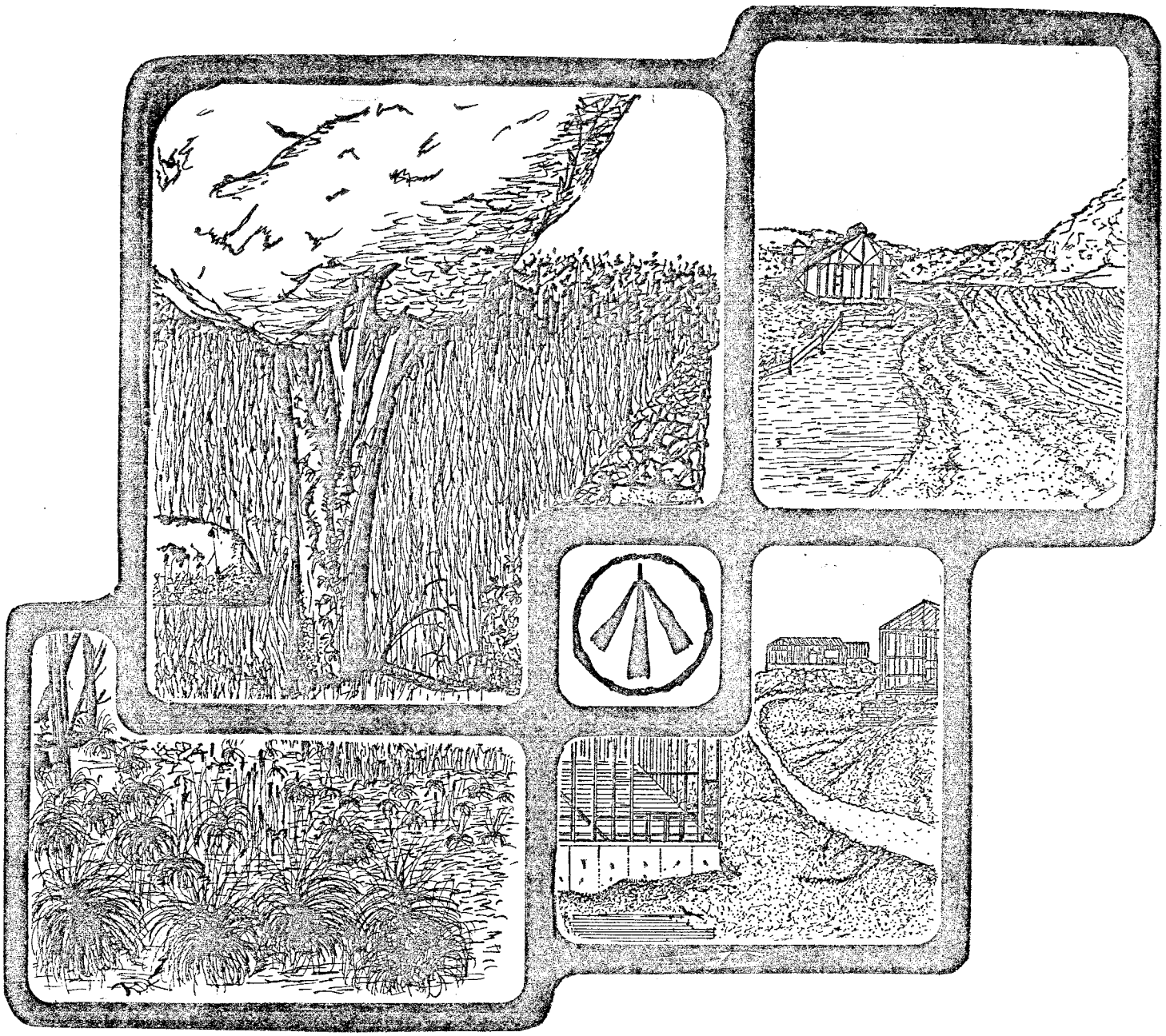
ENVIRONMENTAL REVIEW TEAM REPORT



HIGH VIEW APARTMENTS

PLYMOUTH, CONNECTICUT

KING'S MARK
RESOURCE CONSERVATION & DEVELOPMENT AREA

KING'S MARK
ENVIRONMENTAL REVIEW TEAM REPORT

HIGH VIEW APARTMENTS

PLYMOUTH, CONNECTICUT

AUGUST, 1983

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
State of Connecticut

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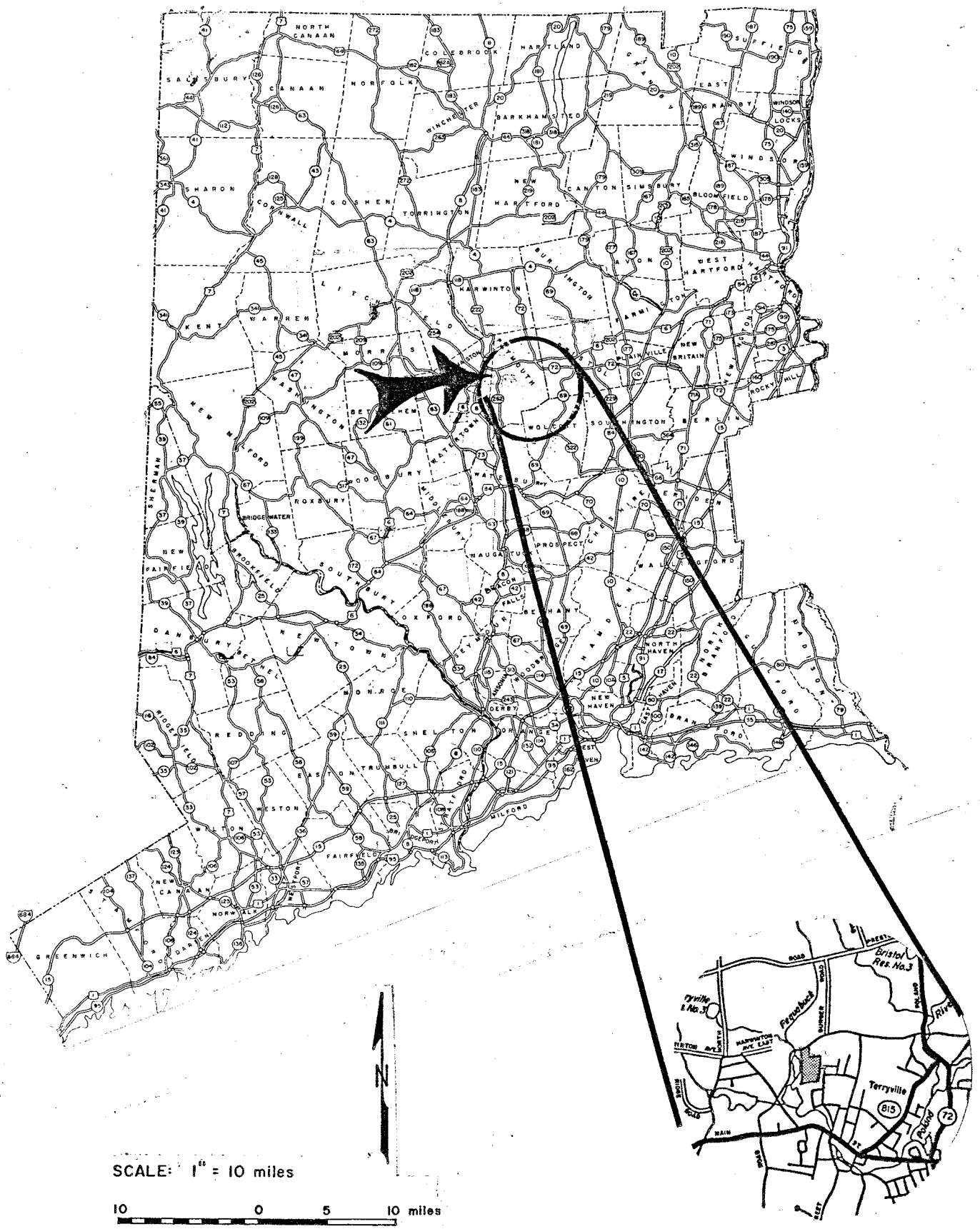
LOCATION OF STUDY SITE



ENVIRONMENTAL REVIEW TEAM REPORT
ON
HIGH VIEW APARTMENTS
PLYMOUTH, CT

I. INTRODUCTION

The Plymouth Conservation Commission is presently considering an application for a proposed apartment complex.

The subject site is 18.5 acres in size and located in the northeastern quarter of town. Access to the site is available from the north off Bemis Street and from the east off Chestnut Street. The site is wooded and characterized by slight to moderate slopes (see Figure 1). Approximately 50% of the site is wetland.

The proposed project calls for 64 apartment units in 13 separate buildings (see Figure 2). A ± 1500 foot access road is proposed to service the site. Public water and sewers are available. One wetland crossing of ± 150 feet is proposed for the main access road. Four acres of the site are being reserved for recreation. No construction is planned within 100 feet of the property boundaries with the exception of the access road.

