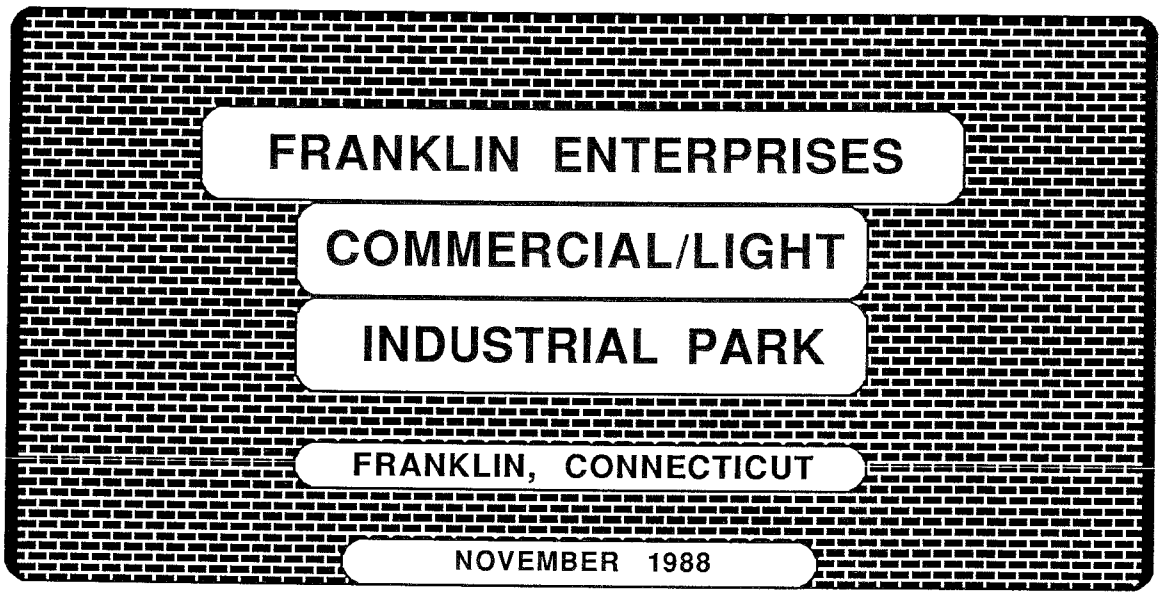


EASTERN CONNECTICUT ENVIRONMENTAL REVIEW TEAM REPORT

EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT AREA, INC.

FRANKLIN ENTERPRISES
COMMERCIAL/LIGHT INDUSTRIAL PARK

FRANKLIN, CONNECTICUT

REVIEW DATE: **SEPTEMBER 8, 1988**

REPORT DATE: **NOVEMBER 1988**

Eastern Connecticut Resource Conservation and Development Area, Inc.
Eastern Connecticut Environmental Review Team
P.O. Box 70, Route 154
Haddam, Connecticut 06438
203-345-3977

ENVIRONMENTAL REVIEW TEAM REPORT
ON

FRANKLIN ENTERPRISES COMMERCIAL/LIGHT INDUSTRIAL PARK
FRANKLIN, CONNECTICUT

This report is an outgrowth of a request from the Franklin Planning and Zoning Commission to the New London Soil and Water Conservation District (SWCD). The S&WCD referred this request to the Eastern Connecticut Resource Conservation and Development (RC&D) Area Executive Council for their consideration and approval. The request was approved and the measure reviewed by the Eastern Connecticut Environmental Review Team (ERT).

The ERT met and field checked the site on Thursday, September 8, 1988. Team members participating on this review included:

Brian Murphy	Fisheries Biologist	DEP-Eastern District
Nancy Murray	Biologist	DEP-NRC, Natural Diversity Data Base
Liz Rogers	Soil Conservationist	USDA-Soil Conservation Service
Tom Seidel	Regional Planner	Southeastern CT Regional Planning Agency
Elaine Sych	ERT Coordinator	Eastern CT RC&D Area
Bill Warzecha	Geologist	DEP-Natural Resources Center

Prior to the review day, each Team member received a summary of the proposed project, a list of the town's concerns, a location map, a topographic map, and and a soils map. During the field review the Team members were given concept plans. The Team met with, and were accompanied by members of the Planning and Zoning Commission, representatives of the developer, their engineers and consultants. Following the review, reports from each Team member were submitted to the ERT Coordinator for compilation and editing into this final report.

This report represents the Team's findings. It is not meant to compete with private consultants by providing site designs or detailed solutions to development problems. The Team does not recommend what final action should be taken on a proposed project -- all final decisions rest with the Town and landowner. 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 developer and the Town. The results of this Team action are oriented toward the development of better environmental quality and the long-term economics of land use.

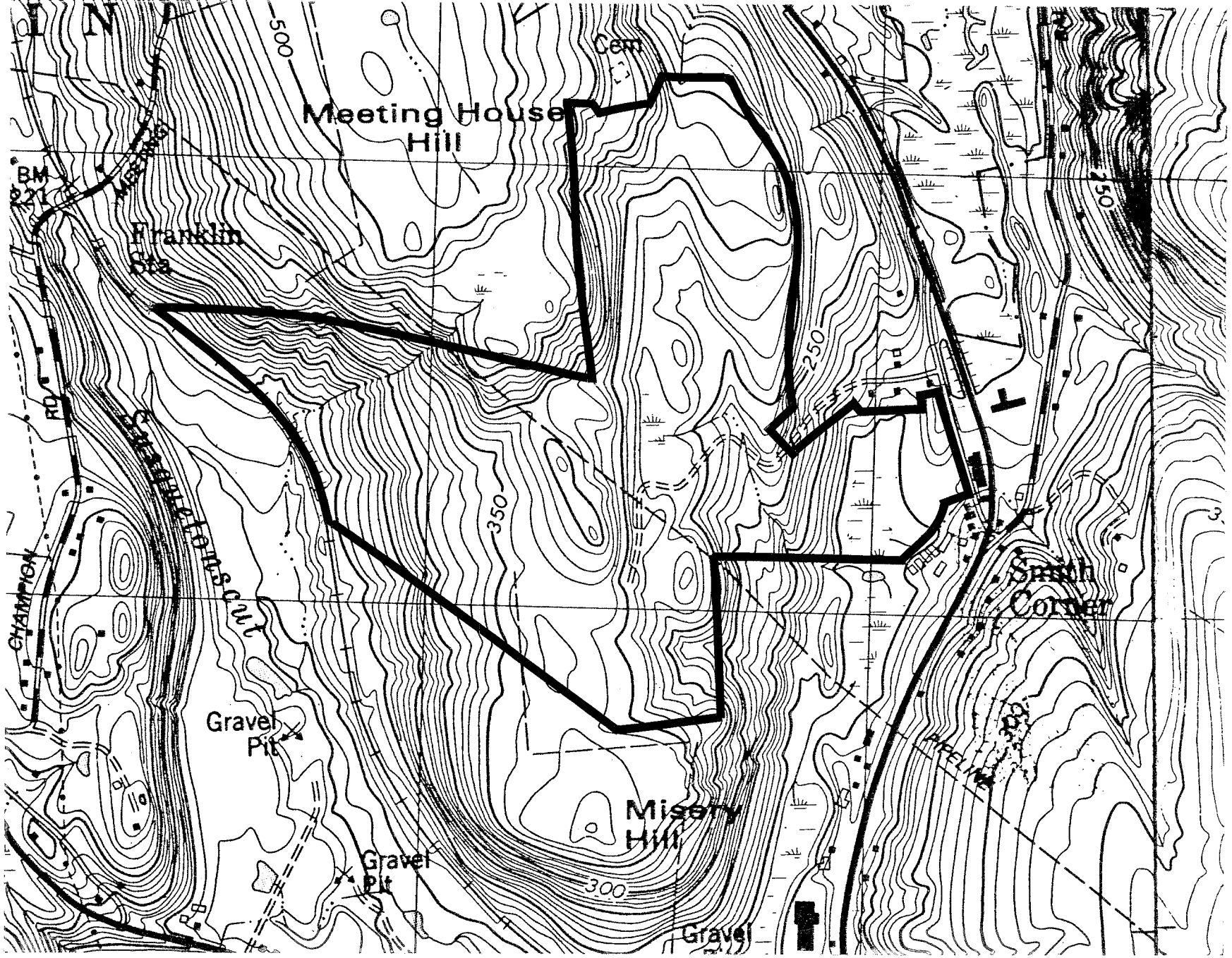
The Eastern Connecticut RC&D Executive Council hopes you will find this report of value and assistance in making your decisions on this proposed commercial/light industrial park.

