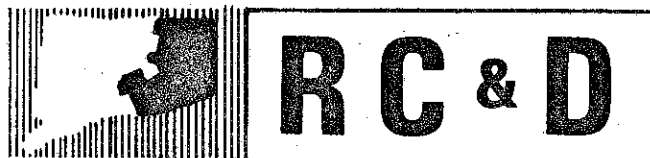


Environmental review team report

PROPOSED SITE FOR QUINEBAUG VALLEY COMMUNITY COLLEGE



Danielson, Connecticut



EASTERN CONNECTICUT
RESOURCE CONSERVATION AND DEVELOPMENT PROJECT

ASSISTED BY: U.S. DEPARTMENT OF AGRICULTURE,
SOIL CONSERVATION SERVICE AND COOPERATING AGENCIES

ENVIRONMENTAL REVIEW TEAM REPORT
ON
PROPOSED CAMPUS SITE FOR
QUINEBAUG VALLEY COMMUNITY COLLEGE
DANIELSON, CONNECTICUT

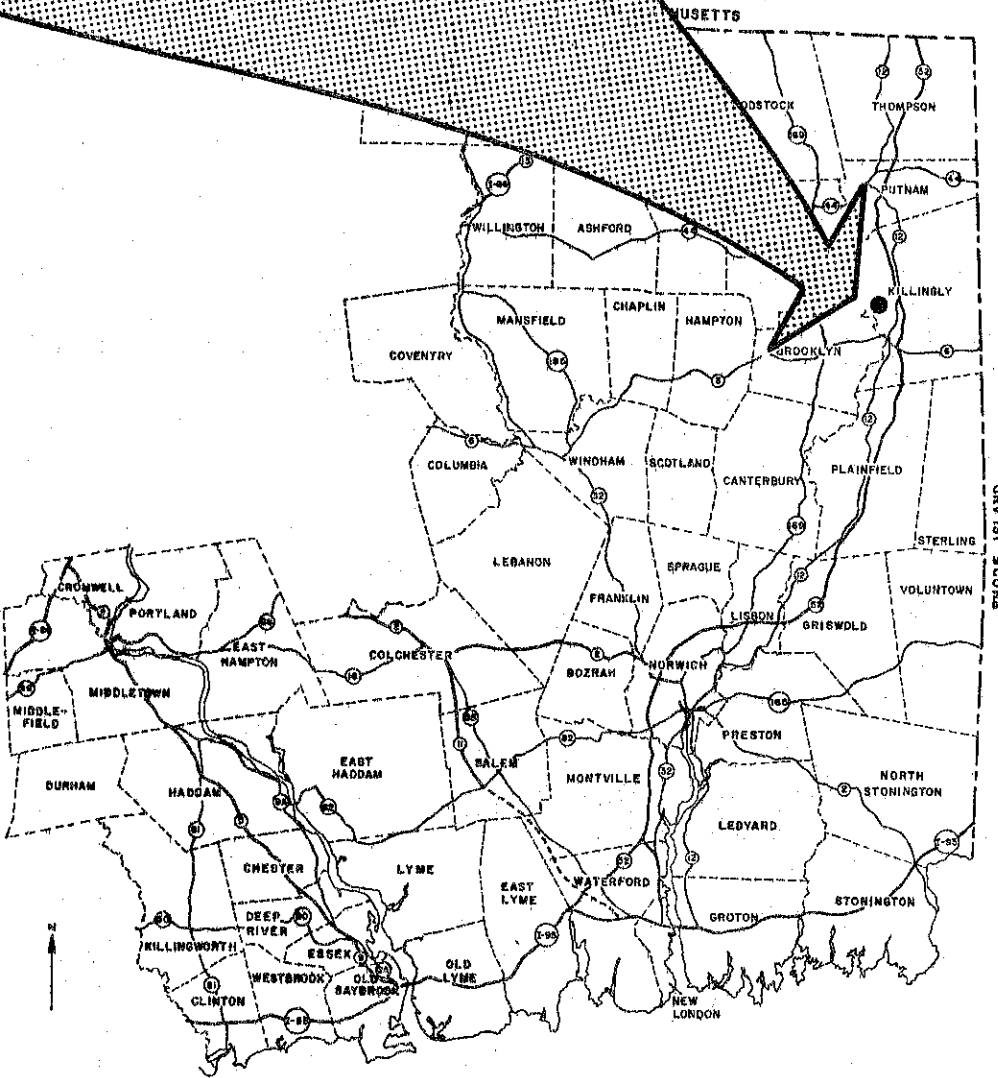
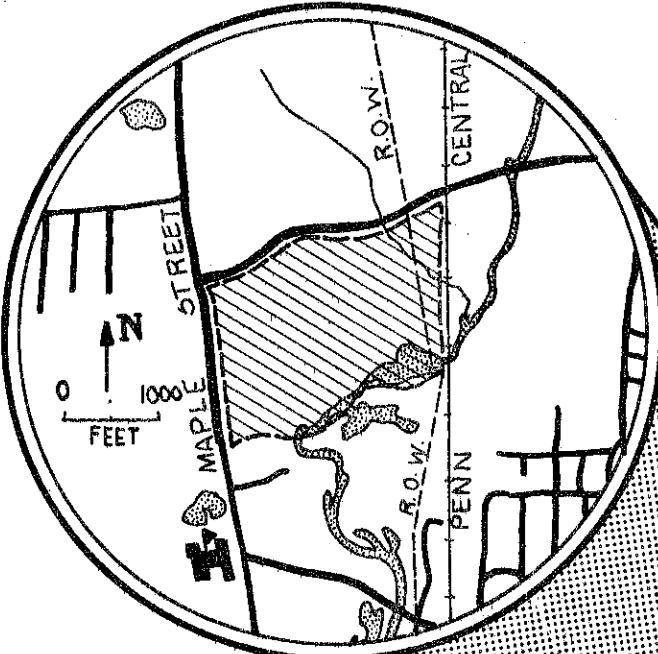
FEBRUARY, 1977