The Plymouth Conservation Commission requested the ERT to 1) provide a natural resource inventory of the site, 2) discuss the suitability of the site for the proposed project, 3) discuss the probable environmental impact of the project, and 4) identify techniques which could be implemented to mitigate adverse environmental effects. Of major concern to the Commission is the impact of the project on inland wetland resources and a Fish and Game Club Pond just downstream from the site.

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 reveiwed the area on May 25, 1983. Team members for this review included:

Sam Barto.....Regional Planner.....Central CT Regional Planning Agency

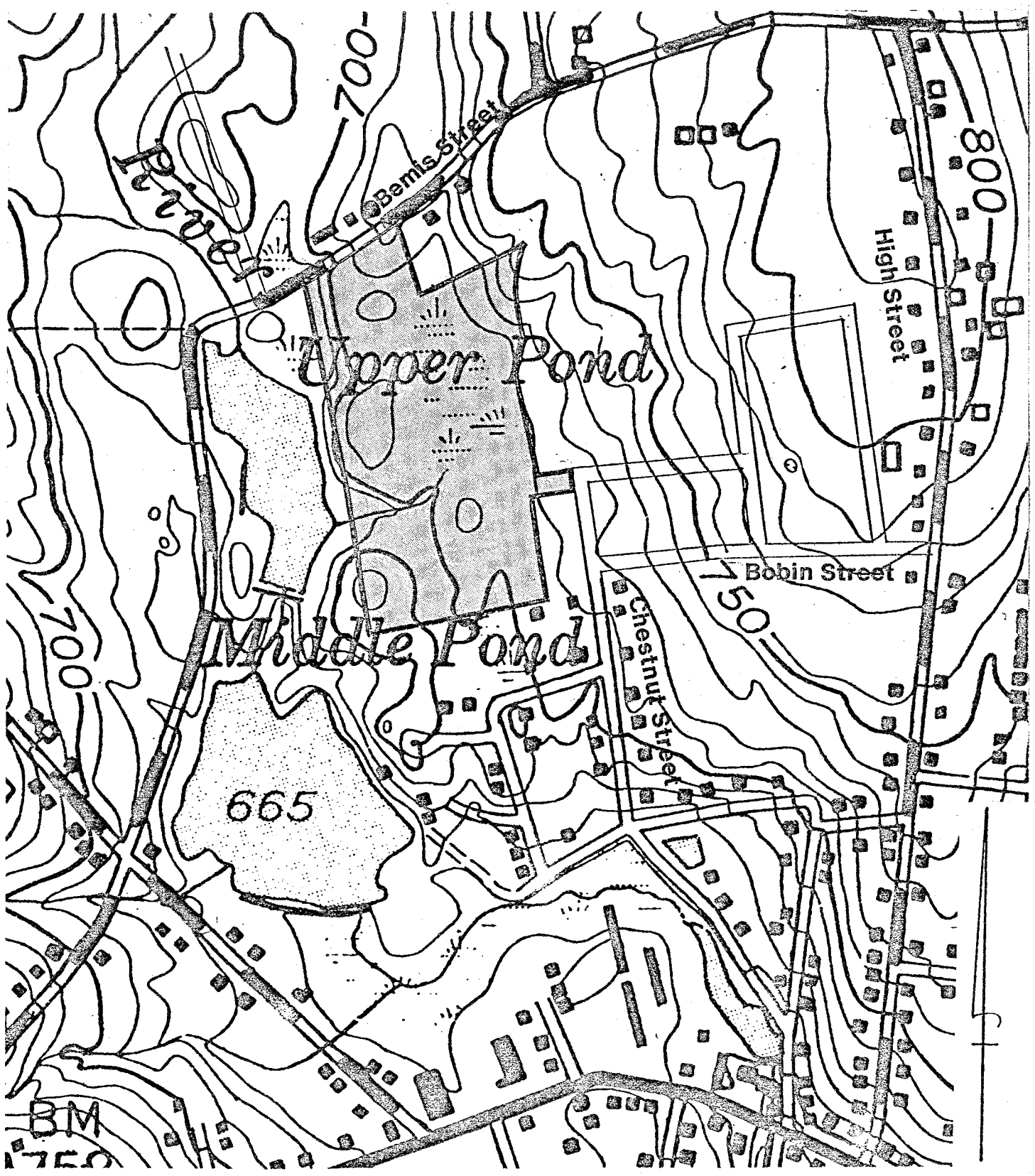
Brant Burz.....Wildlife Biologist.....Connecticut Dept. of Environmental Protection

Kathy Hanford.....Soil Conservationist.....USDA Soil Conservation Service

Bill Hyatt.....Fishery Biologist.....Connecticut Dept. of Environmental Protection

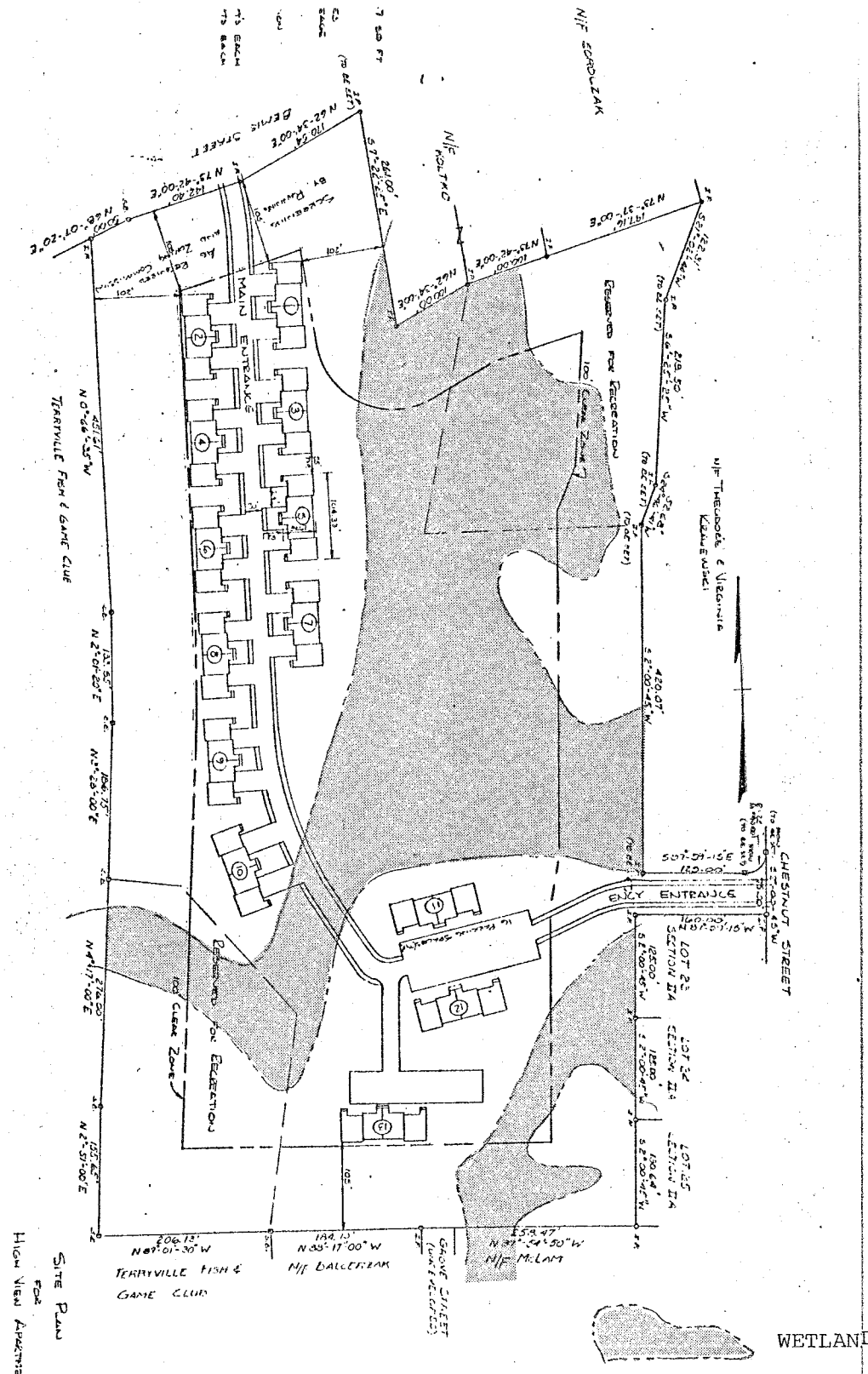
Ralph Scarpino.....Forester.....Connecticut Dept. of Environmental Protection

FIGURE 1
TOPOGRAPHIC MAP



Scale 1"=500'

FIGURE 2
SITE PLAN



Reduced from 1"=60' to 1"=200'

Bill Voelker.....Transportation Planner...Central CT Regional Planning Agency

Bill Warzecha.....Geohydrologist.....Connecticut Dept. of Environmental Protection

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 site plan, and a topographic map of the area. The day of the field review, the ERT met with representatives from the Town of Plymouth and investigated the study area. 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 and recommendations. 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. It is hoped the information contained in this report will assist the Town of Plymouth 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, CT 06754.

