Mystic Seaport
Hewitt Property
North Stonington, Connecticut

Eastern Connecticut
Environmental Review Team Report

Eastern Connecticut
Resource Conservation & Development Area, Inc.

Mystic Seaport Hewitt Property
North Stonington, Connecticut




Environmental Review Team Report

Prepared by the

Eastern Connecticut
Environmental Review Team

Of the

Eastern Connecticut Resource Conservation and Development Area, Inc.

For the

First Selectman
North Stonington, Connecticut

August 2008

#621

Acknowledgments

This report is an outgrowth of a request from the North Stonington First Selectman to the Eastern Conservation District (ECD) and the Eastern Connecticut Resource Conservation and Development Area (RC&D) Council for their consideration and approval. The request was approved and the measure reviewed by the Eastern Connecticut Environmental Review Team (ERT).

The Eastern Connecticut 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 Thursday, June 5, 2008.

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Brian Murphy	Fisheries Biologist DEP – Inland Fisheries Division (860) 295-9523

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Randolph Steinen	Geologist DEP – State Geological & Natural History Survey UCONN – Geology (emeritus) (860) 487-0226
Pat Young	Natural Resource Specialist Eastern Conservation District (860) 887-4163 Ext. 401

I would also like to thank First Selectman Nicholas Mullane II, Juliet Leeming, ZEO/Planner, Bill Peterson, Mystic Seaport and Greg Leonard, Southeastern Connecticut Water Authority 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 and aerial photos. During the field review Team members received additional information, reports and maps. Some Team members made additional visits or separate site visits. Following the reviews, 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 town and landowner. 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 town. The results of this Team action are oriented toward the development of better environmental quality and the long term economics of land use.

The Eastern Connecticut RC&D Executive Council hopes you will find this report of value and assistance in reviewing town acquisition of the Mystic Seaport Hewitt Property.

If you require additional information please contact:

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CT ERT Program
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Introduction

Introduction

The North Stonington First Selectman requested Environmental Review Team (ERT) assistance in reviewing the Mystic Seaport Hewitt Property for a possible town purchase.

The 105.23 acre Hewitt Property is located on Norwich-Westerly Road (Route 2) and Hewitt Road. The property was originally deeded to Mystic Seaport in 1967 with restrictions of open space, forestry, agricultural and recreational use. The Seaport wishes to sell the property to the town. The town would be subject to the same restrictions and conditions as set forth in the deed. It is the opinion of the Connecticut Attorney General Richard Blumenthal that the Town's purchase would be consistent with the intent of the donor. (See Letter in the Appendix)

The property includes several buildings:

- The historic 1740's Hewitt House (renter occupied);
- The former "Rosie's Diner/Dew Drop Inn" restaurant (vacant, partially renovated);
- A 1900-1940's house that operated as a nursery school (vacant for more than 10 years);
- A small cabin (renter occupied).

The property also contains the leased community well field for the Southeastern Water Authority that provides water for the town schools, the Holly Green condominiums, two hotels and a subdivision development. The Shunock River flows through the parcel and is dammed at Hewitt Road to form Lewis Pond. DEP has conducted a review of the dam and their report is available in the Appendix. The property is a mix of active agricultural fields, reverting farm fields, forest and wetlands. Great Plains Cemetery is located on the property.

Objectives of the ERT Study

The First Selectman has requested a natural resource inventory to assist the town in their decision to purchase the property and to serve as an information

base for management and stewardship plans should an acquisition occur. Specific areas of concern include: aquifer protection, water quality and water supply, pond and river ecology, wildlife habitat and management, forestry resources and management, farmland preservation, soils, geology, recreation potential, and historic and archaeological significance

The ERT Process

Through the efforts of the North Stonington First Selectman this environmental review and report was prepared for the Town of North Stonington.

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

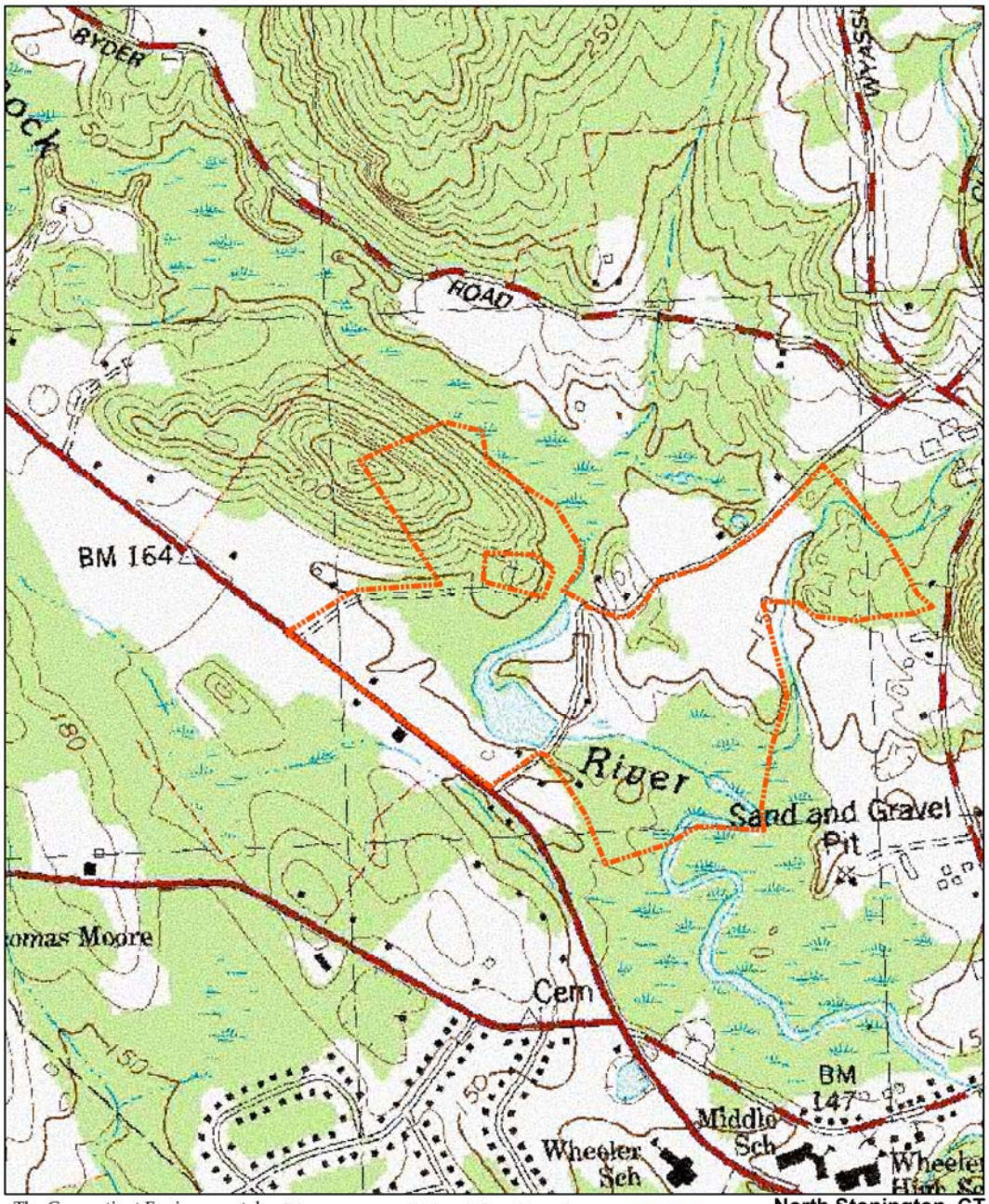
The review process consisted of four phases:

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 Thursday, June 5, 2008. 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. Some Team members made individual or multiple site visits.

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.

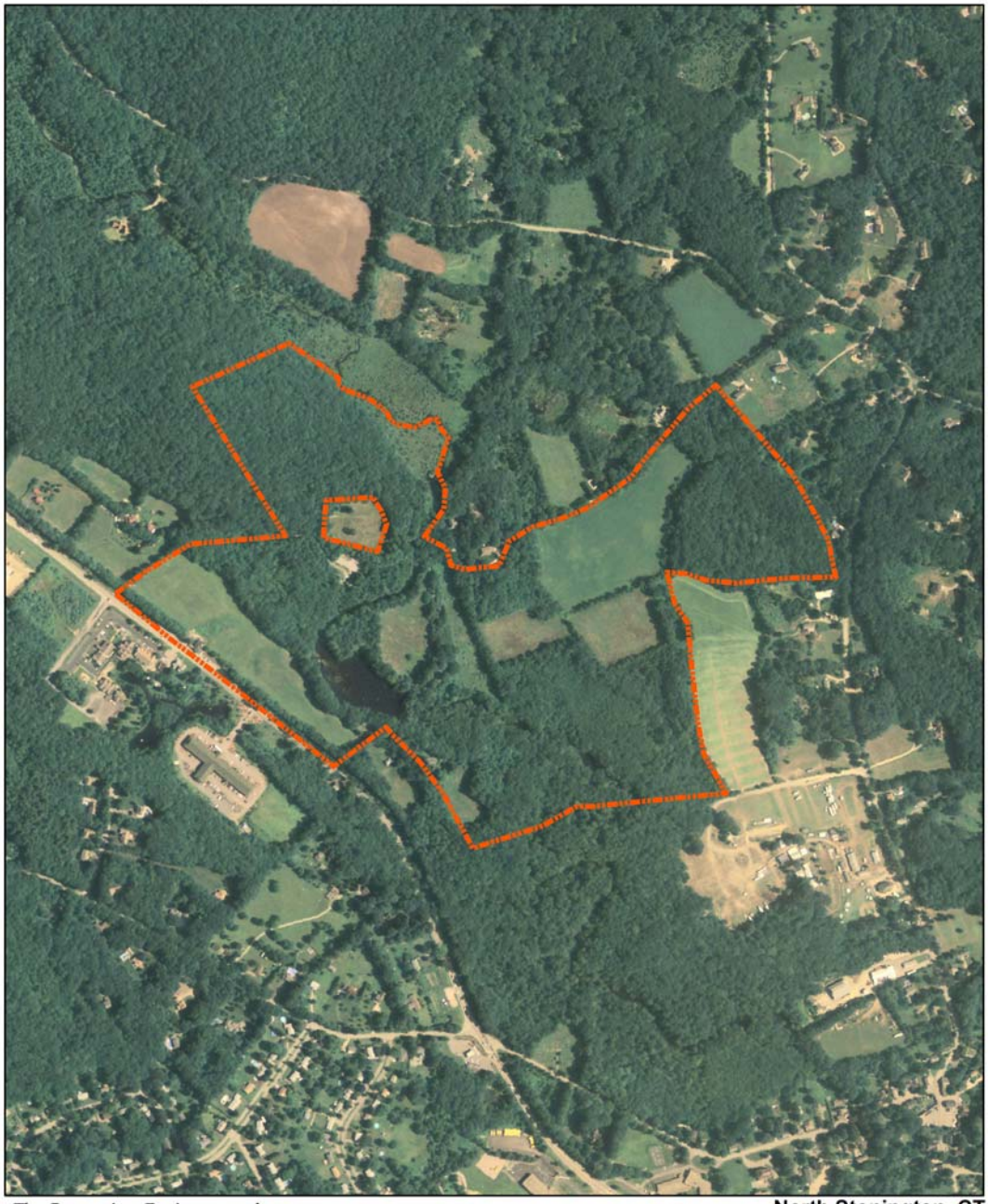
Mystic Seaport Property Site Map



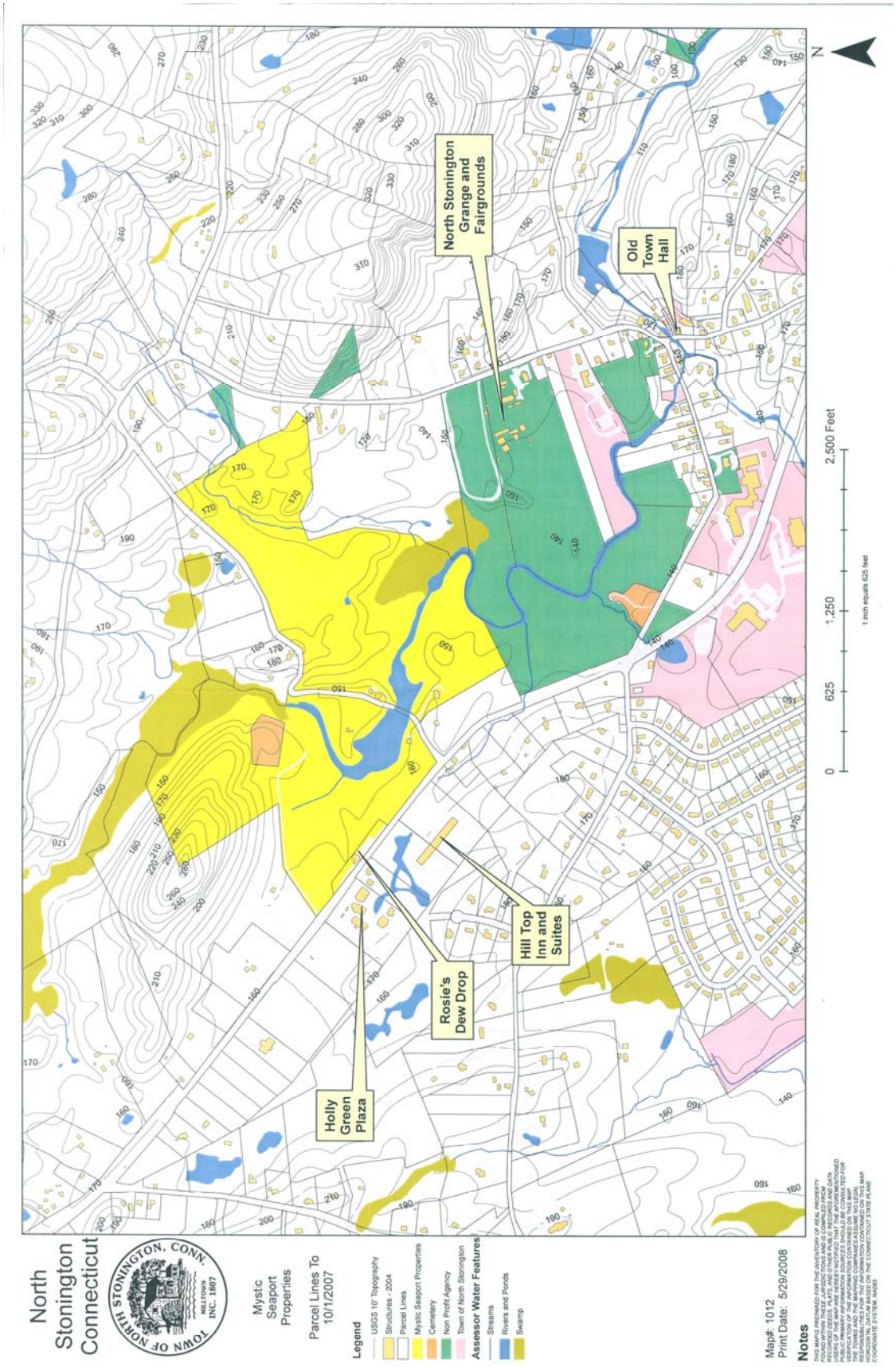
The Connecticut Environmental Review Team

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. August 2008.

Mystic Seaport Property Color Aerial Map



Mystic Seaport Property Aerial Map


North Stonington Connecticut
TOWN OF NORTH STONINGTON, CONN.
INC. 1807
Mystic Seaport Properties
Parcel Lines To 10/1/2007
Legend
USGS 10' Topography
Structures - 2004
Parcel Lines
Mystic Seaport Properties
Cemetery
Non Profit Agency
Town of North Stonington
Assessor Water Features
Streams
Rivers and Ponds
Swamp
Map#: 1012
Print Date: 5/29/2008
Notes
North Stonington Grange and Fairgrounds
Old Town Hall
Holly Green Plaza
Rosie's Dew Drop
Hill Top Inn and Suites
N
0
625
1,250
2,500 Feet
1 inch equals 625 feet

Topography and Geology

Topography

The Shunock River Valley is similar to many valleys in eastern Connecticut. It has rather steep valley walls that may have bedrock exposures and a valley bottom that contains terrace like deposits of sand and gravel. Most of the parcel's land is in the valley bottom that has elevations that range between 145' to 160'. The northwestern part of the parcel is underlain by a hill that stands at an elevation of 280'+. Thus the relief on the property is about 140'. The hill is covered with a thin veneer of glacial till and has numerous bedrock exposures (Goldsmith and Gaffney, 1997).

