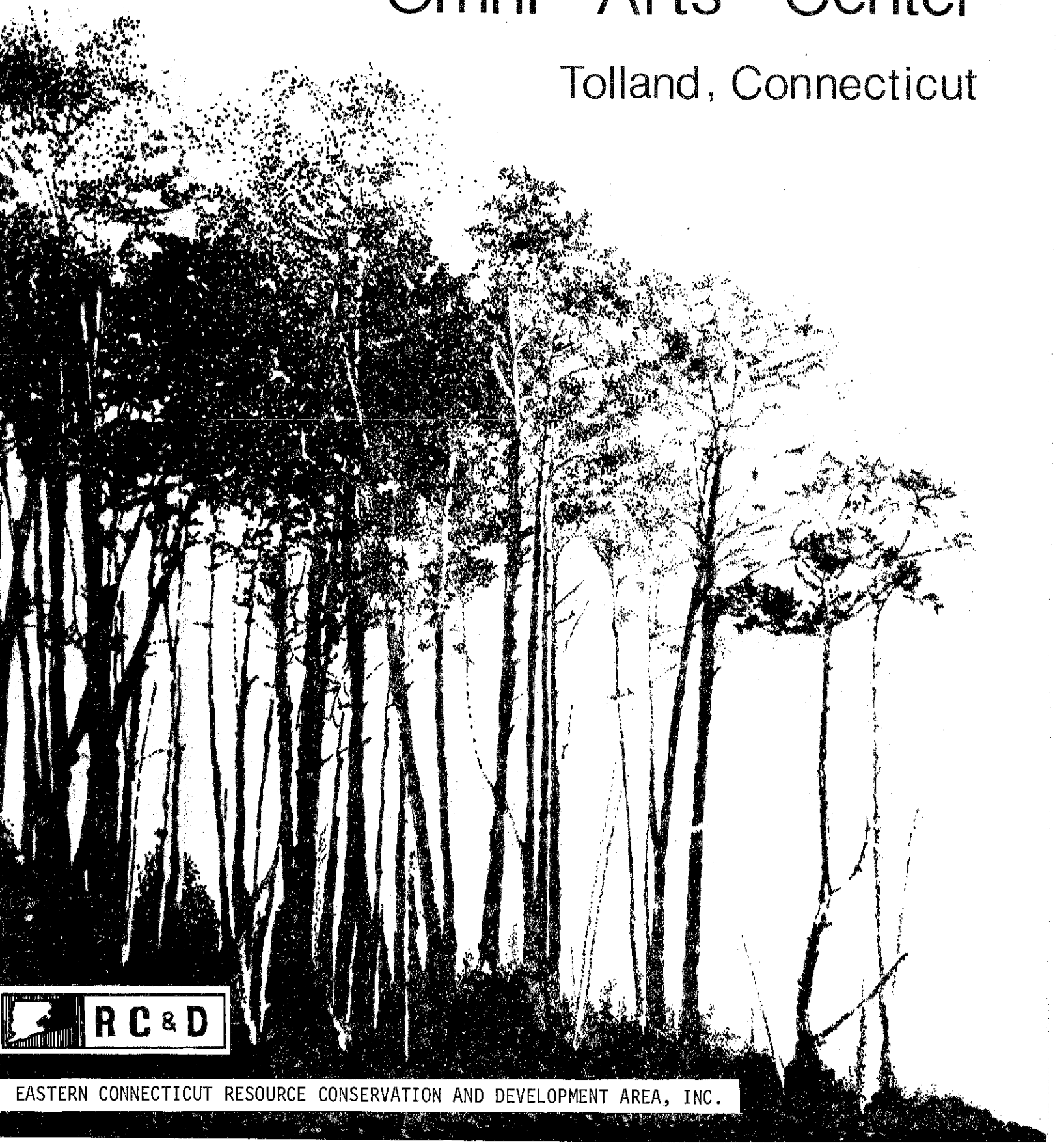
Environmental Review Team Report

Omni Arts Center

Tolland, Connecticut



R C & D

EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT AREA, INC.

