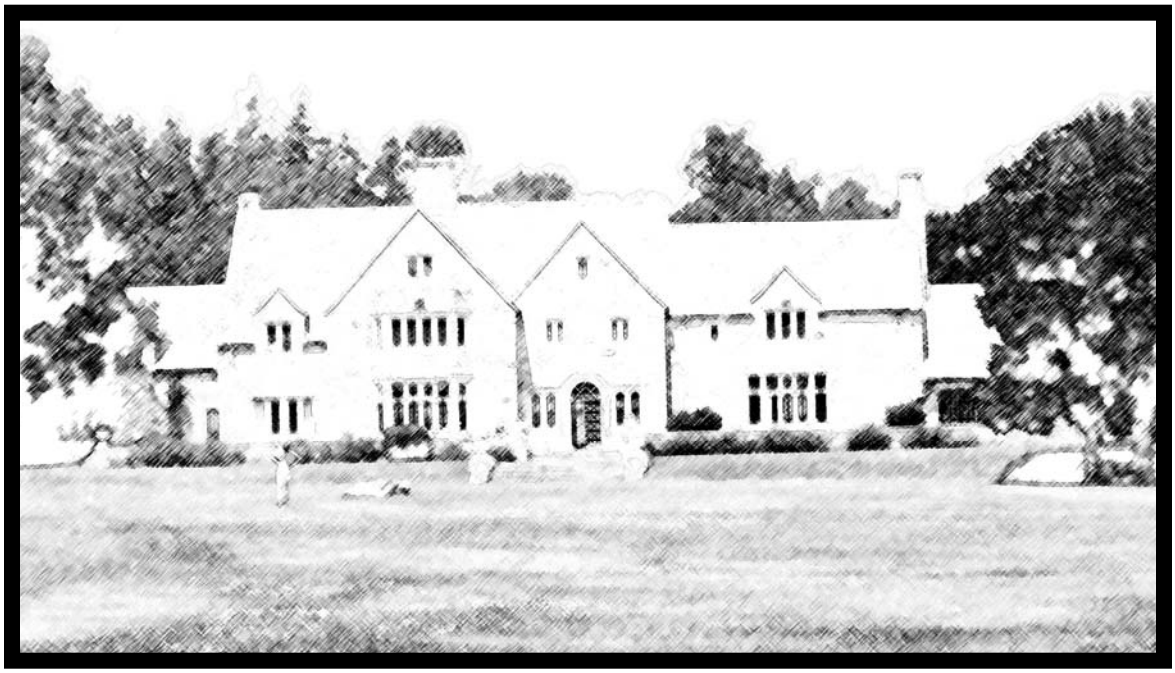
CRANBURY PARK
NORWALK, CONNECTICUT



KING'S MARK ENVIRONMENTAL REVIEW TEAM REPORT

KING'S MARK
RESOURCE CONSERVATION
& DEVELOPMENT AREA, INC.

CRANBURY PARK
NORWALK, CONNECTICUT

Environmental Review Team Report

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

For the
Department of
Recreation and Parks
Norwalk, Connecticut

March 2008

Report #346

ACKNOWLEDGMENTS

This report is an outgrowth of a request from the Norwalk Department of Recreation and Parks to the Southwest Conservation District (SWCD) and the King's Mark Resource Conservation and Development Area (RC&D) Council and ERT Subcommittee for their consideration and approval. The request was approved and the measure reviewed by the King's Mark Environmental Review Team (ERT).

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

The field review took place on Wednesday, July 25, 2007.

Nicholas Bellantoni	Archaeologist Office of State Archeology (860) 486-5248
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David Poirier	Archaeologist State Historic Preservation Office (860) 256-2761

Lawrence Rousseau	Forester DEP – Western District Headquarters (860) 485-0226
Randolph Steinen	Geologist UCONN (Emeritus) DEP – State Geological & Natural History Survey (860) 487-0226

I would also like to thank Michael Mocciae, director, Norwalk Recreation and Parks, Alexis Cherichetti, senior environmental officer, Norwalk Conservation Commission, Celia Maddox and Ellen Tully, Friends of Cranbury Park, for their cooperation and assistance during this environmental review.

Prior to the review day, each Team member received a summary of the proposed project with location maps. During the field review Team members were given reports and additional information. Some Team members conducted a map review only. Following the review, reports from each Team member were submitted to the ERT coordinator for compilation and editing into this final report.

This report represents the Team's findings. It is not meant to compete with private consultants by providing site plans or detailed solutions to development problems. The Team does not recommend what final action should be taken on a proposed project - all final decisions rest with the city. This report identifies the existing resource base and evaluates its significance to the proposed use, and also suggests considerations that should be of concern to the city. The results of this Team action are oriented toward the development of better environmental quality and the long term economics of land use.

The King's Mark RC&D Executive Council hopes you will find this report of value and assistance in the review and development of a master plan for Cranbury Park.

If you require additional information please contact:

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INTRODUCTION

INTRODUCTION

The Norwalk Department of Recreation and Parks have requested Environmental Review Team (ERT) assistance in conducting a natural resource inventory for Cranbury Park.

Cranbury Park consists of approximately 200 acres in north Norwalk near the town of Wilton. It is Norwalk's largest park. It is located on either side of Grumman Avenue. The park currently has some developed areas that include a trail system, an 18-hole disc golf course, a 19th century estate used for weddings, children's programs and other special events, a carriage house hosting a seasonal theater, a newly renovated tea house and gardens, a Dog Zone, pavilion, fields and playground.

OBJECTIVES OF THE ERT STUDY

The Department of Recreation and Parks has requested the ERT to assist them in conducting a natural resource inventory so they may use the information to develop a master plan for current and future uses of the park. They hope to achieve through the plan the potential for further passive and active recreation opportunities and a balance between natural beauty and usage. Areas of concern include wetlands, trails, sensitive habitats, forestry management, soil erosion and soils limitations and opportunities

THE ERT PROCESS

Through the efforts of the Norwalk Recreation and parks Department this environmental review and report was prepared for the City of Norwalk.

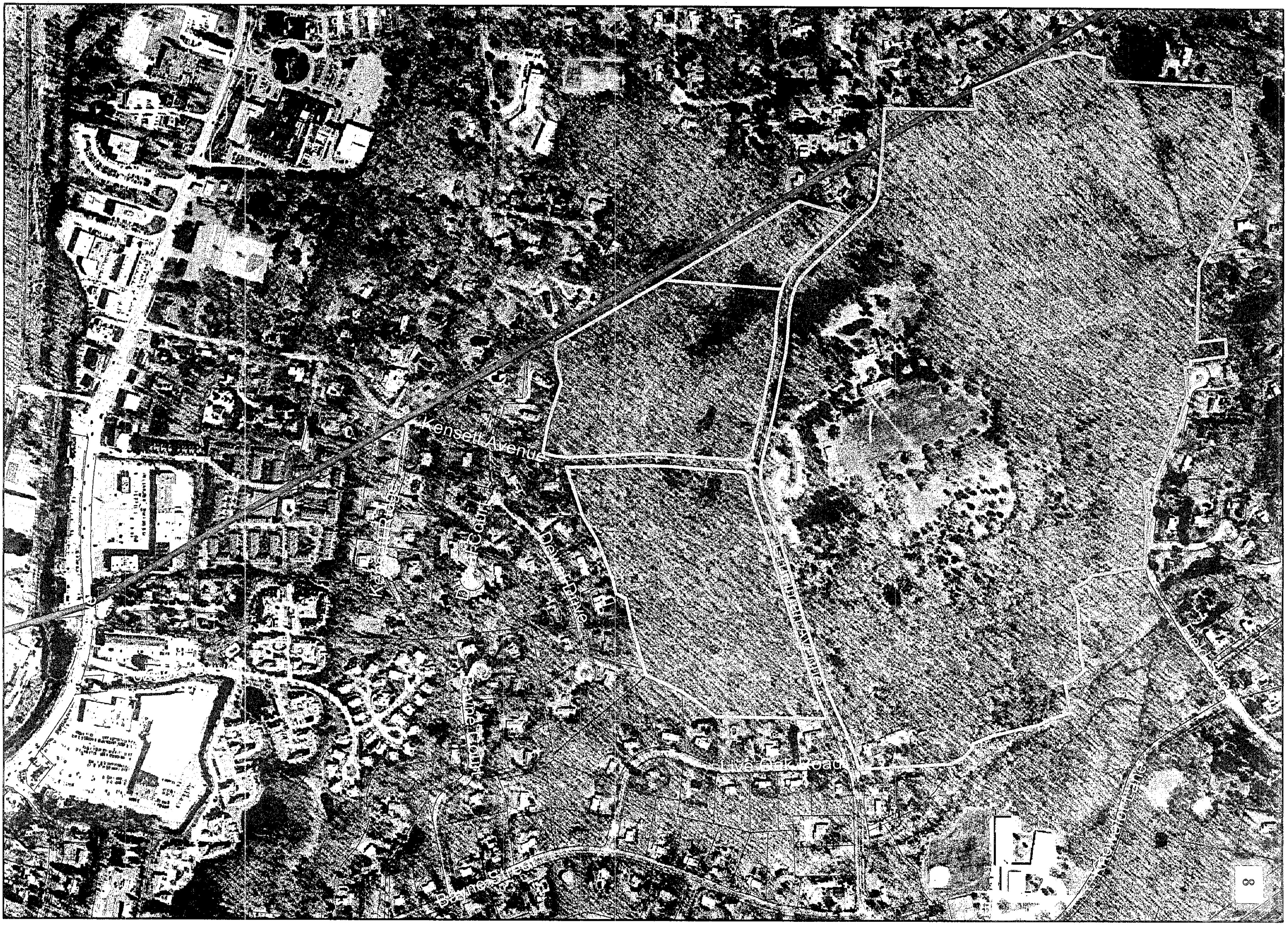
This report provides an information base and a series of recommendations and guidelines which cover the topics requested by the city. Team members were able to review maps, plans and supporting documentation provided by the applicant.

The review process consisted of four phases:

1. Inventory of the site's natural resources;
2. Assessment of these resources;
3. Identification of resource areas and review of plans; and
4. Presentation of education, management and land use guidelines.

The data collection phase involved both literature and field research. The field review was conducted Wednesday, July 25, 2007. The emphasis of the field review was on the exchange of ideas, concerns and recommendations. Being on site allowed Team members to verify information and to identify other resources.