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by a grant under Title 1, Section 107(a)4 of
the Housing and Community Development Act
of 1974, 24 CFR, Part 570, Section 570.406.*

EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT PROJECT
Environmental Review Team
139 Boswell Avenue
Norwich, Connecticut 06360

LOCATION OF STUDY SITE

PROPOSED SITE FOR
QUINEBAUG VALLEY COMMUNITY COLLEGE
DANIELSON, CONNECTICUT



EASTERN CONNECTICUT
RESOURCE CONSERVATION AND DEVELOPMENT PROJECT

ENVIRONMENTAL REVIEW TEAM REPORT
ON THE
PROPOSED CAMPUS SITE FOR QUINEBAUG VALLEY
COMMUNITY COLLEGE
DANIELSON, CONNECTICUT

This report is an outgrowth of a request from the State of Connecticut, Public Works Department, with permission from the landowner, to the Windham 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 Committee for their consideration and approval as a project measure. The request was approved and the measure reviewed by the Eastern Connecticut Environmental Review Team (ERT).

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

The Team that field-checked the property consisted of the following personnel: Al Weeks, District Conservationist, SCS; Tim Dodge, Wildlife Biologist, SCS; Robert Miller, Geologist, Connecticut Department of Environmental Protection (DEP); Martin Cubanski, Forester, DEP; Joe Piza, Fisheries Biologist, DEP; David Miller, Climatologist, University of Connecticut Cooperative Extension Service; Malcolm Shute, Sanitarian, Connecticut Department of Health; and Linda Simkanin, ERT Coordinator, Eastern Connecticut RC&D Area.

The Team met and field-reviewed the site on Thursday, December 16, 1976. Reports from each Team member were sent to the ERT Coordinator for review and summarization.

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 any developers and the Public Works Department. 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 you will find this report of value and assistance in making your decisions on this particular site.

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

INTRODUCTION

Quinebaug Valley Community College (QVCC) proposes to develop as its campus, a 100 acre tract of land locally known as the Alden Danielson Farm. At the present time, QVCC has no campus of its own and is dependent upon host institutions for classroom, laboratory, and administrative space. The Ellis Technical School and Killingly High School presently provide this space to the College, and it is on a time-limited basis.