The valley, on the other hand, has several topographic features. The northeastern part of the parcel is a sloped terrace deposit with an elevation greater than 150'. The central part of the parcel is a gently undulating terrace (Figure 1) with an elevation of about 150'. The terraces are somewhat hummocky (Figure 1a). The valley bottom is less than 150 feet in elevation and much of it is wetland. This all relates to the sequence of glacial (ice age) and post-glacial depositional events.

Geology

Bedrock (ledge) in the area is shown on a map (Figure 2) taken from the state map (Rodgers, 1985). Bedrock does not crop out in many places on the parcel and, thus, bedrock outcrops were not visited during the field review. Bedrock outcrops are shown on the map of Goldsmith and Gaffney to occur on the 280' hill on the northwestern part of the parcel. The rocks that crop out on the parcel are composed of the Potter Hill Alaskite Gneiss (Zsp). Alaskite is a light colored rock composed of potassium feldspar, quartz and mica. Magnetite may also be a constituent. Quartzite of the Plainfield Formation (Zpq) crops out on the adjacent property on the south side of the hill.

Quaternary (surficial) geology is a more important part of the resources of this parcel than the bedrock geology. The Quaternary is the most recent phase of geologic history and involves the last ice age. The glaciers that covered eastern Connecticut 20,000 years ago plastered the underlying bedrock with mud, sand and gravel when they melted. We call the glacial soil *till*. Till of varying thickness covers most of the highlands of eastern Connecticut, including the hilltops and valley sides in North Stonington. The 280' hill is covered by a thin veneer of till.

As the glacial ice melted, an enormous volume of melt-water was created. That melt-water collected into streams and rivers. Those streams and rivers carried along their beds sand and gravel that was frozen into the glacial ice as well as sediment the streams eroded from the landscape. Much of the sediment the rivers carried was deposited in the valleys, in some cases up against or on top of left over ice.

The surficial map (Figure 3) shows an interpreted ice margin passing through the eastern part of the property and farther south. This marks a temporary position of the southern margin of the ice, about 17,500 years ago, during the recession (melt-back) of the glacier. Sand and gravel deposits south and east of the ice margin are at an elevation of 160'+ and were deposited by melt-water streams up against the edge of the ice. Thus a tongue of ice filled the valley during deposition of the higher, sloping terrace. The terraces with an elevation of about 150' were similarly deposited by melt-water streams, but they were not deposited until after the ice tongue melted farther northwestward. The melt-water streams deposited this sand into the edge of a small pond that occupied the depression where the ice tongue stood. The melt-water was impounded by the earlier deposit of sand which eventually was breached, draining the pond and leaving behind a swampy area.

The sand and gravel are a resource of the land in several ways. First, sand and gravel is a porous and usually very permeable medium. It is a good aquifer that will yield abundant quantities of water when drilled into. It is a shallow aquifer and more easily contaminated than bedrock aquifers. Hence, careful monitoring of potential polluting activities in the aquifer recharge area is warranted if the aquifer is developed.

Second, the sand and gravel, if rocky enough, is a resource for construction materials. Crushed and processed gravel is constantly in demand for development activities.

Third, the flat surface of the gravel deposit is amenable to farming activities. The soils are usually well drained so it is easy to get farming machinery into the fields. Indeed, parts of the parcel are actively used for farming activities today (Figure 1b).

References

Goldsmith, R, and Gaffney, J.W., 1997, Surficial geologic map of the Old Mystic Quadrangle, New London County, Connecticut. U.S. Geol Surv. Geol Quad. Map #GQ-1771 (scale 1:24,000).

Rodgers, John, 1985, Bedrock Geological Map of Connecticut. State Geological and Natural History Survey of Connecticut, Nat'l. Resource Atlas Series, 1:125,000, 2 sheets.

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.

A.

B.

Figure 1. Terrace deposits of sand and gravel. **A.** Hummocky surface of terrace. **B.** Farmed terrace.

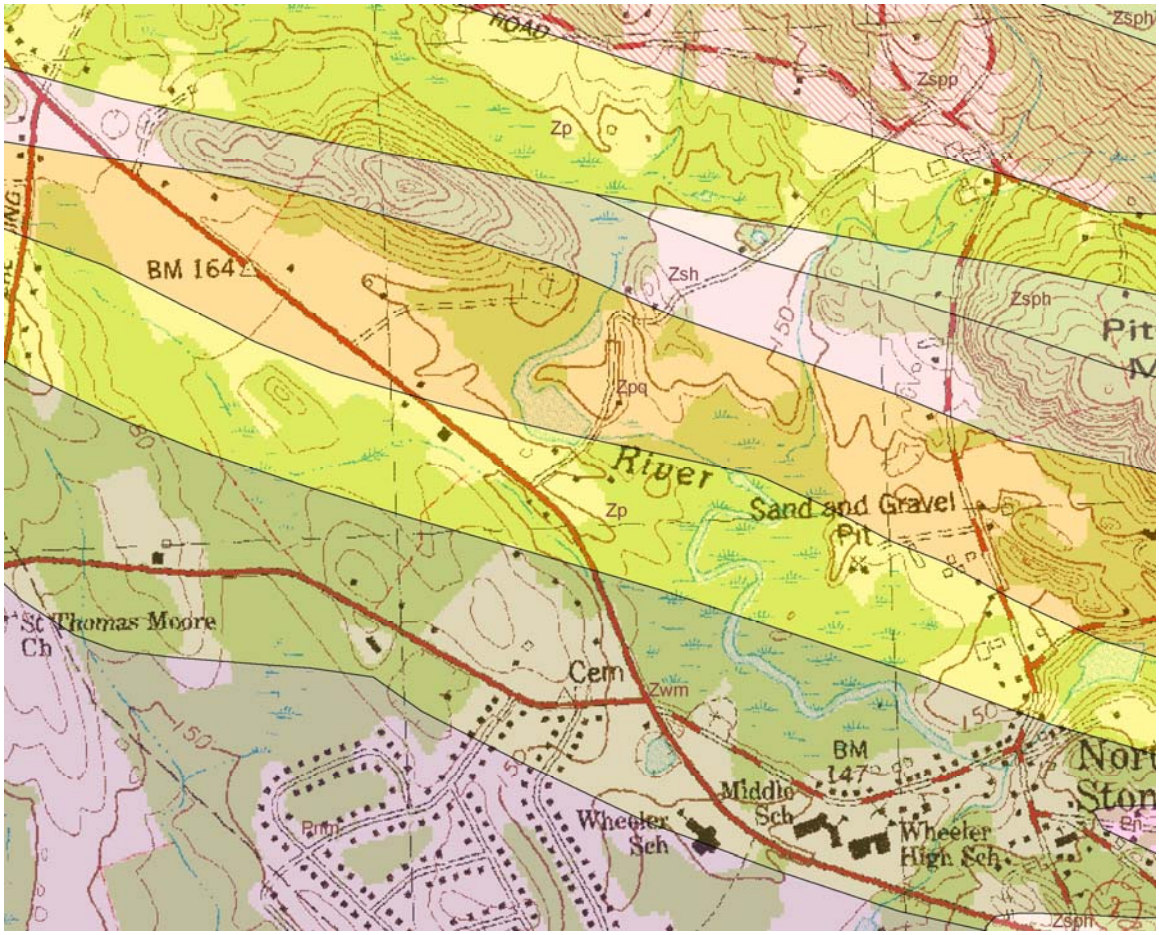


Figure 2. Bedrock geologic map of Hewitt Mystic Seaport parcel and surrounding land (Rodgers, 1985). The oldest rocks in the area belong to the Proterozoic aged (1+ billion years) Plainfield Formation (Zpq and Zp) and the Marmacoke Formation (Zwm). These were intruded by slightly younger granitic rocks belonging to the Potter Hill Gneiss (Zsph) and the Hope Valley Alaskite Gneiss (Zsh), and the Permian aged Narragansett Pier granite (Pnm and Pn) which is not metamorphosed and much younger (250 million years).

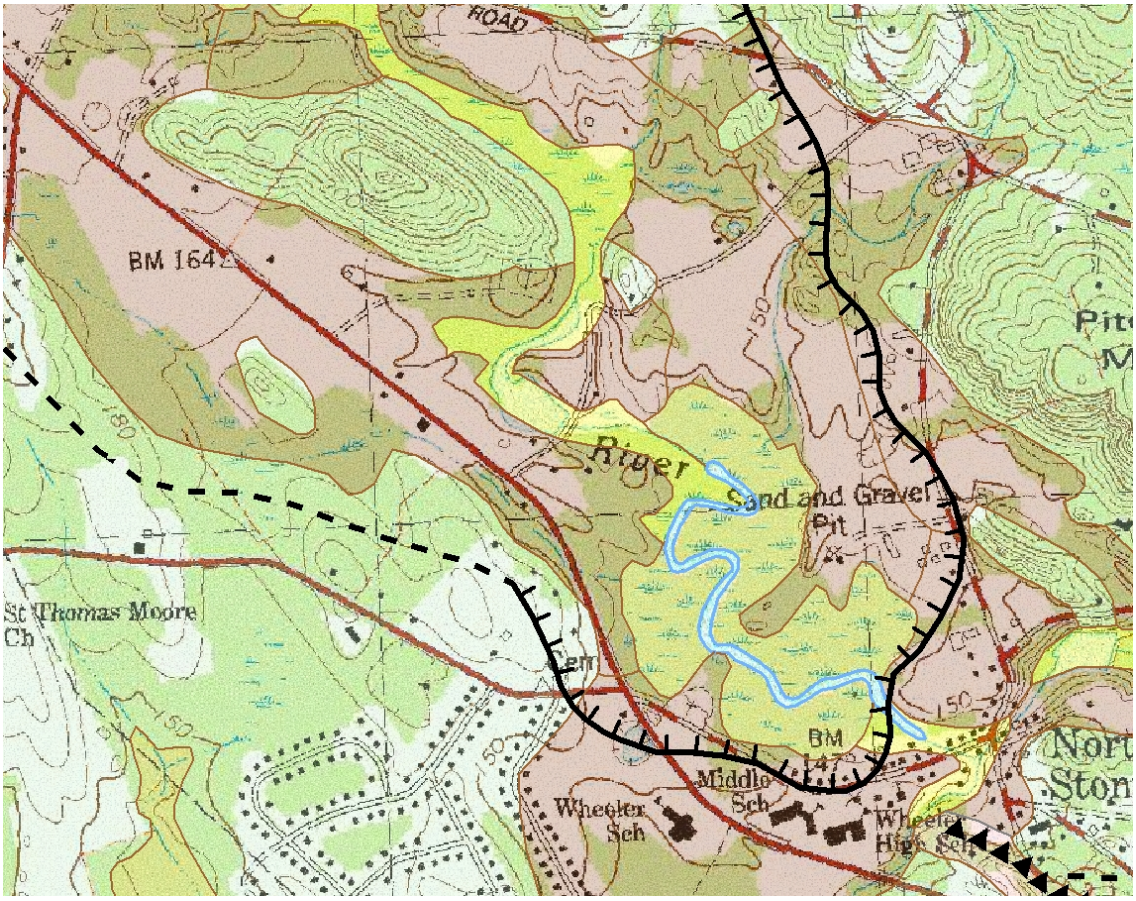


Figure 3. Quaternary geologic map of the parcel and surrounding areas (Stone and others, 2005, after Goldsmith and Gaffney, 1997). The areas colored green and lightest gray are areas where till is present at the surface. Areas colored dark green and beige are underlain by sand and gravel. The areas colored yellow are swamps and modern river alluvium. The hachured line represents a position of the ice during a period of melting. It is dashed to the west where it is inferred. Chain of triangles in southeast corner of map is a ridge of sand and gravel, perhaps an esker.

Conservation District Review

Introduction

This environmental review was conducted in response to the Town of North Stonington's request for a natural resource inventory on a property identified as 386 Norwich Westerly Road (Route 2), North Stonington, Connecticut. This property is just over 105 acres and is currently the site of Rosie's Diner, three residences, including the Hewitt House. A historic cemetery owned by a local church is also located on site. Two community wells are located on the property, which provide water for the town schools, a condominium development, two hotels and a single family residential development. Mystic Seaport has offered the property to the Town who wishes to purchase it for several reasons including, wellhead protection, open space preservation, greenway linkages, possible recreational uses and historic preservation.

An ERT (Shunock River Non-Infringement Area Natural Resource Inventory, 5/08, #614) was conducted approximately a year ago for approximately 420 acres south of this property as part of a Town review for rezoning and resource protection of the Shunock River. In that request for an ERT the town had a vision of the Shunuck River corridor being a central amenity for the community. That report should be consulted for further recommendations on resource protection of the Shunock River corridor. This is an opportunity to further that vision and provide future permanent protection for this important resource.

The Eastern Connecticut Conservation District (ECCD) has provided an overview of the soils, water and open space resources on this site.

Soils

As part of its review, ECCD has provided a soil map for the property based on Natural Resource Conservation Service (NRCS) Soil Web Survey, included at the end of the this section. The total acreage shown for the property exceeds the actual size to allow for as complete mapping of soils as possible.

Two soil reports were also generated for the parcel to provide further information to the town as it considers long term use and management options. While on-site soil investigations provide specific information necessary for activities such as locating septic systems and construction material suitability, general information is useful for the purpose of planning with larger parcels for things such as playing fields and trails.

The first report was generated using the Selected Soil Interpretations from the website. Categories include inland wetland soils, paths and trails and recreational playgrounds. The inland wetland category simply identifies whether the soil meets the Connecticut definition for a wetland soil and includes those that are poorly drained, very poorly drained, and alluvial or floodplain. The paths and trails category rates the soils for their suitability when developing walkways. The higher the number, up to a rating of 1, the more restrictive the defined soil feature is for the proposed use category. The third category is for recreational playgrounds, again with the same rating system.

The second map and report shows soils that are considered prime agricultural soils and those of statewide importance. It is no surprise that these designated soils match up with existing and historical agricultural fields.

Due to the number of types present, ECCD did not include individual soil descriptions. These are available, however, through the NRCS Soil Website at the following address, http://websoilsurvey.nrcs.usda.gov/app, or by contacting the ECCD office.

Water Resources

Surface water resources on site consist of the Shunuck River and two smaller watercourses which flow to the Shunuck. The Shunuck River is part of the Pawcatuck River Watershed with a total watershed area of about 16.8 square miles.

A portion of the Shunuck is dammed on this site, creating a large pond on the property. Depth of the pond is unknown, however it is thought that at least portions of it range from 10-12 feet. Areas of emergent vegetation were apparent at specific sections of the pond, but appear to be fairly limited in scope. According to the Department of Environmental Protection, Dam Safety Unit, maintenance work including leakage repair, spillway refurbishing and some clearing of vegetation is necessary to bring the dam back into safety compliance.

The pond and river provide a wealth of watercourse habitats suitable not only for a variety of fish, but also waterfowl, amphibians, reptiles and a host of mammal species. These resources interspersed with surrounding forests and fields provide a full range of habitats which many animals need for successful survival. Additionally this area appears to be in close range to other large parcels of land, increasing its value.

The soils map shows designated wetland soils which are located primarily along the Shunuck and other watercourse corridors. These soil types include Walpole (13), Timakwa and Natchaug (17), Catden and Freetown (18), and Rippowam (103). Again the wetland soil maps are general and should not be construed as final wetland mapping required by most towns as part of the permitting process.

Wetlands on site are primarily wooded with red maple as the main canopy. Additional species include, birch, musclewood, hickory, sweet pepperbush, witch hazel, skunk cabbage, touch-me-not, blue iris, false Solomon's seal, sweet cicely, trillium, and wild violet among others. Invasive species noted in wetland areas included multiflora rose, barberry, bittersweet and yellow iris.

