Environmental Review Team Report

Industrial Roadway

Deep River, Connecticut

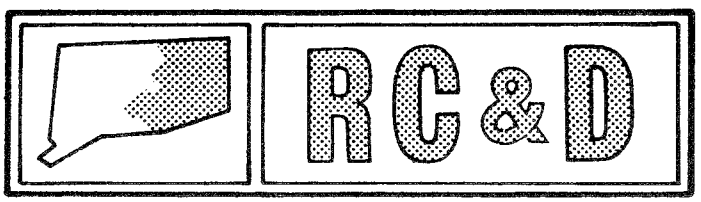
RC&D

EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT AREA, INC.

Environmental Review Team
Report

Industrial Roadway
Deep River, Connecticut

August 1984

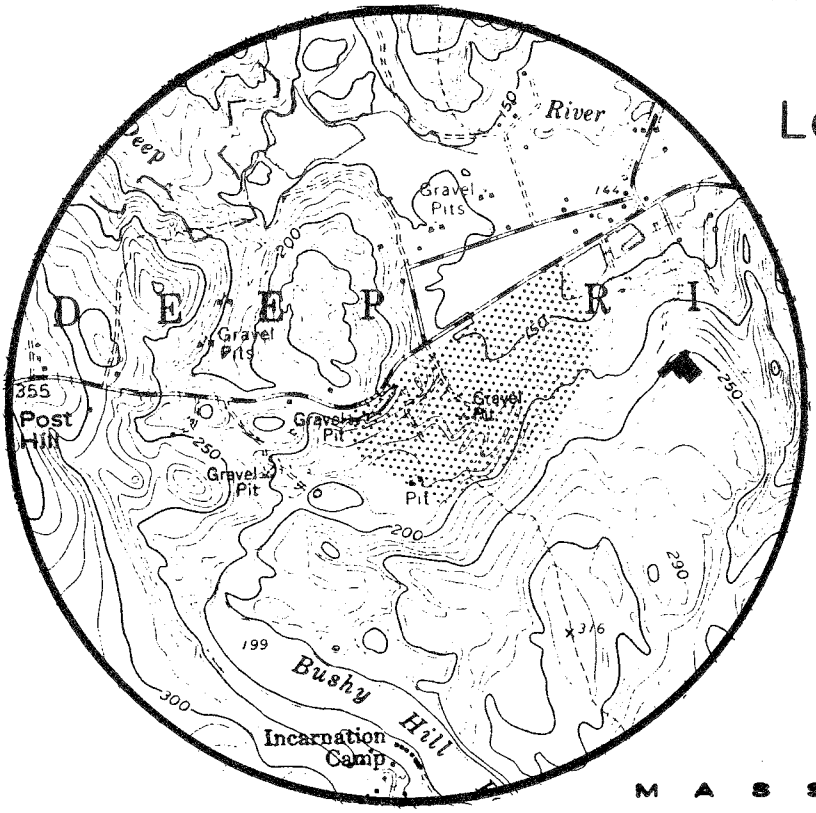


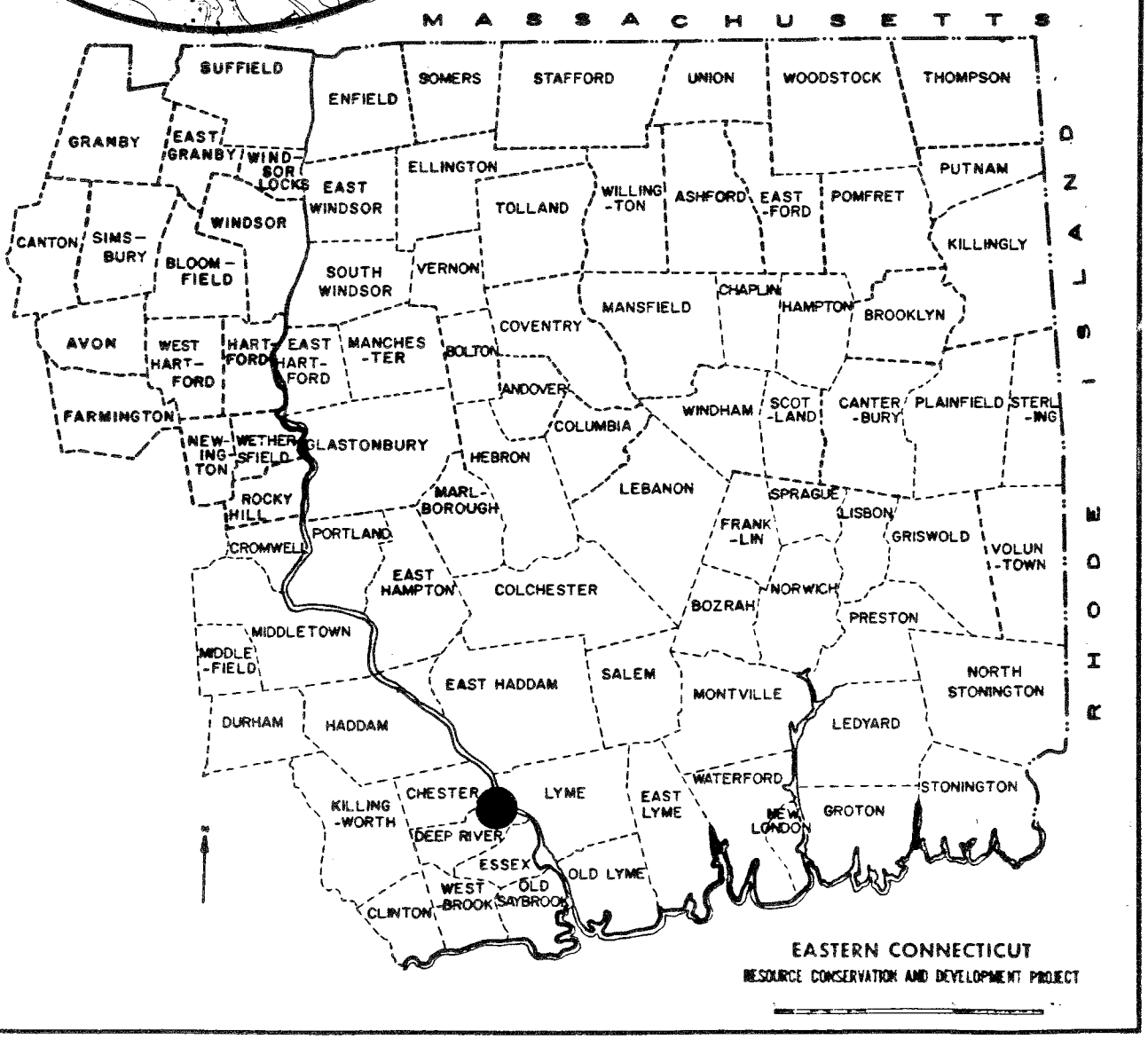
Eastern Connecticut Resource Conservation & Development Area

Environmental Review Team
PO Box 198
Brooklyn, Connecticut 06234

Location of Study Site

INDUSTRIAL PARK ROADWAY
DEEP RIVER, CONNECTICUT





EASTERN CONNECTICUT
RESOURCE CONSERVATION AND DEVELOPMENT PROJECT

ENVIRONMENTAL REVIEW TEAM REPORT
ON
DEEP RIVER INDUSTRIAL PARK ROADWAY
DEEP RIVER, CONNECTICUT

This report is an outgrowth of a request from the First Selectman of Deep River to the Middlesex County Soil and Water Conservation District (S&WCD). The S&WCD referred this request to the Eastern Connecticut Resource Conservation and Development (RC&D) Area Executive Committee for their consideration and approval. The request was approved and the measure was reviewed by the Eastern Connecticut Environmental Review Team (ERT).

The soils of the site were mapped by a soil scientist from the United States Department of Agriculture, Soil Conservation Service (SCS). Reproductions of the soil survey map, a table of soils limitations for certain land uses and a topographic map showing property boundaries were distributed to all Team members prior to their review of the site.

