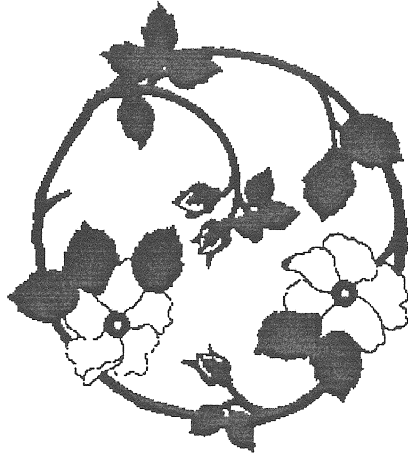


Pole Hill Road Town Owned Parcel



Bethany, Connecticut

*KING'S MARK
ENVIRONMENTAL
REVIEW TEAM
REPORT*

KING'S MARK RESOURCE CONSERVATION & DEVELOPMENT AREA, INC.



October 1994

**Pole Hill Road
Town Owned Parcel
Bethany, Connecticut**

Environmental Review Team Report

**Prepared by the King's Mark Environmental Review Team
of the King's Mark Resource Conservation and Development Area, Inc.
Haddam and Wallingford, Connecticut**

for the

Bethany Board of Selectmen

This report is not meant to compete with private consultants by supplying designs or detailed solutions to development problems. This report identifies the existing resource base and evaluates its significance to the proposed development and also suggests considerations that should be of concern to the Board of Selectmen and the Town. The results of the Team action are oriented toward the development of a better environmental quality and long-term economics of land use. The opinions contained herein are those of the individual Team members and do not necessarily represent the views of any regulatory agency with which they may be employed.

Acknowledgements

The King's Mark Environmental Review Team Coordinator, Elaine Sych, would like to thank and gratefully acknowledge the following Team members whose professionalism and expertise were invaluable to the completion of this report.

Nicholas Bellantoni	State Archaeologist UCONN - Museum of Natural History
Joseph Hickey	State Park Planner DEP - State Parks Division
Doug Hoskins	Environmental Analyst DEP - Inland Water Resources Division
Stacey Kingsbury	Environmental Analyst DEP - Natural Resources Center
Jerry Milne	Forester DEP - Bethany Field Office
Don Mysling	Fisheries Biologist DEP - Fisheries Division
Alan Page	District Conservationist USDA - Soil Conservation Service
Richard Stoecher	Regional Planner South Central Regional Council of Governments
Stephen VanHorn	Geologist UCONN - Dept. of Geology and Geophysics

I would also like to thank John Ford, the Bethany First Selectman and Robert Brinton, the Bethany Zoning Enforcement Officer for their cooperation and assistance during this environmental review.

Executive Summary

Introduction

The Bethany Board of Selectmen requested a review of the 37 acre Pole Hill Road parcel which is town owned. The town received the property in lieu of back taxes and has no proposed use of the property at this time. The site is mostly wetlands with a small man-made pond. The site is zoned residential, and a 6 lot subdivision was approved for the site but never completed. This was due to the inability to construct on-site sewage disposal systems that would meet the Public Health Code.

The Town needs to determine what to do with this parcel, and has asked the ERT to provide them with natural resource information and planning ideas for use. Several ideas that the Town wanted the Team to consider include: passive or active recreation, the pond's use for fire protection, or a road maintenance sand storage area. The Town also needs to decide whether they should retain ownership or should it be transferred to a land trust.

The review process consisted of 4 phases:

- 1) Inventory of the site's natural resources (collection of data);
- 2) Assessment of these resources (analysis of data);
- 3) Identification of resource problem areas; and
- 4) Presentation of planning, management and land use guidelines.

Topography and Geology

The Pole Hill Road parcel is located in the northern part of the Pine Brook watershed which feed into Bladen's River. Topographic features include: the gravel fill placed in wetlands for the 6 unfinished house lots, the small pond, the mounds of glacial till from the pond construction and trenching activities and wetlands over the majority of the site.

The surficial deposits consist of swamp deposits and glacial till. Poorly sorted gravel was used by the former owner as fill in the 6 lots fronting on Pole Hill Road. This gravel may represent an economic resource that the town could use.

The bedrock is composed entirely of Prospect Gneiss. There are no outcroppings anywhere within the parcel.

Soil Resources

The soils within the parcel include Carlisle muck (Ce) and Ridgebury, Leicester, and Whitman (RN). These are both wetland soils. Both soils have limitations for recreational development which include: wetness, excess humus and large stones. These limitations do not preclude development, but require careful consideration during the planning process to minimize the disturbance to the soil resources in particular and the total natural resources in general. Due to the extensive area of wetlands in the parcel and the identified limitations, it is recommended that recreational use be limited to pedestrian traffic only, and limit development primarily to RN soils. Additional

consultation with a recreation specialist is recommended to maximize use of this area.

Wetland Resources Review

Approximately 33 of the 37 acres are inland wetlands, and the majority is a forested wetland. The manmade pond is fed by Pine Brook which flows into Bladen's River and ultimately into the Naugatuck River. The 220 acre upstream watershed contributing to this wetland is a mix of forest and single family residential.

Pine Brook's water quality is not classified according to DEP. Bladen's River near where it joins the Naugatuck River is classified B/A, with the water quality goal of becoming Class A. The groundwater classification for the site is GA, which means that it is within the area of influence of private and potential public drinking water supply wells.

The functional values of this wetland include: flood control, ecological integrity, nutrient retention and sediment trapping, and educational value.

Active recreation (motor bikes, mountain bikes and horses) should be discouraged due to the fragile nature of the wetlands. Passive recreation such as hiking, fishing and nature study would be suitable. Trail construction, boardwalks, observation decks and parking areas are improvements which could be made.

The use of this area for a fire pond appears feasible with improvements for access. A more detailed study is needed to determine the amount of water that would be needed and the effect of this withdrawal on the wetlands.

The extraction of the gravel that was placed on the frontage lots should not create any long-term, unacceptable impacts to the wetlands provided that proper erosion and sediment controls are used. Reclamation would serve to expand and diversify the wetland resource.

The upland portion of the site is suitable for the storage of road maintenance sand. However, "road sweepings" are classified by DEP as solid waste and require proper disposal and/or storage. The existing house foundations could serve for containment and sediment barriers depending on the amount of material to be stored.

The transfer of this property to a private land trust could prove to be advantageous. A private organization may find it easier to obtain funding for recreational improvements, while the Town could offer "in-kind" services such as design and engineering.

The Natural Diversity Data Base

According to the current information there are no known populations of Federal or State Endangered, Threatened or Special Concern Species occurring at this site.

Fisheries Resources

Surface waters on the parcel consist of an unnamed 1.3 acre pond, several intermittent drainages discharging to the pond, and the headwater reaches of Pine Brook.

The fisheries resources of the unnamed pond and Pine Brook have never been formally investigated by the DEP Fisheries Division. It is anticipated to be classified as warmwater. Fish species associated with warmwater ponds are: largemouth bass,

bluegill sunfish, common sunfish, black crappie, chain pickerel, golden shiner, and brown bullhead. Pine Brook would be classified as a coolwater wetland stream. Naturally occurring species could include redbfin pickerel, common shiner, tessellated darter, and white sucker, also brook trout might be found.

This site's aquatic resources would benefit most if there was complete protection from development. Passive recreation would create the least amount of adverse impacts.

Since the pond serves as the headwaters of Pine Brook, activities that degrade the pond water quality could impact the stream.

The pond does offer an opportunity for angling, but there is a concern for over-exploitation of the fishery population. It would be wise to limit angler access to the pond.

If the pond is to be expanded for fire protection, it would be beneficial to increase shallow water areas to allow for spawning and rearing of species such as largemouth bass and sunfish.