After considering approximately 25 different sites, the College favored the Danielson Farm site for many reasons. The positive features of this site are largely due to its location which is (1) central to the 15 town region from which the College draws its student body (2) immediately adjacent to the Ellis Technical School which provides much of the present classroom and all of the administrative offices and (3) immediately adjacent to the Danielson Airport where students can work toward an Associate degree in aviation maintenance.

The Environmental Review Team field-checked the site which is located in the Town of Killingly, west of Connecticut Route 52, and within a mile north of the village of Danielson. The site is undeveloped and is in partial agricultural use. Public sewers and water supply will be available to the site.

This ERT report will describe the natural characteristics of the site including topography, geology, soils, forest cover, and wildlife habitat. Consideration will be given to the compatibility and suitability of the development relative to the natural resource base, as well as to the existing development pattern including roads and utilities. Comments or recommendations made within this report are presented for consideration by the College in the preparation and review of the site development plans, and should not be construed as mandatory or regulatory in nature.

TOPOGRAPHY AND GEOLOGY

The proposed site occupies a small plateau of approximately 100 acres to the north and west of the Fivemile River. Chicken Farm Road and Maple Street form the north and west boundaries, respectively, the railroad track forms the east boundary, and the Fivemile River forms a portion of the southern boundary of the site. Elevations on the site range from about 230 feet at the level of the Fivemile River, to a knoll of 280 feet. The topography is undulating, with the exception of a steeply sloping escarpment descending to the Fivemile River in the southeast corner of the site.

Bedrock Geology

The entire site is underlain by bedrock known as the lower member of the Quinebaug Formation. Although no bedrock outcrops were observed on the site, the bedrock has been described at other locations as being light-to-dark greenish-gray in color with grain sizes ranging from medium to fine. The depth to bedrock in this area ranges from approximately five feet at the north end of the property to 100 feet at the southeastern portion of the property.

Surficial Geology

The surficial deposits found on the site are of three general types: till, alluvium, and stratified drift. Till is a poorly sorted mixture of rock fragments deposited by glacial ice as they melted and retreated from the area. Till has very little economic importance and is not very suitable as a fill material. A small section of till is observable on the northwest corner of the site.

