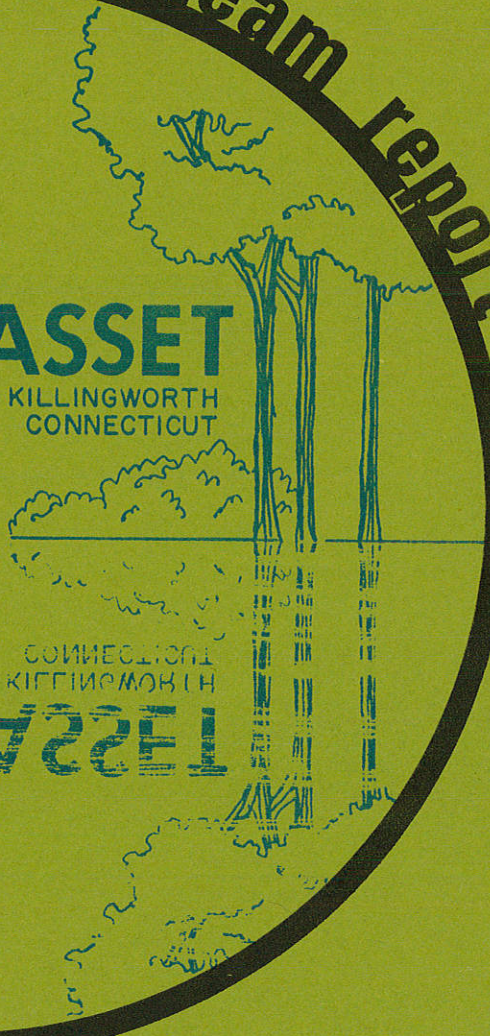


environmental review team report

HAMMONASSET
RESERVOIR
PROPERTY
PROPERTY
RESERVOIR
HAMMONASSET

KILLINGWORTH
CONNECTICUT

CONNECTICUT
KILLINGWORTH



RC & D

EASTERN CONNECTICUT
RESOURCE CONSERVATION AND DEVELOPMENT PROJECT

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

ENVIRONMENTAL REVIEW TEAM REPORT
ON THE
HAMMONASSET RESERVOIR PROPERTY
KILLINGWORTH, CONNECTICUT

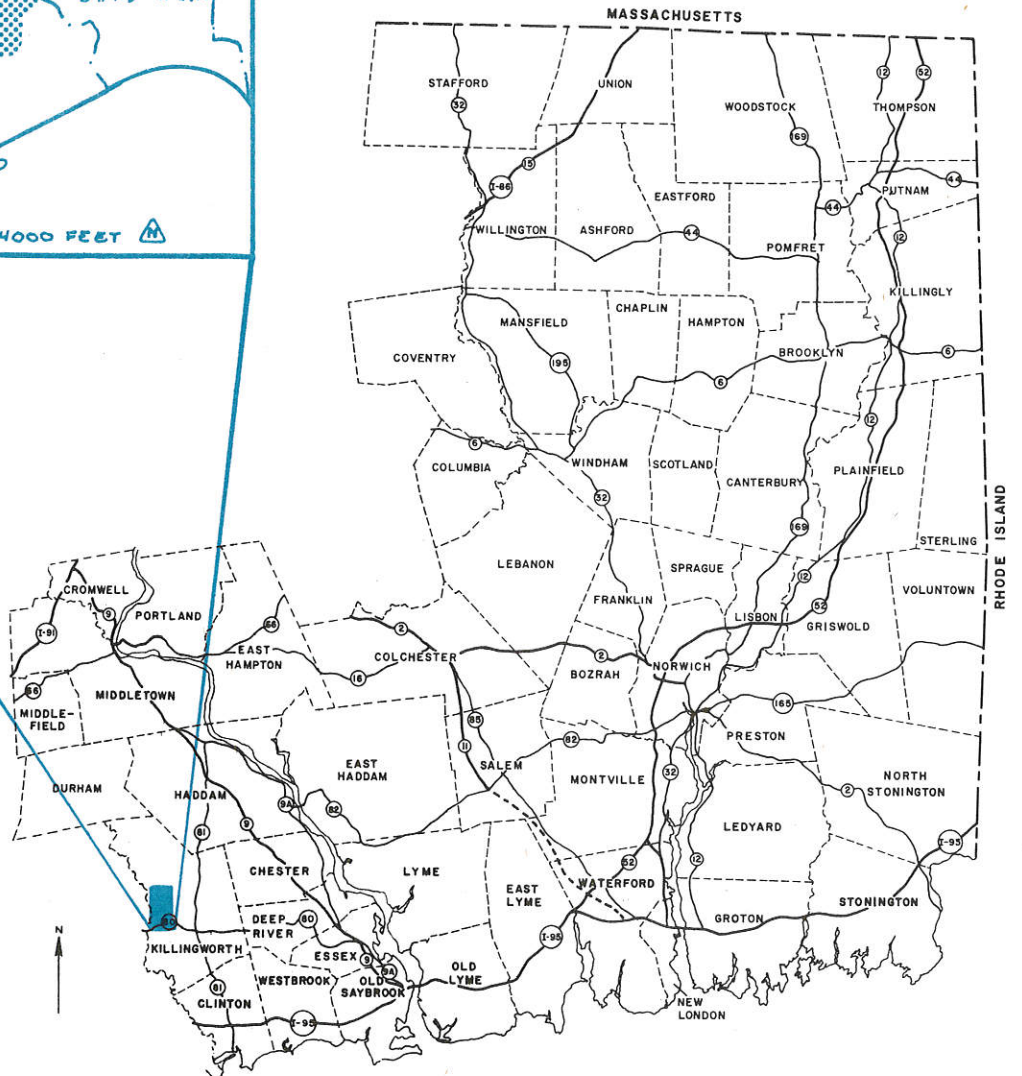
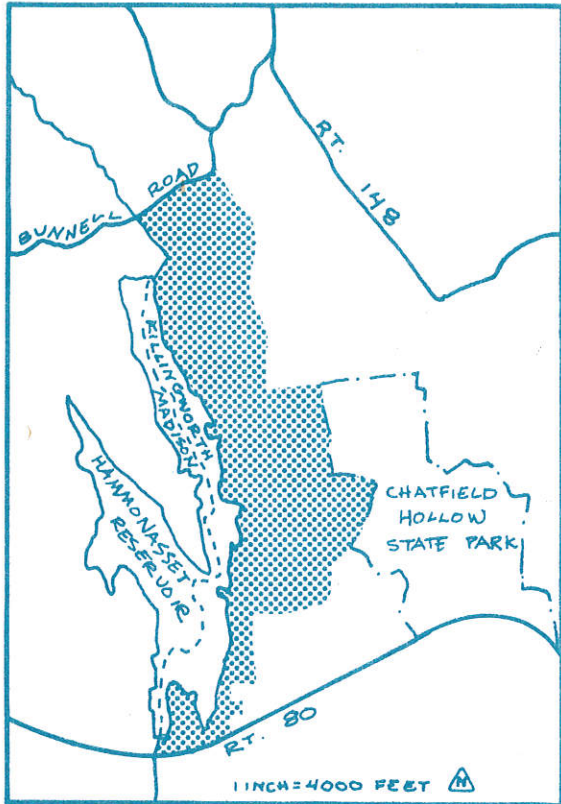
OCTOBER, 1974