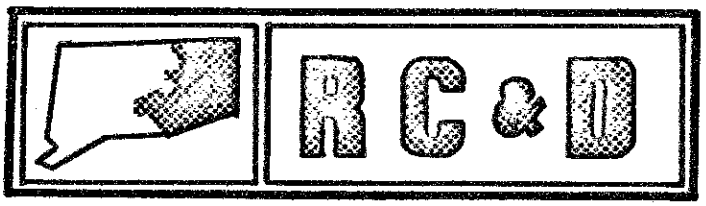
Environmental Review Team Report

on

Omni Arts Center

Tolland, Connecticut

February 1979

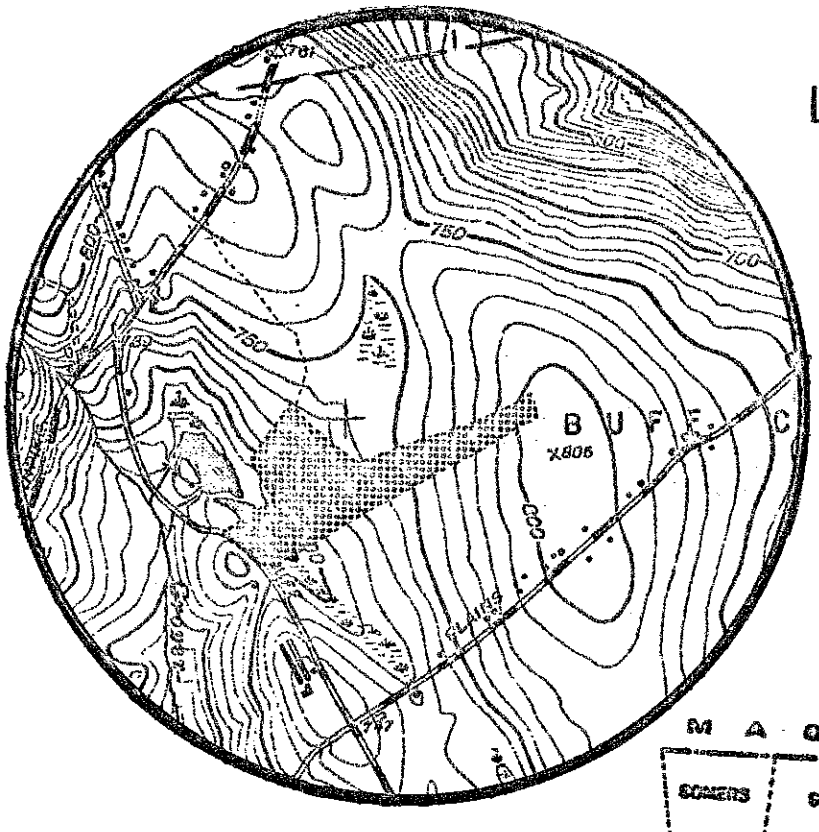


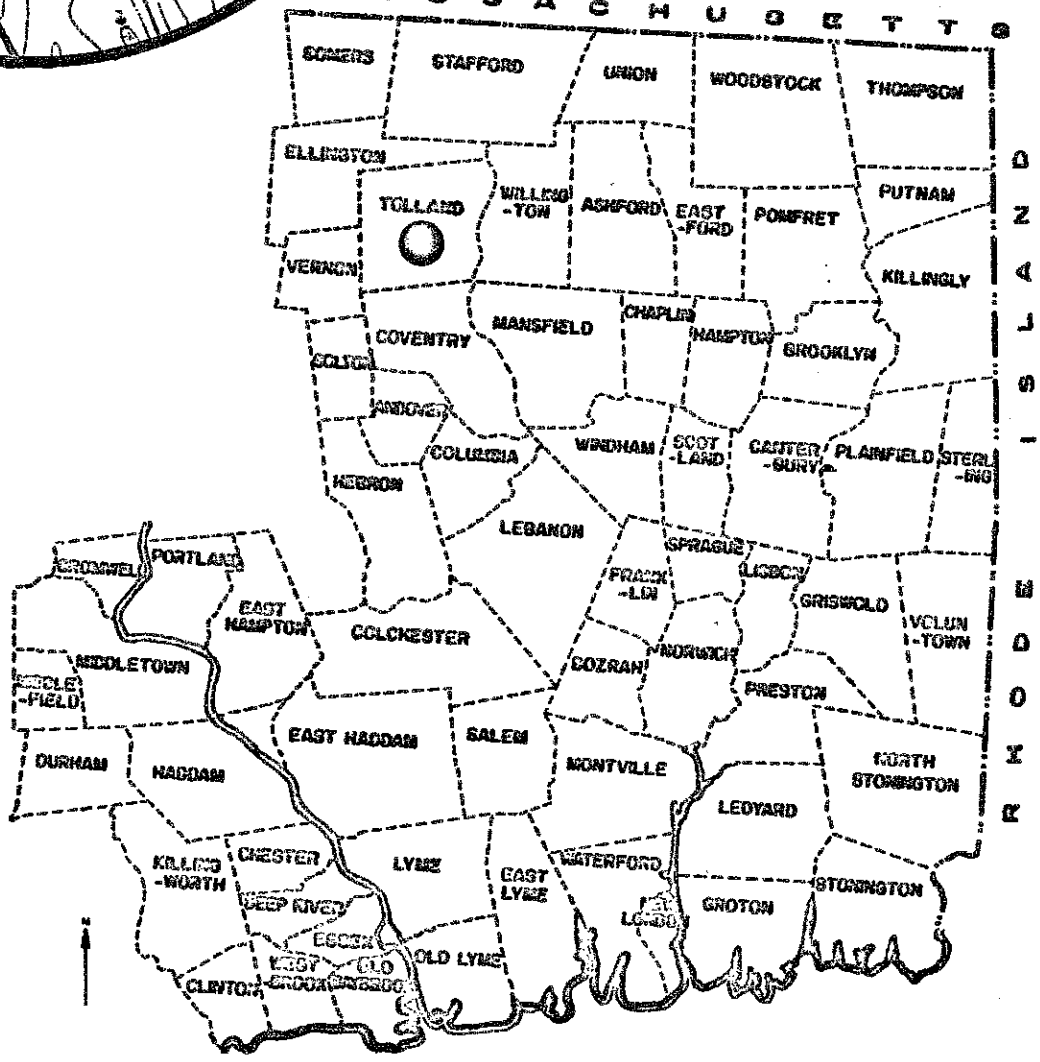
eastern connecticut resource conservation & development area

environmental review team
139 boswell avenue
norwich, connecticut 06360

Location of Study Site

OMNI ARTS CENTER
TOLLAND, CONNECTICUT





EASTERN CONNECTICUT
RESOURCE CONSERVATION AND DEVELOPMENT PROJECT

ENVIRONMENTAL REVIEW TEAM REPORT
ON
OMNI ARTS CENTER
TOLLAND, CONNECTICUT

This report is an outgrowth of a request from the Tolland Planning and Zoning Commission to the Tolland County Soil and Water Conservation District (S&WCD). The S&WCD referred this request to the Eastern Connecticut Resource Conservation and Development (RC&D) Area Executive Committee for their consideration and approval. The request was approved for the RC&D Executive Committee by David Syme, Committee President, and the measure was reviewed by the Eastern Connecticut Environmental Review Team (ERT).