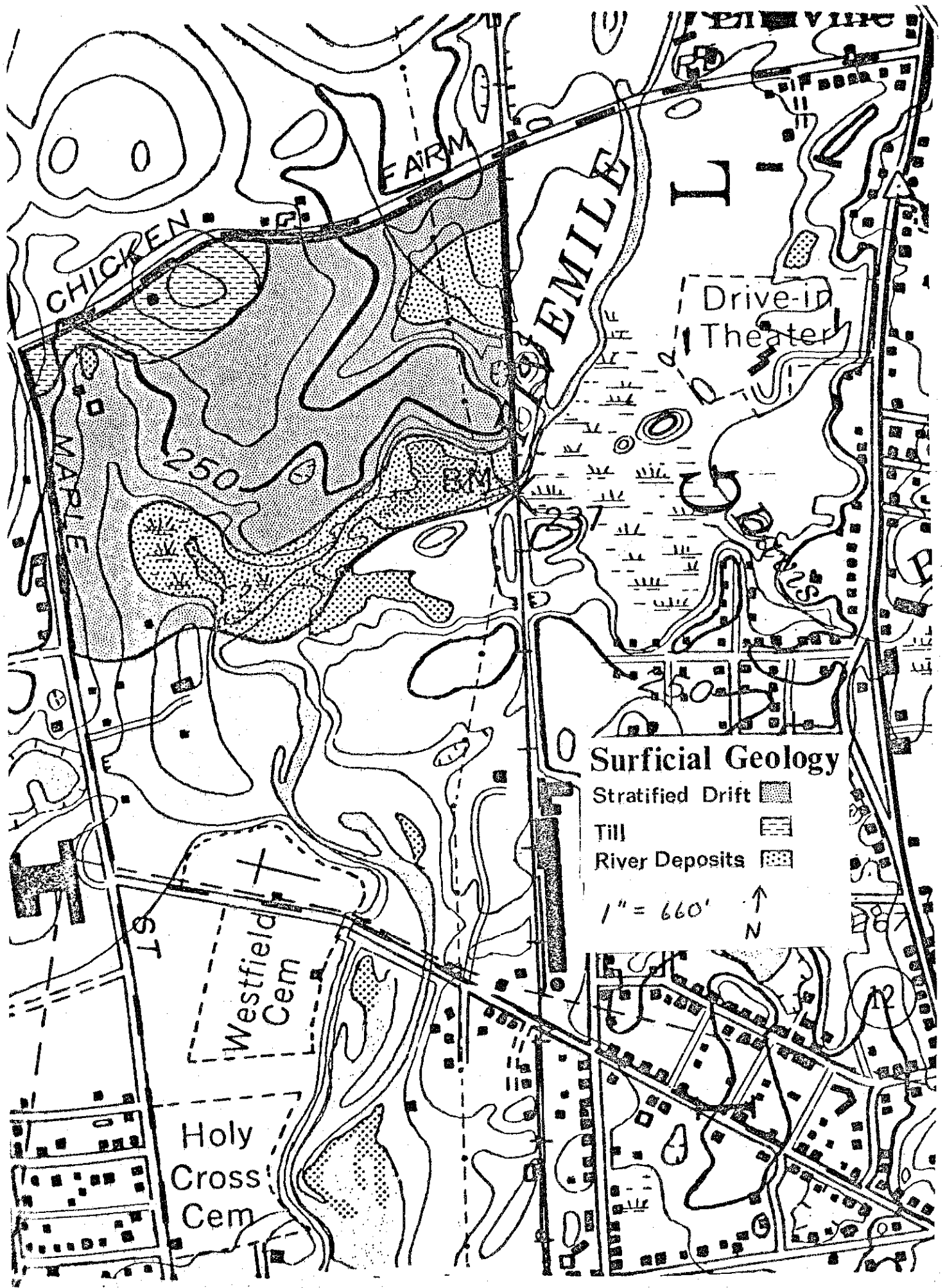
Alluvium is composed of a well sorted combination of sand, silt, and gravel and forms what is usually considered the floodplains of a river. This is evident on this site by the alluvium deposits which are located along the Fivemile River.

The major surficial deposit within this area is stratified drift. This material was deposited in glacial streams and lakes. The composition is similar to that of alluvial deposits except it generally is better sorted. Stratified drift is a good construction material and should be considered a non-renewable natural resource. Refer to the Surficial Geology Map on the following page.

Hydrology

All the surface water that runs off the existing site either travels directly into the Fivemile River as overland flow or into a small unnamed brook on the northeastern side of the site which in turn empties into the Fivemile River. The approximate total drainage area for the Fivemile River at the site area is 1261 square miles; of this approximately 5 square miles is drainage area for the site. Considering the volume of the Fivemile River's flood flows, development on the site will not appreciably aggravate flooding downstream.

Problems may develop during low river flow periods. All parking lot runoff contains oils, either from the asphalt used as a base material or from leaking vehicles. Short summer rains of low intensity do not increase the flow of the river beyond low flow rates, thus creating a situation where less water is available for dilution of surface runoff contaminants.



SOILS

A detailed soils map of the site and a soils limitations chart are provided in the Appendix of this report. As the map is an enlargement from the original 1320'/inch scale to 660'/inch scale, the soil boundary lines shown should not be viewed as absolute boundaries but rather as guidelines to the distribution of soil types on the property. The soils map, along with the Soil Interpretations report, Windham County Soil and Water Conservation District (USDA, SCS, 1975), can serve as an educational tool regarding the identification and interpretation of soils.

The soils limitations chart for certain land uses which is found in the Appendix of this report, provides useful information concerning each soil type found on the proposed industrial park site. An explanation of the numbered ratings for particular land uses is provided on the last page of the Appendix.

The soils on this site can be grouped in three natural soil groups. About 75% of the soils on the site are in Natural Soil Group A. (Refer to the Limitations Chart in the Appendix of this report). Group A soils are terrace soils over sands and gravels. The soils are generally well drained with droughtiness and slope being the chief limiting factors. Hinckley, Merrimac, Sudbury, and a Hinckley-Enfield complex are the dominant soil types in the Group A soils on this site. These soils are all excessively drained soils developed in sandy deposits (Merrimac) and stratified sandy, gravelly and cobbly water deposits (Hinckley), and are usually deeper than 10 feet.