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Eastern Connecticut Development Council.*

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

LOCATION OF STUDY SITE

HAMMONASSET RESERVOIR PROPERTY
KILLINGWORTH, CONNECTICUT



EASTERN CONNECTICUT
RESOURCE CONSERVATION AND DEVELOPMENT PROJECT

ENVIRONMENTAL REVIEW TEAM REPORT
ON THE
HAMMONASSET RESERVOIR PROPERTY
KILLINGWORTH, CONNECTICUT

This report is an outgrowth of a request from the Planning and Zoning Commission of Killingworth, with the approval of the New Haven Water Company, to the Middlesex County Soil and Water Conservation District (S&WCD). The S&WCD referred this request to the Eastern Connecticut Resource Conservation and Development (RC&D) Executive Council for their consideration and approval as a project measure. The request has been approved and the measure reviewed by the Environmental Review Team.

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

The Team that reviewed the site consisted of the following personnel: Howard Denslow, Soil Conservationist, Soil Conservation Service (SCS); Dennis Hutchison, Soil Scientist, SCS; Phillip Renn, Engineer, SCS; Richard Hyde, Robert Miller, Geologists, Natural Resource Center, State of Connecticut Department of Environmental Protection (DEP); Stanley House, Forester, DEP; Charles Phillips, Carol Youell, Fishery Biologists, DEP; T.E. Linkkila, Debbie Fuller, Wildlife Biologists, DEP; Richard Woodhull, Sanitarian, State of Connecticut Department of Health; Stanley Greimann, Regional Planner, Connecticut River Estuary Regional Planning Agency; Barbara A. Hermann, Team Coordinator, Eastern Connecticut RC&D Project.

The Team met and reviewed the site on August 15, 1974. Reports from each Team member were sent to the Team Coordinator for review and summarization.

This report is not meant to compete with private consultants by supplying site designs or detailed solutions to development problems. This report identifies the existing resource base and evaluates its significance for development and also suggests considerations that should be of concern to the Town of Killingworth and the New Haven Water Company. The results of this Team action are oriented toward the development of a better environmental quality and the long-term economics of the land use.

The Eastern Connecticut RC&D Council hopes you will find this report of value and assistance in making your decisions on this particular site.

If you require any additional information, please contact: Miss Barbara A. Hermann (889-2324), Environmental Review Team Coordinator, Eastern Connecticut RC&D Project, 139 Boswell Avenue, Norwich, Connecticut 06360.

INTRODUCTION

The New Haven Water Company presently owns about 600 acres of land and water immediately adjacent to the Hammonasset Reservoir within the Town of Killingworth. Provided the necessary legislation is passed, they will be offering this land for sale. It will probably be offered first to the Town and State. If not purchased by them, it would then be sold privately.

There are two parcels comprising this 600 acre tract. The larger parcel, 442.5 acres, consists of the land west of North Chestnut Hill Road and the portion of the reservoir within Killingworth. This area would not be for outright sale though certain recreational rights might be sold. The Hammonasset Fish and Game Club already owns some fishing and hunting rights, so it is unclear what additional rights might be available and compatible with existing uses.

The second parcel, 162.8 acres, is east of North Chestnut Hill Road and abuts Chatfield Hollow State Park to the east. This property has portions within and outside the Hammonasset Reservoir watershed (see map on page 7 for drainage divide). The area within the watershed is to be sold with restrictions, not as yet defined. The area outside the watershed would be sold with no restrictions.