The soils of the site were mapped by a soil scientist from the United States Department of Agriculture, Soil Conservation Service (SCS). Reproductions of the soil survey map, a table of soils limitations for certain land uses and a topographic map showing property boundaries were distributed to all Team members prior to their review of the site.

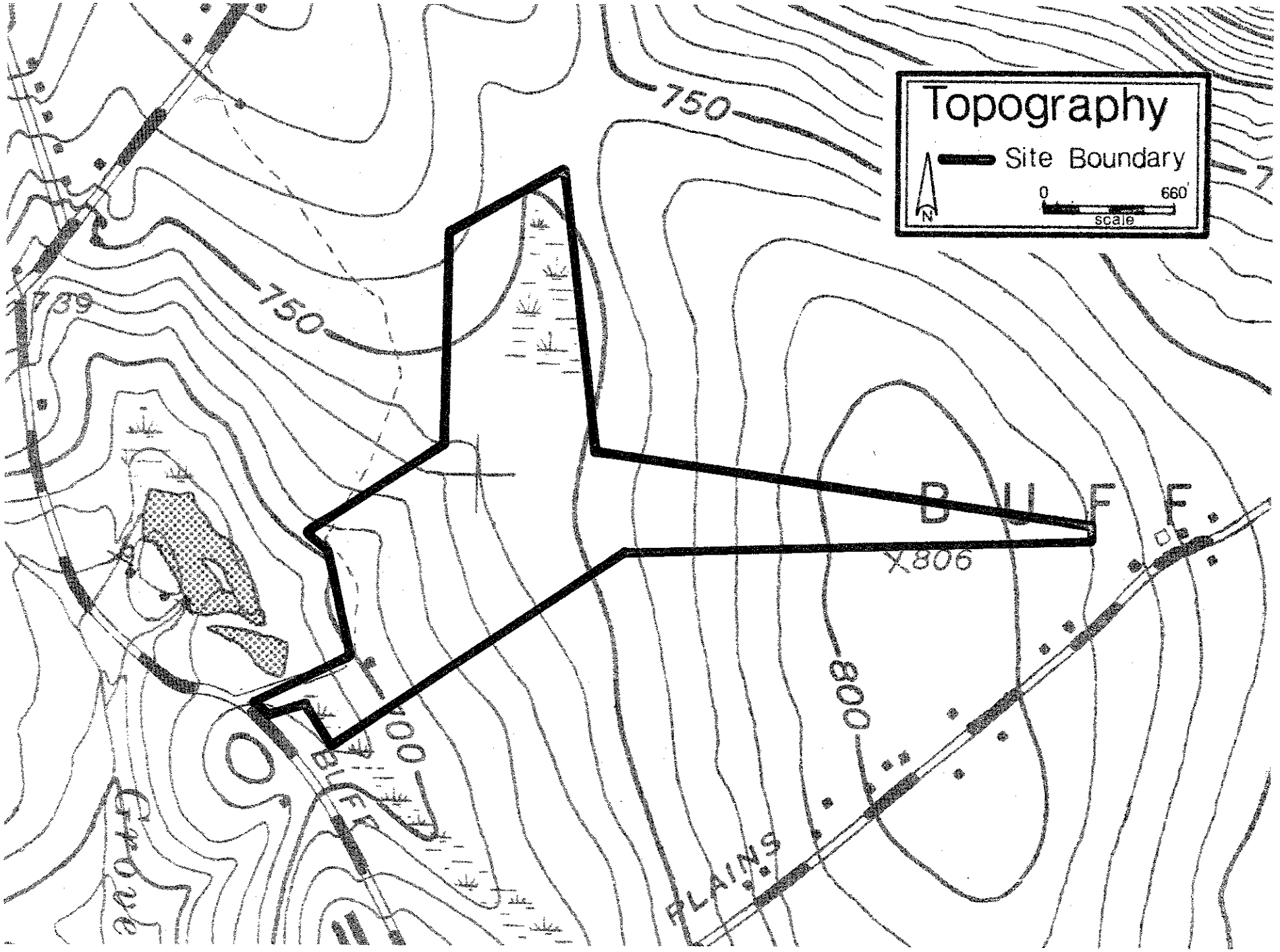
The ERT that field-checked the site consisted of the following personnel: Timothy Dodge, District Conservationist, Soil Conservation Service (SCS), Tom Ladny, Soil Conservationist, (SCS), Michael Zizka, Geologist, Connecticut Department of Environmental Protection (DEP), Timothy Hawley, Forester (DEP), Al Buzzetti, State Department of Health, and Jeanne Shelburn, ERT Coordinator, Eastern Connecticut RC&D Area.

The Team met and field checked the site on Thursday, November 9, 1978. Reports from each contributing Team member were sent to the ERT Coordinator for review and summarization for the final report.

This report is not meant to compete with private consultants by supplying site designs or detailed solutions to development problems. This report identifies the existing resource base and evaluates its significance to the proposed development and also suggests considerations that should be of concern to the developer and the Town of Tolland. The results of this Team action are oriented toward the development of a better environmental quality and the long-term economics of the land use.

The Eastern Connecticut RC&D Area Committee hopes that this report will be of value and assistance in making any decisions regarding this particular site.