The ERT that field-checked the site consisted of the following personnel: Tom Ladny, Soil Conservationist, Soil Conservation Service (SCS); Bill Warzecha, Geologist, Connecticut Department of Environmental Protection (DEP); and Jeanne Shelburn, ERT Coordinator, Eastern Connecticut RC&D Area.

The Team met and field-checked the site on Thursday, July 12, 1984. Reports from each contributing Team member were sent to the ERT Coordinator for review and summarization for the final report.

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

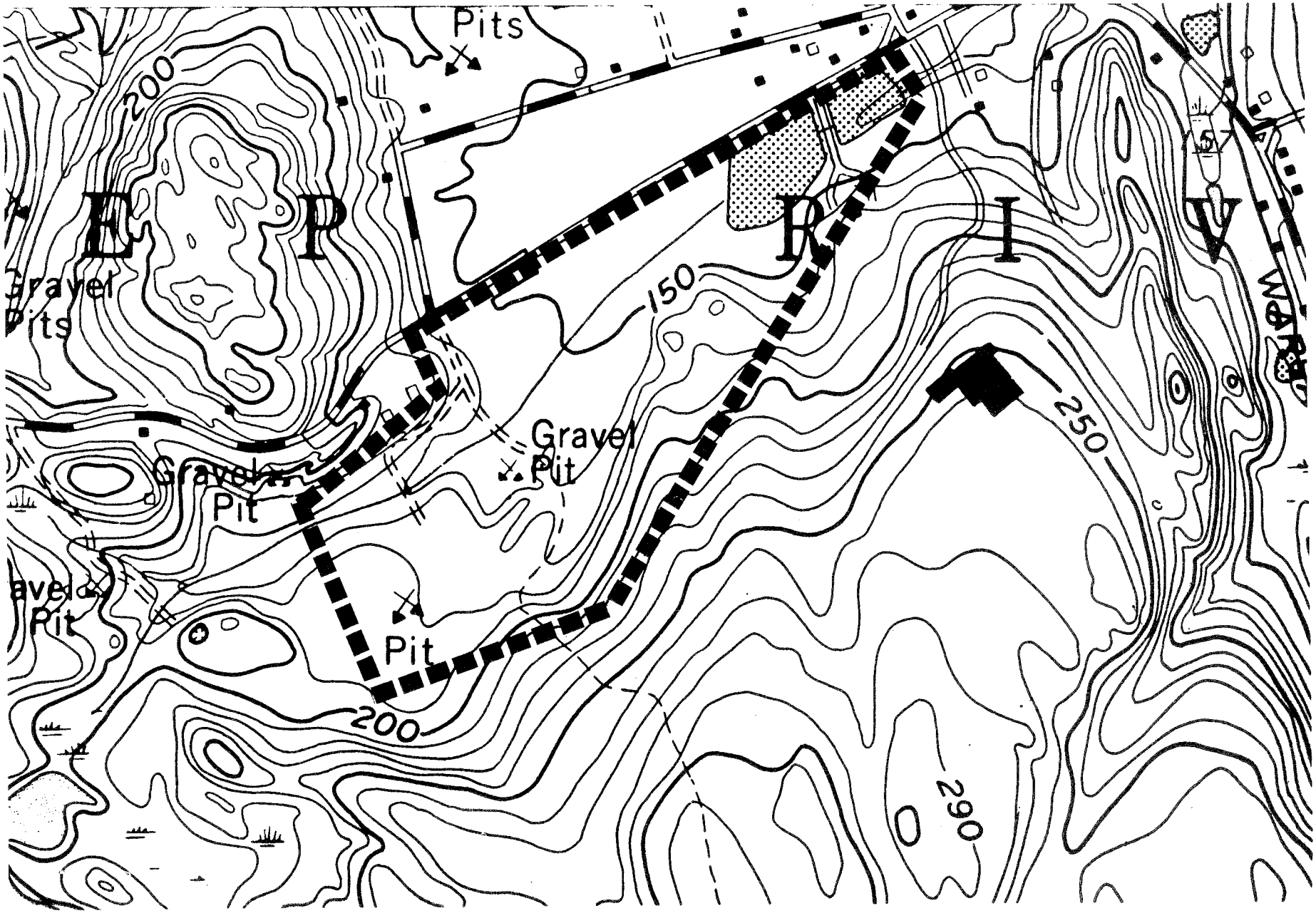
The Eastern Connecticut RC&D Area Committee hopes that this report will be of value and assistance in making any decisions regarding this particular site.

