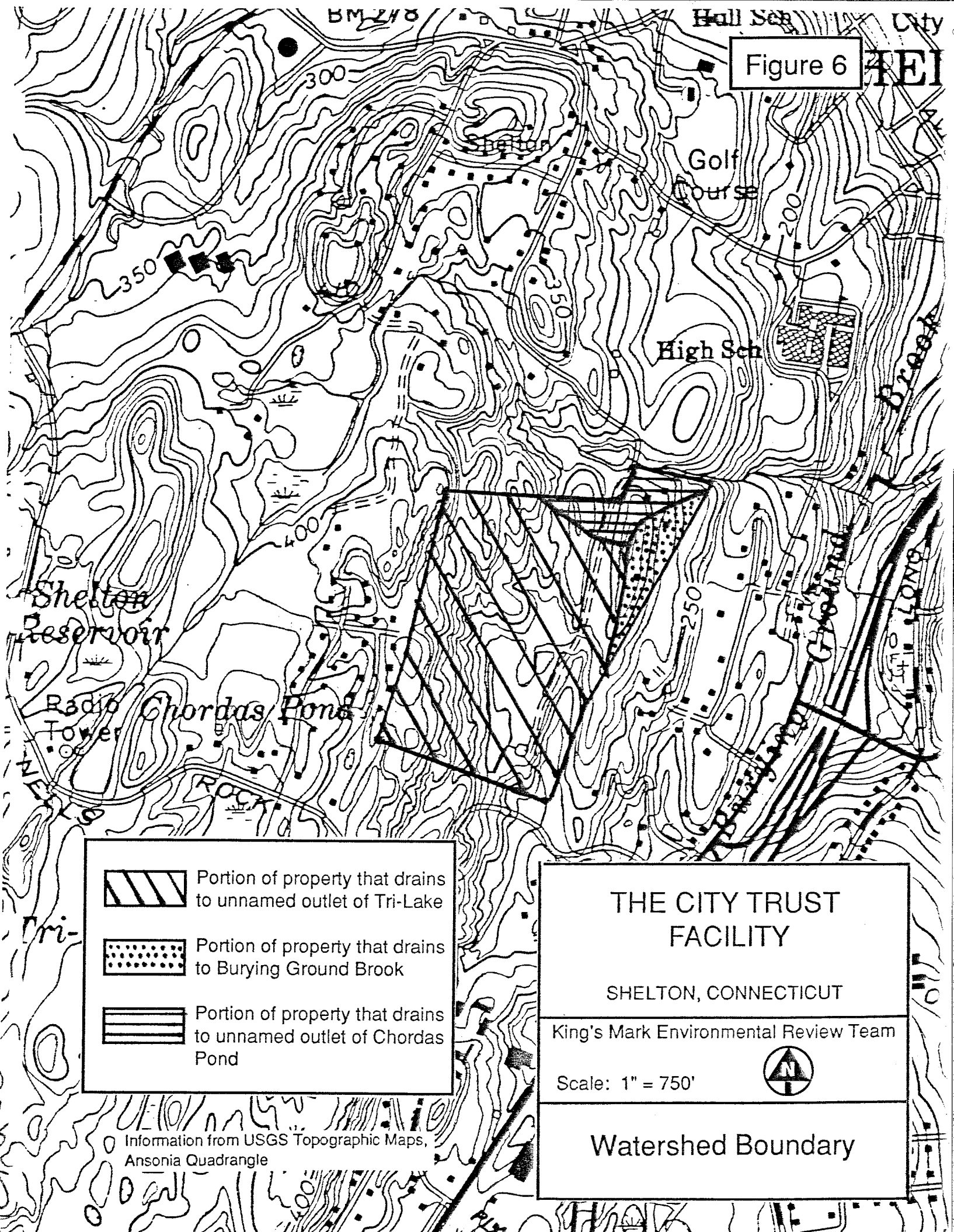


Figure 6
Portion of property that drains to unnamed outlet of Tri-Lake
Portion of property that drains to Burying Ground Brook
Portion of property that drains to unnamed outlet of Chordas Pond
THE CITY TRUST FACILITY
SHELTON, CONNECTICUT
King's Mark Environmental Review Team
Scale: 1" = 750'
Watershed Boundary
Information from USGS Topographic Maps, Ansonia Quadrangle
Golf Course
High Sch
Shelton Reservoir
Radio Tower
Chordas Pond
Burying Ground Brook
300
350
400
250
200

The plans for the City Trust Facility address erosion and sediment control concerns. However, certain important items are missing from the plans and should be included in the final draft. A worksheet useful as a guide in preparation of a sediment and erosion control plan is included in Appendix B along with a sample construction sequence narrative in Appendix C.

The proposed site has severe development limitations including bedrock outcrops, shallow soils, highly erodible soils, steep slopes and irregular topography. Shallow rooted trees exposed to changed wind patterns and velocities due to clearing the site will be subject to windthrow. Extensive cuts and fills are planned, and these areas are very difficult to stabilize. Most of the grading activity will involve blasting bedrock. Rock rubble is costly to move around and to grade properly. Additional unconsolidated fill material and topsoil may have to be brought in to properly grade and stabilize some areas. Consequently, care should be taken to prepare and implement a comprehensive erosion and sediment control plan.