If you require additional information, please contact:

Elaine A. Sych
ERT Coordinator
Eastern Connecticut RC&D Area
P.O. Box 70
Haddam, Connecticut 06438
(203)345-3977

FRANKLIN ENTERPRISES COMMERCIAL/LIGHT INDUSTRIAL PARK

TABLE OF CONTENTS



TOPOGRAPHY

Approximate Site Boundary

Scale 1" = 1000'

1. INTRODUCTION, SETTING AND TOPOGRAPHY

The site, about 332 acres in size, is located in the southwest corner of Franklin. It is bordered in part on the east by Route 32, to the west by the Central Vermont Railroad line and private, undeveloped lands on the remainder. An Algonquin Gas transmission line traverses the central parts of the site in as northwest/southeast direction.

The entire parcel, which formerly comprised the Beckwith Farm, has an agricultural past. There are several active cornfields on the site. Except for some open fields at the eastern limits, the remainder of the site is wooded.

The greatest percentage of the site is located in a C-2 zone, which allows commercial and light industry. The area in the vicinity of the site is characterized by a mixture of low-density residential, industrial and commercial-type land uses. It is understood that the applicant(s) wish to develop the site for an industrial park whose occupants would not be high high water consumption users and would be clean from an environmental standpoint, i.e., no discharge of hazardous materials. The land would be subdivided into lots of about 100,000 square feet in size. Since public water and sewers are not presently available to the site, it is likely that each prospective occupant would need to rely on individual on-site septic systems and wells.

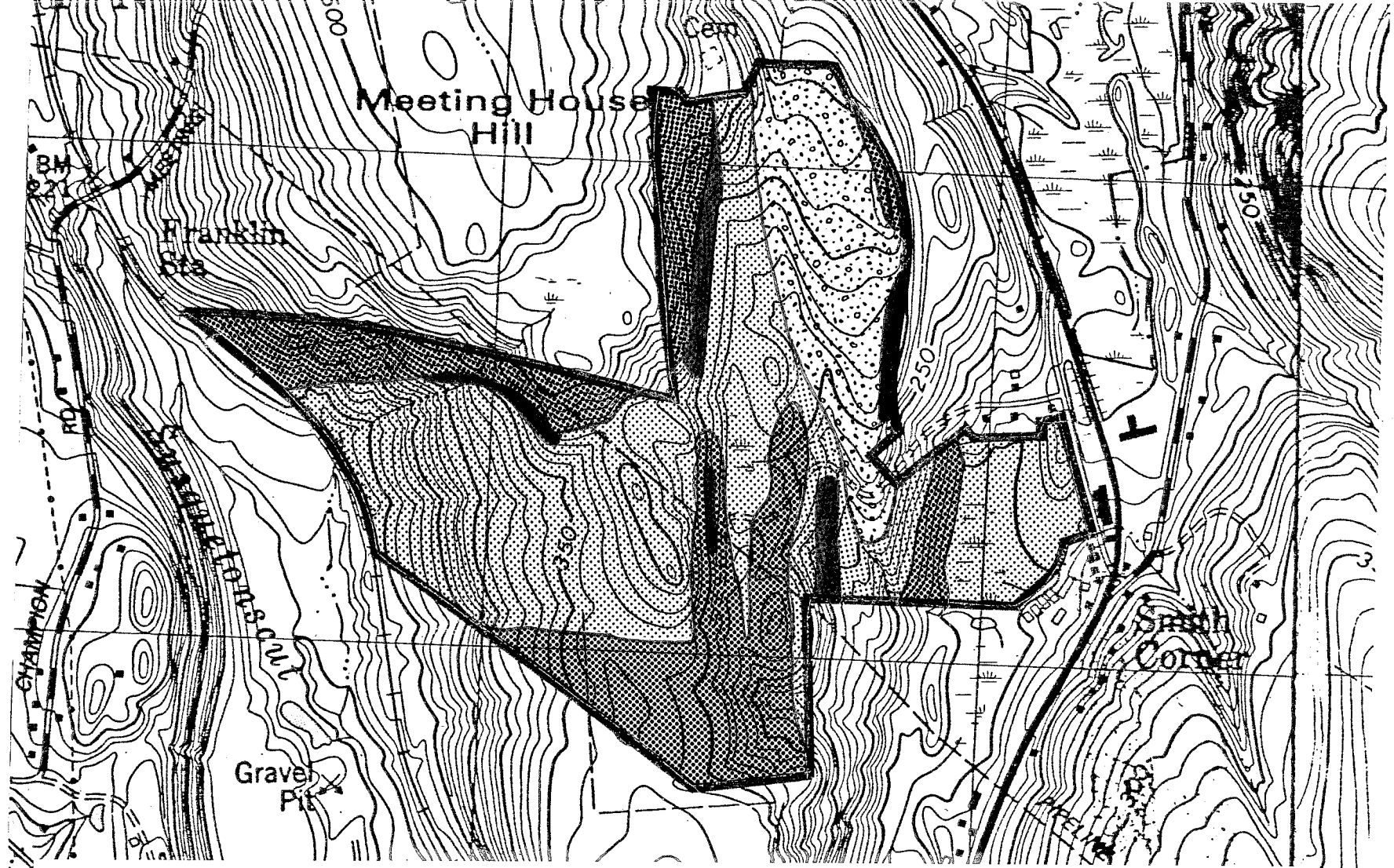
The site, which is largely controlled by the underlying bedrock, lies between Meeting House Hill and Misery Hill. The main axes of the hills, which are oriented in a northeast/southeast direction, encircle the subject parcel. Slopes range from gentle on the tableland, to some very steep areas in the western, central and eastern parts.

According to information supplied to Team members, approximately 73 percent of the site contains slopes in excess of 25 percent. The western parts of the site slope very steeply westward to the Susquetonscut Brook valley. The eastern portions slope mainly south and east to an unnamed tributary to Susquetonscut Brook. Maximum and minimum elevations are 410 feet and 190 feet above mean sea level, respectively.

It is important to note that for the applicant to access interior sections of the property for the proposed use, a wetland crossing is necessary at the eastern limits of the site. Alternative access may be possible via Manning Road, but abutting lands would need to be acquired.

2.GEOLOGY - BEDROCK AND SURFICIAL

The subject site is located in the Fitchville topographic quadrangle. A bedrock geologic map (U.S.G.S. Bulletin 1161-I by G. L. Snyder, out of print) and a surficial geologic map (GQ 485 by Fred Pessl, Jr., 1966) for the quadrangle have been published by the U.S. Geological Survey.



