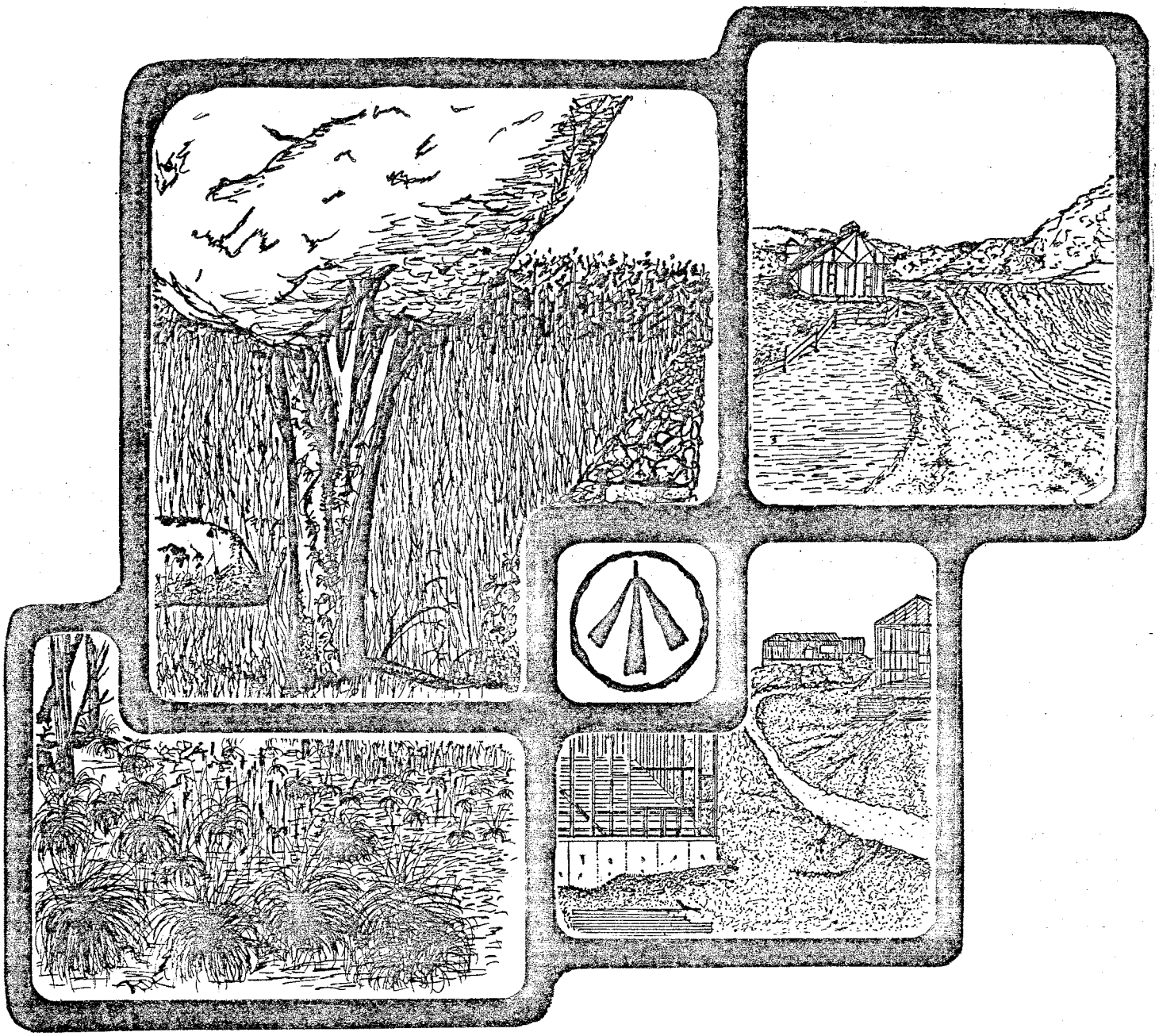
ENVIRONMENTAL REVIEW TEAM REPORT



ROSSMORR ESTATES
HARWINTON, CONNECTICUT

KING'S MARK
RESOURCE CONSERVATION & DEVELOPMENT AREA

KING'S MARK
ENVIRONMENTAL REVIEW TEAM REPORT

ROSSMORR ESTATES
HARWINTON, CONNECTICUT

JANUARY 1982

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

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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
Capitol Regional Council of Governments
American Indian Archaeological Institute

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FUNDING PROVIDED BY
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Irene Nadig, Secretary

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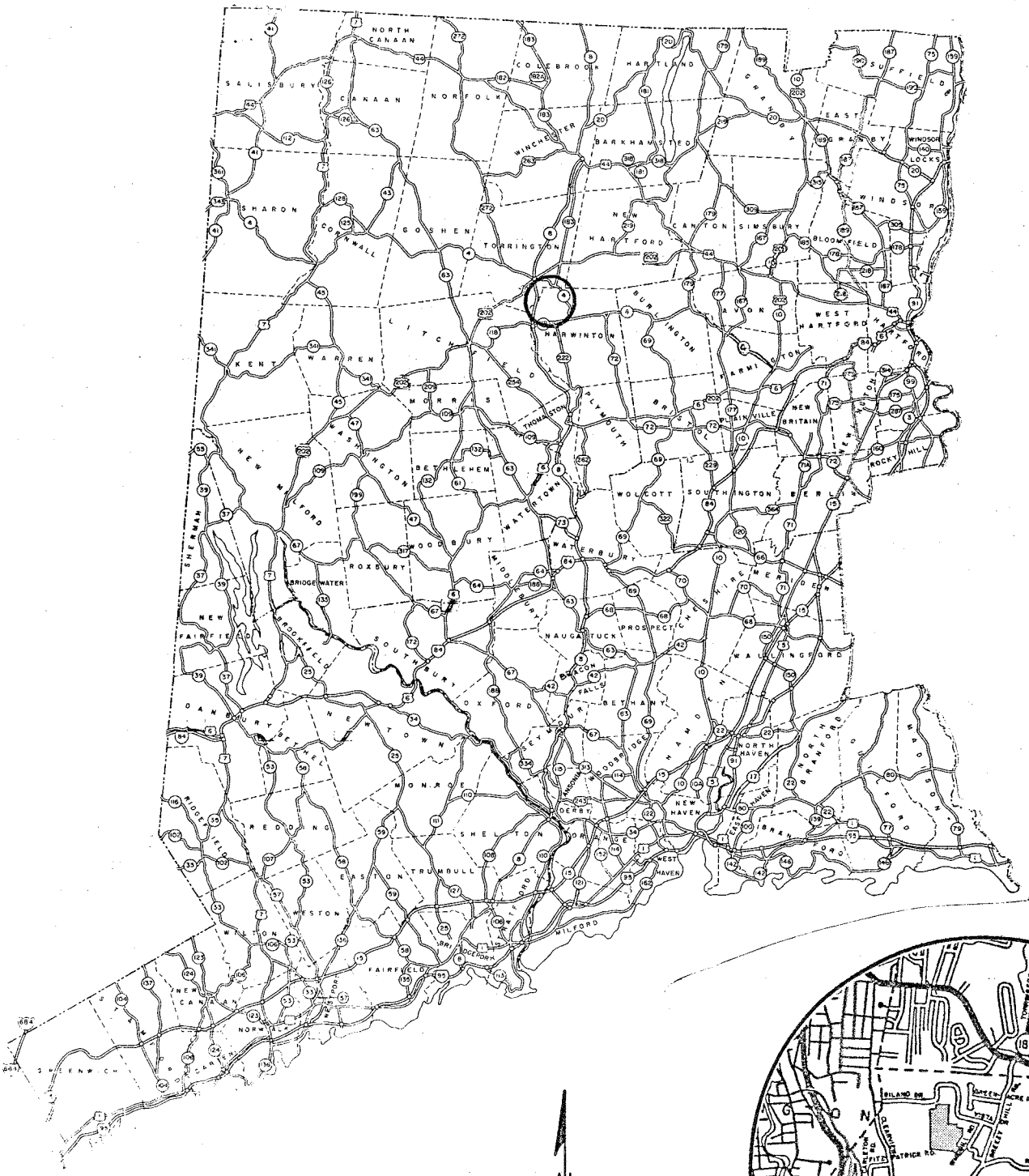
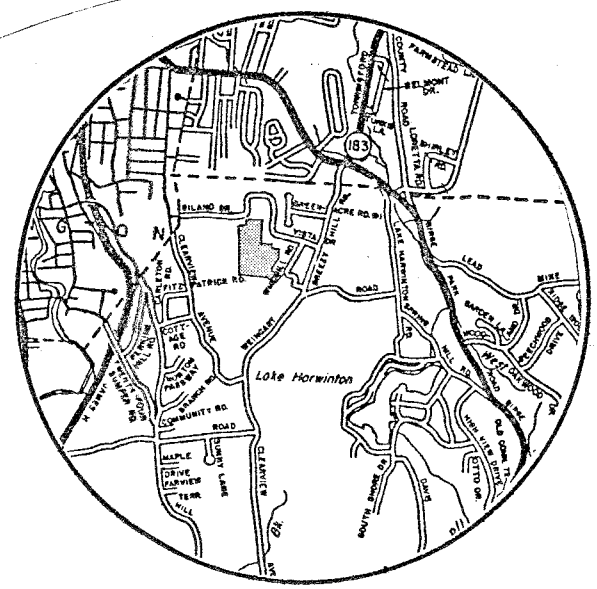
ROSSMORR ESTATES
HARWINTON, CONNECTICUT