Because the potential use of the larger parcel is limited, the Environmental Review Team concentrated more on the smaller parcel. The report evaluates the existing resources and what opportunities exist for open space and recreation. Residential use was also evaluated for the smaller parcel since that would be the most likely use if the land were to be developed privately. Comments and recommendations within this report are offered for consideration by the Town, but should not be construed as mandatory or regulatory in nature.

EVALUATION

EXISTING RESOURCES

Topography. The general topography for this area of Connecticut consists of numerous elongate northwest by southeast trending hills and valleys. These reflect the underlying bedrock, the effects of glaciation, and an eternity of erosion and drainage. The specific property in question exhibits all these features.

The topography map on the opposite page shows the northern third of the site to be fairly low, flat, and swampy. The elevation increases gently to the south to form an irregular bedrock-controlled hill. Moving south, the elevation increases gently from 290 feet to 310 feet above sea level, whereupon the slope drops off rapidly along the hill's southern margin to another low, and in places, swampy area. In addition to this general topographic setting, there is a series of four small bedrock knobs, ranging from 20 to 40 feet in height, located adjacent and parallel to the east branch of the lake.

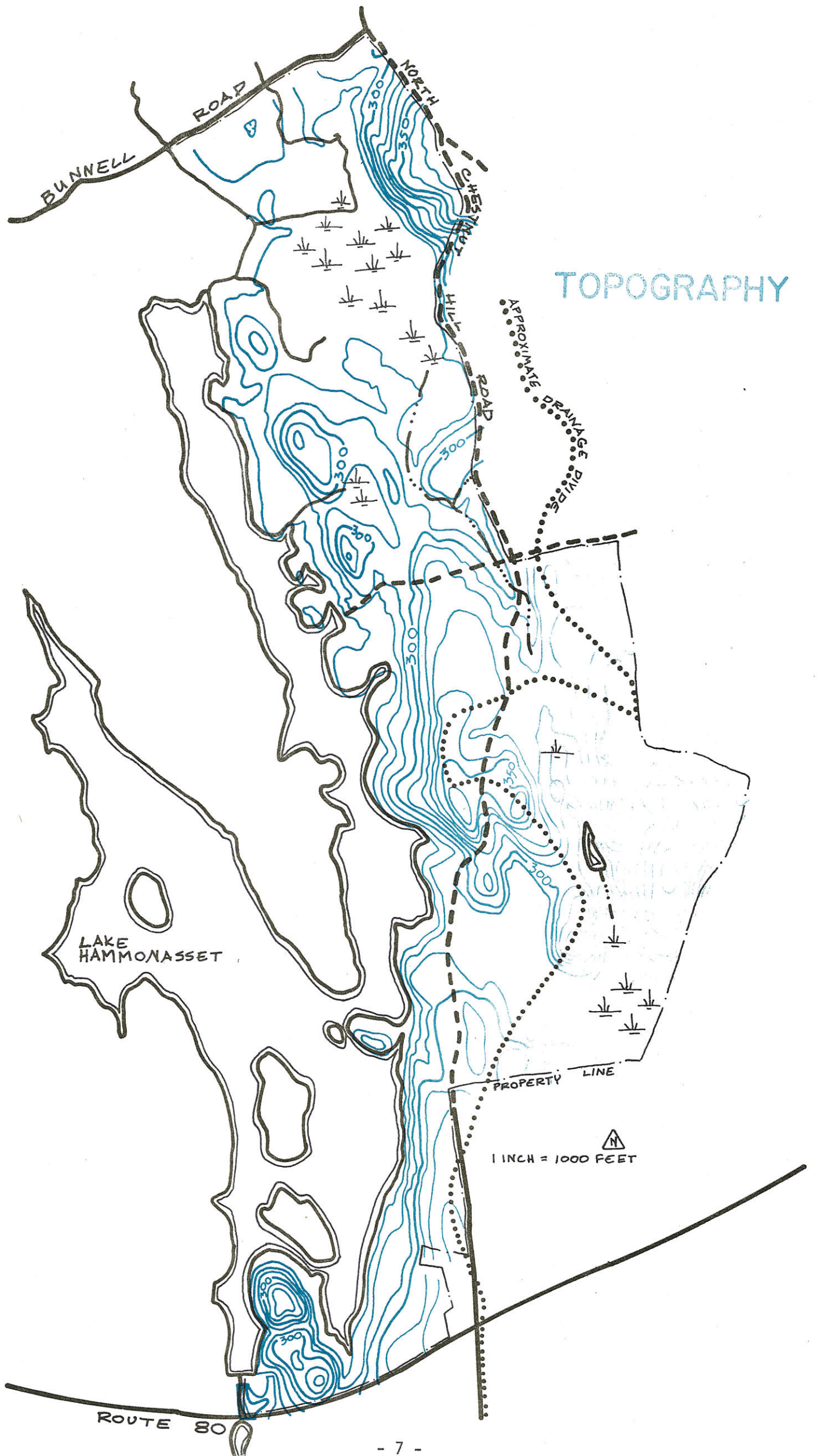
Drainage patterns have bisected the main hill into two lobes, of which the western one falls almost entirely within the Lake Hammonasset watershed and the eastern one into the Chatfield Hollow drainage system. The approximate location of the drainage divide is shown on the topography map.