BEDROCK GEOLOGY

Hebron Formation - layered, fine grained, greenish grey calc-silicate rock

Pegmatite - very course grained foliated microcline perthite-plagioclase-quartz-biotite-muscovite-garnet-pegmatites

Scotland Schist - silvery to rusty weathering quartz-muscovite-biotite oligoclase andodsite-staurotite garnet schist containing conspicuous quartz ite particles

Quartzite of Franklin - dirty white massive to layered quartz-muscovite quartzite

Scale 1" = 1000'

Bedrock is exposed at the ground surface virtually throughout the site. Some of the exposures may be "floaters", a term used to describe an isolated, displaced fragment of rock on the surface. Synder (1964) indicated that the bedrock on the site consists mainly of schists and, to a lesser degree, quartzite and pegmatites.

The schists and quartzites mentioned above are crystalline metamorphic rocks, while the younger pegmatites intruded the schist on the site as molten material after their formation. The schist and quartzite rocks, which may be hundreds of millions years old, have been subjected to the heat and pressure of mountain building. As a result, they have been greatly changed since their deposition as mud, silt, sand, lime or volcanic material. Foliation (layering) has developed as micas, and other platy minerals grew a long preferred directions in response to heat and pressure (metamorphism). See enclosed Bedrock Geologic Map for complete rock descriptions.

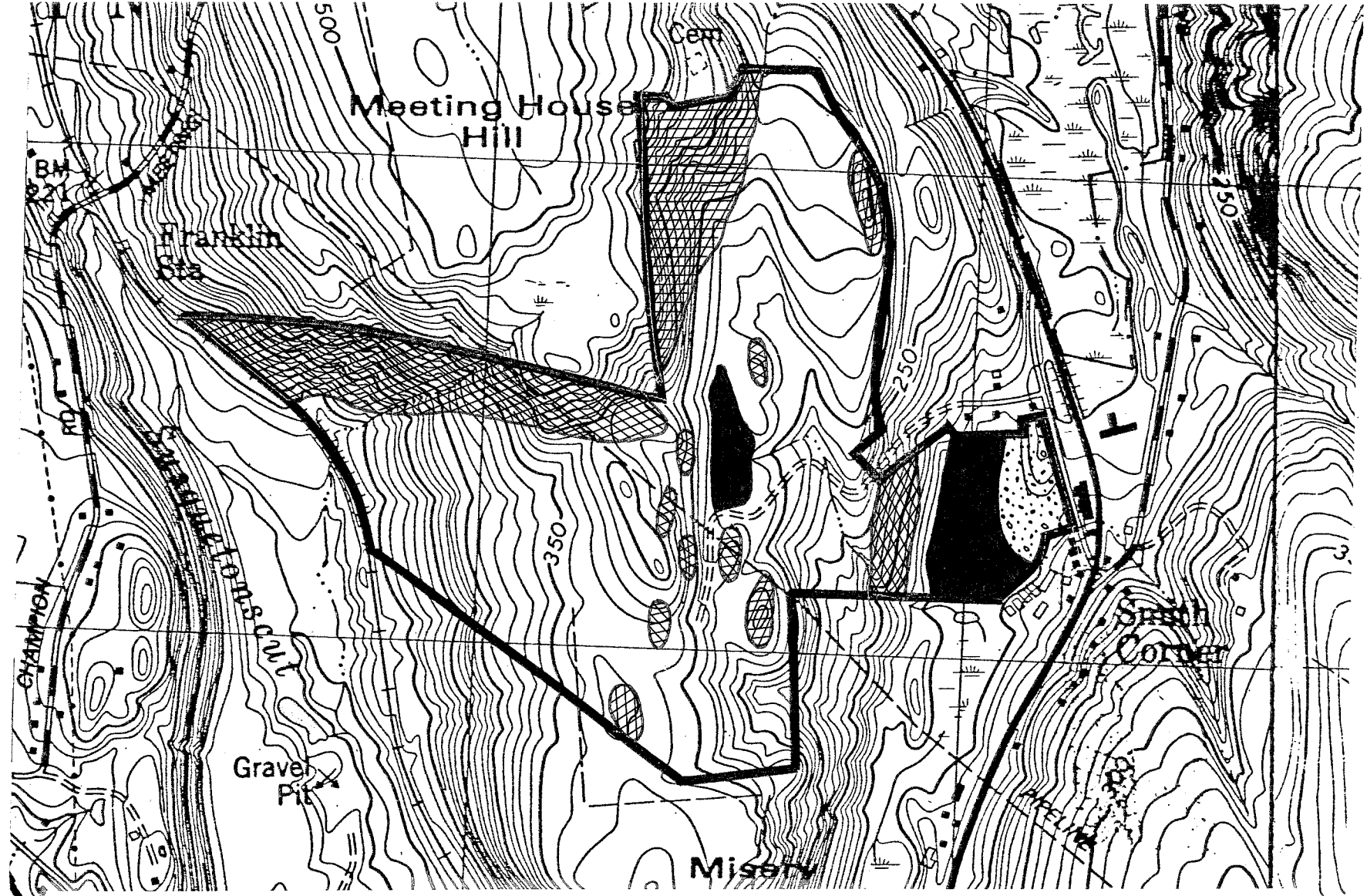
Regionally, the site is located within an anticline (fold). As a result, it is expected that the upper few hundred feet of the rock surface has been fractured and slightly to moderately weathered. On the other hand, the schist rock, which comprises most of the site, responds to geologic stresses by slipping and folding along foliation planes. The joints that do develop in the schist are likely to be small and discontinuous. This is important since prospective users of the industrial park need to rely on individual on-site wells. The underlying bedrock will be the likely source of water to the wells.

Depth to bedrock ranges between zero in places of rock exposures to perhaps 39 feet beneath the wetlands in the eastern limits.

Except for sandy, gravelly deposits underlying the stream valley in the eastern limits, the site is covered by glacial sediments called till. Till is a glacial sediment that was deposited directly from glacial ice. The sediment consists of varying proportions of sand, silt, gravel, clay and boulders. Particles of different sizes are generally mixed together in a complex fashion.

According to the soil survey for New London County, the texture of the till on the site ranges from sandy, stony and moderately loose to silty, moderately stony and compact. The latter type of till, which is scattered mainly throughout the southern parts, is characterized by a a "hardpan" layer which has developed at a relatively shallow depth (1.5 - 2.0 feet below ground surface). Because of the low permeability of the "hardpan" layer, the soil zone above the "hardpan" layer becomes saturated with groundwater during the wet time of year. On the other hand, the sandy, moderately loose variety of till found on the site generally lacks the "hardpan" layer and is not usually characterized by a seasonally high water table except the Sutton soils series.

The exact thickness of the till deposits on the site are unknown, but they are probably not much more than 10 feet in most places.



SURFICIAL GEOLOGY

Till
Wetland* (approximate)
Areas where bedrock is at or near ground surface
Stratified Drift (sand and gravel)

*Wetland areas in the eastern parts are underlain by stratified drift

Scale 1" = 1000'

As mentioned earlier, the eastern parts of the site are covered by stratified drift deposits (sand and gravel). These deposits were laid down by meltwater streams emanating from glacial ice that occupied the stream valley in the eastern parts. Bulletin No. 5 (Lower Thames River Basin) suggests that the sand and gravel in the valley may be as much as 39 feet thick.