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ENVIRONMENTAL REVIEW TEAM REPORT
ON
ROSSMORR ESTATES SUBDIVISION
HARWINTON, CT

I. INTRODUCTION

The Harwinton Planning Commission is presently considering an application for residential subdivision of ± 35 acres of land. The subject site is mostly wooded and located in the northwestern corner of town off Mountain View Drive. As shown in Figure 1, the subject site is characterized by slight to moderate relief in the western portion, and moderate to steep relief in the eastern portion.

Phase 1 of the project consists of lots 1-7 as shown in Figure 2. According to the project engineers, plans for Phase 2 (i.e. the eastern half of the site) are still tentative. However, the project planners told the ERT that they are now considering the development of only 2-4 lots on this section(rather than the 9 lots shown in Figure 2) due to land limitations. All lots are to be served by on-site wells and septic systems.

Access to Phase 1 is available off Mountain View Drive. An interior road of ± 800 feet is being proposed off Mountain View Drive to service the seven proposed lots. Access to Phase 2 of the project is available off Vista Drive and/or Windmill Drive.

The Harwinton Planning Commission requested the assistance of the King's Mark Environmental Review Team to help them in analyzing the proposed project. The Team was asked to identify the natural resource base of the site, to comment on the suitability of the land for the proposed project, and to provide an objective evaluation of the potential development impact. Of major concern to the Commission is the impact of the project on wetlands and local hydrology and the suitability of the site for septic systems.

The King's Mark Executive Committee considered the town's request for an ERT study of the development proposal and approved the project for review by the Team.

The ERT met and field reviewed the site on December 2, 1981. Team members for this review consisted of the following:

Gary Campbell	Sanitarian	Torrington Area Health District
Todd Cook	Planner	State Office of Policy and Management
Rob Rocks	Forester	State Department of Environmental Protection
Mike Schaeffer	Soil Conservationist	U.S.D.A. Soil Conservation Service
Mike Zizka	Geohydrologist	State Department of Environmental Protection

FIGURE 1.