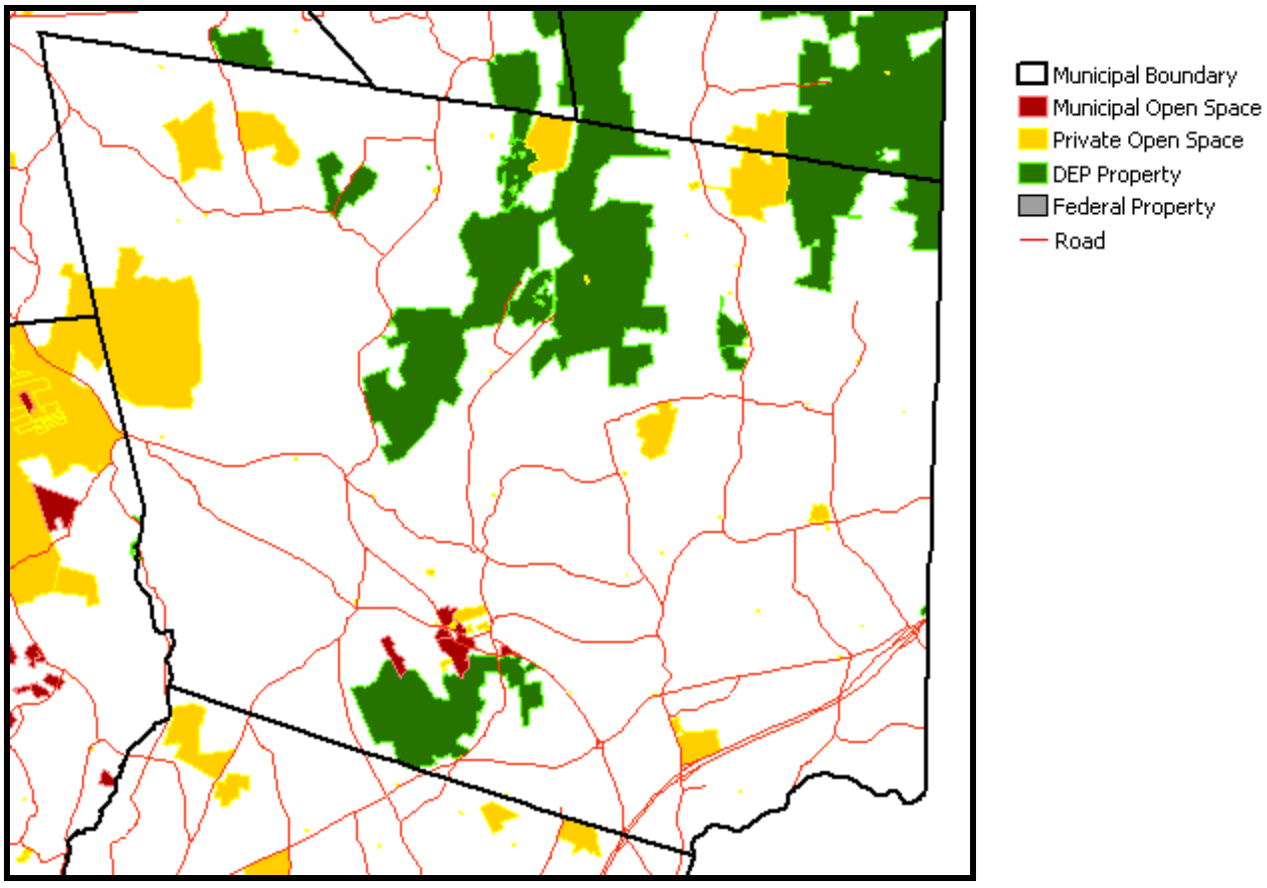
Wetlands such as these are valuable and offer the following functions. They provide additional habitat resources, pollutant filtering, watercourse buffers, some floodwater storage, groundwater recharge and discharge and educational and aesthetic resources. The wetland-watercourse system on this site should be considered of very high value and considerable effort should be made to preserve this resource.

Surface water quality is designated as A/AA by the Connecticut Department of Environmental protection (DEP) which indicates good to excellent water quality.

Groundwater quality is designated as GAA/GA for the area indicating that the natural quality is considered suitable for drinking water purposes. A sizable coarse grained stratified aquifer with saturated depths exceeding 10 feet has been identified in this area along the Shunuck River corridor, according the 1978 map entitled, "Ground-Water Availability in Connecticut" by the CT DEP and USGS. These areas are capable of yielding moderate to very large amount of water. Protection of existing and future water supplies should be of utmost importance to the town.

Open Space

The existing parcel is approximately 105 acres in size. In viewing other mapping from the Connecticut NEMO CRI website (Connecticut Non-point Education for Municipal Officials-Community Resource Inventory) which shows other designated open space, it is apparent that there are large areas of protected land to the south and southwest of this property. In conjunction with plans that the town is considering further south along the Shunuck River, there are considerable opportunities to create large contiguous areas of open space.



Large areas of open space provide a variety of benefits including, habitat preservation for species requiring large contiguous land tracts, groundwater recharge, water quality protection, flood mitigation, connected walking and biking trails, scenic vistas, and educational opportunities.

Further, this tract of land is strategically located near the town center, local schools, and highway systems. It is the site of two community waters supply wells and perhaps additional future water supplies and contains a large segment of a key environmental resource, the Shunuck River. Permanent preservation of this property should be a high priority for the Town of North Stonington.

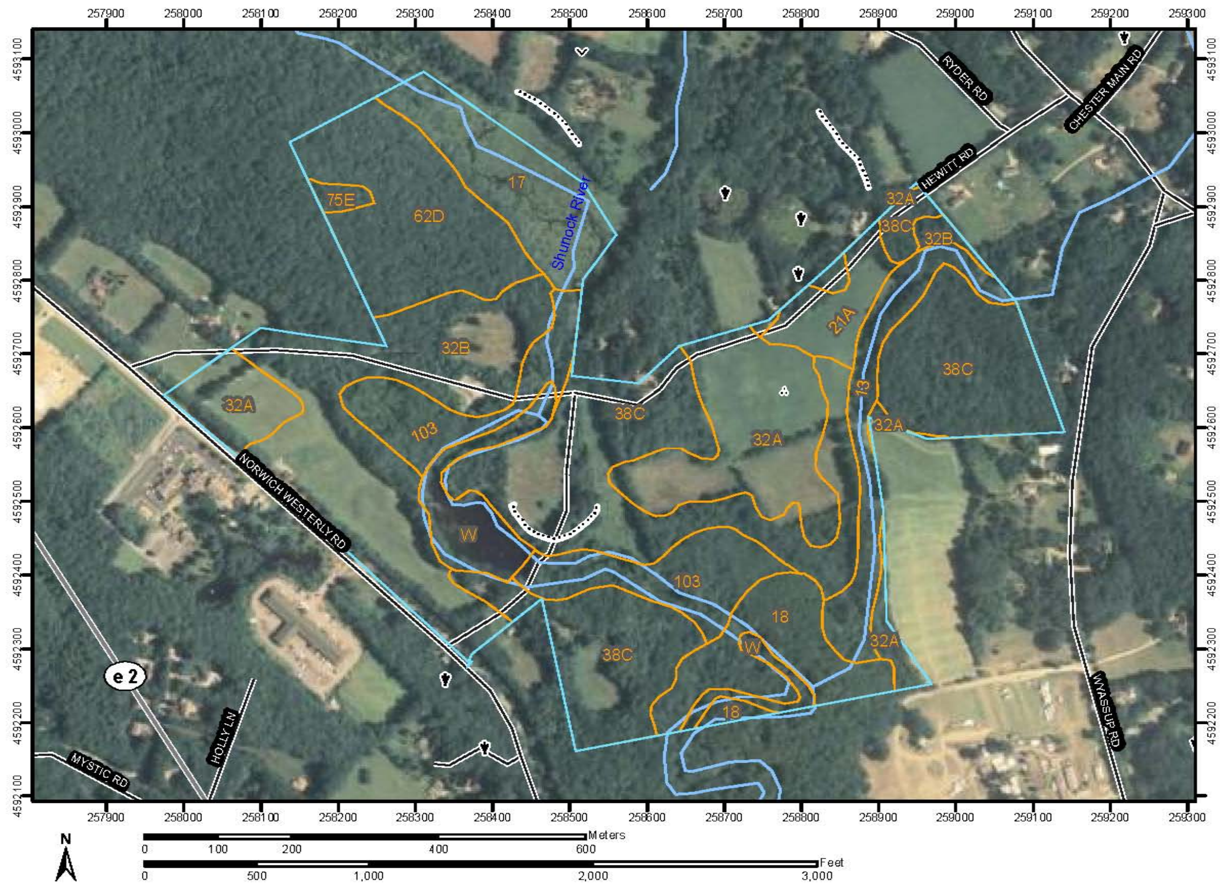
Recommendations

- Preservation of this property as open space, with minimal development, is recommended to preserve existing and future water supplies, riparian and riverine habitats, important agricultural soils, contiguous wildlife corridors, greenways and passive recreational activities.
- Alterations to the property should only be made after carefully assessing the environmental impacts to water quality, wildlife, vegetative communities, soils,

recreational and educational activities, historical significance and aesthetic beauty.

- If future development, even for recreational fields, is ever anticipated on the property, substantial vegetative buffers should be incorporated into a river corridor system. Undisturbed buffers of a minimum of 100' feet should be designated. In areas where there are little to no riparian wetlands, then additional undisturbed upland areas up to 150 feet should be designated. Steep slopes along the river corridor should be preserved.
- Every effort should be made to preserve soils that have high agricultural value. Some of these areas are presently being used as hay fields. Provided they are managed effectively to minimize any nutrient run-off, this use offers additional habitat resources as well as scenic vistas.
- If trails are anticipated, they should be laid out to take advantage of existing pathways wherever possible. Trails that need to be constructed should be planned to avoid sensitive areas such as steep or eroding slopes, nesting areas and to minimize clearing.
- Periodic removal of invasive species will prevent further spreading.
- If supplemental plantings are ever considered, native plantings are strongly recommended. Native plants are generally better suited to local soil and climate conditions, provide valuable food resources to native animals and typically need less care to survive. Additionally it is an opportunity to educate visitors on the importance of preserving native vegetation.
- If any timber harvesting activities are considered, it should be in conjunction with a sustainable forest management program, which aims at maintaining the health of the forest ecosystem, not simply harvesting the majority of high-grade trees, thus weakening the forest. Timber harvesting should be carefully weighed against any desired passive recreational activities to ensure that there is no conflict.
- Crossings of the Shunuck River should be limited to existing impacted areas. If crossing of the intermittent watercourses is desired, then consideration of a method that maintains the integrity of the channel and minimizes fill should be incorporated into the design.
- While the site inspection on June 5, 2008 did not reveal any vernal pools, further documentation in the spring should be conducted to verify the presence or absence of these wetland types. If functional breeding vernal pools are present, then the necessary protection of these resources should considered when determining long-term use and management of the property.

Soil Map–State of Connecticut
(Mystic Seaport Property-North Stonington, CT)



Natural Resources
Conservation Service

Web Soil Survey 2.0
National Cooperative Soil Survey

6/24/2008
Page 1 of 3

MAP LEGEND

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

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

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 19N

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

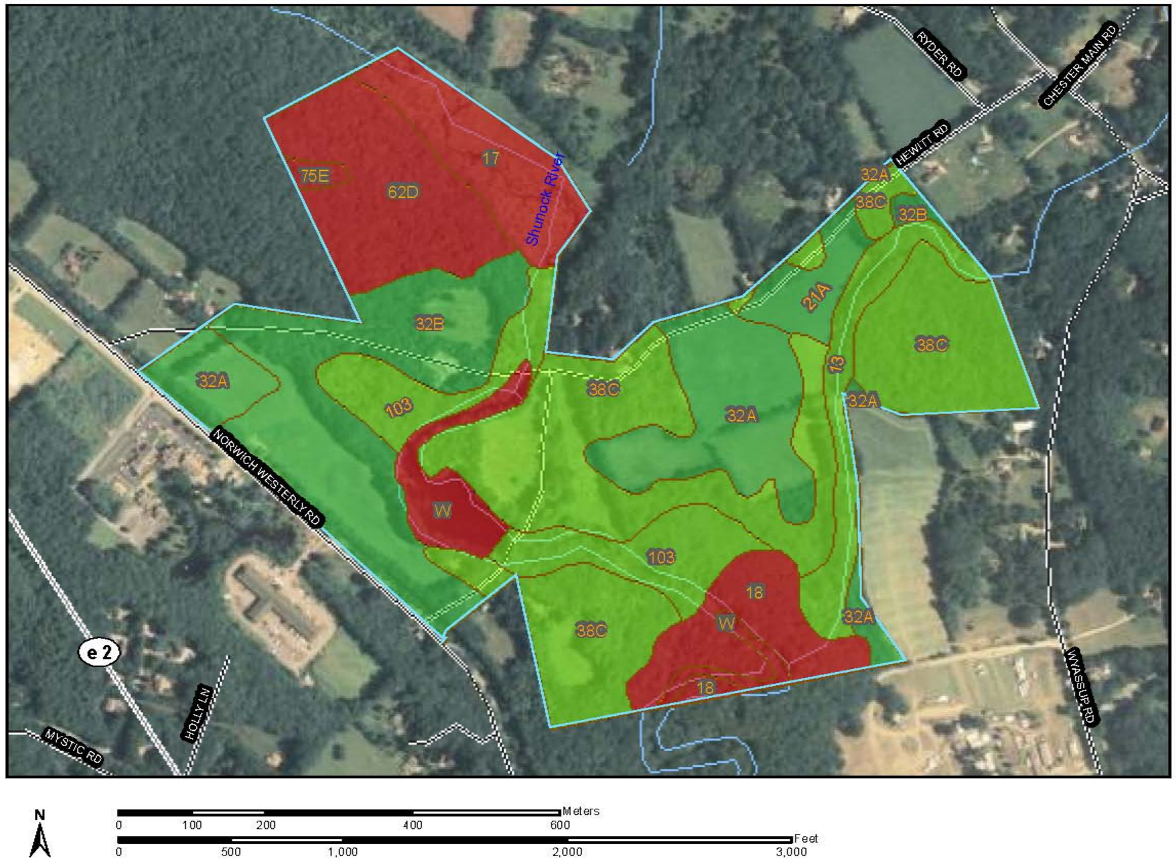
Date(s) aerial images were photographed: 4/12/1991

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.

Map Unit Legend

State of Connecticut (CT600)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
13	Walpole sandy loam	6.5	4.8%
17	Timakwa and Natchaug soils	8.3	6.1%
18	Catden and Freetown soils	8.1	6.0%
21A	Ninigret and Tisbury soils, 0 to 5 percent slopes	3.6	2.7%
32A	Haven and Enfield soils, 0 to 3 percent slopes	16.7	12.3%
32B	Haven and Enfield soils, 3 to 8 percent slopes	22.5	16.6%
38C	Hinckley gravelly sandy loam, 3 to 15 percent slopes	39.6	29.1%
62D	Canton and Charlton soils, 15 to 35 percent slopes, extremely stony	12.9	9.5%
75E	Hollis-Chatfield-Rock outcrop complex, 15 to 45 percent slopes	0.6	0.5%
103	Rippowam fine sandy loam	11.7	8.6%
W	Water	5.5	4.0%
Totals for Area of Interest (AOI)		136.1	100.0%

Farmland Classification–State of Connecticut
(Mystic Seaport Property-North Stonington, CT)



MAP LEGEND

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

Soils
- Soil Map Units

Soil Ratings
- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of local importance
- Farmland of unique importance
- 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

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Farmland Classification

Farmland Classification— Summary by Map Unit — State of Connecticut				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
13	Walpole sandy loam	Farmland of statewide importance	6.5	4.8%
17	Timakwa and Natchaug soils	Not prime farmland	8.3	6.1%
18	Catden and Freetown soils	Not prime farmland	8.1	6.0%
21A	Ninigret and Tisbury soils, 0 to 5 percent slopes	All areas are prime farmland	3.6	2.7%
32A	Haven and Enfield soils, 0 to 3 percent slopes	All areas are prime farmland	16.7	12.3%
32B	Haven and Enfield soils, 3 to 8 percent slopes	All areas are prime farmland	22.5	16.6%
38C	Hinckley gravelly sandy loam, 3 to 15 percent slopes	Farmland of statewide importance	39.6	29.1%
62D	Canton and Charlton soils, 15 to 35 percent slopes, extremely stony	Not prime farmland	12.9	9.5%
75E	Hollis-Chatfield-Rock outcrop complex, 15 to 45 percent slopes	Not prime farmland	0.6	0.5%
103	Rippowam fine sandy loam	Farmland of statewide importance	11.7	8.6%
W	Water	Not prime farmland	5.5	4.0%
Totals for Area of Interest (AOI)			136.1	100.0%

Description

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.