* * * * * *

II. HIGHLIGHTS

1. *Development of the site as planned will lead to increases in the amount of surface runoff produced during periods of precipitation. It is not anticipated that construction of the project will significantly increase flooding downstream from the site. The increased runoff does however represent a potential erosion hazard and underscores the importance of effective control of erosion and sedimentation at the site. (p. 9)*

2. *A comparison of the soils map to the plan of development shows that development is proposed to be concentrated on those soils with the least limitations. The majority of the shallow to bedrock and extremely wet soils which cause severe limitations for development have been left as open spaces. This is judicious site planning from an environmental standpoint. (p. 12)*

3. *There is one area (Woodbridge soils) of the development where problems are likely to arise due to soil conditions unless various measures are planned and installed. This area is at the location where three buildings and parking areas are planned farthest from Bemis St. The seasonal high water table in this area is likely to cause frost heaving of parking areas and wet lawns. More fill under these areas and curtain drains around foundations, and under lawn areas, will help alleviate these problems. (p. 12)*

4. *There is an extensive wooded wetland area on the property. This wetland has value for ground water recharge, nutrient absorbtion, stormwater retention, and wildlife habitat. Leaving the wetlands in its natural state as planned is a good use of this resource. (p. 12)*

5. *The wetlands map supplied by the developer is substantially correct. This map however does not delineate the area in which the planned emergency access road runs between the development site and Chestnut Street. This area is an inland wetland. While the proposed emergency access road through this wetland area is feasible with good planning and engineering, an alternate site which avoids wetland disturbance should be used if one can be located. (p. 12)*

6. *Erosion and sediment controls are critical to preserving the wetlands and quality of the stream flowing through the property. Suggestions for effective erosion and sediment control are provided in the text of this report. (p. 13)*

7. *Most of the property is heavily wooded, with a large portion consisting of a wetland forest type where red maple is the most dominant species. It does not appear that the proposed project will result in extensive damage to the wetland vegetation; however, some alteration in limited areas is likely. (p. 14)*

8. *In the opinion of the Team's Wildlife Biologist, a rich variety of wildlife species utilize the area. If this area is developed as planned, there will be an immediate negative impact on wildlife throughout the property. However, the project can be expected to attract more "urban" adapted wildlife forms to the property. (p. 17)*

9. *Upper Pond covers roughly 6 acres and has a maximum depth of approximately 12 feet. The overall quality of the Upper Pond for fish appears to have been reduced over the years by an influx of sediment via the upper Pequabuck River. Without strict erosion and sediment control, the proposed project*

can be expected to increase the suspended silt load carried by the on-site brook and subsequently deposited along the eastern shore of the pond, thus speeding up the already accelerated natural process by which the pond fills with sediment. Sediment deposition resulting from the construction of High View Apartments can be minimized by the conscientious implementation of a comprehensive erosion and sedimentation control plan. (p. 18)

10. *The proposed project is considered to be compatible with the surrounding land uses in the opinion of the Team's planner. (p. 19)*

11. *These apartments are expected to generate between 450 and 650 vehicle trips each day. At present, this number of trips presents no threat to the capacities of Bemis Street or any other road in the town. (p. 19)*

12. *Consideration should be given to relocating the proposed access road off Bemis Street approximately 100' to the east. Sight line distances to the east from the current access are restricted due to a dip in the road at the eastern edge of the property. By moving the access road ± 100' easterly to the crest of the hill, sight line distances to the east will be markedly improved. (p. 21)*

13. *The subject site is well-suited for the utilization of solar energy. Consideration should be given to including solar energy systems in project design. (p. 21)*

14. *In the opinion of the Team's planner, the proposed project is consistent with the goals and objectives of the Regional Land Use and Development Plan. (p. 23)*

III. TOPOGRAPHY AND GEOLOGY

As shown in Figure 1, the site is characterized by slight to moderate slopes. The steepest slopes are evident along the western property line as well as around the small, bedrock controlled knoll in the southwest corner of the site. Topography rises from west to east with a low elevation occurring at ± 690 feet above mean sea level along the western property line and a high elevation of about 740 feet above mean sea level at the eastern property line.

A relatively wide band of poorly drained soils (Leicester) which comprises the wetlands on site, bisects the property from north to south (see Figure 2). One small, unnamed stream which emanates from the wetlands on the site, flows east to west in the southwest section of the property until it ultimately discharges into Upper Pond.

The site is located in an area encompassed by the Thomaston topographic quadrangle. The surficial geologic map of that quadrangle was prepared by Charles R. Warren and published by the U.S. Geological Survey (Map GQ 984). The bedrock geologic map of the quadrangle has not been completed to date: however, a preliminary bedrock geologic map is available for review purposes at the Natural Resources Center of the Department of Environmental Protection in Hartford.

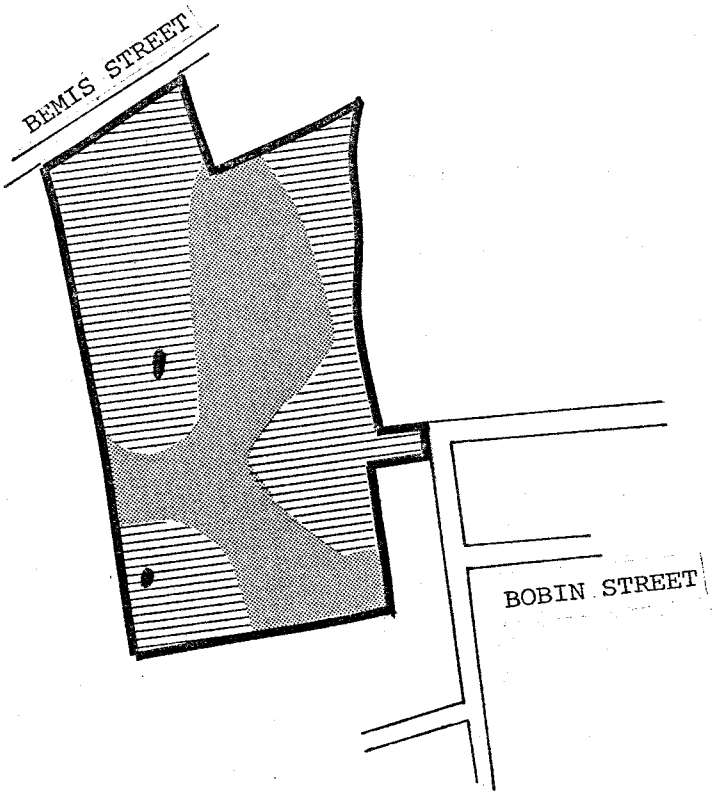
Till is a surficial geologic material that covers nearly half of the site (see Figure 3). Surficial geologic materials refer to those unconsolidated organic and mineral particles which overlie bedrock. Till is a glacial sediment composed of a non-sorted, non-stratified mixture of sand, silt, clay, gravel and boulders. The texture of till may be sandy and loose, silty and compact, stony, non-stony or otherwise. Also, it will vary from place to place. Typically, the upper three to five feet of a till deposit will be coarse grained and loose. However, at a depth of five feet or more or occasionally at shallower depths, the loose till may give way to a more compact, slightly finer grained till.

In general it does not appear as though the till will pose any difficult problems with respect to the proposed development. However, because of its stony, compact texture, excavation with hand tools may be difficult. Also, till soils are more susceptible to frost damage where the water table is high (groundwater movement through till usually is very slow). Therefore, it is important to keep this in mind with respect to the proper location and construction of building foundations and roads. Thickness of the till to bedrock is probably no greater than 10 feet throughout the site.

The materials that overlie the till throughout the wet, flat area in the middle section of the site as well as along the unnamed stream on the site are swamp deposits. The swamp deposits are a mixture of decayed plant material, sand, silt, and clay that formed in stagnant or sluggish bodies of water. The total thickness of these deposits is probably less than three feet.

Only small exposures of bedrock outcrops were observed within the site, primarily along the access road and on the small knoll in the southwest corner (see Figure 3). The rock type comprising these outcrops, as well as the bedrock underlying the site, is gneiss. "Gneisses" are crystalline metamorphic (formed under great heat and pressure) rocks in which thin bands of elongate or flaky minerals alternate with layers of granular minerals. These rocks, which are light in color, medium grained and well layered are composed primarily of the minerals plagioclase,

FIGURE 3
SURFICIAL GEOLOGY



LEGEND

Till

Swamp Deposit

Bedrock outcrop

quartz and biotite. They also contain muscovite and garnets in many layers. Bedrock is unlikely to be a significant factor in the construction of the proposed development.

IV. HYDROLOGY

The site lies within the watershed of the Pequabuck River (see Figure 4). All runoff from the site flows westward into Upper Pond. A small stream in the west-central section of the parcel flows east to west draining the wetlands on most of the site. This stream flows about 60 feet from the property line before it finally discharges into the Upper Pond. The quality of water in the stream appeared to be good the day of the ERT's field review. Another small intermittent stream which probably originates as a result of road drainage from Bemis Street, was observed flowing south westward into the wetlands in the northeast section of the property.