TOPOGRAPHIC MAP

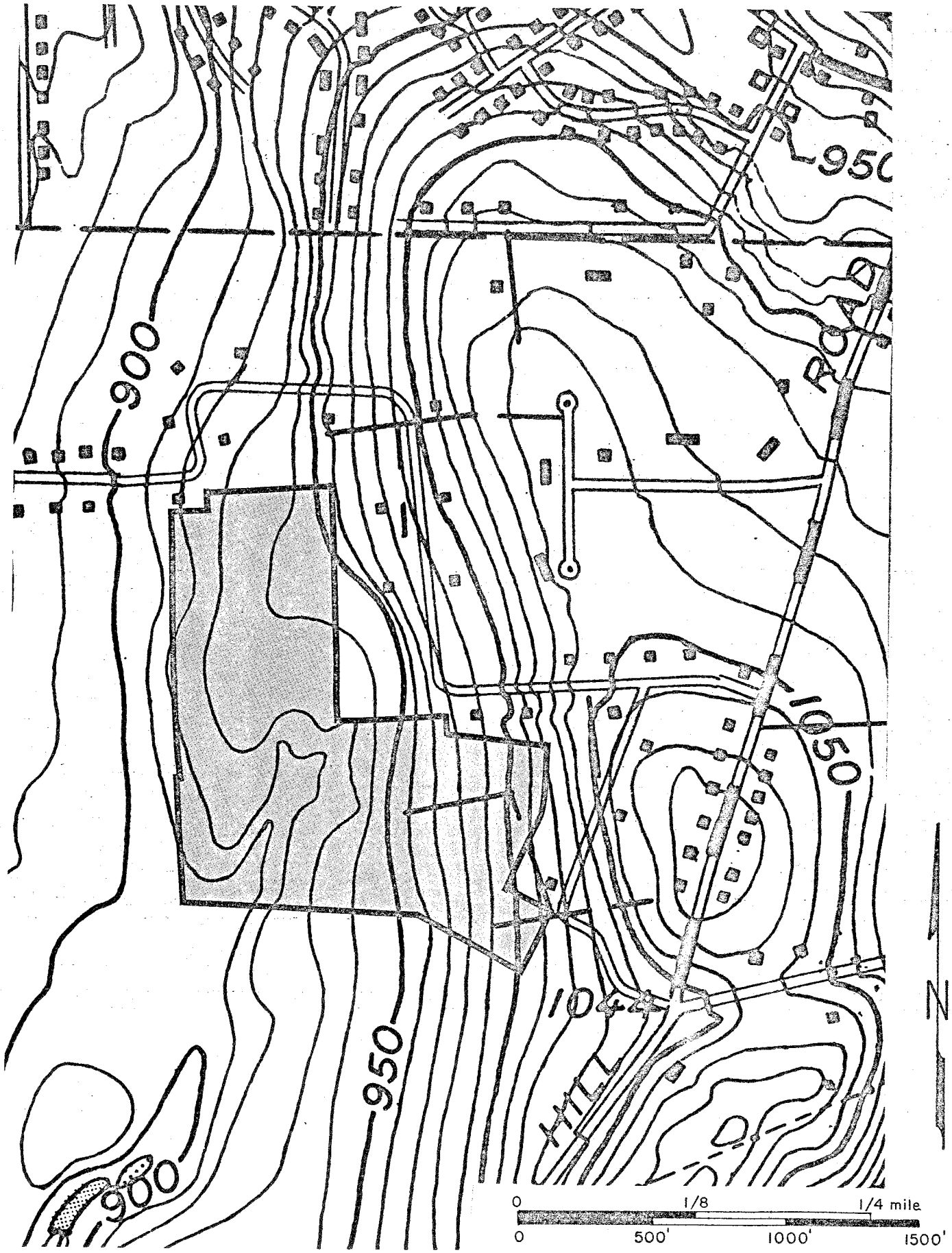

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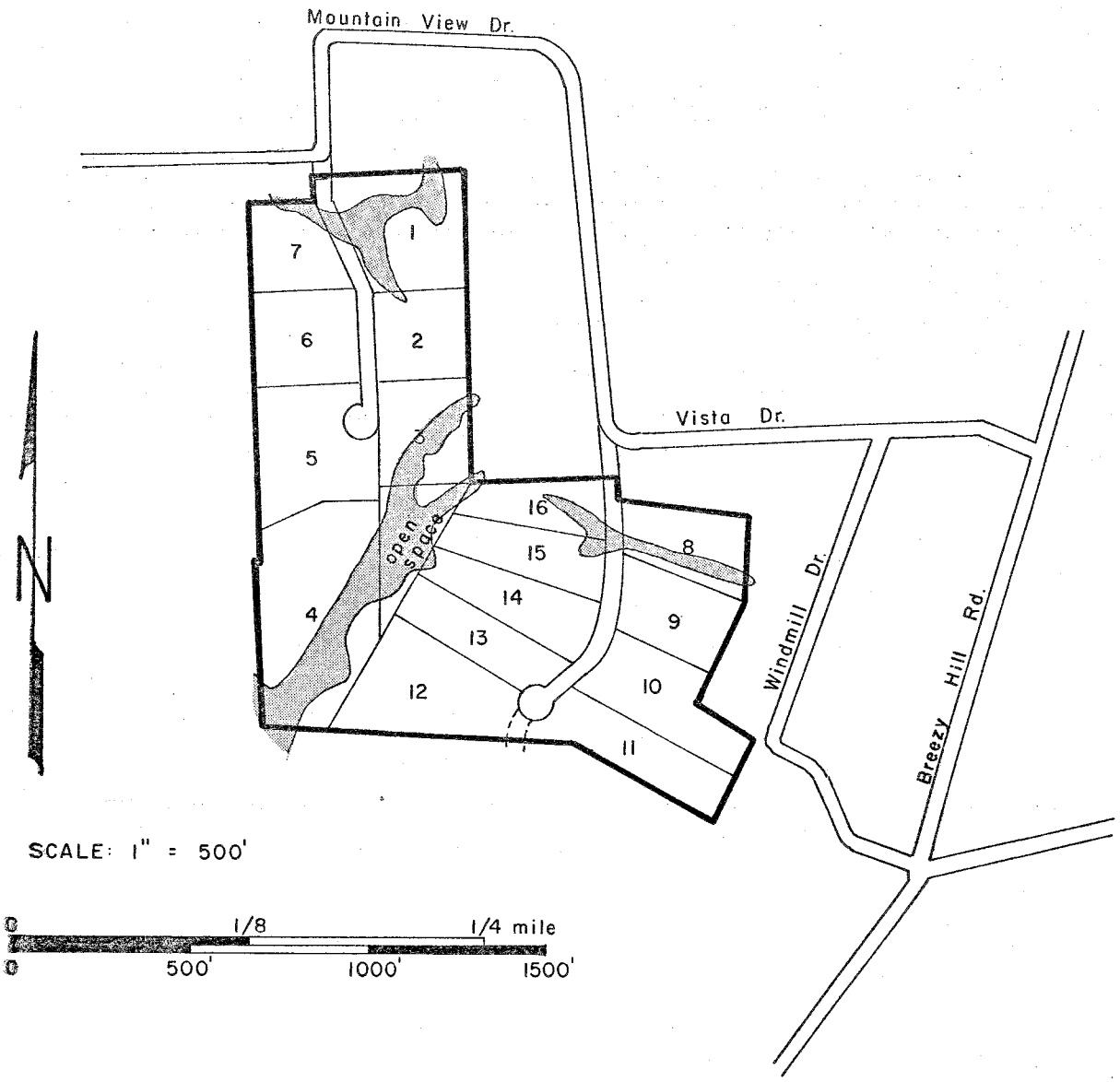
FIGURE 2.

SIMPLIFIED SITE PLAN



• ADAPTED FROM DEVELOPER'S SITE PLAN OF JUNE 15, 1981

INLAND WETLANDS

Prior to the review day, each team member was provided with a summary of the proposed project, a checklist of concerns to address, a detailed soil survey map, a soils limitation chart, a topographic map, and a simplified site plan of the development proposal. 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. It is important to understand that the ERT is not in competition with private consultants and hence does not perform design work or provide detailed solutions to development problems. Nor does the team recommend what ultimate action should be taken on a proposed project. The ERT concept provides for the presentation of natural resources information and preliminary development considerations--all conclusions and final decisions rest with the town and the developer. It is hoped the information contained in this report will assist the Town of Harwinton and the landowner/developer 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. GEOLOGY

Rossmorr Estates is located in a section of Harwinton that is encompassed by the Torrington topographic quadrangle. The bedrock geology of the quadrangle has been mapped by C. W. Martin and published by the Connecticut Geological and Natural History Survey (Quadrangle Report No. 25, 1980). The surficial geology of the quadrangle has been mapped by R. B. Colton and published by the U.S. Geological Survey (Map GQ-939, 1971).

No bedrock outcrops were seen on the site. Bedrock below the surface is interpreted to consist of fine-grained, gray, granulitic gneisses or granulites composed of quartz, plagioclase, biotite, and muscovite. Subordinate layers of schist composed of different proportions of the same minerals are also present. The term "granulite" refers to a metamorphic (geologically altered) rock with little noticeable internal structure. As the name implies, granular mineral grains predominate. "Gneiss" refers to a metamorphic rock in which thin bands of elongate or flaky minerals are interspersed with layers or lenses of granular minerals. "Schist" refers to a metamorphic rock in which the alignment of flaky or elongate minerals is pronounced, giving the rock a strong structual layering.

Bedrock does not appear to be close to the surface (within 5 feet) on the site. The shallowest depths to bedrock would probably be found on the steeply sloping section of Phase 2, just west of Windmill Drive. Numerous boulders littered the toe of the slope along the site's central streamcourse.

Till overlies bedrock throughout the property. Till is a glacial sediment that contains a non-sorted mixture of clay, silt, sand, gravel, and boulders. Because the till was deposited directly from glacier ice without significant reworking by meltwaters, the texture of the sediment may vary markedly within short distances. Test holes on the site indicate that a sandy, gravelly texture is common in the upper 3 to 7 feet of the till. At some depth, however, the texture becomes siltier, less stony, and more compact. The compact layer, often designated "hardpan", restricts percolation of groundwater and may cause seasonally high groundwater levels. The Phase 2 section of the property (proposed lots 8-16 in Figure 2) was extremely wet during the field review, apparently because of a relatively shallow occurrence of the compact till. The Phase 1 section had a generally lower hardpan level but was more variable.

III. HYDROLOGY

The Rossmorr Estates parcel is set within an area of problem drainage and failing septic systems. The town is understandably concerned that new development within the area will add to existing problems or create new ones. Some of these concerns are addressed below.

Approximately 28 acres of the parcel (all of Section 2, lot 3, and the open-space area; most of lot 2; and parts of lots 1, 4, and 5) drains into a streamcourse between Section 1 and 2. This steam also receives storm drainage from catch basins located along Mountain View Drive, Vista Drive, and Windmill Drive. The stream bed was filled with sand, part of which undoubtedly came from the existing streets and part of which came from erosion of the streambanks. Where the steam leaves the property, at the southwest corner, it has a drainage area

of approximately 60 acres. If the narrow wetland in lot 1 is diverted through the access road to Phase 1, as the developer proposed, the effective drainage area would be increased by about 6 acres (see Figure 3).

Approximately 7 acres of the parcel (all of lots 6 and 7, most of lots 1 and 5, and parts of lots 2 and 4) drains westward. The lot 1 wetland mentioned above now sends intermittent drainage onto an established residential lot along Silano Drive. Surface drainage has been a problem along Silano Drive, as have high water tables. If the lot 1 wetland were drained through the new access road, part of the problem would be alleviated. It is unlikely, however, that a complete cure would be obtained, since the general hydrologic conditions of the area are unfavorable.

Runoff from much of the 7 acre area mentioned above appears to flow directly westward, staying south of the existing Silano Drive lots. Development of the site as proposed would cause increases in the runoff volume, but the increases would be relatively small due to the low density of the development. The combined runoff increases from lots 7 and 6, which seem to be the only lots capable of affecting Silano Drive, should be more than offset by the diversion of the lot 1 wetland. The Team foresees no detrimental overall impact on that road. Efforts should be made, however, to direct as much runoff as possible from the houses and driveways on lots 7 and 6 to the new access-road drainage system. This would help to prevent any impact on the immediately abutting properties.

