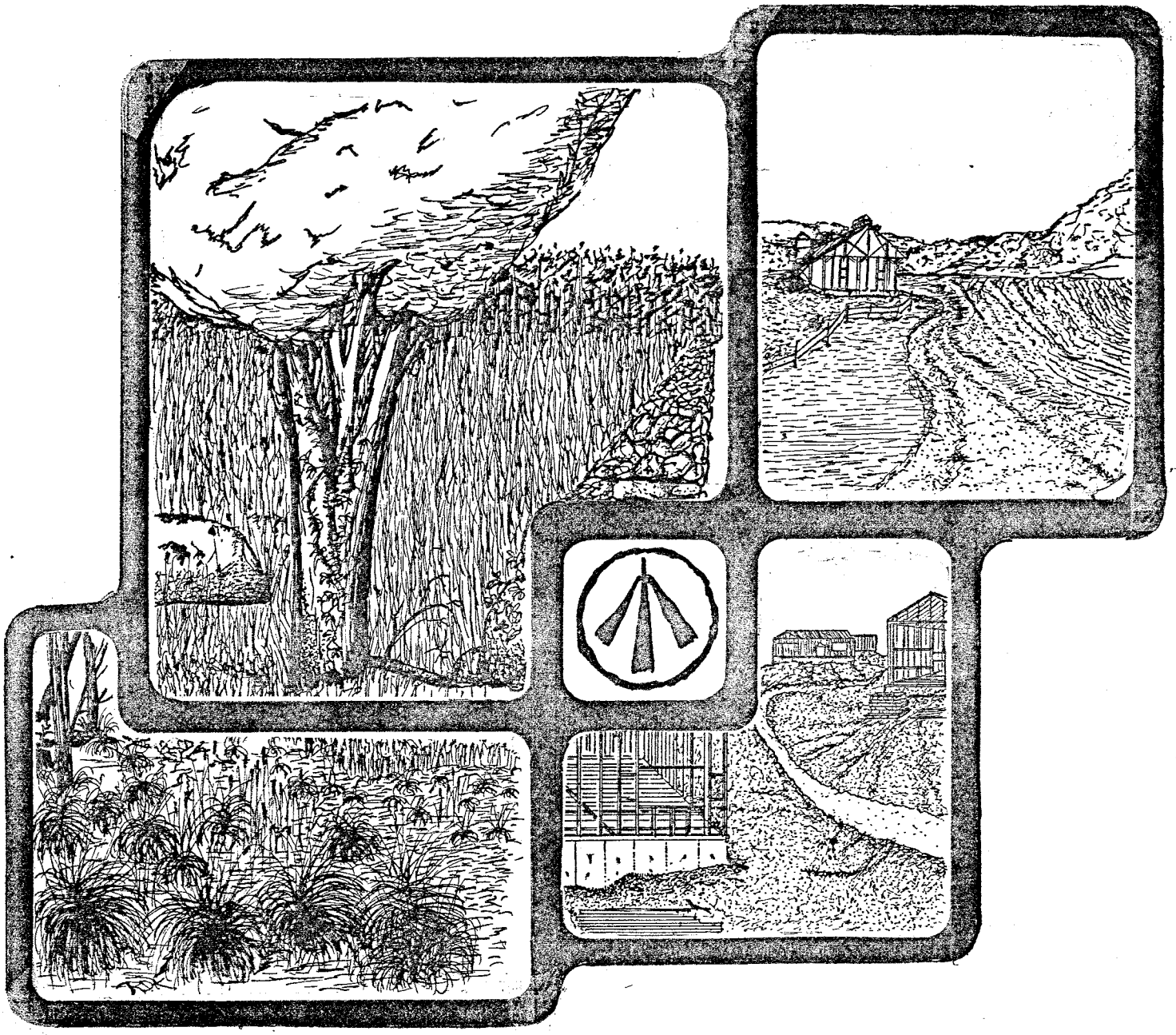
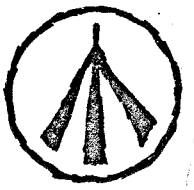
ENVIRONMENTAL REVIEW TEAM REPORT



SALEM ROAD WETLAND
PROSPECT ,CONNECTICUT
KING'S MARK
RESOURCE CONSERVATION & DEVELOPMENT AREA

KING'S MARK
ENVIRONMENTAL REVIEW TEAM REPORT

SALEM ROAD WETLAND
APRIL, 1984



King's Mark Resource Conservation and Development Area
Environmental Review Team
Sackett Hill Road
Warren, Connecticut 06754

ACKNOWLEDGMENTS

The King's Mark Environmental Review Team operates through the cooperative effort of a number of agencies and organizations including:

Federal Agencies
U.S.D.A. Soil Conservation Service

State Agencies
Department of Environmental Protection
Department of Health
University of Connecticut Cooperative Extension Service
Department of Transportation

Local Groups and Agencies
Litchfield County Soil and Water Conservation District
New Haven County Soil and Water Conservation District
Hartford County Soil and Water Conservation District
Fairfield County Soil and Water Conservation District
Northwestern Connecticut Regional Planning Agency
Valley Regional Planning Agency
Central Naugatuck Valley Regional Planning Agency
Housatonic Valley Council of Elected Officials
Southwestern Regional Planning Agency
Greater Bridgeport Regional Planning Agency
Regional Planning Agency of South Central Connecticut
Central Connecticut Regional Planning Agency
American Indian Archaeological Institute
Housatonic Valley Association

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FUNDING PROVIDED BY
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Donna Lindgren, Ansonia

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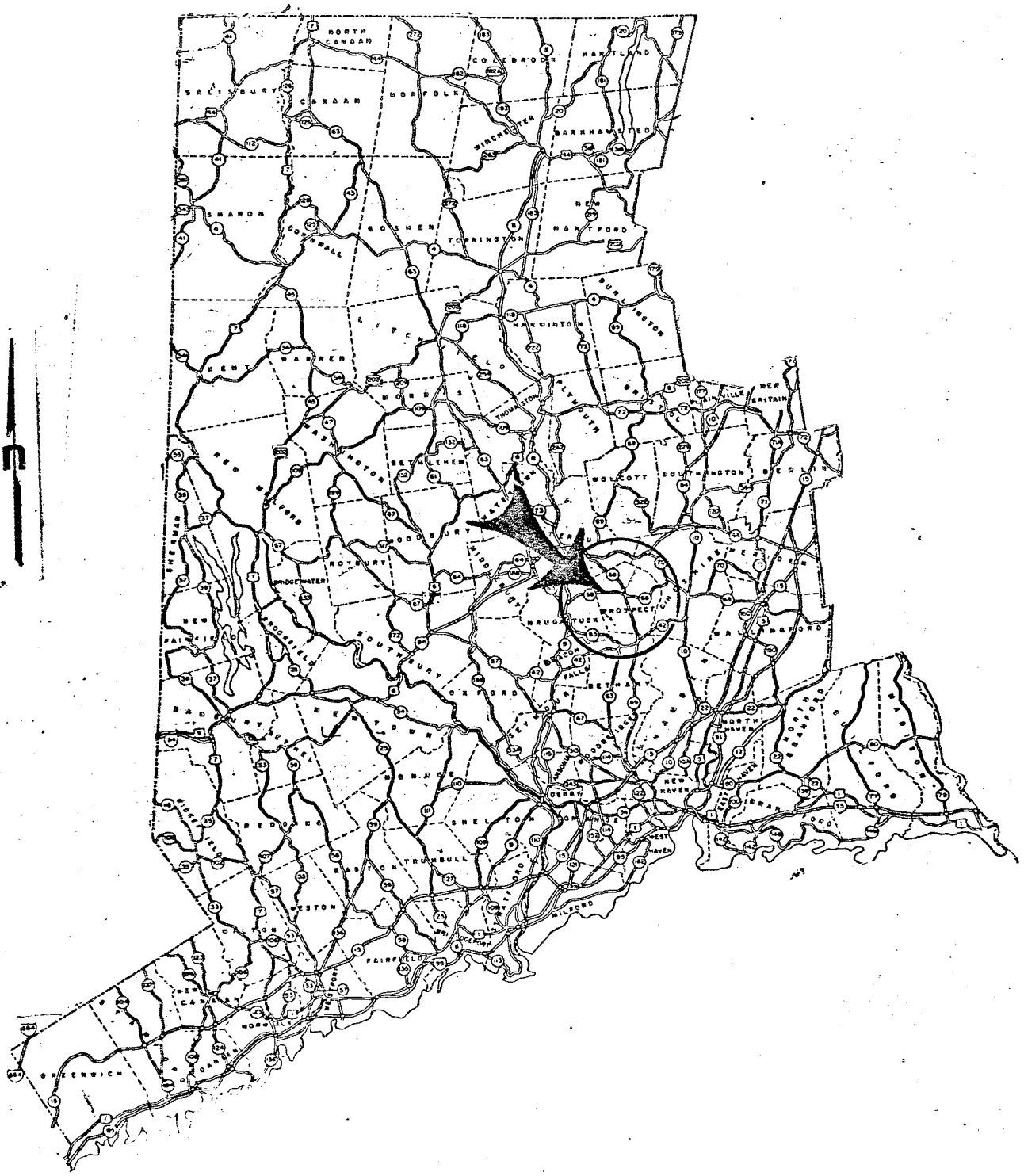
Northwestern Connecticut Regional Planning Agency

