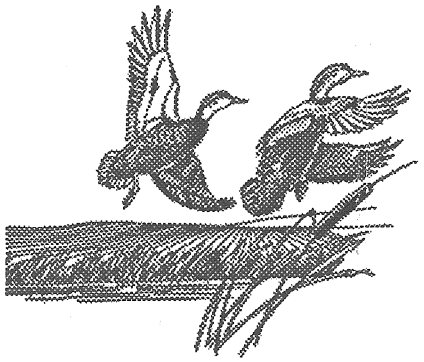


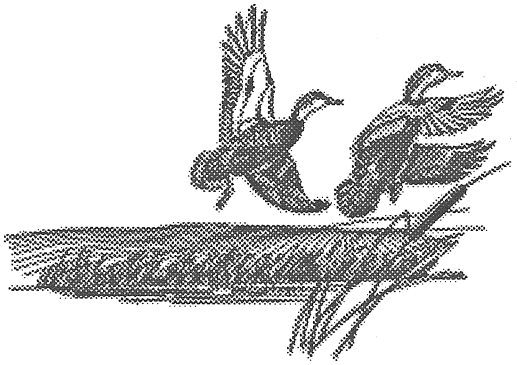
Durham, Connecticut

Durham Rod and Gun Club Property

Eastern Connecticut Environmental Review Team Report

Eastern Connecticut Resource Conservation & Development Area, Inc.

Durham Rod and Gun Club Property
Durham, 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
Durham, Connecticut

March 2001

CT Environmental Review Teams
1066 Saybrook Road, P.O. Box 70
Haddam, CT 06442
(860) 345-3977

Acknowledgments

This report is an outgrowth of a request from the Durham First Selectman to the Middlesex County Soil and Water Conservation District (SWCD). The SWCD referred this request to the Eastern Connecticut Resource Conservation and Development Area (RC&D) Executive 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 Tuesday, June 13, 2000.

Nicholas Bellantoni	State Archaeologist CT Museum of Natural History - UCONN (860) 486-5248
John Hirschfeld	Certified Soil Scientist DEP - Site Remediation Section (860) 424-3893
Dawn McKay	Biologist/Environmental Analyst III DEP - Natural Resources Center (860) 424-3592
Brian Murphy	Fisheries Biologist DEP - Eastern District (860) 295-9523
Peter Picone	Wildlife Biologist DEP - Sessions Woods Wildlife Management Area (860) 675-8130

Rob Rocks	Forester DEP - Eastern District (860) 295-9523
Stephanie Shakofsky	Hydrogeologist Middlesex County Soil & Water Conservation District (860) 346-3282

I would also like to thank Ray Kalinowski, first selectman, Bill Milardo, Durham health department, Geoffrey Colgrove, town planner, and Gary Perlman, epidemiologist with the CT Department of Health 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 and soils maps. During the field review Team members were given additional information. Some Team members made separate or follow-up site visits. Following the review, reports from each Team member were submitted to the ERT coordinator for compilation and editing into this final report.

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

If you require additional information please contact:

Elaine Sych, ERT Coordinator
CT ERT Program
P. O. Box 70
Haddam, CT 06438
(860) 345-3977

Introduction

Introduction

The Durham First Selectman has requested assistance from the Eastern Connecticut Environmental Review Team in conducting a review of property proposed for town purchase for the purpose of a municipal campus.

The 96 acre site is located on Route 79, south of Durham Center. The property is currently owned by the Durham Rod and Gun Club, Inc. The property is forested with wetlands, ledges and a pond created by damming a stream. The adjacent land uses are state forest and private residential or forested land.

The site is being considered for use as a future municipal campus that could possibly include a new town hall, senior/community center, public works facility and areas for recreational use. Recreational use could include: picnic areas, hiking trails, fishing, scenic vistas and an outdoor swimming pool/pond.

Objectives of the ERT Study

The Town is seeking recommendations on the use of the parcel to enable them to do long range planning for facilities needed by the town. A major concern is whether or not this parcel could meet all their future needs, as well as knowing any environmental or health issues that would limit use of the site.

The ERT Process

Through the efforts of the first selectman this environmental review and report was prepared for the Town of Durham.

This report provides an information base and a series of recommendations and guidelines which cover the topics requested by the first selectman. 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 proposed uses; 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 on Tuesday, June 13, 2000. Some Team members made additional site visits. The emphasis of the field review was on the exchange of ideas, concerns and recommendations. Being on site allowed Team members to verify information and to identify other resources.

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

Figure 1.