Forest Resources

The property consists of 4 acres of disturbed fill, 27 acres of red maple swamp, and 6 acres eastern portion dominated by hardwoods.

The red maple swamp has little potential for sawtimber production because of the wetness of the soils.

The hardwood forest area also has little potential for a timber harvest due to poor access. Signs of wild turkey were noted in this area.

There is potential for a hiking trail to run parallel to the excavated/trenched watercourse that runs easterly. The excavated material provides a dry path across the red maple swamp. This may be a way to connect with Land Trust property west of Pole Hill Road.

It is recommended that the property boundaries be clearly delineated on the ground.

State Park Planner Review

The site would be best used for dedicated passive open space, with active management limited to grading and seeding disturbed frontage areas. A small, gravel parking lot could also be considered.

Planning Review

The combination of large land holdings by the South Central Connecticut Regional Water Authority and low density residential development would appear to balance any need for large amounts of town open space.

Ideas for recreational use include: trails (maintained by youth groups or community organizations), fishing, ice skating, and bird watching. The close proximity to two schools makes it an ideal site for environmental education.

The property should be integrated into any planning activities being considered by town commissions and community groups so there could be town wide planning for connecting recreational trails.

Archaeological Review

The Office of State Archaeology has no recorded sites in the project area. However, well drained slopes adjacent to the wetlands are sensitive to the discovery of unknown archaeological sites. Should proposed plans entail limited construction activity, it is recommended that areas of impact be reviewed prior to such work.

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Introduction

An environmental review was requested for a piece of town owned land by the Bethany Board of Selectmen.

The ±37 acre site is located on Pole Hill Road. A major portion of the site is wetlands with a manmade 2 acre pond. The Town recently received the parcel in lieu of back taxes. The site is zoned residential, and was approved for a six lot subdivision in 1983. Fill was placed on all the road frontage lots for the construction of on-site septic systems, but they still could not meet Public Health requirements. Two foundations were built before the project was abandoned and the Town received the property.

The Town has no proposed use for the site at this time, but they are seeking guidance on the appropriate use or disposition of the parcel. The Board of Selectmen want information on the site's suitability for passive or active recreation, a fire protection water source, or a road maintenance sand storage area. A decision also needs to be made as to whether the Town should maintain ownership of the parcel or whether it should be transferred to a local land trust.

The Environmental Review Team Process

Through the efforts of the Town of Bethany and the King's Mark ERT, this environmental review and report was prepared for the Town. This report primarily provides a description of the on-site natural resources and presents planning, management and land use guidelines. The review process consisted of four phases:

1. Inventory of the site's natural resources (collection of data);
2. Assessment of these resources (analysis of data);
3. Identification of resource problem areas; and
4. Presentation of planning, management and land use guidelines.

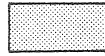
The data collection phase involved both field and literature research. The ERT field review took place on April 26, 1994. Mapped data or technical reports were also perused, and specific information concerning the property was collected. Being on-site allowed some Team members to check and confirm mapped information and identify other resources.

Once Team members had assimilated an adequate data base, they were able to analyze and interpret their findings. Results of this analysis enabled Team members to arrive at an informed assessment of the property's natural resource opportunities and limitations. Individual Team members then prepared and submitted their reports to the ERT coordinator for compilation into the final ERT report.