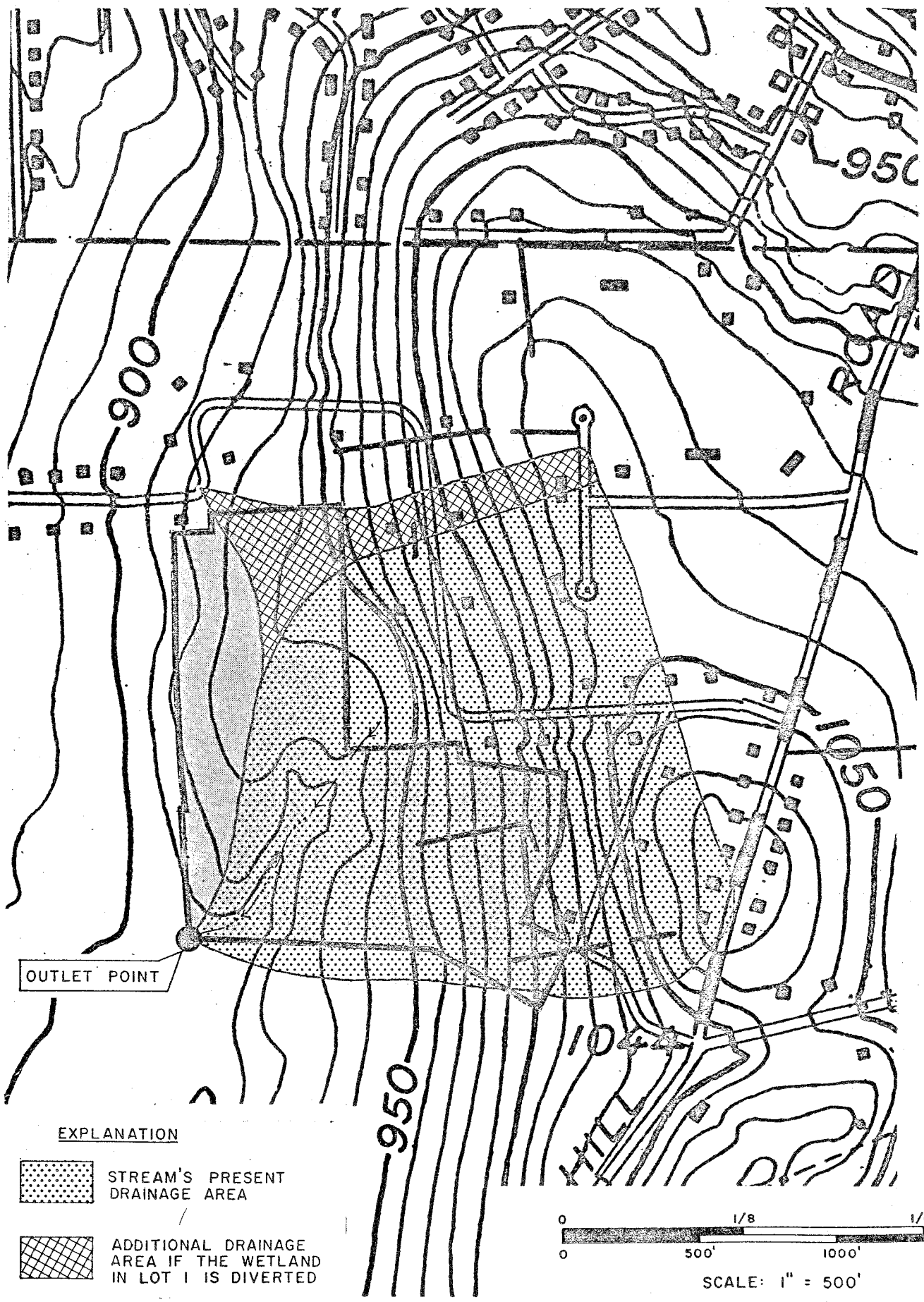
As a result of runoff increases from the proposed development, peak flows in the site's central stream would increase. Again, however, the relatively low density of the subdivision would tend to minimize the effect, even with the diversion of the lot 1 wetland. If Phase 1 only were completed, peak flows for a 2 year frequency storm would increased by only about 5 percent, while peak flows for the 50-year and 100-year storms would increase by only about 1 percent. If both Phases 1 and 2 were completed (including all of lots 1 through 16), peak flows for a 2 year storm would increase by about 22 percent, while increases for a 50-year or 100-year storm would increase by about 5 percent. Phase 2 would have a greater influence on the storm flows because of its steeper slopes and because of the greater number of lots that would lie within the stream's watershed.

A man-made pond is located less than 1000 feet downstream from the site. Some consideration should therefore be given to the potential effects of the development on this pond. Augmented flows could result in increased streambank erosion and further transport of road debris. If only Phase 1 is completed, the projected flow increases should be small enough so that little effect on the pond occurs. If both phases are completed, the flows may rise enough to cause additional sediment to flow into the pond. Moreover, the soils in Phase 2 are generally less suitable for septic systems than the soils in Phase 1. If septic system failures occur on Phase 2, the quality of water in the stream and pond could be degraded.

On the day of the field review, the developers indicated that they were considering reducing Phase 2's subdivision from eight lots to two. If this is done, few problems of water quality, peak flows, erosion, or sediment generation would be anticipated from the project. This is not to say that there would be no problems. The groundwater levels in Phase 2 apparently are high enough to cause at least seasonal troubles for septic systems unless appropriate engineering solutions can be developed. The wetland areas on the site are probably seasonal discharge areas for groundwater. If septic systems are placed too near the wetlands, there would be a risk of improperly treated sewage effluent surfacing

FIGURE 3.

DRAINAGE AREA OF ON-SITE STREAM



in or near the wetlands. For this reason, the Team Geohydrologist recommends a setback of at least 50 feet. Special care should also be used in both the design and the installation of septic systems in areas having seasonally high groundwater levels.

The Team was asked to trace the course of the site's central stream after it leaves the property. After passing through the pond mentioned above, the stream flows under Clearview Avenue, Scoville Hill Road, and Route 8 before joining Naugatuck River.

IV. WATER SUPPLY

Bedrock is the only practical water supply source on the site. Wells founded in bedrock are usually capable of providing small but reliable yields of groundwater. Surveys of bedrock wells in the Housatonic River basin have shown that 80-90 percent of the wells yield at least 2-3 gallons per minute, amounts which are adequate for most household needs.

Bedrock transmits water largely by way of fractures. The yield of a given well therefore depends upon the number and size of water-bearing fractures that the well intersects. Since fractures are not evenly distributed through the rock, there is no practical way to determine the potential of any particular site for a bedrock well.As stated above, most wells can deliver 2-3 gallons per minute of groundwater. There is, however, the occasional dry hole. Bedrock fractures are primarily concentrated in the upper 200 feet. If a well drilled through 200 feet of bedrock fails to yield any water or yields an unsatisfactory quantity, it may be more productive to drill in a new location than to continue drilling in the original location.

The natural quality of the groundwater in this area should be good. The bedrock is not known to contain significant concentrations of minerals that may affect color, odor, or taste. Wells should be located as far as is practical from septic systems.

V. SOILS

A Soils Map of the subject site is presented in the Appendix of this report. The Appendix also contains a Soils Limitation Chart which identifies limiting factors for various land uses. By comparing the Soils Map with the Soils Limitation Chart, one can gain an understanding of the suitability of the various soils for alternate land uses.

A. SOIL DESCRIPTIONS

Four major soil types are found on this property according to the Litchfield County Soil Survey. Each of these is discussed briefly below:

Paxton and Woodbridge soils are gently sloping to moderately steep. They are loamy upland soils with a firm substratum (hardpan). The Paxton soils on the site total ± 19.1 acres. Woodbridge soils total ± 6.0 acres of the site. Together they represent about 71% of the site.