Regulated inland wetland boundaries have not been delineated in the field to date (9/8/88) by a certified soil scientist. The Soil Survey for New London County identified two major wetland areas on the site. One is a pocket of Ridgebury, Leicester and Whitman on the site. One is a pocket of Ridgebury, Leicester and Whitman (extremely stony, fine sandy loams) in the north central parts and the wetlands that occupy the stream valley at the eastern limits, which comprise Sudbury, Scarboro and Adrian and Palms. The latter tow soil types commonly contain peaty and mucky material.

It is suggested that he Town require that the private soil scientist who performs the field work review and sign a statement on the map(s) certifying that the information is substantially correct. The certification statement should be similar to the following:

> "The wetland soils on this site were identified in the field using the criteria required by Connecticut Public Act 72-155 as amended by Connecticut P.A. 73-571, Connecticut P.A. 87-338 and P.A. 87-533. The boundaries of these soils and of identified watercourses are accurately represented in the plot plan."

Although plans are in the preliminary stage, it seems likely that at least one major wetland crossing is proposed. This would occur at the eastern limits of the site and would probably need to affect a sizeable area. It should be noted that the proposed crossing would follow an existing farm road, which was constructed over the wetlands in the past. Despite the past activity that has taken place in this area, the proposed road crossing warrants very careful examination.

Wetland crossings of drainageways may be feasible and can be accomplished without much damage to wetlands provided they are properly designed (e.g., culverts are properly sized and installed and permeable road base fill material is used). The crossings should be constructed at least 1.5 feet and preferably 2 feet above the surface elevation of the wetlands. This will allow for better drainage of the roads and decrease the frost heaving potential of the road. Since organic material (peat and muck) may underlie the existing roadbed and in the area of the proposed crossing, it is suggested that soil investigation, which includes borings, be conducted in this area to determine the soil composition.

It is recommended that any road construction through wetland areas be done during the dry time of year with adequate provisions for effective erosion and sediment control. It is strongly suggested that the applicant be required to submit detailed plans for all wetland crossings. The plans would indicate

specific site development details, erosion and sediment control measures, fill lines, amount of fill to be placed, the impacts of filling, watercourse channel location and flow direction, disturbed areas, etc. Approved wetland activity needs to be closely monitored by town officials.

Because the soils in the preceding paragraph are classified as inland wetland soils in Connecticut, they are regulated under Public Act 155. Any activity which involves modification, filling, removal of soils, etc., will require a permit and ultimate approval of the Franklin Inland Wetlands Commission. In reviewing the proposal, the Commission needs to determine the impact that the proposed activity will have on the wetlands. If the Commission determines that the wetland is serving an important hydrological or ecological function and that the impact of the proposed activity will be significant, they may deny the activity altogether, or at least require measures that would minimize the impact. If alternative routes exist, they should be given consideration.

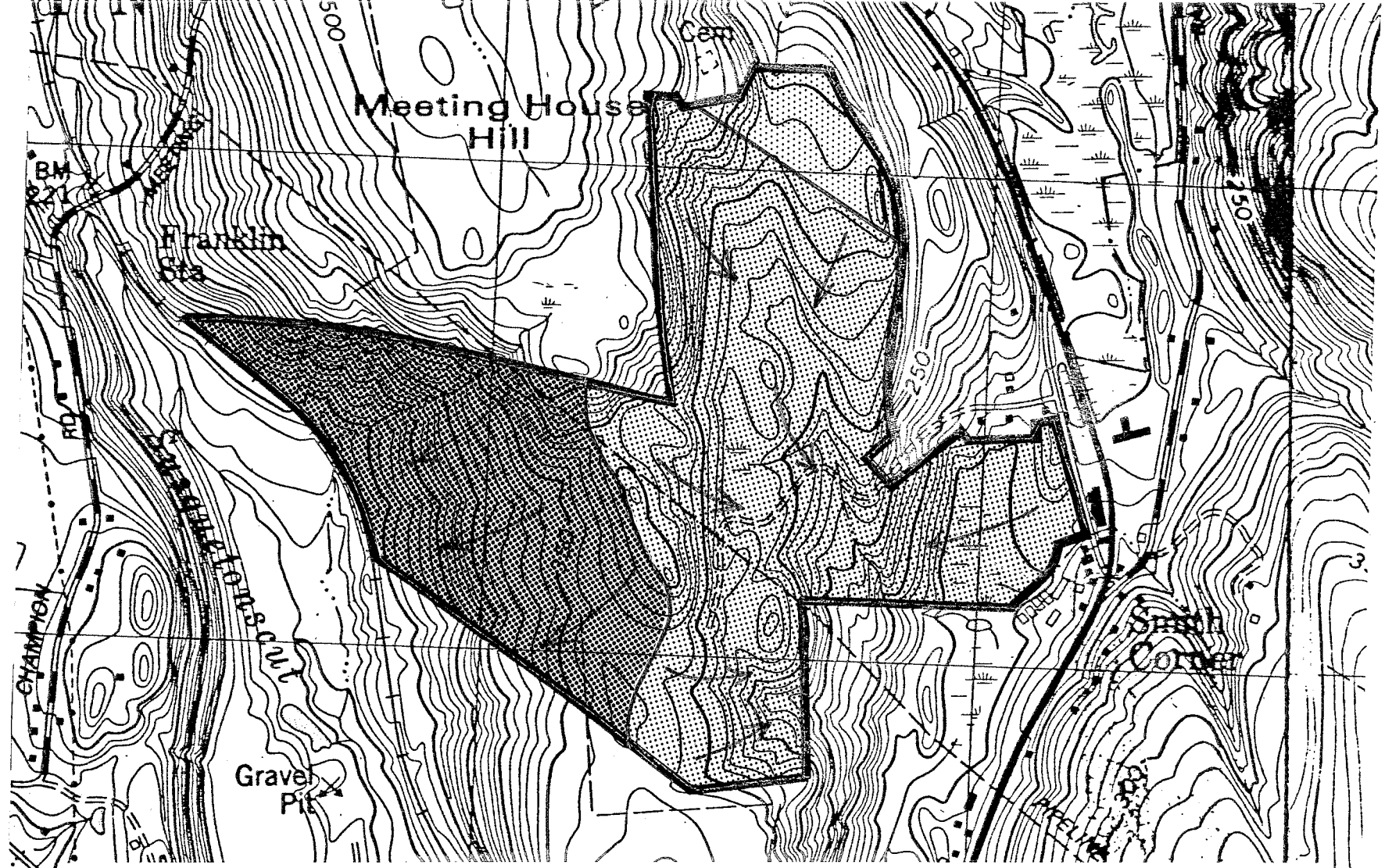
3. HYDROLOGY

Drainage within the site can be subdivided into three areas. Surface runoff arising in the western half of the site drains westward to Susquetonscut Brook, a Yantic River tributary. Most of the eastern parts drain to the unnamed stream and wetland corridor in the eastern limits. The unnamed stream is a tributary to Susquestonscut Brook. A small northern part of the site drains northeastward under Route 32 enroute to McCarthy's Brook.

Most of the surface runoff flows directly down steep slopes, emphasizing the need for runoff controls, if the site is developed. Concentrated runoff from parking areas and roadways could cause severe gullying.

Both residential and commercial/industrial development of the site would increase the amount of runoff during periods of rainfall. These increases would result from soil compaction, removal of vegetation, and placement of impervious surfaces (roofs, driveways, etc.) over the soil. Since the commercial and industrial uses would tend to require more impervious surface area (as for parking lots and bigger buildings), the runoff increases for that type of development would tend to be higher than for residential development. Under either scenario, a detailed stormwater management plan needs to be developed for the site.