Additional elements for the erosion and sediment control plan are recommended and include:

1) Phasing the development should be an integral part of the plan.

2) Bedrock cuts are shown for Constitution Boulevard. Existence of bedrock should be verified by testhole information. If shallow bedrock does not exist in some areas, grading and/or retaining walls will be needed.

3) The plans for the roadway do not have an erosion and sediment control plan narrative.

4) Sediment barriers will be difficult to install in many areas due to the shallow to bedrock soils. Extra time and care will be needed to install and maintain these measures.

5) In several locations sediment barriers are oriented up and down slope rather than across slope. Serious erosion can result from flows running parallel to the barrier.

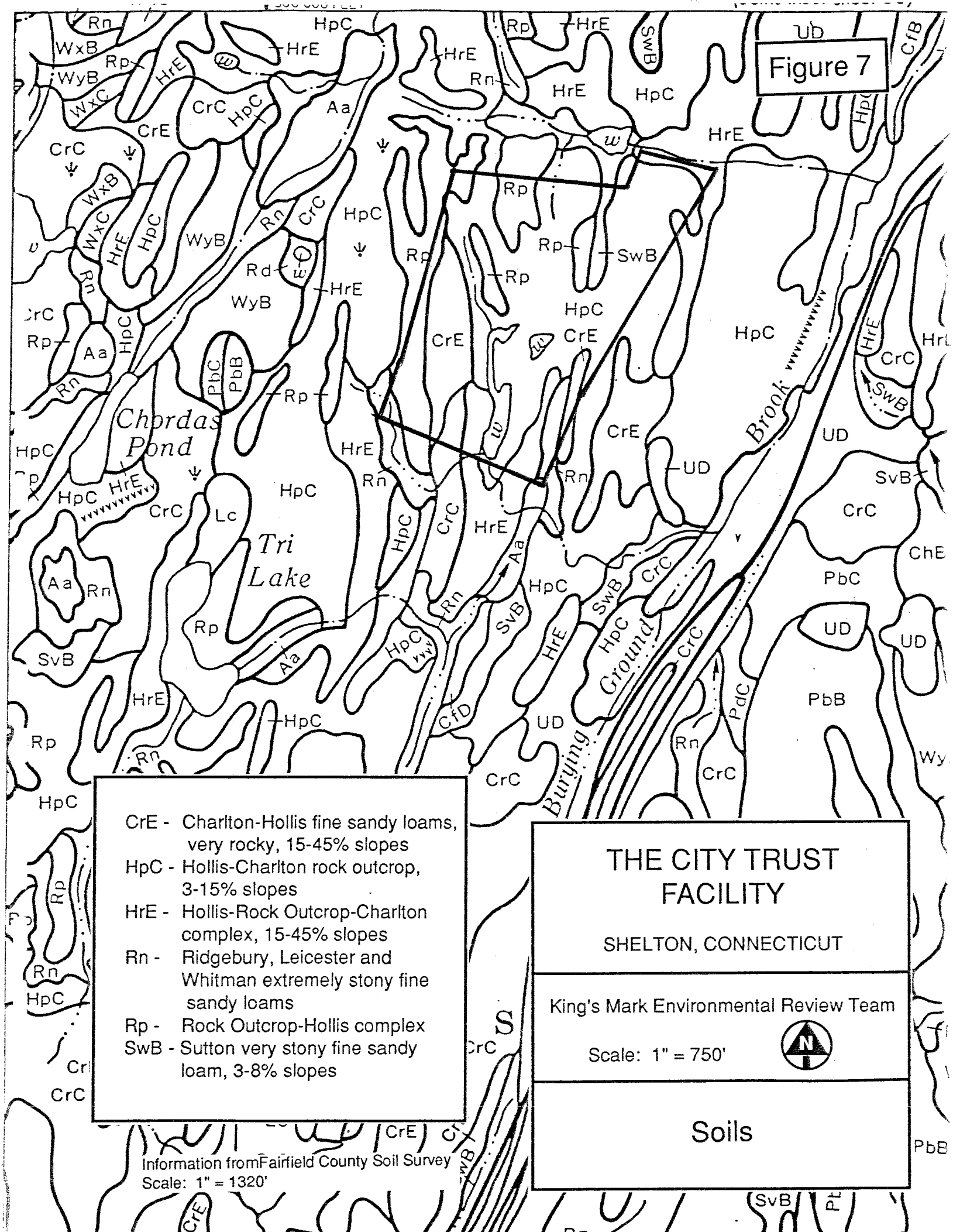


Figure 7
Chordas Pond
Tri Lake
Brook
Burying Ground
CrE - Charlton-Hollis fine sandy loams, very rocky, 15-45% slopes
HpC - Hollis-Charlton rock outcrop, 3-15% slopes
HrE - Hollis-Rock Outcrop-Charlton complex, 15-45% slopes
Rn - Ridgebury, Leicester and Whitman extremely stony fine sandy loams
Rp - Rock Outcrop-Hollis complex
SwB - Sutton very stony fine sandy loam, 3-8% slopes
Information from Fairfield County Soil Survey
Scale: 1" = 1320'
THE CITY TRUST FACILITY
SHELTON, CONNECTICUT
King's Mark Environmental Review Team
Scale: 1" = 750'
N
Soils

6) The location and methods for stabilization of topsoil and other material stockpiles should be specified.