Paxton soils are deep and well drained with moderate permeability in the surface layer and subsoil. Due to the hardpan layer, permeability in the substratum is slow to very slow. The average depth to hardpan is about 22 inches.

Woodbridge soils are deep and moderately well drained. Moderate permeability in the surface and subsoil layers and slow to very slow permeability in the substratum are typical of the Woodbridge soils. As is the case with the Paxton soils, the hardpan layer is found at a depth of about 22 inches.

Limitations affecting the use of Paxton and Woodbridge soils for residential development are: slow to very slow permeability in the substratum, seasonal wetness, and in some cases steep slopes and/or surface stoniness. In most cases these limitations can be overcome by implementing one or more management practices designed to mitigate the effects of each particular limitation. Management practices to overcome the limitations of these soils, and others on this site, are presented at the end of this section in Table A.

The Charlton soil is represented by a small area (+0.1 acres) in the south east corner of the site. Charlton soils are deep and well drained. Permeability is moderate to moderately rapid throughout. Charlton soils occur predominantly on side hill locations on the landscape.

The predominant limitations encountered when using areas of Charlton soils for residential development are: steep slopes, and/or surface stoniness. These limitations can be overcome by using one or more management practices.

The remaining acreage* of the parcel is mapped as Leicester, Ridgebury and Whitman very stony fine sandy loams. This undifferentiated mapping unit includes the poorly drained Leicester and Ridgebury series and the very poorly drained Whitman series. These soils are usually level to nearly level and located within relatively narrow drainage ways. The soils within this mapping unit are regulated under Connecticut Public Act 155 (Inland Wetlands). Wetness is the major limitation associated with this soil for all phases of urban development.

During the site investigation it was noted that included within the area mapped as Paxton very stony soils, 3-15% slopes (PeC, located on the northwestern portion of the parcel) was a considerable area of soil that had no definite hardpan layer to a depth of 4-5'. This was observable as several deep hole test pits had been left open. More test pits could be dug to determine whether to manage this area as a Paxton soil or as a soil with no hardpan layer, such as Charlton.

B. SOILS VS. PROPOSED LAND USE

Phase I - There are to be seven lots on 17 acres under this phase. Each home is to be serviced by individual wells and on-site sewage disposal systems. The following are comments and considerations which relate to the soils on the site, and their inherent limitations in relation to residential development:

*According to the published Litchfield County Soil Survey, the area mapped as Leicester, Ridgebury, and Whitman very stony soils (Lg) is approximately 10 acres. However K. C. Stevens, soil scientist, mapped the wetlands on the site in detail and came up with approximately half the acreage (+ 5 acres). Areas mapped as Lg in the published survey, but not by Mr. Stevens, were mapped predominantly as Woodbridge soils by Mr. Stevens.

1. A considerable portion of lots #1, 3 and 4 is mapped as inland wetland soils. The surrounding soils are of the Paxton-Woodbridge series. Due to the wet nature of these soils, extreme caution is advisable in the design and placement of septic systems to ensure operability.

2. Portions of lots 6 and 7 (although they are mapped as Paxton and Woodbridge) appeared to have no definite hardpan layer within the top 4-5'. However, the extent of this situation can only be determined by further on-site investigation. If no further on-site investigation (test pits) is carried out, it would be best to assume that this area is a small inclusion of another soil within the Paxton or Woodbridge mapping units.

3. Lots #2 and 5 are mapped as Paxton and Woodbridge and should be managed as such.

4. A properly designed culvert crossing should be installed where the proposed road crosses a narrow wetland area near the proposed entrance to the property.

5. The possibility of draining the wetland area on the north side of the property (near the proposed entrance) was discussed during the ERT's field review. It appears that several subsurface drainage lines spaced about 75' apart would be necessary to drain the relatively small area mapped as wetland. However, due to the amount of wetness in the surrounding areas, it is questionable as to whether the wetland area would be dried up even after drains were in place.

Phase II - Due to soil limitations, there are only 2 - 4 homes currently being considered for this ± 18 acres of land. Major limiting factors include stoniness, steep slopes, high water table, hardpan layers and small pockets of wetland soils. It would appear that 2, and possibly 4, homesites could be established on this section of the site.

C. PRIME FARMLAND SOILS

Although a small part of the total acreage is mapped as prime farmland (WxB, PbB), the housing density in the general area is heavy enough to deem these areas insignificant for commercial farm use.

D. EROSION AND SEDIMENT CONTROL

Erosion and sedimentation can be adequately controlled under the proposed project if some basic precautionary measures are taken. These measures include, but are not limited to:

1. Design roads and driveways as close to the contour as possible, and pave these areas as soon as possible.

2. Do not exceed 2:1 side slopes in cut and fill areas.

3. Plan to work when ground is not seasonally wet.

4. Revegetate all disturbed areas as soon as possible after construction. Seed area by area as work progresses (seeding dates: 4/1 - 10/1).

5. Use hay bale check dams around catch basins before paving.

6. When working in steeply sloping areas, install a temporary berm or haybale check dam as needed to keep eroded material on site.

7. Special care should be taken to insure that sediment does not enter any wetland areas or watercourses.

For more detail on erosion and sediment control measures, the developer can refer to "Erosion and Sediment Control Handbook - Connecticut"(USDA, Soil Conservation Service, 1976).

It should be noted that the stream bed through lots 16 and 4 was fairly heavily laden with sand. It appears that at least a portion of the sand is coming from the storm sewer system on Vista Drive. After investigating the storm sewer system, it was noted that very little sump space was built into the catch basins. For best results in the future, it is recommended that catch basins have about 2' of sump space, and that they are cleaned as necessary to prevent siltation of waterways.

TABLE A

Management Practices to Overcome Soil Limitations

Soil/Map Symbol	Management Practices
1. For on-site sewage disposal systems	
Paxton, 3-8% slopes (PbB) Woodbridge, 3-8% slopes (WxB)	- avoid construction when wet - restrict percolation tests to wet seasons of the year - interceptor drains over hardpan - large field, sand filter or mound system
Paxton, 8-15% slopes (PbC)	- all of the above and serial tile distribution in areas of steep slopes
Paxton very stony, 3-15% slopes (PeC) Woodbridge very stony, 3-15% slopes (WzC) Charlton very stony, 3-15% slopes (CrC)	- all of the above and stone removal and/or land grading - enlarge leaching area - avoid construction when wet - serial tile distribution in areas of steep slopes
2. For homes with basements	
Paxton soils Woodbridge soils Charlton soils	- footing drains - avoid construction when wet - stone removal and land grading as necessary
3. For drives and roads	
Paxton soils Woodbridge soils	- subsurface drainage under and along the uphill side of road beds to prevent settling and frost heaving - surface and subsurface drainage on roadcuts to prevent soil slippage caused by seepage.

VI. VEGETATION

The tract which is proposed for subdivision may be divided into five vegetation types (see Figure 4). These include four mixed hardwood stands which total approximately 21 acres; a hemlock stand which totals 7± acres; an old field area which totals 5± acres; a one acre pine stand; and one acre of openland/cleared roadway. It should be noted that the transition zones between these stands are rather wide, resulting in mapping and acreages which are only approximate.

It should be noted that the large healthy trees and flowering shrubs which are present throughout much of this property should be considered for retention because of their high aesthetic value. The high risk trees which are present in vegetation type E should be removed. Loss of trees to windthrow in vegetation type F and along the stream may be intensified if linear clearings are made in or along these areas. Impact on vegetation resulting from road crossing of the wetland should be minimal, providing culverts are properly sized and placed. Improvement thinnings in several stands would reduce crowding and result in healthier more stable trees over time.