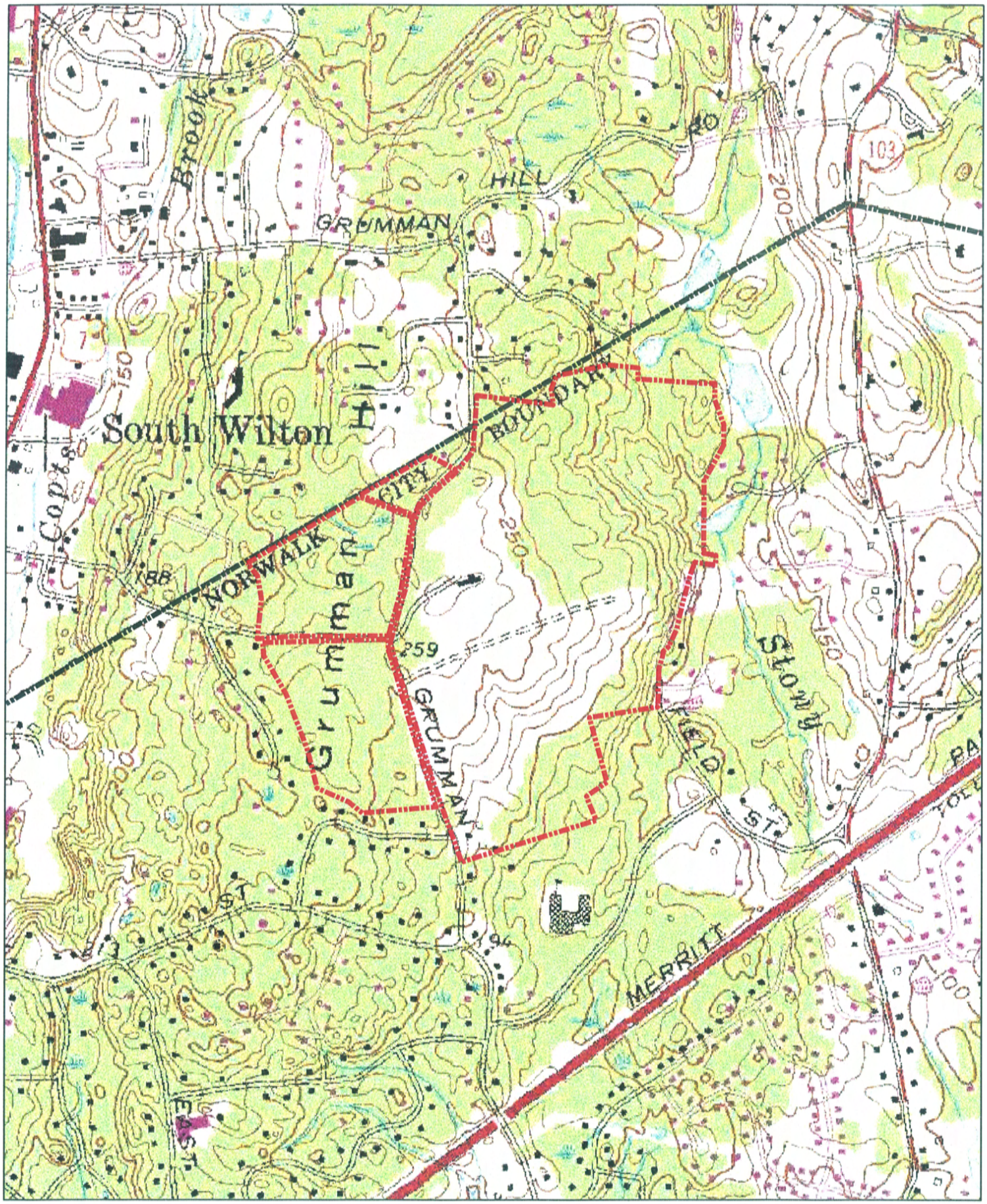
Once Team members had assimilated an adequate data base, they were able to analyze and interpret their findings. Individual Team members then prepared and submitted their reports to the ERT coordinator for compilation into this final ERT report.



CRANBURY PARK

1 inch equals 600 feet

Cranbury Park NRI Site Map



The Connecticut Environmental Review Team

This map was prepared by Amanda Fargo-Johnson for the Connecticut Environmental Review Team.
This map is for educational use only.
It contains no authoritative data.
March 2008.

ERT Review Area

0 0.05 0.1 0.2 0.3 Miles

Norwalk, CT

N

Cranbury Park NRI Color Aerial Map

The Connecticut Environmental Review Team

This map was prepared by Amanda Fargo-Johnson for the Connecticut Environmental Review Team.
This map is for educational use only.
It contains no authoritative data.
March 2008.

ERT Review Area

Norwalk, CT

N

0 0.05 0.1 0.2 0.3 Miles

GEOLOGY

Cranberry Park is located on a low hill (Figure 1) with relatively gentle topography in the north of Norwalk. The maximum elevation of the hill is just greater than 260 feet above sea level in Norwalk: the northernmost extension of the hill into South Wilton increases in elevation of just higher than 280 feet. An estate was built on the flat top of the hill. Slopes in south and east are gentle. Some slopes to the east are moderate. No rugged topography is found on the parcel, making the parcel suitable for the development of hiking trails, even handicapped accessible trails in some areas (Figure 2).

Figure 1. Map showing surfical materials in area surrounding Cranbury Park, Norwalk. Glacial till covers the highland areas and sand and gravel are found in the valley bottoms. T = glacial till; TT = thick till; S, G. A = sand, gravel, and alluvium, W = water. Map from Map from DEP, Environmental Conditions Online which is taken from Stone and others, 1992.

A. B.

Figure 2A and B illustrate the gentle to moderate slopes on the parcel. Fig. 2A digital image by A. Johnson. Fig. 2B digital image by E. Sych.

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1. The author of this section did not participate in the field review. The information presented here is derived from library research and DEP Environmental Conditions Online.

The bedrock geology of Cranberry Park does not present any limitations to its use. The bedrock geology consists of granitic gneiss Figure 3) and minor gray schist. The granite gneiss is coarse to medium grained and is locally foliated or non-foliated. The schist is fine to medium grained and silvery. It weathers rusty in some places. The granitic gneiss is most widespread in this area but local areas contain schist. Both are considered Ordovician in age (Rodgers, 1985). The area was originally mapped by Kroll (1977) who did not attempt to fit the rocks into a regional stratigraphic framework. He mapped the area as "mixed felsic gneiss". Rodgers considered the schist to be related to the Trap Falls Formation but did not provide geologic nomenclature for the granite gneiss. It is considered to be a syntectonic intrusive igneous body. The intrusion was so intimate that, in places, the two rock types are not separated at the scale of the state map.

*From **The Face of Connecticut** by Michael Bell, page 119.*

A thin veneer of glacial till covers the area (see Figure 1). It is generally less than 20 feet thick and in many areas bedrock (ledge) is close to the surface. Indeed, much of the rock seen on the site is slightly disturbed (dislodged) bedrock (Figure 3), but is not, strictly speaking, outcrop. Sand and gravel deposits are found in the adjacent valley bottoms (London, E.H, 1984; Stone ant others, 2005).

A.

B.

Figure 3. A. Poorly foliated granitic gneiss boulder. This is probably close to the ledge from which it broke. Digital image by A. Johnson. B. Rocks behind foliage, although somewhat dislodged, are likely outcrop of poorly foliated granitic gneiss. Digital image by E. Sych.

REFERENCES

Kroll, R.L., 1977, The bedrock geology of the Norwalk North and Norwalk South Quadrangles. St. Geological and Natural Hist. Surv. of CT, Quad. Rpt. # 34, 55p.

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Rodgers, John, 1985, Bedrock Geological Map of Connecticut. State Geological and Natural History Survey of Connecticut, Nat'l. Resource Atlas Series

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Stone, J.R., Schafer, J.P., London, E.H., DiGiacomo-Cohen, M.L., Lewis, R.S., and Thompson, W.B., 2005, Quaternary Geologic Map of Connecticut and Long Island Sound Basin (1:125,000). U.S. Geol. Surv. Sci. Invest. Map # 2784.

SOILS RESOURCES

This soil resources report applies to the approximately 180+-acre parcel referred to as Cranbury Park, which is located along Grumman Avenue in the northeastern corner of Norwalk. The information in this report is based on the USDA's historical soils series descriptions and the new digital mapping unit descriptions as presented in the Soil Survey of Connecticut, remote survey interpretations plus field observations.

MAPPING UNITS -

Exhibit #1- Soils Map

Wetland Soils

1) Map Unit RN - Ridgebury, Leicester and Whitman extremely stony fine sandy loams. USDA Soil *#3* Consists of nearly level to gently sloping, poorly drained soils in drainageways and depressions on glacial uplands. Ridgebury soils are very deep and derived mainly from gneiss and schist. Typically, they have a friable loam or fine sandy loam surface layer and subsoil over a firm fine sandy loam or sandy loam dense till substratum. Ridgebury soils have a perched watertable within 1.5 feet of the surface much of the year.

Observation

Wetlands - These wetlands are dispersed throughout this property with the larger wetlands appearing in the northeast and northwest sectors of the property. Established trails criss-cross these wetlands in several areas, which have given rise to significant disturbances from traffic and siltation from the erosion of an ever widening and denuded trail system.

Potential Vernal Pools - Field walks and historical aerial photos have provided enough information to warrant the need for a field study to qualify and quantify vernal pools on site. The ground-truthing of potential vernal pools in the surrounding uplands should be considered to investigate, inventory and determine enhanced buffering distances to limit their disturbance and preserve the viability of these pools and their associated upland environments.

Wetland Crossings and Trails - Upland trails leading to the wetlands require greater buffering distances, erosion and siltation control and less intrusive, raised walkways across wetland areas. Active recreation such as mountain biking and equestrian uses should be relegated to specific areas to cross any wetlands or watercourses on site. Minimize the size of the crossing, provide hard armoring of the crossing and stabilize the upslope area leading to these crossing.

Non-wetland Soils

2) Map Unit SvB - Sutton fine sandy loam, 3 to 8 percent slopes. USDA Soil #51B

These soils are very deep and moderately well drained. They have developed in slight depressions on glacial till plains and near the base of slopes on glacial uplands where the relief is affected by underlying bedrock. Typically, Sutton soils have fine sandy loam textures to a depth of 60 inches or

more. This soil has a **fair potential** for community development. This soil will remain wet and soggy for several days after moderate to heavy rain events.

Observation

Drainage / Surface Water Runoff
Surface water runoff and general drainage pattern for the acreage west of Grumman Ave. flows directly south into and through the Sutton soils. Limitations in the utilization of this soil type are largely due to extended periods of saturation and the depth to the seasonal high watertable, which range from 1.5 to 2.5 feet during the months of November to April. Redoxamorphic (mottles) features occur within a depth of 24 inches (soil mottling is an indication of seasonal high water tables).

This mapping unit is 9-acres in size and is found in the southwest section of this parcel along Grumman Road to the intersection of Kensett Ave. then trend in a westerly direction.

3) Map Unit CfB - Charlton fine sandy loam, 3 to 8 percent slopes. USDA Soil # 60B
This map unit is located on the sides of hills and ridges and at the foot slopes of steep hills that have been influenced by underlying bedrock. This soil has a **fair potential for community development.** It is limited mainly by underlying bedrock. This soil is fairly easy to excavate, but it commonly contains stones and boulders.

This soil has a **moderate erosion hazard.** Permeability is moderate to moderately rapid. Runoff is rapid. Intensive conservation measures are needed to prevent excessive runoff, erosion and siltation during construction projects.

This map unit is approximately 59-acres in size, constitutes 32% of the total soil types on this parcel and is found in and around the mansion.

4) Map Unit ChB - Charlton very stony fine sandy loam, 3 to 8 percent slopes. USDA Soil #6IB, ChC - Charlton very stony fine sandy loam, 8 to 15 percent slopes. USDA Soil #61C
This map unit consists primarily of Charlton soils, which are very deep, well-drained soils formed in glacial till, derived mainly from granite, gneiss and schist. Typically, they have a fine sandy loam surface layer and subsoil over a friable fine sandy loam or sandy loam substratum that extends to a depth of 60 inches or more.

This soil has a fair potential for development. Permeability is moderate or moderately rapid. Runoff is medium. Stones and boulders near the surface are an annoyance when trying to till these areas.

Concern

"B" Slope - Approximately 42-acres of this soil type and its attributes are located south of the mansion area. This area is all forested with second growth deciduous trees, which would benefit from a forestry management plan.

These lower slopes present a reduced erosion and siltation threat to sensitive habitats along the southern border. Established and proposed walking and riding trails should provide an adequate vegetated buffer between the proposed trails and wetlands.

" C" Slope - 31-acres of these Charlton soils possess steeper slopes with the majority located to the northeast of the mansion and seem to represent the area of greater public use.

- Both soils have a **moderate erosion hazard** associated with them and enhanced conservation measures are needed with the increase in steepness of slope as in the ChC soil type.

- Provide runoff diversions at the top of slope. Utilize permanent diversions to direct runoff into vegetated or semi-armored areas to reduce runoff volumes and velocities. Install waterbars across trails at intervals dictated by slope angle at length shown.

Waterbar Spacing Along Steeper Trails -
1% slope @ 440' **2% slope @ 245'** **5% @ 125'**
10% slope @ 78' 15% **slope @ 58'**

Trails

The expanding width of the trails and their proximity to the wetlands has stripped vegetation, accelerated erosion and caused siltation within the wetlands. Buffers to these areas need to be established and a redesign of the trail layout plus access points should be entertained.

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- Maintain narrow trails and stabilize trailsides with ground covers.

- Blazing of new trails atop of steeper sections should be discouraged.

5) Map Unit CrC - Charlton-Hollis soil 3 to 15 percent slopes. USDA Soil #73C.

This complex consists of well-drained soils located on uplands where the relief is affected by underlying bedrock. The Charlton component has moderate or moderately rapid permeability. Runoff is medium to rapid. The Hollis component has moderate to moderately rapid permeability above the bedrock.