7) The construction sequence used in the plans for each of the lots should have more detail. A sample construction sequence is contained in Appendix C.

8) A contingency plan should be provided for protection of disturbed areas when season or weather prohibit establishment of permanent vegetative cover.

9) Specifications are needed for seedbed preparation, seeding, liming, fertilizing and mulching. Seeding dates, rates, mulching rates and mulch anchoring measures are needed. Areas to be vegetatively stabilized should be noted.

10) Fill slopes should be no steeper than 2:1.

11) A filter layer of geotextile or 6 inches of gravel is needed under the riprap layer in the stormwater outlet detail.

12) The assignment of responsibility for maintenance of permanent measures should be specific. A maintenance schedule and checklist should be developed for inspections of measures including stormwater outlets, seedings and detention structures.

13) Installation details are needed for haybale sediment barriers.

14) The City's inspector should be able to make changes in the proposed plan as site or weather conditions warrant.

# BIOLOGICAL RESOURCES

## WETLAND CONSIDERATIONS

### Wetland Classification and Functions

The wetlands on the site consist of permanent open waterbodies, vernal ponds and some intermittently wet areas. Primarily, these wetlands function in the conveyance of runoff from the site, renovation of runoff waters, stormwater storage, sediment trapping, recreation, aesthetics, educational opportunities and wildlife habitat. Most of these functions are enhanced during the wetter portions of the year, especially wildlife habitat and stormwater storage. Overall, the wetlands on-site range from fair to excellent quality and exhibit good to excellent functional values. As defined by the U.S. Fish and Wildlife Service, the wetlands found on-site are classified as follows:

POWH Palustrine, open water, permanent.

PFOlE Palustrine, forested, broad leaved deciduous, seasonally saturated.

### Development Impacts and Recommendations

The proposed development includes the filling of approximately 1.70 acres of wetlands. Filling of the wetlands is proposed for the development of suitable building sites, roadways and landscaping. The plans indicate some areas as "proposed wetlands" or wetland creation. In evaluating this project, the Commission should not consider these "proposed wetlands" as compensation for impacts to other wetland areas. Additionally, detention ponds and other stormwater management structures should not be considered or proposed as wetland creation areas.

Some of the acreage measurements appear incorrect in light of the map scale. The applicant should check all discrepancies in mapping prior to the Commission's final decision. Specific impacts to the wetland systems on site, other than filling, are very difficult to identify. Due to the extent of the restructuring and earth moving activities proposed and the resulting changes in hydraulic flows, drainage patterns

and sedimentation impacts, significant short term impacts and degradation to the wetlands will be unavoidable with no guarantee of future quality or functional capacities. In general, the site does not appear well suited for the activities and intensities, proposed and Commission members might consider alternative plans and development intensities for the site.

The following recommendations are offered for consideration in reviewing and evaluating this project:

1) Despite the plans to develop the proposed lots in stages, the potential for significant impacts from erosion and sedimentation is high. Commission members should ensure that well planned and detailed sediment and erosion controls are developed. A maintenance plan and some form of performance bonding should be included as part of permit conditions.

2) The applicant should submit a complete copy of the application materials to the U.S. Army Corps of Engineers to determine if a Federal 404 Permit is needed.

3) The applicant should submit all application materials relevant to the repair and modification of the dam associated with the pond in the southern portion of the site, Pond K (labelled by P. Barske), to the DEP Dam Safety Unit. These materials should include all construction and structural details and hydraulic data.

4) Due to the quantities of soil and earth which will be moved on the site, spoils areas, including sediment and erosion controls, should be designated on the application plans. These areas should be seeded or covered to reduce erosion if they are to remain for any extended period of time (2 weeks or more).

## WILDLIFE CONSIDERATIONS

### Description of Area/Habitats

The 75-acre site proposed for development contains a variety of habitats including forest, old field, various wetland areas and 4 ponds. The site is located just southwest of the center of Shelton. Extensive commercial and residential development is proposed for the site.

Generally, the greater the habitat diversity and degree of interspersion of various habitat types, the greater the variety of wildlife there is using an area. Although the site has been badly abused by people dumping garbage, trash and junk cars, it does provide some habitat diversity and provides fair to good wildlife habitat in general.

The abundance of wetlands and small ponds on the site increases the area's value for wildlife. The dumping of trash, although probably more disturbing from an aesthetic point of view, can have a negative effect on wildlife. Wildlife can become entangled in the trash, and if certain types of trash are not disposed of properly, they could contaminate water and soil, having some effect on wildlife.