A. VEGETATION TYPE DESCRIPTIONS

TYPE A MIXED HARDWOODS. This 11± acre fully-stocked stand is made up of medium quality pole and occasional sawtimber-size black birch, gray birch, paper birch, black oak, white oak, red maple, apple, and occasional eastern white pine. The understory in this stand is dominated by witch hazel, bluebeech, gray birch, highbush blueberry, hemlock seedlings, hawthorn, hophornbeam and shadbush. Ground cover and herbaceous vegetation consists of poison ivy, dewberry, raspberry, spirea, Pennsylvania sedge, evergreen wood fern, Christmas fern, hay scented fern and club moss.

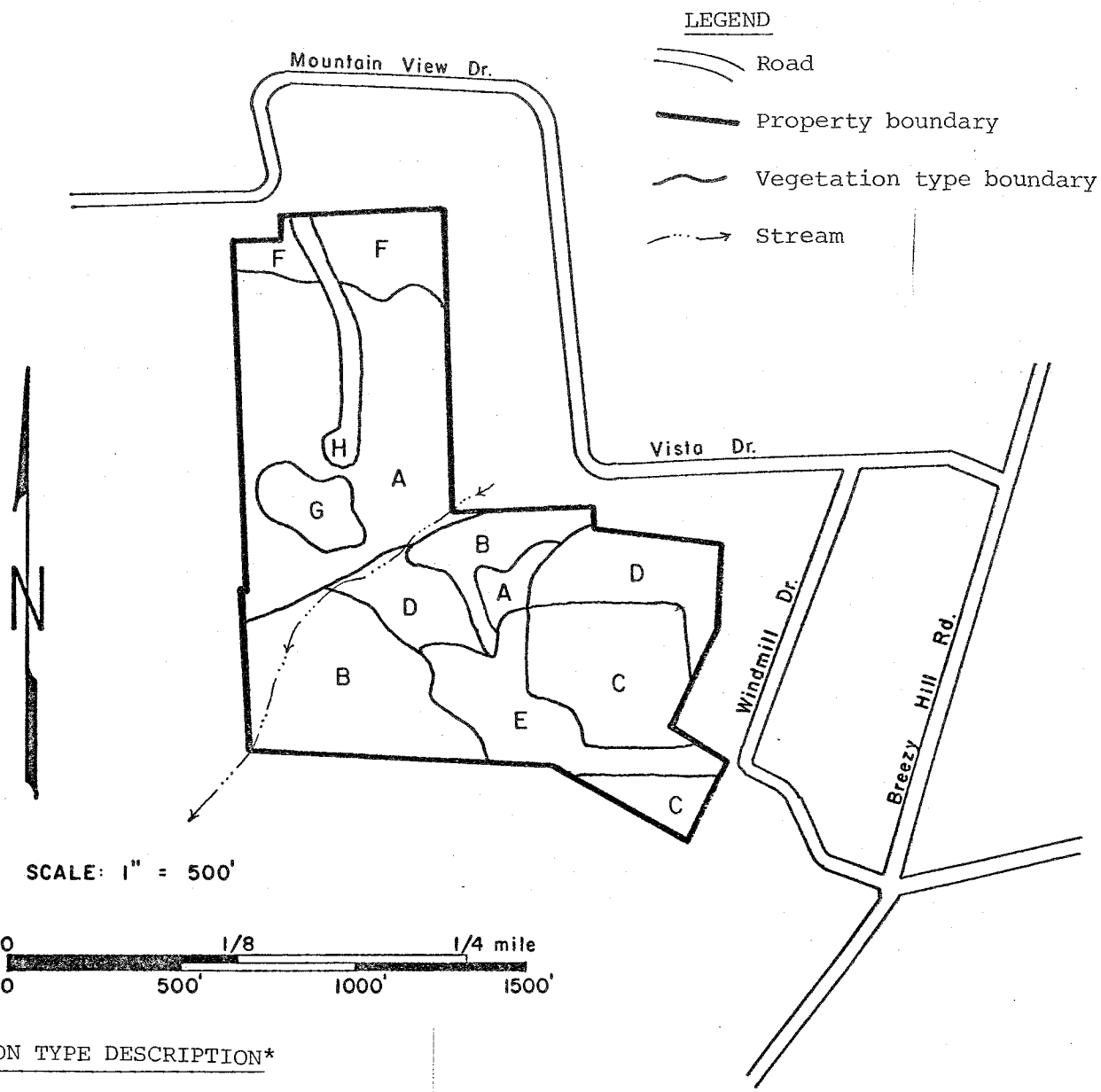
TYPE B HEMLOCK. All size classes of eastern hemlock are present within this 7± acre over-stocked stand. Pole size red maple, yellow birch, black birch, and black oak are also present. Mountain laurel, hemlock seedlings, white pine seedlings and gray birch are present in patches where openings in the overstory allow sunlight to penetrate. Ground cover vegetation is spaced throughout this area, however where it is present it consists of Christmas fern, Canada may flower and club moss.

TYPE C OLD FIELD This 5± acre old field area which is reverting to a mixed hardwood stand is at present under-stocked with seedling size white ash, sugar maple, red maple and black birch. Occasional apple trees and eastern red cedar are also present. Staghorn sumac, smooth sumac, winterberry, arrowwood, gray stemmed dogwood, and pussy willow are the shrub species which dominate this area. Ground cover is made up of grasses, goldenrod, steeplebush, sensitive fern, raspberry and dewberry.

TYPE D MIXED HARDWOODS. Medium quality pole size red maple and yellow birch are present in this 4± acre over-stocked stand. The trees in this stand are slowing in growth and declining in health due to their crowded condition. The understory in this stand is made up of spicebush, high bush blueberry, elderberry and shadbush. Ground cover vegetation consists of Pennsylvania sedge, aster, raspberry, cinnamon fern, Christmas fern, evergreen wood fern and clubmoss.

FIGURE 4.

VEGETATION TYPE MAP



VEGETATION TYPE DESCRIPTION*

TYPE A Mixed hardwoods, fully-stocked, pole with occasional sawtimber size, 11± acres.

TYPE B Hemlock, over-stocked, all size classes, 7± acres

TYPE C Old field, under-stocked, seedling size, 5± acres.

TYPE D Mixed hardwoods, over-stocked, pole size, 4± acres.

TYPE E Mixed hardwoods, under-stocked, sawtimber size, 3± acres.

TYPE F Mixed hardwoods. over-stocked, pole size, 3± acres.

TYPE G Pine, fully-stocked, sawtimber size, 1± acre.

TYPE H Open land, cleared roadway, 1± acre.

*Seedling size - trees less than 1" in diameter at 4½' above the ground (D.B.H.)
Sapling size - trees 1 to 5" in D.B.H.
Pole size - trees 5 to 11" in D.B.H.
Sawtimber size - trees 11" and greater in D.B.H.

TYPE E MIXED HARDWOODS. Extremely poor quality sawtimber size red maple, white ash, black birch and yellow birch are present in this 3± acre understocked stand. Several high quality sawtimber size paper birch are present however. Understory vegetation includes spice bush, witch hazel, arrowwood and highbush blueberry. Club moss, poison ivy, Canada may flower,Christmas fern, cinnamon fern and sensitive fern form the ground cover vegetation in this stand.

TYPE F MIXED HARDWOODS. Pole size black birch, red maple, yellow birch, american elm, paper birch and occasional white pine are present in this 3± acre overstocked area. The understory is dominated by spice bush, highbush blueberry, winter berry, blue beech, white pine seedling, witch hazel and scattered apple trees. Ground cover vegetation is made up of poison ivy, dewberry, aster, barberry, club moss, Christmas fern, cinnamon fern, evergreen wood fern, hayscented fern and sensitive fern.

TYPE G PINE. This approximately one acre fully-stocked stand is made up of high quality sawtimber size eastern white pine with occasional eastern hemlock. The understory in this area is made up of white pine seedlings, hemlock seedlings, mountain laurel, yellow birch seedlings and scattered gray birch. Huckleberry, Canada mayflower, club moss, Christmas fern, evergreen wood fern and Pennsylvania sedge form the ground cover within this area.