Surficial Geology. As shown on the map on page 8, the unconsolidated earth materials lying on top of the bedrock surface (ledge) can be divided into three basic types: Stratified drift and alluvium (shown as sand and gravel), swamp deposits, and till. From the form of the land and the extensive surface exposures of bedrock in this region, it is fairly evident that the deposits of unconsolidated materials are not deep. The depth to bedrock probably ranges between 0 and 10 feet below the land surface for most locations, though pockets of deeper materials, 10 to 30 feet, can be found. In all likelihood, one area of thicker materials is the northern flank of the hill south of Abner Lane.

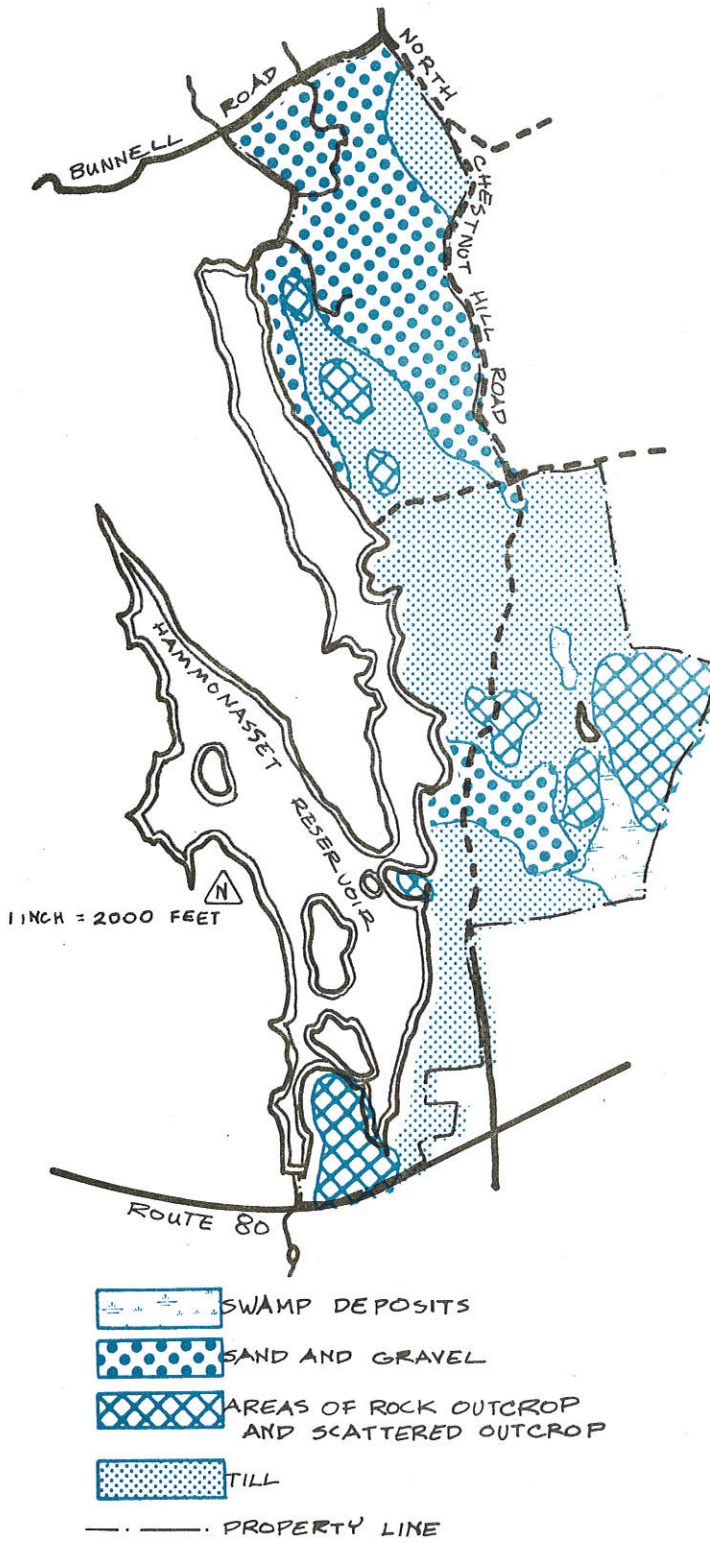
Since no actual subsurface samples were taken during the field review and because the published surficial geology information is rather limited, it is difficult to say whether the sand and gravel deposits outlined on the map are actually sand and gravel deposits of glacial origin or more recently deposited alluvium. The sand and gravel deposits, considered to be of an ice-contact origin, were formed by glacial melt-water streams flowing against the ice mass. These streams carried tremendous amounts of suspended particles. The heavier sands settled to the bottom first and closest to the ice, while lighter and flatter silt and clay particles were transported farther away. Because ice-melt varied according to the daily temperature and season of the year, this type of deposit exhibits an irregular alternation of layers with large ranges in texture over relatively short lateral distances. It is not uncommon for boulders over four feet in diameter all the way down to fine sand and silt to be found in close proximity to each other.

Alluvium, as differentiated from ice-contact deposits, are clay, silt, sand, and gravel materials deposited since glacial time by a stream or other body of running water as a sorted or semi-sorted sediment in the bed of a stream or flood-plain. In large, such deposits generally refer to fine-grained silt and clay materials deposited during times of flood. Whether alluvial or ice-contact, there are no deposits of sufficient quantity or quality, except in two small areas near Pine Orchard Cemetery, for economical aggregate extraction.