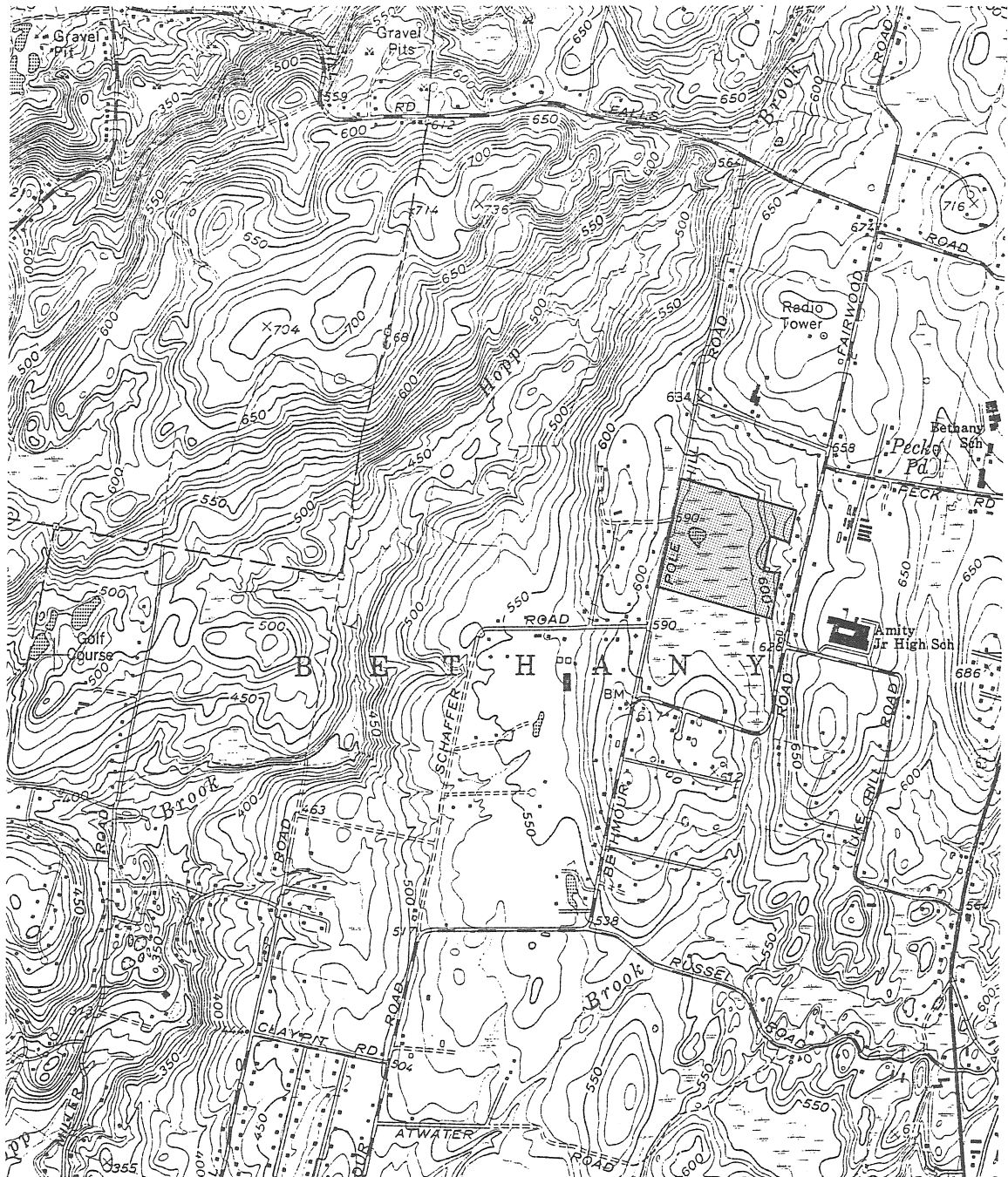
Location Map

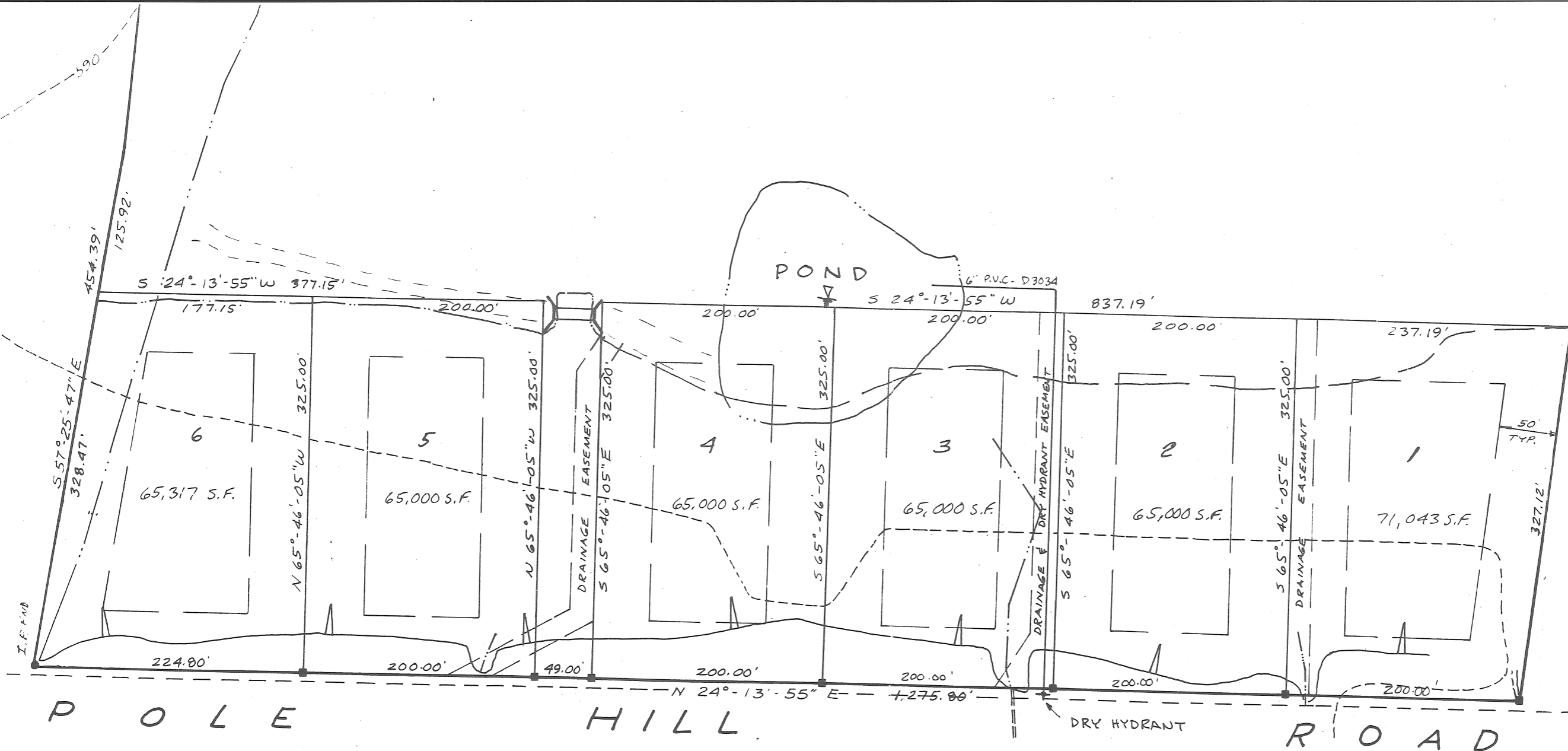


Scale 1"=2000'



Approximate Site





N/F
CAVALIERE

N/F
ED & JANICE
CHIOLA

N/F
SIMON & BARBARA
DELBUONO

N/F
BENJAMIN & EMILY
TUCKER

N/F
RICHARD & JANET
SCOTT

SUBDIVISION MAP
PROPERTY OF
LEONARD FASANO

POLE HILL ROAD BETHANY, CONNECTICUT

SCALE: 1"=100'

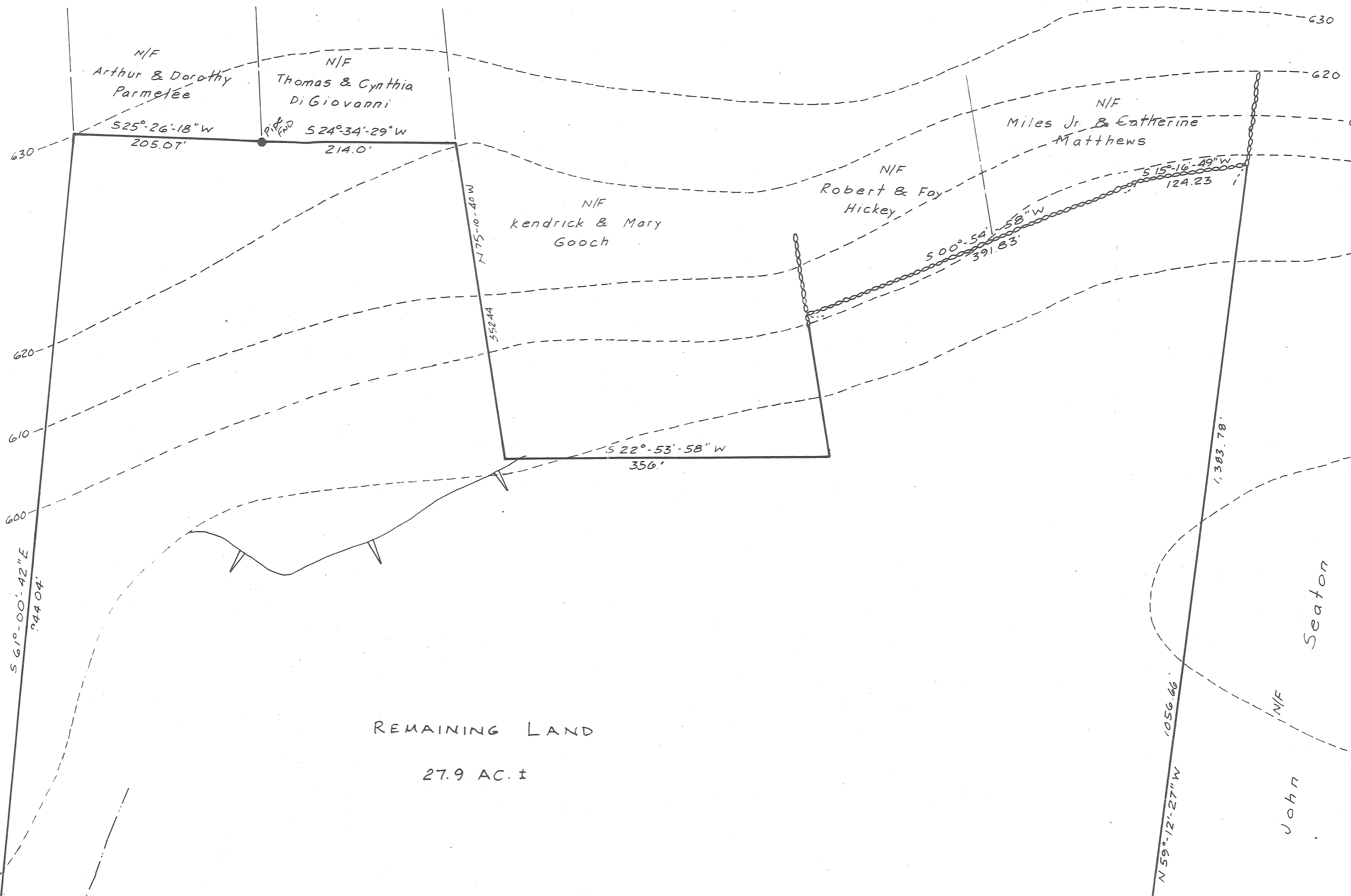
OCTOBER 14, 1983
Rev. Oct. 26, 1983
Rev. Nov. 30, 1983

KENNY & STEVENS
CIVIL ENGINEERS & LAND SURVEYORS
MADISON, CONNECTICUT

I HEREBY CERTIFY THAT THIS MAP AND SURVEY WERE PREPARED IN ACCORDANCE WITH THE STANDARDS OF A CLASS A-2 SURVEY AS DEFINED IN THE CODE OF PRACTICE FOR STANDARDS OF ACCURACY AND MAPS, ADOPTED DECEMBER 10, 1975 AS AMENDED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC.