If you require any additional information, please contact: Ms. Jeanne Shelburn, Environmental Review Team Coordinator, Eastern Connecticut RC&D Area, 139 Boswell Avenue, Norwich, Connecticut 06360, 889-2324.


Topography
Site Boundary
0
660'
scale
N
750
750
739
800
800
BLUFF
BLUFF
PLAINS
X806

INTRODUCTION

The Eastern Connecticut Environmental Review Team was asked to review a proposal for a professional Arts Center in the town of Tolland. The proposed Arts Center is to be located on an 82-acre portion of the larger land holdings of Charles and Florence Goodstein on Buff Cap Road. The Omni Arts Center, as it is to be known, will consist of workshops and symposia, instruction and discussion, performances and exhibitions in various art forms including drawing, painting, sculpture, music, and theatre. Its aim is to further appreciation of and participation in both the visual and performing arts. Credit affiliation for intensive summer course work will be given through several educational institutions.

The proposal for the Omni Arts Center includes the establishment of a large pavilion for studio space, a small band shell for outdoor performances, tent platforms or seasonal cabins, parking areas, and sanitary facilities. The planned capacity for these facilities will be 146 persons in the first operating year, 254 persons in the second, and 307 persons in the third. Estimated weekly audience sizes range from 150 in the first year to 625 in the third year. The center is scheduled for seasonal use during the months of June, July, and August.

The site consists of a large (6 to 7 acre) open field, overgrown with wildflowers and grasses, which slopes to a small man-made pond. The remainder of the site is a mixed hardwood forest, dominated by black oak and red maple. Soils in this area are moderately well-drained. The open land has been used for spreading excavated material from the existing pond during its construction and includes an old homestead area. A waterway/diversion has been constructed along the border area of woodland and open land. The waterway outlets into the wetland area on the southern border of the property, eventually entering the stream that feeds both ponds. Care should be taken to ensure the quality of this runoff water.

The Team is primarily interested in the effect of this land use proposal on the natural resource base of this site. Although the proposed use does not appear overly intensive for the amount of land area on the site, there will no doubt be problems in locating acceptable sites for septic disposal systems. Soil conditions indicate that engineered systems will probably be necessary. Other concerns for development of the site include protection of the wetlands and open water bodies from erosion and sedimentation during and after construction, the establishment of traffic patterns within the site, and the potential need for upgrading of Buff Cap Road. Although the dominant soil on this parcel is the Woodbridge series, which is severely limited for foundation development due to a seasonally high water table, large stones, and susceptibility to frost action, these limitations can be overcome with proper engineering and construction techniques. The seasonal usage of these facilities may be beneficial to establishing the Art Center on this site. It is advisable to retain the services of a professional landscape architect, who specializes in naturalistic, low-maintenance landscapes, if a blending of the overall plan, the architectural structures, and the native landscape is desired.

ENVIRONMENTAL ASSESSMENT

SURFICIAL GEOLOGY

The major unconsolidated geologic material on the property is till. Till is a glacial deposit consisting of rock particles that range in size from clay to boulders and in shape from round to angular to flat. The particles were picked up by and incorporated into a moving ice sheet; they were later either plastered onto the surface underneath the ice or lowered gently onto the surface from within or from the top of the ice. Variations in the mode of deposition, the nature of the rocks from which the particles were collected, and other factors have caused the texture of the till to be locally variable. In the upper few feet, the till appears to be sandy, stony, and relatively loose, while below that, it probably is somewhat siltier and more compact. Groundwater flow tends to be very slow through the more compact till. Occasionally, lenses of fairly well-sorted sand and gravel may be found within the till, indicating that meltwater flowed through a channel within or beneath the ice sheet. These lenses are generally too small and too scattered to be of any economic importance, but they may be exploited, where found, for local fill. The most likely areas for finding sand-and-gravel lenses on the property are along Buff Cap Road and north of the actual arts-center site, near the Ellington town line.

HYDROLOGY

Surface water on the property drains generally southwestward, either by sheet flow or via a small stream that originates in a swamp bordering the angle of the eastern boundary. A linear wetland lying south of the property, just east of Buff Cap Road, drains northward into one of the three man-made ponds. Groundwater flow probably is directed largely toward the southwest. Precipitation is either shed quickly across the surface, retained temporarily by vegetation, or absorbed into the soil. Part of the absorbed water is utilized by plants, part is evaporated from the soil, and part percolates down to the water table (the surface of the zone in which the earth materials are saturated). Water in the zone of saturation moves slowly down-slope and ultimately re-emerges at the surface in the form of seeps, springs, or streams.

Because of the compact nature of the lower part of the till, water percolates very slowly through it. Hence, during periods of heavy rainfall, the upper part of the till quickly becomes saturated, and most of the precipitation ends up as surface runoff. The groundwater level is slowly built up during wet seasons and sometimes remains relatively high for several weeks thereafter. This seasonally high water level can adversely affect septic systems, causing such problems as backups, flooding and plugging of drainage lines, and surfacing of effluent. Therefore, septic systems for the arts center should be very carefully designed and, if necessary (under Health Department guidelines), engineered. It would be preferable to avoid placing any system within 100 feet of the ponds and streams. This restriction would reduce the potential for contamination of those water bodies.