Swamp deposits consist of organic substances mixed with sand, silt, and clay which has been washed in by surface water runoff and accumulated in natural or man-made basins.



SURFICIAL GEOLOGY



The major unconsolidated deposits in this area as well as in the rest of Connecticut is called till. This is generally a thin glacial deposit averaging ten to fifteen feet throughout most of the state. The term till, as used by the geologist, identifies that heterogeneous mass of earth materials consisting of various mixtures of boulders, gravel, sand, silt, and clay particles, none of which have been significantly sorted by particle size, that remained after all glacial ice had melted.

Soils. A detailed soils map of this property is given in the Appendix to this report along with a soils limitations chart. Due to the scale at which the soils are mapped (1"=1,320'), the lines shown on the soils map should not be viewed as precise boundaries, but rather as guidelines to the distribution of soil types on the property. The soils limitations chart indicates the probable limitations for each of the soils for on-site sewage, basements, landscaping, and streets and parking. However, limitations, even though severe, do not always preclude the use of the land for development. If economics permit greater expenditures for land development and the intended objective is consistent with the objectives of local and regional development, many soils and sites with difficult problems can be used.

The soils on the site fall within 5 different Natural Soil Groups: A- terrace soils over sands and gravels; B- upland soils over friable to firm glacial till; C- upland soils over compact glacial till (hardpan); D- upland soils, rocky and shallow to bedrock; and F- marsh and swampy soils. Natural Soil Groups are based on natural physical properties common to the member soils.

The terrace soils of group A occur above flood plains in river and stream valleys and are underlain by water-deposited beds of sand and gravel. In most places loamy or fine sandy material covers the older, coarser deposits.

The soils of group B are formed in the thicker, unconsolidated deposits of till usually occurring on hillsides. The capacity of these soils to hold water for plant growth is good where the till is loamy, but is fair to poor on the sandy till. Stones and large boulders are common in these glacial deposits and add difficulty when excavating or earth moving operations are needed.

Group C soils occur mostly on the tops and slopes of drumlins, hills that were smoothed and elongated north to south by the movement of glaciers. The soils have a hardpan 16 to 36 inches below the soil surface. Permeability above the hardpan is moderate, but the pan drastically reduces percolation. During wet seasons, excess water in the soil moves downslope above the hardpan. Stones and boulders are also common in these soils. These soils have good moisture-holding capacity for plant growth.

The soils of group D may occupy narrow ridge tops, but are most often on steep side slopes. The soils are underlain by hard bedrock and rock outcrops are common. In most places, hard rock is less than 20 inches below the soil surface, though occasional pockets of deeper soils do exist.

Group F is characterized by marsh and swampy soils which occur in depressional areas where surface organic deposits are usually 5 or more feet deep. They are saturated most of the time and water ponds on the surface in winter and spring.

With the variety of soils present on this site and their irregular pattern of occurrence over the property, it is difficult to make any generalizations about the site as a whole. However, with careful study of the soils map and the limitations charts for each parcel, a general understanding of the site's potential can be

obtained. The summary charts which group the parcels by the various categories of development are also useful in this respect. It is safe to say, however, that the site is unsuitable for a "blanket" development of 2 acre residential lots due to its variable soils and topography.

Vegetation and Wildlife. The site is primarily forested and functions mainly as a watershed area. Hardwoods dominate the site with scattered areas of planted conifers. On the eastern parcel there are several areas which can be identified on a forestry basis. In the southern part there is a flat area of about 25 acres which is a plantation of red pine. It is old farm land and a good site for red pine and for hardwood. The plantation presently has a basal area of 170 square feet per acre (thinned in 1967-68 from 200 to 130 square feet per acre). The average diameter at breast height is 9-10 inches. This is the best site on the parcel for timber (soils 456A, 525A, 70A).

To the southeast and north of the red pine plantation are swampy areas. The southeast area contains hardwood with some white cedar. The northern area consists of mixed hardwoods.

At the north end of the parcel is an area that was cut over in 1966 due to a high mortality. It has been planted to a mixture of white pine, larch, and Norway spruce. Some are doing well and others are suppressed by thick hardwood brush. The larger trees left are mostly pole size hardwood of poor quality.

The rest of the lot is a low to medium site of mixed hardwood which has been thinned on a selective basis. It is mostly pole size at present.

With the exception of the Reservoir, there is little area available as a water resource. The Hammonasset Fish and Game Club has stocked the Hammonasset River above the lake with trout for some time. There is undoubtedly a substantial warm water fish population as well. The Reservoir could be an excellent site for a put-and-take trout fishery if fishing rights were to become available.

The property provides good upland game habitat. There is a deer population present as evidenced by numerous tracks along the reservoir. A few old hardwood trees may serve as wolf or den trees for wildlife. There are some wild fruits and plants available for wildlife, including raspberry, greenbriar, blueberry, blackberry, and maple-leaf viburnum.

There are no outstanding or unique features on the site with respect to wildlife. However, the size of the parcel (600 acres) in combination with the adjacent Chatfield Hollow State Park and additional property of the Hammonasset Fish and Game property provides a substantial block of land suitable for both large and small wildlife.