This complex has **fair to poor potential** for community development. **The Charlton component has fair potential** for development and the **Hollis has poor potential for** development due to its shallowness to bedrock.

Intensive enhanced conservation measures such as temporary vegetation and siltation basins are frequently needed to prevent excessive runoff, erosion and siltation.

Concerns

The included Paxton and Hollis soils are even less suitable for development:

- Paxton soils have slow permeability in the substratum. A dense lense of Paxton soils within the Charlton soil can cause down slope seeps and affect the structural integrity of proposed service infrastructures and dwellings.

- Hollis soils are limited by their shallowness to bedrock, which is approx. 10 to 20 inches in depth.

- The fine particulates of schist and gneiss associated with these soils stay in suspension for extended periods. Contamination from siltation can be avoided by limiting land disturbances atop of these soils, which requires the rerouting of trails and limiting public access to these steeper areas.

Land Use Planning Opportunities

The property needs to have a long-term natural resource conservation / forest management plan, which encompasses goals and objectives for increasing and maintaining biodiversity, integrates year round passive recreational uses that can provide a platform for education that showcases and preserves its natural resources, provides public access, serves the citizenry of the City while advocating for all environs on and abutting this site.

- **Environmental Education** - Alternate 2 posed in the Master Plan for Cranbury Park offers several ideas on environmental education. This site also offers a wide array of science based educational opportunities from the study of aquatic and terrestrial flora and fauna, forestry management, and the enhancement of a diverse habitat base that will serve as a sanctuary to the wildlife.

  Specific habitats on site could utilize strategically placed pavilions along well thought out trails system that could serve as staging areas for outdoor living classrooms/laboratories throughout the property. This would expand and enhance all grade level science based curriculums in the Norwalk school system, its citizenry and other environmental groups associated with the City.

  CT DEP can facilitate the development or enhancement of existing environmental programs in the City's school system through Project Wet and Project Wild. (Contact: (203) 734-2513).

- **Trails** - Establish a trail system guided by the protection and preservation of critical habitats, promoting the minimization land disturbance, which ultimately reduces potential impacts from erosion and siltation of sensitive habitats from horticultural and recreation activities. Consideration should be given to isolating areas for more intense recreational uses such as mountain biking and horse back riding, which have a greater ability to disturb stable, vegetated ground cover, which ultimately leads to soil detachment, transport into sensitive areas of the park and water degradation.

  Guidance and assistance on the development and maintenance of trail systems can be secured through the CT Forest and Parks Association in Middlefield, CT (860) 346-2372.

- **Equestrian Uses** - Whether entertaining on site stables or periodic riding events, the concentration of live stock populations in an area surrounded by residences with private wells should be carefully considered due to the potential contamination and degradation of water quality from agricultural waste storage facilities or in stormwater runoff. Ag waste presents a health hazard from e-coli and causes nutrient loading of water resources. Consideration should be given to limiting the access to and the crossing of wetlands and watercourses.

  Guidance and on best management practices (BMP's) for waste management can be obtained from the USDA. NRCS or RC&D's Horse Environmental Awareness Program (HEAP). (Contact Mark Cummings, (203) 284-3663).

Federal Administered Programs

- **USDA/NRCS/RC&D- Programs**
  HEAP = Horse Environmental Awareness Program: Guidance and assistance is available regarding the implementation of BMP's for agricultural waste management through either the Natural Resource Conservation Service or the Resource Conservation & Development agencies of the United States Department of Agriculture.

- **WHIP = Wildlife Habitat Incentive Program:** Municipalities and Private Landowners are eligible to participate in a cost-share program for cities and towns in implementing practices to maintain or establish wildlife habitats. These practices include invasive plant control, early successional woodlands, riparian areas; state identified imperiled habitats plus streams and rivers. See Exhibit *#2* for Tree & Shrub Groups and Forestland Planting and Harvesting information. (Contact Richard Kszystyniak (203) 269-7509).

The development of a comprehensive land use management plan for this property will greatly ensure the protection and preservation of the areas water quality, wildlife habitat enhancement and provide open space access to the community while promoting greater environmental awareness.

Exhibit #1

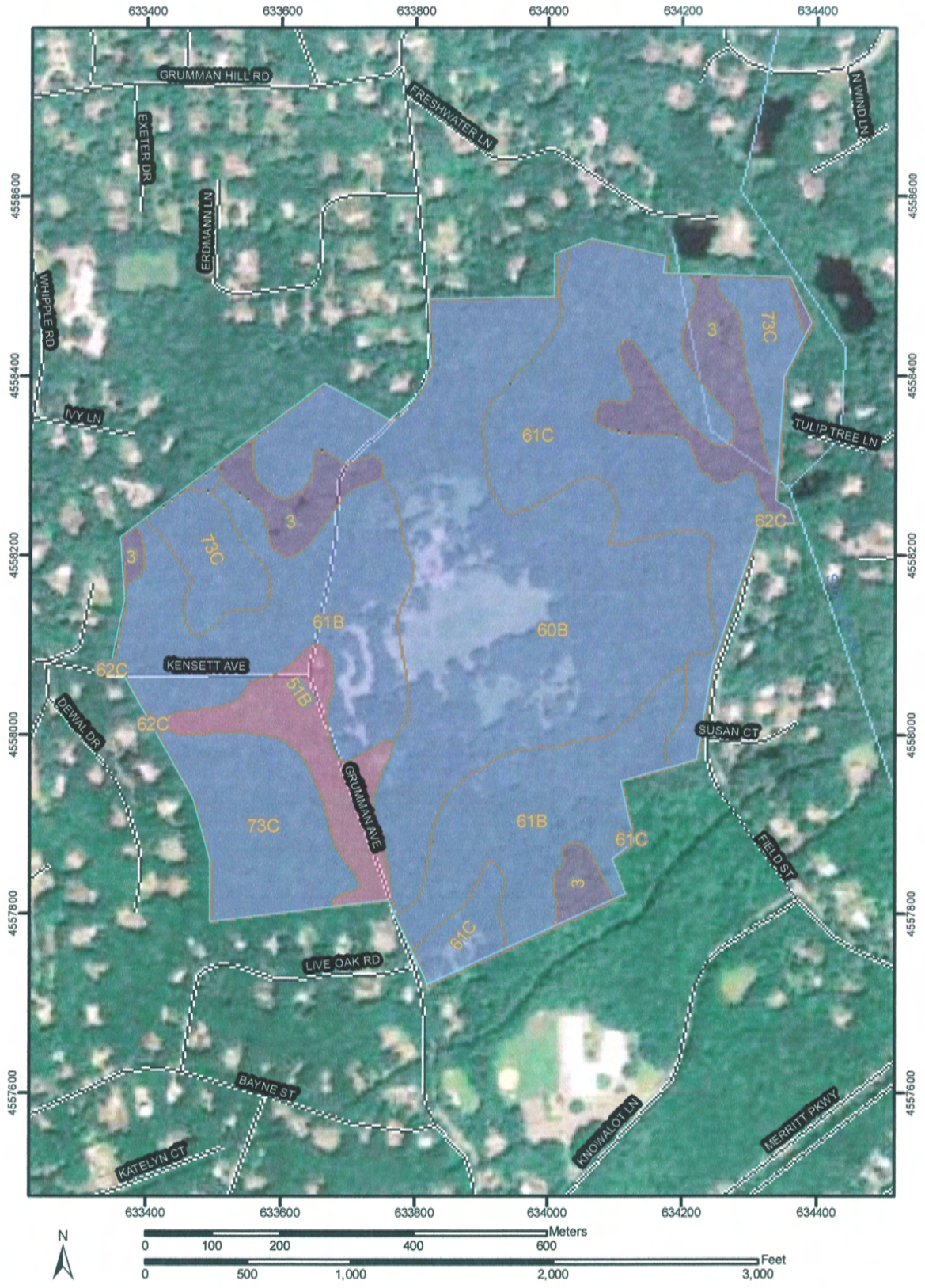
USDA Natural Resources Conservation Service

Web Soil Survey 2.0
National Cooperative Soil Survey

Map Unit Legend

State of Connecticut (CT600)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
3	Ridgebury, Leicester, and Whitman soils, extremely stony	14.5	8.1%
51B	Sutton fine sandy loam, 2 to 8 percent slopes, very stony	9.1	5.1%
60B	Canton and Charlton soils, 3 to 8 percent slopes	58.8	32.7%
61B	Canton and Charlton soils, 3 to 8 percent slopes, very stony	42.8	23.8%
61C	Canton and Charlton soils, 8 to 15 percent slopes, very stony	31.5	17.5%
62C	Canton and Charlton soils, 3 to 15 percent slopes, extremely stony	0.1	0.1%
73C	Charlton-Chatfield complex, 3 to 15 percent slopes, very rocky	22.9	12.7%
Totals for Area of Interest (AOI)		179.8	100.0%

Exhibit #2



Natural Resources Conservation Service

Web Soil Survey 2.0
National Cooperative Soil Survey

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Soil Ratings
- 1
- 1A
- 1H
- 1K
- 1KK
- 1S
- 1SK
- 1SKK
- 2
- 2A
- 2H
- 2K
- 2KK
- 3
- 3A
- 4
- 4A
- 4C
- 4CA
- 4CC
- 4CK
- 4K
- 5
- 5A
- 5K
- 5KK
- 6
- 6A
- 6D
- 6DA
- 6DK
- 6G
- 6GA
- 6GK
- 6GKK
- 6K
- 6KK
- 7
- 7A
- 8
- 8K
- 9C
- 9L
- 9N
- 9NW
- 9W
- 10
- Not applicable
- Not rated or not available

Political Features

Municipalities
- Cities
- Urban Areas

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails

Roads
- Interstate Highways
- US Routes
- State Highways
- Local Roads
- Other Roads

MAP INFORMATION

Original soil survey map sheets were prepared at publication scale. Viewing scale and printing scale, however, may vary from the original. Please rely on the bar scale on each map sheet for proper map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 18N

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Connecticut
Survey Area Data: Version 6, Mar 22, 2007

Date(s) aerial images were photographed: 4/12/1991

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Conservation Tree and Shrub Group

Conservation Tree and Shrub Group— Summary by Map Unit — State of Connecticut				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
3	Ridgebury, Leicester, and Whitman soils, extremely stony	2A	14.5	8.1%
51B	Sutton fine sandy loam, 2 to 8 percent slopes, very stony	5A	9.1	5.1%
60B	Canton and Charlton soils, 3 to 8 percent slopes	6A	58.8	32.7%
61B	Canton and Charlton soils, 3 to 8 percent slopes, very stony	6A	42.8	23.8%
61C	Canton and Charlton soils, 8 to 15 percent slopes, very stony	6A	31.5	17.5%
62C	Canton and Charlton soils, 3 to 15 percent slopes, extremely stony	6A	0.1	0.1%
73C	Charlton-Chatfield complex, 3 to 15 percent slopes, very rocky	6A	22.9	12.7%
Totals for Area of Interest (AOI)			179.8	100.0%

Description

Each tree and shrub species has certain climatic and physiographic limits. Within these parameters, trees and shrubs may be well suited or poorly suited to a given environment because of climate or site or soil characteristics. On the basis of the performance of individual species to specific conditions of soil, climate, physiography, and management, Conservation Tree and Shrub Groups (CTSGs) have been developed. Individual soils have been grouped with similar soils into one of the 10 main CTSGs. Most of these main groups are further divided into subgroups.

This interpretation provides guidance in selecting the species best suited to each of the groups of soils within each vegetative zone. It also can be used for predicting survival, height, growth, species attributes, and effectiveness and for selecting species for windbreaks, riparian plantings, recreation and wildlife plantings, and ornamental or environmental plantings.

Tree and shrub species associated with each CTSG are broken down by vegetative zones (rainfall zones). These lists are available in the local office of the USDA, Natural Resources Conservation Service, or on the Web in the electronic Field Office Technical Guide. Because vegetative zones are rather large, climatic differences within a zone should be considered when species are recommended for planting. For example, some species adapted to the eastern end of a zone may be inadequately adapted to the western end. Care must be taken to ensure that conditions on individual sites are considered when species suitability and performance are determined. A case-by-case decision may be necessary to determine which CTSG is most appropriate when an individual site has characteristics that differ from those of the CTSG in which it occurs. These differences occur because of inclusions of other soils, site modifications (such as leveling and drainage manipulation), soil pH (calcareous sites), irrigation, soil amendments, or other factors.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

Tie-break Rule: Lower

Forestland Planting and Harvesting

This table can help forestland owners or managers plan the use of soils for wood crops. Interpretive ratings are given for the soils according to the limitations that affect planting and harvesting on forestland. The ratings are both verbal and numerical.