STATE OF CONNECTICUT
KENNY & STEVENS
REGISTERED PROFESSIONAL SURVEYORS
No. 10084
10/14/83
DATE
REGISTRATION NO.

Myron E. & Alice W. Lowe



REMAINING LAND

27.9 AC. ±

Topography and Geology

Topography

The Pole Hill Road town owned parcel occupies a 37 acre site in the northern part of the Pine Brook watershed which feeds into Bladens River. The parcel abuts Pole Hill Road along its western margin. Four topographic features are apparent on the parcel. The most obvious feature are the six unfinished lots which were built up by filling wetlands with gravel. The six lots are visible along Pole Hill Road. A small pond is located between and in the rear of lots #3 and #4. The pond appears to have been augmented as mounds of glacial till surround most of the pond. The majority of the parcel is composed of wetlands. The eastern side of the parcel is gently sloping to the west.

Surficial Deposits

The surficial deposits were mapped by Richard Foster (1974 and 1975) and are shown on the Surficial Map of the Naugatuck Quadrangle, Connecticut (plate 1, Quadrangle Report No. 35). Swamp deposits cover a majority of the parcel and consists of silt, sand and clay that is mixed with organic matter. Glacial till is present along the eastern and western portion of the parcel and consists of compact non-sorted sediment. The poorly sorted gravel used by the former developer is located in six lots along Pole Hill Road. This poorly sorted gravel may represent an economic resource that could be utilized by the town.

Bedrock Geology

The bedrock geology was mapped by Michael Carr (1957 and 1958) and is shown on the Bedrock Geology Map of the Naugatuck Quadrangle, Connecticut (plate 1, Quadrangle Report No. 9). The bedrock is composed entirely of the Prospect Gneiss although it does not crop out anywhere within the parcel. The Prospect Gneiss is a dark gray biotite augen gneiss with foliation that strikes northeast and is vertical just north of the parcel.

Soil Resources

The soils within the Pole Hill Road study area include: Carlisle muck (Ce) and Ridgebury, Leicester, and Whitman (RN). These soils, which are identified within the Soil Survey of New Haven, CT (1979), are described below:

Soil Map Symbol	Description
Ce	<p>Carlisle Muck. This nearly level, very poorly drained, deep organic soil is in low depressions on outwash terraces and glacial till plains. The organic layers range from 50 inches to more than 30 feet in depth. Bedrock is commonly more than 60 inches below the surface. It has a high water table most of the year and is ponded for several weeks from fall to spring and after heavy rains in summer. Permeability is moderately rapid. Surface runoff is very slow. The available water capacity is high. Ce is a wetland soil. Limitations for recreation are wetness and excess humus. Limitations for building site development are wetness, low strength, excess humus and frost action.</p>
RN	<p>Ridgebury, Leicester, and Whitman Extremely Stony Fine Sandy Loams. These nearly level, poorly drained and very poorly drained soils formed in compact and friable loamy glacial till. They are in depressions and drainage ways of glacial till uplands. Depth to bedrock is commonly more than 60 inches below the surface. From 3 to 25 percent of the surface of these soils are covered with stones and boulders. The soils were mapped together because they have no significant differences in use and management. These soils have a seasonal high water table at a depth of about 8 inches from fall through spring. Permeability is moderate or moderately rapid in the surface layer and subsoils of these soils. The permeability is slow to very slow in the substratum of the Ridgebury and Whitman soils and moderately rapid in the substratum of the Leicester soils. Runoff is slow. The available water capacity is high in these soils. RN is a wetland soil. Limitations for recreation are wetness and large stones. Limitations for building site development are wetness, large stones and frost action.</p>

Recreational Development Recommendations

The limitations identified above which may be associated with recreational development do not necessarily preclude development. The following recommendations

will address the limitations and provide guidance to minimize disturbance to the soil resources during the planning and implementation process.

Wetness: This limitation for both Ce and RN are rated severe. However, if the area is developed for recreational use, such as trails or picnic areas, limit development to during the summer. This represents a time of year when water tables are traditionally at their lowest and will help to minimize disturbance to the soil resources. Avoid areas which may pond water, areas which traditionally pond water, or both. Between the two soils, Ce will be more limiting in terms of project cost, installation, and maintenance due to its physical characteristics. RN is preferred over Ce for recreational use. Limit use to pedestrians only; motorized use will increase maintenance, safety concerns, and soil disturbance. Where feasible, place materials, such as wood chips, or geotextile material and stone, in high use areas (trails, picnic areas, benches) to minimize soil disturbance and erosion. It is recommended to consult with a specialist in trail development to obtain additional information regarding materials, safety concerns, etc.

Excess Humus: This limitation, which is identified for Ce only, is rated severe. Due to the traditional depth of humus (organic layer) of this soil, it may be difficult to establish a stable footing for any recreational structures such as trail railings, benches, and picnic areas. Project cost, installation, and maintenance can be expected to be high.

Large Stones: This limitation, which is identified for RN only, is rated severe. However, since stones and boulders cover approximately 3 to 25 percent of the surface, careful planning and on-site inspections prior to development will help to maximize development and minimize disturbance to the soil resources. Where feasible, avoid removal of large stones and boulders to minimize the potential of soil erosion.

Building Site Development Recommendations

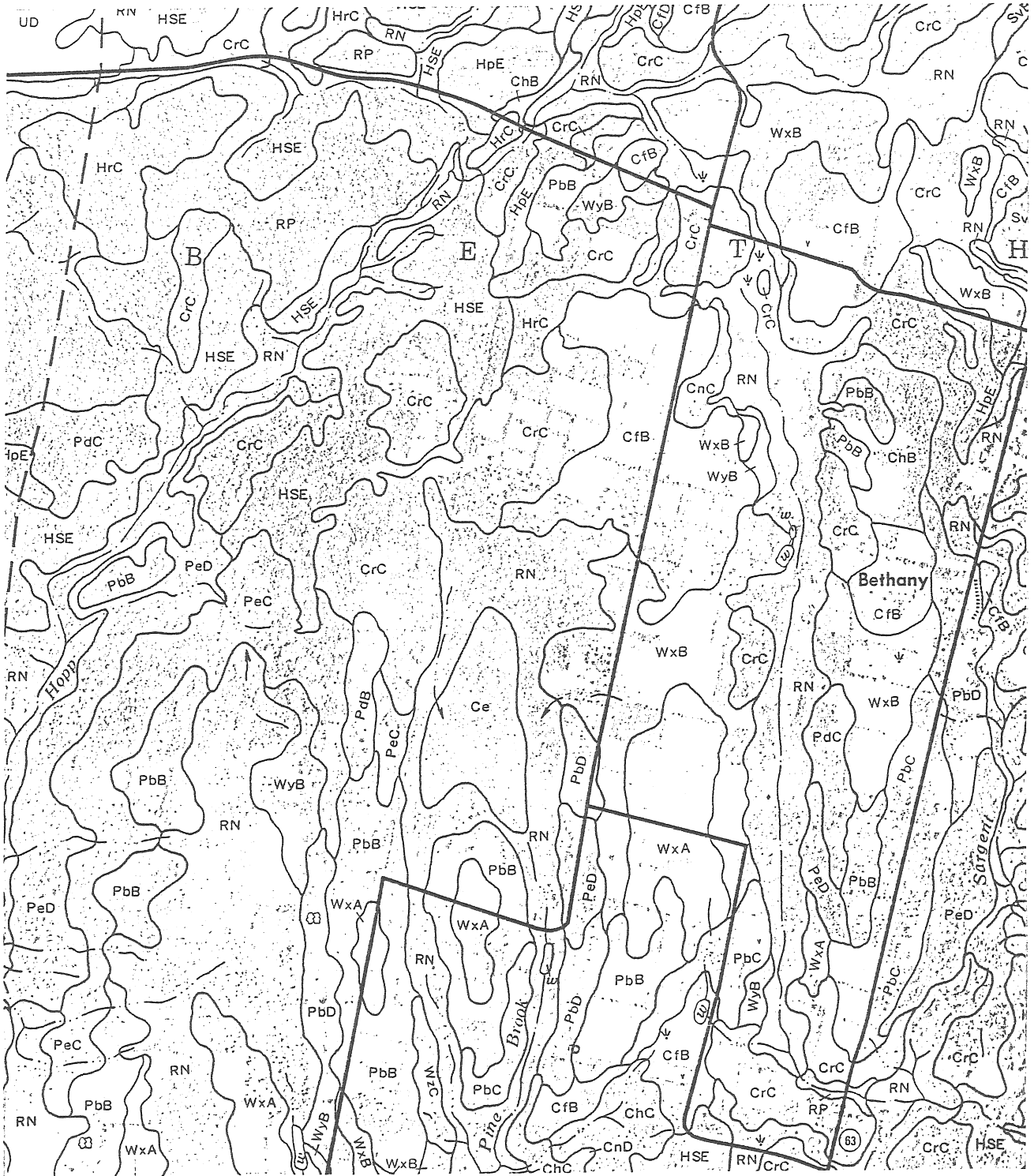
The limitations identified above which may be associated with building site development do not necessarily preclude development. However, the cost of design and implementation of components necessary to overcome the limitations, such as for building foundations and septic systems, are traditionally quite high. Also, the Town has indicated that residential development in the study area is no longer anticipated. Therefore, the limitations will not be discussed in this report. However, it is recommended that the two existing building foundations, and gravel fill material within