There is one inclusion of Group D soils, mapping unit 17MC, located in the northern portion of the site. Group D soils, are upland soils, rocky and shallow to bedrock. Soil depth varies, and can be as shallow as 20 inches.

Group E, or floodplain soils, make up the remaining soils on the site. Mapping unit Saco 823 is found along the southern border of the site, and this is an inland wetland regulated soil type as identified in Public Act 155. The very poorly drained Saco soil type has water ponded on the surface for significant periods in winter and spring. The water table usually remains within three feet of the soil surface throughout the year. This area provides a natural habitat for wetland wildlife. Flood hazard and a fluctuating high water table restricts most uses in this soil type.

FOUNDATION DEVELOPMENT AND GRADED CONDITIONS

About 31% of the site would have slight limitations for buildings with basements. Another 15% would have moderate limitations because of slope. Another 29% would have severe limitations because of wetness. The remaining 25% would have to be leveled for site preparation for buildings and parking lots. Differential settlement could be a problem if the fill material is not placed properly. Glacial outwash soils would have stratified sands and gravel in the subsoil. To assure uniformity in placing the fill material, appropriate tests should be conducted to determine the suitability of the fill for foundation material. Erosion would be a serious problem if large acreage was denuded at one time.

Grades

Cut banks should not exceed 2 to 1, or a drop of one foot in two feet of length. On fill, the banks should be 3 to 1, or a drop of one foot in three feet

of length. Experience indicates that on a 3 to 1 or gentler slope, maintenance such as mowing, fertilizing and liming can be easily accomplished.

EROSION AND SEDIMENTATION CONTROL

Provisions should be made to prevent excessive erosion and sedimentation during development. It would be desirable for the College to require the preparation of a plan for erosion and sedimentation control prior to breaking land. The plan should show the construction timetable, the proposed handling of disturbed areas, and the provisions for surface water control. Components of effective erosion and sedimentation control can include both mechanical and vegetative measures.

Mechanical measures include: land grading of only those areas going into immediate construction; diversions to intercept and divert rainfall runoff without causing harmful effects on land users within a watershed's downstream area; storm drains to dispose of runoff from streets, parking lots, and buildings; catch basins; sediment basins to detain runoff and trap sediment; grassed waterways and/or lined channels; drop structures to safely carry water to protected outlets; and the installation of permanent roads as early as possible.

Vegetative measures include: keeping much of the area under existing vegetative cover and keeping areas devoid of cover exposed for the shortest practical period of time; temporary seeding of cover crops plus mulching to stabilize areas during construction; and establishment of permanent vegetative cover after construction.