Rating class terms indicate the degree to which the soils are suited to a specified aspect of forestland management. *Well suited* indicates that the soil has features that are favorable for the specified management aspect and has no limitations. Good performance can be expected, and little or no maintenance is needed. *Moderately suited* indicates that the soil has features that are moderately favorable for the specified management aspect. One or more soil properties are less than desirable, and fair performance can be expected. Some maintenance is needed. *Poorly suited* indicates that the soil has one or more properties that are unfavorable for the specified management aspect. Overcoming the unfavorable properties requires special design, extra maintenance, and costly alteration. *Unsuited* indicates that the expected performance of the soil is unacceptable for the specified management aspect or that extreme measures are needed to overcome the undesirable soil properties.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified aspect of forestland management (1.00) and the point at which the soil feature is not a limitation (0.00).

The paragraphs that follow indicate the soil properties considered in rating the soils. More detailed information about the criteria used in the ratings is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or on the Internet.

Ratings in the columns *suitability for hand planting* and *suitability for mechanical planting* are based on slope, depth to a restrictive layer, content of sand, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, moderately suited, poorly suited, or unsuited to these methods of planting. It is assumed that necessary site preparation is completed before seedlings are planted.

Ratings in the column *suitability for use of harvesting equipment* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, and ponding. The soils are described as well suited, moderately suited, or poorly suited to this use.

Reference:
United States Department of Agriculture, Natural Resources Conservation Service, National forestry manual.

Report—Forestland Planting and Harvesting

[The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. The table shows only the top five limitations for any given soil. The soil may have additional limitations]

Forestland Planting and Harvesting– State of Connecticut							
Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
3—Ridgebury, Leicester, and Whitman soils, extremely stony							
Ridgebury	40	Moderately suited				Moderately suited	
		Rock fragments	0.50			Rock fragments	0.50
Leicester	35	Moderately suited				Moderately suited	
		Rock fragments	0.50			Rock fragments	0.50
Whitman	15	Moderately suited				Poorly suited	
		Wetness	0.50			Wetness	1.00
		Rock fragments	0.50			Rock fragments	0.50
51B—Sutton fine sandy loam, 2 to 8 percent slopes, very stony							
Sutton	80	Well suited				Well suited	
60B—Canton and Charlton soils, 3 to 8 percent slopes							
Canton	45	Well suited				Well suited	
Charlton	35	Well suited				Well suited	
61B—Canton and Charlton soils, 3 to 8 percent slopes, very stony							
Canton	45	Well suited				Well suited	
Charlton	35	Well suited				Well suited	
61C—Canton and Charlton soils, 8 to 15 percent slopes, very stony							
Canton	45	Well suited				Well suited	
Charlton	35	Well suited				Well suited	
62C—Canton and Charlton soils, 3 to 15 percent slopes, extremely stony							
Canton	45	Moderately suited				Moderately suited	
		Rock fragments	0.50			Rock fragments	0.50
Charlton	35	Moderately suited				Moderately suited	
		Rock fragments	0.50			Rock fragments	0.50

Forestland Planting and Harvesting– State of Connecticut							
Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
73C—Charlton-Chatfield complex, 3 to 15 percent slopes, very rocky							
Charlton	45	Well suited				Well suited	
Chatfield	30	Well suited				Well suited	

Data Source Information

Soil Survey Area: State of Connecticut
Survey Area Data: Version 6, Mar 22, 2007

Hazard of Erosion and Suitability for Roads on Forestland– State of Connecticut							
Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
61B—Canton and Charlton soils, 3 to 8 percent slopes, very stony							
Canton	45	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
Charlton	35	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
61C—Canton and Charlton soils, 8 to 15 percent slopes, very stony							
Canton	45	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
Charlton	35	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
62C—Canton and Charlton soils, 3 to 15 percent slopes, extremely stony							
Canton	45	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Rock fragments	0.50
Charlton	35	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
						Rock fragments	0.50
73C—Charlton-Chatfield complex, 3 to 15 percent slopes, very rocky							
Charlton	45	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
Chatfield	30	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50

Data Source Information

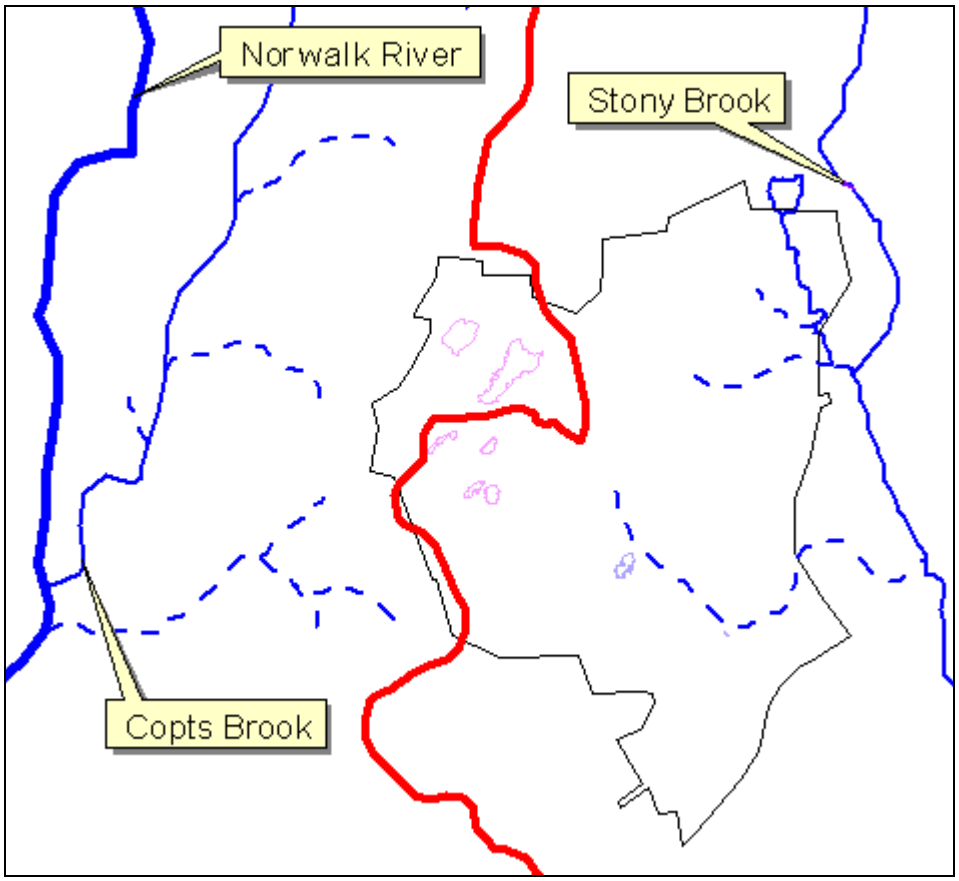
Soil Survey Area: State of Connecticut
Survey Area Data: Version 6, Mar 22, 2007

WETLAND RESOURCE REVIEW

Prior to the ERT field review, Team members were provided with a list of the town's needs and a copy of the *Master Plan for Cranbury Park* (the Plan) co-authored by Friedberg & Partner, and Albertson, Sharp & Ewing. The Plan is undated, but apparently from 1980.

Cranberry Park is located in very northerly Norwalk abutting the town of Wilton. In size it measures approximately 200 acres. The ERT review included the acreage of the abutting school to the south, giving a total acreage of ~230 acres. Cranbury Park is a free range dog park where dogs are off leash with their attending owners.

Elevations above Mean Sea Level (MSL) vary widely over the property. The high points are along the drainage divide which splits the property into two uneven portions.



In the graphic to the left the outline of the property (light black line) is split by a drainage divide, seen here as a red line. All the land east of the divide sheds water into Stony Brook. The small section west of the divide drains west to Copts Brook.

The highest spot of the property is on the divide is along Grumman Road, west of the Mansion where it reaches ~275 feet above MSL. The lowest points are ~140 feet where the tributary to Stony Brook leaves the property along the east north-east boundary and along

Field Street about 800 feet north of the intersection with Knowalot Lane. These differences in elevation over short distances result in steep slopes that should be considered in the planning phase for erodability. The average slope from the Mansion to the low point in the northeast is 7.6 per cent, but within that distance there are steep areas in the 16+ per cent range. Likewise moving from the Mansion to the southeast low point the slope averages 7.7 per cent. But within that length are steeper slopes of 22 per cent. The drainage line divides the property with about 83 per cent draining downhill to the east into Stony Brook. The other 17 per cent flows west and downhill into Copts Brook, then into the Norwalk River.

The site was found to be heavily wooded across most of its extent, except for the expansive lawns, driveways, and parking areas associated with the Mansion. A sometimes vague series of trails crisscrosses the terrain.

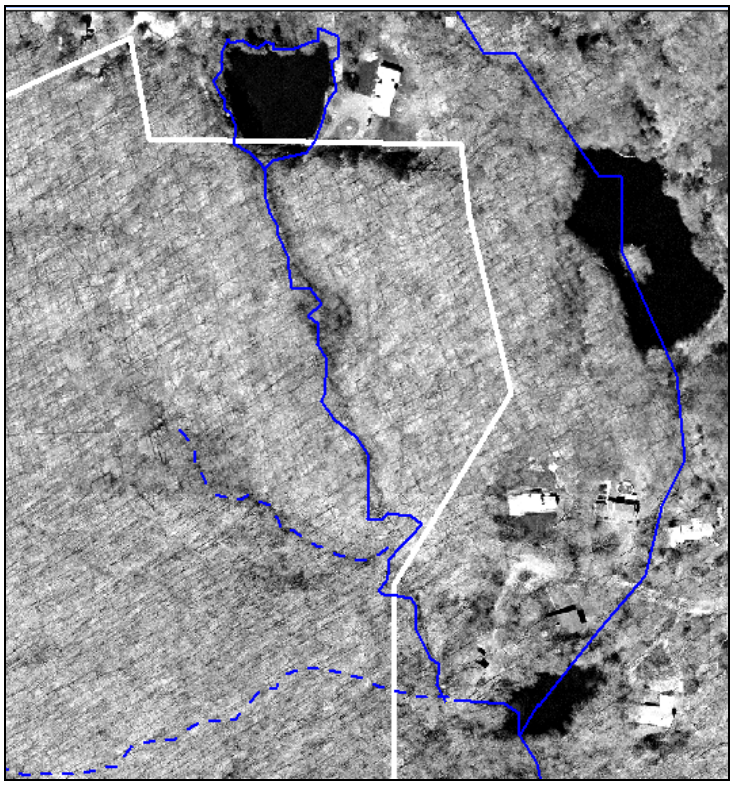
WETLANDS VISITED

The Team visited representative wetlands during the field visit. The first two locations were in the northeast part of the property and are drained by perennial and intermittent streams. The second location was towards the southeast.

Wetlands of the east-northeast corner –

Wetlands of the east-northeast corner were the first visited. There were two sites here. The first was the wetland associated with the stream that flows from the pond just north of the property. Since streamflow increases as it moves downslope towards the mouth/outlet of the watershed, the further back towards the headwaters one goes the less streamflow there is. That is the case at this location. Precipitation, runoff, and groundwater generally contribute to a stream's flow and here, the pond on private property just north of the boundary also contributes. (Though it could not be ascertained how the stream passes under the northern boundary road/driveway).

In the aerial photograph below of the first location, the streams are depicted in blue, with intermittent streams being dashed blue lines. Stony Brook, to the east of the property boundary, passes through the pond with the island.



