

environmental review team report

**LOCARNO
and
GRABOW
PROPERTY**

East Lyme, Connecticut



RC & D

EASTERN CONNECTICUT
RESOURCE CONSERVATION AND DEVELOPMENT PROJECT

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

LOCATION OF STUDY SITE

LOCARNO AND GRABOW PROPERTY
EAST LYME, CONNECTICUT

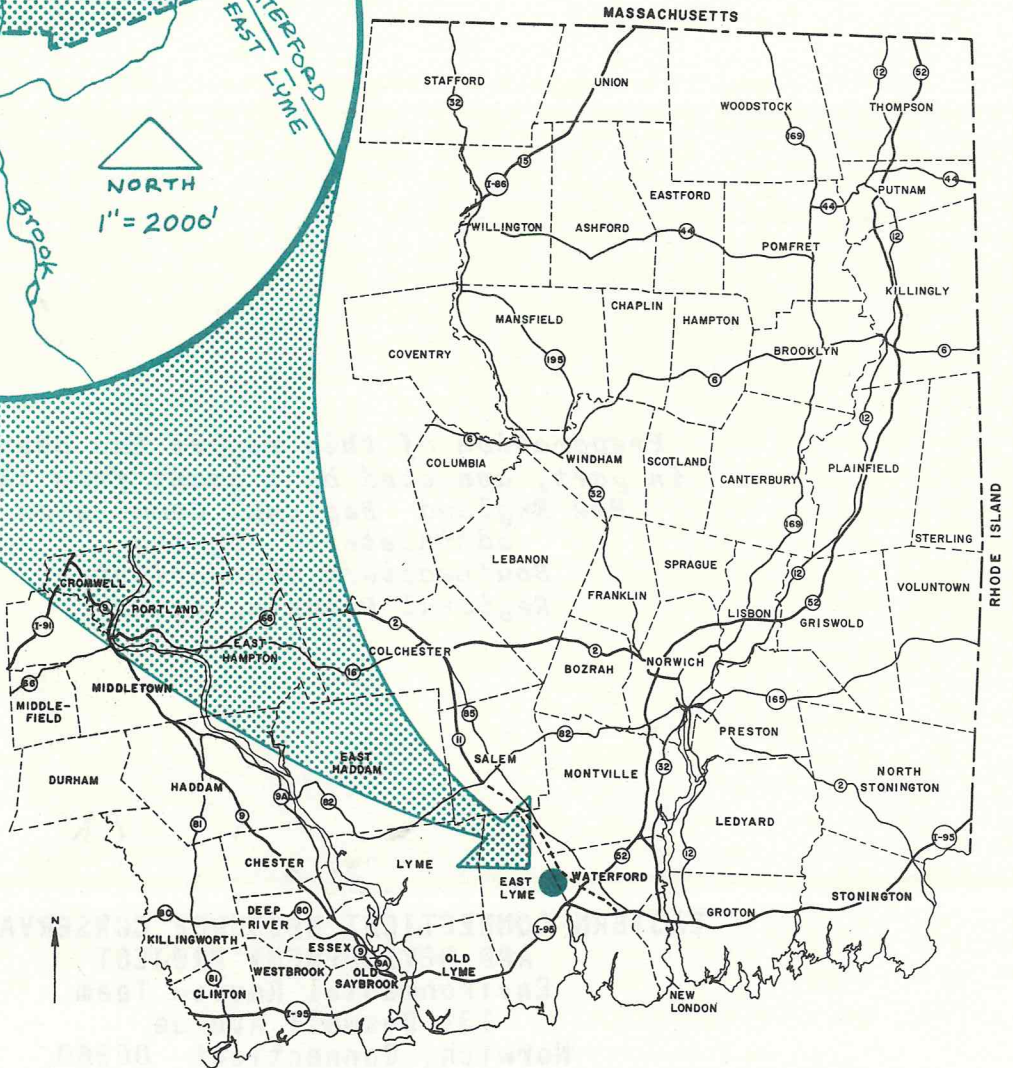
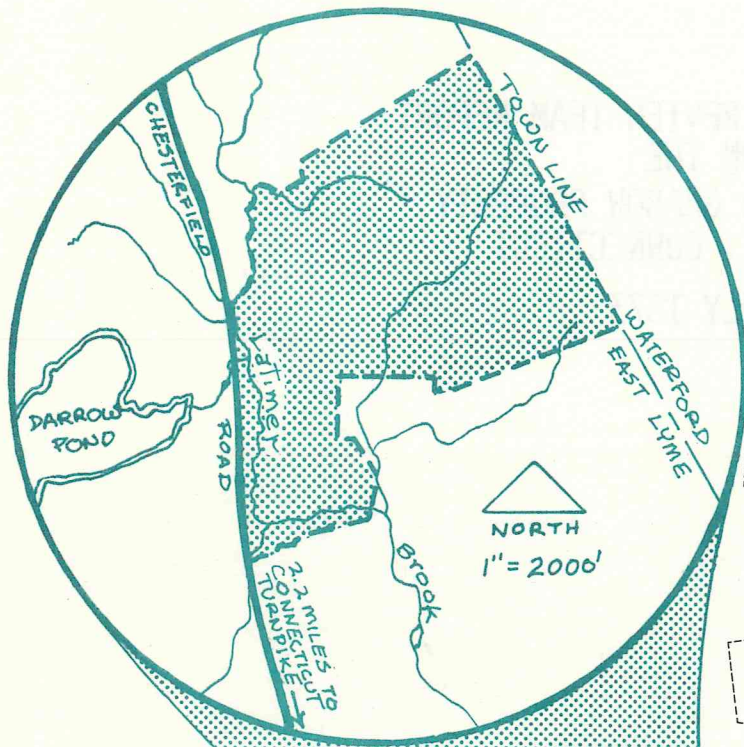
ENVIRONMENTAL REVIEW TEAM REPORT
ON THE
LOCARNO AND GRABOW PROPERTY
EAST LYME, CONNECTICUT
JULY 1973