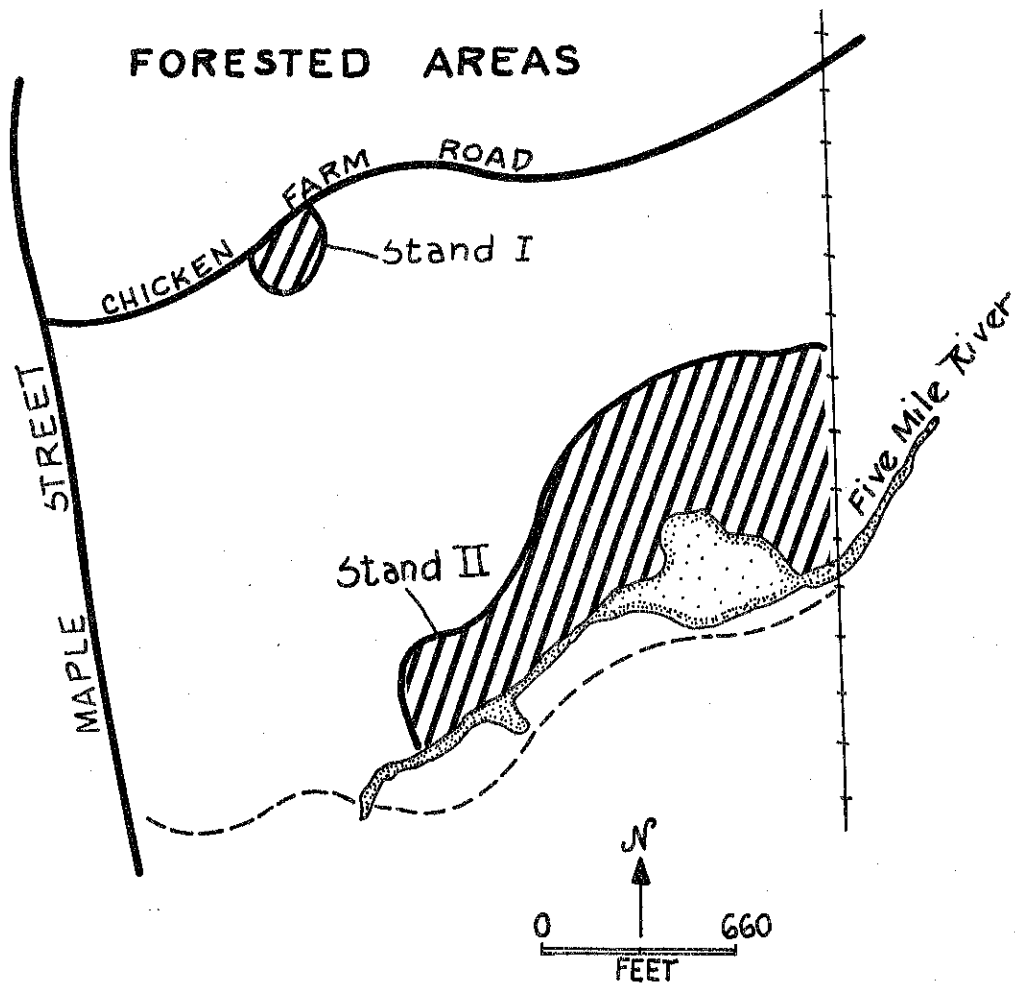
Connecticut's Erosion and Sediment Control Handbook published by the Soil Conservation Service will aid both the developer and the town in preparing and approving an adequate erosion and sediment control plan. Standards and specifications for both mechanical and vegetative practices listed within the Handbook are available at the Windham County Soil Conservation Service office, Wolf Den Road, Brooklyn, Connecticut.

FORESTRY

The 100 acre site proposed for the development of the campus contains approximately 21 acres of forested land. This forested area consists of two distinct forest types separated by open field. They are located on the Forested Areas map and are described below.

Stand I

This stand is a 40 year old white pine plantation of approximately one acre located along the property's northern boundary. It is overstocked with a basal area of over 160 square feet per acre. Nonetheless, the stand appears healthy and of good form. Because it poses no obstacle to the proposed development of the Community College and since it is entirely surrounded by open field, it is recommended that this stand be left as an aesthetic component of the College campus. However, a thinning of this stand is necessary in order to maintain it in a healthy vigorous condition.



Approximately 20 percent of the basal area should be marked by a service forester and removed. In addition, the lower dead branches of the remaining stems should be pruned to heights of up to 17 feet.

Stand II

The stand which is located along the southeastern boundary of the property is approximately 20 acres in size. Its composition consists of saw log size 70-80 year old white and red oaks as well as scattered white pine of a similar age class. In addition, the stand contains a moderate to heavy understory of 20-30 year old white pine. This understory accounts for a high stand basal area which ranges from 110-170 square feet per acre. Stand volume is between 2500 and 3000 board feet per acre, 30 percent of which is grade material. Stand condition is generally good with little evidence of tree mortality resulting from previous gypsy moth infestations.

It is recommended that this stand be excluded from intensive development. Its steep sloped terrain and close proximity to the Five Mile River combine to make this stand a sensitive and erosion prone area. Instead, it is advised that it be left wooded to serve as a buffer zone between the campus and river for aesthetics and soil stabilization. Silvicultural practices can and should be applied to this stand, although extreme care must be taken not to disturb erosion prone areas. Under the supervision of a service forester, a selective thinning of the poorer quality hardwoods should be carried out, thereby releasing much of the suppressed pine understory.