Development of the property to the extent presently proposed would cause at least a slight increase in runoff, but unless the total amount of impermeable surface created were large, the increase should not have a significant effect on peak flows in the nearby streams. Because much of the runoff from the site takes the

form of sheet flow, and because the soils are subject to seasonally high groundwater levels, the potential for erosion should be of more concern. In a worst-case situation, siltation of the ponds would occur. However, because of the gentle slope of the land, a properly designed and followed sediment-and-erosion control plan would ameliorate most of these difficulties. Connecticut's Sediment and Erosion Control Handbook will aid both the town and developer in preparing such a plan. Technical assistance is available through the Soil Conservation Service office in Rockville. It is recommended that construction activities be kept at least 100 feet away from the ponds and streams to minimize siltation effects. All development should be oriented in such a way that a buffer zone of vegetation remains to protect the quality of these existing or improved streams and ponds.

The parking lots as shown in the conceptual plan are located in or border on the stream and wetlands. These should be located away from the wet areas to prevent runoff containing sediment and/or other pollutants from directly entering the streams.

Access roads and parking lots if left unpaved would decrease runoff problems and blend with the natural surroundings. The final design should incorporate surface water runoff controls as necessary to avoid erosion and sedimentation. These could include sediment basins, "water bars", and/or diversions to control road and parking lot runoff. Vegetation should be used for filtering and for buffers around parking areas. Construction designs that keep roads and parking areas on the contour as much as feasible should also be considered.

VEGETATION

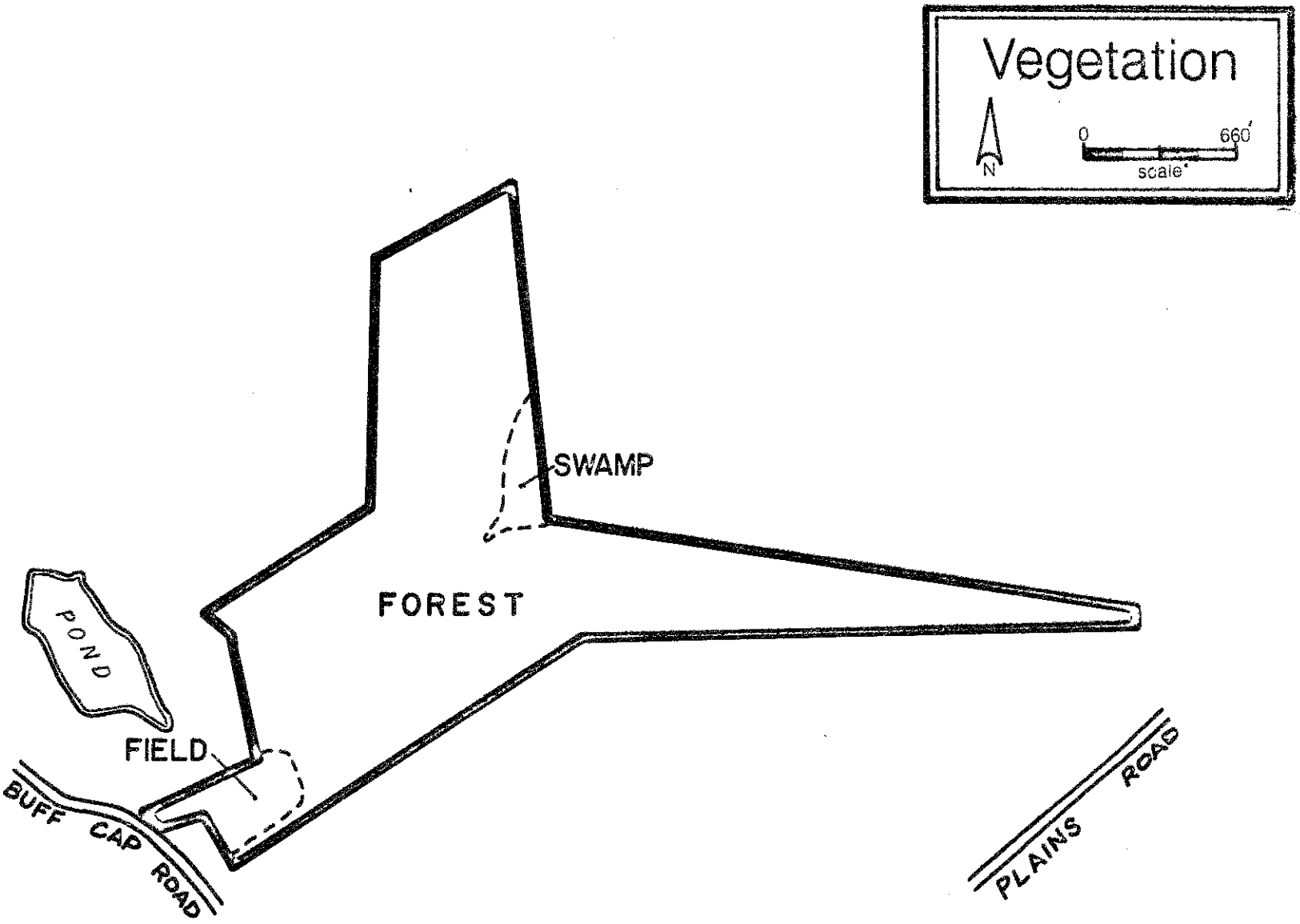
Most of the 86-acre parcel is forested, as shown on the Vegetation Map. The forest consists of a mixture of hardwoods in which black oak and red maple are predominant. Scattered paper birch, white pine, and white oak add aesthetic appeal. The understory includes witch hazel, viburnum, cinnamon fern, and club moss.

The forest appears to have originated as stump sprouts 40 to 60 years ago. Growth of the trees is hampered by wet soil conditions and as a result most of the trees have only reached pole size (5 to 11 inch diameter at breast height). The forest is at full density and some trees are declining in vigor as a result of crowding.