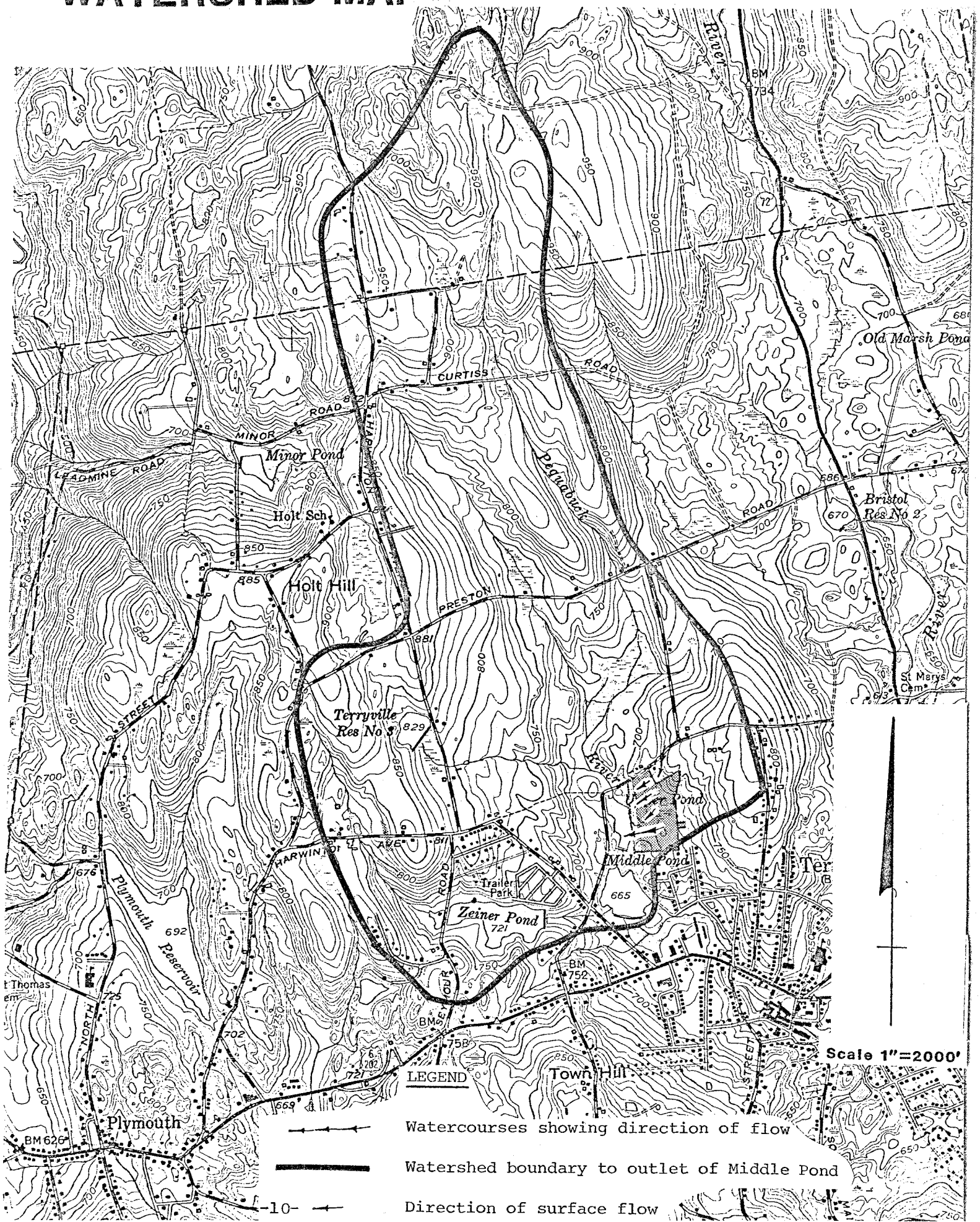
Development of the site as planned will lead to increases in the amount of surface runoff produced during periods of precipitation. The increases will arise primarily from the conversion of permeable soils to impermeable surfaces such as roofs, paved roads and parking lots and from the removal of vegetation. The added runoff could (1) cause increased overland and stream-channel erosion, and/or (2) increase the peak flood flows of the stream on the property (the stream in the west-central section of the site).

The developer's engineer has addressed storm drainage in a plan that was made available to team members during the field review. The storm drainage proposal for the project indicates that surface runoff created by impervious surfaces, (i.e., roof tops, paved surfaces, etc.,) will be artificially collected and outletted. It appears that runoff from the back half of roof tops from all units will not be collected in the storm drainage system but will discharge to the surface of the ground at the rear portion of the units. This runoff which would presumably be collected and discharged through roof gutter systems should not pose any problems. Stormwater drainage emanating from catch basins 1-4, will be outletted into the wetland in the central portion of the site. Catch basins 5-9 will be outletted into the well defined stream in the west-central portion of the site. Special attention should be focused on controlling the runoff discharged into the wetland to ensure that scouring is minimized. Also, maintenance measures should be included in the runoff plan in case a significant buildup of sediments occurs at the discharge points.

The applicant has prepared drainage calculations for the project which will help ensure that pipes are properly sized. The stormwater plan indicates the installation of splash pads-energy dissipators for all discharge points. In order to prevent erosion beneath the splash pad, it is recommended that 18" of coarse gravel be installed beneath the modified rip rap. This will help prevent the scouring of underlying material.

As mentioned earlier, runoff from the site will increase following development. Technical Release No. 55 published by the Soil Conservation Service contains a list of runoff curve numbers for certain soil types and land uses. These numbers relate the amount of precipation that falls on a given area to the amount of surface runoff that is produced. A higher curve number indicates that a greater volume runoff would occur following a given amount of runoff. For the

FIGURE 4
WATERSHED MAP



soils underlying the site, the curve number under the present conditions (wood/forest land with good cover) is 63, while the curve number for the proposed development on the land would be 68. Under these conditions, during a 25-year storm event, the runoff depth would increase from 1.81" to 2.32"; an increase of 28%. This increase is significant and underscores the importance of judicious stormwater management on the site.

It should be noted however that while this is a rather large percentage increase for the site itself, when compared to the total watershed of Upper and Middle Ponds, the increased volume of water is comparatively small. It is not anticipated that construction of the project will significantly increase flooding downstream from the site. The increased runoff does however represent a potential erosion hazard and underscores the importance of effective control of erosion and sedimentation at the site.

The proposed project is to be serviced by public sewers. As a result, this should effectively eliminate the risk of substantial groundwater contamination. It is recommended, however that the application of road salt for drives and parking lots be minimized.

V. SOILS

A. Soils Descriptions

A wide range of soil types exist on the property. Each soil has unique problems and potentials for a development of this nature. The location of the soils is shown, generally, on the soils map in the appendix. A description of each of the soils on site is presented below.

1. Charlton Series
   The Charlton series consists of deep, well-drained soils that developed in friable to firm glacial till. The till was derived mainly from schistose rocks, but to some extent, from granite and gneiss. They are stony or very stony on about two-thirds of their total acreage. Permeability is moderate to moderately rapid in the surface layer and subsoil. Overall this soil poses only slight limitations to development. The Charlton Soil on the property is classified as a prime farmland soil.

2. Hollis Series
   The Hollis series consists of well drained or somewhat excessively drained, gently sloping to steep soils that are very shallow or shallow over crystalline bedrock, including schist and gneiss. These soils developed in a thin mantle of glacial till and the underlying residuum derived from bedrock. Their permeability is moderate or moderately rapid. The major limitations of this soil for development are its steep slopes and shallow depth to bedrock.

3. Sutton Series
   The Sutton series consists of moderately well drained, nearly level to sloping soils that developed in glacial till of Late Wisconsin age. The till was derived mainly from schist but in-

cluded varying amounts of granite and gneiss. Their permeability is moderate or moderately rapid. The major limitations of this soil for development are its steep slopes and seasonal high water table.

4. Woodbridge Series
The Woodbridge series consists of moderately well drained nearly level to sloping soils that developed in compact glacial till of Late Wisconsin age. The till was derived mainly from gray mica schist but included varying amounts of granite and gneiss. These soils are underlain by a compact layer, or pan, at a depth of about 24 inches. Their permeability is moderate in the surface layer and subsoilbut is slow or very slow in the substratum. The sloping Woodbridge soil is similar to the Sutton with seasonal high water table.

5. Leicester Series
The Leicester series consists of poorly drained or somewhat poorly drained soils that developed in very friable to firm glacial till of Late Wisconsin age. The till was derived mostly from schist, gneiss, and granite but included small amounts of quartzite and other rocks. These soils occupy wet, low-lying areas. Their permeability is moderate in the surface layer and subsoil and is moderately rapid in the substratum. The water table in this soil is at or near the surface year round. This high water table severely limits the use of this land. The Leicester soil is an inland wetland soil type.

A comparison of the soils map to the plan of development shows that development is proposed to be concentrated on those soils with the least limitations. The majority of the shallow to bedrock and extremely wet soils which cause severe limitations for development have been left as open spaces. This is judicious site planning from an environmental standpoint.