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Approximate Location and Topographic Map

Scale 1" = 2000'

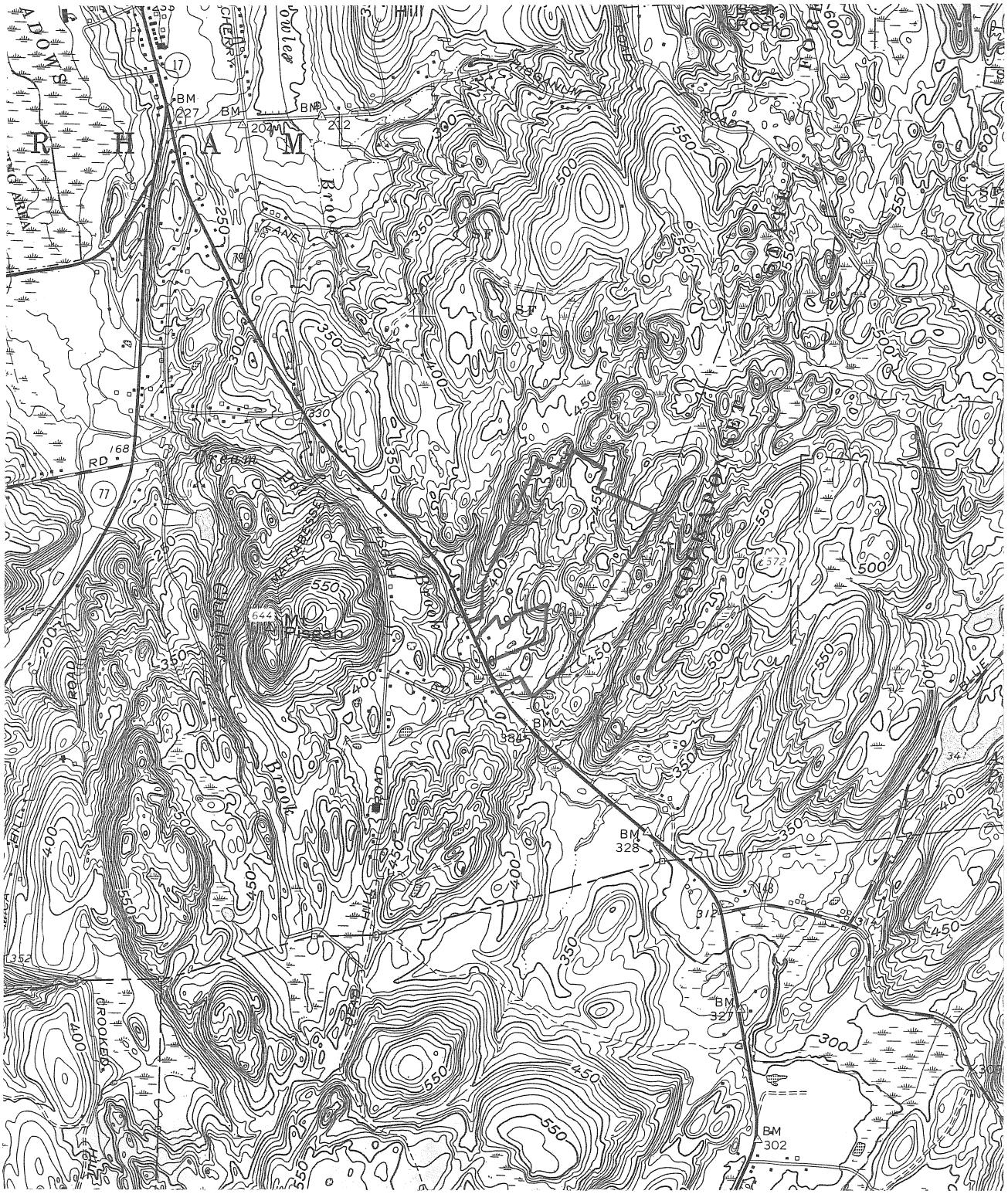

Figure 2.