If you require any additional information, please contact: Ms. Jeanne Shelburn, Environmental Review Team Coordinator, Eastern Connecticut RC&D Area, Box 198, Route 205, Brooklyn, Connecticut 06234, 774-1253.

Topography

Approximate boundary of study site

0 660
scale

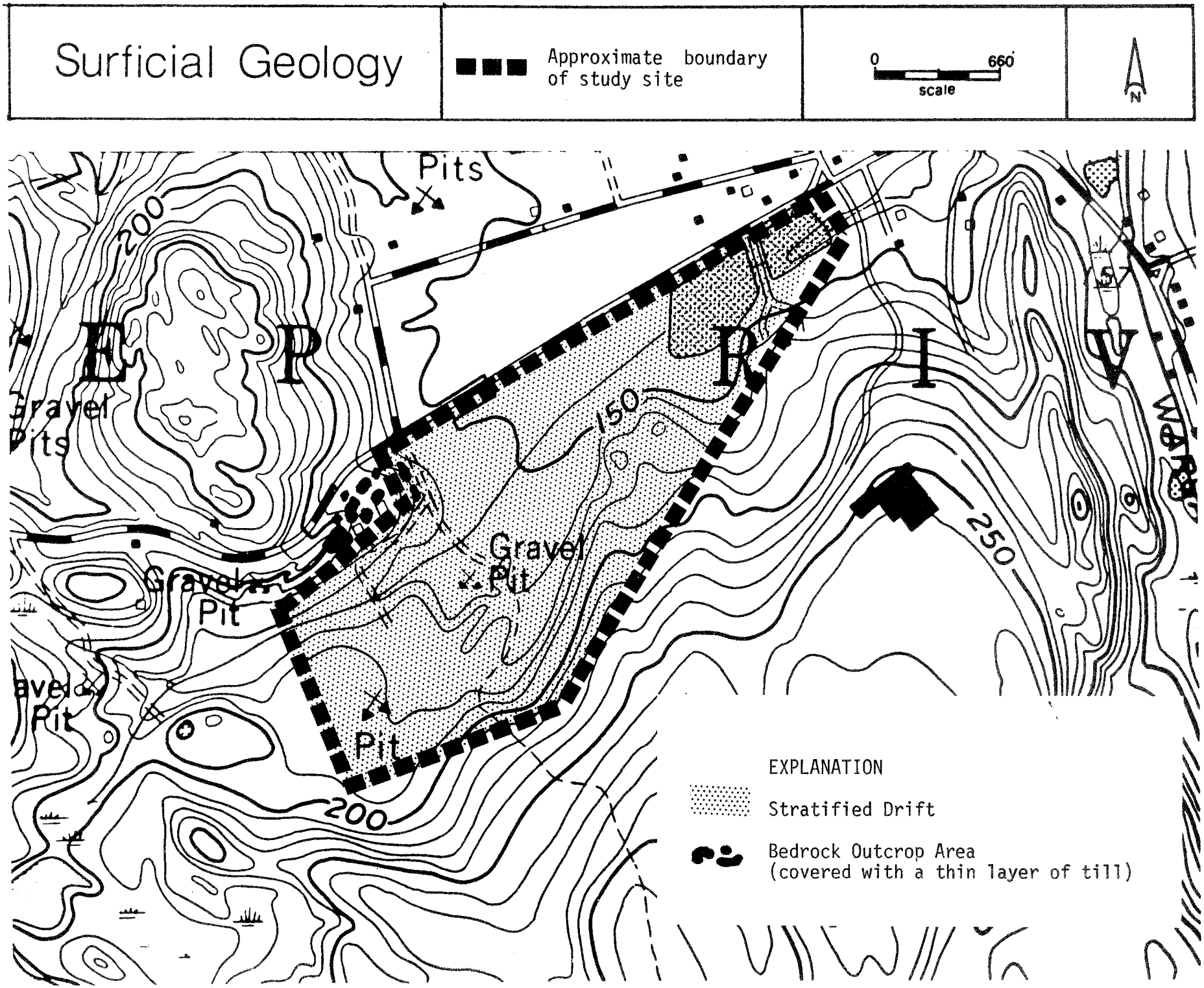


DESCRIPTION OF THE PROPOSAL

The Town of Deep River is proposing to construct a roadway into a town-owned site for future development of an industrial park. The site is located on the southern side of Connecticut Route 80, north and east of Bushy Hill Pond. The Town's public swimming pond is directly adjacent (east) to the proposed road location. Preliminary site plans were prepared by Roger D. Nemergut, a consulting engineer.

The preliminary plans show a proposed 50 foot right-of-way extending south from Connecticut Route 80 into the site. Pavement on the road is shown as approximately 20 feet wide.

A considerable portion of this site and adjacent properties have been excavated for gravel in the past, several water bodies have resulted from this excavation. Vegetation on the site is minimal at this time, primarily shrubby/herbaceous invasion from neighboring areas.


Surficial Geology
Approximate boundary of study site
0
660'
scale
N
Pits
200
150
250
Gravel Pit
Gravel Pit
Gravel Pit
Pit
Pit
Gravel Pits
Gravel Pit
EXPLANATION
Stratified Drift
Bedrock Outcrop Area
(covered with a thin layer of till)

DESCRIPTION OF THE ENVIRONMENT

TOPOGRAPHY

The proposed industrial park roadway is located on the southside of Route 80 in the central part of Town. The proposed 50 foot right-of-way, which will extend east from Route 80 in the site, will service the Town's future industrial park. The study area includes ±9 acres southwest of Deep River's recreation bathing facility.

Slopes in the study area are relatively flat. They rise moderately from the existing access road into the site which is shown on the accompanying topographic map, westward to the top of a bedrock controlled knob. Maximum and minimum elevations in the study area are about 150 feet and 170 feet above mean sea level.