each of the six lot sites, be removed and the disturbance to the wetlands be restored to its original and natural condition. This action will improve the aesthetic quality and remove any potential safety hazard for recreationists using this area.

Soils Map



Scale 1" = 1320'



Wetland Resources Review

Included in this section are observations on the wetland resources, a brief study of the functional values of the wetland area, the impact that possible future use of this parcel may have on the wetland resources, as well as recommendations for future development of this parcel.

Existing Conditions

Approximately 33 of the 37 acres comprising this parcel are inland wetlands. A majority of the wetland is forested. An excavated pond of approximately 2 acres (including an island) exists in the west-central portion of the lot. An existing, unimproved access road connects the pond with Pole Hill Road. The pond is fed by Pine Brook which flows from north to south through the site. The upstream watershed, contributing to the wetlands on this parcel is approximately 220 acres in size. Land-use within the watershed appears to be an even mix of forest and single-family residential with a small area of agricultural use. Pine Brook flows into Balden's River which in turn flows into the Naugatuck River.

According to the Water Quality Classifications Map of Connecticut (DEP, 1987) Pine Brook's water quality was not classified. However, Balden's River, downstream from its confluence with Pine Brook to the point where it joins the Naugatuck River, is classified as B/A. This indicates that this portion may not be meeting Class A water quality criteria for one or more designated uses. The water quality goal here is to become Class A. Groundwater classification according to the above referenced map is "GA". This indicates that ground water is within the areas of influence of private and potential public water supply wells and is presumed to be suitable for direct human consumption without treatment.

Slopes are generally flat throughout the site, except for the eastern quarter of the parcel which has a general grade of 10%.

Most of the upland portion of this site is along Pole Hill Road. According to Town personnel, this area was also comprised of wetland soils and was filled for single-family home construction which was never fully developed. After a search of Town of Bethany

Inland Wetlands Commission records, it appears that an application was made by Frank A. Mazzoli of North Haven, Connecticut in 1975, and approved by the Commission, to fill wetlands to a specified limit and excavate a pond. The approval letter indicated that these activities were to be completed subject to certain conditions stated in the permit itself, which was not found in the municipal file. As part of this ERT review, an inspection of a series of black and white, mid-altitude aerial photographs at a scale of 1"=1000' taken in 1975, 1985 and 1990 was made of this area. It revealed that the pond was dug sometime between 1975 and 1985. Additionally, the outlet of the pond was trenched for a distance of approximately 600'.

Wetland Functional Values

The functional values most applicable to this site are flood control, ecological integrity, nutrient retention and sediment trapping, and educational value. Education seems to be the highest value afforded by this wetland due to the close proximity of at least two public schools. With some improvement, this wetland area could easily provide "real life lessons" for students in the areas of aquatic biology, ecology or wetland science. Flat, wooded swamps as well as the presence of a pond directly in the watercourse adds to this wetland's value as a "trap" for excess nutrients, pollutants and sediments such as septic effluent, fertilizer, road sand, salt and oil which are potentially present in the upstream watershed. Being located so "high" in the watershed makes any flood controlling value of this wetland more critical. This value depends primarily on the presence of constricted or impounded outlets for this wetland. The culvert under Bethmour Road was not inspected to determine this capability. General "Noteworthiness" value can be increased by the presence of archaeological artifacts or endangered/threatened wildlife species, which will be determined by others as part of this ERT.

Proposed Activities

Possible uses of this site, as stated by town personnel include passive/active recreation, fire protection water source, gravel source, road maintenance sand storage area, and finally, the transfer of property rights to a land trust.

Due to the fragile nature of these wetlands, active recreation such as motor bikes, mountain bikes and horse travel should be discouraged. The construction of ballfields

here would not be advisable due to the unconsolidated nature of a majority of the wetlands on-site (refer to the "Soil Resources" section of this report for more detailed information on the soil characteristics of these wetlands). This site would be most suitable for passive recreation such as hiking and fishing and nature study. As indicated above, the educational value of this wetland area is high. With some improvement of the site, such as trail construction, boardwalks and observation decks and improved parking, this site could become an excellent educational resource for students and local residents.

The use of this area as a fire pond should be examined in more detail than is allowed here. However, it does appear that the pond has sufficient volume to allow this use. It should be determined approximately how much water would typically be needed should a fire occur in the area and how this withdrawal would effect water levels in the wetland area. The USDA - Soil Conservation Service may be helpful in this area. Improvements to the existing pond access road would be necessary to support this use.

Depending on the level of use determined for the upland, filled area on Pole Hill Road, extraction of the gravel in this area, using proper erosion and sedimentation controls, would not create long-term, unacceptable impacts to the wetland resources on this site. Certainly, proper gravel removal and reclamation of previously impacted wetland areas would serve to expand and diversify this wetland resource.

The upland portion of this site would be suitable for storage of road maintenance sands. However, "road sweepings", road sands that remain on roads after the winter and are removed in the spring, have been classified as "solid waste" by the Connecticut Department of Environmental Protection and require proper disposal and/or storage. Refer to the DEP document "Municipal Management Practices for Reuse of Road Sand Sweepings" for guidance (see Appendix). Proper erosion and sedimentation control should be used to keep the sands from entering the wetland area. Depending on the volume of sand stored, the existing house foundations in this area could serve well for containment and sediment barriers.

Lastly, the transfer of some or all of this property to a private land trust or a public-private venture, where the Town transfers the property rights yet offers "in-kind" volunteer services or retains maintenance responsibilities, could be advantageous. It may be easier in some instances, for a private organization to obtain funding from

certain sources for the recreational improvements mentioned above, while the Town could offer design and engineering services.