Forest: The majority of the area is covered by mature mixed hardwoods. The mixed hardwood forest contains maple, tulip, cherry, oak and a variety of other species. Mixed hardwood forest provides cover, food and a variety of nesting and den sites for a variety of wildlife species.

There is little conifer cover, except for the stand of pines in the southeastern section of the parcel. Conifer or evergreen trees can provide valuable cover and food to a variety of species. This small stand probably provides for some aerial cover for roosting and some food in the form of cones. Crows, grouse, turkey vultures, some raptors and many songbirds use conifers as preferred roosting and/or loafing sites. Some species such as the mourning dove, goshawk, sharp-shinned hawk and robin may frequently use conifer stands for cover. Some species of birds and small mammals including the red squirrel may use this small stand of conifers.

The snag trees (dead trees) in the area are a source of insects which serve as food for many species including woodpeckers and chickadees. Den trees (trees with cavities) can serve as a nesting or denning place for animals such as squirrels and raccoons.

Old Fields: The old fields provide early successional stage habitat, an important habitat type because it contains a variety of plant communities from grass and herbaceous plants to shrubs and young trees. The abundant growth of a variety of shrubs such as blueberry, multi-flora rose, honeysuckle, cherry and sumac provide abundant cover and a food source for a variety of wildlife.

Old field areas not only increase the overall diversity of the area, they also increase the "edge effect." Edge effect is the phenomena that occurs where vegetational types meet with a high degree of interspersion, and vegetational diversity or richness is achieved. Because of this phenomena, the needs of a wide variety of wildlife can be met.

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

The wetlands found on this site include the wetlands associated with the ponds, deciduous tree/shrub wetlands and wetlands associated with intermittent streams and pools. Several areas hold water on a seasonal basis and contain a variety of shrubs and plants in and around them. The deciduous wetlands and deciduous wetlands with intermittent water that contain a diversity of vegetation are important to a variety of wildlife, especially reptiles and amphibians which use these areas for breeding. Areas like Site F and Site D (labelled by Dr. Philip Barske), could provide habitat such as this. The type of wetland habitat found in the ravine provides food and cover to a variety of species including songbirds, mammals, reptiles and amphibians.

The ponds provide good wildlife habitat because of the variety of open water, emergent vegetation and thick shrub and tree cover around them. It is unfortunate that so much trash has been thrown into them. But unless this dumping of trash has affected the water quality, the effect on wildlife is probably minimal. Wetland areas that hold water over a longer time period and support a greater diversity of vegetation tend to provide more valuable wildlife habitat. Many species including a variety of birds, amphibians, reptiles and mammals make use of areas like these.

Wildlife Habitat/Recommendations

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

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

Because wetlands are important to wildlife and because wetlands are limited in quantity and continue to dwindle on an almost daily basis in Connecticut, it is always preferable to chose the option or path of development that least affects wetlands. The value of wetlands increases as the quantity of the resource diminishes. A buffer of at least 100 feet is recommended around any wetland to

preserve its value and use by wildlife.

Several detention basins are proposed for the site. As proposed, the detention basins will probably have little value as wildlife habitat. Shallow grassed-in basins provide little wildlife habitat. Rip-rapped basins with no vegetation provide no wildlife habitat. Basins replanted with wetland vegetation may offer some habitat to a few species of wildlife, but typically will not duplicate the function of a natural wetland with its own unique hydrology and complex of vegetation. If the detention basins are not maintained and become silted in, growth of vegetation might might be stopped or limited. Because detention basins are usually designed to have water only after periods of heavy runoff and only retain that water for a short period, they do not provide a reliable source of water for wildlife. Unless a variety of desired vegetation species can be provided along with water for some period of time, these basins will have little or no wildlife habitat value.

Wetland Mitigation: The proposal includes the "creation" of wetlands on several upland areas and the enlargement of a wetland in another area as a mitigation step. Creation of a wetland in an upland area would probably result in a net loss of wildlife habitat value for the site, rather than a gain as proposed. The presence of upland areas with diverse vegetation usually enhances the value of the adjacent wetland. Some wetlands vegetation can be restored. But there is uncertainty concerning the extent to which man can restore the various functions including that of wildlife habitat.

Based on research reviewed and the opinion of many resource professionals, wetland creation is not the cure-all that many once hoped it would be for replacing wetlands lost through development. Concerns raised with wetland creation include:

1) Will the created wetlands function as natural wetlands, providing the benefits of a natural system? Most experts agree that the only function man can replicate with any degree of accuracy is that of flood storage.

2) Will vegetation from undisturbed wetlands be used in the wetland created? Can this be done without depleting the remaining wetland?

3) What goals or standards should be applied to wetland creation: function, acreage or only location?

4) Will there be any formal investigation made to determine the function and values of the wetlands to be lost and the function, value and quality of those that will be created? Will there be any monitoring of the "success" of the mitigation?