There is one area (Woodbridge soils) of the development where problems are likely to arise due to soil conditions unless various measures are planned and installed. This area is at the location where three buildings and parking areas are planned farthest from Bemis St. The seasonal high water table in this area is likely to cause frost heaving of parking areas and wet lawns. More fill under these areas and curtain drains around foundations, and under lawn areas will help alleviate these problems.

B. Wetlands

There is an extensive wooded wetland area on the property (see Figure 2). This wetland has value for ground water recharge, nutrient absorbtion, stormwater retention, and wildlife habitat. Leaving the wetlands in its natural state as planned is a good use of this resource. The wetland area will also buffer the development from the adjacent homes.

The wetlands map supplied by the developer is substantially correct. This map however does not delineate the area in which the planned emergency access road runs between the development site and Chestnut Street.

This area is an inland wetland.

An intermittent stream flows through the wetland area planned for the emergency access road. This stream could possibly be diverted into the Chestnut Hill storm sewer system. Until it is diverted, a new stream channel should be constructed with project implementation, sized to handle a minimum 25 year, 24 hour storm event. The new channel should direct water out of the proposed road area.

While the proposed emergency access road through this wetland area is feasible with good planning and engineering, an alternate site which avoids wetland disturbance should be used if one can be located.

The wetland crossing proposed in the southcentral portion of the site is also feasible. Care should be taken to ensure that culverts are properly sized and also properly placed so as not to lower or raise the water table in the wetland area. Erosion and sediment controls in this portion of the site are particularly critical in order to protect the integrity of the wetland and stream system.

C. Erosion and Sediment Controls

Erosion and sediment controls are critical to preserving the wetlands and quality of the stream flowing through the property.

Filter fabric fence is a suitable temporary erosion control method. If installed and maintained in the areas where it is shown on the plan, it will help to keep sediment out of the wetlands and on the property. It should be installed downslope from all construction areas, however.The location of this fence should be shown on the site plan.

The construction of the apartment complex should be phased so that the entire site is not under construction at any one time. A minimum of two phases is recommended. The first phase should be completed and seeded to a permanent vegetative cover prior to construction of the second phase. The phases should be shown on the site plan.

Temporary vegetation should be seeded on all stock piled top soil. It should also be used when construction will be halted over the winter months.

Lime, fertilizer and permanent vegetative cover seeding recommendations should be shown on the site plan as should all erosion control measures. This reduces confusion on-site during construction.

The planned energy dissipator is only shown on the site plan at one drain outlet. They should be installed at every drain outlet to reduce the velocity of the water.

The planned crushed stone piles, shown on the site plan as "check dams" in the stream, are likely to cause more problems than they solve in the opinion of the Team's Soil Conservationist. If other erosion and sediment controls are installed properly, very little sediment should be entering the stream course, making these "check dams" unnecessary. If the "check dams" are installed as shown, crushed stone

is likely to be washed throughout the streambed. This would fill the streambed more than the sediment would have. The crushed stone would also reduce the flow capacity of the stream making it more likely to flood.

In the opinion of the Team's Soil Conservationist, sediment controls in the streambed itself are not warranted with implementation of the proposed project. If, however, such controls are to be included with the plan, a preferable alternative to the "check dams" would be a carefully designed and constructed settling pond where the access road crosses the stream. Again, this is not viewed as necessary; but, in the opinion of the Team, would be better than the proposed "check dams".

Four intermittent streams exist on the property between Bemis St. and the planned emergency access road. A delta of sediment has formed in the second stream in from Bemis Street. The source of this sediment is from a new road being constructed east of the property boundary. This sediment could be seeded down and erosion controls installed to prevent future sedimentation. These conservation measures would help to mitigate negative impacts caused by development in other areas of the wetland.

The USDA Soil Conservation Service office in Litchfield (567-8288) is available to assist in the preparation and review of erosion and sediment control plans.

D. Recreation

Two recreation areas are planned on the property. The recreation area in the southwestern corner of the property is located in Hollis and Sutton soils. Steep slope areas of rock outcrops and areas with a seasonal high water table will limit the use of this land to passive recreation. A walking trail might be developed leading from the eastern side of the stream at the road crossing, along the wetland edge and around the knoll in the recreation area. This area does afford a nice view of Upper Pond and the combination of mountain laurel, flowering azalea, irregular topography, and bedrock outcrops in the area provide an attractive, natural setting for the creation of a passive recreation area.

The recreation area in the northeastern corner of the property is located in the Woodbridge and Leicester soils. The use of this area will be limited by wetness and sloping land to passive uses. An excavated fish pond is feasible in the Leicester soil. This recreation area is not readily accessible to future residents in the apartments as it is cut off by the inland wetlands. The area is more accessible to residents in the existing development east of the property.

VI. VEGETATION

The vegetation on this site can be divided into 3 separate cover types. These types are described below under the heading Vegetative Type Descriptions. In general terms, most of the property is heavily wooded, with a large portion consisting of a wetland forest type where red maple is the most dominant species.

In a commercial sense, the value of the wood found on this parcel is not particularly high. Much of the more valuable sawlogs were removed several years ago. A landscape which offers a variety of vegetative growth does however play an important role in the aesthetics of a community and provides a varied wildlife habitat. The wetlands provide a valuable stormwater detention function: water is stored and slowly released to help provide a continous supply as well as protect downstream properties from excessive flooding.

A. Vegetative Type Descriptions (refer to Figure 5)

TYPE 1, Mixed Hardwood - Most of this area is the buffer strip between the first units to be built and the Game Club Pond. A small pocket of this type exists in the NE corner however. These areas would be considered a pole sized stand. That is, most of the dominant trees are 6-10 inches in diameter. Species in the overstory include yellow, grey and black birch, red and white oak and red maple. The understory contains red maple and oak seedlings as well as lily of the valley, solomon's seal and witch hazel.

TYPE 2, Open Roadway - This area was cleared of most of the vegetation in anticipation of starting construction. Scattered trees were left that will hopefully fit into the finished landscape. Trees left include white, yellow and black birch as well as red maple.

TYPE 3, Red Maple - Most of this area is quite wet although there are pockets of drier land. The dominant tree is red maple. Other tree species include black and yellow birch, white oak and hickory. The understory contains high bush blueberry, witch hazel, sheep laurel, and azalea. The forest floor contains skunk cabbage, trillium, violets, horsetail, jewel weed, poison ivy, false hellabore, lady slippers and a wide variety of ferns.

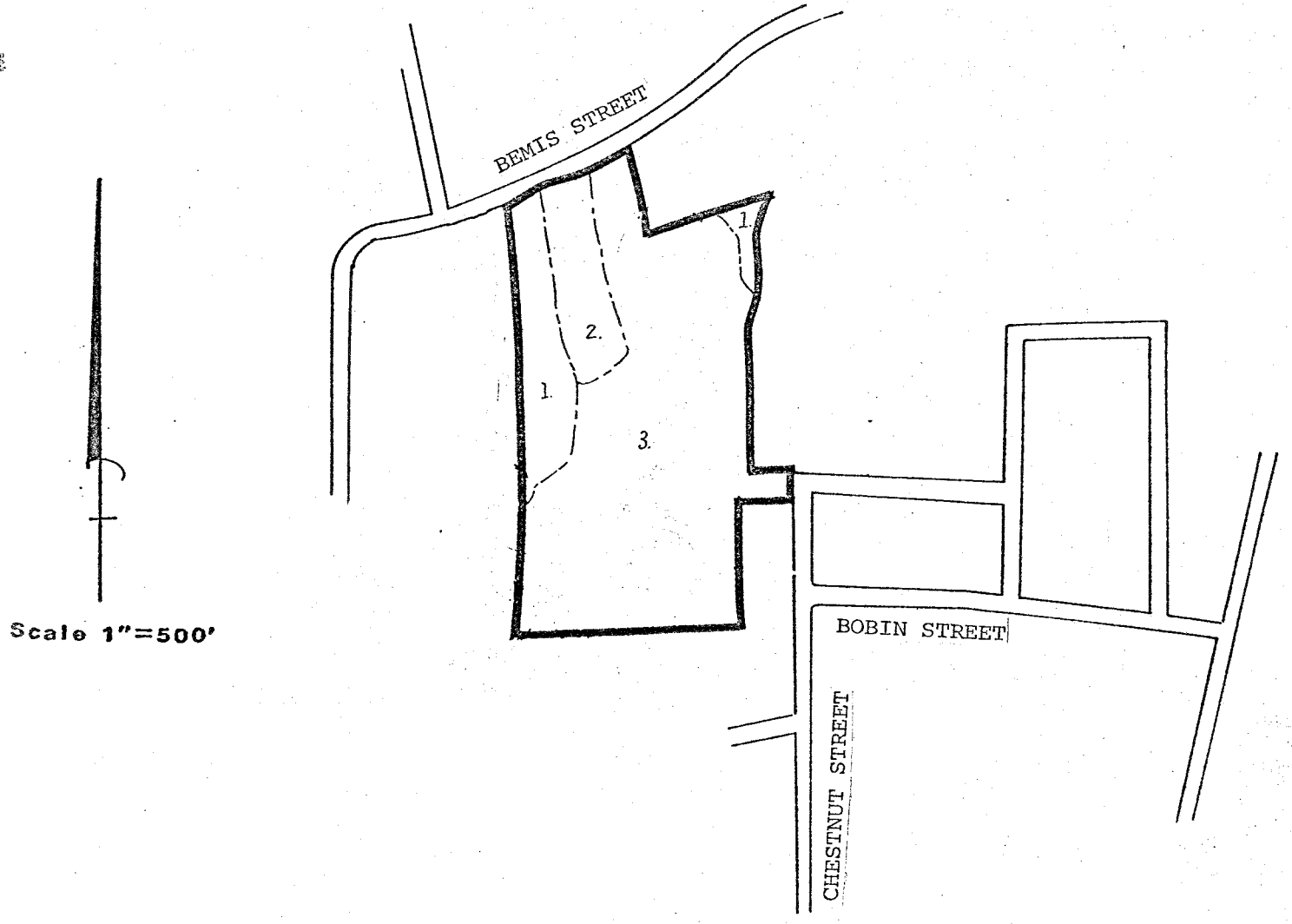
B. Limiting Conditions and Potential Hazards