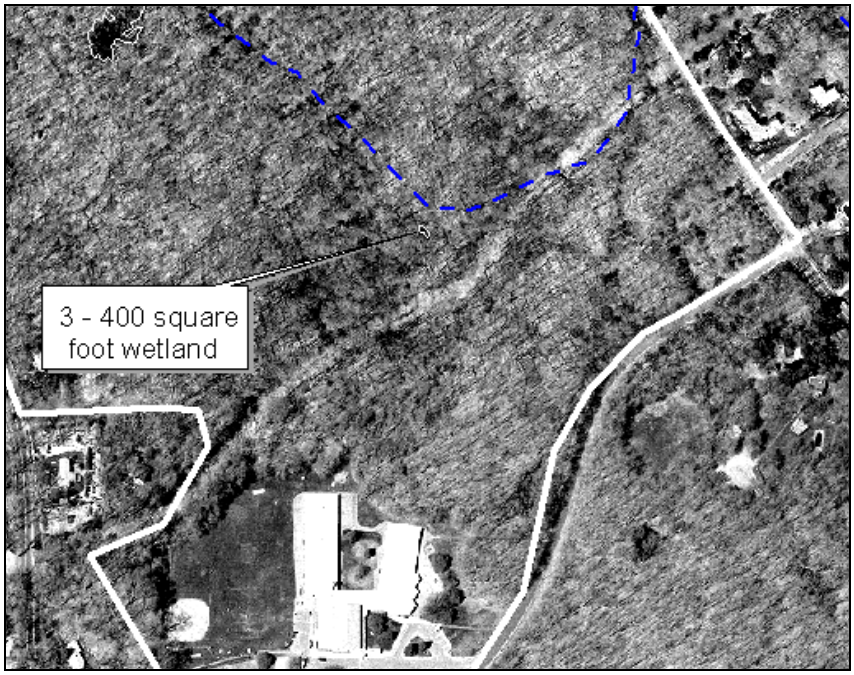
This location exhibited a typical woodland wetland soil with mucky (Extremely Stony Ridgebury, Leicester, Whitman soils), rounded cobble stream bedding, sphagnum mosses *(Sphagnum* sp.*)* indicating a well shaded, generally damp area, and the large leafed hydrophytic vegetation, skunk cabbage (*Symplocarpus foetidus).*

These photos of the northeast corner show (above) the perennial stream near the out-flow from the pond to the north of the property which the aerial shows along with various stream courses. Typical of this northeast corner is a healthy, riparian, three-tiered vegetation cover of herb/grasses, shrub and trees.

The second wetland was in that same northeast drainage pattern, but further downstream. Here it was found to be without much flow this time of year, and what flow there was being frequently altered by various sized woody debris.

This second wetland was not far from the first in the northeast corner of the site.

Wetlands of the southeast corner - The third wetland encountered by the Team was in the southerly end of the property, north of the school land. Here a small (300-400 square feet) impounded wetland was flush with water and lush with growth. It is very similar in makeup and appearance to the previous wetlands having the same Extremely Stony Ridgebury, Leicester, Whitman soils and similar riparian vegetation.

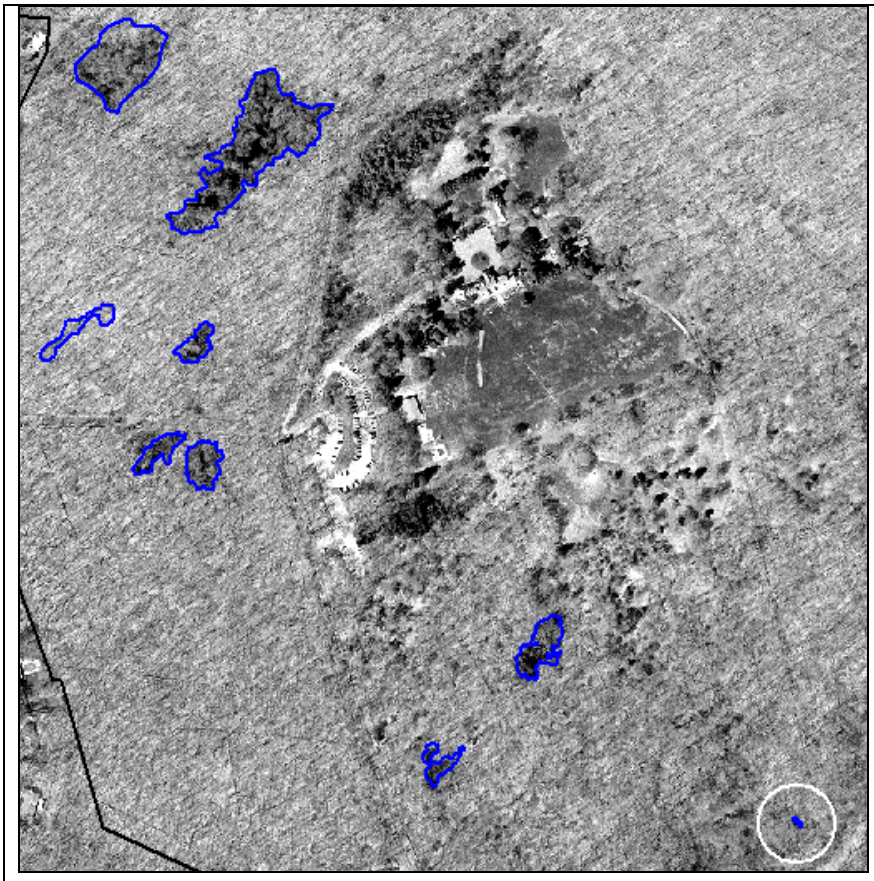


This graphic depicts the area north of the school and shows the location of the tiny impounded wetland and the intermittent stream course (dashed blue line).

The photos above depict the defined channel of the intermittent stream course and the 3-400 square foot wetland full with water in July.

Other Wetlands

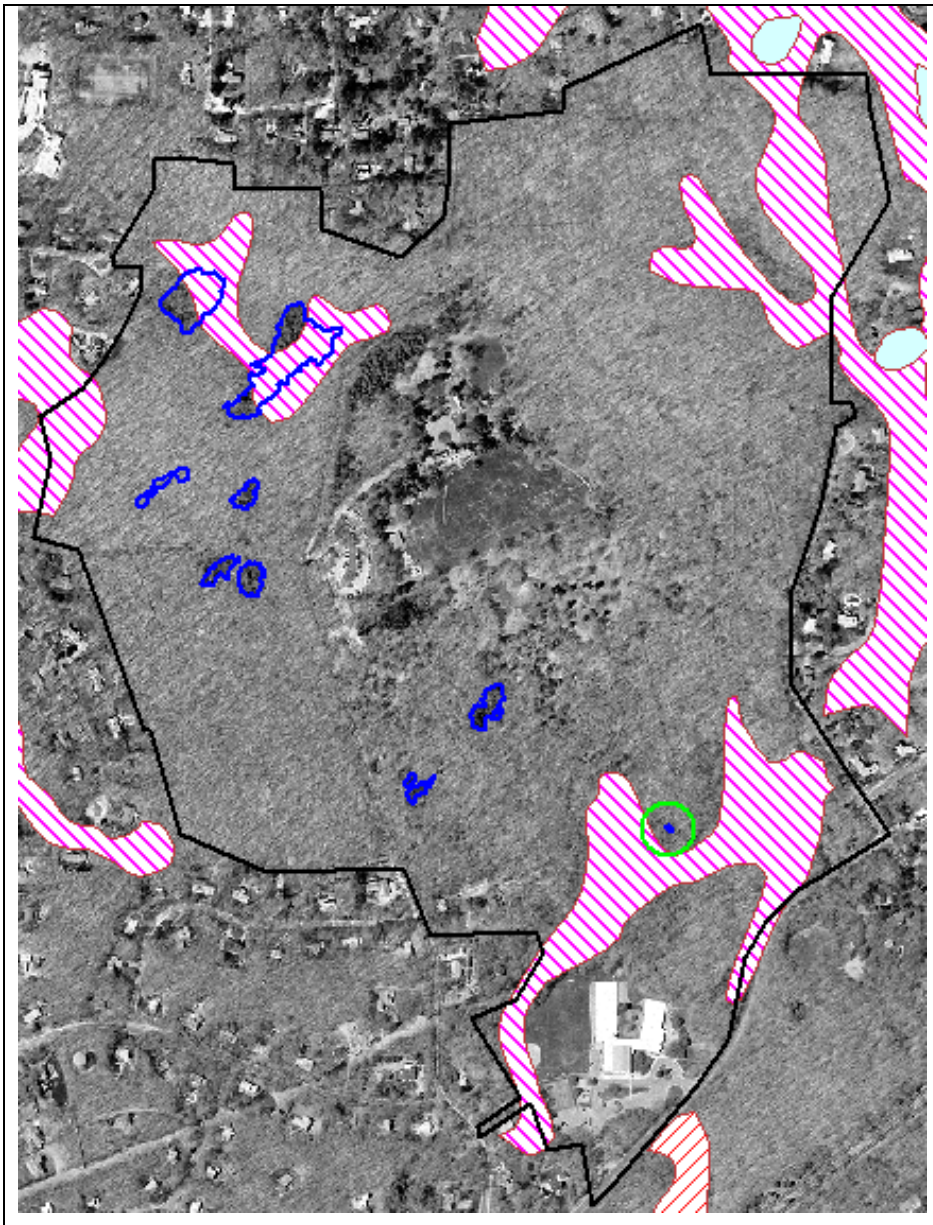
There are other wetlands, potential wetlands, and wetland soils on the property that were not visited by the Team. Nine potential locations were identified by inspecting the 2004 aerial photography. The results of that inspection yielded the following delineations:



The nine potential wetland sites are outlined here in purple with the smallest wetland circled in white. Each will need to be field checked and confirmed before they are plotted on a base map.

Once these nine locations are inventoried and documented they can be added to the USDA Natural Resources Conservation Services (NRCS) soil mapping for the site. That combination yields the following “potential wetlands map” for the site (below).

Generally all of the wetlands are remote, or at least away from the center of activity at the Mansion and grounds, and unbothered except potentially in the northwest corner where possible biking through the wet areas had been evident. Close attention should be given to these locations before any planning of trails takes place.



This 2004 aerial photo shows both the outlines of the potential wetlands to be field checked and the hatched lined shapes showing the mapped extent of wetland soils on the site by the NRCS.

CRANBURY PARK LAND-USE HISTORY

In the year 1934 the state of Connecticut completed the first-in-the-nation photographic inventory of the state's surface from the air. The State Library has these aerial images available on-line. The photograph immediately below these next few paragraphs shows a large part of Cranbury Park in the spring of 1934. The Mansion and its "bib" shaped parking area are easy to recognize. The landscape was far more open than it is today.

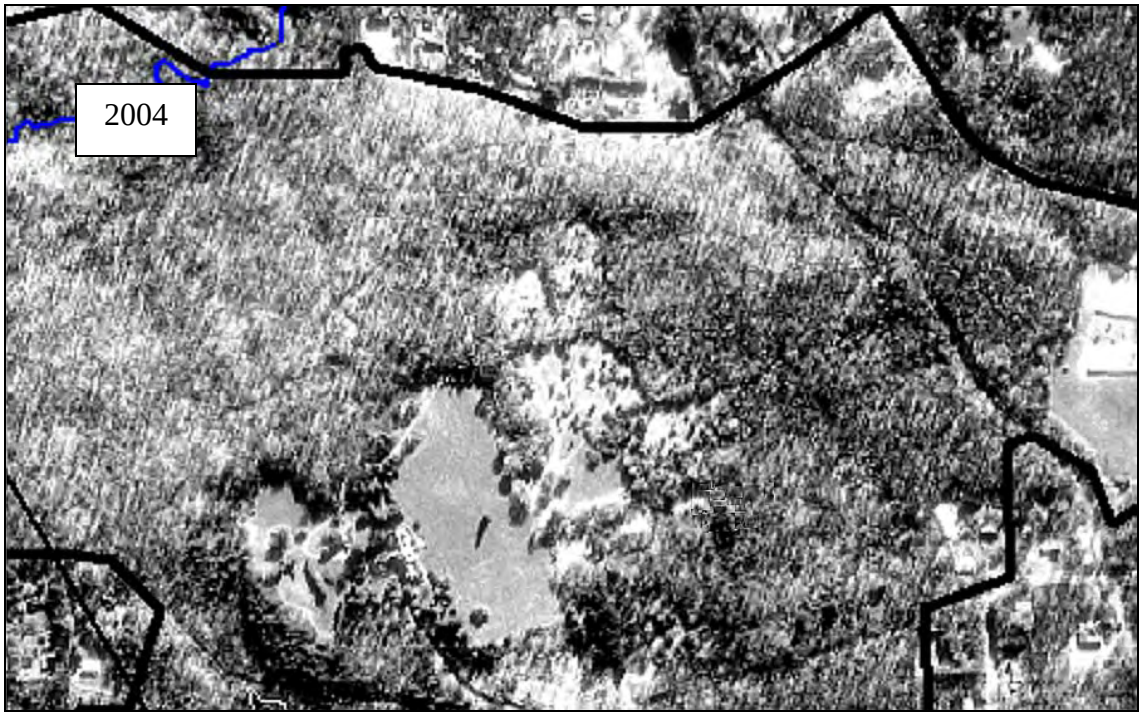
South of the mansion there were approximately 17 acres in farm fields. The 2004 photograph, the second photo immediately below this, documents the changes to the landscape that have occurred over the decades since then.