The wettest part of the parcel supports a low density growth of sapling size red maple sprout clumps on hummocks. Sweet pepperbush, highbush blueberry, azalea, grass, and sphagnum moss occur in the understory. There is standing surface water in low spots at most times of the year. Although this wetland type gradually blends into the mixed hardwood type, the 5 acre-area indicated on the map is especially wet.

Approximately 6 acres of the parcel are in a field dominated by goldenrod and grass. There are scattered open grown oaks of high aesthetic value.

The present forest is healthy and its species diversity results in a great aesthetic appeal. Health and vigor of the trees can best be maintained by periodic thinning to remove trees most likely to succumb to the impacts of disease, weather, and competition. A management plan should be drawn up with the assistance of a forester to provide a long-range guide and to control the impact of harvesting on use of the property.


Vegetation
N
0
660'
scale
SWAMP
FOREST
POND
FIELD
BUFF CAP ROAD
PLAINS ROAD

WILDLIFE HABITAT

The site provides woodland wildlife habitat to a variety of species, both game and non-game. The overall habitat quality is fair to good. The mixture of ponds and wetlands serve to enhance the value of the area. A limiting factor in the woodland appears to be the similarity in age of the trees and the lack of species diversity. There is some "edge" value provided by the open field area; however, the poor quality of the vegetative cover limits its usefulness.

The site is part of a wooded area, without major development extending from the Willimantic River west to Ellington, and from Tolland north to Stafford Springs. State forest holdings within this general area include the Nye Holman and Shenipsit forests.

The proximity to Charter Marsh, Tolland Marsh, and the Willimantic River increase the values of the ponds to waterfowl.

Improvement of this habitat is possible. Development of an uneven age stand with mixed species, promoting shrubby layer understory and patch clearings seeded to grasses would be desirable.

The development plan could incorporate or promote some of these concepts by proper layout of facilities and plantings. Clump plantings of fruiting shrubs, and the establishment of some conifers, grasses, and legumes would help improve the area for small game and non-game species of wildlife.

SOILS

A detailed soils map of this site is included in the Appendix to this report, accompanied by a chart which indicates soil limitations for various urban uses. As the soil map is an enlargement from the original 1,320'/inch scale to 660'/inch, the soil boundary lines should not be viewed as absolute boundaries, but as guidelines to the distribution of soil types of the site. The soil limitation chart indicates the probable limitations of each of the soils for on-site sewage disposal, buildings with basements, streets and parking, and landscaping. However, limitations, even though severe, do not preclude the use of the land for development. If economics permit large expenditures for land development and the intended objective is consistent with the objectives of local and regional development many soils and sites with difficult problems can be used. The soils map, with the publication Soil Survey: Tolland County, Connecticut, can aid in the identification and interpretation of soils and their uses on this site. Know Your Land: Natural Soil Groups For Connecticut can also give insight to the development potentials of the soils and their relationship to the surficial geology of the site.

The Woodbridge series is the dominant soil type on the area being considered for the cultural center. Woodbridge is a deep, moderately well-drained soil formed in glacial till. A compact or hardpan layer is present between 26 to 42 inches. The phase mapped is extremely stony with slopes that vary from less than 2% to about 8%. The major limitation to development is a seasonally high water table, usually at a depth of 24 inches or less during the late fall to late spring, which may flood septic drainage fields, possibly causing backups and surface seepage. Other limitations include frost heaving and excavation difficulties caused by stony conditions.

Sutton soils are mapped on the northern portion of the site and account for approximately 22 acres or 25% of the total acreage. This soil is similar to the Woodbridge soils; however, it does not have the compact layer or hardpan. Limitations to development are also similar to those of Woodbridge soils, including the seasonally high water table.

The Leicester-Ridgebury-Whitman soil complex and the Gloucester-Charlton complex are also present on this site.

The Leicester soils occur in the drainage ways and surrounc the existing ponds. These are deep, poorly drained soils, classified as inland wetlands and regulated by PA 155 as amended. The water table during wet seasons may be as deep as 18 inches during the summer months. Limitations to all types of development are severe.

Gloucester soils occur on a small portion of the site along the western border. These soils are well- to excessively well-drained, and aside from stoniness, present few limitations to development.

A general investigation of other lands adjacent to the site owned by the Goodsteins did not reveal any areas with soils better suited to this type of development. The area with access off Old Stafford Road would require crossing an inland wetland for development of the proposed facilities.

WATER SUPPLY

Water would be supplied to the site by wells, which probably would be drilled into the underlying bedrock. No suitable sand-and-gravel aquifer appears to be present within or near the property. The exact yield of any bedrock-based well is a function of many geologic factors, including the number and size of fractures encountered in the rock. It is extremely difficult to predict such yields. Nevertheless, out of 134 domestic, bedrock-based wells surveyed for Connecticut Water Resources Bulletin No. 11*, 90 percent yielded 3 gallons per minute or more of groundwater, an amount considered adequate for most domestic needs. The proposed arts center lies within an area where relatively high concentrations of iron and/or manganese are common in the groundwater. This problem normally can be handled by suitable methods of filtration. Aside from these potential difficulties, however, the quality of the water supply should be good.

WASTE DISPOSAL

Preliminary soil testing, consisting of deep observation pits and percolation tests should be conducted to locate suitable areas for on-site septic disposal systems. It would appear that the most likely areas for successful disposal of sewage effluent would be those areas with sufficient slope to attempt curtain draining. These would include an area east of the band shell/pavilion area. Also an area north of the brook which is not in the proposed development area may be considered because of the slope present there. The former area is mapped as Woodbridge series and the latter area as Sutton series.