Since both stands contain merchantable material, they can be silviculturally treated at a profit. Information on local markets for forest products is available from the Department of Environmental Protection, Forestry Unit, Room 262, State Office Building, 165 Capitol Avenue, Hartford, Connecticut. Educational considerations of these woodland areas should not be overlooked. The pine and hardwood stands are two good representatives of Connecticut's major forest types and could be used to advantage as outdoor laboratories for classroom biological studies. Dendrology, plant physiology, silvics and entomology are but a few course topics which could make full use of these existing campus woodlands.

WILDLIFE HABITAT

The 100 acre site is primarily openland with the exception of the wooded acreage described above. Contiguous to the Fivemile River are 15-20 acres of wetlands which vary from a shrub swamp condition to shallow ponded water.

The open fields contain grasses such as little bluestem and orchardgrass, as well as perennial weeds. Along Chicken Farm Road, field areas are being invaded by spreading juniper and red cedar. Fencelines contain some wild cherry, and brushy growth. These field areas provide openland habitat used by birdlife (mostly songbirds) and small mammals such as cottontail rabbit and red fox.

Within the border of woodland along the Fivemile River, the understory is generally sparse in density containing greenbriar, blueberry, sassafras, and occasional viburnams. The woodlands provide habitat for songbirds, woodpeckers, small mammals, such as raccoon, gray squirrel and animals which use the openland and wetland which surround it. The woodland also provides a buffer which protects the river and wetlands and increases the collective value of these areas, over what they would be if considered separately.

The wetland areas are an integral part of the Fivemile River which is considered a class B water quality stream in all but its lower reach. A shallow backwater area of approximately 3-5 acres exists along the stream channel and contains emergent vegetation, grassy hummocks, and a dense shrubby growth of silky dogwood and sweet pepperbush along the edges. These areas as well as the stream provide excellent habitat to wetland wildlife such as the black duck, wood duck and mallard duck. River otter, muskrat and woodcock also frequent this type habitat. Its value is also increased due to the large wetland area immediately east of the railroad tracks.

During and following development, surface runoff will increase due to roof areas, parking lots and other compacted areas. Storm and parking lot catch basins which trap sediment and separate oil should be considered to reduce adverse effects of runoff on the river. Some added runoff will undoubtedly reach the river, but natural filtration through the well drained soils will minimize adverse effects upon this valuable wildlife habitat resource.

Fish Habitat

Preliminary site plans viewed by the ERT on the day of the review indicated an intention to leave the marsh areas contiguous to the Fivemile River in their natural, or streambelt condition. A streambelt is a natural environmental corridor. Some basic components of a streambelt are: the stream itself; adjacent land subject to stream overflow; associated wetlands; adjacent lands with special resources

of public or environmental value (as scenic areas or wildlife habitat); future sites for water development as flood control, or reservoirs; and any areas necessary as links to form continuous streambelt systems. As the Fivemile River is heavily stocked with trout, protection of the streambelt is important for the maintenance of the present stream water quality.

AESTHETICS AND PRESERVATION

The wetland and woodland areas should remain in an undisturbed condition to preserve their natural values and protect the river. At some future date, the college might consider development of a natural area in the woodland which could be a blending of arboretum, study area and wildlife habitat. The potential also exists for habitat management. The college biology department might want to consider developing a long range management plan in conjunction with a wildlife course. Management could include waterfowl plantings, fruiting shrubs and developing tall cover between the woodland and open field areas.

The small pond north of the farmstead should also be preserved. The gravel pit area is about five acres in size and the banks should be stabilized and seeded. Slopes should be shaped to two to one. A low maintenance seed mixture would be Crown Vetch and Tall Fescue. As the gravel pit has been dug down nearly to water level, before buildings are planned, a study should be made to determine the frequency and intensity (range) of flooding in areas adjacent to the Fivemile River.

As most of the soil is glacial outwash, care will have to be taken to save as much topsoil as possible when disturbing areas for roads, parking lots and buildings. Even in saving as much topsoil as possible, areas to be maintained in vegetation may need irrigation during dry periods. Areas to be mowed should be seeded with good lawn mixture and yearly maintenance including fertilizer and lime requirements should be determined by soil testing. The natural waterway located on the west side of the property, running parallel to Maple Street, should be maintained and used as an outlet for road, parking lots and drainage around the buildings.