*Preparation of this report has been,
in part, assisted by a grant from the
New England Regional Commission
administered by the
Southeastern Connecticut
Regional Planning Agency*

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

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LOCARNO AND GRABOW PROPERTY
EAST LYME, CONNECTICUT



EASTERN CONNECTICUT
RESOURCE CONSERVATION AND DEVELOPMENT PROJECT



ENVIRONMENTAL REVIEW TEAM REPORT
ON THE
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EAST LYME, CONNECTICUT

This report is an outgrowth of a joint request from the Town of East Lyme Planning Commission and Conservation Commission, with the approval of Peter Locarno and Harold Grabow, to the New London County Soil and Water Conservation District (S&WCD). The S&WCD referred this request to the Eastern Connecticut Resource Conservation and Development (RC&D) Project Committee for their consideration and approval as a Project measure. The request has been approved and the measure reviewed by the Environmental Review Team.

The soils of the site were mapped by a soil scientist, of the USDA Soil Conservation Service. Reproductions of the soil survey, natural soil group descriptions, and a table of limitations for urban development were forwarded to all members of the Team prior to their review of the site.

The Team that reviewed the Locarno and Grabow property consisted of the following personnel: Sherman Chase, District Conservationist, Soil Conservation Service (SCS); Edwin L. Minnick, Engineering Specialist, SCS; Dan Meade, Geologist, Natural Resource Center, State of Connecticut Department of Environmental Protection (DEP); Ed Golden, Wildlife Biologist, DEP; Charles L. Phillips, Richard Modlin, Fishery Biologists, DEP; Donald Capellaro, Principal Sanitarian, State of Connecticut Department of Health; David R. Miller, Climatologist, Connecticut Cooperative Extension Service, USDA; Thomas Seidel, Regional Planner, Southeastern Connecticut Regional Planning Agency; John Hester, Natural Resource Analyst, Northeastern Connecticut Regional Planning Agency; Barbara Hermann, Team Coordinator, Eastern Connecticut RC&D Project.