Both photographs are oriented with north to the left to maximize the size of the image on the page. Quite a lot of the1934 landscape was used as truly "open" open space when compared with 2004. Those viewing this on a screen can enlarge the view of the photo and be able to detect the farm field access lanes, hedgerows and fence lines of the fields below that, and even the mowing path on the Mansion lawn.

In the 2004 photograph immediately below the 1934 photo the old farm lanes between fields can still be picked out today. The main east-west thoroughfare south of the Mansion lawn which shows up so clearly in 1934 is barely perceptible today. The area to the north of the lawn and Mansion was far more open 70 years ago as well.

Below the two images described above is a set of side by side photos. This set contrasts the Mansion and the grounds to the north of it in the 1934 and 2004. By comparison the forest has taken over nearly all of what could have been considered the 'grounds' of the estate in the seventy intervening years.

North



(Note: the 1934 image is a photographic composite of aerial photo numbers 05242 and 05243 from the collection of the Connecticut State Library. http://cslib.cdmhost.com/)

These side by side photographs (north is at top) show the Mansion and north grounds in 1934 (left) and in 2004. In 2004 the extensive gray areas are the deciduous trees in a leaf-off state enabling the view to go directly to the ground. By contrast, the fully crowned trees are coniferous and show their fullness of character year ‘round. The black “dots” in 1934 represent small/young trees or bushes.

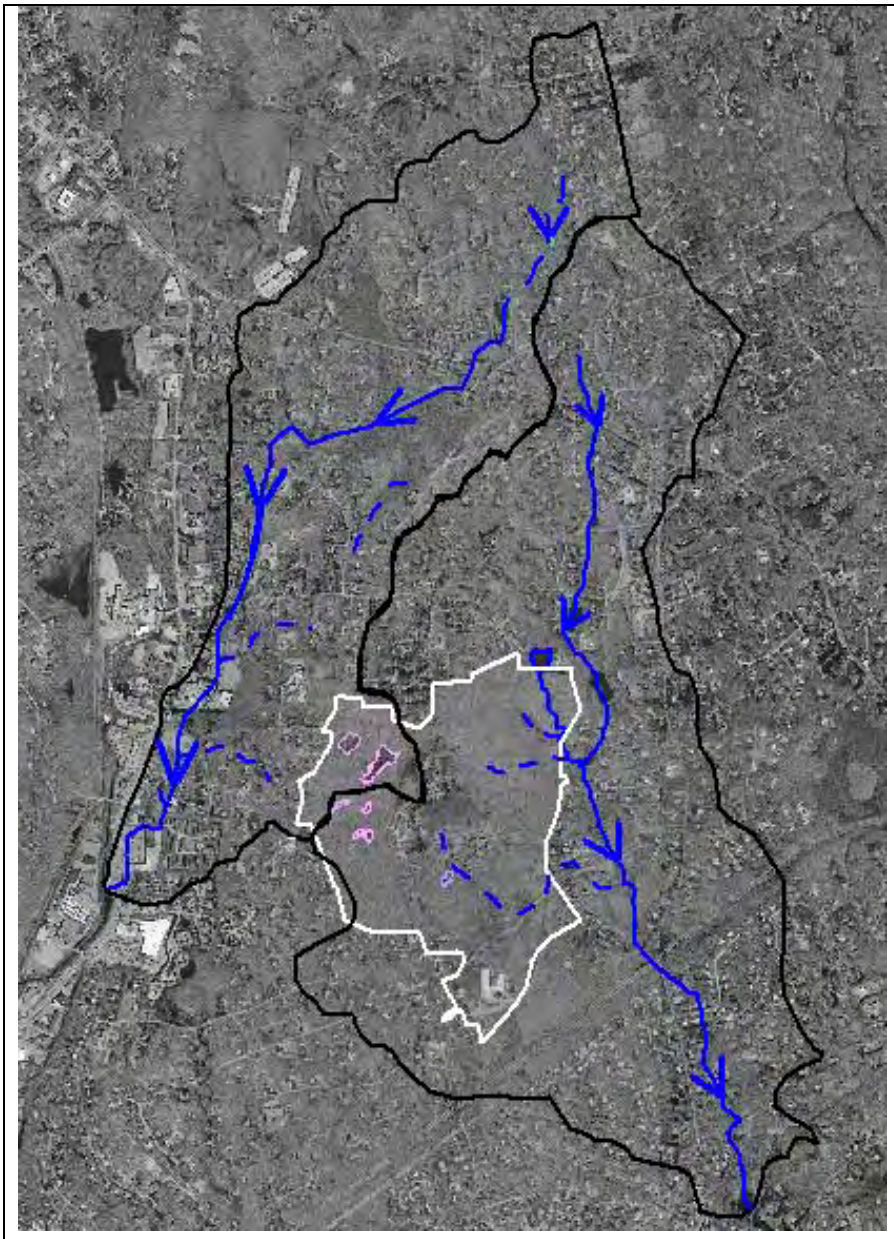
WATERSHED

All wetlands are important to the ecology of the area and these especially so because they occur at the top of the watershed. At this location they are fragile and vulnerable to impacts since they lack the benefit of upstream flow to dilute pollutants and, since they are at the top of the watershed, they have limited flow intensity to assert themselves on the landscape.

While some wetlands are isolated (vernal pools for example) for those wetlands that contribute to downstream flow it is imperative that all water flowing from this area be maintained both in quality and quantity as it mixes with downstream waters.

In the graphic below (on a 2004 air photo base) it is easy to visualize where Cranbury Park (white outline) is located relative to its watershed boundaries (black outlines). Copts Brook

watershed on the left/west receives the runoff from about 17 per cent of the Cranbury Park acreage. To the east, 83 percent of the property drains into the Stony Brook watershed.



The two watersheds that Cranbury Park contributes to stand out well in this 2004 photo. The Park is seen with a white boundary showing how many of its wetlands sit at the top of the hill, feeding more or less straight downslope into their respective streams. Arrows have been added to Copts Brook and Stony Creek to help visualize flow direction.

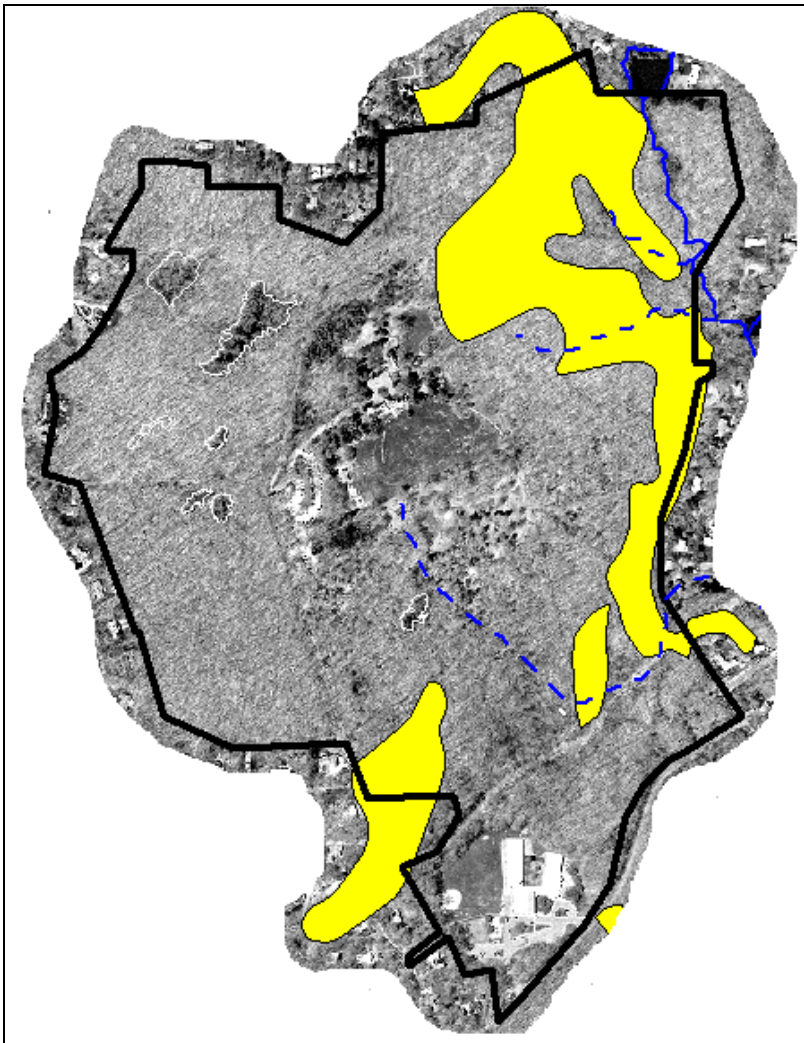
OTHER ISSUES

Park Boundaries - their location and maintenance

It is often difficult for municipalities to locate and manage the exact boundaries of their properties. However, frequently some lengths and runs of these boundaries *are* known (along roads and school property lines), and others can be found by searching land records, and in the field by locating survey pins and markers.

Once the boundaries are established, in a community such as this, with so much support from the public, a boundaries subcommittee could be established with the duty to keep track of the bounds. Knowing the boundaries will help keep the neighbors from dumping vegetative cuttings and leaves into the woods (and possibly introducing or spreading seeds of invasive plants into the park). It will also to help to keep small out-buildings from straying over the line, as well as mowed areas which have a way of creeping into municipal properties to extend homeowner's yards.

In the early 1800s a day in early spring was traditionally used to walk the boundaries of the family property. Called Rogation Sunday, the walk enabled parents to pass onto the succeeding generation the known boundary markers, the extent and the limits of the family farm.



Erosion:

As mentioned above, there are areas of very steep slopes on the property. One of the layers of coverage in the GIS information provided by the CT DEP regards erosion susceptibility. In Cranbury Park, as seen on the left, distinct areas are color coded specifically as Highly Erodable Soils; based on soil type and slope.

On the field walk the Team encountered areas of packed dirt, where trees had been cut to the stumps, the herb and shrub layer was absent, the land surface had only a thin semblance of

leaf cover, no duff*, and a general absence of woody debris to slow rapid runoff. As a result gullying has occurred on the site which will inevitably carry eroded sediments downslope to the low lying wet areas.

(* duff is defined as the undisturbed accumulation of leaves, needles and decaying matter on the forest floor)

<table>
<tr>
<td>  </td>
<td>  </td>
</tr>
<tr>
<td>  </td>
<td>In the photo in the top left a tree has been cut down to make way for Frisbee golf. To the left, stumps of cut and dead-fall trees by chance act as a sediment trap on slopes which have no ground level or shrub level vegetation. Above, overused trails expose root and rocks and become eroded runoff channels.</td>
</tr>
</table>

VERNAL POOLS

Nine potential wetlands have been delineated above and the NRCS shows extensive wetland soils in some sections of the park. Within these areas the possibility exists that there are some productive forested vernal pools. That is why field checking is imperative.

Vernal pools are typically small, isolated, shallow, circular or oblong depressions in the forested landscape. They are fed primarily by surface water runoff and precipitation, filling

with water during the wetter periods of the year (spring and late fall) and becoming drier during the warmer summer months. They exhibit no permanent inlet or outlet. The drainage areas for these pools typically measure 2-3 to 5-6 acres. Thus, local land-use impacts can be dramatic and damaging to the vernal pool ecology.