Dorothy Westerhoff, Chairman
Charles A. Boster, Director
Richard Lynn, ERT Coordinator
Sandra Bausch, ERT Cartographer
Jamie Whitman, Secretary

TABLE OF CONTENTS

LIST OF FIGURES

LOCATION OF STUDY SITE



Scale 1" = 10 miles

10 0 5 10 miles

ENVIRONMENTAL REVIEW TEAM REPORT
ON
SALEM ROAD WETLAND
PROSPECT, CT

I. INTRODUCTION

The Prospect Inland Wetland Commission is considering a private landowners proposal to excavate a channel in a wetland area.

The subject area is ± 12 acres in size and is known colloquially as the Salem Road Wetland. The drainage area for this wetland is ± 520 acres (see Figure 1).

The landowner of the Salem Road wetland is interested in "cleaning out" and deepening the brook traversing this area. This activity is being proposed in order to "dry out" the back yard areas of several recently approved homesites along Salem Road, and to minimize potential flooding in the area. No detailed plan for the project has yet been submitted, but a conceptual plan for the activity is portrayed in Figure 2.

The Prospect Inland Wetland Commission requested this ERT study to become aware of the probable environmental impact of the proposed project. Specifically, the Team was asked to 1) discuss the hydrology of the watershed area and the biological value of the Salem Road Wetland, 2) comment on how the hydrologic and biologic characteristics and functions of the wetland will be impacted by the proposed project, 3) discuss whether or not the proposed project will, in fact, dry up the edge of the wetland, 4) comment on whether the project will increase down-stream flooding, impact the underlying aquifer, or affect neighborhood wells, and 5) identify any mitigating measures which could be implemented to minimize any adverse environmental effects.

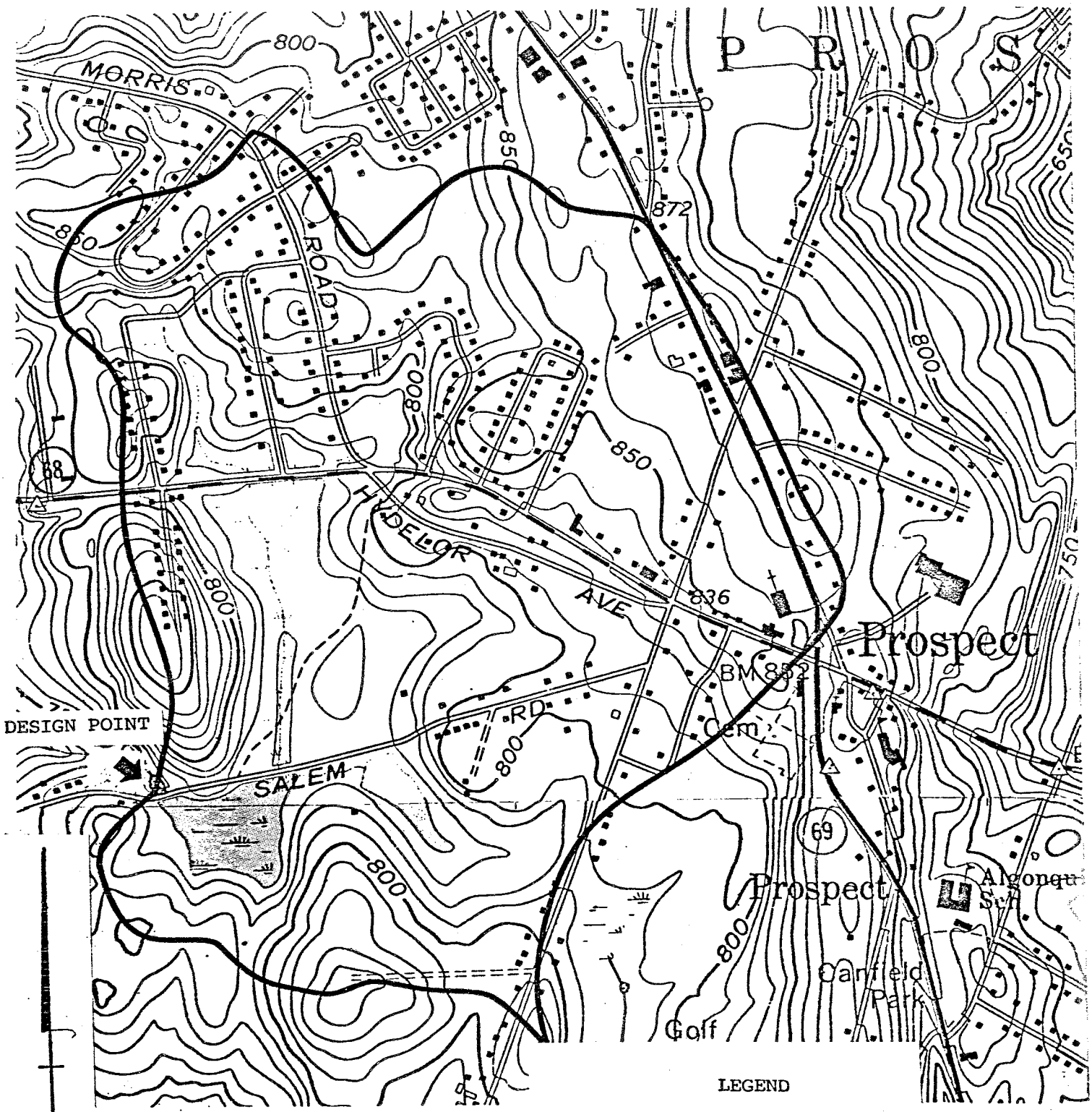
The King's Mark Executive Committee considered the town's request, and approved the project for review by the Team.