Rating Options

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

Selected Soil Interpretations

This report allows the customer to produce a report showing the results of the soil interpretation(s) of his or her choice. It is useful when a standard report that displays the results of the selected interpretation(s) is not available.

When customers select this report, they are presented with a list of interpretations with results for the selected map units. The customer may select up to three interpretations to be presented in table format.

For a description of the particular interpretations and their criteria, use the "Selected Survey Area Interpretation Descriptions" report.

Report—Selected Soil Interpretations

Selected Soil Interpretations– State of Connecticut							
Map symbol and soil name	Pct. of map unit	Inland wetlands (ct)		Rec - paths and trails (ct)		Rec - playgrounds (ct)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
13—Walpole sandy loam							
Walpole	80	CT wetland		Very limited		Very limited	
				Depth to saturated zone	1.00	Depth to saturated zone	1.00
17—Timakwa and Natchaug soils							
Timakwa	45	CT wetland		Very limited		Very limited	
				Depth to saturated zone	1.00	Depth to saturated zone	1.00
				Ponding	1.00	Ponding	1.00
Natchaug	40	CT wetland		Very limited		Very limited	
				Depth to saturated zone	1.00	Depth to saturated zone	1.00
				Ponding	1.00	Ponding	1.00
18—Catden and Freetown soils							
Catden	40	CT wetland		Very limited		Very limited	
				Depth to saturated zone	1.00	Depth to saturated zone	1.00
				Ponding	1.00	Ponding	1.00
Freetown	40	CT wetland		Very limited		Very limited	
				Depth to saturated zone	1.00	Depth to saturated zone	1.00
				Ponding	1.00	Ponding	1.00

Selected Soil Interpretations– State of Connecticut							
Map symbol and soil name	Pct. of map unit	Inland wetlands (ct)		Rec - paths and trails (ct)		Rec - playgrounds (ct)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
21A—Ninigret and Tisbury soils, 0 to 5 percent slopes							
Ninigret	60	CT nonwetland		Not limited		Somewhat limited	
						Depth to saturated zone	0.39
						Gravel content	0.22
						Slope	0.13
Tisbury	25	CT nonwetland		Not limited		Somewhat limited	
						Depth to saturated zone	0.39
32A—Haven and Enfield soils, 0 to 3 percent slopes							
Haven	60	CT nonwetland		Not limited		Somewhat limited	
						Gravel content	0.06
Enfield	25	CT nonwetland		Not limited		Not limited	
32B—Haven and Enfield soils, 3 to 8 percent slopes							
Haven	60	CT nonwetland		Not limited		Very limited	
						Slope	1.00
						Gravel content	0.06
Enfield	25	CT nonwetland		Not limited		Very limited	
						Slope	1.00
38C—Hinckley gravelly sandy loam, 3 to 15 percent slopes							
Hinckley	80	CT nonwetland		Not limited		Very limited	
						Gravel content	1.00
						Slope	1.00
						Large stones content	0.11

Selected Soil Interpretations– State of Connecticut							
Map symbol and soil name	Pct. of map unit	Inland wetlands (ct)		Rec - paths and trails (ct)		Rec - playgrounds (ct)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
62D—Canton and Charlton soils, 15 to 35 percent slopes, extremely stony							
Canton	45	CT nonwetland		Very limited		Very limited	
				Large stones content	1.00	Slope	1.00
				Slope	1.00	Large stones content	1.00
Charlton	35	CT nonwetland		Very limited		Very limited	
				Large stones content	1.00	Slope	1.00
				Slope	1.00	Large stones content	1.00
						Gravel content	0.43
75E—Hollis-Chatfield-Rock outcrop complex, 15 to 45 percent slopes							
Hollis	35	CT nonwetland		Very limited		Very limited	
				Large stones content	1.00	Slope	1.00
				Slope	1.00	Depth to bedrock	1.00
						Large stones content	1.00
Chatfield	30	CT nonwetland		Very limited		Very limited	
				Slope	1.00	Slope	1.00
				Large stones content	0.53	Depth to bedrock	0.54
						Large stones content	0.53
Rock outcrop	15	CT nonwetland		Not rated		Not rated	
103—Rippowam fine sandy loam							
Rippowam	80	CT wetland		Very limited		Very limited	
				Depth to saturated zone	1.00	Depth to saturated zone	1.00
				Flooding	0.40	Flooding	1.00
						Gravel content	0.06
W—Water							
Water	100	CT wetland		Not rated		Not rated	

Data Source Information

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

Wildlife Resources

A site inspection was conducted on July 3, 2008 to evaluate existing wildlife habitat on the property. The property is located on the northeastern side of Route 2 in North Stonington and is approximately 105 acres. The property was originally deeded to Mystic Seaport with restrictions of open space and recreational use. The town of North Stonington is considering purchasing the property; with no intention to develop (restrictions cannot be changed without the approval of CT Attorney General and probate courts). The site is comprised of a myriad of habitat types including forest, active agricultural land, fields, and wetlands, including the Shunock River, Lewis Pond, and at least one vernal pool. The property also has several buildings, a cemetery, and is the site of community wells. The town has requested information to assist in their decision to purchase the property and to serve as an information base for management if it is purchased.

Existing Wildlife Habitats

The property includes 6 fields, 4 of which are currently leased for hay production, including the ~8-acre field just east of Route 2 and the 3 westernmost fields, totaling ~14 acres. The northeastern edge of the 8-acre field is dominated by invasive species, including Asiatic bittersweet. The fields which are not actively farmed include the field just north of the pond, ~ 2.3 acres and dominated by grasses and wildflowers, and the field located northeast of the house, ~2 acres, dominated by goldenrods with non-native invasive autumn olive at the southern end. Actively farmed fields and fields that are no longer being farmed total ~26 acres.

Open field habitats are those dominated by a mix of grasses, often with herbaceous and flowering plants mixed in. Old fields are characterized by woody plants with scattered open patches of grasses and forbs. The presence of these habitats in conjunction with forested areas provide for a diverse mix of species and habitats on the landscape. Old field and open field habitats are valuable to a large number of species, including birds such as field sparrow, Eastern bluebird and American goldfinch, herbivores such as meadow jumping mouse, cottontail rabbit, and woodchuck, and reptiles such as garter snake and box turtle. Old field habitats consisting of woody shrubs and herbaceous plants provide nesting sites, cover, and foraging opportunities for many species, including many invertebrates, which, in turn, are preyed upon by insect-eating birds and small mammals, which are then preyed upon by raptors and larger mammals such as red fox and coyote.

The northwestern and southeastern portions of the property are composed of mature deciduous forest, dominated by red maple, black birch and oaks. The understory contains blueberry and viburnum, and is relatively free of invasive species such as Japanese barberry. Forested areas are valuable to wildlife, providing cover, food, nesting and roosting places and denning sites. Mast or acorns produced by oaks provides excellent

forage for a wide variety of mammals and birds including white-tailed deer, gray squirrel, southern flying squirrel, eastern chipmunk, white-footed mouse, eastern wild turkey and blue jay. Trees, both living and dead, also serve as a home for a variety of insects, which, in turn, are eaten by many species of birds, including woodpeckers, warblers and nuthatches.

Wetlands include the Shunock River, Lewis Pond (a dam-created pond) at least one vernal pool, and marshy areas near the southeastern boundary. Riparian zone habitat, the area along the edge of rivers and streams, is important in protecting and enhancing aquatic habitat, as well as providing travel corridors for species such as white tailed deer, and providing habitat for species such as water shrews, some amphibians and many invertebrates.

Vernal pools are small, temporary bodies of standing fresh water that are typically filled in spring and dry out most years. There is no inlet or outlet, and therefore fish are not found in these pools. Vernal pools are important to the survival of many species of reptiles and amphibians that utilize wetlands for reproduction. For some species, such as the wood frog and the spotted salamander, vernal pools are critical because it is the only type of wetland in which they will breed. These species are also dependent on the presence of healthy forested uplands surrounding the vernal pool, because, when not breeding, this is where they spend the balance of their life cycle. Calhoun and Klemens (2002) recommend that the upland areas around breeding pools up to a distance of 750 feet be considered critical upland habitat, that at least 75% of that zone be kept undisturbed and that a partially closed-canopy stand be maintained.

Habitat Management Recommendations

The Hewitt property parcel is a medium-large parcel, providing valuable wildlife habitat in moderately developed surroundings. Undeveloped parcels over 100 acres are increasingly rare, particularly parcels with a mosaic of habitats including wetlands, forested uplands, and early successional areas.

Early successional habitats such as fields, shrublands, grasslands, and meadows like those found on this property are rapidly declining in Connecticut. This decline is due to development and natural succession, where farmland abandoned years ago has grown up into forestland. Interruptions of natural processes that create early successional habitats across the landscape, such as fire and flooding have also contributed to this decline. All of these factors have combined to result in species declines for most grassland specialists. Many of Connecticut's grassland specialist birds, including bobolink, savannah sparrow and grasshopper sparrow are included on the state list of endangered, threatened and special concern species. Other species that make use of grasslands, shrublands and meadows include turkey, eastern box turtle, milk snake, and bronze copper (butterfly).

There are currently several ideas for use of the fields, should the town acquire the property, including continued agricultural use and/or conversion to recreational fields, as well as utilization for agricultural fair parking (for the westernmost fields) during mid-July. All of these proposed uses will have varying impacts on wildlife.

Managing the Fields for Wildlife Habitat

While agriculture is an important land use to keep land open and hay fields can provide valuable bird habitat, the intensive farming practices utilized today have contributed to the decline of some of our grassland specialists. Grassland birds typically require a long breeding and nesting season, sometimes extending into late July, if conditions force them to re-nest. Multiple hay cuttings conducted from May to August can prevent grassland-nesting birds from completing their nesting cycle. If fields must be kept in agricultural use, ideally they should be mowed no sooner than July 15th to allow birds a chance to complete their nesting cycle. This would also give reptiles such as box turtles, which can be active in these areas from April through October, a chance to forage in the fields,

If some fields must remain in active hay production, the larger fields or those above 5 acres are more valuable for grassland bird specialists than are the smaller fields.

If all the fields are dedicated to wildlife habitat, they could all be brush hogged or mowed every year or every couple of years, in order to keep invading saplings and small trees from growing up in the fields. If the 4 fields that are currently farmed are left in active agriculture, the 2 remaining fields still should be brush hogged or mowed periodically. Mowing should be conducted after August and before April in order to allow any nesting species to complete their reproductive cycle. Ideally, habitat management should also include converting agricultural fields, particularly the larger fields, to native warm-season grasses to benefit grassland specialists such as bobolink and eastern meadowlark that require contiguous unbroken areas in order to successfully reproduce.

Grassland birds also require specific minimum acreages for successful breeding; bobolinks require at least 5 acres and eastern meadowlarks require at least 15 acres. Currently the eastern-most 9-acre field and the western-most 8-acre field are large enough to support breeding bobolinks, but may or may not due to the current management practices. If the town decides to maximize the value of the area for grassland specialists that require larger acreages, such as the eastern meadowlark, one larger field could be created in the eastern portion of the property by removing some of the narrow hedgerows of single trees between the 9-acre field and the two smaller adjacent fields. If fields are managed to benefit wildlife in general, but not specifically grassland-nesting birds, they could be allowed to convert to meadow habitat, with a mix of grasses and flowers including purple coneflower, black-eyed susan, and New England aster. A more diverse plant community that contains grasses, weeds and flowers is more

useful to a wider variety of species, including Eastern bluebird, red-tailed hawk, and smooth green snake.

Limiting Recreational Wildlife Impacts

As the intensity of human recreational use of an area increases, the value of the area to wildlife significantly decreases. Highly disturbing, intense activities include creation of parking areas and associated sports fields, while lower-disturbance recreational activities could include biking and walking trails, if located appropriately and not overused. Walking trails should only be considered lower-disturbance if dogs are kept on leashes and under control at all times so that nest disturbance and general harassment of wildlife is minimized. Ideally, these lower-intensity activities should be limited to trails that have already been established, so new impacts are not made. However, if new trails are to be established, guidelines for protecting wildlife resources should be followed (see Attachment A). Dogs should be leashed at all times and should not be allowed to run through any fields, particularly during the bird nesting season, April through August.

Use of the fields as recreational ball fields would greatly reduce or eliminate their value as wildlife habitat, because highly desirable open field habitat would be replaced with short, mowed grass. This man-made habitat would also be subjected to high human disturbance.

Management could also include non-native invasive species control for all fields and field edges. Invasive species such as autumn olive and Asiatic bittersweet can dominate the native vegetation, significantly reducing native plant diversity. They displace native vegetation that provides high-quality forage, cover, and nesting sites, thereby diminishing the value of an area to wildlife. Invasive species control can be accomplished through manual pulling (although very labor intensive) or through the use of herbicides such as Roundup®.

Summary

The Mystic Seaport property has the potential to provide high-value habitat for wildlife due to both the large acreage of undeveloped habitat and the variety of habitats types of which it is comprised. Large parcels of early successional farmland containing multiple habitat types are increasingly rare in Connecticut, as development creates small, isolated patches of habitat in the landscape. For wildlife, large blocks of habitat are always better, as they can provide a greater variety of food (different types of acorns, catkins, a variety of fruits, etc.), more nesting and roosting sites, and areas for cover, and support those species with large territory requirements as well as more pairs of species with smaller territory requirements. To gain the most benefit for grassland birds, fields over 5 acres

should be managed for these species, if possible. Five acres is the minimum useful to bobolinks, the species with the least minimum breeding acreage requirement, and, where suitable, larger grassland fields should be created by removing hedgerows. In order to provide sufficient time for grassland birds to complete their nesting cycle, fields dedicated to grassland bird management should be mowed no earlier than July 15th, and if possible, August 1st. If possible, this should also include fields kept in agricultural use. Smaller fields and fields managed for wildlife but not specifically grassland birds should be mowed or brush hogged every year or two in order to keep them from growing up into forest. While habitat management that is undertaken to specifically benefit wildlife would be ideal, agricultural uses and wildlife uses are not completely incompatible and continued agriculture would certainly be preferable to recreational uses of the fields. Continued stewardship of this area will conserve the inherent wildlife values and maintaining the early successional habitat will provide for many species with declining populations.

Literature Cited

Calhoun, A. J. K. and M.W. Klemens. 2002. Best Development Practices: Conserving Pool Breeding Amphibians in Residential and Commercial Developments in the Northeastern United States. MCA Technical Paper No. 5, WCS, Bronx NY, 57 pp.

The Northeast Upland Habitat Technical Committee and the Massachusetts Division of Fisheries & Wildlife, 2006. Managing Grasslands, Shrublands, and Young Forest Habitats for Wildlife: A Guide for the Northeast. 148 pp.

Attachment A

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)

Vegetation

Present Conditions

A reconnaissance of the Mystic Seaport property located in North Stonington was completed in June 2008. The property has been separated into eleven (11) Areas or vegetation cover types (see Vegetation Map). Acreages were scaled from aerial photographs and are approximates only.

Non-native species considered to be invasive are italicized.

Area #1 – 12.34 Acres

These stands were once red pine plantations established in open fields by the Hewitt family in the 1920's. A mix of mostly shade tolerant hardwoods developed under the protective canopy of the red pine. During the late 1980's and early 1990's an infestation of an insect, red pine scale, caused the mature red pine to decline and slowly die, and the hardwoods came to dominate the site. Many dead standing red pine stems are still present in these areas.

The overstory is now pole to sawtimber-sized (see Definitions for size explanations) Sugar maple, Red maple, Black birch, Red oak, Black oak, Scarlet oak, Hickory, White ash and Sassafras. *Norway maple* is a component of the stand near the former nursery school. An understory of sapling to pole-sized Red maple, Sugar maple, Hickory and Black birch exists. *Tree of Heaven* occurs at the edges of this Area. Tree regeneration is primarily Sugar maple. These stands are fully stocked with trees.

Non-native invasive species such as *Autumn olive*, *Multiflora rose*, and *Winged euonymus* form much of the shrub layer. Greenbrier is also present. This shrub layer is patchy and moderately open. Ground cover is sparse due to the shading and is mainly ferns.