True vernal pools also support diverse and dynamic, sometimes obligate, wildlife. Much of this wildlife is solely dependent on these areas for one or more periods of their life cycle. Because of the absence of permanent water, fish do not live in the pools, making them attractive to certain animals that would normally fall prey to these carnivorous fish.

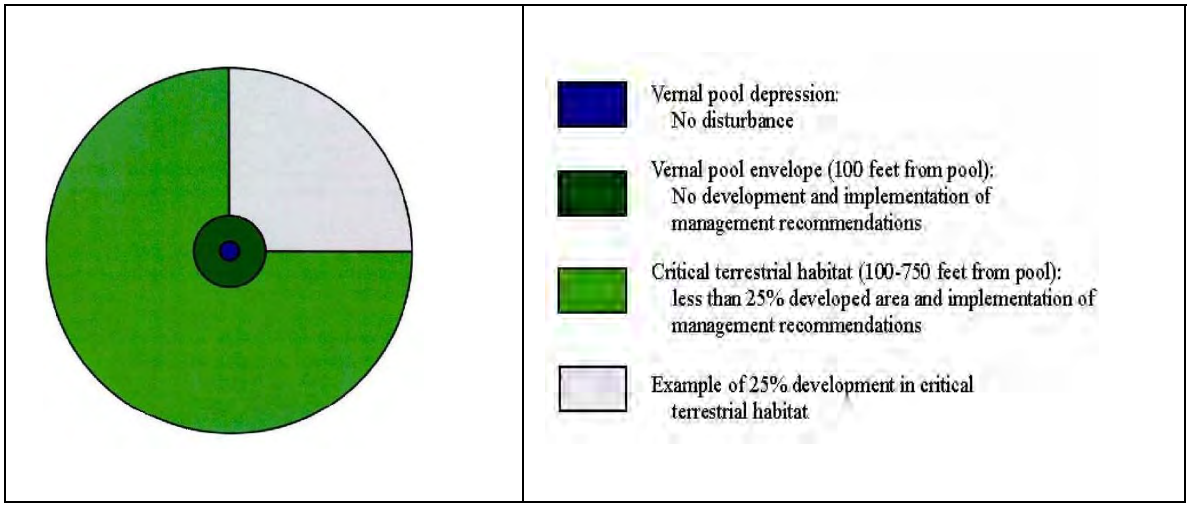
The largest integral part of the vernal pool ecosystem is the upland area which neighbors it. This typically extends away from the pool uphill or upslope to drier soil types. The slopes often vary from gentle to steep, some approach 45 or more degrees. It is in these slopey areas that adult phase amphibians spend over 90% of their lives, burrowing into the well drained soils. They return to the pools only to breed.

Migration distance away from the pools vary significantly between species. Spotted salamanders can range to 380+ feet from the pool, while the wood frog has a significantly larger range, known to be as far as 1,550 feet for juveniles and 3,835 feet for adults. The away-from-pool amphibian range averages about 525 feet.

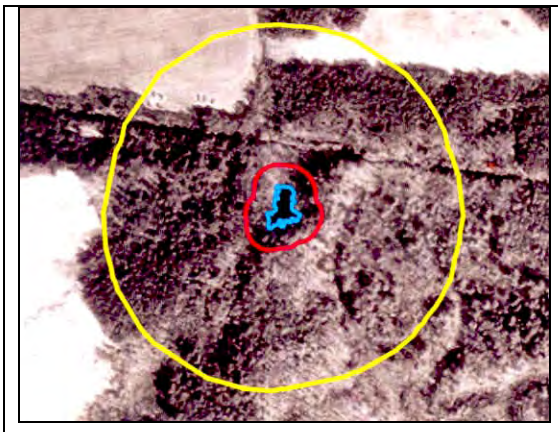
Much of the extensive information about vernal pools points to the fact that the reduction of more than a certain percentage of critical adjacent upland habitat will have telling impacts on the pool’s breeding ecology. Modification of, and additions within, these adjacent upland areas, and their resulting impacts to water quality; pose a significant impact threat to the pool. In Cranberry Park, the location of hiking trails and the various holes for disc golf should take these landscape needs into account.

The impacts may be subtle. Erosion from denuded areas up slope within the vernal pool drainage could easily lead to erosion. The down cutting would transfer sediments down hill into the low lying pools threatening the ecology.

Dr. Michael Klemens suggests in his book: “Best Development Practices - Conserving Pool Breeding Amphibians in Residential and Commercial Developments in the Northeastern United States”, co-authored with Dr. Aram J.K. Calhoun, that there be no development in the 100 foot buffer around the vernal pool. In addition that there be no more than 25 per cent in the critical terrestrial habitat, the distance from 100 feet to 750 feet away from the pool.



(The graphics above and the images below are taken from Dr. Klemen’s document which may be obtained from the DEP Store: http://www.dep.state.ct.us .)



Vernal pool shown in blue with undisturbed envelope in red and less than 25% of the critical terrestrial habitat developed as bounded by yellow. Existing amphibian populations will likely remain viable in this pool.

Vernal pool shown in blue with some disturbance in the envelop shown in red and more than 25% of the critical terrestrial habitat having been developed , within the yellow line. It is highly unlikely that this pool will probably be able to support viable amphibian populations.

POTENTIAL PLAN OF ACTION

Below is a list of steps that may help the Department of Recreation and Parks and the Friends of Cranbury Park address some issues that will impact wetlands and recreation for years to come.

- Determine and map the locations of all wetlands and watercourses. Apply the appropriate municipal buffer or setback to these areas. Consider extra upslope buffering for any vernal pools and/or erodable soils as described above. Of note: on the ERT field walk there were owners calling unnoticed to their dogs, one which was trying to dig a burrowing animal from under a large rock or bolder. Another dog approached our group and had to be repeatedly called back. It will be a challenge to prohibit the unleashed dogs from frolicking in vernal pools. Their entry into such a sensitive ecological resource could be the death knell for it. (See Appendix for a DEP document "General Guidelines for Protecting Wildlife Resources When Developing Trails."

- Include erodable slopes in the base map for planning purposes.
- Plot existing trails on map, highlighting areas of existing erosion, excessive root exposure, etc. This is easy work with a hand held GPS (Global Positioning System) unit as was illustrated on the ERT field walk. A technology subcommittee could accomplish this handily. In the field, trail signs need to be established and clearly identified for hikers, walkers and disc golfers.

- Ascertain park boundaries as closely as possible. Assign a subcommittee to research and actively monitor. Plot and field check known locations with GPS.

- Use available existing vegetation and species community inventories to add to the map's ecological areas of concern. While the Team was requested to prepare a natural resources inventory for the site, the ERT team does not spend enough time on a given location to research such a detailed report. However, citizen volunteers have inventoried trees and other vegetation (vegetative subcommittee?). The park Friends could coordinate these volunteers to synthesize their work and agree upon a final document. (I.e.: Mr. Elliman's species observation list of June 14, 2007)

- Plot existing disc Golf Course on map, labeling all holes.
- Assess existing trails and golf course path for realignment to avoid slopes, wetlands, erodable soils, sensitive plant and animal communities, etc.

The mapping should be done on a Geographic Information System (GIS). As we saw with the results of the GPS trail obtained on the ERT walk*, the GPS'd field information can provide the base information for very accurate location planning.

*Available on the ERTwebsite: www.ctert.org

FOREST RESOURCES

The study area is approximately 190 acres of which 160 acres are forested. The remaining 30 acres are comprised of structures, roads, parking lots, and recreation fields and landscaped areas.

A forest reconnaissance was made of the area. This process entails laying out the boundaries of the area on a recent aerial photo, dividing the forest cover into stands, visiting each stand and noting the forest vegetation that occurs there. Along with the vegetation, other physical characteristics of the property such as aspect, slope, terrain, drainage, accessibility from roads, limits to the operability of equipment, and the evidence of past management activity is noted. The reconnaissance is the prelude to conducting a forest inventory. A certified forester would use the data from that inventory to develop a forest management plan.

The Team forester recommends that the Town of Norwalk enlist the services of a certified forester to conduct a forest inventory and develop a forest management plan for the portions of the study area that lend themselves to active forest management. The locating and marking of the boundaries of the property would be the minimum level of forest management.

FOREST COVER TYPE DESCRIPTIONS

The forested portion of the study area can be broken down into three forest cover types: mixed hardwood wet site, old softwood plantation, and mixed hardwood dry site (see Forest Cover Map).

1. **Mixed Hardwood Wet Site:** This type occupies approximately 18 acres of the study area in four stands. This type occurs on soils that are poorly drained or have seasonally high water tables. The sawtimber- sized trees making up the main canopy of this type are white ash, black gum, red maple, scarlet oak, elm, yellow birch, yellow poplar, and sassafras. Shrubs found in this type are sweet pepperbush, high bush blueberry, witch hazel, hobblebush, and spicebush. The soils' poor drainage and high water table restricts active forest management activities.

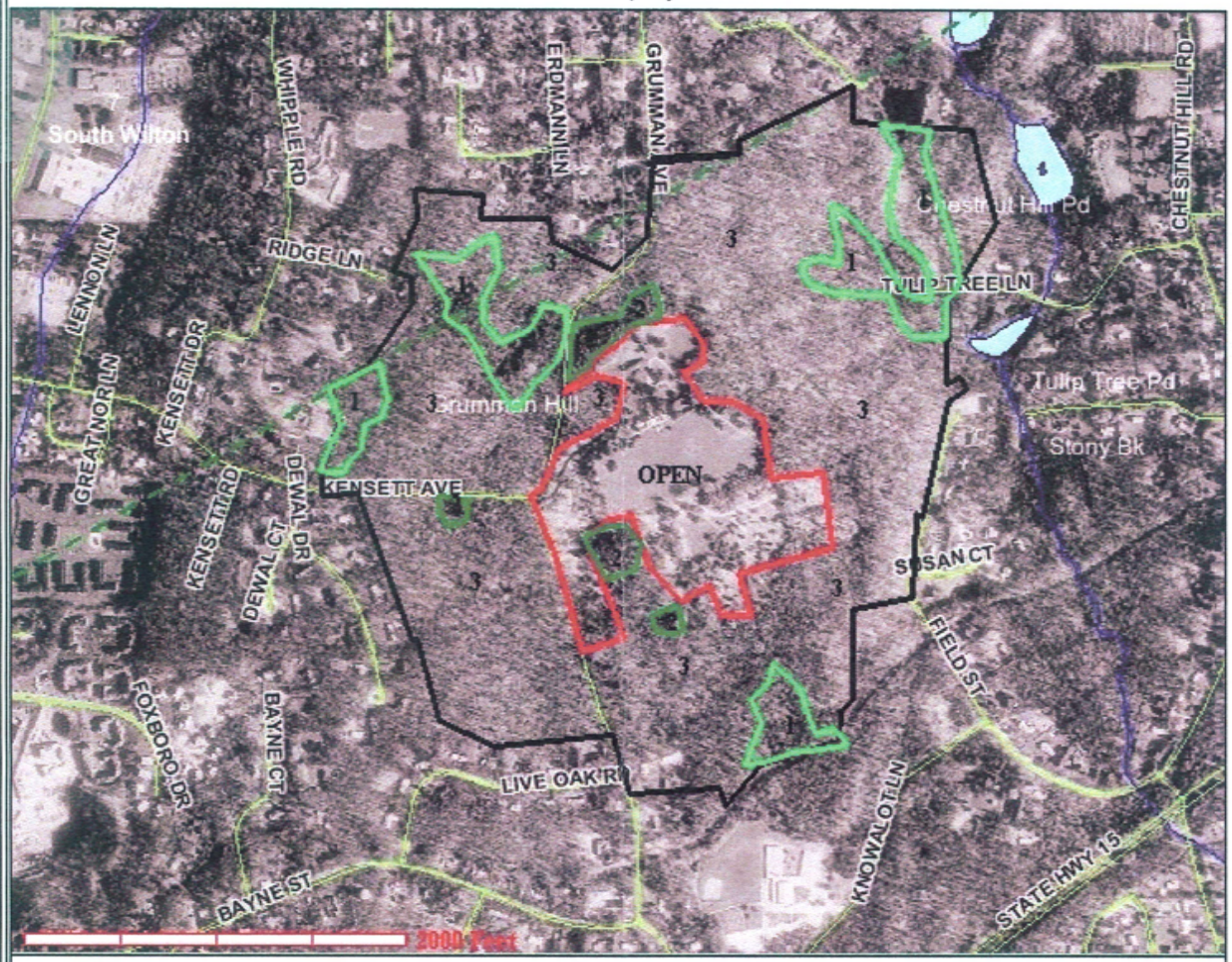
2. **Old Softwood Plantation:** This type includes four areas totaling four acres that were planted 75 years ago with native and non-native conifer species. The native species are white pine, hemlock, and pitch pine. Non-native species are Norway spruce and northern white cedar.