The Team met and reviewed the site on June 7, 1973. Reports from each team member were sent to the Team 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. The report identifies the existing resource base and evaluates its significance to the proposed development and also suggests considerations that should be of concern to both the administrative agency and the ~~State of Connecticut~~. 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 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,

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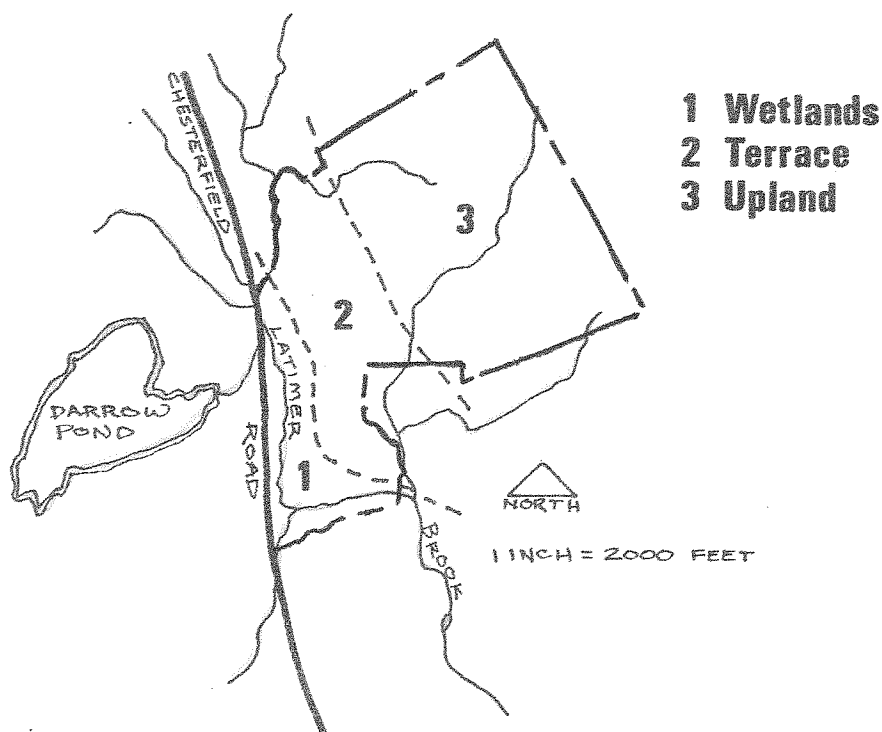
INTRODUCTION

The property of Peter Locarno and Harold Grabow lies totally within the drainage area of Latimer Brook in East Lyme, Connecticut. It is bordered on the east by the East Lyme-Waterford town line, on the west by Chesterfield Road, and encompasses an area of approximately 268 acres. The site can be separated into three identifiable areas: the southwest portion, which includes Latimer Brook and its adjoining wetlands; the central portion, a fairly level and open area overlying a sand and gravel terrace; and the eastern portion, with a hilly, rugged, and wooded terrain.

The developers' plans for the property include the construction of a 20 acre pond in the wetland area. The pond would be created by excavating sand and gravel. The depth of the pond will be determined by the depth of sand and gravel and difficulties in excavation. Under P.A. 155, the Inland Wetlands Act, the Conservation Commission is currently considering the proposed pond construction. Primary concerns include any resultant temperature change in Latimer Brook, its effect on the trout in the brook, and the silt and sedimentation problems during construction of the pond.

Following completion of the pond (if approved by the Conservation Commission), the remaining property will be developed for single-family homes. No specific plans have been drawn up for this area as yet, though the developers expect to use the cluster concept in their subdivision.

In presenting the Environmental Review Team's evaluation of this property, each of the three areas mentioned above will be considered separately with respect to its proposed development: Wetlands; Terrace; Upland. The sketch below shows the general location of the areas.



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EVALUATION

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WETLANDS

The only major development proposed in the wetland area is a 20 acre pond.

Inventory of Natural Resources

The wetland area that is proposed for pond construction is a unique vegetation (grass-sedge) association, that is rapidly disappearing in the area, along with the flora and fauna associated with it.

Bobwhite quail are plentiful in the area. The quail is not only a fine game species, but also a songbird. It is losing its habitat at an alarming rate along the coastline. The American woodcock is another bird dependent on the wetland. Other wild-life that are fairly abundant are the white-tailed deer, numerous species of songbirds, and small mammals such as the raccoon, opossum, skunk, and native mice.