Area #2 – 15.18 Acres

This mixed hardwood stand has an overstory of pole to sawtimber-sized Black oak, White oak, Scarlet oak, Red maple, Black birch, and Hickory. Sapling to pole-sized White oak, Black birch, Red maple, Hickory, Sassafras, Flowering dogwood, American beech, and American hornbeam comprise the understory. Sprouts of American chestnut were also found. Scattered older, larger sawtimber trees, so-called legacy trees, and scattered groups of Eastern redcedar, an old field invader or pioneer species, indicate that

this area was former pasture land that has reverted to forest. The Area is fully stocked with trees.

The shrub layer of Lowbush blueberry, Black huckleberry, Mapleleaf viburnum, Highbush blueberry, Witch hazel, Spicebush and Greenbrier is open to moderately dense. The best development of this shrub layer occurs where soil moisture levels are highest. Desirable tree regeneration present includes oak, maple, hickory, birch, cherry, and Eastern white pine seedlings.

The 2007 Bicentennial trail traverses this Area.

Area #3 – 2.52 Acres

This Area includes the grounds around the former nursery school (the 1900's house) and adjacent old field. Norway spruce, Eastern hemlock, Sugar maple, Black locust, Cherry, and White ash poles and sawtimber surround the house and line the field edges. This Area is considered non-stocked with trees.

Shrubs include Raspberry, Juniper, *Bush honeysuckle*, *Winged euonymus*, *Autumn olive*, *Oriental bittersweet*, and Privet. Ground covers noted are Poison ivy, Dewberry, Pachysandra, and Myrtle.

The majority of the old field is a mix of native and cultivated grasses, Goldenrod, New England aster, Hawkweed, and Milkweed.

The Eastern hemlock are infested with Hemlock wooly adelgid.

Area #4 – 6.07 Acres

Included within this Area is the 1740's farmhouse, old fields and a small conifer plantation. Sapling to pole-sized *Tree of Heaven*, Red maple, Cherry, White ash, Scarlet oak, *Norway maple*, and Eastern redcedar are found along Hewitt Road within this Area and also along the old field edges. This site is also considered non- stocked with trees.

Shrubs include Highbush blueberry, Staghorn sumac, Viburnum spp., *Autumn olive*, *Multiflora rose*, and *Bush honeysuckle*. *Oriental bittersweet* and *Japanese honeysuckle* vines are common.

Ground cover within the old fields is comprised of native, notably Big bluestem and Little bluestem, and cultivated grasses, Goldenrod and Milkweed.

Near the farmhouse are large Sugar maple, White ash, and others planted as ornamentals and for shade. A conifer plantation of less than one acre occurs just north of the old farmhouse. It contains pole to sawtimber-sized Norway spruce and Blue spruce, possibly planted for Christmas trees.

Area #5 – 6.80 Acres

This mixed hardwood stand was a former agricultural field and orchard. It now has an overstory of poles and scattered sawtimber-sized trees. Species present in the overstory include Sugar maple, *Norway maple*, Cherry, Black oak and Eastern redcedar. Pole-sized Sugar maple, *Norway maple*, Eastern redcedar, and a few Apple trees form the understory. This site is fully stocked with trees.

A light shrub layer of *Japanese barberry*, *Multiflora rose*, and *Bush honeysuckle* exists. The ground cover of Ferns and various Grasses is sparse.

The health and vigor of the Eastern redcedar is declining as the hardwoods are shading the redcedar out.

Area #6 – 1.01 Acres

Now a stand of sapling and pole-sized Eastern redcedar, Black oak, Scarlet oak, and Aspen, this stand was an agricultural field until 30 – 40 years ago. It is now fully stocked with trees. A very light and open shrub layer of Highbush blueberry is present. *Winged euonymus* and *Bush Honeysuckle* are present along the edges of this Area. The most common ground cover is the club mosses.

Area #7 – 9.92 Acres

This area was an agricultural field until last used as pasture 40 – 60 years ago. The overstory is formed by sapling, pole, and sawtimber-sized Eastern redcedar, Black oak,

Scarlet oak, White oak, Red maple, Hickory, White ash, Sassafras, and a small number of Red oak. Several large older legacy trees occur on this site. Sapling and pole-sized Eastern redcedar, Black oak, Scarlet oak, White oak, Hickory, Red maple, Cherry, Sassafras, American hornbeam, Flowering dogwood. Black birch, Hophornbeam, Eastern white pine, *Norway maple*, and a few American beech make up the understory. Tree regeneration of Oak, Maple, Birch, and Sassafras is present. The Area is fully stocked with trees.

The shrub layer contains Lowbush blueberry, Highbush blueberry, Black huckleberry, *Winged euonymus*, *Multiflora rose*, *Bush honeysuckle*, *Oriental bittersweet*, *Japanese barberry*, *Japanese honeysuckle,* and Greenbrier. Several Mountain laurel shrubs were noted. This shrub layer varies from open to moderate and is quite patchy.

Desirable tree regeneration of Oak, Maple, and Sassafras is present but in low numbers. A patchwork ground cover of Poison Ivy, various grasses, ferns, club moss occurs is the most sunlit areas.

Area #8 – 19.22 Acres

The riparian areas along the Shunock River contain an overstory of pole to sawtimber-sized Red maple, White oak, Red oak, Black oak, White ash, Sycamore, Sugar maple, Black birch, and American elm. Sapling to pole-sized Red maple, Black birch, White ash, and American elm form the understory. Portions of this Area that are frequently flooded and/or have saturated soils for several months of the year are almost exclusively stocked with Red maple. Tree stocking within the riparian areas are variable but much of these areas are fully stocked.

A moderately dense to dense and continuous shrub layer of Spicebush, Sweet pepperbush, Highbush blueberry, Elderberry, *Japanese barberry*, *Multiflora rose*, and *Bush honeysuckle* exists. Poison ivy and Grape vines are common. Regeneration of Eastern white pine and various hardwood tree species are present in sparse numbers.

Area #9 – 5.17 Acres

This Area is comprised of two marshes. The northernmost marsh is an old Beaver flowage dominated by various Sedges and Cattails. A very light and very patchy shrub layer of Buttonbush, Highbush blueberry, and various Viburnum spp. is present. Very widely scattered sapling to pole-sized Red maple are found within this Area typically on the slightly higher spots of ground. This Area is considered non-stocked with trees. Numerous dead standing trees still exist in this marsh.

The southernmost marsh is an active Beaver impoundment dominated by sapling to pole-sized Red maple. This area is presently fully stocked with trees. The shrub layer of Spicebush, Sweet pepperbush, Highbush blueberry, and Buttonbush is moderately dense and continuous. These trees and shrubs are showing signs of decline and dieback due to the flooded site conditions. Sedges are beginning to become established in this marsh.

If this marsh remains flooded for another year or more, tree and shrub mortality will occur and over time this marsh will become similar to the northern marsh.

Area #10 - Agricultural Fields – 23.56 Acres

These fields are being actively used for hayfields at the present time. They contain a mix of cultivated grasses, clovers, and alfalfa.

Area #11 - Open Water – 3.44 Acres

Included in this cover type is Lewis Pond and the wider sections of the Shunock River.

Management Recommendations

These management recommendations are based on information collected at the review meeting and the reconnaissance of the property. Detailed forest management recommendations can be developed after a more intensive resource inventory and a refinement of the property owner's goals and objectives. The Town's goals at present for the property are to maintain a healthy forest condition and to protect the water resources.

Maintaining a Healthy Forest

The largest threat to forest health of this property at present is the large numbers and widespread distribution of the non-native invasive plant species. These invasives can displace and replace desirable native vegetation and alter ecological processes. They can out compete the native vegetation for sunlight, nutrients, soil moisture, and space. Areas # 1, 3, 4, 5, 7, and 8 as well as the edges of the agricultural fields have significant populations of a number of different invasive plants. Efforts should be undertaken to reduce these populations in these Areas and prevent further spread. Various mechanical and chemical controls are available to target the individual invasive species. See the Invasive Plant Atlas of New England Project website http://invasives.eeb.uconn.edu/ipane for more details.

The Eastern hemlock at the former nursery school is infested with Hemlock woolly adelgid, a non-native insect that attacks only Hemlock. Long duration infestations of the insect are known to cause mortality. Prolonged winter temperatures below 20 degrees F. will reduce the number of live adelgids, however, recent winters in southeastern Connecticut have been mild. The Town might investigate treating these Hemlock with a root drench of Imidacloprid™ to control this pest. Annual treatments may be required for a period of many years.

The majority of the Areas might be permitted to evolve naturally over time if management for timber or other forest products is not desired. Some tree mortality is to be expected as trees are suppressed and lose their position in the canopy. The Eastern redcedar in Areas #2, 4, 5, 6, and 7 will be out competed by hardwood tree species in a relatively short time period. Their mortality will result in the loss of the desirable softwood (evergreen) component now present in these Areas. In addition to tree species diversity, the Eastern redcedar, a shade intolerant species, provide valuable wildlife habitat. Removing trees competing with the Eastern redcedar for sunlight and nutrients would allow the redcedar to remain in the forest for longer time period.

Protect Water Resources

Maintain tree and shrub cover in the riparian areas along the Shunock River and along the shoreline of Lewis Pond wherever possible. The 2007 Connecticut Field Guide - Best Management Practices for Water Quality While Harvesting Forest Products, available on the Connecticut DEP website, should be followed when conducting harvesting activities within any of the Areas.

General Management Issues

The boundaries of the property should be clearly marked with painted blazes and/or signs. This is helpful to prevent trespass or encroachment. Annual inspection of the bounds is necessary.

Numerous hiking trails marked with a small round metal disk painted yellow were observed during the reconnaissance of the property. These trails vary greatly in use and in maintenance. If their existence and use is sanctioned, these trails should be re-marked and then maintained at least annually. All sanctioned trails on the property, especially the 2007 Bicentennial Trail, should be inspected for hazardous trees and any observed should be mitigated promptly.

The dead standing Red pine trees within Area #1 are especially hazardous to users of the property. In places where they pose a hazard, these trees should be felled or the area closed off to the public.

Definitions

Tree size classes:

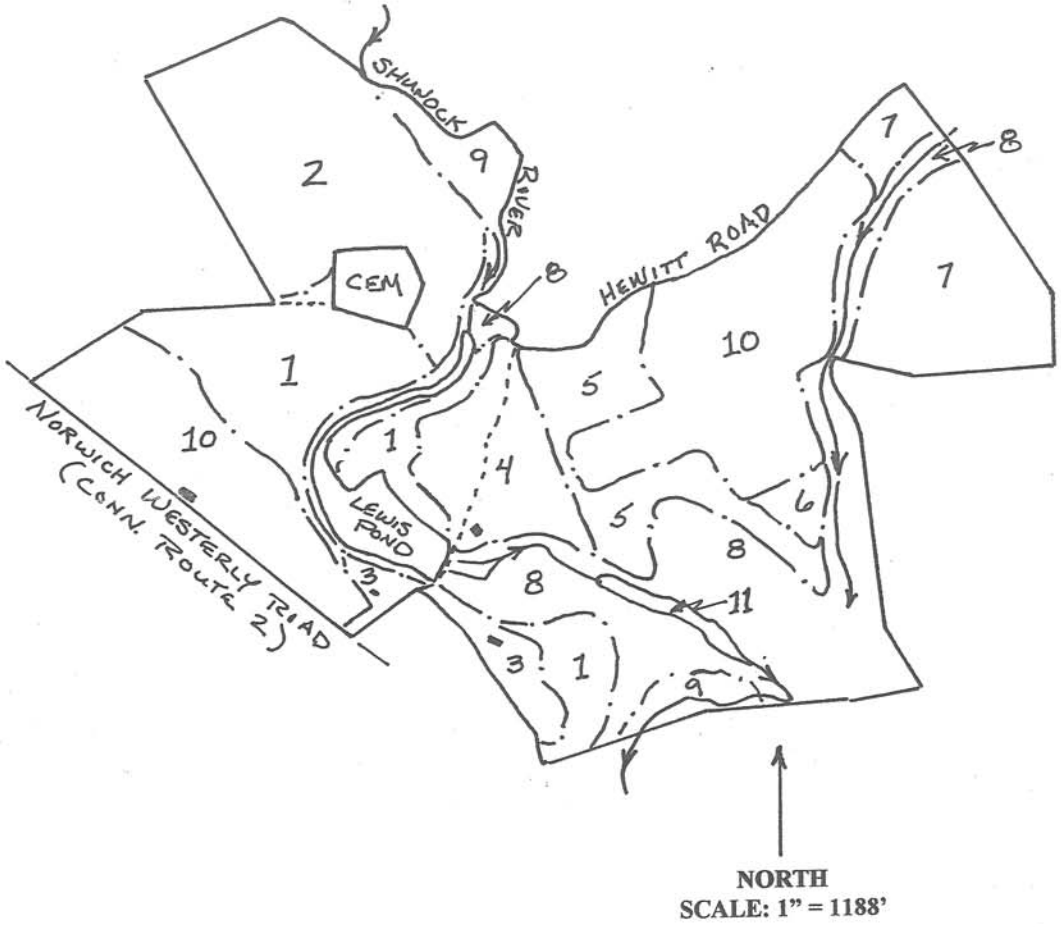
Seedling – up to 1” diameter at breast height (DBH – measured 4-1/2 feet above the ground.
Sapling – 1.1” to 4.9” DBH
Pole – 5” to 10.9” DBH
Sawtimber - 11” DBH and larger

Stocking:

A description of the number of trees, basal area, or volume per acre in a forest stand compared with a desired level for balanced health and growth. Most often used in comparative expressions, such as well-stocked, poorly stocked, or overstocked.

VEGETATION MAP

MYSTIC SEAPORT PROPERTY
386 NORWICH WESTERLY ROAD
NORTH STONINGTON, CONNECTICUT
JUNE 2008



NORTH
SCALE: 1" = 1188'

LEGEND

———	PROPERTY BOUNDARY
———→	STREAM, RIVER
- - - -	GRAVEL ROAD
▬	STRUCTURE
—·—	AREA (VEGETATION COVER TYPE) BOUNDARY
1 – 11	AREA (VEGETATION COVER TYPE) – **SEE TEXT**

SHERWOOD R. RAYMOND, JR.
SERVICE FORESTER
CT DEP DIVISION OF FORESTRY

Fisheries Resources

Lewis Pond is a small, impoundment of the Shunock River. The pond appears to be fairly shallow, especially near the pond's inlet and contains a variety of floating and submergent aquatic plants including pondweed, pickerel weed, water lily and coontail. The fish community is expected to be mainly comprised of largemouth bass, chain pickerel, yellow perch, sunfish species and brown bullhead.

Banded sunfish, a State species of special concern, has been found in the Shunock River Basin just downstream in Ripley Park Pond; however, the presence of banded sunfish in Lewis Pond is unknown. The banded sunfish is currently classified as a Species of Special Concern pursuant to Connecticut General Statutes (CGS) Chapter 495. This classification was recommended by the Endangered Species Advisory Committee for Fish, based in part on the findings of Jann (2001). Much of our information on banded sunfish emanates from a University of Connecticut Masters Thesis by Jann (2001). Other sources of information on banded sunfish in Connecticut include Whitworth et al. (1968) and Whitworth (1996). Banded sunfish distribution in Connecticut has been correlated with cold summer water temperatures, high water clarity (i.e. low turbidity) and abundant levels of aquatic plants (Jann 2001).

The Shunock River is annually stocked by the DEP Inland Fisheries Division with over 3,300 adult (9-12 inch) brook, brown and rainbow trout. Stocking locations on this property include Lewis Pond and within the river behind the Great Plains Cemetery. The Shunock River in this area supports a mixed coldwater/warmwater fish community due to the presence of Lewis Pond. The Shunock River is classified as a Class 3 wild trout management area known to support native brook trout and wild brown trout as well as a diverse community of obligate stream fishes. These fishes include: longnose dace, fallfish, white sucker, common shiner and tessellated darter.

The lower Shunock River supports runs of diadromous (anadromous and catadromous*) fish such as river herring (alewife and blueback herring), sea-run brown trout and American eel. Diadromous fish runs are currently blocked/impeded downstream at the Ripley Park Pond Dam, located approximately 1.4 river miles downstream from the Lewis Pond dam. Past discussions have involved providing upstream fish passage at Ripley Park Pond for diadromous species through various options such as fishway construction or dam removal. Fish passage plans at Ripley Park Pond are currently "on-hold".