Mixed hardwood species that are established in the plantations are beech, sugar maple, black birch, white oak, red maple, and Norway maple. The understory contains maple-leafed viburnum, winged euonymus, and Japanese barberry. The conifers should be maintained for the benefit of having cover diversity in a property that is predominately mixed hardwood.

3. **Mixed Hardwood Dry Site:** This type covers approximately 138 acres and is the predominant cover type on the study area. The sawtimber sized mixed hardwood trees are 85 to 120 years old. Species include white ash, beech, black birch, black cherry, hickory, red maple, sugar maple, yellow poplar, black oak, red oak, scarlet oak, cedar, hemlock, white pine, and pitch pine. Shrub species such as spicebush, winterberry, winged euonymus, Japanese barberry, holly, and witch hazel occupy the lower canopy. The extent and occurrence of certain groups of hardwood species such as black oak, scarlet oak and hickories will dominate. On soils that are deeper and contain more moisture, species such as white ash, beech, black birch, black cherry, sugar maple, red maple, yellow poplar, red oak, and white oak will dominate. The understory will contain shrub species such as spicebush, winterberry, witch hazel, winged euonymus, and Japanese barberry. This type is suitable for active forest management due to its established access, the forest cover type, and its operable soils.

CRANBURY PARK FOREST RESOURCE MAP

NORWALK, CT Map by L. Rousseau



Legend

- Town Lines
- State
- Town
- Coastline
- Railroads
- Airports
- GDT Roads (Zip Geocode)
- Named Rivers and Streams
- Water
- Shore
- Named Rivers
- Named Lakes
- USGS Orthophotos

1:12000
Jan 10, 2008

Numbers correspond to Forest Cover Type

This map is for illustrative purposes only. Data may not be complete or current. Environmental Data and Geographic Exchange

Source(s):
DEP, GDT

THE NATURAL DIVERSITY DATA BASE

The Natural Diversity Data Base (NDDB) maps and files regarding the project area were reviewed. According to our information there are no known extant populations of Federal or State Endangered, Threatened or Special Concern Species that occur at the site in questions. However, we have records of *Viburnum prunifolium* (blackhaw), a State Special Concern Species (RCSA Sec.26-306) from an area near the project site. It is recommended that a site survey by a botanist be done to determine if this species is present on the site. If the species is found it is recommended that the site design consider protection of the species if possible. The NDDB works to conserve State Special Concern Species with the goal of preventing them from becoming threatened or endangered.

Natural Diversity Data Base information includes all information regarding critical biologic resources available to us at the time of the request. This information is a compilation of data collected over the years by the Environmental & Geographic Information 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. Consultations 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 s, enhance existing data. Such new information is incorporated into the Data Base as it becomes available.

Please contact Nancy Murray, (DEP, Biologist, 860-424-3589) if you have further questions.

RECREATION PLANNER REVIEW

SITE

The park is an approximately 200 acre property in northern Norwalk, bisected by north-south running Grumman Road. The western section is a wooded, undeveloped tract at one time proposed as a community college site and containing about one third of the park's area. Its larger, eastern section acts as the focal point of the park, including both a developed core around the former Gallaher Mansion and a wooded periphery. The entire park is underlain with gently to moderately rolling stony till soils typical of Connecticut's upland areas. Wetland areas seem limited to several pockets in the northwestern sector plus along tributaries of Stony Brook along the park's eastern border.

USE POTENTIAL

A facility's uses are determined by a blend of several factors including its physical character as mentioned above, historic usage as seen in the developed mansion area, the wishes of the community, and fiscal reality. Soils, slope and wooded character discourage intensive development and would involve considerable investment of limited fiscal resources. On the other hand, the existing major investment in the mansion area zone calls more for maintenance and repair than development. Finally, local opinion as determined from citizen surveys clearly favors a generally passive management, with exception of uses compatible with maintaining the character of the mansion and adjoining areas. Similarly addition of field sport facilities is opposed, interestingly agreeing with physical site reality and fiscal costs of development of such areas.

CURRENT USES INCLUDE:

a) Mansion Area – A broad range of civic events, functions, informal play occurs in and around the site's buildings.
b) Woodland Peripheral to Mansion Area – A mix of hiking, biking, dog walking and some equestrian use as well as an 18 hole Frisbee golf course.
c) Western Woodland Area – Some casual trail use.
d) Adjacent to Cranbury School – Some environmental education.

EVALUATION OF CURRENT USES AND RECOMMENDATIONS

a) Mansion Area – Park staff are doing an excellent job of maintaining and operating this complex which serves many civic functions. Noteworthy is the ongoing restoration of the Tea Garden, various other proposals in the 1980's Master Plan include clearing/restoring the apple orchard (good idea), developing a garden theater/amphitheater (nice, but lower priority), nursery (Is it needed or cost effective? Re: the need to clear land and staffing), equestrian center (questionable because of the limited size of the park and possible incompatibility with other trail uses as discussed below).
b) Wooded Periphery East of Grumman Road – A defined, blazed trail plan needed. Also compatibility of various trail uses needs evaluation, as dogs and horses do not mix. Hiking and trail biking also can conflict. Frisbee (disc) golf course seems noncontroversial although unusual use of a woodland area. This reviewer personally recommends dogs being leashed on trails and a complete separation of hikers/dog walkers from equestrian use. Also any trails with slope, sight line limitations should separate hikers from bikers to avoid potential accidents.
c) Western Woodland Area – Develop official trail system linked to trails east of Grumman Road. Active silvaculture/tree farm a possible option here.
d) Adjacent to Cranbury School – Continuation and possible expansion of environmental education.
e) Misc. – If not already in place, install no parking signs along Grumman Road.

POTENTIAL TRAIL LINKAGES

The Norwalk River Valley Linear Trail is about ½ a mile to the west of Cranbury Park as the crow flies. This trail is an extension of the Norwalk Heritage Greenway designated in 2001, and will expand walking and biking opportunities from the shoreline north toward the City's border with Wilton. Although the northern part of the trail is not completed there will likely be a future trail link opportunity.

ARCHAEOLOGICAL AND HISTORICAL REVIEW

The Office of State Archaeology (OSA) and the State Historic Preservation Office (SHPO) suggests that the project area has a high sensitivity for cultural resources associated with Native American and later Euro-American occupations. The Cranbury Park area includes the three story 20th century English fieldstone manor house and the Cranbury Elementary School. However, the property was used by Native Americans for possibly thousands of years. Stone tool artifacts including bifaces and projectile points have been recovered from the area. It appears that Cranbury Park area may have been used by Connecticut Indians as a seasonal winter camp as early as 4,000 years ago.

Historic research suggests that the area was also used by English farmers as early as the 17th century. Of particular interest is that in the 1890s Dr. Edwin Everett Smith established the "Kensett" tuberculosis sanitarium on the property. Preliminary archaeological excavations conducted by Holly Cuzzone suggests that the stone foundations of the sanitarium are in place below ground and that archaeological research may yield important information on the treatment of patients and the hospital's organization.

The OSA and SHPO refer you to Ms. Cuzzone's report entitled, "Cranbury Park Past and Present: the Gallaher Estate Grumman Hill Road, Norwalk, Connecticut 06851", which provides a complete history of the property and its archaeological potential. Cranbury Park appears to be eligible to the National Register of Historic Places. It is our understanding that Ms. Cuzzone will be working with the City of Norwalk in an archaeological project at the park and we encourage this collaboration and research. In addition, the Office of State archaeology would be pleased to assist the on-going research of the park by providing non-intrusive geophysical techniques like ground-penetrating radar to locate the pattern of below ground foundation stones.

The OSA and SHPO are available to provide technical assistance in the identification and evaluation of cultural resources on the Cranbury Park property.

APPENDIX

General Guidelines for Protecting Wildlife Resources When Developing Trails

General Guidelines For Protecting Wildlife Resources When Developing Trails

Some properties may lend themselves to providing a variety of recreational opportunities (e.g., hiking, hunting, fishing, nature study and photography, horseback riding, mountain biking.) Properly designed trails can provide excellent opportunities to increase public appreciation for wildlife and the ecological values of various habitats. Trails should be designed to enhance the learning and aesthetic aspects of outdoor recreation while minimizing damage to the landscape. They should be laid out to pass by or through the various cover types and other special features represented on the property while avoiding those areas prone to erosion or that contain plants or animals that may be impacted by human disturbance. Uses that are generally considered "compatible" could impact sensitive resources depending on the location, timing and frequency of their occurrence. For example, while regulated fishing is considered an accepted form of outdoor recreation, there could be impacts associated with it, such as streambank erosion at heavily used sites. The overall level of disturbance to vegetation/habitat and wildlife can be significantly reduced by establishing one or two (will depend on property size and degree of importance to natural resources) multiple-use trails rather than several single/exclusive-use trails.

Some guidelines to follow when developing a trail system include:

- Narrow, passive-use recreation trails with natural substrate that would require minimal vegetation removal, maintain forest canopy closure, prohibit the use of motorized vehicles, and require dog owners to keep their dogs under control, are preferred to reduce environmental impacts and disturbance to wildlife. Abandoned roadways (e.g., farm/logging roads) should be incorporated into the trail system whenever possible and appropriate to minimize cutting activity/vegetation removal;
- If a paved, multi-purpose trail is established, avoid the use of curbing. If it is necessary, Cape Cod style curbing (curbing at 45 degree angle) is recommended;

- Know the characteristics of the property and plan the layout so that the trail passes by or through a variety of habitat types;
- Make the trail as exciting and safe as possible and follow a closed loop design. Avoid long straight stretches of >100'; trails with curves and bends add an element of surprise and anticipation and appear more "natural";
- Traversing wetlands and steep slopes should be avoided whenever possible to minimize erosion and sedimentation problems; where wetlands must be crossed, a boardwalk system should be used;
- The property boundaries and trail should be well marked. It is best to provide a map/informational leaflet describing the wildlife values associated with the property (e.g., value of wetlands, various habitat types/stages of succession, habitat management practices) and guidelines for responsible trail use;
- Potential impacts of trails on private property owners should be identified. Where trails bisect private property, the access should be of adequate width and the trail well-marked to help avoid potential conflicts (e.g., trespass by trail users);
- For more specific guidance on trail design and construction contact the Connecticut Forest & Park Association (860-346-2372 or www.ctwoodlands.org) or Appalachian Mountain Club (www.outdoors.org);
- For an extensive literature review about the effects of different types of recreation activities on wildlife, visit web site www.Montanatws.org – 307 page document published in 1999 entitled, "Effects of recreation on Rocky Mountain wildlife: A review for Montana."

Prepared by the CT DEP Wildlife Division for the Partners In Stewardship Program (June 2002)

Questions? Contact CT DEP Wildlife Division at 860-295-9523 (Eastern CT) or 860-675-8130 (Western CT)

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 and 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 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 in the review of sites proposed for major land use activities or natural resource inventories for critical areas. 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 recreation/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 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 landowner / developer allowing the Team to enter the property for the purposes of a review and a statement identifying the specific areas of concern the Team members should investigate. When this request is reviewed by the local Conservation District and approved by the King's Mark RC&D Executive Council, the Team will undertake the review. At present, the ERT can undertake approximately two reviews per month depending on scheduling and Team member availability.

For additional information regarding the Environmental Review Team, please contact the King's Mark ERT Coordinator, Connecticut Environmental Review Team, P.O. Box 70, Haddam, CT 06438. The telephone number is 860-345-3977.