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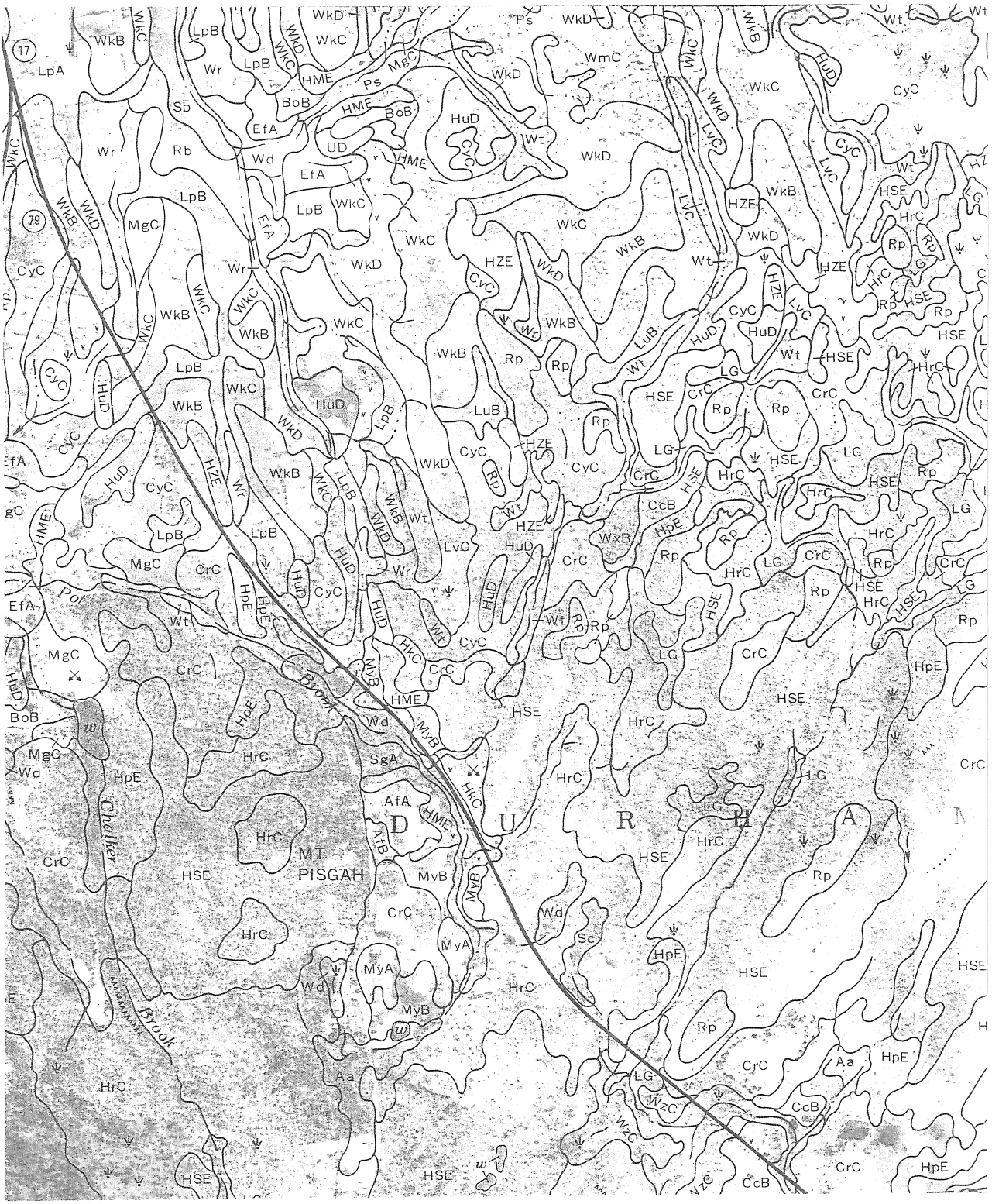
Soils Map

Scale 1″ = 1320′



Possible Site Contamination

The Durham Rod and Gun Club Property is being considered for use as a municipal campus to possibly include a senior and community center, town hall, public works facility, and other recreation uses; including picnic areas, hiking trails, and an outdoor swimming pool. The historic use of this property as a shooting range presents possible conflicts with these suggested uses, owing to possible soil contamination with lead shot and bullets.

A site reconnaissance during the ERT visit on June 13, 2000 determined that the shooting was mostly within a cleared area northwest of the existing clubhouse, at the headwaters of the stream into the existing pond. Soil contamination with lead in this shooting area and in the stream and pond sediments needs to be investigated. There is a reasonable likelihood that lead contamination exists on the site. The Connecticut Remediation Standard Regulations can be consulted as a guide in determining the need for site remediation.

In addition to lead, arsenic can also be a concern in shooting ranges. Soil and sediment samples should be analyzed on a dry-weight basis for mass lead and arsenic, as well as leachable lead and arsenic. These analyses will help in determining direct exposure risks to contamination and what, if any, contaminants are leaching into the waterway. Additionally, a leachability determination for these metals will aid in identifying suitable disposal locations if a removal of soil and sediment is necessary.

Lead accumulates in the food chain. Therefore, elevated lead in fish tissues could also be an issue if stream and pond sediments are lead contaminated. The use of this site for recreation presents a scenario for exposure to lead through fishing and fish consumption.