* This Bulletin deals with the Shetucket River basin.

Particular attention should be given to depth to seasonal water table and depth to any compact soil layers. Percolation tests should be conducted in compact soil layers.

Due to limitations in these soil types, any subsurface sewage disposal system design would have to be prepared by a professional engineer, licensed in the State of Connecticut.

According to soil mapping provided by the Soil Conservation Service, the 88.9 acres in the proposed development area are principally made up of soils in the Woodbridge, Sutton, and Leicester - Ridgebury - Whitman soil series.

The Woodbridge series (56.9 acres) consists of soils that have formed over glacial till deposits. A hard compact layer exists at 20 to 30 inches below grade and a seasonal water table is found at 12-20 inches. Limitations to subsurface sewage disposal are severe and feasibility is dependent upon the presence sufficient slope, to allow curtain drain installation to control the seasonal water table, and of sufficient depth to the compact soil layer, to allow the installation of a leaching system with the botton at least 6 and preferably 12 inches above the compact layer. The size of the system, which is based upon testing in the compact layer, would be relatively large.

The Sutton series (22 acres) consists of soils formed over glacial till deposits. A seasonal water table exists at 10 to 20 inches depth. Limitations to subsurface sewage disposal are dependent upon ability to control the seasonal water table. This may be more difficult than with the Woodbridge series as no distinct hard compact layer may be present and this may hamper curtain drain effectiveness.

The Leicester - Ridgebury - Whitman series (9.9 acres) consists of soils that are poorly to very poorly drained, are very wet, and are designated as inland wetland. Subsurface sewage disposal limitations are very severe and such use should not be considered.

ROADS/TRAFFIC

Buff Cap Road is a town-owned and-maintained roadway. Due to the winding nature of the road at the site location, line-of-sight problems could develop with added traffic. An increase in traffic volume may also require general upgrade of Buff Cap Road. Consideration should be given to making the access roadway one-way, with the exit or entrance on Plains Road. This would require a right-of-way onto Plains Road. Security of the area could be a drawback to establishing separate exit-entrance areas. If exit/entrance is on Buff Cap Road, road construction should utilize the present access road configuration to avoid additional disturbance to the wetlands and minimize construction costs.

NATURAL HAZARDS

The ponds, wetlands and other seasonally wet areas may generate mosquito and other insect pest problems during the summer months. Placement of the tent and performance pavilion as shown on the conceptual plan would maximize insect/human encounters. Consideration should be given to relocation of facilities; otherwise,

chemical control may be necessary.

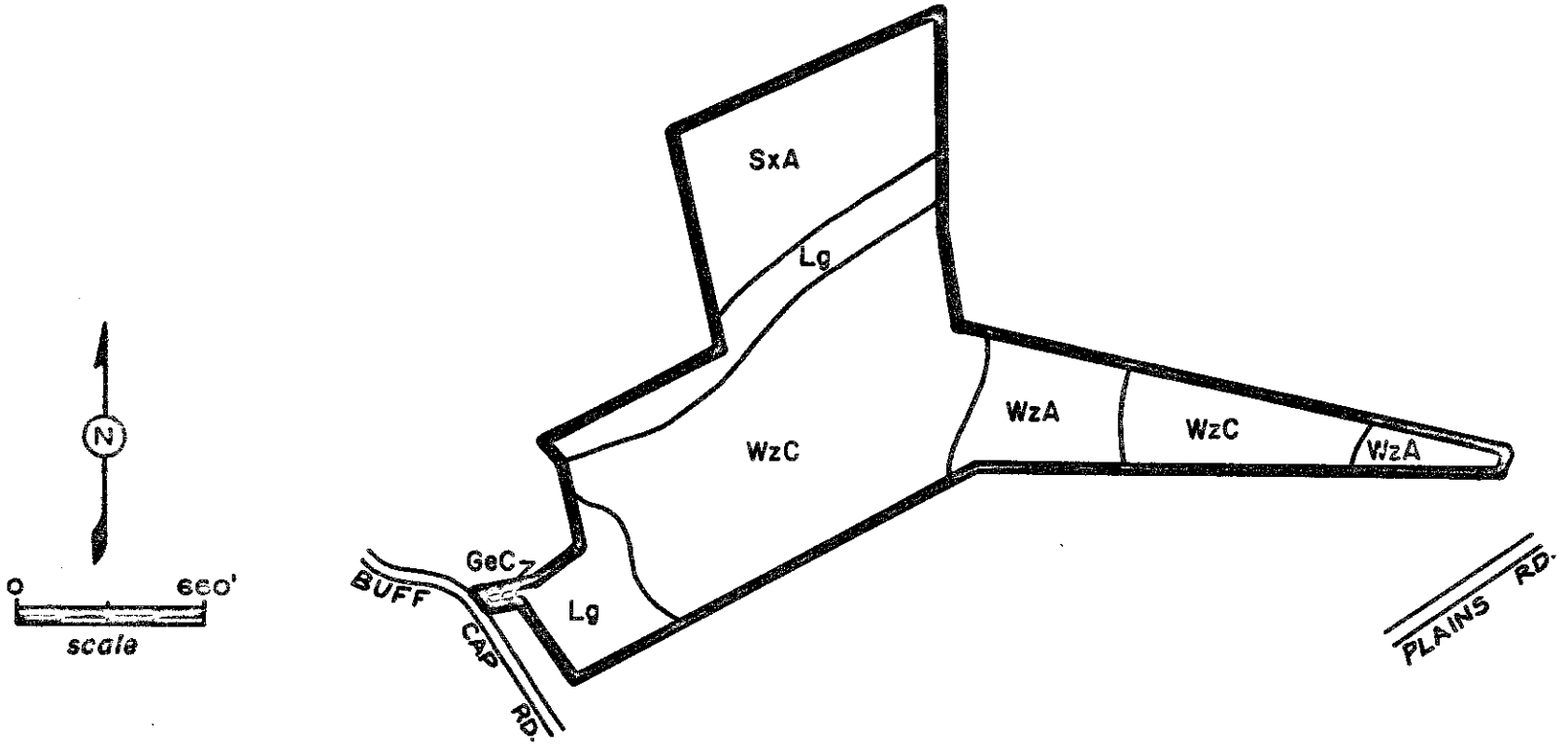
The moderately well-drained nature of the soils in the spectator areas could present wetness problems to individuals sitting on the ground. Benches may be necessary, especially after rainy periods.