Latimer Brook, which flows through the wetland area, is unique in Connecticut because of the sea run brown trout management program in its lower reaches below the proposed pond site. The brook is also unique in its ability to support stocked trout. The brook is the (only one in East Lyme) which is stocked by the state.

The low-lying swamp land has a generally level topography. Geologic materials here are basically the result of deposition of glacial melt waters with a minor amount of postglacial deposition. The postglacial deposits consist of both alluvial material deposited by Latimer Brook and swamp deposits. The alluvial material generally consists of sand and gravel with a little finer material, whereas the swamp deposits are chiefly organics, silts, and clays.

In the wetlands the water table should be, and was observed to be, extremely close to or at land surface. The presence of a favorable groundwater area has been noted by the Water Resources Division of the U.S. Geologic Survey in the Latimer Brook Valley. The area is rated as potentially yielding up to 1.3 million gallons per day with proper and complete development of wells.

Stream flow of Latimer Brook has been calculated by the same agency and the 90% duration low flow at the southern border of the property is estimated at being approximately 2.0 million gallons per day. Proper development of an aquifer for ground water supply would rely on induced infiltration of stream flow.

Pond Construction

The proposed pond would involve the excavation of aggregate material to an unspecified depth over a surface area of approximately 20 acres. Ultimately the depth of excavation will depend upon any one or several factors. Of considerable importance will be the nature (size ranges) of the materials encountered. If the alluvial and swamp deposits are relatively shallow and the glacial outwash underlying is of very fine grained nature (the value of the fines for aggregate is nil), excavation would probably stop at the interface. Slope stability of the cut will vary depending upon the material and may limit depth of excavation.

Method A

This is the plan which has been formally drawn up for consideration by the Conservation Commission. It involves constructing a diversion channel along the eastern edge of the wetland, just outside the area of the proposed pond, into which the stream would be diverted during construction. A dike would prevent the stream flow from entering the area of excavation. When the pond excavation is complete, the stream would then be allowed to flow directly through the lake and the diversion channel would be filled.

Method B

This method has previously been considered by the developers and was suggested as an alternative by several of the team members during the field review. Latimer Brook would be maintained in its existing bed except where it meanders across the wetland. Connector channels, lined with stone riprap, would be constructed in these areas to keep the brook on the western side of the wetland. A dike would be constructed on the east bank of the stream to prevent high flows from entering the area of excavation.

The pond itself would be excavated in the area east of Latimer Brook, resulting in a pond where the water level in the pond would either depend entirely on ground water conditions, or if so desired, the stream could be tapped to permit a small portion of stream flow to enter and leave the lake, thus creating a by-pass pond. By controlling the stream flow through the pond, the temperature effect on the brook below the pond can be controlled and will be negligible.

Advantages of Method A over B:

1. When completed, the lake would act as a sediment trap along Latimer Brook.
2. Method A would probably permit a greater volume of gravel to be extracted.

Advantages of Method B over A:

1. There would be less disturbance of the stream channel and, therefore, less chance of sediment being transferred downstream during construction.
2. There should be no significant change in water temperature of the stream as it passes through the area.
3. Method B is less costly to construct.

It appears that the advantages of Method B far outweigh the advantages of Method A. Furthermore, if desired at some future point by the responsible party, it would be a simple matter to divert the entire stream flow through the lake. However, if Method A were chosen, it would not be a simple matter to divert the stream around the pond if it was determined the temperature change through the pond was detrimental to fish life downstream.

Potential Hazards

With construction of the pond, there will be a substantial loss of the wetland habitat described above and along with it a loss of associated wildlife. How much of this type of ecological association is left in the area should be determined before destroying this one. If these are very scarce, then the trade off is more expensive.

Should pond construction be approved, the two problems causing the greatest amount of controversy are erosion-sedimentation and increase in water temperature. In both cases primary concern is over the downstream effects on the trout in Latimer Brook.