An environmental assessment of the property and any necessary remediation will reduce the risks of exposure to contaminated soils and spent lead shot and bullets. The Town of Durham should not hesitate to contact John Hirschfeld (860 424 3893) with the CT DEP Site Remediation Section for additional guidance.

Soil and Water Conservation District Review

The study site is located within the Coginchaug Regional Watershed.

The site drainage is predominately to the southwest and flows to Cream Pot Brook which eventually flows to the Coginchaug River. An intermittent stream courses through the site and had been dammed in the recent past to construct a pond.

Wetland and Watercourse Disturbance

An open violation file on this site exists within the Enforcement Section of the Inland Wetlands and Watercourse Division of the Connecticut Department of Environmental Protection. Pursuant to the Dam Safety Section of the Connecticut General Statutes, the Durham Rod and Gun Club is under a consent order to complete repairs to the dam and to stabilize the breech section downstream of the dam.

Any new owner of the site will also take ownership of the violation and will be responsible for complying with the consent order.

The Natural Diversity Data Base

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

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

Fisheries Resources

Resource Inventory

A small unnamed tributary of Cream Pot Brook flows through the property. The stream is best characterized as a small headwater stream or a stream in the uppermost section of a watershed. One of the more important functions of a headwater stream is to provide clean and unpolluted waters to downstream areas of a watershed which contain an increased diversity of aquatic organisms. The stream is intermittent, meaning that it flows in direct response to precipitation or is seasonally dry. This watercourse does not support a viable fish community.

The unnamed tributary to Cream Pot Brook had been impounded to create a small pond for Durham Rod and Gun Club membership use. The dam has been breached per a CTDEP dam safety order leaving a much smaller and shallow pond habitat. Based upon a field review, it appears that the pond now supports a warmwater fish community; largemouth bass and unidentified shiner species were observed. Warmwater fish live in the shallow portions of the pond and can survive in an aquatic environment where water temperatures exceed 75°F for extended periods.

The Durham Rod and Gun Club more than likely has stocked the pond with coldwater fish such as brown, brook, and rainbow trout on a put and take basis. The pond in its present breached condition is unlikely to promote good survival of trout throughout the warm summer months; thus, limiting the number of holdover fish.

Impacts

The construction of a municipal campus could impact aquatic resources if proper mitigation measures are not implemented:

1. Site soil erosion and sedimentation of the pond and watercourse due to extensive vegetation clearing and cut/fill activities. This parcel with its steep, hilly topography presents a challenge to properly control soil runoff. Without proper safeguards, the placement of fill in concert with land disturbances associated with construction may introduce suspended sediments to the pond and the stream. If not properly controlled, suspended sediments may result in the following fisheries resource impacts:

(1) Sediment reduces the survival of resident fish eggs and hinders the emergence of newly hatched fry. Adequate water flow, free of excess sediment particles is required for fish egg respiration and successful hatching.

(2) Sediment reduces the survival of aquatic macroinvertebrates. Since aquatic insects are important food items in fish diets, reduced insect populations levels in turn will adversely affect fish growth and survival. Fish require an excessive output of energy to locate preferred prey when aquatic insect levels decrease.

(3) Sediment reduces the amount of usable habitat required for spawning purposes. Excessive fines can clog and even cement gravels and other desirable substrate together. Resident fish may be forced to disperse to other areas not impacted by siltation.

(4) Sediment reduces pond and stream pool depth. A reduction of usable fish habitat can effectively limit fish population levels.

(5) Turbid waters impair gill functions of fish and normal feeding activities of fish. High concentrations of sediment can cause mortality in adult fish by clogging the opercular cavity and gill filaments.
(6) Sediment contributes to the depletion of dissolved oxygen. Organic matter associated with soil particles is readily decomposed by microorganisms thereby effectively reducing oxygen levels.

2. Aquatic habitat degradation due to the influx of stormwater drainage. The construction of new roads and buildings for a municipal campus will increase the amount of impervious surfaces in the area. Stormwaters emanating from paved parking lots and road systems can contain a variety of pollutants that are detrimental to aquatic organisms. Pollutants commonly found in stormwaters are hydrocarbons (gasoline and oil), herbicides, heavy metals, road salt, fine silts, and coarse sediment. Nutrients in stormwater runoff can fertilize pond and stream waters causing water quality degradation. Additionally, fine silts in stormwaters that remain in suspension for prolonged periods often cannot be effectively removed from roadway catch basins and/or stormwater detention basins. Accidentally spilled petroleum based chemicals or other toxicants can precipitate partial or complete fishkills if introduced in high concentrations. Stormwater drainage can also result in increased stream flows, which may lead to streambank erosion.