The existing waterway will help control surface runoff in the spectator area during rain, but it will not significantly affect moisture content within the soils.

Appendix

Soils

OMNI ARTS CENTER
TOLLAND, CONNECTICUT



This is an enlargement from the original 1,320'/inch scale to 660'/inch.

Information taken from: Soil Survey, Tolland County, Connecticut, 1961; Soil Survey Sheet No. 7: prepared by United States Department of Agriculture, Soil Conservation Service, advance copy, subject to change.

SOILS DATA - GOODSTEIN PROPERTY

Limitations For Certain Land Uses

Map Symbol and Soils Series	Principle Limiting Factor	Septic Tank	Dwelling with Basement	Dwelling without Basement	Roads and Streets	Lawns and Landscapes	Camp Areas	Picnic Areas	Paths and Trails
GeC Gloucester & Charlton	Droughty & Stony	Severe Large Stones	Moderate Large Stones	Severe Large Stones	Moderate Slope	Moderate Large Stones	Mod. Slope	Mod. Slope	Mod. Large Stones
Lg Leicester-Ridgebury-Whitman Complex	Wetness Poorly Drained	Severe Large Stones, Wetness	Severe Large Stones, Wetness	Severe Large Stones, Frost Action	Severe Large Stones, Frost Action	Severe Large Stones, Wetness	Severe Large Stones, Wetness	Severe Large Stones, Wetness	Severe Large Stones, Wetness
SxA Sutton	Seasonal High Water Table	Severe Wetness	Severe Large Stones, Wetness	Severe Large Stones	Moderate Frost Action, Large Stones	Severe Large Stones	Severe Large Stones	Mod. Large Stones	Severe Large Stones
WzA Woodbridge	Hardpan	Severe Slow Percolation	Severe Wet	Severe Frost Action	Severe Frost Action	Severe Large Stones	Severe Large Stones	Severe Large Stones	Severe Large Stones
WzC Woodbridge	Hardpan	Severe Slow Percolation	Severe Wet	Severe Frost Action	Severe Frost Action	Severe Large Stones	Severe Large Stones	Severe Large Stones	Severe Large Stones

SOILS DATA - GOODSTEIN PROPERTY

Proportional Extent

Soil Series and Map Symbol	Approximate Acres	Approximate % of Total Acres
Gloucester and Charlton, GeC	0.12	0.13
* Leicester-Ridgebury-Whitman, Lg	9.9	11.1
Sutton, SxA	22.0	24.7
Woodbridge, WzA	47.0	52.9
Woodbridge, WzA	9.9	11.1
Total	88.9	

*Inland Wetlands as defined by P.A. 155 as amended

SOIL INTERPRETATIONS FOR URBAN USES

The ratings of the soils for elements of community and recreational development uses consist of three degrees of "limitations:" slight or no limitations; moderate limitations; and severe limitations. In the interpretive scheme various physical properties are weighed before judging their relative severity of limitations.

The user is cautioned that the suitability ratings, degree of limitations and other interpretations are based on the typical soil in each mapping unit. At any given point the actual conditions may differ from the information presented here because of the inclusion of other soils which were impractical to map separately at the scale of mapping used. On-site investigations are suggested where the proposed soil use involves heavy loads, deep excavations, or high cost. Limitations, even though severe, do not always preclude the use of land for development. If economics permit greater expenditures for land development and the intended land use is consistent with the objectives of local or regional development, many soils and sites with difficult problems can be used.

Slight Limitations

Areas rated as slight have relatively few limitations in terms of soil suitability for a particular use. The degree of suitability is such that a minimum of time or cost would be needed to overcome relatively minor soil limitations.

Moderate Limitations

In areas rated moderate, it is relatively more difficult and more costly to correct the natural limitations of the soil for certain uses than for soils rated as having slight limitations.

Severe Limitations

Areas designated as having severe limitations would require more extensive and more costly measures than soils rated with moderate limitations in order to overcome natural soil limitations. The soil may have more than one limiting characteristic causing it to be rated severe.

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, climatologists, soil scientists, landscape architects, archeologists, recreation specialists, engineers and planners. The ERT operates with state funding under the supervision of the Eastern Connecticut Resource Conservation and Development (RC&D) Area.

The Team is 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, sanitary landfills, commercial and industrial developments, sand and gravel operations, 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 officials 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. This request letter should include a summary of the proposed project, a location map of the project site, written permission from the landowner allowing the Team to enter the property for purposes of review, and a statement identifying the specific areas of concern the Team should address. 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 regarding the Environmental Review Team, please contact Jeanne Shelburn (889-2324), Environmental Review Team Coordinator, Eastern Connecticut RC&D Area, 139 Boswell Avenue, Norwich, Connecticut 06360.