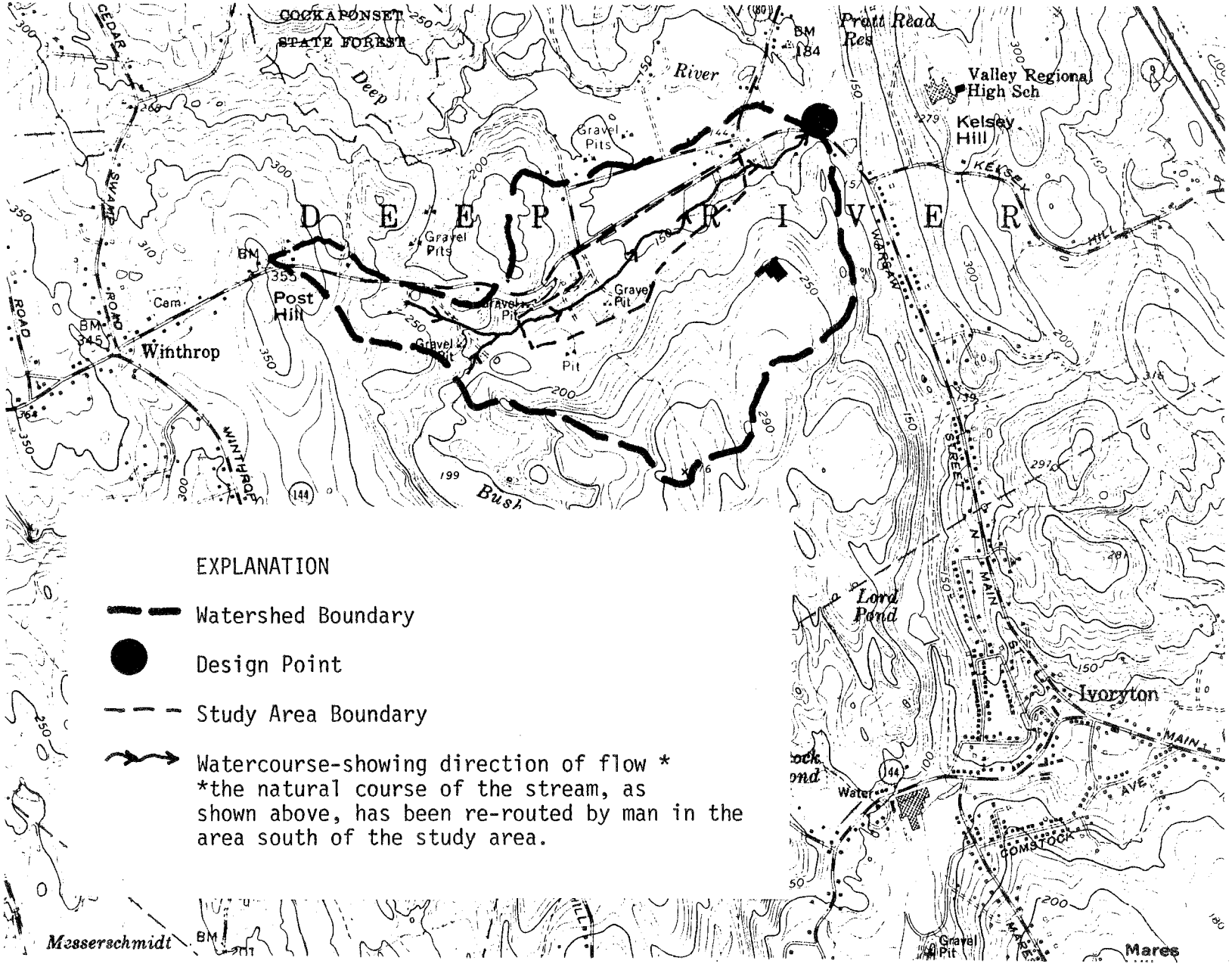
GEOLOGY

The proposed industrial park roadway is located in a section of Deep River which is included in the Essex topographic quadrangle. The bedrock geologic map by Lawrence Lundgren, Jr. (QR-15) and the surficial geologic map by Richard Foster Flint (QR-31) have been published by the Connecticut Geological and Natural History Survey. Both maps are available for purchase and/or review at the Department of Environmental Protection's Natural Resources Center in Hartford.

Bedrock exposures are visible on the east side of the existing access road to the sand and gravel operation site. This area is delineated as CrC (Charlton soils) on the accompanying soils map. Map QR-15 classifies the bedrock underlying or cropping out within the study area as a subunit of the Monson gneiss formation. The rock consists of a light gray, fine-to-medium grained gneiss composed of the minerals plagioclase, quartz, biotite and hornblende. The rock is interbedded with amphibolite and pink alaskitic granite. A "gneiss" is a metamorphic rock (a rock altered by high temperatures or pressures in the earth's crust) in which thin bands of aligned, elongate or flaky minerals alternate with layers of more rounded mineral grains. The word "amphibolite" is a term given to rocks which are composed chiefly of dark-colored minerals of the amphibolite group, especially hornblende. A "granite" is a light-colored, coarse grained igneous rock (rocks formed from molten rock). The adjective "alaskitic" which precedes the word granite above describes a rock composed of light-colored minerals such as orthoclase, microcline and quartz.

Depth to bedrock ranges from zero where bedrock outcrops to probably not much more than 10 feet throughout the proposed interior road.

Drainage Areas



The study area is covered by sediments that were deposited by glacial meltwater streams. These sediments are referred to as stratified drift. The predominant componants of the stratified drift are sand and gravel, but there may be some silt and clay layers. Stratified drift is commonly layered (stratified) and ranges from poorly to well-sorted. The exact thickness of the stratified drift in the study area is unknown, since much of the sand and gravel has been mined in these areas. Bedrock visible along the existing road suggests that they are probably relatively thin (not more than 10'). If bedrock is encountered, there is a chance that blasting may be required in order to construct the road.