TYPE H OPEN LAND/CLEARED ROADWAY. One acre of this parcel has been cleared of all its woody vegetation to make way for the proposed road. At this time, grasses, goldenrod, dewberry, raspberry and spirea are dominant, with mountain laurel and hardwood tree sprouts becoming more widespread.

B. AESTHETIC CONSIDERATIONS

Many of the large healthy trees which are scattered throughout vegetation types A, B, E and G have high aesthetic and shade value. These high value trees should be selected for retention and worked into the final site plan for the proposed development. Several trees found within vegetation types A, E and G (which include paper birch and eastern white pine) would make excellent specimen trees. Recent research has shown that trees on a house lot may enhance the value of that house lot by as much as twenty percent.

It should be noted that trees are very sensitive to the condition of the soil within the entire area under their crowns. Development practices near trees such as excavation, filling and grading for construction of roadways and buildings may disturb the balance between soil aeration, soil moisture level and soil composition. These disturbances may cuase a decline in tree health and vigor, potentially resulting in tree mortality within three to five yars. Mechanical injury to trees may cause the same results. Dead trees reduce the aesthetic quality of an area and may become hazardous and expensive to remove if near roadways, buildings or utility lines.

Care should be taken during the construction period not to disturb the trees that are to be retained. Special care should be taken near hemlock trees because of their shallow root systems. In general, healthy and high vigor trees should be favored for protection over unhealthy trees because they are usually more resistant to the environmental stresses brought about by construction.

Where feasible, trees should be retained in small groups or "islands". This practice lowers the possibility of soil disturbance and mechanical injury. Individual trees and "islands" of trees should be temporarily, but clearly marked so they may be avoided during construction.

Several species of flowering trees and shrubs, including apple trees and mountain laurel are present throughout this tract. These flowering species should be retained where feasible for their aesthetic value. The flowering of these species can be stimulated by allowing increased direct sunlight to reach them. This can be accomplished by removing the trees in the overstory which are blocking the sunlight.

C. LIMITING CONDITIONS AND POTENTIAL HAZARDS

Many of the trees which are present in vegetation type E (mixed hardwoods) are very low in quality. Broken tops, split seams and extremely poor form is characteristic of many of these trees. These trees will represent a potential hazard if they are not removed prior to development.

Windthrow is a potential hazard in parts of vegetation type F, and also along the stream which passes through this property. Tree root depth is restricted by saturated soils in these areas. Under these conditions trees are unable to become securely anchored and are susceptible to windthrow. Trees which are crowded and rely on each other for stability have an even greater potential for windthrow problems and top breakage. These conditions may be intensified if linear openings, which allow wind to pass through rather than over these areas, are made. Openings and clearings in and along side these wetland areas should be avoided if at all possible. Light thinnings in these areas may help to improve tree stability however.

Alterations in wetland areas which permanently raise the water table such as restricting natural drainage and stream flows, may eventually have a negative impact on the vegetation in these areas. Raising the water table may drown roots causing widespread mortality in the trees, shrubs and herbaceous vegetation which are now present. The impact on vegetation created by construction of the proposed road crossing of the wetland area will be minimal providing that the culverts that are utilized are adequately sized and properly placed.

D. MANAGEMENT CONSIDERATIONS

Trees which are unhealthy and not growing vigorously due to crowded conditions are most susceptible to further degradation from environmental stresses brought about by development, disease, insect infestation and adverse weather conditions. Improvement thinnings, which remove undesirable trees and reduce competition for space, sunlight, nutrients and water between the high quality residual trees will, over time, allow trees to improve in health, vigor and stability. These thinnings when implemented properly can improve the aesthetic value of an area, improve tree health and vigor, improve wildlife conditions and provide wood products.

The trees which are present in vegetation types D and F are declining in health and vigor as a result of their crowded condition. Under these circumstances the trees are under stress, and major disturbances in their environment, such as changes in soil conditions and mechanical injury caused by construction in this area, may rapidly lower their health. A fuelwood thinning in these stands, following the "crop tree selection method" (preferably prior to construction) would help to reduce the crowded condition and improve health and

vigor. Under the "crop tree selection method", 100 of the highest quality trees in each acre should be identified (trees spaced about 20' x 20' will equal 100 trees per acre), and one, two, or three trees that are in direct competition with each of those identified should be removed. The 100 trees per acre that are selected as crop trees should be healthy, large crowned, and show little or no signs of damage. Trees which are not competing with the 100 selected trees should not be removed, unless they are severly damaged. This thinning, if implemented, will provide between 4 and 5 cords of fuelwood per acre. Thinnings in the above noted stands should be implemented when the ground is sufficiently frozen or dry so that soil damage (i.e. rutting) is not significant.

Although the trees which are present in vegetation types A, B and E are not rapidly declining in health and vigor, their overall condition could be improved by removing some of the poor and damaged trees for fuelwood. Thinnings focused on the removal of undesirable trees will once again reduce crowding and competition between residual trees. Up to one-third of the trees which are present in the overstory could be removed for the purposes of this thinning. Healthy, high quality trees should, however be retained.

Ideally, the above proposed improvement thinnings should take place prior to the development of this property. This will allow uniform quality of the thinning operations and uniform removal of hazards throughout the tract. If, however, this is not desirable or feasible, these thinnings could take place on an indivudual lot basis after subdivision has taken place. Regardless, all suitable trees removed during clearing operations should be utilized as fuelwood.

A public service forester or private forester should be contacted to help with the implementation of the suggested thinnings. Trees that are to be removed should be marked, so that the trees that are to be retained are not removed by mistake.

VII. WILDLIFE

The tract proposed for subdivision into Rossmorr Estates is made up of three major wildlife habitat types. These include upland woodland habitat without a significant evergreen understory, upland woodland habitat with an evergreen understory, and open land/old field habitat. For a description of the vegetation present and approximate location of these habitat types, please see the vegetation type descriptions and vegetation type map.

The upland woodland habitat without an evergreen component totals approximately 21 acres or 60% of the total tract. The value of this habitat type is enhanced by the large variety of tree species and size classes which are present. Over all, however, general habitat conditions are fair in terms of food and cover. Utilization of this habitat type by gray squirrel and ruffed grouse was unusually high at the time of the field investigation. Other wildlife species which commonly use this habitat type include white-tailed deer, raccoon, fox, woodchuck and many non-game species including song-birds, woodpeckers, creepers and small rodents.

The upland woodland habitat type with a considerable evergreen understory (hemlock and pine vegetation types) totals 8± acres or 23% of this property. The evergreen understory present in this area provides many of the above mentioned wildlife species with high quality cover. This cover is especially valuable during the winter months when shelter from adverse weather conditions is needed for survival.

The openland habitat which includes the oldfield vegetation type and open and cleared roadway area totals 6 acres or 17% of the tract. This habitat type is extremely valuable to song birds and small rodents which utilize the seeds and fruit produced by the herbaceous vegetation and shrub species which are present. The dense growth of shrubs and seedling size trees offers high quality cover for many species of wildlife during all but the winter months. Typically this habitat type is also used by cottontail rabbits, woodchucks, opossum, meadow voles and field mice. Several other species frequently visit this habitat for hunting and/or grazing. These species include hawks, owls, foxes, raccoon and white-tailed deer.

Impact of Proposed Project

Impact on the wildlife of this area will primarily stem from habitat destruction. Displacement of wildlife populations will occur as the density of development increases as it has to the north of the property. The more timid wildlife species will be the first to leave the disturbed areas in search of undisturbed areas. Raccoons, opossums, cottontail rabbits, and gray squirrels will probably continue to use the tract providing some areas are left as open space. Songbirds should increase in number over the entire site once development occurs; this will result from an increase in lawn areas and birdfeeders which attract these species.

Certain practices designed to enhance wildlife habitat in terms of food and cover could be implemented in conjunction with the development of this tract. These practices include: landscaping homesites with fruiting trees, shrubs and bushes;planting evergreen species, retaining undeveloped buffer strips (30-50 feet) along the stream belt areas, and perhaps retaining some land areas as open space. While these practices will not eliminate wildlife displacement, they should encourage utilization of the area by the more tolerant species.