Since on-site mitigation involves some elimination of other types of habitat in order to create the wetlands and the wetlands created will be of questionable value in some respects, consideration should be given to outright purchase of other wetlands in the area to compensate for the loss. Thus a currently functioning system, although located elsewhere, could be preserved as wildlife habitat.

Further Pre-Development Recommendations: In planning and constructing a development, there are steps that should be considered in order to minimize adverse impacts to wildlife. Despite these measures, wildlife habitat will be adversely affected as the amount of development increases on a site.

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

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

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

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

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

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

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

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

d) Trees with vines (i.e., fruit producers) should be encouraged. Shrubs and trees which produce fruit can be planted as part of the landscaping in conjunction with the development, especially those that produce fruit which persists through the winter (winterberry). See Appendix 1 for a list of suggested shrub and tree species that can be encouraged and/or planted to benefit wildlife.

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

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

## FISHERIES RESOURCES

### Site Description

The City Trust Facility property contains 4 small ponds as well as several intermittent streams. The streams average less than 5 feet in width and serve as drainages connecting wetland areas. The streams have intermittent flows (becoming dry or of extremely low flows during periods of little precipitation). Given the uncertainty of year-round flows, the ability of these streams to contain a viable fishery population is unlikely.

The City Trust Facility property contains 4 ponds which will be referred to as Pond G, Pond H, Pond K (labelled by Dr. Philip Barske) and Pond L.

Pond G: This waterbody is approximately 1/8 acre in surface area and averages less than 2 feet in depth. This pond is in an advanced state of eutrophication with an overabundance of submergent and emergent aquatic vegetation as well as emergent

terrestrial vegetation. Given the advanced state of eutrophication, this area of standing water should be classified as a swamp.

Pond H: This is an artificial waterbody approximately 3/4 acre in surface area and averages 4 feet in depth. Submergent aquatic vegetation overtops nearly 100% of the pond bottom, and emergent vegetation covers 85-90% of the pond surface. This pond is classified warmwater.

Pond K: This is an artificial waterbody approximately 2 acres in surface area and averages 5 feet in depth. This pond is steep sided with a narrow littoral zone which has limited the areas available for aquatic plant growth. Emergent and submergent vegetation occupy less than 40% of the pond area. This pond is classified warmwater.

Pond L: This pond is located at the spillway along the eastern shore of Pond K. This is an artificial waterbody approximately 1/16 acre in surface area and averages 3 feet in depth. This pond is steep sided, however the shallow water depth has allowed for abundant aquatic plant growth. This pond has a dense algal bloom and is classified warmwater.

According to the DEP, the surface waters of the City Trust Facility are Class A. Designated uses for waters of this classification are: fish and wildlife habitat, recreational use, agricultural and industrial supply and other purposes.

Aquatic Resources

The DEP Bureau of Fisheries does not have a recorded fisheries investigation of the ponds on the City Trust Facility property nor record of previous fish liberation. The ponds are classified warmwater, and anticipated fish species include: largemouth bass, bluegill sunfish, common (pumpkinseed) sunfish, yellow perch, chain pickerel, golden shiner and brown bullhead. Yearling and adult sunfish (species unidentified) and goldfish were observed in Pond H and Pond K at the field review.

The presence of yearling fish is an indication that the species population is in "balance." A balance is the relationship between fish species and the available food supply. Fish populations are balanced if they produce catchable sized fish on a yearly basis. In ponds such as those found on the site, a balance must be reached between the sunfish species and a predator such as the largemouth bass. Both of these species will reproduce in the pond: the sunfish will feed upon invertebrates, while the largemouth bass, being picavorous (fish feeding), will feed on the sunfish. The bass will control the sunfish numbers and will allow a certain percentage of sunfish to grow to a larger size and reproduce and be "catchable." The largemouth bass will likewise have an ample food supply to allow growth to maturity and also be harvestable. An unbalanced fish population will result in species overcrowding and will not produce catchable sized individuals annually.

The simplest method of determining balance is to pull a minnow seine along the pond shoreline. This method will capture a portion of the existing fishery population. The sample will give a representative species size and composition. Seining should be done during the mid to late summer when the spawning of warmwater species is completed and the newly hatched young are evident.

The following can be determined from shoreline seining:

**Proper balance**: one or more largemouth bass fingerlings and many newly hatched sunfish along with intermediate sized sunfish.

**Unbalance**: many newly hatched sunfish, many intermediate sized sunfish and no fingerling bass, which indicates an overcrowding of sunfish.

**Unbalance**: few newly hatched sunfish, no or few intermediate sized sunfish, along with fingerling and small largemouth bass, which indicates an overcrowding of largemouth bass.

Fisheries Management

The most effective method for maintaining the balance of warmwater sportfish in the City Trust ponds is angling. Angling will remove a portion of the fishery population while assuring the continued growth of the remaining individuals and reducing the likelihood of overcrowding. If an overcrowding of sunfish occurs, additional largemouth bass may be stocked or angling for bass may be curtailed for a period of time. If there is an overabundance of largemouth bass, shelter must be provided for the escape of young sunfish and/or additional forage must be provided such as the introduction of golden shiners. Additional sunfish should not be stocked because overcrowding can occur easily. The DEP Bureau of Fisheries can be contacted for advice on methods of maintaining balance.