Comments/Recommendations

1. A 100 foot open space buffer zone should be maintained along the unnamed tributary to Cream Pot Brook. This buffer can be an effective mitigation measure against any type of proposed development on this property. No construction and alteration of existing habitat should be allowed in this zone. Research has shown that 100 foot buffer zones help prevent damage to wetlands and stream ecosystems that support diverse fish and aquatic insect life. Impacts such as soil

erosion can be more effectively minimized if riparian areas are left in their natural condition. These buffers will absorb surface runoff and other pollutants before they can enter aquatic ecosystems.

2. It is recommended to rebuild the dam and spillway to restore the original water surface elevation of the pond. This will increase the depth and surface area of the pond and promote better growth and survival of trout due to a larger volume of cold, well-oxygenated water in deeper portions of the pond. To create and maintain a coldwater fishery in the pond, the town will have to annually stock trout since these species will not successfully reproduce. Warmwater species such as largemouth bass will naturally reproduce in the pond and do not need to be stocked.

3. Develop an aggressive and effective erosion and sediment control plan. Install and maintain proper erosion and sedimentation controls during site construction activities. This includes such mitigative measures as filter fabric barrier fences, staked hay bales, and sediment catch basins. Land disturbance and clearing should be kept to a minimum and all disturbed areas should be restabilized as soon as possible. Exposed, unvegetated areas should be protected from storm events.

4. A detailed stormwater management plan should be devised. The effective management of stormwaters and roadway runoff can only be accomplished through proper design, location, and maintenance of catch basins. When possible, stormwaters should only be outletted into non-wetland habitat; thus, avoiding direct contact with wetlands. Timely maintenance of catch basins is of critical importance. Roadway catch basins should be regularly maintained to minimize adverse impacts to riverine/wetland habitats. The use of road salt to de-ice roads should be minimized when possible.

Wildlife Resources

This report will address the following: current conditions for wildlife, planning for wildlife, outdoor classroom/nature trail potential and other considerations.

Current Conditions

The following wildlife were observed during a limited site visit (2.5 hour walk through) either directly or indirectly by identifying calls, tracks, scat or other sign: whitetailed deer *(Odocoileus virginianus)*, eastern coyote *(Canis latrans)*, gray squirrel *(Sciurus carolinensis)*, chipmunk *(Tamias striatus)*, ovenbird *(Seiurus aurocapillus)*, red-eyed vireo *(Vireo olivaceus)*, rufous-sided towhee *(Pipilo erythrophthalmus)*, gray catbird *(Dumetella carolinensis)*, mallard *(Anas platyrynchos)*, wood duck *(Aix sponsa)*, cooper's hawk *(Accipiter cooperii)*, turkey vulture *(Cathartes aura)*, American goldfinch *(Carduelis tristis)*, and blue jay *(Cyanocitta cristata)*, house finch *(Carpodacus mexicanus)*, common raven *(Corvus corvax)*, northern flicker *(Colaptes auratus)*, eastern wood peewee *(Contopus virens)*, painted turtle *(Chrysemys picta ssp.)*, wood frog *(Rana sylvatica)*. These are just a few examples of the types of wildlife that utilize the habitats on this property. It can be expected, with more thorough field investigations, that the species list will be diverse for this property.

Habitat Conditions

The property is heavily forested with small openings, paths and a pond under construction. Bird species using the property can be good indicators of habitat conditions. Bird species tallied such as the red-eyed vireo, ovenbird, and eastern wood peewee are interior forest indicators. Birds such as the rufous-sided towhee indicate shrubland conditions. All four of these bird species are neotropical migrants for which the property accommodates part or all of their habitat

requirements. It is difficult to ascertain the nesting success of these species on the property because of this limited survey, but nonetheless they are documented to be present during the nesting season. Around the clubhouse, birds tallied were house finch, northern flicker, and American goldfinch which are indicative of common and adaptable species. An observation of three common ravens on the property was unexpected because of the relative scarcity of these birds in Connecticut. It is difficult to discern the significance of finding these ravens on the property. Are they just foraging in the area? Have they nested nearby?

A pair of wood ducks were flushed from the wetland area in the northern part of the property. Ducklings were not observed, however the possibility exists that wood ducks may nest there. Placing a man-made wood duck nest box in this wetland may enhance nesting opportunities. Because of the wetter than normal spring this year, these areas may contain a unusually greater amount of water which may have increased its use by waterfowl.