It should be pointed out that the section of Susquetonscut Brook west of the site is classified as B/A. A 'B' classification means the water quality goal is a fishable/swimmable condition. It is possible to discharge treated industrial or municipal wastewaters to Class B watercourses. These discharges are regulated by the Department of Environmental Protection through Section 25-54i of the Connecticut General Statutes and Section 402 of the Federal Clean Water Act (National Pollution Discharge Elimination System, NPDES). The State's goal, however, is to upgrade the Susquetonscut Brook to an 'A' classification. Designated uses include potential drinking water supply, fish and wildlife habitat, recreational uses, agricultural and industrial supply and



WATERSHED BOUNDARY

Portion of property that drains to McCarthy Brook
Portion of property that drains to unnamed tributary to Susquetonscut Brook
Portion of proprty that drains to Susquetonscut Brook
Surface flow showing direction of flow

Scale 1" =1000'

other legitimate uses, including navigation. Discharges to a Class A stream would be limited to treated backwash for drinking water treatment facilities, minor cooling or clean water.

4. SOILS AND EROSION AND SEDIMENT CONTROL

The proposed access road to the property would cross a section of regulated inland wetlands. If permits were granted to construct the road, than precautions should be taken to mitigate the amount of wetland disturbance as well as to protect all remaining wetland areas during construction.

An erosion and sediment control was not submitted for the project. It is recommended that one be prepared and include the following information.

A. A narrative describing,
I. The development
2. The schedule for grading and construction activities.
3. The design criteria for proposed soil erosion and sediment control measures and stormwater management facilities.
4. The construction details for proposed soil erosion and sediment control measures and stormwater management facilites.
5. The installation and/or application procedures for proposed soil erosion and sediment control measures and stormwater mangement facilites.
6. The operations and maintenance program for proposed soil erosion and sediment control measures.

B. A site plan map showing:
1. The location of the proposed development and adjacent properties.
2. The existing and proposed topography including soil types, wetlands and water courses.
3. The proposed area alternations including cleared, excavated, filled or graded areas and proposed structures, utilities and roads.

5. GEOLOGIC DEVELOPMENT CONCERNS

Since public sewers are not presently available to the property, any development that takes place on the property would need to rely on individual on-site septic systems and wells. The nearest sewer and water lines (Norwich Public Utilities) are nearly two miles south of the site.

No subsurface exploration data for on-site sewage disposal was available to Team members on the review day. Nevertheless, available geologic and soil-mapping data and visible observations made during the field walk suggests that the principal geologic concerns with respect to the proposed project include: (l) the presence of relatively thin till soils (shallow to bedrock conditions); (2) the presence of moderate to very steep slopes; (3) the presence of till soils, which may have the potential for seasonally high water tables and slow percolation rates. This variety of till delineated as WxB, WyB (Woodbridge) and PdB

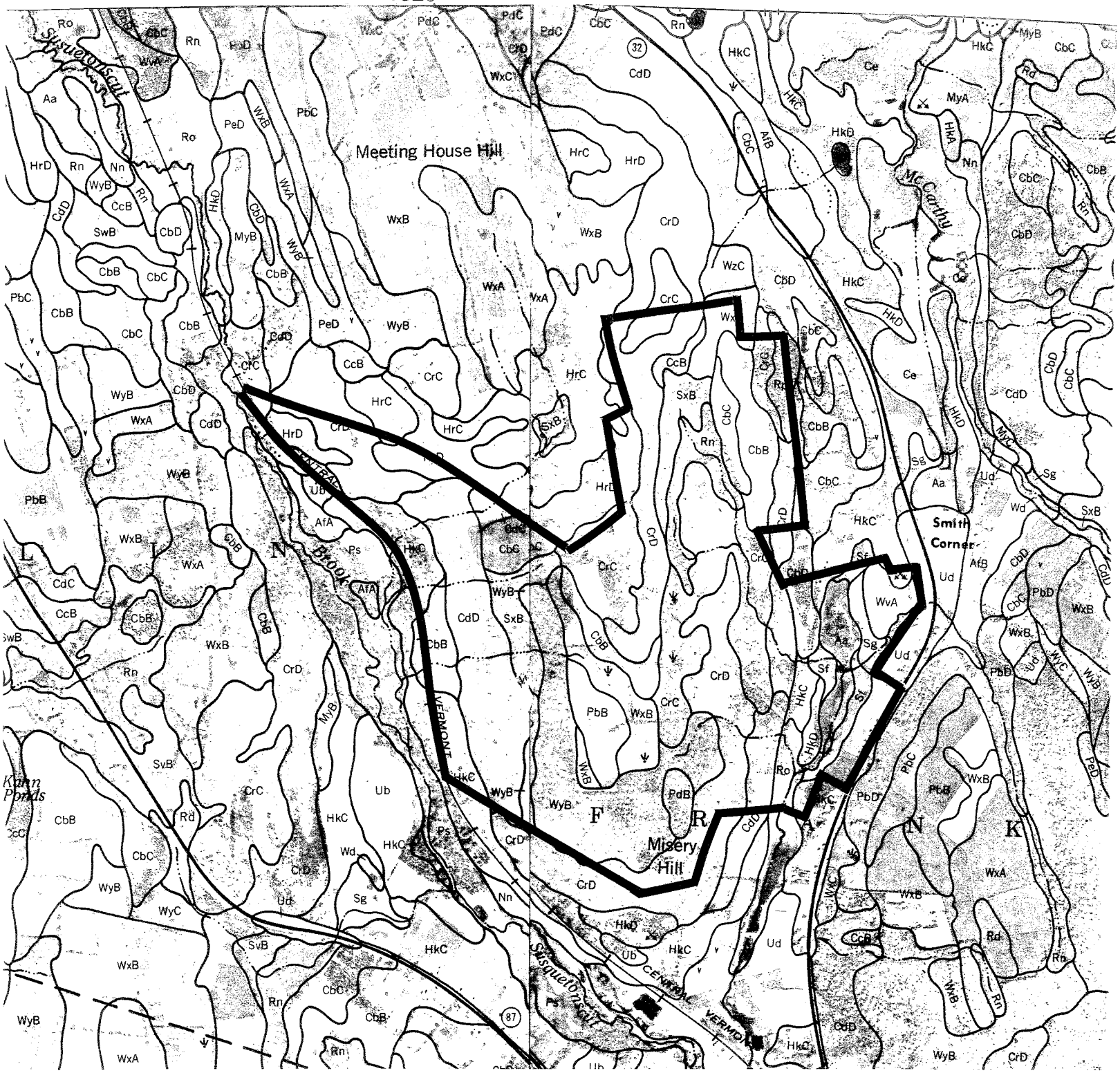
United States Department of Agriculture

Soil Conservation Service

SOILS

New London County USDA-SCS
562 New London Turnpike
Norwich, CT 06360
887-4163

Scale 1" = 1320'