Comments/Recommendations

1. **Lewis Pond- Fish Passage**. It is understood that Lewis Pond is currently being assessed for dam repairs (See DEP Letter, March 2008, in the Appendix). Although diadromous fish passage is currently "on-hold" for the watershed,

resident fluvial dependent species such as trout would greatly benefit if fish passage was provided at Lewis Pond dam. Fishway installation at this location would provide fish passage up to the base of Gallup Pond, a total of approximately 1.6 river miles. A fishway designed for resident fish species could be retrofitted in the future if efforts to provide diadromous fish passage were renewed.

2. **Lewis Pond- Angler Access.** The town should consider improving angler access to Lewis Pond, which could include: 1). development of a trail system around the pond, and 2). construction of a fishing pier that would be located next to the dam or areas of deeper water within the pond.

Literature Cited

Jann, D.B. 2001. Distribution, habitat, and population characteristics of banded sunfish in Connecticut. Masters Thesis. University of Connecticut, Storrs, Connecticut. 58 pgs.

Whitworth, W.R. 1996. Freshwater fishes of Connecticut. Connecticut Geologic and Natural History Survey Bulletin No. 114. Hartford, CT. 243p.

Whitworth, W.R., P.L. Berrien, and W.I. Keller. 1968. Freshwater fishes of Connecticut. State Geol. and Nat. Hist. Survey of Connecticut. Bull No. 101. Hartford, Connecticut. 134 pp.

* *Anadromous – Fish that ascend rivers from the sea at certain seasons for breeding.*
Catadromous – Fish that spend most of their life in freshwaters, but migrate to the sea to spawn.
Diadromous – Fish that use both freshwater and marine habitats during their life cycles.

The Natural Diversity Data Base

The Natural Diversity Data Base maps and files regarding the Mystic Seaport Hewitt Property have been reviewed. According to our information, there are records for State Special Concern *Enneacanthus obesus* (banded sunfish) that occur in the vicinity of the site.

This native species is distributed in coastal freshwaters from New Hampshire to Georgia. The range was first extended to include Connecticut by Jordon (1877). Populations are found only in the lower Connecticut River drainage basin, small coastal drainage basins between the Connecticut River and Thames River, and in eastern tributaries of the Quinebaug River, Thames River drainage basin. Most populations are associated with weedy lowland lakes and streams. Although most populations are small, Cohen found that the banded sunfish was the most abundant species in Green Falls Reservoir for a few years. Sexual maturity is reached in 1-2 years and lengths of 4-8 cm are attained. (Freshwater Fishes of Connecticut, Walter R. Whitworth, Second Edition, 1996, Bulletin 114.)

Natural Diversity Data Base information includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the Department'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 substitutes for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data base as it becomes available.

Please be advised that this is a preliminary review and not a final determination. A more detailed review may be conducted as part of any subsequent permit applications submitted to DEP for the proposed site.

Archaeological and Historical Review

The Mystic Seaport property includes several structures, some are noteworthy and others are not. In particular, the Hewitt House possesses historic and architectural importance and may be eligible for the National Register of Historic Places. The State Historic Preservation Office (SHPO) strongly encourages the preservation, sensitive rehabilitations, and continued use of this historic structure as well as the conservation of its immediate setting. Likewise, the Great Plains Cemetery possesses historic importance and appears eligible for the National Register of Historic Places. The cemetery is currently well-maintained and doesn't warrant any immediate conservation efforts.

The SHPO believes that recent renovations of the Dewdrop Inn (Rosie's Diner) have altered much of its historic architectural integrity and as such, this structure does not appear eligible for the National Register. However, SHPO notes the significant history and association of this former restaurant within the local community and encourages Mystic Seaport and/or the Town of North Stonington to consider restaurant-related use as a preferred future development alternative.

In the opinion of SHPO, the so-called "cabin" and Mrs. Penfield's house/nursery school lack architectural character and are not eligible for the National Register of Historic Places. Absence a community-related use or purpose, alteration and /or demolition of these structures might be an appropriate alternative.

Although SHPO would require additional information regarding the historic use and possible industrial importance of Shunock River Dam in order to professionally evaluate the eligibility, or not, of this structure for the National Register, this office encourages repair, rehabilitations and retention of this 19th Century stone structure as the millpond enhances the overall setting and character of the nearby Hewitt House.

The Samuel Miner House, a National Register property, is located in immediate proximity to the Mystic Seaport property and as such, SHPO would strongly recommend the retention of mature trees as a visual buffer between this historic resource and any future development on the adjoining lands.

Three Native American archaeological sites, CT 102-24, 102-25, and 102-26 have been identified by the Office of State Archaeology (OSA) as being on the project area. These sites appear to be hunting/gathering/fishing camps utilizing the natural resources of the watershed.

SHPO and OSA strongly recommend that Mystic Seaport and/or the Town of North Stonington commission a professional archaeological survey for the property as an integral aspect of pre-development planning. Grants can be obtained from SHPO's website:

http://www.cultureandtourism.org/cct/

The Office of State Archaeology and the State Historic Preservation Office are available to provide technical assistance in the identification and evaluation of cultural resources on the parcel under consideration.

DEP's Review of Groundwater Resources, Aquifer Resources, Water Quality and Water Supply

Groundwater Resources

The Mystic Seaport Property is located in the upper Shunock River Valley. The site consists of stratified drift deposits of sand and gravel that are relatively thin (< 50 feet) and not very extensive. These geologic conditions are favorable for storing and transmitting moderate quantities of groundwater (See Figure 1.). The existing Southeastern Connecticut Water Authority's (SCWA) North Stonington Well Field taps into this stratified drift deposit but there is not much potential for additional well fields beyond the existing SCWA well field. The SCWA well field has a diversion permit amount of 180,000 gallons per day.

Aquifer Protection

Currently, the Town of North Stonington does not have any State Aquifer Protection Areas (APA). The Department of Environmental Protection (DEP) identifies state Aquifer Protection Areas as the critical protection areas around public water supply wells in stratified drift that serve over 1000 people. The SCWA has indicated that the population served by this well field will exceed 1000 people in the near future. When this occurs, it will become a designated state aquifer protection area and the Town will have protection responsibilities under the state program. The SCWA has Level B (preliminary) aquifer protection area mapping (See Figures 2 and 2a.) and they are conducting Level A (final) mapping. Once the Level A mapping is approved by DEP, the Town of North Stonington will be notified to begin Aquifer Protection Area Program Implementation.

The Town of North Stonington has recognized aquifers in previous land use studies and plans. The town has worked with DEP to establish a local aquifer protection overlay zone and local aquifer protection zoning regulations to protect important groundwater resources in town, including the site area. The aquifer protection zone restricts certain types of activities that present a high threat to groundwater quality and requires certain controls or mitigation measures. These local regulations are generally consistent with the 2004 State Aquifer Protection Area Land Use Control Regulations, which include the following protection requirements:

- Restricted underground fuel/chemical storage tanks or transmission lines
- No industrial and other non-domestic wastewater discharges to the ground

- Restricted use, storage or handling of hazardous materials
- Best Management Practices (BMPs)
- Material Management/Pollution Prevention Plan for the facilities
- Stormwater Management Plan for the site

With the overlay zone restrictions, proposed uses of the land would be generally consistent with DEP recommended land use policies for the protection of proposed drinking water supply aquifers, and policies as found in the State Conservation and Development Policies Plan for growth areas within these aquifer resource areas.

It should also be noted that the site also is within the US Environmental Protection Agency's (EPA) designated Pawcatuck Sole Source Aquifer. This designation broadly denotes the entire Pawcatuck River Watershed as highly dependent on groundwater for private and public drinking water supplies. Any federal project or use of federal funds in the area would require US EPA review.

Water Quality

The site is classified by CT DEP as Class "GAA" groundwater quality indicating areas of existing or potential public water supply. (See Figure 3.) (See Attachment 1.) Groundwater quality conditions are generally good and assumed suitable for drinking without treatment. Industrial and other non-domestic wastewater discharges to the ground are prohibited.

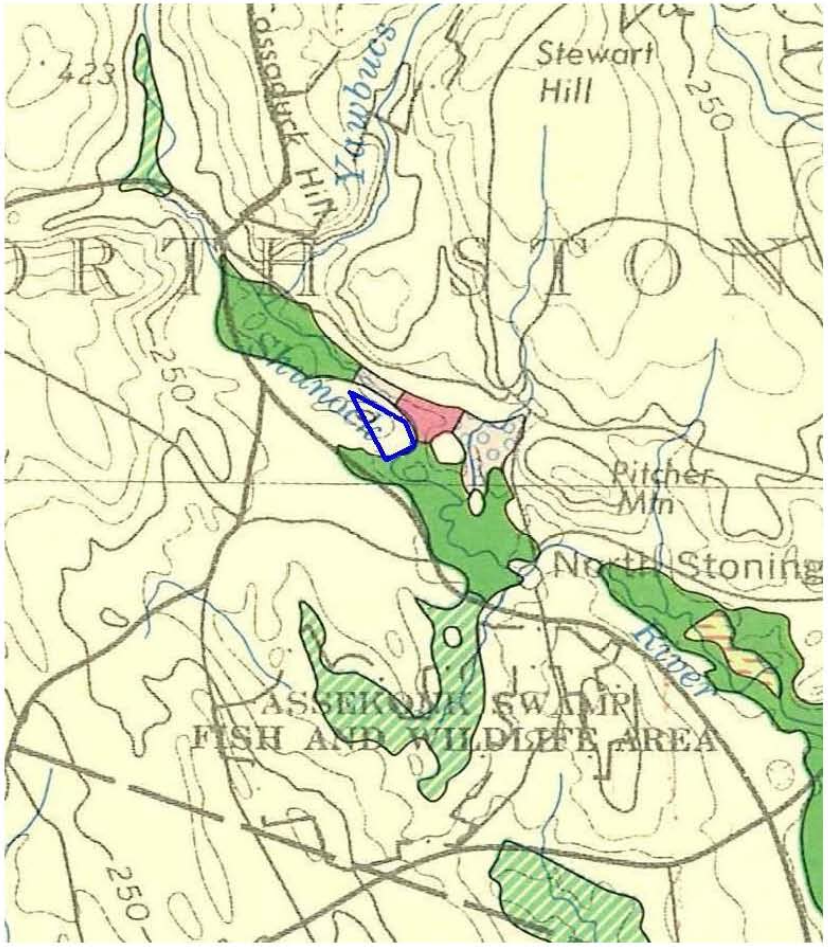
Best Management Practices (BMPs)

The DEP has developed Best Management Practices (BMPs) for sensitive Aquifer Protection Areas such as this site in the Town of North Stonington. The BMPs provide guidance to reduce the potential for contamination of the existing drinking water well fields and potential ground water resources. BMPs are applicable to certain land use activities, including recreational uses (See Attachment 2.). Although recreational uses are generally low risk uses, BMPs that do apply should be implemented as appropriate. Recreational related BMPs may include pesticide and fertilizer restrictions (See Attachment 3.).

Additional Comments

The Mystic Seaport Property was deeded with restrictions of open space and recreational use. If the Town of North Stonington acquires the property and maintains the land as it was deeded, then this purchase would be a good long-term protection of the well field.

Figure 1 - Groundwater Availability Map
ERT Report, North Stonington, CT



AREAS UNDERLAIN BY DEPOSITS KNOWN OR INFERRED TO BE CAPABLE OF YIELDING MODERATE TO VERY LARGE AMOUNTS OF WATER (50 - 2000 GALLONS PER MINUTE (3.15 - 126.18 LITERS PER SECOND)) TO INDIVIDUAL WELLS.

COARSE-GRAINED STRATIFIED DRIFT - composed dominantly of sand or sand and gravel. These deposits have a water saturated thickness of 10 feet (3.05 meters) or greater. Light green areas are thought to be coarse-grained but hydrogeologic data are incomplete and verification requires further investigation.

COARSE - GRAINED STRATIFIED DRIFT OVERLAIN BY FINE-GRAINED STRATIFIED DRIFT - composed dominantly of sand or sand and gravel overlain by fine to very fine sand, silt and clay. These deposits have a water saturated thickness of 10 feet (3.05 meters) or greater. In many areas data are insufficient to identify this unit and it may occur in more localities than shown.

AREAS UNDERLAIN BY DEPOSITS KNOWN TO BE CAPABLE OF YIELDING MODERATE TO LARGE AMOUNTS OF WATER (50 - 500 GALLONS PER MINUTE (3.15 - 31.55 LITERS PER SECOND)) TO INDIVIDUAL WELLS.

COARSE - GRAINED STRATIFIED DRIFT OVERLYING FINE-GRAINED STRATIFIED DRIFT - composed dominantly of sand or sand and gravel underlain by fine to very fine sand, silt and clay. These deposits have a water saturated thickness of 10 feet (3.05 meters) or greater. In many areas data are insufficient to identify this unit and it may occur in more localities than shown.

AREAS UNDERLAIN BY DEPOSITS KNOWN OR INFERRED TO BE CAPABLE OF YIELDING SMALL TO MODERATE AMOUNTS OF WATER (1 - 100 GALLONS PER MINUTE (0.06 - 6.31 LITERS PER SECOND)) TO INDIVIDUAL WELLS.

FINE-GRAINED STRATIFIED DRIFT - composed dominantly of fine to very fine sand, silt and clay. These deposits have a water saturated thickness of 10 feet (3.05 meters) or greater. Orange areas are thought to be fine-grained but hydrogeologic data are incomplete and verification requires further investigation.

TILL AND STRATIFIED DRIFT - composed of mixtures of gravel, sand, silt, and clay. This unit includes all areas of stratified drift that have a water saturated thickness of less than 10 feet (3.05 meters) and areas of exposed bedrock.

SCWA Wellfield Aquifer Protection Area

State of Connecticut Department of Environmental Protection Water Protection and Land Reuse

July 03, 2008

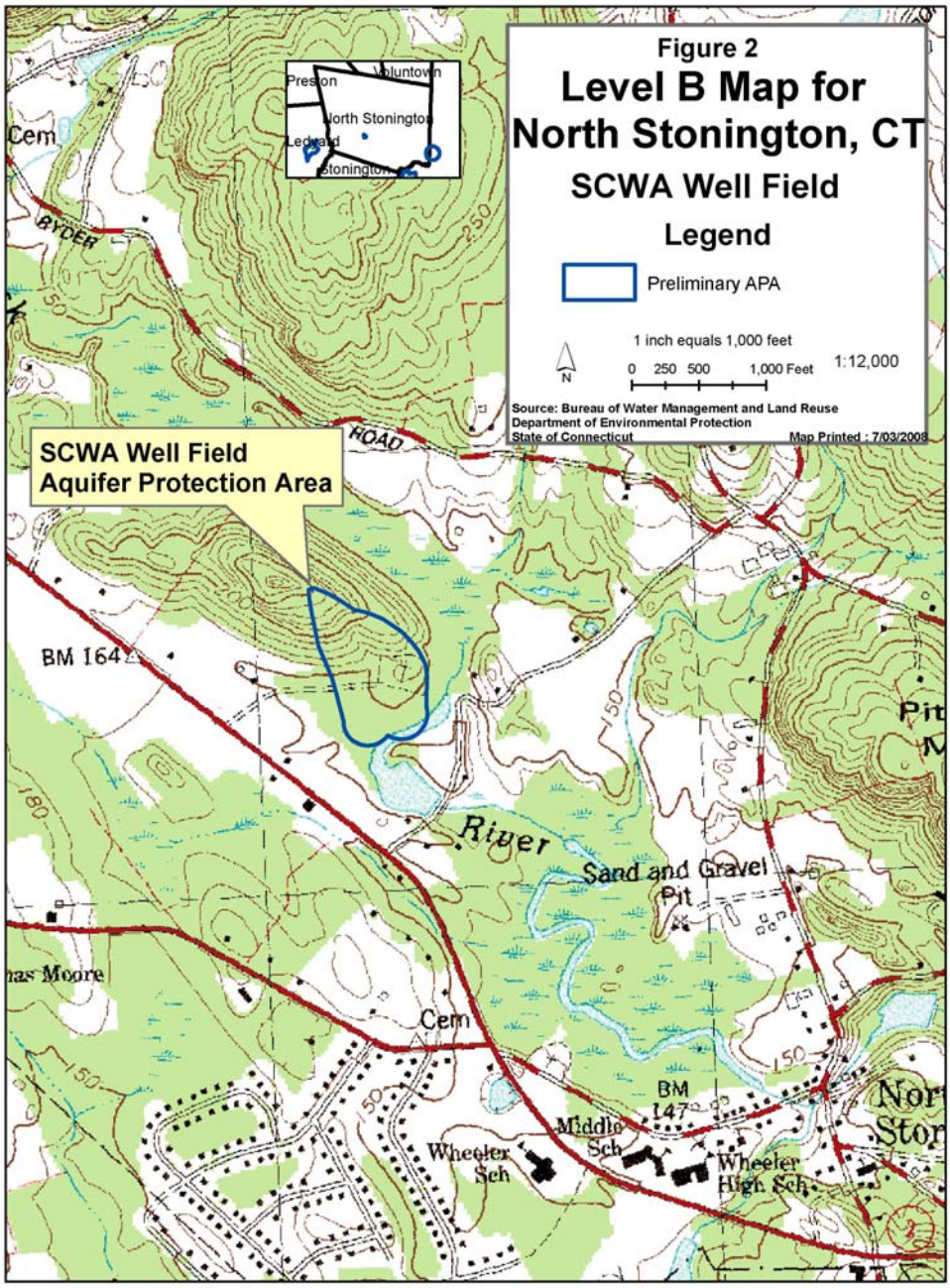


Figure 2
Level B Map for
North Stonington, CT
SCWA Well Field
Legend
Preliminary APA
1 inch equals 1,000 feet
0 250 500 1,000 Feet
1:12,000
N
Source: Bureau of Water Management and Land Reuse
Department of Environmental Protection
State of Connecticut
Map Printed : 7/03/2008
SCWA Well Field
Aquifer Protection Area
Preston
Voluntown
North Stonington
Ledyard
Stonington
Cem
BYDER
ROAD
BM 164
River
Sand and Gravel
Pit
Cem
BM
147
Middle
Sch
Wheeler
Sch
Wheeler
High Sch
150
180
250