The ERT met and field reviewed the site on February 8, 1984. Team members participating on this project included:

Steven Derby	Civil Engineer	CT Department of Environmental Protection
William Warzecha	Geohydrologist	CT Department of Environmental Protection
Janet Wilscam	Biologist	CT Department of Environmental Protection
Irene Winkler	Soil Conservationist	U.S.D.A. Soil Conservation Service

Prior to the review day, each team member was provided with a summary of the proposed study, a checklist of concerns to address, a topographic map, a soils map, and a soils charactertics chart. During the ERT's field review, team members met with representatives from the Inland Wetlands Commission and

FIGURE 1
TOPOGRAPHIC MAP



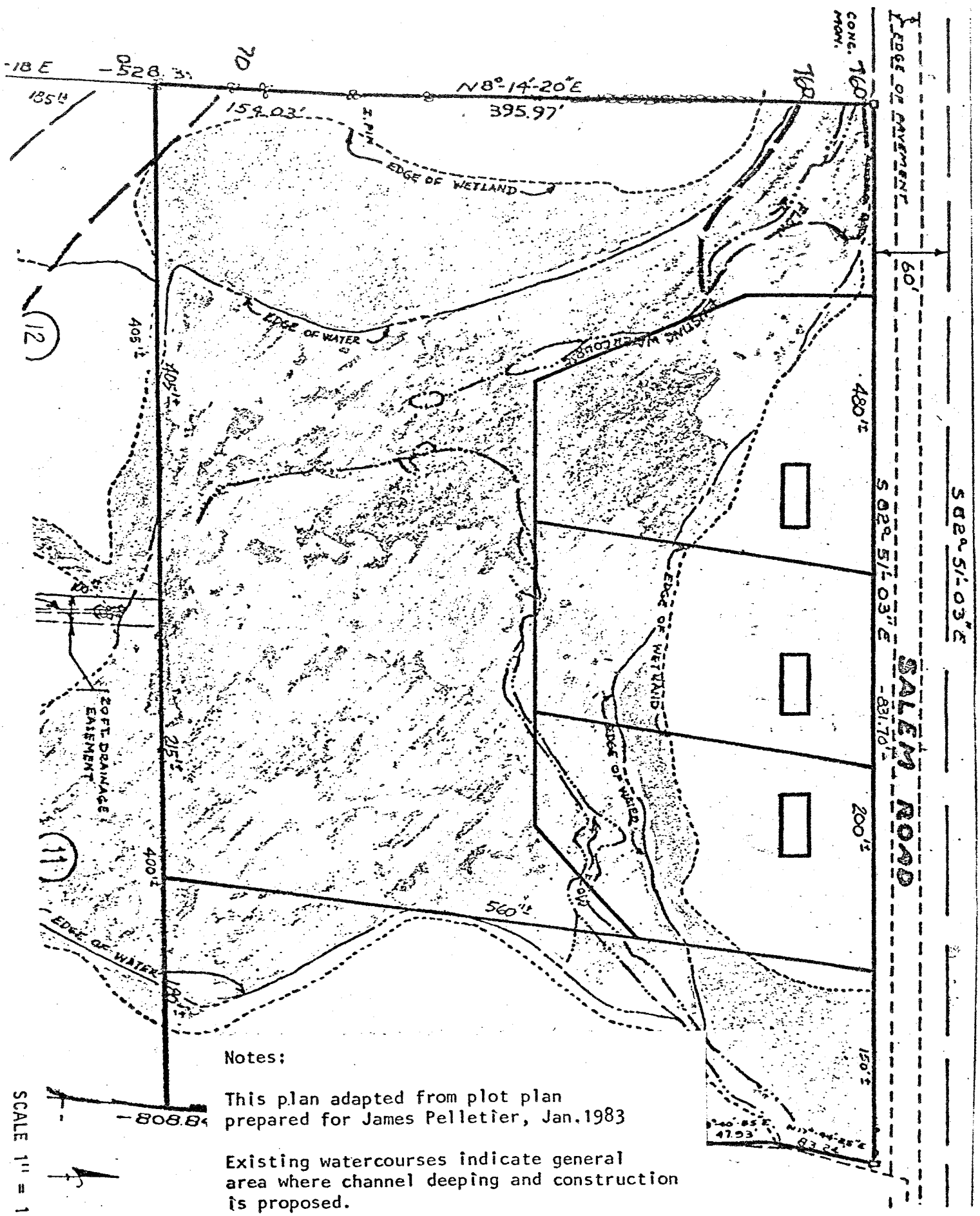
LEGEND

= Watershed boundary of designated design point

= Salem Road wetland

Scale 1"=1000'

FIGURE 2
CONCEPTUAL SITE PLAN



Notes:

This plan adapted from plot plan prepared for James Pelletier, Jan. 1983

Existing watercourses indicate general area where channel deeping and construction is proposed.

SCALE 1" = 100'

walked the property. Following the field review, individual reports were prepared by each team member and forwarded to the ERT Coordinator for compilation and editing into this final report.

This report presents the Team's findings. The report identifies the natural resource base of the Salem Road Wetland area and discusses opportunities and limitations for the proposed project. All conclusions and final decisions with regards to the proposed project rest with the town of Prospect and the landowner. It is hoped the information contained in this report will assist both parties in making environmentally sound decisions.

If any additional information is required, please contact Richard Lynn (868-7342), Environmental Review Team Coordinator, King's Mark RC&D Area, Sackett Hill Road, Warren, Connecticut 06754.

* * * * *

II. TOPOGRAPHY AND GEOLOGY

As shown in Figure 1, the watershed draining to the Salem Road Wetland is characterized by gentle to moderate slopes. Elevations of the watershed range from a low of approximately 760 feet above mean sea level, at the surface of the Salem Road Wetland, to a high of 870 feet above mean sea level along the eastern limits.

The Salem Road Wetland watershed is located in a part of Prospect that is encompassed mainly by the Southington topographic quadrangle and partly in the Mount Carmel topographic quadrangle. The latter comprises approximately 87 acres in the southern limits of the watershed. Bedrock geologic maps of both quadrangles, which were prepared by Crawford E. Fritts, have been published by the U.S. Geological Survey. (Map GQ-200 for the Southington quadrangle, Map GQ-199 for the Mount Carmel quadrangle). It should be pointed out that the "Preliminary Bedrock Geologic Map of Connecticut" by John Rodgers was also referenced for this report. A surficial geologic map (GQ-146) for the Southington quadrangle, prepared by A.M. LaSala, Jr., has been published by the U.S. Geological Survey. The surficial geologic map (QR-12) for Mount Carmel topographic quadrangle, prepared by Richard Foster Flint, has been published by the Connecticut Geological and Natural History Survey.

All of the above mentioned maps are available at the Department of Environmental Protection's Natural Resource Center in Hartford.