Land Use. The property itself is presently undeveloped. Surrounding land uses include scattered single-family homes, Chatfield Hollow State Park, and Hammonasset Fish and Game Club property. Zoning on the site is presently 2 acre residential (minimum lot size of 2 acres), the lowest density category in the Town of Killingworth.

The proposed regional plan recognizes the role which this area plays in the water supply of two major utilities, the New Haven Water Company and the Connecticut Water Company. The plan supports the local plan and zoning regulations which maintain a low density residential standard throughout the Town, except for some

limited commercial and industrial areas in the vicinity of the Route 80 and Route 81 intersection.

WATER SUPPLY

No local water supply service is existing or planned for the area in the foreseeable future. The site is, however, located within the Hammonasset River basin which serves as a major water supply source for the metropolitan New Haven area and for towns in the Estuary area (Clinton, Westbrook, and Old Saybrook). Because of its location, particular care should be taken in any development of the site to protect both ground and surface water quality.

If on-site water supplies are necessary for housing, recreation, or other purposes, bedrock wells are feasible. The bedrock in this area is a relatively hard and dense material with tightly interlocking mineral grains. For this reason water supplies are nearly completely dependent on the fluids which flow through the joints, cracks, and fissures of the rock. Therefore, bedrock wells are only as good as the number and size of these openings below the water table. The more numerous and the larger the fractures and openings, the more water a well will be capable of receiving in the shortest possible time and thus be capable of yielding to the user.

Except for fault zones, which may extend deep into the earth, the major amount of openings in the rock are primarily confined to within roughly 200 feet of the land surface. As a general rule then the capacity for rock to yield water declines with depth. From a statistical analysis of wells located in the eastern Connecticut uplands, it appears wells drilled to a depth of 200 feet produce proportionately more water per foot drilled than a well 400 feet deep. In other words, the cost, on the average, from putting down additional well footage below the 200 foot level far exceeds the return in usable water. It has also been calculated that 9 out of 10 bedrock wells yield at least three gallons of water per minute which, if adequately sized cold water tanks are utilized, can be a sufficient yield for most single-family units.

WASTE DISPOSAL

As with water supply, municipal sewers are not anticipated for this area in the foreseeable future. Therefore, on-site septic systems would have to be used. If the land area outside of the Hammonasset Reservoir watershed in the eastern parcel of the site is eventually utilized for housing or some other purpose requiring on-site septic systems, careful identification and location of suitable sites will be necessary. Variable soil conditions make this particularly important.

As noted in the soils limitations chart for the eastern parcel, only Natural Soil Groups A-1a, A-2, B-1a, and B-1b exhibit slight or moderate limitations for on-site sewage disposal. The remaining soils, representing 81.6 percent of the parcel, are characterized by shallow bedrock conditions, high water table, hardpan soils, and/or steep slopes, all of which severely limit the installation and operation of septic systems. Therefore, attempting to systematically subdivide the area for homes on 2-acre lots could result in malfunctioning septic systems requiring costly remedial steps by the Town or homeowner.

FOUNDATION DEVELOPMENT AND GRADED CONDITIONS

Any land disturbed for construction should be stabilized with vegetation as soon as possible. Prevention of erosion on steeper slopes would be especially important. The soils chart gives limitations for installation of basements and landscaping as well.

ROADS AND UTILITIES

The existing gravel road system is in fair to good condition and provides good access to the land. Clearing and gravelling of old logging roads could open up less accessible portions of the property with a minimum of expense. Any additional roads constructed should not be developed with steep cuts or fills where erosion could begin.

Residential development of the eastern parcel would necessitate improvement of the existing roads and probable construction of new ones. Most of the on-site limitations for roads are steep slopes, seasonal high water table, and/or shallow depth to bedrock. With careful layout, respecting the natural contours, wetland areas, rock outcrops, and other important features and with proper engineering, the limitations can be minimized.

The increased traffic that would result if development occurred could possibly result in the need to improve sight distances at the intersection of North Chestnut Hill Road and Route 80.

POTENTIAL HAZARDS

Natural. There are several hazards which exist relative to either residential or recreation use. Within the entire site, there are steep ledge areas which could be hazardous for children. Also, the swamp on the southeast corner of the eastern parcel could be dangerous. The briars in the woods, which include greenbriar, raspberry, and blackberry, not only impede walking, but can also rip clothing and skin.

Man-induced. One of the primary concerns with development on the site would be the effect of increased run-off, both surface and subsurface, which might deteriorate either the potable water supply of the Reservoir or the recreational uses of the State Park. If these factors are well considered and measures are taken to insure proper design and installation of necessary facilities, then recreational or residential development at a very low density would seem feasible. The important factor to remember is that all land areas are not equally suitable for development and some may require special site preparation or other measures to overcome natural limitations.

PRESERVATION AND RECREATION

Forestry. From a forestry viewpoint the area of the red pine plantation is the best site, with the rest of the area having a low to medium value. Some timber stand improvement could be implemented. Pruning out dead or diseased trees would be good. There would also be a possibility here to provide a Town fire wood supply, by allowing the residents to cut undesirable timber for their home use.

Wildlife. Though not unique or outstanding in any way, the site does provide a good upland game habitat. The main value of the site appears to be its size and its location between two other substantial tracts of open space land.