The erosion-sedimentation problem is a universal problem and will never be eliminated completely, development or no development. Minimization of the problem however may not be difficult or expensive if proper planning at the proper time occurs. The connector channels (assuming use of method B) should be riprapped with suitable materials (gravel, cobbles, boulders, etc.) and the upper banks planted. Natural vegetation should be retained when possible. A level, low gradient channel without sharp curves will reduce flow velocity and turbulence.

In determining the size of the dike and the overall distance between Latimer Brook and the proposed pond, the effect of at least a 5 or 10 year frequency rainfall should be considered so as to protect the brook during excavation (probably a 4-5 year project).

The pond banks and surrounding area should be seeded and stabilized as soon as construction permits.

With respect to potential water temperature increase of the brook from the pond, use of the by-pass pond method of construction will allow adequate control to prevent any significant change within the brook. Depending on the depth of the pond and the presence of springs within the pond, it may be able to support cold water fish in its lower depths.

Another problem may arise with the proposed excavation. The area from Colchester south to East Lyme contains deposits of sulfurous minerals, which if exposed to water, will create very acid conditions. If any deposits are exposed and enter the brook, the acidity may be increased to the point of killing the trout and other fish. A spring observed in the formerly excavated gravel area north of the pond site has an abundance of iron bacteria indicating the possible presence of iron sulfide.

The method of gravel extraction used may also affect Latimer Brook. If pumping is done to permit dry gravel extraction the nature of the material could cause the stream to percolate into the excavation, thus reducing stream channel flow. Also, the water pumped from the extraction may not be clean water and should not be discharged directly into the stream.

If wet extraction is done, any stockpiling or dredgings should be placed so that the drainage will be back into the excavated area and not the stream.

TERRACE

Single-family residential development is planned for this area. The density will generally conform to the R-40 zoning for the area, 40,000 sq. ft. per lot or 30,000 sq. ft. per lot using the cluster concept.

Water Supply

The water supply will be derived from the East Lyme municipal system. Water lines crossing Latimer Brook could cause problems unless they are run above ground in the area of the brook.

As described on page 6, this site overlies a portion of a substantial ground water supply with an estimated safe yield of 1.3 million gallons per day. It is identified in the Water Supply Plan for the Southeastern Connecticut Region, 1970, as a potential water source, though it is not included in any of the specific proposals.

Waste Disposal

On-site sewage disposal systems are proposed for the subdivision. The terrace area is situated on nearly level materials consisting of clays, silts, sands, and gravels in varying proportions, which were deposited here by glacial melt waters. The depth to bedrock and depth to water table, both greater than 10 feet, seem sufficient to adequately accomodate the needed facilities.

The soils in this area include 63A, a well drained soil over stratified sand and gravel, and ML-2, a similar soil that has been modified by extraction. The soil 63A is rated at slight limitations for septic effluent disposal because of its high permeability. But because of this high permeability, care should be given to the location and installation of septic systems in this soil when they are located near a stream, lake, or high ground water table.

Two possible problems could arise from the on-site septic systems; pollution of Latimer Brook and pollution of the previously identified aquifer. Increased fertility of the brook might result in excessive algae, turbidity, and vegetation. Adequate distance must be maintained between the houses and the stream and adjoining wetlands to allow sufficient filtering through the gravel before reaching the stream.

Consideration and resolution of the possible contamination of the aquifer will involve a trade-off between the value of the aquifer and the value of the housing. If the aquifer is deter-

mined to be significant, then perhaps the developer should consider the installation of capped sewers, so that if in the future the Town extends an interceptor north on Route 161, the proposed development could be tied into it with a minimum of disruption.

By time dev. is ready to build town's sewer plans should be more definite

Foundation Development and Graded Conditions

The terrace has excellent conditions for construction except for the erosion problem during construction. Areas should be disturbed only as necessary for construction and seeding of these areas should take place as soon as construction permits.