Soil name and map symbol	Dwellings without Basement	Dwellings with Basement	small commercial buildings	lawns and landscaping	Local Roads and streets	Potential rating	Concerns
Aa* Adrian	Severe Ponding, low strength.	Severe Ponding	Severe: Ponding low strength	Severe: excess Humus, ponding.	Severe ponding low strengt frost action	Extremely Low	Organic soils,depth to water table.
CbB* Canton	slight	slight	Moderate slope	slight	slight	Very high	None
CbC* Canton	Moderate slope	Moderate slope.	Severe slope.	Moderate slope	Moderate slope.	Very high	None
CbD* Canton	Severe slope	Severe slope	Severe slope	Severe slope	Severe slope	Very high	None
CcB* Canton	Slight	Slight	Moderate slope.	Moderate: Large stones	Slight	Very high	None
CdD* Canton	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	High	Slope
CrD* Charlton	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Very low	Slope
CrC* Charlton	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, Large stones	Moderate: slope.	Very high	None
HkC Hinkley	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, slope.	Severe: slope.	High	Fast perc rate

SOILS LIMITATION CHART

Soil name and map symbol	Dwellings without Basement	Dwellings with Basement	small commercial Buildings	local roads and streets	lawns and landscaping	Potential rating	concerns
HkD Hinkley	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope. small stones	Medium	Fast perc rate, slope.
HrC* Hollis	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope	Severe: slope.	Low	Depth to Bedrock.
HrD* Hollis	Severe: slope. depth to rock.	Severe: slope. depth to rock.	Severe: slope. depth to rock.	Severe: slope. depth to rock.	Severe: slope. thin layer	Very low	Depth to Bedrock.
PdB* Paxton	Moderate: wetness.	Moderate: wetness.	Moderate: slope wetness.	Moderate: frost action wetness.	Moderate: large stones	Medium	slow perc rate, depth to water table.
Rn* Ridgebury	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action	Severe: wetness.	Very low	Depth to Water table.
RO Rippowam	Severe: flooding wetness	Severe: flooding wetness.	Severe: flooding wetness.	Severe: flooding wetness.	Severe: wetness flooding	Extremely Low	fast perc rate depth to water table, flooding
RP* rock outcrop Hollis	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, thin layer.	Extremely Low	Depth to Bedrock, slope.

SOILS LIMITATION CHART

Soil name and map symbol	Dwelling without Basements	Dwelling with Basements	small Commercial Building	local roads and streets	lawns and Landscaping	Potential rating	concerns
Sf Scarboro	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, frost action.	Severe: ponding, excess humus.	Extremely Low	Fast perc rate Depth to water table, flood-ing.
Sg Sudbury	Moderate; wetness.	Severe: wetness.	Moderate wetness.	Moderate; wetness, frost action.	Moderate: wetness.	Low	Fast perc rate depth to water table
SxB	Moderate: wetness.	Severe: wetness.	Moderate: slope, wetness.	Moderate: frost action wetness	Moderate: wetness large stones	Low	Dept to water table.
WvB Windsor	Slight:	Slight:	Moderate: slope	Slight:	Moderate: droughty.	High	Fast Perc rate
WxB Woodbridge	Moderate: wetness.	Severe: wetness.	Moderate: slope, wetness.	Severe: frost action.	Moderate: wetness		Slow perc rate depth to water table.
Wzc* Woodbridge	Moderate: slope, wetness.	Severe: wetness	Severe: slope.	Severe: frost action	Moderate: slope, large stones wetness.	Low	slow perc rate depth to water table.
WyB Woodbridge	Moderate: wetness	Severe: wetness.	Moderate: slope, wetness.	Severe: frost action	Moderate: large stones wetness.	Low	slow perc rate depth to water table

SOILS LIMITATION CHART

(Paxton). The soils map distributed to Team members indicates that they are mainly at the southern limits; and (4) the presence of regulated inland-wetland soils, which comprise both seasonally and permanently wet areas.

In all likelihood, the geologic limitation cited in the preceding paragraph will be a major hindrance for developing this site, mainly with respect to on-site sewage disposal. Because of the generally unfavorable conditions, i.e., steep slopes, shallow bedrock, and hardpan soil that exists throughout the site, any industrial development that takes place will need to be low-density and low-water consumption users.

If a prospective user of the proposed industrial park discharged sewage in excess of 5,000 gallons per day, the DEP Water Compliance Unit must issue a permit.

Under this scenario, the applicant's engineer would first have to provide detailed technical information on the hydrogeologic conditions in the disposal area(s), the design of each sewage disposal areas; and analysis of the probable impact on any nearby water resources and the underlying aquifer from a drinking water quality standpoint. This last requirement should include an analysis of bacterial travel, virus removal and nitrate and phosphate transport. The "burden of proof" is clearly upon the developer here to show that the proposed sewage disposal system(s) will function properly and not pose a threat to environmental or public health. Prior to acting on a permit application, the applicant should be required to make arrangements for ownership, operation and maintenance of the sewage disposal system. Based on the generally unfavorable conditions of the site, it does not seem likely that even large lots within the site could support large septic systems (greater than 5,000 gallons per day) without extending a municipal sewer line. The latter should probably be investigated by the applicants.

Septic systems discharging under 5,000 gallons per day may be feasible in some places on the site. These systems would come under the purview of the state and local health departments. However, detailed soil testing would need to be conducted on each lot before a determination of its suitability for on-site sewage disposal could be made. Development of the site should proceed only within the limits of acceptable density as to the capacity of the soil and not to overload it with too great a volume of sewage waste water discharge.

Because of the proposed industrial use of the land and because on-site wells will be required, each potential user of the site should be carefully screened as to the type of industrial waste generated and methods for handling and disposing of such waste. certain users of the park may pose too great a risk for site conditions without tying into a public sewer line.

Bedrock is at or near ground surface throughout much of the site. This suggests the need for blasting, particularly with respect to the placement of septic tanks, water lines, roads/driveways and building foundations.

Any blasting that takes place on the site should be done only under the strict supervision of persons familiar with the latest blasting techniques. Only then will be environmental effects of blasting be kept to minimum. For the most part, these concerns include flyrock, ground vibrations, airblast and dust and gases. If blasting is conducted, it is strongly suggested that the blaster be required to conduct a pre-blast survey in the area. A thorough blasting record should accompany the survey. There are several methods that can be employed which will help reduce the potential environmental effects mentioned above. These include (l) blasting to an open face; (2) multiple small-charge blasting and (3) use of milli-second delay between detonations. The latter condition will, of course, depend on the blasting requirements of each lot.

Also, because of steep slopes and because of the site's locations, (northwest side of hill) with respect to amount of sunlight received during winter months, one might expect ice accumulations on the roadways to be a major problem during winter months. These ice conditions may be dangerous for the employees of the park and general public. Careful planning and driveway design should address this potential concern.

6. WATER SUPPLY

Unless a municipal water line was extended to the site, the principal water source to the potential users of the park would be the underlying metamorphic rock. Groundwater moves through bedrock by way of an interconnected fracture system. Wells drilled l00 - 200 feet into bedrock are generally capable of supplying small, but reliable yields of groundwater. Approximately 90 percent of the bedrock wells surveyed for Connecticut Water Resources Bulletin No. l5 yielded three gallons per minute or more. If pumped continuously, a well producing three gallons per minute would yield 4320 gallons of water per day. It is expected that sufficient storage would need to be provided for peak demand periods and/or necessitating the drilling of more than one well.

The natural quality of the groundwater should be good. There is a good chance that naturally high concentrations or iron, manganese or other mineral residue will taint the well water. Both the Hebron formation and Scotland schist, in particular the latter, have been identified as a frequent problem source.