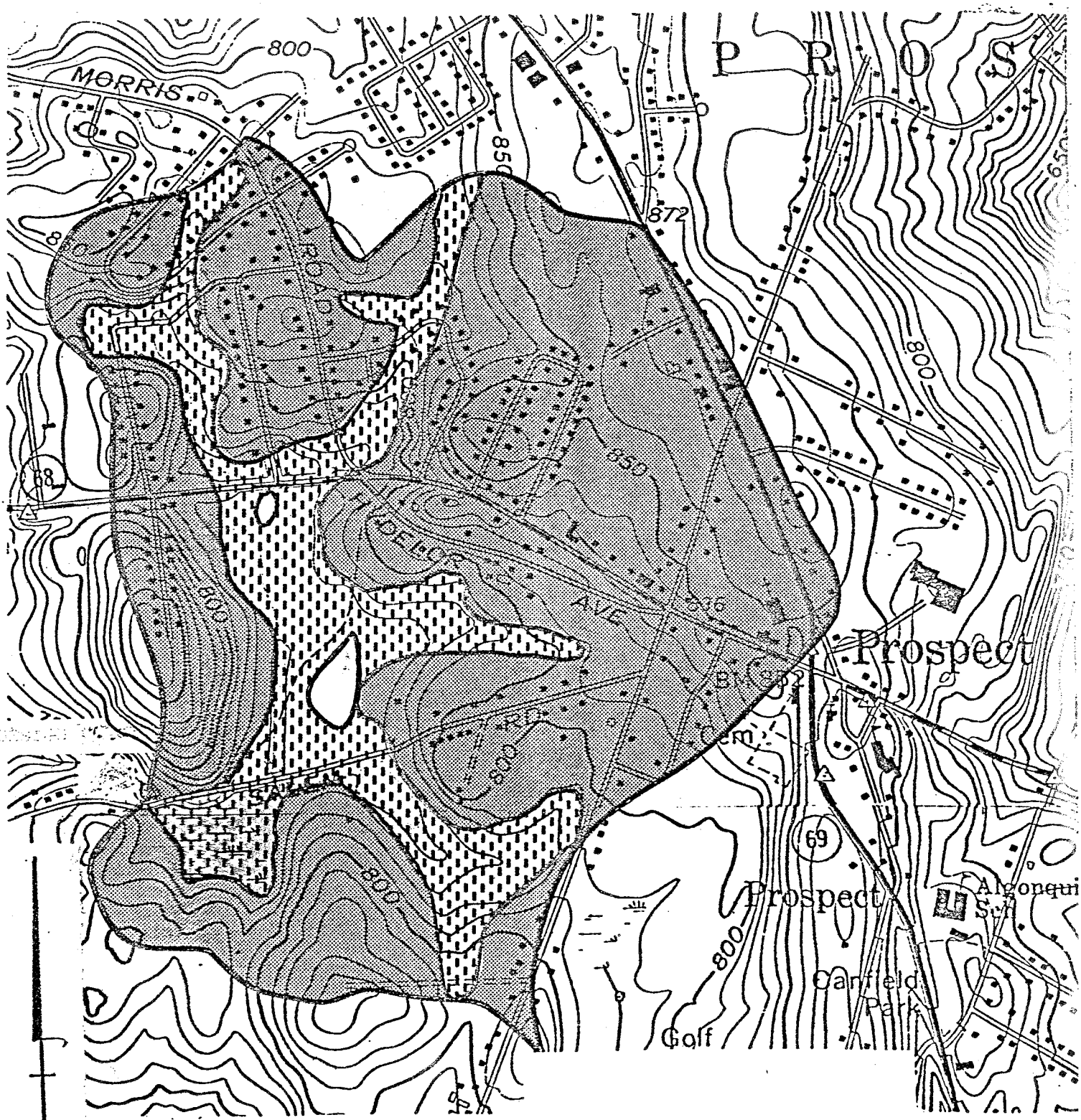
Surficial Geology

The surficial geologic materials, those unconsolidated materials overlying bedrock found in the watershed area, may be classified into three major units: till, stratified drift and swamp sediments. Till, which consists of a non-sorted, non-stratified deposit of glacial material, is composed largely of rock fragments of varying sizes and shapes. This material which covers nearly 80% of the watershed (see Figure 3), accumulated on, within or beneath an ice sheet as it moved across pre-existing soils and rock outcrops. The till was later deposited directly from the glacial ice without substantial reworking by meltwater. Till is commonly sandy, friable and very stony in the upper few feet, however, becomes siltier and more compact at depth. The thickness of the till deposit is generally thin throughout the watershed, probably ranging from zero, where bedrock is exposed, to 10 feet at various points in between.

Stratified drift comprises those materials that were deposited by meltwater streams, probably in contact with wasting ice. Stratified drift is composed primarily of sand and gravel. This deposit covers a small area (less than 1% of the watershed) in the wetlands north of the Salem Road Wetland. It is delineated by the symbol Hka (Hinckley soils) on the accompanying soils map (see Appendix). The thickness of the stratified drift is probably not more than 10 feet within this watershed.

Swamp deposits overlie till or stratified drift in scattered areas throughout the central portions of the watershed, primarily along water courses, intermittent drainage swales, and in low topographic depressions. These deposits, which consist of sand, silt, clay, and organic remains that were deposited in stagnant or slowmoving, well-vegetated water bodies, comprise approximately 20

FIGURE 3
SURFICIAL GEOLOGY



Scale 1"=1000'

- *Till*
- *Stratified drift*
- *Swamp sediments*

percent of the watershed. They are delineated by the symbols Ru (Rumney), RN (Ridgebury, Leicester, Whitman), AA (Adrian and Palms mucks) and Ce (Carlisle muck) on the accompnaying soils map (see Appendix).

The wetland soils found in the study site include mainly Ce (Carlisle muck) and Rn (Ridgebury, Leicester and Whitman soils). The Carlisle muck soils, which cover about 70 percent of the site, mainly in the eastern sections, are relatively thick (ranging between 70 inches to more than 30 feet) and have very low stability when excavated. Because of this instability, it would probably be extremely difficult to stabilize the side slopes of the stream bank, if the channel were deepened as proposed. As a result, the side slopes would be subject to sloughing. Because the Rn (Ridgebury, Leicester and Whitman) soils are more stable, it would probably be much easier to stabilize the side slopes in these areas.

Bedrock Geology

Bedrock underlying or cropping out within the watershed has been classified as Waterbury Gneiss. This rock unit consists of a medium-to dark-gray, fine-to medium grained schistose (schist like) gneiss composed of the minerals biotite, quartz, oligoclase, kyanite (or sillimanite) and garnet. Gneisses are crystalline, metamorphic rocks which were subjected to and altered by, great heat and pressure deep within the earth's crust. They are characterized by a streaky, banded appearance, which results when thin layers of elongate minerals (e.g., biotite) alternate with layers of more rounded minerals (e.g., quartz, oligoclase). The Waterbury Gneiss, which crops out or underlies the site, may be interbanded with schists in some places. "Schists" are metamorphic rocks with a strongly developed foliation due to an abundance of aligned elongate minerals (e.g., muscovite, biotite). The schists are composed mainly of the minerals muscovite, quartz, garnet, biotite and oligoclase. Minor minerals include ilmenite or magnetite, rutile and zircon. Bedrock is exposed in the north central and southern limits of the watershed.

III. HYDROLOGY

By definition, the watershed for the Salem Road Wetland comprises all land areas from which water may drain into the wetland. A raindrop falling on the watershed boundary would have a 50 percent chance of passing into or out of the watershed. Figure 1 shows the watershed boundaries, which tend to follow the crests of local hills. The watershed, as delineated, comprises approximately 520 acres (about .8125 square miles).

The unnamed stream traversing the Salem Road Wetland drains the above mentioned watershed. The stream originates in the northern parts of the watershed and flows generally in a north to south direction through the west central parts. Once the stream passes under Salem Road, it makes a sharp turn to the west. From this point, it flows westward through the Salem Road Wetlands ultimately discharging into the small pond northwest of the study site. The outlet stream for the pond continues to flow westward to Fulling Mill Brook and thence to the Naugatuck River.

The Salem Road Wetland is located in the southwest portions of the watershed. Other wetland areas are found scattered throughout the watershed primarily in the central portion along watercourses and intermittent drainage swales.

The Department of Housing and Urban Development has prepared a Flood Hazard Boundary Map for the Town of Prospect. Based on this map, the Salem Road Wetland area, the wetland areas bisecting the watershed north of the study area, and the low-lying area surrounding the pond east of the Salem Road Wetland all lie within special flood hazard areas (see Figure 4).

According to Town officials, the owner of the Salem Road Wetlands, Mr. James Pelletier, is interested in "cleaning out" and "deepening" the unnamed brook that traverses the wetland. The purpose of this proposal is to "dry out" the back yard areas of several recently approved homesites along Salem Road and to minimize potential flooding in the area. As a result, the Town is concerned about what the probable environmental impacts of the proposed project will be.

Because of the Salem Road Wetlands unique position in the watershed, it serves many valuable hydrological as well as ecological functions, some of which include providing: 1) flood storage, 2) sediment control, 3) pollution control, and 4) habitat for waterfowl and wildlife.

The Salem Road Wetland serves as a natural runoff retention basin, storing water during times of heavy rainfall, slowly releasing it to downstream areas. This results in lower flood peaks downstream.