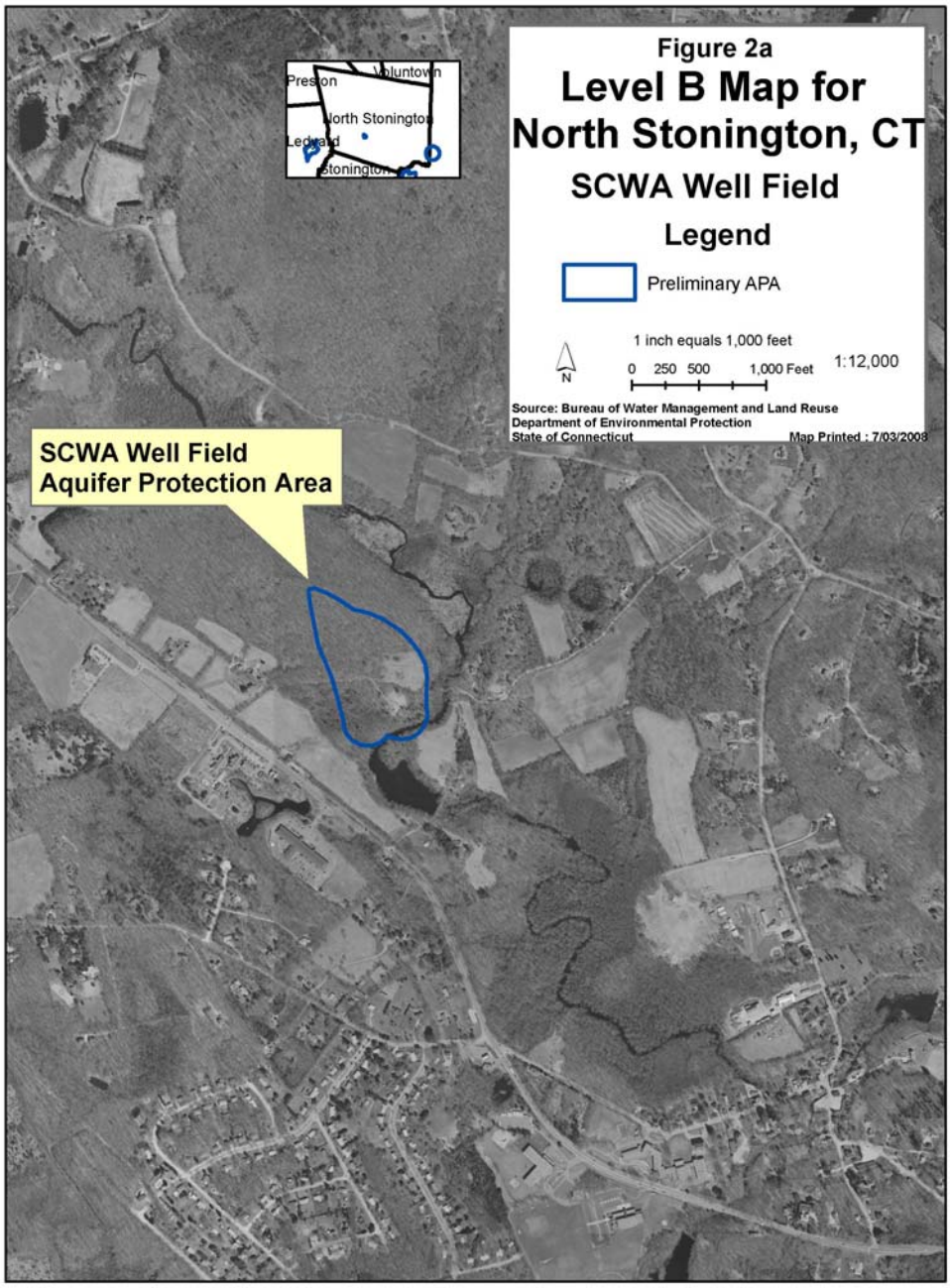


Figure 2a
Level B Map for
North Stonington, CT
SCWA Well Field
Legend
Preliminary APA
1 inch equals 1,000 feet
0 250 500 1,000 Feet
1:12,000
N
Source: Bureau of Water Management and Land Reuse
Department of Environmental Protection
State of Connecticut
Map Printed : 7/03/2008
SCWA Well Field
Aquifer Protection Area
Preston
Voluntown
North Stonington
Ledyard
Stonington

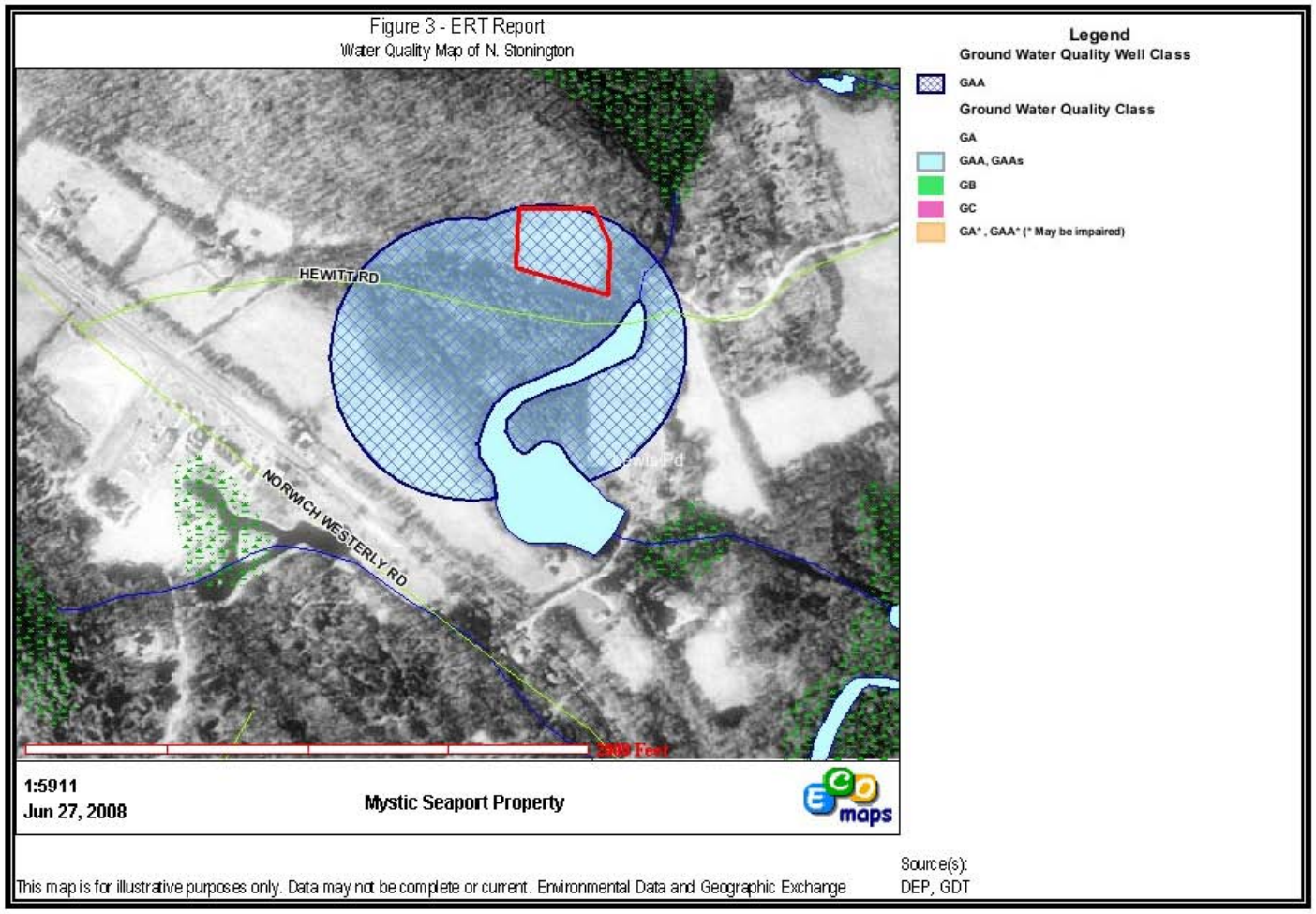


Figure 3 - ERT Report
Water Quality Map of N. Stonington
HEWITT RD
NORWICH WESTERLY RD
Lewis Rd
2000 Feet
1:5911
Jun 27, 2008
Mystic Seaport Property
maps
This map is for illustrative purposes only. Data may not be complete or current. Environmental Data and Geographic Exchange
Legend
Ground Water Quality Well Class
GAA
Ground Water Quality Class
GA
GAA, GAAs
GB
GC
GA*, GAA* (* May be impaired)
Source(s):
DEP, GDT

Attachment 1 - Ground Water Quality

Class	General Condition	Designated Use	Resource Type	Allowable Wastewater Discharges
GAA	Natural quality, or suitable for drinking	Existing or potential public supply, stream base flow, industrial & misc .	Public drinking water supply well recharge (GAA), Public drinking water supply reservoir watershed (GAAs)	Domestic sewage, agriculture, water treatment, clean water discharges
GA	Natural quality, or suitable for drinking	Existing private supply, potential private or public supply, stream base flow, industrial & misc	Area of private drinking water supply wells	Same as the above & certain waste of natural origin
GB	Assumed to have some degradation and not suitable for drinking without treatment	Industrial & misc., non- drinking supply, stream base flow.	Groundwater in urbanized areas, not used for drinking water supply	Same as above & certain other biodegradable and soil treatable wastewaters
GC	Quality altered by wastewater discharges	Areas of permitted waste disposal (i.e. landfill), not suitable for drinking.	Ground waters within waste disposal areas	Same as above & certain permitted waste facilities.
GA* & GAA*	Water quality is threatened, or may be impaired	Groundwater quality goal and designated use is Class GA or GAA, however there may be a known or potential impairment sources.		

Consult the adopted WQS & Classifications Maps for further information. For information contact: Planning and Standards Division, Bureau of Water Protection and Land Reuse, Department of Environmental Protection, 79 Elm Street, Hartford, Connecticut, 06106-5127, (860) 424-3020. Copies of Classifications Maps are available at the DEP Publications Office. (6/2008)

Attachment 2 – North Stonington ERT

BUREAU OF WATER PROTECTION AND LAND REUSE TECHNICAL GUIDANCE

Best Management Practices – Aquifer Protection Areas

Registered and permitted facilities in Aquifer Protection Areas must certify compliance with Best Management Practices (BMPs) in accordance with Section 22a-354i-9 of the Regulations of Connecticut State Agencies (RCSA). The requirements are outlined below, but please refer to the regulations for the full text.

(a) Every regulated activity shall be conducted in accordance with the following:

(1) hazardous materials may be stored above ground within an aquifer protection area only in accordance with the following conditions:

(A) hazardous material shall be stored in a building or under a roof that minimizes storm water entry to the hazardous material storage area, except that a roof is not required for a bulk storage facility as defined in Section 22a-354i-1(6) of the RCSA,

(B) floors within a building or under a roof where hazardous material may be stored shall be constructed or treated to protect the surface of the floor from deterioration due to spillage of any such material,

(C) a structure which may be used for storage or transfer of hazardous material shall be protected from storm water run-on, and ground water intrusion,

(D) hazardous material shall be stored within an impermeable containment area which is capable of containing at least the volume of the largest container of such hazardous material present in such area, or 10% of the total volume of all such containers in such area, whichever is larger, without overflow of released hazardous material from the containment area,

(E) hazardous material shall not be stored with other hazardous materials that are incompatible and may create a hazard of fire, explosion or generation of toxic substances,

(F) hazardous material shall be stored only in a container that has been certified by a state or federal agency or the American Society of Testing Materials as suitable for the transport or storage of such material,

(G) hazardous material shall be stored only in an area that is secured against un-authorized entry by the public, and

(H) the requirements of this subdivision are intended to supplement, and not

to supersede, any other applicable requirements of federal, state, or local law, including applicable requirements of the Resource Conservation and Recovery Act of 1976;

(2) no person shall increase the number of underground storage tanks used to store hazardous materials;

(3) an underground storage tank used to store hazardous materials shall not be replaced with a larger tank unless (A) there is no more than a 25% increase in volume of the larger replacement tank, and (B) the larger replacement tank is a double-walled tank with co-axial piping, both meeting new installation component standards pursuant to §22a-449(d)-1(e) and §22a-449(d)-102 of the Regulations of Connecticut State Agencies, and with interstitial monitoring;

(4) no person shall use, maintain or install floor drains, dry wells or other infiltration devices or appurtenances which allow the release of waste waters to the ground, unless such release is permitted by the Commissioner in accordance with §22a-430 or §22a-430b of the Connecticut General Statutes; and

(5) a materials management plan shall be developed and implemented in accordance with the following:

(A) a materials management plan shall contain, at a minimum, the following information with respect to the subject regulated activity:

(i) a pollution prevention assessment consisting of a detailed evaluation of alternatives to the use of hazardous materials or processes and practices that would reduce or eliminate the use of hazardous materials, and implementation of such alternatives where possible and feasible,

(ii) a description of any operations or practices which may pose a threat of pollution to the aquifer, which shall include the following:

(aa) a process flow diagram identifying where hazardous materials are stored, disposed and used, and where hazardous wastes are generated and subsequently stored and disposed,

(bb) an inventory of all hazardous materials which are likely to be or will be manufactured, produced, stored, utilized or otherwise handled, and

(cc) a description of waste, including waste waters generated, and a description of how such wastes are handled, stored and disposed,

(iii) the name, street address, mailing address, title and telephone number of the individual(s) responsible for implementing the materials management plan and the individual(s) who should be contacted in an emergency,

(iv) a record-keeping system to account for the types, quantities, and disposition of hazardous materials which are manufactured, produced, utilized, stored, or otherwise handled or which are discharged or emitted; such record-keeping system shall be maintained at the subject facility and shall be made available thereat for inspection during normal business hours by the Commissioner and the municipal aquifer protection agency, and

(v) an emergency response plan for responding to a release of hazardous materials. Such plan shall describe how each such release could result in pollution to the underlying aquifer and shall set forth the methods used or to be used to prevent and abate any such a release;

(B) when a materials management plan is required under either Section 22a-354i-7(d) or 22a-354i-8(c) of the RCSA, such materials management plan shall be completed and certified by a professional engineer or a certified hazardous materials manager, or, if the facility where the regulated activity is conducted has received and maintained an ISO 14001 environmental management system certification, then the registrant may complete and certify the materials management plan; and

(C) the materials management plan shall be maintained at the subject facility and shall be made available thereat for inspection during normal business hours by the Commissioner and the municipal aquifer protection agency.