There were few noted invasive plants on the property. Invasive plants do not seem to be a problem on the property currently. A watchful eye is needed to find invasives before they become well established and displace native vegetation.

Existing Use / Wildlife Value

The existing use of the property as a sportsman club appears to have a limited effect on the wildlife habitat of the property. Except for small clearings and openings to accommodate shooting ranges, the majority of the property is in its natural condition. In addition, general recommendations for wildlife diversity in forested habitats is to maintain approximately four (4) percent in grass/shrub conditions.

Outdoor Classroom Potential

The property has dozens of areas which can accommodate outdoor classrooms for use in nature observation, education and recreation. There are almost innumerable opportunities to teach about the wildlife, native trees, shrubs, wildflowers, herbs and fungi found on the property. Interpretive walking trails can be easily incorporated and placed along existing paths.

Conversion of Property to Alternative Uses

Specific plans were not submitted for review, but it appears that the property has limited value for large scale development for municipal buildings. The topography would require a lot of cut and fill and major alterations of existing natural features. Cutting and filling to develop large flat open land for municipal development would be highly destructive to the natural habitat conditions of the property. The property lends itself well to its current use as a shooting range and hunting area. If the town purchased the land as open space property, a limited amount of development appears to be feasible without major alteration of the property's natural amenities and loss of habitat diversity.

Man-made Pond

Although the specifics of the existing problems associated with reconstruction of the pond was not made available to Team members, something should be done to stabilize the banks and revegetate any unvegetated soils to prevent erosion and downstream siltation. Stream erosion and siltation cause indirect impacts to wild life which aren't readily seen at the site of the problem.

Discussion and Conclusion

The property has many natural features which provide habitat to a variety of wildlife. The field walk resulted in tallying several interior forest bird species for which the property provides habitat. As land in Durham becomes further developed and fragmented, larger parcels of private land such as this one, will gain in value for wildlife that require large forested areas. Private land comprises the majority (about 88 percent) of land ownership in Connecticut. This property's use as a shooting/sportsman club predictably allows it to stay in its natural condition, therefore maintaining its value as a natural area. On the other hand, if it is sold for housing or other commercial development, the property will lose its long range value as a natural habitat. The town should review other potential open space property to compare the relative value and compatibility of municipal development. From a wildlife perspective this property has many habitat qualities, however, how it compares to the rest of Durham's potential open space is unknown. It is probable that if current use as a shooting/sportsman club continues, the open space qualities will not be lost. However, if the club is sold for housing development or other commercial venture, it can quickly lose its value as a natural area for wildlife.

Vegetation Review

The ±96 acre parcel may be divided into several broad vegetation categories. These include Mixed Hardwoods, Oak Ridge, Open Land, Hardwood Swamp and Open/Shrub Swamp. Below are brief descriptions of each of these vegetation categories. The location and acreage of these areas were obtained from 1995 aerial photographs and are only approximate. They are depicted on the Forest Vegetation Map (Figure 3). The field inventory of vegetation types was conducted in June. A more comprehensive inventory of the herbaceous vegetation, which is present in each of these categories, should be made at different times throughout the year by a botanist.

This is a rugged property dominated by shallow to bedrock soils and numerous rock outcrops. Most of the forested portions of this tract were harvested over twenty years ago. At that time almost all of the merchantable trees were removed leaving the smaller and less vigorous trees to grow in the residual stand. Some larger trees however, were left in the valleys and scattered throughout the high ground. Many of these larger trees provide excellent mast for wildlife. Where the timber harvest was heaviest, a dense growth of sapling size hardwoods originating from stump sprouts has become established.

At this time, forest management aimed at improving forest health that generates revenues from the sale of wood products is not feasible. However, this forest should be re-evaluated in approximately ten years to determine if a harvest would be feasible at that time.

The present owner of the property has created many openings in the forest to improve habitat for wildlife and to create shooting ranges. These openings if not periodically maintained will revert back to hardwood vegetation.