Flood flows and the velocity of flood waters are slowed down in wetland areas, which reduces the chance of streambank erosion and allows the flood waters to release the sediment that they carry from upstream areas. Various types of wetland vegetation filter and hold sediment which would otherwise find its way to downstream ponds, lakes, and streams. Sedimentation can lead to rapid filling of surface water bodies, which in turn can lead to their destruction.

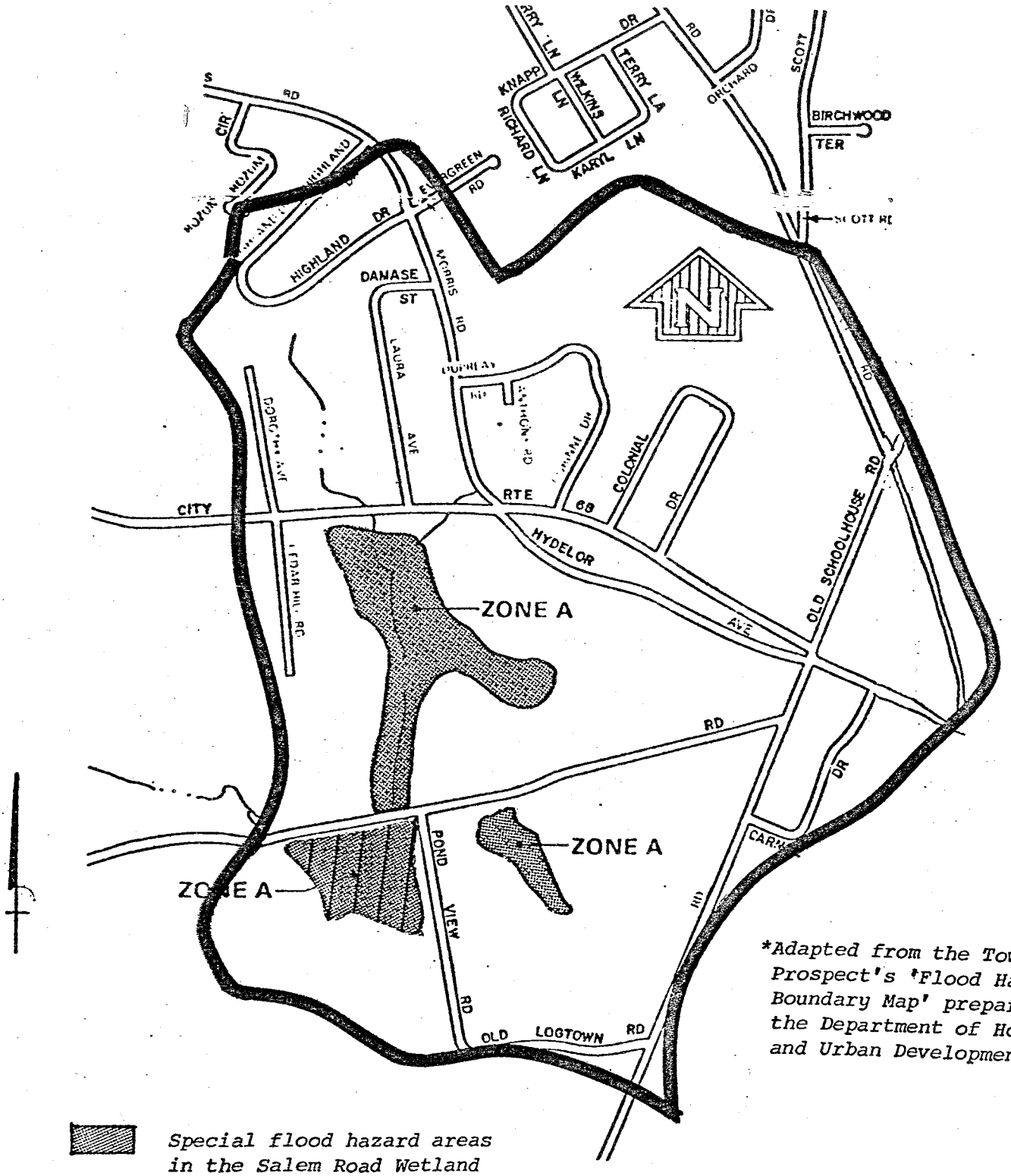
In addition, wetlands can change water quality through biochemical processes, often resulting in cleaner water. As a result, downstream water bodies (e.g., ponds, lakes, streams) are protected by wetlands from sediment, nutrients and other natural and man-made pollutants. It should be pointed out however, that wetlands cannot remove all contaminants which may find their way into the wetland.

Wetlands also provide valuable breeding, nesting, feeding, and predator escape habitats for numerous types of waterfowl and mammals.

Some of the hydrological and ecological effects that may occur in the wetland if the channel is "deepened" as planned include: 1) by increasing the velocity of the stream, particularly during high flows, there is the potential for increasing flooding downstream; 2) due to increased stream velocities, there will be a potential increase in stream bank erosion, at least initially; 3) reducing the pollution filtering capabilities of the wetland through most of the year (except springtime) which would lead to increases in sediment and nutrient loads downstream; and 4) damage or destruction to wildlife habitats and wetland vegetation.

In view of the valuable hydrologic and ecologic functions of the Salem Road Wetland, it appears that the proposed deepening of the channel in this area could have significant negative impacts on existing conditions and downstream properties. Based on visual inspection of the backyard areas of the

FIGURE 4
FLOOD HAZARD AREAS



*Adapted from the Town of Prospect's 'Flood Hazard Boundary Map' prepared by the Department of Housing and Urban Development

Special flood hazard areas in the Salem Road Wetland area

Watershed boundary

Salem Road Wetland

approved homesites off of Salem Road, there appears to be ample "dry area" before the wetland boundary is encountered (i.e., ± 50-100 feet between houses and wetland area). This buffer provides suitable area for back yard recreational use and the houses are high enough to not be at risk due to flooding in the wetland. If the channel was deepened, it would likely "dry up" the area more so along the stream, than it would "dry up" the outer limits of the wetland in the vicinity of the backyards.

Mr. Pelletier has also expressed an interest in lowering the culvert under Salem Road which drains his wetlands and/or adding additional barrels for drainage. In this regard it should be noted that the lower reaches of Fulling Mill Brook flows through the highly developed center of the Town of Naugatuck. The 12 acre wetland on Mr. Pelletier's property, situated as it is at the top of the Fulling Mill Brook watershed, is ideally suited to mitigate flood flows through this urban center, and in fact, is currently providing that function. Due to this important flood mitigating function, the Team's engineer would not recommend lowering the culvert under Salem Road or adding additional barrels. To do so would seriously alter the highly valuable flood storage characteristics of the wetland.

In regard to cleaning the channel of debris (i.e., broken limbs, fallen trees, material from upstream areas, etc.), it was the opinion of Team members during the field review that there would be no harm provided it is done manually and not with heavy equipment.

Another concern Team members were asked to comment on was whether or not deepening the channel would effect groundwater resources such as nearby wells and aquifers. In reviewing well completion reports for several homes in the vicinity of the wetlands (Pond View Road and Salem Road), all were found to be served by individual on-site wells tapping the underlying bedrock. Bedrock fractures that are saturated with water can serve as an aquifer. An aquifer may be defined as a geologic formation which is capable of yielding a significant amount of water to a well. All wells reviewed were greater than 128 feet deep. If the channel was deepened, it would probably have an immeasurable effect on the yield of bedrock based wells. In addition, it is doubtful that deepening of the channel would adversely affect the yield of any dug well (a well sunk a few feet below the water table) which is hydraulically connected to the stream and wetland. By deepening the channel of the stream, the water table in the wetland could be somewhat lowered but it is unlikely that this would be significant enough to noticeably lower the water levels in any nearby wells. This concern would become more significant if the culverts under Salem Road were lowered in addition to deepening the channel. It is not known if any dug wells exist in the Salem Road Wetland area.