VIII. SEPTIC SYSTEMS

The Torrington Area Health District has reviewed the septic system plans for phase I of the project. In a letter dated July 9, 1981 to the Harwinton Planning and Zoning Commission, the TAHD recommended that "Lots 1-7 be approved as submitted". As discussed in the soils portion of this report, the soils in the Phase I section of the site are generally favorable for residential development. A seasonal high water table is the major factor limiting the use of this soil. The TAHD has recommended that standard septic systems be installed no more than 18" into existing soils, protected by subsurface curtain drains and one foot of fill over the septic areas graded to divert surface runoff waters away from the systems.

The soils in the phase II portion of this site are more limiting. An extremely high water table(almost to the surface in the spring and fall of the year) is characteristic of this area. The soils were also found to have slow percolation rates. Such soils are prone to septic system failure and other problems if over-developed. The TAHD has recommended that the developer consider limiting the development of this area to two large lots with access off Vista Drive and Windmill Drive.

IX. ADDITIONAL PLANNING CONSIDERATIONS

Land use surrounding the Rossmorr Estates parcel includes residential land and wooded land.

The proposed project is compatible with these adjacent land uses.

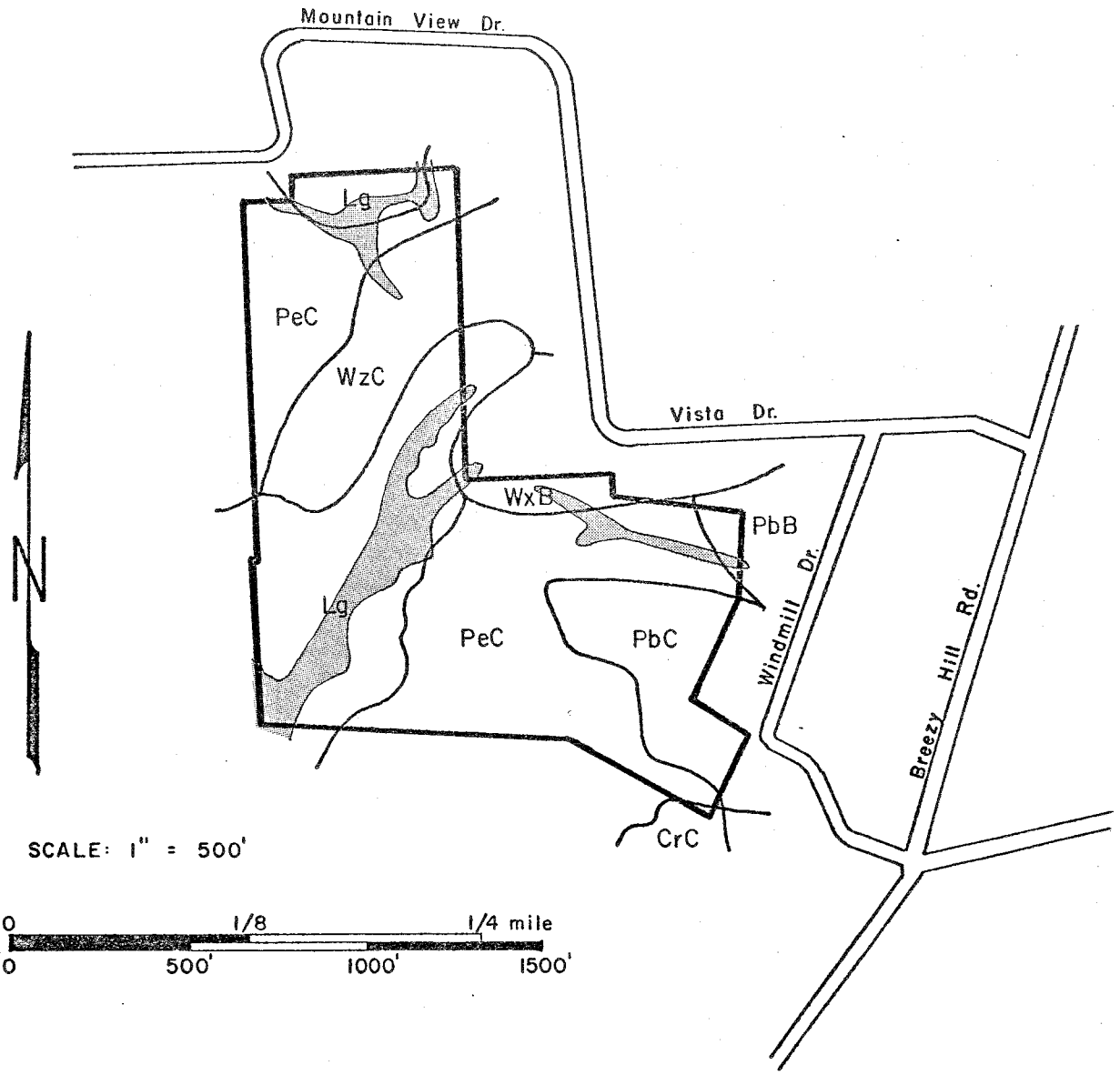
No circulation problems are envisioned with implementation of phase I. Only seven sites are planned, and the proposed interior road is level. The steep grades of the surrounding roads will always be a problem in winter however. The cul de sac of the interior road should be designed to allow a fire truck to turn around.

The vehicular impact of this project on local traffic should be insignificant with only seven lots planned.

* * * * * * * * *

APPENDIX

SOILS MAP



- ADAPTED FROM LITCHFIELD COUNTY SOIL SURVEY, U.S.D.A. – S.C.S.
- 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.

INLAND - WETLANDS AS DEFINED BY K.C. STEVENS, SOIL SCIENTIST

SOILS LIMITATION CHART - ROSSMORR ESTATES SUBDIVISION

HARWINTON, CT.

MAP SYMBOL	SOIL NAME	SEPTIC SYSTEMS	BLDG. W/ BASEMENTS	ROADS OR DRIVEWAYS	LANDSCAPING
CrC	Charlton very stony fine sandy loam, 3-15% slopes	Moderate; Smears, Slope	Moderate; Slope	Moderate; Slope	Moderate; Large stones, Slope
Lg	Leicester, Ridgebury & Whitman very stony fine sandy loams	Severe; Wetness, Large stones	Severe; Wetness Large stones	Severe; Wetness, large stones Frost action	Severe; Wetness, Large stones
PbC	Paxton fine sandy loam, 8-15% slope	Severe; Percs slowly, Smears, Slope	Moderate; Slope, Wetness	Moderate; Frost action, Slope,wetness	Moderate; Slope
PeC	Paxton very stony fine sandy loam, 3-15% slopes	Severe; Percs slowly Smears, Slope	Severe; Slope, Wetness	Moderate; Frost action, Slope,wetness, Large stones	Moderate; Large stones, Slope
WzC	Woodbridge very stony fine sandy loam, 3-15% slopes	Severe; Percs slowly, Wetness	Severe; Wetness	Severe; Frost action	Moderate; slope, Large stones, Wetness
PbB	Paxton fine sandy loam, 3-8% slopes	Severe; Percs slowly,	Moderate; Wetness	Moderate; Frost action Wetness	Slight
WxB	Woodbridge fine sandy loam, 3-8% slopes	Severe; Percs slowly, Wetness	Severe; Wetness	Severe; Frost action	Moderate; Wetness

EXPLANATION OF RATING SYSTEM:

SLIGHT LIMITATION: indicates that any property of the soil affecting use of the soil is relatively unimportant and can be overcome at little expense.

MODERATE LIMITATION: indicates that any property of the soil affecting use can be overcome at a somewhat higher expense.

SEVERE LIMITATION: indicates that the use of the soil is seriously limited by hazards or restrictions that require extensive and costly measures to overcome.

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.