According to the Water Quality Classification Map of Connecticut, (Murphy, l987) groundwater throughout the entire site is classified as being Class GA meaning that it would be of acceptable quality for use as a drinking water supply without requiring treatment (other than possibly for naturally occurring mineral constitutents). The only type of wastewaters permitted for discharge to GA areas are domestic sewage, septage wastes of predominately human or animal origin, or substances which easily biodegrades in the soil system and pose no threat to untreated drinking water supplies drawn from outside of the zone of influence of a permitted discharge. The discharge of all other materials to the ground is prohibited. As one can easily see, these requirements have a great impact on the nature of industrial /commercial establishments which then become feasible in view of the wastewaters

produced by each. During initial contact, the town should inform potential industrial/commercial establishments of these restrictions and requirements so that an understanding is clear from the outset. The Department of Environmental Protection (Water Compliance) would be available to meet with the town over questions reqarding any specific proposal . It should be kept in mind that the area in the vicinity of the proposed industrial park must rely upon groundwater drinking water supplies.

7. FISH RESOURCES

I. Site Description

The parcel of land proposed for commercial and light industrial park development lies east of the Susquetonscut River, the primary surface hydrological feature in the area. This report will delineate expected impacts of site development on the aquatic resources of the Susquetonscut River.

The Susquetonscut River contains excellent fisheries habitat in the low gradient stretch that borders the development site. A l:l pool-riffle ratio was documented. This is considered optimal for resident fish production and survival. Stream width ranges from l0 to 30 feet. Dominant stream substrate was comprised of small boulders and cobble (substrate diameter 2-12"). A well developed streamside overhead tree canopy comprised of mixed hardwoods and stands of eastern hemlock was observed. Streamside trees benefit aquatic resources by shading and cooling stream waters. Surface waters of this brook are classified by the Department of Environmental Protection (DEP) as "Class B/A". Designated uses for this classification are as follows: fish and wildlife habitat; recreational use; and industrial and agricultural supply. DEP goals are to upgrade all "Class B" watercourses to "Class A" where they could be used as potential sources of drinking water.

The developing parcel also contains a small intermittent stream, originating within the steep slopes of the westerly corner of the site. Although intermittent, this stream functions to provide seasonal clean and healthy waters to the Susquetonscut River.

II. Fish Population

The Susquetonscut River, a vital tributary of the Yantic River, is annually stocked by the DEP Bureau of Fisheries with over l,400 adult (9-12") brook, brown, and rainbow trout in the towns of Franklin and Lebanon. Besides stocked trout, the river also contains a native brook trout fishery. Other species of fish expected to inhabit the river are: blacknose dace, longnose dace, fallfish, white sucker, common shiner and tesselated darter. The area of the river next the to proposed development site is heavily utilized by local sport fishermen.

III. Impacts

Any development on the steep slopes (greater than 20%) poses a potential threat to the Susquetonscut River. Land sloping towards the river in concert with the intermittent watercourse provide a direct avenue for surface runoff. This runoff would be either in the form of soil erosion or stormwater. These are the two main anticipated impacts. A discussion of the negative effects of these impacts to aquatic resources follows.

I. Construction site soil erosion through increased runoff from unvegetated areas can ultimately result in the deposition of sediment in streams. This process is called "sedimentation". Erosion and sedimentation due to construction has long been regarded as a major cause of stream degradation , especially when proper mitigation measures are not utilized. Nationally, sediment is considered a major stream pollutant. If proper mitigation devices are not implemented, the potential is great for severe erosion events to occur on steep slopes. In particular, sediment will negatively impact aquatic resources by:

* Reducing the amount of usable fish habitat used for spawning purposes - preferred substrate that becomes compacted with silt is no longer available for spawning. Fish will be forced to disperse to other areas of the brooks not affected by siltation.

* Reducing stream pool depth - pools provide cover, shelter, and resting areas for fish. They are important fish habitat areas. Siltation of pools will cause further reduction in usable fish habitat.

* Reducing fish egg survival - adequate water flow, free of sediment particles is required for egg respiration (biological process of extracting oxygen from water) and successful hatching. Silt will smother eggs.

* Reducing aquatic insect production - sediment free water is also required for successful aquatic insect egg respiration and hatching. Aquatic insects are important food items in fish diets. Reduced insect levels will adversely effect fish growth and survival since excessive energy demands are required to locate preferred aquatic insects when population levels are low.

* Adversely impairing "gill" function - studies have documented that high sediment concentrations and turbidity will disturb fish respiration (breathing) and gill function.

* Contributing to the depletion of oxygen - organic matter associated with soil particles is decomposed by micro-organisms contributing to the depletion of oxygen in waters overlying sediments.

* Encouraging the growth of rooted aquatic plants and promote filamentous algae growth in streams - eroded soils contain plant nutrients such as nitrates and phosphates. Although algae and aquatic plants require these nutrients for growth, most aquatic ecosystems contain very limited amounts. Consequently, these nutrients act as fertilizers once they are introduced into aquatic habitats resulting in accelerated plant growth.

2. Severe aquatic habitat degradation can occur in the Susquetonscut River due to stormwater drainage. In particular, stormwaters can contain pollutants such as salt, sediment, gasoline, and oil. These pollutants can cause water quality and aquatic habitat degradation while excessive amounts of

hydrocarbons (oil and gasoline) can result in fishkills. Additionally, fine silts in stormwaters that remain in suspension for prolonged periods of time cannot be effectively removed from stormwater management control structures. Hence, stormwater runoff that contains fine silts will eventually fertilize stream waters and result in further water quality degradation.

IV. Recommendations

Implementation of the following recommendations will help mitigate adverse impacts to the Susquetonscut River:

I. Maintain a **100 foot** open space **buffer zone** along the unnamed intermittent stream that flows through steep sloped lands on the westerly portion of the property - no construction and alteration of natural vegetation shall take place in this zone, otherwise the ability of the buffer zone to function properly will be reduced. Research has shown that 100 foot buffer zones will protect aquatic resources by helping to prevent surface runoff and other pollutants from entering streams. The town of Franklin should be responsible for the regulation of all activities that can take place within the buffer zone.

2. The developer must submit an aggressive erosion and sediment control plan - the plan should include such mitigative measures as silt fences, hay bales, and catch basins. Silt fences or hay bales should be placed within excavated trenches. Additionally, the Town of Franklin should have an appointed official that would be responsible for checking this development to ensure that contractors have complied with all stipulated mitigation devices. Numerous stream siltation disturbances in Connecticut associated with construction activities have occurred when individual contractors either improperly deployed mitigation devices or failed to maintain these devices on a regular basis.

3. Design an effective stormwater management plan - properly design, locate, and maintain roadway catch basins and detention ponds to ensure the proper management of stormwaters. Maintenance is very critical. The Town of Franklin should regularly maintain all catch basins to minimize adverse impacts to aquatic environments. Street sweeping should occur in the spring to clean away road sands and other debris.