Pond H and Pond K are best suited for the management of warmwater species and would provide the greatest angling opportunities. The shallowness of the ponds indicates a condition of increased water temperatures and lowered oxygen levels, producing an environment not favorable for the year-round survival of coldwater species such as trout. Trout may be stocked in the spring or late fall to provide for a put-and-take sportfishery. That is, trout are stocked for angling with the intention of removing all or most prior to the onset of warmer temperatures.

Watershed Management

The proposed development of this site may have **impacts** on the waterbodies including:

1) The potential for soil erosion and sedimentation of the waterbodies during construction through increased surface runoff can cause waterbody degradation. There exists a great potential for increased surface runoff given the proximity of the ponds to the proposed development.

2) Surface drainage from roads and parking lots within the proposed development can carry road salt, sand and oils to the waterbodies. This will result in water quality and in-lake habitat degradation.

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

4) Any water quality problems and habitat degradation to waterbodies on the City Trust Facility property due to increased sedimentation, road and stormwater drainage, lawn chemicals and fertilizers will eventually be observed in downstream areas.

The impact on the aquatic resources of the proposed development can be minimized by implementing precautionary measures including:

1) Maintain a **minimum** 150-foot open space buffer zone along the shoreline of each waterbody and watercourse. No construction or alteration of riparian habitat should take place within this zone. The buffer zone should be widened in areas of steeper terrain.

2) A comprehensive erosion and sediment control plan should be submitted and implemented prior to the start of construction and maintained through all construction phases. Mitigative measures should include, but not be limited to, detention basins, catch basins, silt fences and haybales. Surface runoff must not be allowed to **directly** enter waterbodies or watercourses on the property. Once construction is initiated, officials from the City of Shelton should regularly police this development to ensure that all erosion and sedimentation controls are properly placed and regularly maintained.

3) An effective stormwater management plan should be designed and implemented. Waterbodies and watercourses **should not** be utilized as stormwater detention basins.

4) Limit liming, fertilizing and the introduction of chemicals to manicured lawns of the proposed development. This restriction will minimize the amount of additional nutrients entering the waterbodies on the property.

## THREATENED AND ENDANGERED PLANT AND ANIMAL SPECIES

According to the Natural Diversity Data Base, there are no Federal Endangered and Threatened Species or Connecticut "Species of Special Concern" that occur at the site in question.

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

# LAND USE AND PLANNING CONSIDERATIONS

## PLANNING CONSIDERATIONS

### Land Use

The proposed development is surrounded by a mix of land uses. The east and west sides of the property are bordered primarily by single-family residences (Cots Street and Bristol Drive). The south side is bordered by multi-family development (Sunwood Condominiums). Along the north side, a near-rural area contains scattered single-family dwellings on Walnut Avenue Extension. Other condominiums, a school and various light industrial uses are also located in the vicinity.

The main issue which should be considered in evaluating this development is Shelton's desire and commitment to build Constitution Boulevard. When completed, this road would extend from Route 110 in White Hills down to River Road (Route 110) in Sunnyside. Sections of the roadway have already been completed, and this bypass of downtown Shelton should alleviate traffic congestion significantly in that area. The City will continue its efforts to have the developers build sections of the road as part of their projects. Therefore, it should be assumed that development of this key parcel is inevitable, regardless of site restrictions. The Commission should concentrate on mitigation of environmental impacts.

The compatibility of this mixed-use development (offices and condominiums) with surrounding land uses is questionable. Homeowners are likely to object to the sight and noise of multi-story office buildings and parking structures at such a close distance, even with a substantial tree buffer. However, the residential component is compatible with the other condominiums to the south. Due to economic, traffic and amenity considerations, mixed-use development has become more widely accepted in recent years.

The actual location and arrangement of the condominium units, roadway, parking and office structures should be considered carefully. Units should not be built directly over any of the watercourses if avoidable. Lack of adequate erosion controls could create many problems, both during and after construction. The entire site should be developed gradually in phases, which allows greater ability to handle any unforeseen problems and lessens the initial environmental impacts.

Plan of Development

Shelton's Plan of Development is in the process of revision. A major element of the new plan is Constitution Boulevard. Several different uses will be recommended along this road, including housing in some sections and light industrial uses in other sections. Shelton's previous and now outdated plan (1965) had recommended single-family residential use on this property.