Depending on how the development is to proceed, some of the following conservation practices may be needed: diversions, waterways, debris basins, pipe drop structures, and seeding. These measures are contained in the Erosion and Sediment Control Handbook, published by the U.S. Department of Agriculture, Soil Conservation Service, Storrs, Connecticut.

available from D.C. Sherm Chase NL SWCD, Ext. Center 887-4163

Roads and Utilities

Except for erosion, there should be no problems with road construction. Roads across and near the stream should avoid damage to the stream banks. Salt treatment of the roads system should be confined to those roads not crossing or adjacent to the brook.

erosion controls

Hazards - Man Induced

The previously excavated area on the northern portion of the terrace area shows evidence of excessive erosion. This area should be stabilized before any further construction is permitted. It will be necessary to fill in the gullies and establish a permanent vegetative cover on the bank adjacent to the brook. The remaining area should be seeded to a temporary cover until the subdivision is constructed. *at which time perm. landscaping*

A systematic approach to development should be followed so that a minimum amount of barren earth is exposed to the elements at any given time.

Aesthetics and Preservation

The natural vegetation should be disturbed as little as possible and the housing should be clustered, leaving enough open space for the wildlife species to exist to some extent on the area. Wildlife is a barometer of the environment and when their numbers decrease so does our quality of living.

The prevailing winds are up and down the valley. Therefore, the developers might consider planting strips of trees across the valley to reduce the wind run and make the conditions more comfortable in winter in the proposed housing area. Recommendations for the types of trees that will grow on the soils there can be obtained from the local Service Forester of the State Department of Environmental Protection (Region III office, Marlborough).

Services to Support Development

Existing and proposed shopping facilities along Route 161 about 2 miles south of the site should service the development adequately.

The Town is in the best position to evaluate the impact of the development on roads, schools, police, and other town services, in relation to the addition to the Town's grand list.

Compatibility of Surrounding Land Uses

Surrounding land uses are scattered residential along Route 161, active agriculture to the southeast of the site, and undeveloped forested areas set back to the east and west of Route 161. There are no industrial uses and the only commercial use is Ponderosa Park, a commercial recreation area with hiking, horseback riding, swimming, picnicking, and sports facilities, north of the site along Route 161. A new subdivision is currently under construction immediately south of the proposed lake. Based on these uses, low density residential development would appear to be a compatible development on a land use basis.

Alternative Land Uses for the Area

Currently feasible land use alternatives appear to be residential, sand and gravel excavation, and undeveloped. Agriculture does not appear to be a feasible alternative because the top soil has been removed from a major portion of the site.

The Town will have to make value judgements and set priorities on use of this land in relation to existing resources. The Town Development Plan depicts the level area between Latimer Brook and the uplands to the east as residential and the area of the proposed lake as undeveloped.

Short of no development, which would give maximum protection to the aquifer and wetland, the best use on the 63-A soils would be residential and/or sand and gravel excavation. This assumes that any residential uses would be set back from Latimer Brook and the wetland at a sufficient distance to preclude any leaching into them or the aquifer of septic tank effluent.

UPLAND

Single-family residential development is also planned for this area. It, too, is within the R-40 zone, though a lower density is anticipated.

Water Supply

The water supply will be derived from the East Lyme municipal system. With the possible exception of needing some additional facilities to provide for proper water pressure at the higher elevations, there should be no particular problems with this system.

The aquifer described earlier does not underlie this portion of the site.

Waste Disposal

On-site sewage disposal systems are proposed for the subdivision.

The upland region is characterized by natural resource conditions that could be severely adverse to sewage disposal and other development. The soils, primarily 204D, have severe limitations for on-site sewage, due to rock outcrops, stoniness and often shallow depth to bedrock. The topography in the area is rugged, with slopes mostly 10 percent or greater. The depth to the water table varies considerably and would require on-site tests.

Unless public sewerage is available, there are portions of this area which should not be developed at all. Selective house lots based on an adequate area for the placement of a septic disposal system should be the prime consideration of the developer. A careful, detailed engineering investigation should probably be undertaken in order to document the more suitable land.

Due to the questionable and variable conditions in this section, minimum lot sizes should not be adhered to. Even with public water, it seems reasonable and preferable that the upland area should have a density considerably lower than the terrace area.

Foundation Development and Graded Conditions

The rock outcrops, stoniness, steep slopes and variable water table will severely encumber the installation and maintenance of basements, water lines, storm drains, and roads.

A major concern when building a house on a slope is differential settlement. The bearing capacity of the soil may vary considerably with its depth, causing greater settling in one area of the foundation than another.