It appears that bedrock is the principle aquifer underlying the wetland. Where wetlands are underlain by thick, saturated deposits of sand and gravel and possess other hydrogeologic conditions, they may have high potential for the development of high-yielding ground-water wells. It does not appear, however, as though the Salem Road wetland possesses these qualities. In view of the surficial deposits found within the wetlands (i.e., till, Carlisle muck), it is doubtful that deepening of the channel would affect the underlying bedrock aquifer to any significant extent.

On the review day, Mr. Pelletier asked Team members to comment on the suitability of constructing an access road to Lot 15. If access was provided

off of Salem Road, it appears that the road would cross approximately 100 feet of wetland soil (Carlisle muck) as well as the unnamed stream flowing through the wetland. Crossing the wetland with a road may be feasible, provided it is properly engineered. Provisions should be made, however, for removing unstable material (i.e., Carlisle muck) beneath the roadbed and backfilling with a permeable road base fill material. Also, any pipe installation should be properly sized. If the access road is constructed through the wetland, it should be done during the dry time of year and should include provisions for effective erosion and sediment control. Also, all necessary permits (e.g., inland-wetlands, etc.) should be secured from the town before construction is started.

An alternative means of providing access to Lot 15 may be possibly accomplished by constructing a right-of-way on the corner lot of Pond View Road and Salem Road which could be shared by both lots. As a result, there would be little or no disturbance of the wetlands.

To conclude, the proposed lowering of the culverts on Salem Road and dredging of the brook bottom can be expected to have a number of significant adverse environmental effects, the most significant of which is the lessening of the flood storage capacity of the Salem Road wetland. While the project could be expected to lower flood elevations within the Salem Road Wetland during high flow periods, the project would, at the same time, increase the potential for additional flooding downstream. In other words, the flooding "problem" would simply be transferred further downstream. It should also be noted that deepening of the channel in the wetland without lowering the culverts under Salem Road is not expected to have a significant effect in drying out the edges of the wetland. It is the high groundwater table rather than the brook proper which is maintaining the wetland.

IV. SOILS

A Soils Map of the Salem Road Wetland watershed is presented in the Appendix of this report. The Appendix also contains a "Soils Characteristics Chart" which identifies the major features of the various soils.

Within the watershed of the Salem Road Wetland, the landscape is composed primarily of undulating uplands.

Charlton soils make up the majority of this watershed. These soils are dominantly sloping to gently sloping, deep, well drained and loamy. Stones and boulders are common on the surface in places.

Sutton soils occupy the concave and slightly depressional areas on the till plains. These soils are moderately well drained fine sandy loams. Hinckley soils may be found in the central portion of the watershed and are nearly level to sloping and occupy narrow stream valleys. They are deep, excessively drained, coarse textured soils that formed in sand and gravel.

Four wetland soil types have been mapped for this watershed. Rumney soils (Ru) are poorly drained alluvial soils on flood plains adjacent to streams. Adrian and Palms mucks (AA) are poorly and very poorly drained soils that have 16 to 50 inches of organic deposits over mineral soil material. This soil occupies the lowest depressions on the landscape.

The two additional wetland soil types are Carlisle muck (Ce) and Ridgebury, Leicester, and Whitman extremely stony fine sandy loam (RN). The Salem Road Wetland is underlain primarily by these two soil types. Therefore, the

characteristics of these two soil types are discussed in some detail below along with their suitability for the proposed project.

Ce - Carlisle muck

This nearly level, very poorly drained, deep organic soil is in low depressions on outwash terraces and glacial till plains. The organic layer may range from 50 inches to more than 30 feet in depth. Slopes are 0-3% but dominantly less than 1%. Carlisle muck is an inland wetland soil type according to Connecticut law.

This soil has moderately rapid permeability. Runoff is very slow. Carlisle muck soils have a high available water capacity. The soil remains wet most of the year and is ponded for several weeks from fall to spring and after heavy rainfall in the summer.

Carlisle soils have poor potential for community development. A high water table exists most of the year and the soils are subject to flooding or ponding. The organic layers have very low strength and stability. In many places they are too deep to be feasibly removed. If the soil is drained, subsidence causes the organic matter to shrink, thus lowering the surface of the soil. Excavating this material is difficult because side slopes are very unstable and slough readily.

The proposed brook deepening would take place in the area of the Carlisle soils. As stated above, excavation would be difficult even during dry summer months. Finding firm mineral material for a channel bottom and side slopes may also be difficult. The brook is mapped as a perennial stream. Close attention to sediment and erosion control measure planning and installation would be extremely important if channel deepening were to occur. An excavated pond exists downstream from the proposed activity. Sediment could be deposited in this pond if proper measures were not installed. Measures may include sediment basins, silt fencing and staked haybale filters.

An alternative to deepening the channel may be to clear it of vegetative obstructions such as fallen trees, branches, and stumps. Large, heavy equipment will have difficulty gaining access to the stream channel. Clearing the existing channel may best be accomplished by manpower and small handheld power equipment. Access to the stream can be gained more easily when the ground is frozen or in the dry summer months. Erosion and sediment transport can be kept to a minimum at this time also. Silt fence should be placed across the stream before any activity in the stream begins. The fencing should remain until all activity has been completed. The fencing should be properly maintained by removing any large obstructions that may inhibit its filtering capacity.

RN - Ridgebury, Leicester and Whitman extremely stony fine sandy loams

Ridgebury, Leicester and Whitman soils occupy the western and southern portions of the wetland. This soil group consists of nearly level to gently sloping poorly and very poorly drained soils in drainageways and depressions on glacial uplands. Slopes are 0-5%. Stones and boulders cover 3 to 25% of the surface. Approximately 40% of the acreage consists of Ridgebury extremely stony fine sandy loam, about 35% is Leicester extremely stony fine sandy loam, about 15% is Whitman extremely stony fine sandy loam and about 10% other soils.

The soils of this unit were not separated in mapping because they react similarily to most uses and to management.

The Ridgebury and Leicester soils have a seasonal high water table at a depth of about 8 inches from late fall until mid-spring. The Whitman soils have a water table at the surface from fall through spring and after heavy rains. In many places, they are ponded for several weeks in winter. In summer, the water table may drop to a depth of 5 feet or more. These soils have moderate or moderately rapid permeability in the surface layer and subsoil. The Ridgebury and Whitman soils have slow or very slow permeability in the substratum, and the Leicester soils have moderate or moderately rapid permeability in the substratum. These soils have a high available water capacity. Runoff is slow or very slow.

The soils of this unit have poor potential for community development. They are limited mainly by their seasonal high water table and stoniness. The Ridgebury and Whitman soils are also limited by the slowly permeable substratum. These soils are difficult to excavate because of the high water table and stoniness. The steep slopes of excavations tend to slump when saturated.