In conclusion, forested inland wetlands comprise a majority of this parcel. Prominent functional values of this wetland include flood control, nutrient retention and sediment trapping with strong possibilities to develop its educational value. An optimum use of this property, given the above alternatives would be to determine how much filled upland area would be necessary for sand storage and then remove the remaining, usable gravel to a level that would allow for natural re-vegetation of any impacted wetland areas (some monitoring should be done to prohibit the invasion of exotic, aggressive vegetation such as Phragmites or common reed plant and purple loosestrife). The interior wetland area could then be improved, given adequate funding, to enhance the passive recreation/educational value of the wetland area. Use of the pond as a fire pond should be investigated further to determine possible wetland impacts.

Natural Diversity Data Base

The Natural Diversity Data Base maps and files have been reviewed for the town-owned Pole Hill Road property. According to our information, there are no known extant populations of Federal or State Endangered, Threatened or Special Concern Species occurring at the site in question.

Natural Diversity Data Base information includes all information regarding critical biologic resources available to us at the time of the request. This information is a compilation of data collected over the years by the Natural Resources Center's Geological and Natural History Survey and cooperating units of DEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site specific field investigations. Consultation with the Data Base should not be substituted for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as enhance existing data. Such new information is incorporated into the Data Base as it becomes available.

Please contact the Natural Diversity Data Base if you have any questions regarding this information (566-3540). Also be advised that this is a preliminary review and not a final determination. A more detailed review may be conducted as part of any subsequent environmental permit applications submitted to DEP for the proposed site.

Fisheries Resources

Site Description

Presently, the 37 acre parcel is primarily wooded wetland with the exception of fill and partially completed house foundations fronting on Pole Hill Road. Surface waters on the parcel are an unnamed ± 1.3 acre pond, several unnamed intermittent drainages discharging to the pond, and, at the pond outlet, the headwater reaches of Pine Brook. Of these surface waters, viable aquatic systems are limited to those found within the pond and Pine Brook.

The unnamed pond is artificial in nature created by excavation. Information concerning maximum and average pond depth are unavailable. Being relatively steep sided, aquatic plant growth is limited to a narrow band around nearly the entire pond perimeter. Aquatic plant growth, fallen trees, and large boulders comprise in-water fisheries habitat.

The unnamed pond functionally serves as the headwater source for an Pine Brook. While on the Pole Hill Road parcel, this stream is approximately 10 feet in width with an average bank-full depth of 2 feet. Low gradient produces surface flows predominated by moving pool. Stream substrate is of coarse sand and sand-silt fines. Dense vegetative growth abounds along the stream as it traverses an extensive wetland. Undercut banks and fallen vegetation comprise in-stream fisheries habitat.

Fisheries Resources

The fisheries resources of the unnamed pond and Pine Brook have never been formally investigated by the DEP Fisheries Division. Given the pond's visible physical characteristics, it is anticipated to be classified as warmwater. Fish species associated with warmwater ponds in Connecticut are largemouth bass, bluegill sunfish, common sunfish, black crappie, chain pickerel, golden shiner, and brown bullhead.

Although originating from a warmwater pond environment, the unnamed stream is most aptly classified as being a coolwater wetland stream. Naturally occurring fish species associated with such streams in Connecticut are redbfin pickerel,

common shiner, tessellated darter, and white sucker. Brook trout may also be found.

Impacts of Proposed Activities

Several proposals for use of the Pole Hill Road site have been suggested to include open space for active and/or passive recreation, expanding the pond for a fire protection water source and storage of road maintenance sand.

The site's aquatic resources will benefit most if offered complete protection from development, as in the scenario where the site is maintained for active and/or passive recreation. Increased opportunity for adverse impacts will occur in response to the degree of land use change associated with development.

Land use change may impact the unnamed pond. Impacts anticipated to result from:

- 1. Nutrient enrichment**, from either sediment deposition or other runoff, can lessen water quality however, in most instances it will result in an overabundance of aquatic plants. An overabundance of aquatic plants can cause "stunting" (overabundance of small fish with extremely slow growth rates) due to the inability of large predatory fish to find and consume small fish in heavy plant cover. Overabundant plants may also cause winter or summer kills of fish by consuming large amounts of oxygen during the night, during prolonged periods of cloudiness, or under the cover of ice and snow.
- 2. Sediment deposition** will fill in-lake areas within the immediate vicinity of the point of entry, thereby eliminating certain amounts of habitat.
- 3. Contaminant introduction**, such as oils or salts, can cause kills of fish and other aquatic life.

As the unnamed pond functionally serves as the headwaters of Pine Brook, activities which may degrade pond water quality can potentially impact the resources of the stream.

Recommendations

As previously stated, maintaining the parcel as open space for active and/or passive recreation will offer the best guarantee for resource protection. The pond should offer an opportunity for angling however, there are concerns for over-exploitation of the fishery population. It would prove wise to limit angler access to the pond. Designating usage to age groups (children, senior citizens) or allowing angling by permit are successful methods to limit access.

Should the Town of Bethany proceed with the proposal to expand the pond surface area for fire protection, it would be beneficial to increase shallow water (2-4 feet in depth) areas to allow for the spawning and rearing of species such as largemouth bass and sunfish.

Plans to further develop the site need to incorporate the following to assure aquatic resource protection:

1. Maintain, at a minimum, a 100 foot open space buffer zone along development's closest encroachment to perennial surface waters and a minimum 50 foot buffer along intermittent streams.

Neither construction nor other alteration of riparian habitat should be allowed within these zones. Buffer widths should be increased in areas of steeper terrain.

2. Establish a comprehensive erosion and sediment control plan with mitigative measures (hay bales, silt fence, etc.) to be installed prior to and maintained through all development phases.

3. Design and implement an effective stormwater management plan with storm water runoff being detained rather than allowed direct discharge to surface waters.

4. Limit liming, fertilizing, and the introduction of chemicals to developed land susceptible to runoff into watercourses. On-site septic systems likewise should not be located on land susceptible to leaching into surface waters.

Forest Resources

The property consists of approximately 37 acres. Roughly 4 acres are disturbed fill areas along Pole Hill Road, 27 acres in the middle of the site are red maple swamp, and 6 acres in the eastern portion are dominated by hardwoods typically found on moist, lower slopes.

Red Maple Swamp

The overstory consists primarily of small sawtimber red maple, along with yellow birch and white ash. The understory is primarily spicebush and barberry, and skunk cabbage and trout lily were identified on the forest floor. The site has little potential for sawtimber production because of the wetness of the soils.

Lower Slope Hardwood Forest

The overstory contains a variety of sawtimber-sized tree species, such as tulip poplar, white ash, sugar and red maple, and white oak. The understory consists primarily of red maple, spicebush, and hornbeam. Because access to this stand is poor, there is little potential for a timber harvest. During the site walk, signs of wild turkey were noted.

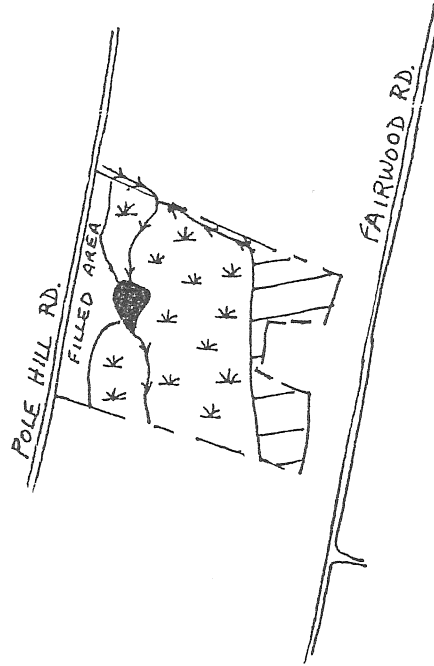
It was noted by Town officials that there is interest in creating a hiking trail which would cross east to west to connect with Land Trust property west of Pole Hill Road. There is potential for a hiking trail that would run parallel to an excavated watercourse that runs easterly in the vicinity of the northern boundary. The excavated material has been piled adjacent to this stream, and provides a dry path across the red maple swamp to the drier forests in the eastern part of the site.