Roads and Utilities

The limitations for roads are severe to very severe due mostly to slope, stoniness, and high water table. Slope and stoniness can be overcome by selective location of roads. Roads going up the hill should follow the contours as much as possible. The water table can be overcome by the use of good drainage practices.

Selective placement of utilities will help overcome the soils limitations, and at the same time minimize installation and maintenance costs. The planning of storm sewer outlets should take under consideration the effect these outlets will have on the streams or other bodies of water into which they will flow.

Hazards - Man Induced

The proposed development will have very little effect on the microclimate if the vegetation (trees, etc.) is left on the steep southwest facing slope. This will avoid making cold air drainage pathways and a resulting frost pocket at the bottom of the hill, which could cause increased heating bills for homes at the foot of the hill.

As mentioned with the terrace development, a minimum amount of barren earth should be exposed to the elements at any given time. Where possible, erosion and sediment control practices should be used.

Aesthetics and Preservation

In conjunction with the wetland and terrace areas, the upland contributes to a diversity of habitat which is ideal for wildlife. As little natural vegetation as possible should be disturbed. This will not only maintain some of the natural habitats, but also maintain the ameliorating quality of the woods on the air temperature.

Services to Support Development

Compatibility of Surrounding Land Uses

Same as for the terrace development. See page 12.

Alternative Land Uses for Area

Development on the hilly, upland area of the site should be limited because of steep slopes (up to 25%), shallow and outcropping bedrock in the 204-D soils, and poor access. Even if percolation and soil pit tests indicate that "pockets" of this upland can be developed, the steep slopes will still make access roads difficult to construct, maintain and use.

The Town Development Plan recommends no development on this rear section of the site adjacent to Waterford and the adopted Regional Development Plan for Southeastern Connecticut recommends scattered residential at 3 or more acres per family, recreation, conservation, and agricultural uses.

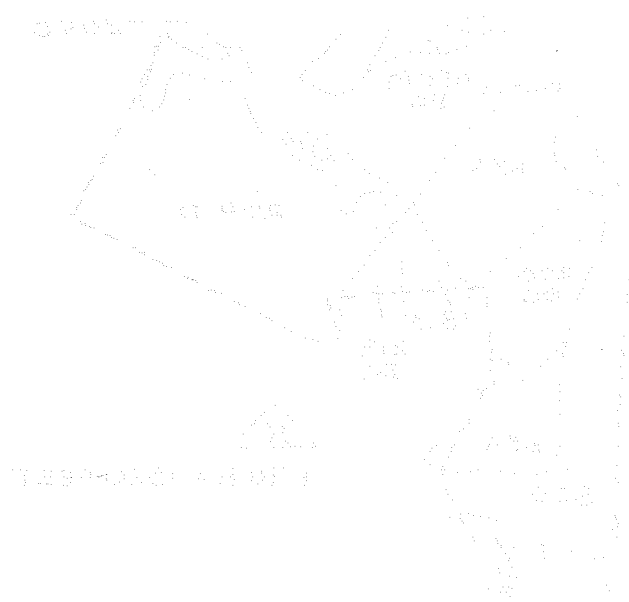
ADDITIONAL COMMENTS

The major problem presently existing on the site and potentially one of the greatest problems during construction is erosion and sedimentation. If the pond is approved and constructed, it is another potential source of sediment. The existing problem can be controlled and the potential ones minimized through proper conservation measures.

As mentioned before, the Erosion and Sediment Control Handbook, published by the U.S. Department of Agriculture, Soil Conservation Service, provides information on basic principles, guidelines, and standards and specifications for the design and use of numerous erosion and sediment controls.

In addition, the developer may request technical assistance from the New London County Soil and Water Conservation District for development of erosion controls for the immediate problem and, at a future date, for development of a conservation plan for the subdivision. Assistance might also be available for design of the pond and associated sediment controls.