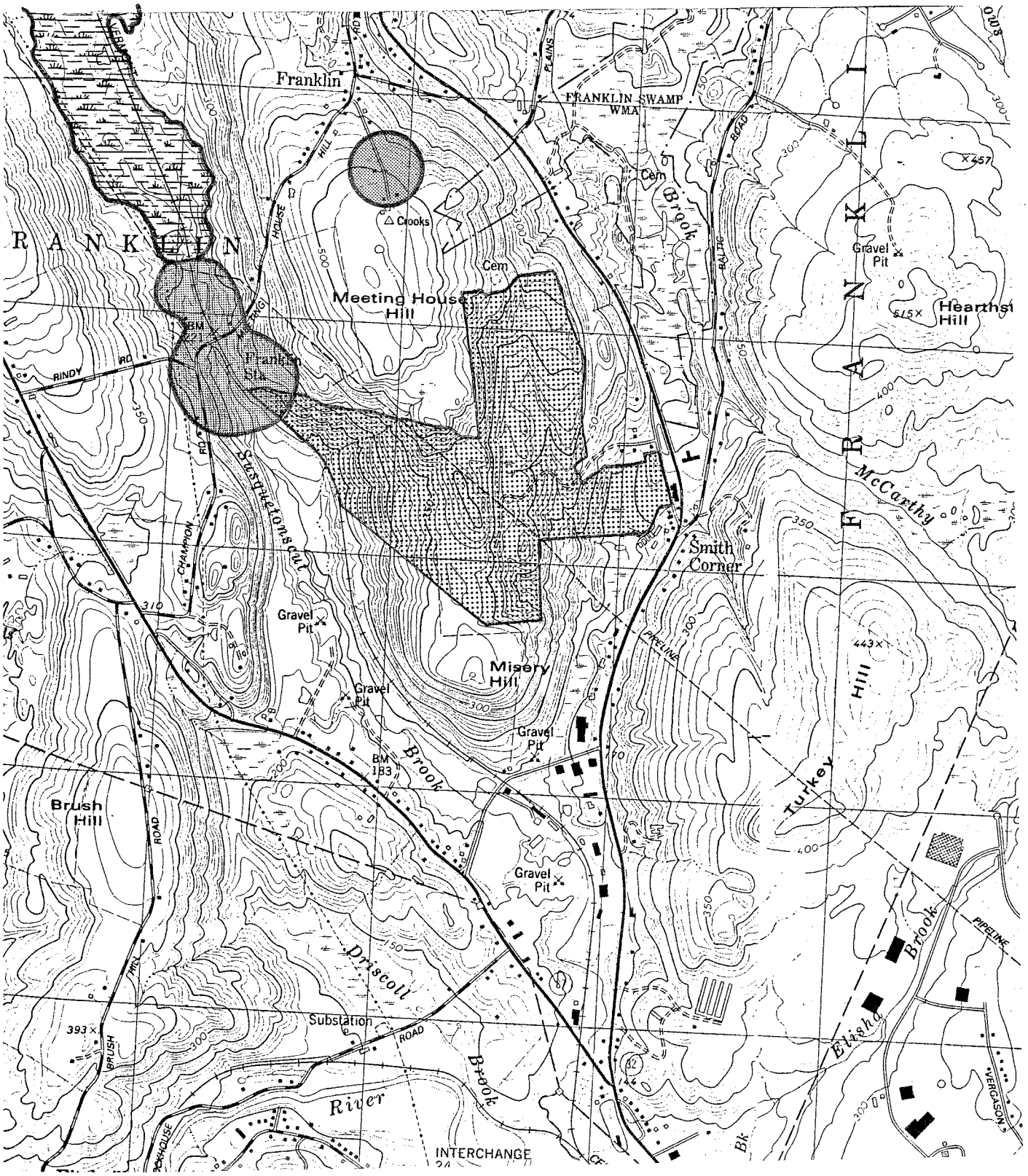
8. NATURAL DIVERSITY DATA BASE

The Data Base maps and files have been reviewed regarding the study area. Two Natural Area Inventory sites, a "Wetland of Special Concern" and a population of a CT "Species of Special Concern" occur immediately adjacent to the area in question.

They are delineated on the enclosed map:

Meeting House Hill Overlook Natural Area Inventory site

Peck's Hollow Natural Area Inventory site



AREAS OF CONCERN

Study Site
Wetland of Special Concern
Natural Area Inventory Site

Scale 1" = 2000'

Susquetanscut Brook Marshes Wetland of Special Concern:

Site: Susquetanscut Brook Marshes
Town: Lebanon and Fitchville
Quadrangle: Fitchville and Willimantic
Ecological Significance:

1. Significant recreational finfish habitat (Yantic River).
2. Important areas for low flood stability.
3. Important areas for flood flow stability.

Species of Special Concern - Postemum ceratophyllum, Riverweed grows in Susquetonscut Brook

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 conservations 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.

9. LAND USE AND TRANSPORTATION

The proposed development is located to the west of Route 32 in the vicinity of the intersection of Route 32 and Route 6l0 (Baltic Road). Commercial land uses are located around this intersection and south of the proposed development along Route 32. A gas transmission line traverses the site from the northwest to the southeast. Residential land uses are located on the easterly side of Route 32 in the vicinity of the entrance road to the roposed development and also along Manning Road on the northern side of the development. Other than the small portion of the property that fronts on Route 32, the side is surrounded by undeveloped land that is forested. The Central Vermont railroad line is located immediately west of the proposed development. An analysis of slope and bedrock conditions in this area will have to be conducted to determine if a siding could be constructed.

If the proposed roads can be designed to meet the slope requirements of the Franklin Town Road Ordinance, then the areas of steep slopes, shallow to bedrock soils, and wetlands could be utilized to separate the commercial-industrial lots from each other. The best lot areas would most likely be the existing corn fields which are the areas with the best soils and slope conditions. Since the site and surrounding area is entirely forested except for open fields

and corn fields, these existing trees should be utilized as natural buffers to separate uses and lots within the proposed development and should also be utilized as a natural buffer along the perimeter of the property to separate the development from future residential uses. The surrounding area is zoned for 80,000 square feet residential lots. The potential exists to produce an attractive development if these kinds of design ideas are followed and would result in a development that is compatible with existing and future surrounding land uses.

Access the the site is off Route 32 south of the intersection with Route 6l0. Horizontal site lines are good in this location. The Connecticut Department of Transportation traffic log indicates a l987 average daily traffic count of 8,200 between Routes 6l0 and 207. The actual uses located in the proposed development will determine traffic to be added to Route 32. When more information is known on actual uses it might be prudent to conduct an engineering traffic analysis to help determine if turning movement improvements such a turning lanes are needed and what traffic control devices are needed.

ABOUT THE TEAM

The Eastern Connecticut Environmental Review Team (ERT) is a group of professionals in environmental fields drawn together from a varety of federal, state and regional agencies. Specialists on the Team include geologists, biologists, foresters, soil specialsits, engineers and planners. The ERT operates with state funding under the supervision of the Eastern Connecticut Resource Conservation and Development (RC&D) Area --- an 86 town region.

The services of the Team are available as a public service at no cost to Connecticut towns.

PURPOSE OF THE TEAM

The Environmental Review Team is available to help towns and developers in the review of sites proposed for major land use activities. To date, the ERT has been involved in reviewing a wide range of projects including subdivisions, landfills, commercial and industrial developments, sand and gravel excavations, elderly housing, recreation/open space projects, watershed studies and resource inventories.

Reviews are conducted in the interest of providing information and analysis that will assist towns and developers in environmentally sound decision-making. This is done through identifying the natural resource base of the project site and highlighting opportunities and limitations for the proposed land use.

REQUESTING A REVIEW

Environmental reviews may be requested by the chief elected official of a municipality or the chairman of town commissions such as planning and zoning, conservation, inland wetlands, parks and recreation or economic development. Requests should be directed to the chairman of your local Soil and Water Conservation District and the ERT Coordinator. A request form should be completely filled out and should include the required materials. When this request is approved by the local Soil and Water Conservation District and the Eastern Connecticut RC&D Executive Council, the Team will undertake the review on a priority basis.

For additional information and request forms regarding the Environmental Review Team please contact the ERT Coordinator: 203-345-3977, Eastern Connecticut RC&D Area, P.O. Box 70, Haddam, Connecticut 06438.