The Regional Plan of Development for the Valley (1988) recognizes that Constitution Boulevard and the Route 8 corridor will contain greater areas of mixed land uses in the future, mainly combinations of office and light industrial properties. The Map of Future Land Use recommends mixed uses along the proposed section of Constitution Boulevard from Bridgeport Avenue to Shelton Avenue (Route 108). However, the map recommends that a substantial portion of this site remain as open space. The open space areas are defined as areas of unusual topography, significant wetlands or watercourses, or other areas such as State parks and golf courses. This site contains substantial wetlands, watercourses and steep slopes. It should be noted that the map is a generalized interpretation of present and future development areas and is not specific to individual properties. Nevertheless, the plan does indicate that at least part of this site should be handled very carefully, or even left alone altogether.

The Locational Guide Map for the State Policies Plan for the Conservation and Development of Connecticut, 1987-1992 designates the area around and including this site as an "Urban Growth" area. The State action strategy for Urban Growth Areas

is as follows: "High priority and affirmative support toward concentration of new urban growth which occurs outside of urban centers into specified areas capable of supporting large scale, mixed uses and densities in close relationship to the urban centers." The entire Route 8 corridor in Shelton has been designated as Urban Growth Area. Therefore, this development proposal is in accordance with the State Plan.

Zoning Regulations

Surrounding zoning includes Residential R-1, a planned residence district (Sunwood Condominiums) and Commercial CB-1 along Bridgeport Avenue. The Shelton Planning & Zoning Commission has created a Special Development Area (SDA) overlying the R-1 zone. The design proposal meets the minimum standards for lot area, frontage, building height, setbacks, lot coverage and floor area.

Site Design Compatibility

Site design is an important consideration in the development of this property. The steep slopes and wetland areas will make both construction and erosion control difficult and expensive. Storm drainage from the condominiums should be carefully examined. Slight sedimentation from Sunwood Condominiums was observed in the large pond. Also, the possibility of combining some of the parking facilities with the office buildings should be re-evaluated. The large surface areas of the parking garages will create substantial runoff. Although the cost might be greater, buildings that integrate parking and office space can still be aesthetically feasible, given the right design. Although the office buildings would be larger, it may be possible to reduce the total percentage of lot coverage by diminishing or eliminating some of the parking garage areas. This would reduce some of the impacts to wetlands.

## TRAFFIC CONSIDERATIONS

Once Constitution Boulevard is connected to the White Hills and Sunnyside sections of Route 110, it will become a major arterial road in Shelton. A large number of vehicles will use the Boulevard as a bypass of downtown, regardless of the level of development along any portion. Constitution Boulevard will also service a substantial number of external trips (vehicles travelling through an area, such as Monroe to Stratford). Traffic generated by this development should be viewed in the context of future traffic volumes for the entire length of the roadway. The following table defines projected traffic generation for the condominiums and office buildings:

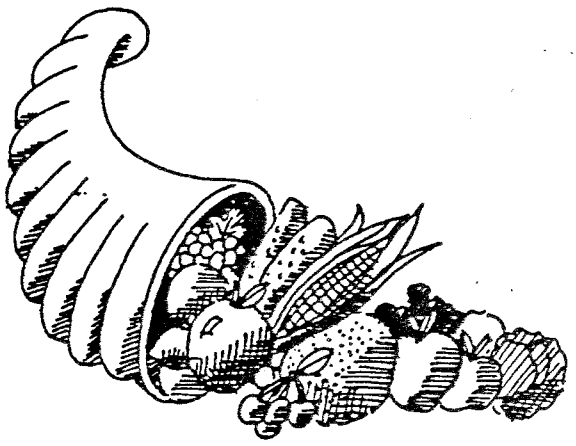
CITY TRUST DEVELOPMENT
PROJECTED TRAFFIC GENERATION

Total Condominium Units = 82
Total Office Space = 1,245,000 sq.ft.

| | | Residential Condo Dwelling Unit | | Square Footage of Office Space | |
|---|---|---|---|---|---|
| | | Average Trip Rate | Trip Ends @ 82 Units | Average Trip Rate 1K Sq. Ft. | Trip Ends @ 1,245K Sq. Ft. |
| Average Weekday Vehicle Trip Ends | | 5.40 | 443 | 10.33 | 12,861 |
| A.M. Daily Peak Hr. | Enter | 0.07 | 6 | 1.46 | 1,818 |
| | Exit | 0.37 | 30 | 0.18 | 224 |
| | Total | 0.44 | 36 | 1.64 | 2,042 |
| P.M. Daily Peak Hr. | Enter | 0.36 | 29 | 0.26 | 323 |
| | Exit | 0.18 | 15 | 1.35 | 1,681 |
| | Total | 0.54 | 44 | 1.61 | 2,004 |

As shown by the table, full development of this site would generate over 13,000 trip ends (i.e., trips entering or leaving). Therefore, over 6,500 vehicles would use this development on a daily basis, with over 2,000 of these vehicles making trips in the A.M. peak hour and the P.M. peak hour. Turning lanes and traffic control signals will be needed to achieve an acceptable level of service, along with considerations made for future widening of the roadway as other development occurs. The 8% grade from Bridgeport Avenue will require several improvements which will be undertaken in conjunction with the State Traffic Commission.