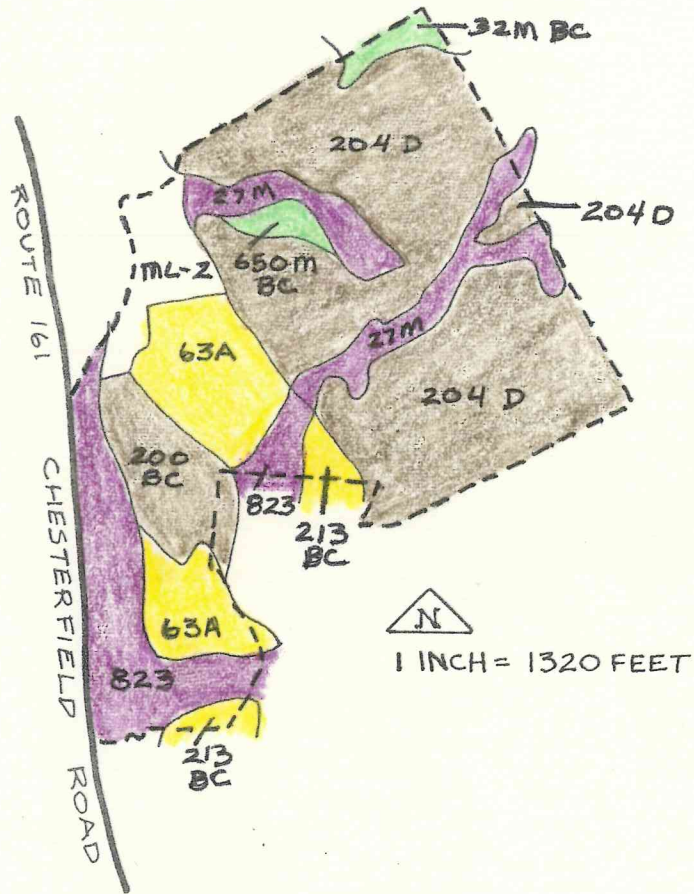
APPENDIX



SOIL MAP

LOCARNO AND GRABOW PROPERTY
EAST LYME, CONNECTICUT

APPENDIX



Prepared by: UNITED STATES DEPARTMENT OF AGRICULTURE,
Soil Conservation Service.

ADVANCE COPY, SUBJECT TO CHANGE.

JUNE, 1973

SOILS LIMITATIONS CHART

Natural Soil Group*	Mapping Symbols	Acres	Percent of Total Acres	Limitations For: **			Streets and Parking	Principal Limiting Factor
				On-Site Sewage	Base-ments	Land-scaping		
A-1a	63A	32	12.8	1	1	1	1	None
A-1b	213 BC	4.8	1.9	2	2	2	3	Slope
B-1c	32M BC 650M BC	5.2	2.1	2	2	3	3	Stoniness, Slope
C-3b	27M	24	9.6	4	4	4	4	High water table, Stoniness
D-1	200 BC	16	6.4	3-4	3-4	3-4	3-4	Slope, Shallow, Stoniness
D-2	204D	118	47.2	3-4	3-4	3-4	3-4	Shallow, Slope, Stoniness
E-3b	823	38	15.2	4	4	4	4	Flood hazard, High water table
Not Classified	ML-2	12	4.8	This is an area of previous extraction. Suitability can only be determined by on-site inspection.				
		250	100.0					

* Refer to Know Your Land, Natural Soil Groups for Connecticut, Soil Conservation Service, USDA Connecticut Cooperative Extension Service, for further explanation of the natural soil groups.

** Limitations: 1-slight; 2-moderate; 3-severe; 4-very severe.

ACREAGE SUMMARY OF SOILS LIMITATIONS

	<u>Slight</u> <u>Acres</u>	<u>%</u>	<u>Moderate</u> <u>Acres</u>	<u>%</u>	<u>Severe</u> <u>Acres</u>	<u>%</u>	<u>Severe-Very Severe</u> <u>Acres</u>	<u>%</u>	<u>Very Severe</u> <u>Acres</u>	<u>%</u>
On-Site Sewage	32	12.8	10	4.0	-	-	134	53.6	62	24.8
Basements	32	12.8	10	4.0	-	-	134	53.6	62	24.8
Landscaping	32	12.8	4.8	1.9	5.2	2.1	134	53.6	62	24.8
Streets and Parking	32	12.8	-	-	10	4.0	134	53.6	62	24.8