A high water table over a good portion of the property limits its use for construction. Although the planned construction largely avoids direct disturbance of wetland areas, construction could nevertheless have some impact on the wetlands in the area. A high water table allows for shallow root penetration of the trees. Additional openings and clearings in and along side wet areas should be avoided if possible as this can lead to windthrow problems. Wetland vegetation as a whole is more sensitive to development than other vegetation.

Alterations in or near the wetlands which permanently raise the water table and/or restrict natural drainage may also have a negative impact on the vegetation in the immediate area. Raising the water table may drown root systems causing widespread mortality in the plant community. Lowering the water table, on the other hand, can result in droughty conditions which will also affect the composition of the plant community. It does not appear that the proposed project will result in extensive damage to the wetland vegetation; however, some alterations in limited areas is likely.

It should be recognized that trees are quite sensitive to changes in soil conditions. Development practices near trees which disturb the root zone may ultimately affect the health and vigor of the trees. Trees in the process of dying, and indeed dead trees, reduce the aesthetic appeal of an area, become hazardous and may be expensive to remove. In the areas designated for housing,

FIGURE 5
VEGETATION TYPES



LEGEND

TYPE 1. MIXED HARDWOOD

TYPE 2. OPEN ROADWAY

TYPE 3. RED MAPLE STAND

if possible, trees should be left in clumps or clusters. This lowers the possibility of soil disturbance and mechanical injury to individual trees.

Trees which are presently unhealthy and not growing vigorously due to overcrowded conditions are most susceptible to further degradation from environmental stresses brought on by development as well as disease, insect infestation and adverse weather conditions. It would be desirable to remove undesirable trees, therefore reducing competition for sunlight, nutrients and water among the residual stems. This improvement thinning can be done even on a small scale (such as clumps of trees) and is designed, over time, to allow residual trees to improve in health, vigor, quality, and stability. These thinnings when applied properly can improve the aesthetic value of an area, improve tree health and vigor, improve wildlife habitat and provide wood products.

Any cutting, whether it is done for thinnings, unit sites or for roadways, should be done to take advantage of the high demand for wood products. Firewood will be the main product and is highly sought after. The proper marketing of this product should be a concern and should be planned for.

A public service forester (available at 485-0226) or a private forester may be of assistance in either on-the-ground planning or the marketing of the wood products.

VII. WILDLIFE

Presently, the "High View Apartment Site" may be divided into three major wildlife habitat types. These include a hardwood shrub swamp, forestland, and a newly created openland. For a description of the vegetation present and location of these habitat types, please see the vegetation type descriptions and Figure 5.

During the ERT's field review, deer tracks, raccoon tracks, rail tracks, a ruffed grouse, a pileated woodpecker, and a few unidentified non-game birds were observed. In the opinion of the Team's Wildlife Biologist, a rich variety of wildlife species utilize the area.

Buttonbush, willows, dogwoods, highbush blueberry and viburnums can be found on the site and are all valuable food for many wildlife species.

If this area is developed as planned, there will be an immediate negative impact on wildlife throughout the property. The primary impact will be a direct loss of habitat due to roads, buildings and driveways. Another impact will be a change in habitat where hardwood forests are cleared for lawns. A third impact will be the increased human presence, vehicular traffic, and number of roaming cats and dogs. This will drive the less tolerant (shy) wildlife species from the site, even in areas where it has not been physically changed.

A number of measures can be implemented to minimize the adverse impacts of the project on wildlife. When developing the proposed road network, every effort should be taken to keep the soils from eroding into the wetland and on-site stream. Culverts should have devices built in to discourage beaver from creating flooded roads.

To actively encourage wildlife at the "High View Apartment Site" one could:

a) Plant perennial vegetation beneficial to wildlife for food and cover.

b) Leave exceptionally tall trees, along with den/snag trees for cavity nesting wildlife.

c) Encourage existing wildlife food supplies.

d) Leave buffer strips of natural vegetation along wetland areas. These buffer strips should be 50 to 100 feet wide. The natural vegetation will help to filter and trap silt and sediments which might otherwise reach the wetland areas.

To conclude, the proposed project will negatively impact existing wildlife populations. However, the project can be expected to attract more "urban" adapted wildlife forms to the property (e.g. songbirds (via bird feeders), raccoons, skunks, opossums, squirrels).

If any future wildlife related questions arise, the town or applicant should feel free to contact the Western District Wildlife Biologist at 485-0226.

VIII. FISHERIES

Two artificial impoundments, Middle Pond and Upper Pond, are located on property owned by the Terryville Fish and Game Club, adjacent to the western boundary of the proposed construction site for High View Apartments (see Figure 1). Middle Pond receives water via outflow from Upper Pond and from a small brook to the southwest. The ± 10 acre pond is generally shallow (maximum depth approx. 6 feet) and contains a mix of warmwater fish species including pickeral, bass, yellow perch, bluegill sunfish, pumkinseed sunfish, bullheads, black crappie, white perch and various minnow species. The proposed construction should have no affect on this already highly eutrophic body of water or its warmwater fishery.

Upper Pond covers roughly 6 acres and has a maximum depth of approximately 12 feet. It is inhabited by the same fish species as Middle Pond except that the fish and game club stocks it annually with 400 catchable size trout (two stockings of 200 fish each - brown and rainbow trout). Approximately 100 members of the fish and game club purchase yearly permits which entitle themselves and their families to fish the two ponds. Children living in the adjacent neighborhood are generally allowed access to the ponds free of charge. The Upper Pond, while stocked with trout, should still be considered generally warmwater in nature. Water temperatures can be expected to become quite warm during the summer resulting in little year to year survival of trout.

The overall quality of the Upper Pond for fish appears to have been reduced over the years by an influx of sediment via the upper Pequabuck River. This brook flows through the Plymouth Industrial Park where it has been diverted and widened in places resulting in increased water temperatures and an increase in the suspended silt load. Water also enters the Upper Pond by a second brook which flows through the wetlands located east of the pond. Much of these wetlands are contained within the proposed apartment construction site. Without strict

erosion and sediment control, the proposed project can be expected to increase the suspended silt load carried by the on-site brook and subsequently deposited along the eastern shore of the pond, thus speeding up the already accelerated natural process by which the pond fills with sediment. As discussed earlier in this report, sediment deposition resulting from the construction of High View Apartments can be minimized by the conscientious implementation of a comprehensive erosion and sedimentation control plan. Such a plan might include the installation and maintenance of a settling pool downstream from the access road. While water temperatures would be increased in the pool, in the brook, and to a lesser degree in the pond, this would not be harmful to the warm-water fish populations, and should not be considered harmful to the trout as only a put-take spring trout fishery exists under the current conditions.

A second potential problem exists in that lawn maintenance around the apartment complex might increase the nutrient content (via fertilizer) of the runoff entering the pond, causing an increase in the growth of aquatic vegetation and algae. If this were to become excessive, fish kills would eventually result. Little, except moderation in the application of lawn chemicals,may be done to prevent this from occuring.