CLIMATOLOGY

The overall climate of the area is typical of the northeastern Connecticut area with relatively mild winters and cool humid summers.

Mean Annual Air Temperature	48°
Annual Heating Degree Days	6600
Mean Annual Precipitation	46 inches
Mean Seasonal Snowfall	50 inches
Average date of last occurrence of 32°F temp.	May 10
Average date of first occurrence of 32°F temp.	Sept. 30

Air Quality

The proposed use should have no effect on the general air quality of the area.

Energy Conservation

The site is very exposed to northerly winds in the winter and therefore normal building designs will be very inefficient during winter. Buildings should be oriented facing south (doors and windows to the south) with blank walls facing Northwest, the direction of prevailing winter wind. Wind breaks of large coniferous trees along the north and west edges of the property would help considerably.

The site is on a slight south facing slope. Thus the potential for capturing solar energy is higher than normal if the buildings are designed with this in mind.

WATER SUPPLY

Public water supply is available to service the site from the Crystal Water Company. Although it will be necessary to resolve the water pressure problem, the cost of developing an on-site water supply including design for storage, distribution, and possible treatment, and designing, installing and maintaining a subsurface sewage disposal system plus reserve area, which would tie up a large portion of land, might far outweigh that of a looped or pumped water system and sewer connections and maintenance.

WASTE DISPOSAL

Public sewers will be available to service the site, thus eliminating need to locate suitable locations for subsurface sewage disposal systems.

HAZARDS

As public sewers are available to service the site, groundwater pollution should not be a problem providing that storm drainage and proper erosion and sediment control handling is provided for the area during construction. As mentioned earlier, the extent of the flood hazard area in the vicinity of the gravel pit should be determined before any building is planned for the area.

ROADS AND UTILITIES

Access roads from both Maple Street and Chicken Farm Road should be planned for the campus. As mentioned earlier, grades for roads, plus road drainage should be adequately planned so as not to encourage or direct uncontrolled runoff, especially into the environmentally sensitive areas discussed in the HABITAT sections.

The area adjacent to the power line located in the north-west corner should be planned for open space rather than location of a portion of the school's facilities.

COMPATIBILITY OF SURROUNDING LAND USES

The west side of Maple Street is presently in educational/institutional use as a regional technical school. Woodland, wildlife habitat, and a community college campus would be compatible with the surrounding land uses.

APPENDIX

QUINEBAUG VALLEY COMMUNITY COLLEGE

PROPORTIONAL EXTENT OF SOILS AND THEIR LIMITATIONS FOR CERTAIN LAND USES

Soil Series	Natural Soil Group	Soil Symbol	Approx. Acres	Percent of Acres	Principal Limiting Factor	Urban Use Limitations*				
						On-Site Sewage	Buildings with Basements	Streets & Parking	Land-Scaping	Athletic Fields
Hollis-Rock Outcrop Complex	D-2	17MC	7	7	Slope	3	3	3	3	3
Charlton	B-1a	32B	1	1	Slope	1	1	1	1	2
Hinckley	A-1b	60C	4	4	Slope	2	2	2	2	3
Hinckley	A-1c	60D	15	15	Slope	3	3	2	3	3
Merrimac	A-1d	70A	8	8	Slope	1	1	1	1	2
Merrimac	A-1d	70B	17	17	Slope	1	1	1	1	2
Adrian and Palms Muck	A-3b	91**	2	2	Wet, floods	3	3	3	3	3
Hinckley-Enfield Complex	A-1b	213C	11	11	Slope	2	2	2	2	3
Sudbury	A-2	455A	12	12	Wetness	3	3	1	2	2
Agawam	A-1d	695B	5	5	Slope	1	1	1	1	2
Saco	E-3b	823**	15	15	Floods, wetness	3	3	3	3	3
Fresh Water Marsh		F.M.	1	1						
Gravel Pit		G.P.	2	2						
			100	100%						

* Urban Use Limitations: 1 = slight; 2 = moderate; 3 = severe. (See back of this page for a further explanation of limitation classifications.)

** Inland Wetland soils defined and regulated under Public Act 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.