# APPENDICIES



Appendix A: Soil Limitations Chart

| MAP UNIT NAME | GENERAL SOIL PROPERTIES | DRAINAGE CLASS & DEPTH TO SEASONAL HIGH WATER TABLE | MAJOR LIMITATIONS TO THE DEVELOPMENT OF: HOMES WITH BASEMENTS | ROADS & STREETS | LAWNS/ LANDSCAPING |
|---|---|---|---|---|---|
| CrE - Charlton-Hollis fine sandy loams, very rocky, 15-45% slopes | Complex of glacial till soils from deep to shallow formed in loamy materials | Well drained to excessively drained >4.0 feet | Variable depth to bedrock, slope | Variable depth to bedrock, slope | Thin layer of soil, slope |
| HpC - Hollis-Charlton rock outcrop, 3-15% slopes | Complex of glacial till soils from deep to shallow formed in loamy materials with 20% exposed bedrock | Well drained to excessively drained >4.0 feet | Bedrock | Bedrock, slope if >8% | Thin layer of soil |
| HrE - Hollis-Rock Outcrop-Charlton complex, 15-45% slopes | Complex of glacial till soils from deep to shallow formed in loamy materials with 25% exposed bedrock | Well drained to excessively drained >4.0 feet | Bedrock, slope | Bedrock, slope | Thin layer of soil, slope |
| *Rn - Ridgebury, Leicester and Whitman extremely stony fine sandy loams | Undifferentiated unit of glacial till soils formed in loose to dense loamy materials | Poorly to very poorly drained 0-1.5 feet | Wetness | Wetness, frost action | Wetness |
| Rp - Rock Outcrop-Hollis complex | Complex of glacial till soils from deep to shallow formed in loamy materials with 50% exposed bedrock | Well drained to excessively drained >4.0 feet | Bedrock | Bedrock | Thin layer of soil, bedrock |
| SwB - Sutton very stony fine sandy loam, 3-8% slopes | Deep glacial till soils formed in loamy materials | Moderately well drained 1.5-2.5 feet | Wetness | Wetness, frost action | Large stones, wetness |

*Inland wetland soil regulated under PA155 mapped in field by Ken Stevens, consultant soil scientist

Appendix B: Sediment and Erosion Control Plan Worksheet

# PLAN REVIEW WORKSHEET

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

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

Name or Development _____

Materials received _____

_____

_____

_____

Total Area _____ Location _____

Total Number of Lots _____

Engineer _____

Date Received _____ Site Visit _____ Reviewed by _____

Submitted by _____

NARRATIVE SECTION DESCRIBING:

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

_____

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

A SITE PLAN AT A SUFFICIENT SCALE SHOWING:

Natural Features

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

Project Features

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

Clearing, Grading, Vegetative Stabilization

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

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

Drainage System

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

House Site Developments

____ Sediment and erosion control measures for individual lot development

Additional Comments

## III. INSPECTION WORKSHEET

This worksheet is suggested for personnel responsible for inspection.

PROJECT NAME: _____

LOCATION: _____

PROJECT DESCRIPTION: _____
(Brief description, condominiums, subdivision, etc.)

PARCEL AREA (Acres) _____

RESPONSIBLE PERSONNEL: (Person with responsibility for implementing soil erosion and sediment control plan)
NAME _____
ADDRESS _____
CITY _____
PHONE _____

EROSION AND SEDIMENT CONTROL PLAN PREPARER: _____

INSTALLATION CHECKLIST:

| * WORK DESCRIPTION E&S CONTROL MEASURES | ** LOCATION | DATE MEASURE INSTALLED | INITIALS OF INSTALLER | DATE MEASURE REMOVED | INITIALS OF PERSON REMOVING MEASURE |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

*Sequentially list (dates not necessary) measures to be installed. This list should be developed from the narrative and must include all work items.

**Describe location of each proposed measure so that it can be referenced to the plan map. Use of alphabetical measure names can be utilized here. Abbreviated names found in guidelines are preferable - for example: (Construction entrance to Paxton Road = C.E. Paxton Road.

# Appendix C: Sample Construction Sequence

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

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

## TYPICAL CONSTRUCTION SEQUENCE

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

Site Work:

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

Appendix D: Suitable Planting Materials for Wildlife Food and Cover

## SUITABLE PLANTING MATERIALS FOR WILDLIFE FOOD AND COVER

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

# NOTES

# ABOUT THE TEAM

The King's Mark Environmental Review Team (ERT) is a group of environmental professionals drawn together from a variety of federal, state and regional agencies. Specialists on the Team include geologists, biologists, soil scientists, foresters, climatologists, landscape architects, recreational specialists, engineers and planners. The ERT operates with state funding under the aegis of the King's Mark Resource Conservation and Development (RC&D) Area - an 83-town area serving western Connecticut.

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

## Purpose of the Environmental Review Team

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

Reviews are conducted in the interest of providing information and analysis that will assist towns and developers in environmentally sound decision-making. This is done through identifying the natural resource base of the site and highlighting opportunities and limitations for the proposed land use.

## Requesting an Environmental Review

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

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