IX. PLANNING CONSIDERATIONS

A. Surrounding Land Use

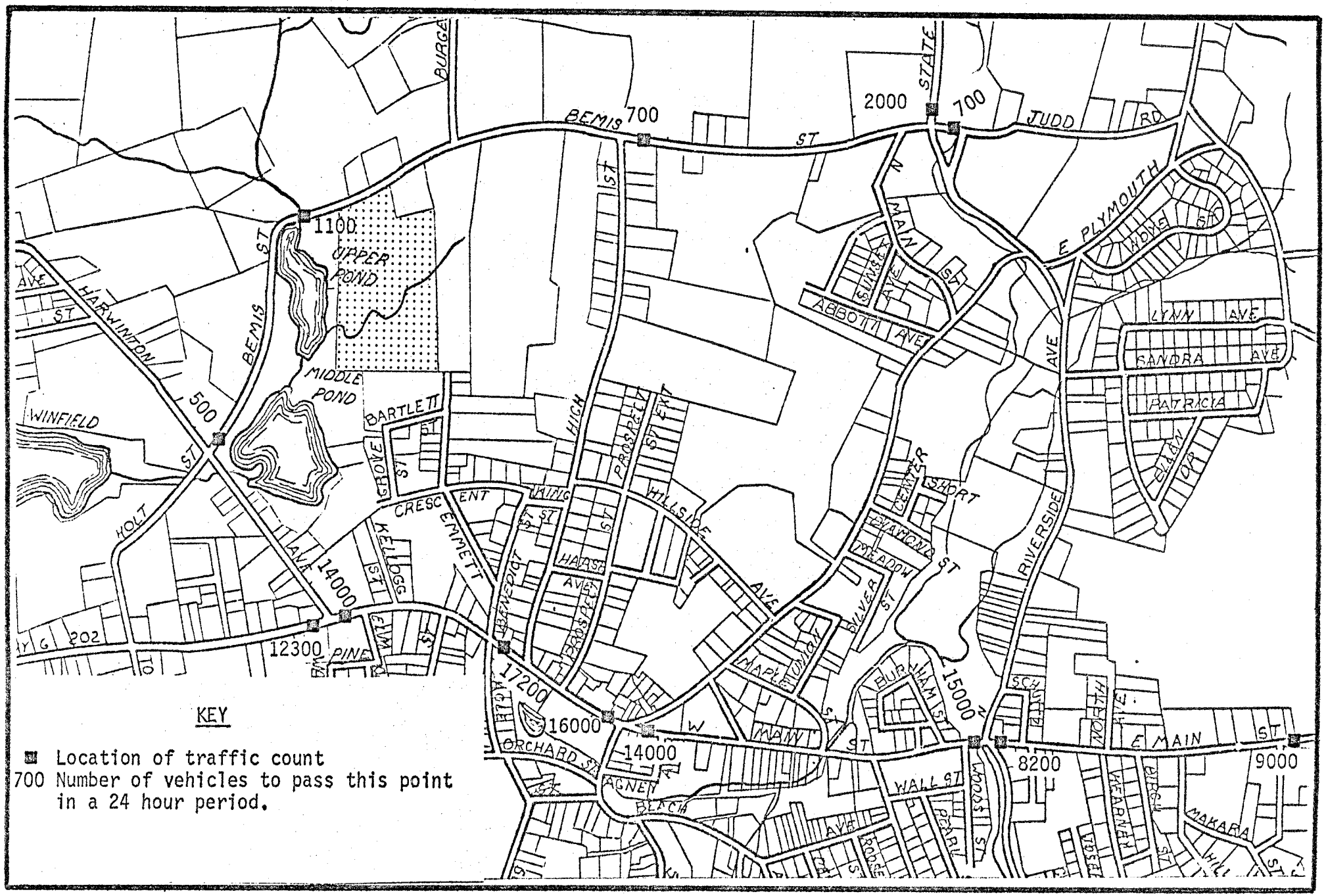
The subject site is bordered predominantly by medium density residential land uses. However, an industrial park is located just to the northwest of the property and, as discussed earlier, two Terryville Fish and Game Club ponds are located immediately west of the subject site. The proposed project is considered to be compatible with the surrounding land uses in the opinion of the Team's planner.

B. Traffic and Circulation Impacts

These apartments are expected to generate between 450 and 650 vehicle trips (includes to and from) each day. At present, this number of trips presents no threat to the capacities of Bemis Street or any other road in the town. During the a.m. peak hour, between 39 and 52 trips will be generated and between 48 and 70 during the p.m. peak hour. These are the most trips which will be generated during any single hour of the day. The remaining trips will be spread out over the 22 remaining hours in the day with the majority concentrated during daytime and evening hours. Under ideal conditions, capacity of a one lane, two way road is 2,000 vehicles per hour. Road conditions are adequate to good throughout most of the study area and would not be an impediment to travel nor be adversely affected by the additional traffic. The Traffic Counts Map (see Figure 6) shows the latest available (1981) average daily traffic counts on all roads in the study area. It is projected that a minimum of 60 percent of the daily trips (270-390) will travel south to Route 6 and then east to Bristol. The remaining 40 percent will be split among traffic to andfrom western destinations and incidental shopping, education, and recreation trips. This volume of traffic will not seriously affect capacity.

Access to the site is proposed to and from the Bemis Street frontage to the property. There is a second access road to the rear of the property onto

FIGURE 6
TRAFFIC COUNT MAP



Chestnut Street. The Chestnut Street access would provide the quickest route to and from Main Street and would generate the bulk of the traffic. However, this access should remain restricted for emergency purposes only. If used for a free access by the residents, it could create a nuisance to the homeowners on Chestnut, Crescent, and Emmett Streets. In order to avoid such consequences, traffic should be routedto Bemis Street as the main entrance. This is in no way a hardship on the residents of the site, and, again, poses no threat to capacity of the road system.

Consideration should be given to relocating the proposed access road off Bemis Street approximately 100' to the east. Sight line distances to the east from the current access are restricted due to a dip in the road at the eastern edge of the property. By moving the access road ± 100' easterly to the crest of the hill, sight line distances to the east will be markedly improved. This alternate access road could tie in to the presently proposed road as shown in Figure 7.

C. Solar Considerations

Section 8-25(b) of the Connecticut General Statutes (PA 81-344) requires that passive solar heating be considered in reviewing a subdivision. This includes house orientation, street and lot layout, natural and man made topography and protection of solar access (i.e., prevention of shading solar collector areas). These requirements are covered in detail in: Passive Solar Design: A Planner's Guidebook, published by the Energy Division of the Connecticut Office of Policy and Management and the Central Naugatuck Valley Regional Planning Agency.

The subject site is well-suited for the utilization of solar energy largely because of favorable slopes and the opportunity to control vegetation which might threaten access to sunlight. The orientation of the proposed buildings will facilitate the incorporation of solar energy systems in the design of the project. Consideration should be given to including solar energy systems in project design.

D. Consistency of Project with Regional Plan

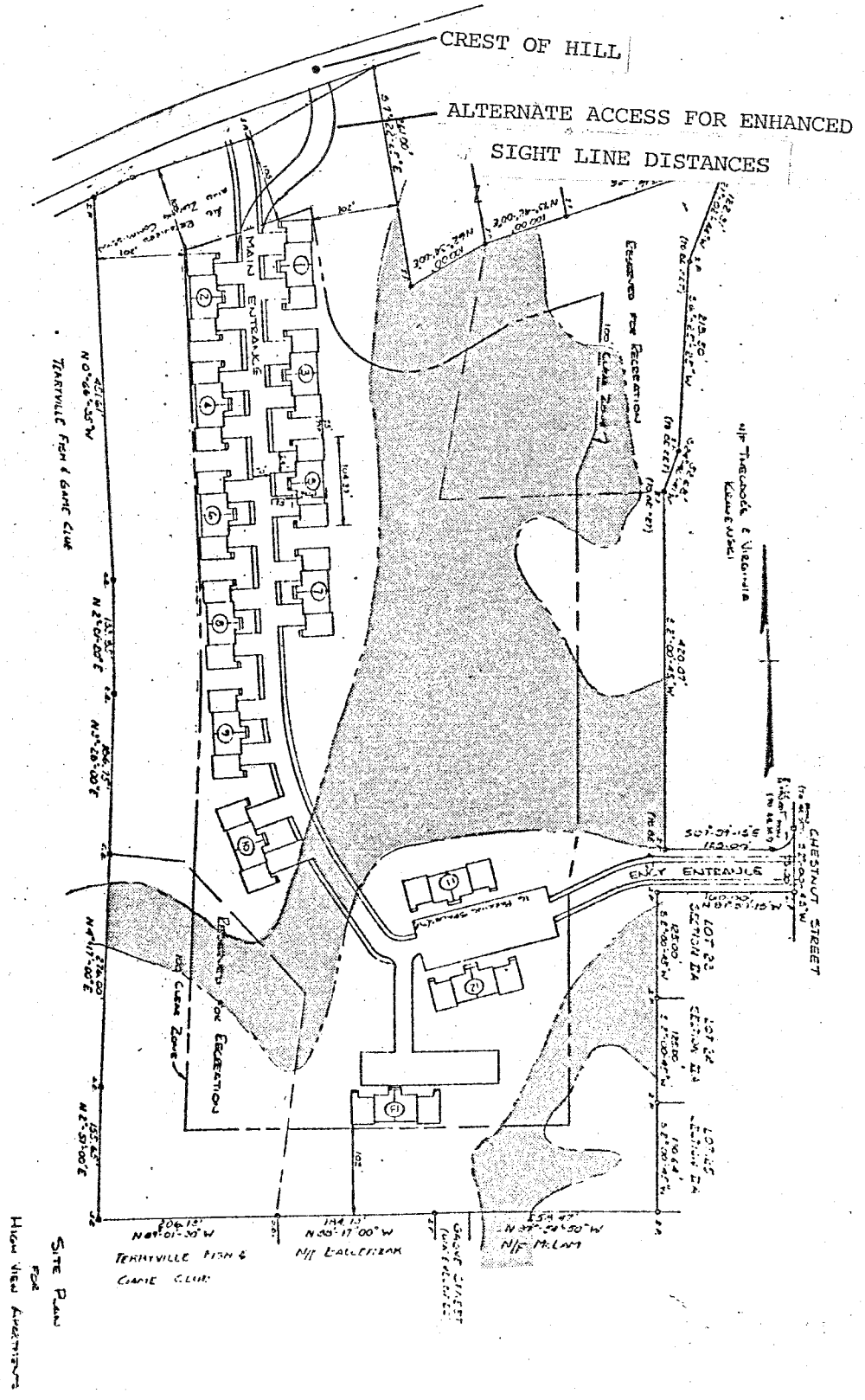
The Central Connecticut Regional Planning Agency Regional Land Use and Development Plan has as its framework two essential components for regional development; namely, an analysis of the resources and issues in the planning region along with goals and objectives for future land use development. The land use goals and objectives represent the broad and long-term policies of the region's planning activities.