Some wildlife habitat improvements could be implemented. Suggestions include creation of brush piles in conjunction with timber clearing and planting of wild-life food patches.

Fish. The small pond on the site might be re-excavated for fishing, skating, and water fowl. The Reservoir would be a good location for put and take trout fishing as well as the natural warm water fishing it undoubtedly supports. However, this cannot be a consideration until the question concerning recreational rights is cleared up.

Recreation. The area is very pleasing aesthetically. The red pine plantation is in excellent condition and the Reservoir provides a scenic vista. Passive recreational use of the area with some limited campsite and/or picnic area development would preserve the aesthetic character of the site while making it available for use by the general public. Wood chipped trails for hiking and/or horseback riding could be developed. Various informational stations could be constructed for outdoor education; possible stations include the marsh, pond, upland ledge area, and red pine plantation.

SERVICES TO SUPPORT DEVELOPMENT

Services provided by the Town at this time are limited. Road maintenance, education, and fire protection are the primary services. With the lack of public water and sewer and the importance of this area to a water supply watershed, extensive development is not recommended. However, single-family homes placed in proper soils with large wooded lots would be feasible. Non-intensive recreational uses as described in the previous section would also be suitable.

COMPATIBILITY OF SURROUNDING LAND USES

The site and surrounding area are now zoned for residential use at a maximum density of one family on every two acres. The State Forest and the Fish and Game Club can be considered as permanent open space. It would therefore appear that either recreational or residential use should be compatible with present and future land uses in the surrounding area.

ALTERNATIVE LAND USES FOR AREA

According to the proposal of the New Haven Water Company the western parcel appears to be limited to recreational uses. The major question here is whether the hunting and fishing rights now owned by the Hammonasset Fish and Game Club will be available for public purchase and use.

On the eastern parcel, low density residential development and recreation are the major alternative land uses. For several reasons, passive recreational use seems to be the preferable use. Primarily, with proper placement of sanitary facilities, it would not jeopardize the water quality of the area. Another factor is the present wildlife value in this section of Killingworth for upland game, such as deer. To

maintain this value, use of the area with a minimum of land disruption is highly recommended. Location of this parcel adjacent to the Chatfield Hollow State Park further reinforces its desirability for recreation and open space. It would provide a good buffer for the park as well as opportunities for additional passive recreation.

Residential development should only be done at densities capable of being sustained over the long term by on-site water and waste disposal systems.

ADDITIONAL COMMENTS AND SUMMARY

The western parcel does not appear to have much potential for additional use at the present time. The eastern parcel appears to be best suited for passive recreation with possibilities for some wildlife and forest management. Only very limited opportunity for water-based recreation exists with the small pond.

Killingworth representatives indicated that water-based recreation was one of the Town's prime needs. This site would not appear to meet this need. It would appear more fruitful for the Town to seek another site with greater water-based recreation potential. However, if the Town also sees a need for a wooded open space area for passive recreation and has adequate financial resources, it could be a worthwhile acquisition.

Due to its location next to Charfield Hollow State Park and the type of recreational activities which appear most suitable, State purchase of the site would seem most logical and desirable and is strongly recommended by the Environmental Review Team.

APPENDIX

SOILS LIMITATIONS CHART, PARCEL EAST OF NORTH CHESTNUT HILL ROAD

| Natural Soil Group* | Mapping Symbols | Acres | Percent of Total Acres | Limitations For:** | | | | Principal Limiting Factor(s) | |
|---------------------|------------------|-------|------------------------|--------------------|------------|--------------|---------------------|------------------------------|--|
| | | | | On-Site Sewage | Base-ments | Land-scaping | Streets and Parking | | Athletic Fields |
| A-1a | 70A | 4 | 2.4 | 1 | 1 | 2 | 1 | 2 | Droughtiness, texture. |
| A-2 | 456A, 525A | 12 | 7.4 | 2 | 2 | 2 | 2 | 2 | Seasonal high water table. |
| #A-3b | 91 | 4 | 2.4 | 3 | 3 | 3 | 3 | 3 | High water table. |
| B-1a | 6XB | 9 | 5.5 | 1 | 1 | 1 | 2 | 2 | Slope 3-8% |
| B-1b | 6XC | 5 | 3.1 | 2 | 1 | 2 | 3 | 3 | Slope 3-15% |
| #B-3b | 43M | 4 | 2.4 | 3 | 3 | 3 | 3 | 3 | High water table, stoniness. |
| C-1a | 85XB | 14 | 8.6 | 3 | 1 | 1 | 2 | 2 | Hardpan, slope 3-8%, stoniness. |
| C-1b | 85XC | 30 | 18.4 | 3 | 2 | 2 | 3 | 3 | Hardpan, slope 3-15%, stoniness. |
| C-1c | 35MC | 14 | 8.6 | 3 | 2 | 3 | 3 | 3 | Hardpan, slope 3-15%, stoniness. |
| C-2b | 31MC | 20 | 12.3 | 3 | 2 | 3 | 3 | 3 | Hardpan, seasonal high water table, stoniness. |
| D-1 | 17LC | 21 | 12.9 | 3 | 3 | 3 | 3 | 3 | Shallow, rocky, slope 3-15%. |
| D-2 | 17LD, 17ZC, 17ZD | 14 | 8.6 | 3 | 3 | 3 | 3 | 3 | Shallow, rocky, slope 3-35%. |
| #F-1 | 93 | 12 | 7.4 | 3 | 3 | 3 | 3 | 3 | High water table, organic material. |
| | | 163 | 100.0 | | | | | | |

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

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

These soils fall within the inland wetlands classification, as defined by P.A.155.