Vegetation Type Descriptions

A. Mixed Hardwoods:

The Mixed Hardwood vegetation type totals approximately 50 acres and is generally restricted to the deeper and richer soiled valleys which are located throughout the property. This type is dominated by reasonably healthy pole size trees (5" to 11" in diameter at breast height (d.b.h.)) which range from 60 to about 100 years of age. In some areas these trees are somewhat crowded and beginning to decline in health and vigor. Larger and older trees are present but they are few in numbers and scattered. They were probably left during the last harvest because they were not large enough or valuable enough to be cut and sold as timber. The overstory in this vegetation type is dominated by tuliptree, black birch, red maple, American beech, yellow birch, white ash and sugar maple with red oak, black oak, white oak, chestnut oak, sassafras, shagbark hickory, pignut hickory and mockernut hickory mixed in. Red maple, white ash, yellow birch and tuliptree dominate where the mixed hardwood type makes a transition to the Hardwood Swamp type and also along streams and seeps. The understory vegetation, which is present, includes mountain laurel, hardwood tree seedlings, maple leaved viburnum, hophornbeam, American hornbeam, azalea, American chestnut sprouts, witch hazel, highbush blueberry, spice bush and sweet pepperbush. Ground cover vegetation includes poison ivy, Virginia creeper, rattlesnake plantain, Canada mayflower, wild sarsaparilla, wood aster, club moss, evergreen wood fern, hayscented fern, Christmas fern and many other species of grasses, sedges and wild flowers.

B. Mixed Hardwoods/Oak Ridge.

The Mixed Hardwood/Oak Ridge vegetation type occupies approximately 23 acres of this property. This vegetation type is found on the excessively drained, very stony shallow to bedrock knolls and side hills that are present. The vegetation, which dominates these sites, is made up of somewhat stunted and malformed pole-sized chestnut oak, scarlet oak, white oak, and black oak with scattered mockernut hickory and pignut hickory. Red maple, black birch, sassafras, American beech and eastern red cedar are also present in the overstory, but in lesser numbers. Understory vegetation includes lowbush blueberry, huckleberry, hardwood tree seedlings, mountain laurel, American chestnut sprouts, witch-hazel, maple leaved viburnum and green briar. Ground cover consists of Pennsylvania sedge, Canada mayflower, club moss, poison ivy, Virginia creeper, hayscented fern and bracken fern.

C. Open Land.

At the present time there are approximately 12 acres of open land within this tract. Several of these areas were cleared of hardwood vegetation by the club to encourage herbaceous vegetation to improve habitat for wildlife. Other areas were cleared to create shooting ranges. The area north of the dam site, which is now open, was the former pond bottom. The droughty shallow to bedrock areas are now dominated by grasses, hayscented fern, mountain laurel, lowbush blueberry, huckleberry, highbush blueberry, sweet fern and hardwood tree seedlings which include bigtooth aspen, quaking aspen, choke cherry, American chestnut, red maple, chestnut oak, scarlet oak and sassafras. Open areas along the streams and old pond site include grasses, sedges, jewelweed, hawkweed, blackberry, wild strawberry, cinquefoil, elderberry, goldenrod, hayscented fern, cinnamon fern, sensitive fern and skunk cabbage. Tree and shrub species which include black willow, red maple, quaking aspen, sassafras, winged sumac, shadbush, sweet pepperbush, highbush blueberry, silky dogwood, arrowwood and alder spp. are beginning to become reestablished.

D. Hardwood Swamp.

There are approximately 8 acres of the Hardwood Swamp vegetation type present within this parcel. The vegetation that is present is somewhat variable with all size classes and age classes of trees represented. Each wetland is dominated by red maple and may include occasional yellow birch, black gum, white ash, sugar maple, red oak, gray birch, black birch and tuliptree. Some of the larger trees that are located in the wetland areas adjacent to streams have cavities that make excellent den sites for many species of wildlife. Young seedling and sapling size trees and a dense shrub layer dominate the wetlands that are located adjacent to open areas. Shrub species that are present include spice bush, sweet pepperbush, highbush blueberry, swamp azalea, buttonbush, winterberry and witch-hazel. Skunk cabbage, false hellebore, tussock sedge, club moss, sphagnum moss, poison ivy, Virginia creeper, cinnamon fern, Christmas fern, sensitive fern, evergreen wood fern, royal fern, Canada mayflower, wild geranium, wild sarsaparilla, aster spp., sedges and other wild flower species are present as ground cover.

E. Open/Shrub Swamp.

The Open/Shrub Swamp vegetation type occupies about 3 acres of this site. Open water is present with sedges, grasses, phragmites, cattails, red maple seedlings, black birch seedlings, gray birch seedlings, maple leaved viburnum, highbush blueberry, silky dogwood, arrowwood, elderberry, alder spp., buttonbush, mountain laurel, spirea, whorled loosestrife, purple loosestrife, cinnamon fern, sensitive fern and several species of moss.