The following land use goals and objectives reflect the Agency's future land use priorities in the Central Connecticut Planning Region.

GOAL OF REGIONAL LAND USE PLAN:

"To determine, allocate and recommend the future uses of land in the Central Connecticut Region in an environmentally sound and energy-efficient manner that will best serve the needs of current and future residents of the Region."

FIGURE 7
ALTERNATE ACCESS ROAD



Reduced from 1"=60' to 1"=200'

OBJECTIVES OF REGIONAL LAND USE PLAN:

"*To treat transportation and land use planning as complementary, interacting means of shaping urban development patterns, and, as such, a means of accomplishing broad social, economic and environmental planning goals.*

To coordinate the location and timing of public utilities and community facilities with current and projected development so as to produce the desired land use pattern as expressed in the Regional Plan of Development.

To maintain a balance between potential desired growth and development and the ability of the Region to maintain standards and services in accordance with other CCRPA goals and policies.

To give prime consideration to the physical capabilities of undeveloped land in the Central Connecticut Region to support different development types and densities in the determination and allocation of its future use.

To make all reasonable efforts to avoid further urbanization of substantial areas of inland wetlands, floodplains, aquifers, and aquifer recharge areas, cognizant of their economic and ecological values for such diverse functions as water supply and purification, flood control, wildlife habitat and microclimatic moderation.

To recommend the location of proposed new high and medium density urban development on gently sloping land oriented south and southwest whenever possible and consistent with other environmental and economic policies so as to minimize energy requirements of such development.

To produce an energy-efficient land use pattern by such means as encouraging higher residential zoning densities where appropriate, closer proximity between major residential areas and employment centers, and increased use of more energy-efficient transportation means. Appropriate energy-saving land use practices will be incorporated into the continuing CCRPA Land Use Planning Program.

To recommend residential land uses of various types of densities in the Regional Plan of Development that will broaden the range of choice among alternative types and costs of housing available in desirable living environments.

To recommend residential development that relates to the natural, social, and economic resources of local communities and the larger regional community.

To integrate and coordinate the CCRPA Land Use Planning Program and Housing Planning Program to the maximum feasible extent via housing densities and new land use concepts such as clustered development.

To assure sufficient open space land and water areas, as well as diverse recreational facilities, that satisfy, within the physiographic limitations of the Region, the leisure time needs of the current and projected future population of the Region. "

In the opinion of the Team's planner, the proposed project is consistent with the goals and objectives of the Regional Land Use and Development Plan.

E. Sewage Disposal and Water Supply Service

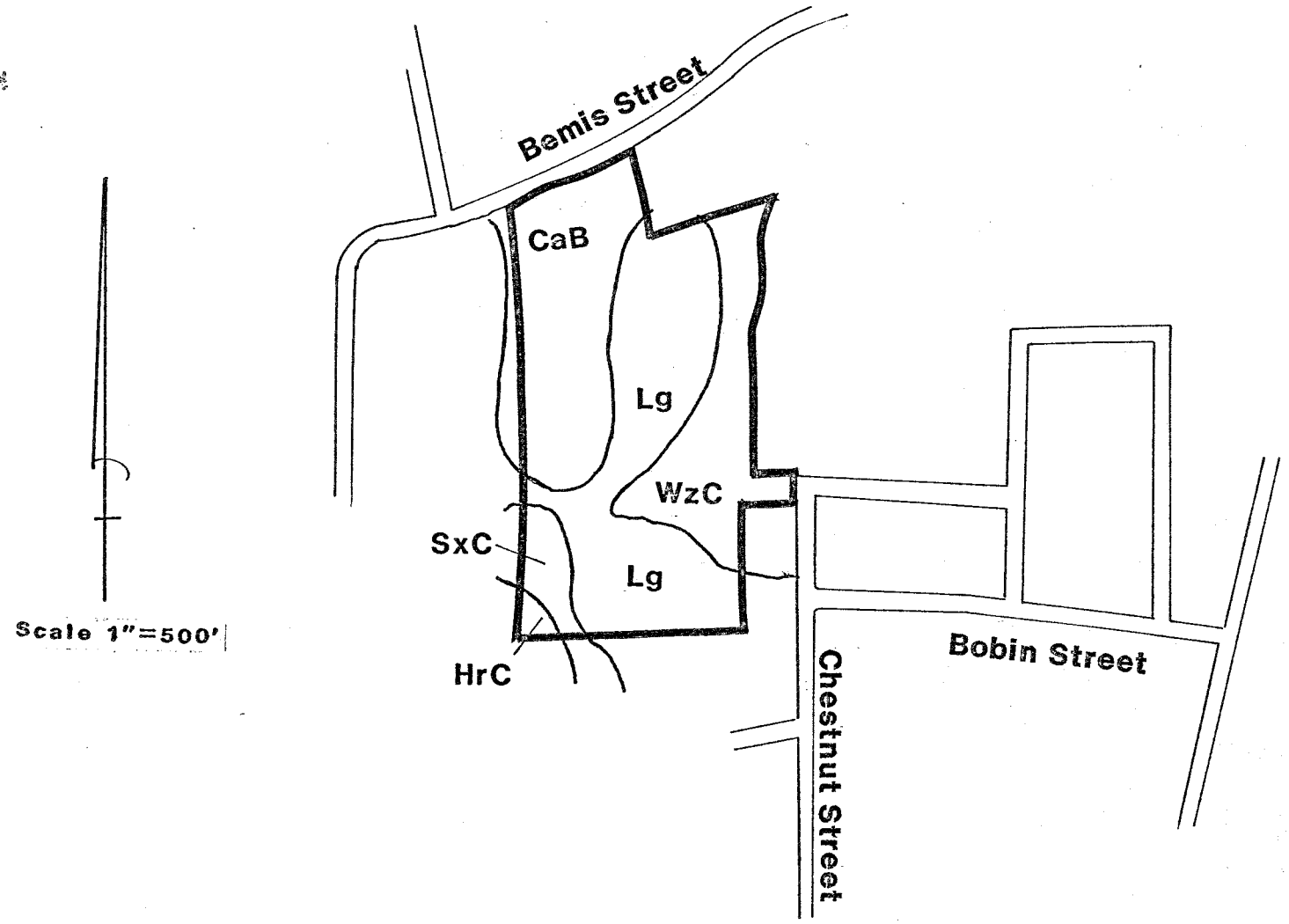
On July 1, 1982 the moratorium on additional sewer system hook-ups in the Town of Plymouth was lifted by the State Department of Environmental Protection. The upgraded sewage plant should be able to easily accept the effluent from the proposed 64 unit apartment complex. What still needs to be determined is whether the sewers will enter the property from the Bemis Street area or from the Chestnut Street area.

Public water is also available to service the site. As with the sewer service lines, the public water supply lines must be extended to the site from nearby areas by the developer.

* * * * *

APPENDIX

SOILS MAP



NOTE:

A more detailed mapping of the inland wetland soils (Lg) on this site has been performed by the applicant and is shown in Figure 2 of this report.

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.

Adapted from Litchfield County Soil Survey, U.S.D.A. - S.C.S.

SOILS LIMITATIONS CHART

Soil Name	Shallow Excavations	Dwellings Without Basements	Local Roads & Streets	Lawns and Landscaping
Leicester, Ridgebury and Whitman very stony fine sandy loams (Lg)	Severe-wetness	Severe-wetness and frost action	Severe-wetness and frost action	Severe-wetness
Woodbridge very stony fine sandy loam, 3 to 15 percent slopes (WzC)	Severe-wetness	Moderate-wetness	Severe-frost action	Moderate-large stones & wetness
Charlton fine sandy laom, 3 to 8 percent slopes (CaB)	Slight	Slight	Slight	Slight
Sutton very stony fine sandy loam, 3 to 15 percent slopes (SxC)	Severe-wetness	Moderate-wetness	Severe-frost action	Moderate-large stones and wetness

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.