SOILS LIMITATIONS CHART, PARCEL WEST OF NORTH CHESTNUT HILL ROAD

| Natural Soil Group* | Mapping Symbols | Acres | Percent of Total Acres | Limitations For:** | | | | Principal Limiting Factor(s) | |
|---------------------|--------------------|-------|------------------------|--------------------|------------|--------------|---------------------|------------------------------|-------------------------------------|
| | | | | On-Site Sewage | Base-ments | Land-scaping | Streets and Parking | | Athletic Fields |
| A-1a | 60A,63A 67A,67B | 41 | 12.4 | 1 | 1 | 2 | 1 | 2 | Droughtiness, texture. |
| A-1d | 69A | 2 | .6 | 1 | 1 | 1 | 1 | 1 | |
| A-2 | 456A | 4 | 1.2 | 2 | 2 | 2 | 2 | 2 | Seasonal high water table. |
| #A-3a | 464 | 2 | .6 | 3 | 3 | 3 | 3 | 3 | High water table. |
| #A-3b | 754,91 | 30 | 9.1 | 3 | 3 | 3 | 3 | 3 | High water table. |
| B-1a | 6XB | 12 | 3.6 | 1 | 1 | 1 | 2 | 2 | Slope 3-8%. |
| B-1b | 6XC | 2 | .6 | 2 | 1 | 2 | 3 | 3 | Slope 8-15%. |
| B-1c | 6MC | 21 | 6.4 | 3 | 3 | 3 | 3 | 3 | Stoniness, slopes 3-15%. |
| #B-3a | 43 | 3 | .9 | 3 | 3 | 3 | 3 | 3 | High water table. |
| #B-3b | 43M | 18 | 5.5 | 3 | 3 | 3 | 3 | 3 | High water table, stoniness. |
| C-1a | 85XB | 43 | 13.0 | 3 | 1 | 1 | 2 | 2 | Hardpan, slope 3-8%, stoniness. |
| C-1b | 85XC | 12 | 3.6 | 3 | 2 | 2 | 3 | 3 | Hardpan, slope 3-15%, stoniness. |
| C-1c | 35MC | 6 | 1.8 | 3 | 2 | 3 | 3 | 3 | Hardpan, slope 3-15%, stoniness. |
| C-1e | 35MD | 7 | 2.1 | 3 | 3 | 3 | 3 | 3 | Hardpan, slope over 15%, stoniness. |
| C-2a | 31XB | 3 | 0.9 | 3 | 2 | 2 | 2 | 2 | Hardpan, seasonal high water table. |

SOILS LIMITATIONS CHART, PARCEL WEST OF NORTH CHESTNUT HILL ROAD continued

| Natural Soil Group* | Mapping Symbols | Acres | Percent of Total Acres | Limitations For:** | | | Principal Limiting Factor(s) | |
|---------------------|--------------------|-------|------------------------|--------------------|-------------------------|---------------------|------------------------------|-------------------------------------|
| | | | | On-Site Sewage | Base-ments Land-scaping | Streets and Parking | | Athletic Fields |
| C-2b | 31MC | 52 | 15.8 | 3 | 2 | 3 | 3 | Hardpan, seasonal high water table. |
| D-1 | 17LC | 32 | 9.7 | 3 | 3 | 3 | 3 | Shallow, slope 3-15%, rocky. |
| D-2 | 17LD, 17ZC 17ZD | 18 | 5.5 | 3 | 3 | 3 | 3 | Shallow, slope 3-35%, rocky. |
| #F-1 | 93 | 22 | 6.7 | 3 | 3 | 3 | 3 | High water table, organic material. |
| | | 330 | 100.0 | | | | | |

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

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

These soils fall within the inland wetlands classification, as defined by P.A.155.

SUMMARY OF LIMITATIONS

PARCEL EAST OF NORTH CHESTNUT HILL ROAD

| | Slight | | Moderate | | Severe | |
|-------------------|--------|------|----------|------|--------|------|
| | Acres | % | Acres | % | Acres | % |
| On-site Sewage | 13 | 7.9 | 17 | 10.5 | 133 | 81.6 |
| Basements | 32 | 19.6 | 76 | 46.7 | 55 | 33.7 |
| Landscaping | 23 | 14.1 | 51 | 31.3 | 89 | 54.6 |
| Streets & Parking | 4 | 2.4 | 35 | 21.5 | 124 | 76.1 |
| Athletic Fields | | | 39 | 23.9 | 124 | 76.1 |

PARCEL WEST OF NORTH CHESTNUT HILL ROAD

| | | | | | | |
|-------------------|-----|------|-----|------|-----|------|
| On-site Sewage | 55 | 16.6 | 6 | 1.8 | 269 | 81.6 |
| Basements | 100 | 30.2 | 22 | 6.6 | 208 | 63.2 |
| Landscaping | 57 | 17.2 | 59 | 17.8 | 214 | 65.0 |
| Streets & Parking | 43 | 13.0 | 59 | 17.8 | 228 | 69.2 |
| Athletic Fields | 2 | 0.6 | 100 | 30.2 | 228 | 69.2 |