(b) The development and implementation of a storm water management plan required for regulated activities in accordance with Section 22a-354i-7(d) or 22a-354i-8(c) of the RCSA, shall be as follows: A storm water management plan shall assure that storm water run-off generated by the subject regulated activity is (i) managed in a manner so as to prevent pollution of ground water, and (ii) shall comply with all of the requirements for the General Permit of the Discharge of Storm Water associated with a Commercial Activity issued pursuant to §22a-430b of the Connecticut General Statutes.

Attachment 3 – North Stonington ERT

BUREAU OF WATER PROTECTION AND LAND REUSE TECHNICAL GUIDANCE

Best Management Practices (BMPs) for Recreational Areas

Including: Golf Courses, Athletic Fields, Country Clubs, Resorts, and Large Residential Housing Developments (Condominiums)

Recreational areas, such as golf courses, athletic fields, country clubs, resorts, and areas of large residential housing developments, all share in common lawn areas to be maintained. These areas and their associated lawn maintenance practices have the potential to contaminate groundwater in sensitive Aquifer Protection Areas. These practices often involve the mixing and storing of pesticide and fertilizer products, and the cleaning, repair, and maintenance of equipment necessary for lawn maintenance. Follow the Best Management Practices (BMPs) below to reduce the potential to contaminate the groundwater.

Turf Management - Nutrient and Integrated Pest Management (IPM) Plans

Integrated Pest Management (IPM) is defined as the use of all available pest control techniques including judicious use of pesticides, when warranted, to maintain a pest population at or below an acceptable level, while decreasing the use of pesticides. IPM includes the combined use of many techniques.

Some of these techniques include:

- Site scouting or monitoring
- Correct pest and damage identification
- Use of resistant turf cultivars and varieties
- Proper cultural practices (irrigation, mowing, soil aerification and thatch management)
- Soil and plant tissue testing
- Nutrient management
- Weather monitoring
- Physical controls
- Biological controls
- Identification of beneficial organisms
- Record keeping
- Equipment calibration and maintenance
- Good communication
- Precise timing and proper selection of pesticides

A nutrient management plan should be developed that addresses the timing and placement of fertilizers based on seasonal demand or usage of specific turf species, landscape position and weather. Areas of seasonally high water tables should be flagged during typically wet periods in spring and fall. Special care should then be taken in the timing of applications to these areas since they become surface runoff zones during storms.

A full discussion of IPM recommendations is beyond the scope of this fact sheet. Some specific BMPs related to water quality are listed below. For more information see "Integrated Pest Management for Golf Courses", available through the EPA, "Model Integrated Pest Management Plan for Connecticut State Agencies, Ornamental and Turf", available through CT DEP, "Best Management Practices for Golf Course Water Use" (2006), available through CT DEP, "Professional Guide for IPM in Turf for Massachusetts", available through UMass, or "University of Connecticut Turfgrass Nutrient and Integrated Pest Management Guide for Turfgrass" (December 2001) available through UCONN.

Specific BMPs for Turf Management

- Do not apply fertilizer to soggy areas until the water table is lowered enough for the turf to be able to absorb the nutrients. These areas are typically in converging and flatter areas in the landscape, which can be detected during wet periods such as late winter/early spring.
- Avoid spraying pesticides when the soil is saturated or when heavy rains are imminent or under any other conditions where surface runoff may result.
- Establish pesticide free zones around water bodies and near drinking water wells.
- Spray pesticides when the wind is calm. Be careful to avoid drifting of pesticides towards sensitive areas or water.
- Locate compost piles away from surface waters, wetlands and floodplains and not on steep slopes nor in areas with high water tables to reduce nutrient loads to waterways.

Equipment Maintenance, Fueling, Chemical Storage and Mixing Areas

Equipment maintenance, fueling, and chemical storage can impact water quality on and off-site, both during construction and during the maintenance of existing courses. To minimize these impacts follow BMPs for daily operations.

Specific BMPs for Daily Operations

- Store and maintain vehicles and equipment on covered, sealed impervious areas.
- Fueling facilities should be located on concrete paved areas (not asphalt), in paved, roofed areas and equipped with spill containment and recovery facilities.
- Floor drains must be eliminated unless they drain to storage tanks.

- Equipment washing areas must drain to an oil/water separator and from there to a sanitary sewer or holding tank.
- Keep containment booms and absorbent materials on hand for the clean up of spills.
- Employees should be familiar with the locations of all underground structures such as storage tanks, septic fields and storm drains.
- Provide secondary containment for all hazardous materials, including liquid fertilizer storage areas.
- Store all hazardous material in sealed, locked areas or buildings. Identify locations for these materials on the site plan. Register all materials with the fire marshal.
- Locate pesticide, fertilizer and hazardous material storage, mixing and loading areas at least 200 feet away from surface water resources or high water table areas and drinking water wells.
- Locate pesticide, fertilizer and hazardous material storage, mixing and loading areas in separate areas so that they cannot be confused with one another.
- Provide impervious surfaces in mixing areas.
- Dispose of hazardous materials in a manner consistent with the label and regulations.
- Buy fertilizers and pesticides in limited quantities and do not store large volumes of chemicals on site.
- Minimize the use of underground fuel storage and eliminate chemical storage tanks in drinking water ground water supply areas.
- Fueling should be carried out away from surface waters and drinking water wells. Fueling areas should be protected from surface runoff.

Spill Response

The goal of a spill response plan is to have a series of steps in place so employees can respond to an emergency spill safely and swiftly. The policy should be written, employees should be acquainted with it and it should be posted in an easily accessible place.

- Develop plans to be followed in case chemical materials are spilled. Tailor the plans to the specific potential hazards posed by each chemical used on site. The plan should identify all potential hazards, and include safe-handling measures and appropriate spill response procedures.

- Clearly identify the appropriate responding authorities – DEP, state police, or local emergency response. Maintain a list of people to notify in the event of a spill; including drinking water suppliers, if the site is on a public water supply water watershed.

Department of Public Health Drinking Water Section Review

On behalf of the Department of Public Health Drinking Water Section, this Team member has reviewed the information submitted on the proposed land acquisition of the former Hewitt Property from Mystic Seaport in North Stonington, Connecticut with respect to impacts on public drinking water sources. This 104 acre parcel contains two large capacity wells that serve Southeastern Connecticut Water Authority (SCWA) North Stonington Division, an active community water system.

The parcel is currently leased but not owned by SCWA or any other water company so there is no Water Company Lands on the parcel as land must be owned by a water company to meet the definition of Water Company Lands. However, since the Town of North Stonington currently meets the definition of a water company, if they were to own the parcel then portions of the property would become Water Company Land, specifically those portions that meet the definitions in the Regulations of Connecticut State Agencies and Connecticut General Statutes sections 25-37c. The sale, lease, disposition or other change of use of Water Company Lands is regulated. Construction activities that constitute a change of use on Water Company Lands require a permit from this department, so this department would need to be contacted prior to the dam restoration or any other projects to ensure compliance. Protection of the drinking water sources is crucial to maintain purity and adequacy, and this purchase would result in more regulatory protection of the sources of public drinking water, which the DPH Drinking Water Section supports.

The town is currently planning to connect their public water systems to SCWA, at that point they will no longer be a water company, so the portions of the property that were Water Company Lands will no longer meet the definition or be protected as Water Company Lands. The town should continue to work closely with SCWA to secure more permanent protection for the source areas. While ownership of any of the parcel by SCWA is not an option at this time because of deed restrictions, the current town administration is committed to obtaining more permanent protection of the sources than the current lease ownership affords. This project should continue to be coordinated with the Department of Public Health Drinking Water Section, SCWA and the Town of North Stonington to ensure it will not have an adverse impact on the drinking water sources and to ensure permanent protection of the wells and source areas.

Planning Considerations

The Seaport property is ideally located in relation to the village of North Stonington, the schools, library, grange property/fairgrounds and the intensive developments of Meadow Wood, Kingswood Park, and Holly Green condos. In many cases this proximity allows one to walk or bike to it.

The North Stonington Plan of Conservation and Development and the Zoning Map depict this property in the rural preservation residential and the aquifer protection overlay area categories.

The Regional Plan of Conservation and Development depicts the property in the existing and proposed rural uses, in the existing and proposed suburban uses medium density for the frontage along Route 2, proposed conservation areas, and level B aquifers categories. Ownership of the property by the Town of North Stonington would continue to meet the intent of Flora Hewitt that the property be utilized for recreation and park uses. It would also help to better ensure that the well fields and recharge areas of the Southeastern Connecticut Water Authority water supply be preserved in perpetuity. The proposed purchase and use of the property by the Town is compatible with existing and proposed land uses in the area.

Recreation Planner Review

The Hewitt Property, owned by Mystic Seaport, is a 105 acre parcel housing the community wells supplying the Village of North Stonington, the town schools, plus subdivisions and two hotels along Route 2. As Mystic Seaport wishes to sell the property, town action is proposed. This reviewer strongly recommends town acquisition for a number of significant reasons including:

- Protection and control of the critical community wells.
- Ownership of the Shunock River dam which needs repair, especially in view of flooding threat in downstream village area.
- Ownership of sizeable stretch of Shunock River linked via Grange-owned fairgrounds to village and school campus (A related recommendation is for town acquisition of the fairgrounds should the Grange ever propose its sale.)

Recommended Uses

- Passive recreation including trails, fishing, perhaps a picnic pavilion in field across the road from the Hewitt house.
- Continued agricultural lease of three fields to help maintain agricultural land base in North Stonington.

Recommended Management Actions

- Continued periodic mowing of several reverting fields to maintain their character.
- Gating as required to control vehicular access to sensitive areas such s the wells.

Cost/Benefit Discussion of Existing Buildings on Property:

- Hewitt House – Historically significant, in good condition, currently occupied: save and perhaps lease to town employee providing on-site surveillance.
- DewDrop Inn – Needs a septic system, parking intrudes into Route 2 Right-of-Way: Sale of lot may be best option if agreement can be reached with DOT on parking.
- Former Nursery School – Unoccupied and needs considerable work: Lease possible but relative costs and benefits of lease versus demolition must be weighed by the town.
- Fishing Cabin – Small, occupied: Perhaps continue to lease if town staff interested. Otherwise demolish.

Appendix

RICHARD BLUMENTHAL
ATTORNEY GENERAL

55 Elm Street
P.O. Box 120
Hartford, CT 06141-0120

Office of The Attorney General
State of Connecticut

May 16, 2008

Honorable Nicholas H. Mullane II
First Selectman
Town of North Stonington
40 Main Street
North Stonington, Connecticut 06359

Dear First Selectman Mullane:

This letter responds to your letter to me, dated April 17, 2008, asking for my opinion as to whether the Town of North Stonington's (the "Town") proposal to purchase from Mystic Seaport 104 acres of property in the Town (the "Property"), subject to a charitable deed restriction, would be legally permissible.

In particular, Mystic Seaport has offered to sell the Property to the Town, but the Property is subject to a 99 year deed restriction created by its former owner, Flora Hewitt. The deed, dated April 17, 1967, gave the Property to Mystic Seaport to be used for specific charitable purposes and imposed specific restrictions on the use of the Property for 99 years, including a directive that Mystic Seaport not sell or convey it. The Deed also provides that, should Mystic Seaport breach any of the deed restrictions, upon notice by North Stonington, the Property "shall become the property of Town of North Stonington, to be used exclusively for recreation and park purposes."

As you may know, Connecticut law requires that gifts intended for public or charitable use must be used exclusively as intended by the donor. I have reviewed the Hewitt Deed and believe that the Town's purchase of the Property from Mystic Seaport would be consistent with the intent of the donor, that the Town receive it upon Mystic's breach. The Town's use of the Property, however, will be subject to the conditions and restrictive covenants set forth in the deed.

Specifically, the Deed provides that if the Town takes the Property upon a breach of Mystic Seaport, it must use the Hewitt Property for "recreation and park purposes." This restricted use for parks and recreation runs with the land in perpetuity. Further, the Town would take the Property subject to the 99-year conditions enumerated in the Deed, including the directive to "use best efforts to preserve the principal dwelling as an example of an old New England farm house."

I commend you and the Town of North Stonington for your efforts to ensure that Flora Hewitt's Property continues to be used as she intended. Please feel free to contact me should you have further questions regarding the Town's use of the Property.

Very truly yours,

RICHARD BLUMENTHAL

C: Frank Eppinger

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

March 28, 2008

Mr. Nicholas H. Mullane, II
First Selectman
Town Hall
40 Main Street
North Stonington, CT 06359

Re: Shunock River Dam
North Stonington, #10207 Hazard Class BB

Dear Mr. Mullane:

On March 13, 2008, Department of Environmental Protection (DEP) Dam Safety Section staff met with you at the above referenced site. Mr. William F. Parent, Director of Facilities and Projects for Mystic Seaport, was also present at the meeting as well as Mr. Steve Holliday and Mr. Karl Sommers of the North Stonington Public Works Department.

The purpose of the meeting was to assess the present condition of the dam and any repairs/modifications that may be necessary. The Town of North Stonington has expressed an interest in taking over ownership of the dam from the present owner, Mystic Seaport.

The dam has three spillway sections with the left side spillway set at a lower elevation serving as the principal spillway. The following conditions/deficiencies were observed:

1. There were numerous trees and brush growing on the dam and within twenty-five feet of the downstream toe which require removal.
2. Trees greater than six inches in diameter require the removal of their root systems.
3. There were numerous voids observed throughout the masonry wall sections that require repair.
4. The two auxiliary spillway sections have undermining which requires repair.
5. The left spillway training wall of the right auxiliary spillway section is out of alignment and its stability is questionable.
6. There was a significant crack in the right auxiliary spillway section that requires repair.

7. There is significant seepage/leakage through various portions of the dam that should be investigated/repaired.

8. There is some loss of earthen embankment material on the upstream side of the dam which requires replenishment and stabilization.

9. The alignment of the stone masonry walls on the upstream and downstream sides is irregular in various locations but appears to be stable.

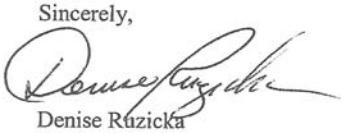
10. There are numerous capstones missing from the masonry walls.

11. There are v-notched seepage collection weirs located downstream of the two auxiliary spillway sections that are no longer functioning properly.

12. During the site inspection spillway flows prohibited a thorough inspection of the left side principal spillway section. A follow-up inspection under low flow or no flow conditions will allow for a more thorough inspection.

The dam deficiencies cited in this correspondence must be addressed to ensure the continued integrity of the dam. The completion of these corrective measures will prevent more serious structural deficiencies from developing. An engineer familiar with dams and dam construction should reinspect this dam and design appropriate repairs and maintenance measures to ensure the dam's integrity. If you have any questions concerning this matter, please call Wesley Marsh of the Inland Water Resources Division at 424-3887.

Sincerely,



Denise Ruzicka
Director
Inland Water Resources Division

DR:JFS:ljk

Cc: William F. Parent

About The Team

The Eastern Connecticut Environmental Review Team (ERT) is a group of professionals in environmental fields drawn together from a variety of federal, state and regional agencies. Specialists on the Team include geologists, biologists, foresters, soil specialists, engineers and planners. The ERT operates with state funding under the supervision of the Eastern Connecticut Resource Conservation and Development (RC&D) Area — an 86 town region.

The services of the Team are available as a public service at no cost to Connecticut towns.

Purpose of the Team

The Environmental Review Team is available to help towns and developers in the review of sites proposed for major land use activities. To date, the ERT has been involved in reviewing a wide range of projects including subdivisions, landfills, commercial and industrial developments, sand and gravel excavations, active adult, recreation/open space projects, watershed studies and resource inventories.

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 project site and highlighting opportunities and limitations for the proposed land use.

Requesting a Review

Environmental reviews may be requested by the chief elected official of a municipality and/or the chairman of town commissions such as planning and zoning, conservation, inland wetlands, parks and recreation or economic development. Requests should be directed to the chairman of your local Conservation District and the ERT Coordinator. A request form should be completely filled out and should include the required materials. When this request is reviewed by the local Conservation District and approved by the ERT Subcommittee, the Team will undertake the review on a priority basis.

For additional information and request forms regarding the Environmental Review Team please contact the ERT Coordinator: 860-345-3977, Eastern Connecticut RC&D Area, P.O. Box 70, Haddam, Connecticut 06438, e-mail: connecticutert@aol.com.