V. BIOLOGICAL CONSIDERATIONS

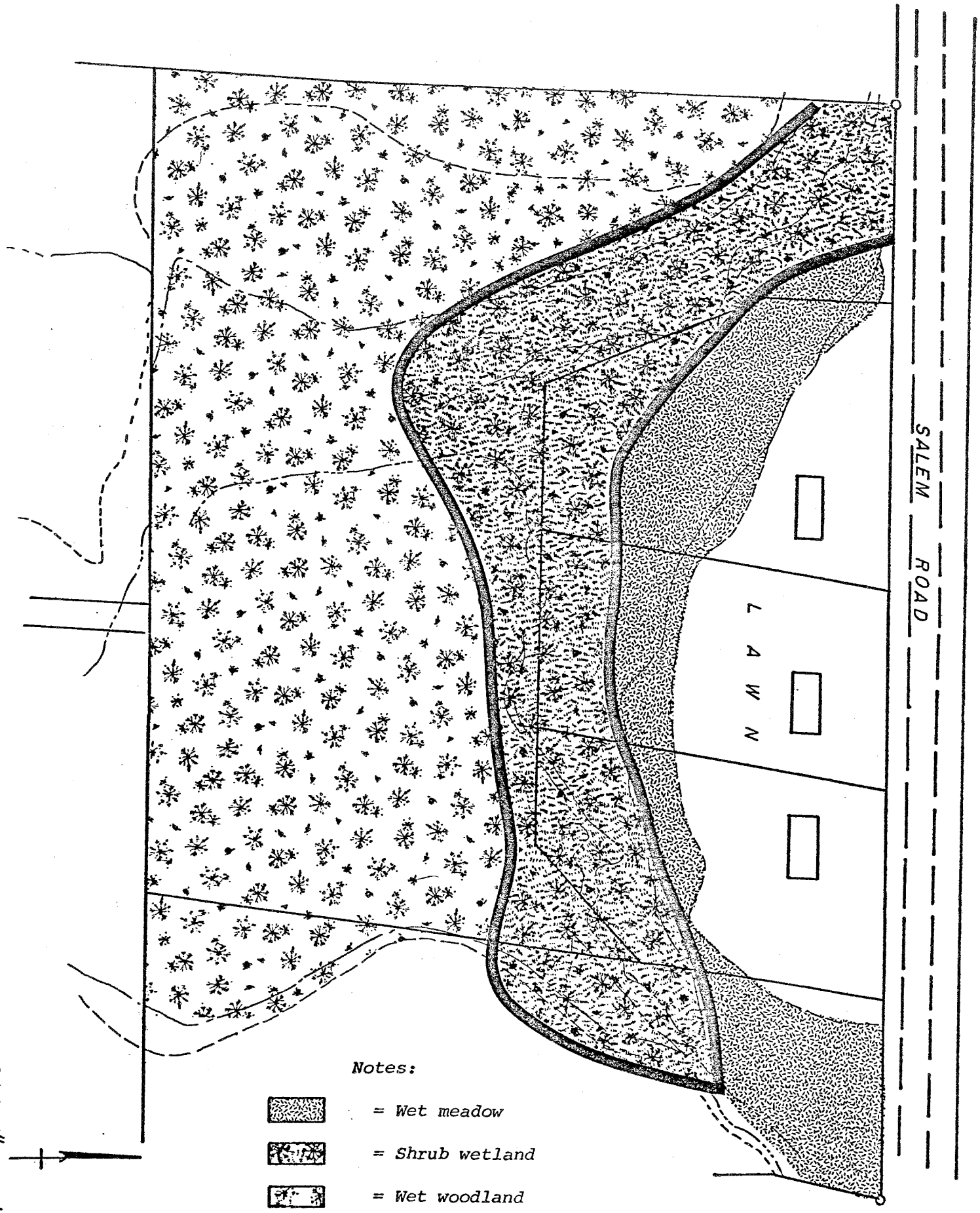
The vegetation on the project site occurs in three distinct zones (see Figure 5). Extending southward from the roadway at the east end of the parcel and from the toe of slope of the lawn is a wet meadow. Forbs and grasses which are well-adapted to wet environments dominate the meadow. That the meadow supports a preponderance of non-woody species is apparently a function of the recent clearing of the site for housing construction.

A second vegetation zone on the property is a shrub wetland. The shrubs occur in association with the streambed. They are moisture-tolerant, and are more tolerant of shading from the trees in Zone 3 than the grasses and forbs that are found in the wet meadow. Silky dogwood, speckled alder, sweet pepperbush, and viburnums are the dominant shrubs, while red maple, white ash, and black birch dominate the canopy. Red oak occurs at the higher (and drier) elevations.

American Crows, House Sparrows, Tufted Titmouse, and Black-capped Chickadees were the only birds observed during the February 8 inspection. No doubt the site also provides a valuable habitat and feeding ground for Northern Cardinals, Northern Orioles, American Robins, Red-winged Blackbirds and Blue Jays, as well as for a variety of wrens, finches, flycatchers, and warblers. These songbirds could collect an abundance of food from the insects which breed in the water and from the many berry-producing shrubs. The meadow has plenty of nest-building materials, and the shrubs and trees afford many nesting sites. The availability of water from the stream is important to the birds for drinking. The site is also a likely habitat for amphibians, as well as for such small mammals as rabbits, grey squirrels, raccoons,and skunks.

Across Salem Road from the Pelletier site is a wetland dominated by red maple and tussock sedge. The project site is separated from another wetland located to the east by Pond View Drive.

FIGURE 5
GENERAL VEGETATION MAP



According to a January 4, 1980 report by Soil Scientist Henry T. Moeller, the area designated as Carlisle mucks acts as a water detention basin. The presence of sphagnum moss and peat supports this interpretation, as well as lending support to Mr. Moeller's speculation that the area was probably a shallow lake following the last glaciation.

To summarize the site's functions, the wetlands act as wildlife habitat and as a detention basin. Although the site is not unique in terms of other Connecticut wetlands, it is locally significant for ecological and hydrological reasons, and for providing passive recreational opportunities.

In consultation with Civil Engineer Steven Derby and Geohydrologist Bill Warzecha, the Team's biologist was advised that the proposed channel deepening would have the effect of drying-out the areas immediately adjacent to the streambed. Such alterations in the water regime frequently result in invasion by common reed grass (Phragmites australis) and, in drier areas, Japanese knotweed (Polyganum cuspidatum). These species have very little wildlife value, and few species can feed on them or use them as nesting sites. Phragmites is also a fire hazard.

If the project goes forward, any Phragmites which appears should be removed by hand, and then the site should be replanted with more productive cattails. Rhizomes have been found to be more effective in establishing cattails than seeds alone, but existing cattail stands should not be denuded for the sake of revegetating the project site. Rather, no more than one propagule per square yard should be taken, and rhizomes should be planted no more sparsely than 1.5 feet off-center.