It is recommended that the boundaries of the parcel be clearly delineated on the ground, with either signs or by painting trees along the property lines.

Vegetation Map

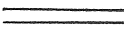







Scale 1" = 1000'



Legend

(Boundaries are approximate)

-  Paved Road
-  Stream
-  Boundary
-  Pond
-  Red Maple Swamp
-  Lower Slope Hardwoods

State Park Planner Review

Clearly the Pole Hill Road parcel is composed nearly wholly of poorly drained and/or muck soils. Therefore it is not suitable for active recreational or residential development. Indeed it is unfortunate that fill was deposited along the Pole Hill Road frontage, presumably impacting inland wetlands to some degree. The most logical management approach would be to dedicate it as passive open space, either under town administration or by cooperative agreement with a local land trust. Active management probably should be limited to grading and seeding any disturbed frontage along Pole Hill Road, with a possible option of developing a small gravel parking lot for those wishing to visit the property to do ecological research or environmental education etc.

Planning Review

Site Characteristics

The 37 acre site is located on Pole Hill Road in the mid section of the community. The site is largely made up of wetland soils. Gravel and fill material has been dumped along Pole Hill Road where the proposed building lot foundations were to be located. The depth of the gravel and fill deposits is undetermined. A dry upland area is located at the rear of the parcel near properties that front Bethmour Road. The main feature of the site is a small pond area and stream that flows through the property. The property does not lie within the South Central Connecticut Regional Water Authority (SCCRWA) watershed which makes the property rather unique in town. The site and adjacent property is zoned for residential development (R-65) requiring a minimum of 65,000 square feet per lot to build and develop. None of the proposed lots on the site could meet requirements of the Public Health Code for on-site sewage disposal.

Selected Demographic Data

The Town of Bethany is the only community in the South Central Regional Council of Governments (SCRCOG) region which could be depicted as rural. The 1990 Census reported the population as 4,608 persons with a total land area of 21 square miles or 13,440 acres. The population density for the community is by far the lowest in the region at .34 persons per acre and well below the regional and statewide averages.

Although the percentage of privately owned open space land in Bethany is high, the majority of that property is owned by the South Central Connecticut Regional Water Authority (SCCRWA) for water supply protection. The combination of large land holdings by the SCCRWA and low density residential development would appear to balance any need for large amounts of open space to be retained by the town. According to the latest CT DEP Statewide Comprehensive Outdoor Recreation Plan, the municipal percentage of governments lands in the community is listed at 1.4% of the town or 189 acres. The table below lists the approximate holdings and acreage of open space land in the community based on various land use reports.

OPEN SPACE LAND	ACREAGE
Water Utility Property	3,900
Bethany Land Trust Property	152
Town Owned Land	189
Privately Owned Property	4,417

Recreational Options

The town owned parcel provides an excellent opportunity for the town and local volunteer community groups to establish a useful recreational site. The pond could be dredged, enlarged and enhanced without creating any significant environmental problems. (Please refer to **Wetland Resources Review** and **Fisheries Resources** sections for further information) A network of trails could be established and maintained by various youth groups or community organizations. The pond area is a great site for fishing, ice skating, bird watching and other passive recreational pursuits. It appears that a properly designed loop trail around the pond could be established without damaging the wildlife habitat or degrading water quality.

The property is close to the local elementary school and junior high schools making the site an ideal location for environmental education projects. Once citizen interest is created for the use of the area for educational and recreational activities, volunteer assistance should be easily mustered.

Other Planning Considerations

The property should be integrated into any planning activities being considered by the Planning & Zoning Commission, Conservation Commission or community groups (Bethany Land Trust, Bethany Horsemen, Bethany Wanderers, etc.) In this way specific development plans could be included into the town wide planning efforts and attempts of connecting recreational trails. The dredging and enlarging of the pond would also enhance the fire fighting capabilities of that area of the community. The Town may also want to consider some minor gravel extraction of the fill along the road frontage when undertaking minor grading for parking and drainage. All parking areas, access points and trail systems should be designed to have the least amount of impact on the site.

Archaeological Review

A review of the State of Connecticut Archaeological Site Files and Maps shows no known archaeological resource in the project area. However, areas of well-drained soils adjacent to wetland systems offer ideal environmental and topographic settings for the location of small hunting and gathering economies. Four prehistoric archaeological sites are located to the south and west of the project area along Hopp and Pine Brooks. These sites appear to date from 1,000 to 3,000 years ago and represent Native American encampments. Similar natural features within the project area would predict the location of similar cultural resources. The slopes above the wetland along the eastern portion of the parcel are of particular archaeological sensitivity.

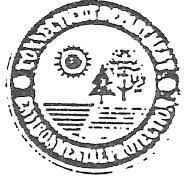
The Office of State Archaeology recommends that any proposed land disturbance should have an archaeological survey prior to construction activities to ensure the preservation of sites within the impact area. In addition, it is recommended that the Town of Bethany consult with David Thompson, a town resident and president of the Greater New Haven Archaeological Society, for a more specific review of the property when any development plans are finalized in the future. Mr. Thompson is the authority most familiar with the archaeological resources in Bethany.

The Office of State Archaeology looks forward to working with the Town of Bethany in the conservation and preservation of its archaeological heritage. Please free to to contact the State Archaeologist 486-5248 if he can be of any further technical assistance.

Appendix



STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION



April 5, 1994 -

Dear Municipal Official:

Please find enclosed a copy of the Department's Municipal Management Practices For The Reuse of Road Sand Sweepings. The Connecticut Department of Environmental Protection has prepared this technical guidance document in response to concerns expressed by municipalities on how to best manage road sand sweepings collected in the spring.

I would like to emphasize the Department's recommendation that when economically feasible, recovered road sand sweepings should be recycled in the production of processed gravel which in turn may be used as fill material below an impervious surface at a construction site.

Also find enclosed the Department's draft technical guidance, Best Management Practices For Disposal Of Post-Plowing Snow Accumulations From Roadways And Parking Lots. This issue has generated a substantial amount of interest this year and the draft guidelines enclosed will be finalized before the start of the next winter season. The Department will be mailing this document to all municipalities again in November. In the meantime, if you have any handling practices that you feel should be added to the draft document before the November mailing, please write to the DEP Water Management Bureau. DEP staff will review all suggestions and determine if the guidance document should be amended before the November mailing.

Although the Road Sand Sweeping guidelines are specifically directed towards municipalities, they have been reviewed by Connecticut Department of Transportation officials who indicated their interest in having DOT maintenance crews follow the guidelines as well.

I hope you find the enclosed technical guidance helpful.

Sincerely,

Robert Smith, Chief
Bureau of Water
Management

Enclosures (2)

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION



BUREAU OF WATER MANAGEMENT TECHNICAL GUIDANCE

MUNICIPAL MANAGEMENT PRACTICES FOR
THE REUSE OF ROAD SAND SWEEPINGS
MARCH 1994

Purpose: These guidelines have been developed to assist municipalities manage the disposition of road sand sweepings. The goal is to use common sense techniques to minimize risks to water resources. The guidelines should prevent the inadvertent filling of wetlands and the sedimentation of any surface water resources from erosion at an unstable fill site and minimize the potential affect on potable water supply wells.

Nature of Material: Road sand collected in the spring may contain residual salt and other materials associated with stormwater runoff from streets. It is not as clean as virgin earth materials and should be handled with a certain degree of care.