Impact on Vegetation

Development of the proposed municipal center will have an impact on the vegetation that is present. Some tree and vegetation clearing will have to take place if this center is developed. Trees that are going to be removed should be

utilized as sawlogs and fuelwood rather than chipped and removed at a cost to the town. Construction activities that occur too close to trees that are to be retained will adversely effect their health, vigor and longevity and potentially create future hazard trees. Trees are very sensitive to the condition of the soil within the entire area of their root systems, which generally extends well beyond the spread of their crowns. Excavation, filling and the general use of heavy machinery will lead to some degree of soil compaction that will adversely affect the soil moisture and aeration balance. This imbalance could lead to a decline in tree health and vigor and may even lead to tree mortality within three to five years. Physical damage to the root system (by excavation) or bark damage may allow the introduction of decay organisms, which may result in the decline of tree health over time. The older and/or larger a tree is, the more readily it is affected by the negative impact of construction related activities.

The negative effect of construction on trees is not usually visible at the time the work is done. Soil compaction, root injury, and scraped bark are stressors that contribute to insects and diseases infesting the tree long after machinery has left the sight. This creates hazards and problems as trees die several years after construction. These problems can be minimized or eliminated when proper care is taken with vegetation during the construction period.

During construction, when making grade cuts, trees should be removed back from the cut for at least a distance of two feet for each one-foot of depth of cut, e.g. 20 feet back for a 10-foot cut. Where feasible, roads and buildings should be relocated slightly in the field to protect healthy, highly aesthetic trees that are going to be retained.

Figure 3.

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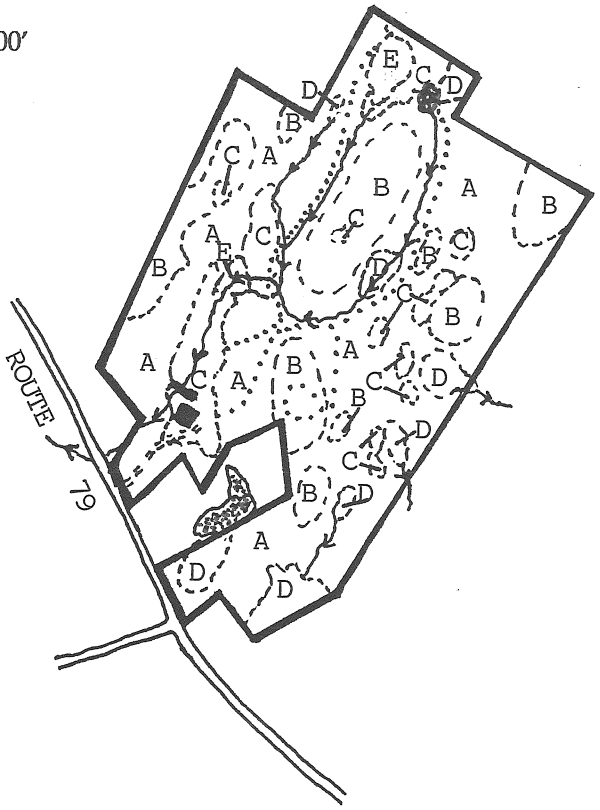
Forest Vegetation Map

Scale 1" = 1000'



VEGETATION TYPES

A. Mixed Hardwoods.....50+- ACRES

B. Mixed Hardwoods/Oak Ridge.....23+- ACRES

C. Open Land.....12+- ACRES

D. Hardwood Swamp.....8+- ACRES

E. Open/Shrub Swamp.....3+- ACRES

LEGEND

PROPERTY BOUNDARY

VEGETATION TYPE BOUNDARY

PAVED ROAD

WOODS ROAD/TRAIL

POND

STREAM

STRUCTURES

Archaeological Review

A review of the State of Connecticut site files and maps shows no known archaeological site in the project area: however there are three prehistoric Native American sites in relatively close proximity. In fact, a review of the environmental and topographic features of the property suggest very strongly that undiscovered Native American campsites as well as the potential of historic foundations may be situated on the property.

The Office of State Archaeology (OAS) recommends that any land use proposed for this property that would include subsurface disturbance be reviewed by the OSA to insure the preservation and protection of any sites that might be there. The area has a high sensitivity for historic and prehistoric archaeological remains. Passive recreational use of the property however, would not necessarily need to be reviewed because of the lack of ground disturbance. However, the building of a community center or any other structures should be reviewed by the OAS prior to construction activities.

The Office of State Archaeology looks forward to working with the town of Durham as they research the purchase this property for municipal use.

ABOUT THE TEAM

The Eastern Connecticut Environmental Review Team (ERT) is a group of professionals in environmental fields drawn together from a varety 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, elderly housing, 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 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 Soil and Water Conservation District and the ERT Coordinator. A request form should be completely filled out and should include the required materials. When this request is approved by the local Soil and Water Conservation District and the Eastern Connecticut RC&D Executive Council, 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.