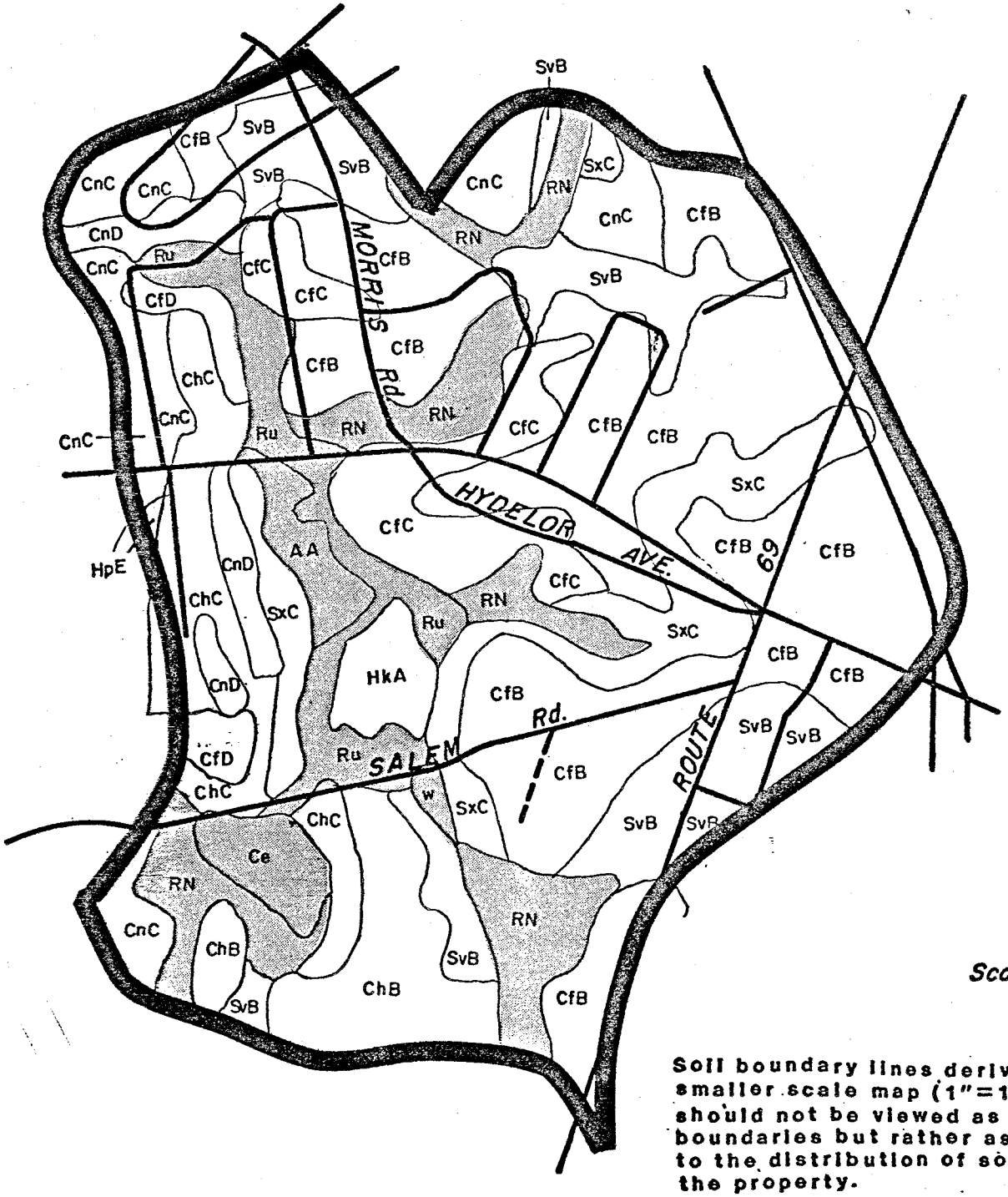
This method, however, is not guaranteed to succeed. If Phragmites persists, it might be necessary to excavate the area to inundate it sufficiently to give cattails a competitive advantage over Phragmites. Excavating, however, would have the effect of moving the dry areas further from the center line of the channel, and would simple "move" the area to be invaded by Phragmites.

It seems, then, that the proposed channel deepening would have substantial adverse ecological impacts that would be difficult, if not impossible, to mitigate. In light of this, the Team's biologist suggests that serious consideration be given to abandoning the plan to deepen the channel. Removing dead trees and shrubs from the channel area should not cause significant problems provided this work is done manually. The area simply is not suitable for the use of heavy equipment. If the channel deepening is conducted despite the above suggestions, then the excavation activities should begin upstream and proceed downstream, so that sediments released by the activity will be removed as the excavation proceeds. All work should be conducted during low-flow periods.

* * * * *

VI. APPENDIX

SOILS MAP



Scale 1" = 1000'

Soil boundary lines derived from smaller scale map (1"=1320') and should not be viewed as precise boundaries but rather as a guide to the distribution of soils on the property.

SOILS CHARACTERISTICS CHART

MAP SYMBOL	SOIL NAME	FLOODING FREQUENCY	HIGH WATER TABLE DEPTH	BEDROCK DEPTH
AA	Adrian and Palms mucks	None	+1-0 feet Nov - May	>5 feet
CE	Carlisle muck	"	"	"
CfB	Charlton fine sandy loam, 3 - 8 percent slopes	"	>6 feet	"
CfC	Charlton fine sandy loam, 8 - 15 percent slopes	"	"	"
CfD	Charlton fine sandy loam, 15 - 25 percent slopes	"	"	"
ChB	Charlton very stony fine sandy loam, 3 - 8 percent slopes	"	"	"
ChC	Charlton very stony fine sandy loam, 8 - 15 percent slopes	"	"	"
CnC	Charlton extremely stony fine sandy loam, 3 - 15 percent slopes	"	"	"
CnD	Charlton extremely stony fine sandy loam, 15 to 35 percent slopes	"	"	"
HkA	Hinckley gravelly sandy loam, 0 - 3 percent slopes	"	"	"
RN	Ridgebury, Leicester & Whitman extremely stony fine sandy loams	"	0 - 0.5 feet Sept - May	"
Ru	Rumney fine sandy loam	Frequent Nov - May	0 - 0.5 feet Nov - Apr.	"
SvB	Sutton fine sandy loam, 3 - 8 percent slopes	None	1.5 - 3.5 feet Nov. - Apr.	"
SxC	Sutton extremely stony fine sandy loam, 3 - 15 percent slopes	"	"	"

VEGETATION INVENTORY

Wet Meadow

Sensitive fern (Onoclea sensibilis)
Cinnamon fern (Osmunda cinnamomea)
Common cattail (Typha latifolia)
Sedges (Carex spp.)
Redtop (Agrostis alba)
Switchgrass (Panicum virgatum)
Panic grass (P. clandestinum)
Asters (Aster spp.)
Goldenrod (Solidago spp.)
Meadowsweet (Spiraea tomentosa)
Turtle head (Chelone glabra)
Water horehound (Lycopus sp.)
Mad-Dog skullcap (Scutellaria lateriflora)
Monkey flower (Mimulus ringens)
Swamp dewberry (Rubus hispidus)
Common greenbrier (Smilax rotundifolia)
Silky dogwood (Cornus amomum)
Red maple (Acer rubrum)
Ditch-stonecrop (Penthorum sedoides)

Shrub Wetland

Ground cedar (Lycopodium complanatum)
Sensitive fern (Onoclea sensibilis)
Cinnamon fern (Osmunda cinnamomea)
Tussock sedge (Carex stricta)
Speckled alder (Alnus rugosa)
Sweet pepperbush (Clethra alnifolia)
Clammy azalea (Rhododendron viscosum)
Highbush blueberry (Vaccinium corymbosum)
Spicebush (Lindera benzoin)
Silky dogwood (Cornus amomum)
Nannyberry (Viburnum lentago)
Maple-leaf viburnum (V. acerifolium)
Wild black cherry (Prunus serotina)
American chestnut (Castanea dentata)

Wet Woodland

Sphagnum moss (Sphagnum sp.)
Duckweed
Silky dogwood (Cornus amomum)
Highbush blueberry (Vaccinium corymbosum)
Nannyberry (Viburnum lentago)
Maple-leaf viburnum (V. acerifolium)
Red maple (Acer rubrum)
Red oak (Quercus rubra)
White ash (Fraxinus americana)
Black birch (Betula lenta)

ABOUT THE TEAM

The King's Mark Environmental Review Team (ERT) is a group of environmental professionals drawn together from a variety of federal, state, and regional agencies. Specialists on the team include geologists, biologists, foresters, climatologists, soil scientists, landscape architects, recreation specialists, engineers, and planners. The ERT operates with state funding under the aegis of the King's Mark Resource Conservation and Development (RC&D) Area - a 47 town area in western Connecticut.

As a public service activity, the team is available to serve towns and developers within the King's Mark Area --- free of charge.

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 the review of a wide range of significant activities including subdivisions, sanitary landfills, commercial and industrical developments, and recreation/open space projects.

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 an administration agency such as planning and zoning, conservation, or inland wetlands. Requests for reviews should be directed to the Chairman of your local Soil and Water Conservation District. This request letter must include a summary of the proposed project, a location map of the project site, written permission from the landowner/developer 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 King's Mark RC&D Executive Committee, the team will undertake the review. At present, the ERT can undertake two reviews per month.

For additional information regarding the Environmental Review Team, please contact your local Soil Conservation District Office or Richard Lynn (868-7342), Environmental Review Team Coordinator, King's Mark RC&D Area, P.O. Box 30, Warren, Connecticut 06754.