Planning Considerations: Perhaps the most critical aspect of management is the careful and thoughtful selection of the location of sites for storage and disposal. Municipalities should carefully consider certain factors in determining storage areas and disposal (utilization as fill) locations including:

- o Proximity to wetlands and watercourses.
- o Proximity to wells.
- o Ability to have reasonable all-weather access to the site (storage locations only).

It may be that the most efficient way for a municipality to plan for management of this material is to create a comprehensive municipal plan for the management of all municipally generated construction, maintenance and demolition debris, including road sweepings. Municipal officials are further advised to develop a plan for the disposition of road sand sweepings in the fall or winter to optimize ability to reuse the material as aggregate, and to have enough time to provide for the coordination of decisions to place fill at suitable locations.

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Temporary Storage Site: A temporary storage site needs to be located to facilitate the management and subsequent disposal of the material. Appropriate locations for temporary storage are:

- a. in an empty salt storage shed.
- b. at a municipal site where sand and salt are normally handled.
- c. elsewhere at a site that meets the fill location guidelines below.
- d. at an inactive landfill, preferably on an unfilled area.
- e. an open field where drainage will flow in an overload pattern which allows runoff to flow through grass or natural vegetation to encourage soil and debris removal.

Reuse as construction aggregate: The Department promotes reuse of road sand sweepings by blending with crushed stone or reclaimed aggregate in the production of processed gravel for use as fill material below an impervious surface at a construction site (e.g. beneath roads, and parking lots). The Department recommends this use over others to the extent practicable.

Use as fill: Use of sweepings as fill material, although generally less desirable, may be necessary to reuse all the sand sweepings collected by a municipality, and should be coordinated with both the municipal inland wetlands enforcement officer and the town sanitarian to minimize risks to surface water resources and with appropriate officials (local health department, water department or water company) to determine approximate locations of potable water supply wells. Fill should be placed only with the consent and permits required under applicable regulatory programs but in general, be located as follows:

- a. not within 100 feet of any wetland or watercourse
- b. not within 100 feet of any private potable water supply well
- c. not within 250 feet of any public potable water supply well
- d. not placed below the seasonal high ground water table

Quantity guidelines: Because the material may contain residual salt and other materials, it is desirable to limit disposal to less than 100 cubic yards at any location unless the municipality maintains permanent records of any larger fill location. This guideline does not apply when the material is incorporated in a pavement base or sub-base.

Erosion controls: Road sand sweeping fills should be covered with a minimum of 3" of top soil, and stabilized using appropriate erosion and sediment control techniques as described in "Guidelines for Soil Erosion and Sediment Control, Connecticut", by the Department of Environmental Protection and the Connecticut Council on Soil and Water Conservation.



STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION



BUREAU OF WATER MANAGEMENT TECHNICAL GUIDANCE

BEST MANAGEMENT PRACTICES FOR DISPOSAL OF
POST-PLOWING SNOW ACCUMULATIONS FROM ROADWAYS AND PARKING LOTS

MARCH 1994

DRAFT

Purpose: These guidelines have been developed to clarify DEP recommendations to state and municipal officials, and others regarding the removal and disposal of post-plowing snow accumulations from roadways and parking lots. For purposes of this guidance post-plowing snow accumulations refers to snow banks and snowpiles which are removed by front end loader or by loading on trucks for disposal. This guidance does not apply to normal snow plowing operations which must, inevitably, discharge some contaminated snow into wetlands and watercourses.

Problem: Current road maintenance activities include removal of post-plowing snow accumulations from bridges, roads and parking areas for the purpose of providing more space for subsequent snow storms and for ease of travel and parking. Oftentimes this snow is moved by truck or with a front end loader and deposited directly into surface waters of the state including streams, wetlands and Long Island Sound. This practice is un-acceptable due to the presence of dirt, sand, salt, litter and other debris which are routinely mixed in the accumulated snow.

Under normal conditions of snowmelt, the majority of these contaminants remain on or next to the paved surface or may be captured in stormwater catch basins. These contaminants can then be swept from streets and bridges or vacuumed from catch basin sumps. However, when accumulated snow is collected and dumped into surface waters, this mixture of snow, sand and debris may both smother aquatic life in the bottom of streams and rivers and degrade the aesthetics of the surface water with silt plumes and litter. Large quantities of snow (and the sand and debris) may also cause blockage of storm drainage systems, resulting in increased chance for localized flooding.

Recommended Management Practice: Post-plowing snow accumulations removed from roadways, bridges, and parking lots should be placed in upland areas only, where sand and other debris will remain after snowmelt for later removal. Care must be exercised not to deposit snow in the following areas:

- o freshwater or tidal wetlands or in areas immediately adjacent to such areas where sand and debris may be flushed during rainstorms;
- o on top of storm drain catch basins;

DRAFT

- o in storm drainage swales,
- o on stream or river banks which slope toward the water, where sand and debris can get into the watercourse, and
- o in areas immediately adjacent (within 75 feet) of private or public drinking water well supplies (due to the possible presence of road salt).

Implementation: The Department recognizes that there is a considerable need for flexibility in implementation of this policy. There is no intent to interfere with in-storm plowing operations. Where trucking and dumping operations are undertaken the Department expects adherence to these guidelines.

Information: For further information please call the DEP Water Management Bureau General Information Line at 566-7167.

Department Contacts:

Water Management Bureau: Liz Napier 566-7049
Waste Management Bureau: Earl Beebe 566-8722

Note: The following are firms that are listed as Construction and Demolition Aggregate Recycling Facilities. The Department has received information from these firms but this listing is not an endorsement of any firm or process. This is only a partial list. As additional information is received the Waste Bureau will update the list and provide additional information for callers. For additional aggregate recycling facilities and construction aggregate producers in your area you may wish to examine the Yellow Pages under "Sand and Gravel."

Firms that engage in aggregate recycling:

Recycling Concrete Products
Apothecaries Road
East Windsor, CT
Phone: 800-742-6701

Tilcon Connecticut
Colt Highway Rte 6
New Britain, CT
Phone: 677-1643

O&G
240 Bostwick Avenue
Bridgeport, CT
Phone: 366-4586

Stapleton Resource
Recycling, Inc.
221 Old Gate Lane
Milford, CT
Phone: 882-5353

O&G
South Main Street
Torrington, CT
Phone: 489-9261

Soneco Services
185 South Road
Groton, CT 06340
Phone: 445-2457

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, soil scientists, foresters, climatologists and landscape architects, recreational 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 - an 83 town area serving western Connecticut.

As a public service activity, the Team is available to serve towns within the King's Mark RC&D Area - **free of charge**.

Purpose of the Environmental Review Team

The Environmental Review Team is available to assist towns in the review of sites proposed for major land use activities or natural resource inventories for critical areas. For example, the ERT has been involved in the review of a wide range of significant land use activities including subdivisions, sanitary landfills, commercial and industrial 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 site and highlighting opportunities and limitations for the proposed land use.

Requesting an Environmental Review

Environmental reviews may be requested by the chief elected official of a municipality or the chairman of an administrative agency such as planning and zoning, conservation or inland wetlands. Environmental Review Request Forms are available at your local Soil and Water Conservation District and through the King's Mark ERT Coordinator. This request form 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 the purposes of a review and a statement identifying the specific areas of concern the Team members should investigate. When this request is reviewed by the local Soil and Water Conservation District and approved by the King's Mark RC&D Executive Council, the Team will undertake the review. At present, the ERT can undertake approximately two reviews per month depending on scheduling and Team member availability.

For additional information regarding the Environmental Review Team, please contact the King's Mark ERT Coordinator, Connecticut Environmental Review Team, P.O. Box 70, Haddam, CT 06438. The telephone number is 203-345-3977.