West of the existing road, which leads into the Connecticut Valley Sand and Gravel operation, the stratified drift grades into an area of shallow bedrock. The bedrock is covered by a relatively thin blanket of till. Till, like stratified drift is a glacial sediment. However, because the till was deposited directly from an ice sheet, it lacks the sorting (the separation of grain sizes) and the layering that is characteristic of stratified drift.

HYDROLOGY

The site lies entirely within the watershed of an unnamed tributary of Deep River. A watershed may be defined as the land area that drains runoff to a stream or other surface water body. The size of the watershed is approximately 442 acres or .69 square miles and tends to follow along the crests of local hills and ridges (see Drainage Area Map).

The Town's bathing facility lies northeast of the proposed industrial park roadway. In addition, there are two surface water bodies lying in succession northeast of the bathing pond. All three surface water bodies appear to have been created as a result of the sand and gravel operation.

SOILS

A detailed soils map of this site is included in the Appendix to this report, accompanied by a chart which indicates soil limitations for various urban uses. The soil boundary lines should not be viewed as absolute boundaries, but as guidelines to the distribution of soil types on the site. The soil limitation chart indicates the probable limitations for each of the soils for roads and streets, small commercial buildings, lawns and landscaping, and road fill. However, limitations, even though severe, do not preclude the use of the land for development. If economics permit large expenditures for land development and the intended objective is consistent with the objectives of local and regional development, many soils and sites with difficult problems can be used. The soils map, with the publication Soil Survey, Middlesex County, Connecticut, can aid in the identification and interpretation of soils and their uses on this site. Know Your Land: Natural Soil Groups for Connecticut can also give insight to the development potentials of the soils and their relationship to the surficial geology of the site.

Soils on the site as mapped by the USDA Soil Conservation Service, are generally fine sandy loams derived from glacial till. Those soils that are very poorly drained and would be regulated under P.A. 155 as wetland soils are Leicester, Ridgebury & Whitman (Lg). These soils are found in drainageways and depressions of glacial till uplands. The soils of this unit were mapped together because they react similarly to most uses and management.

These soils have poor potential for community development. Wetness, stoniness and the slow to very slow permeability of the substratum in the Ridgebury & Whitman soils are major limitations. These soils are not suitable to community development unless they are extensively filled.

The Canton and Charlton very stony and extremely stony fine sandy loams are moderately sloping, well drained soils occurring on upland hills, ridges and glacial till plains. Areas of this unit consist of Canton soil or Charlton soil, or both. These soils are mapped together because they have no significant differences that affect their use and management. These soils have fair potential for development, with stoniness and slope being the main limiting factors. On-site septic systems will need careful design and installation.

Charlton-Hollis very stony fine sandy loams consist of gently sloping and sloping well drained and somewhat excessively drained soils on bedrock ridges and on upland glacial till plains. The soils in this complex occur in such an intricate pattern that it was not practical to map them separately. This complex has fair potential for development where the Charlton series predominates. The shallow depth to bedrock in the Hollis soils and the bedrock outcrops make excavation difficult. On-site septic systems require very careful design and installation, and an area of more than two acres is sometimes needed to find a suitable site for an on-site septic system.

Hinckley gravelly sandy loam is excessively drained and gently to moderately sloping. The permeability of this soil is rapid in the surface layer and subsoil, and very rapid in the substratum. Available water capacity is low. Runoff is rapid. This soil has a severe erosion hazard, and maintaining permanent plant cover helps to control erosion. Steep slopes of excavations are unstable. Lawns, shallow-rooted trees, and shrubs need watering in summer. Quickly establishing plant cover, providing temporary diversions and establishing siltation basins are suitable management practices during construction. Unlimited areas of these soils are extremely acid to medium acid. Thus, considerable amounts of lime are needed to establish and maintain vegetation properly.

The Hollis-Charlton complex consists of moderately steep to very steep, somewhat excessively drained and well-drained soils on bedrock ridges and upland glacial till plains. Again, the soils in this complex are in such an intricate pattern that it was not practical to map them separately. They have poor potential for community development due to steep slopes, shallowness to bedrock, rock outcrops and stoniness. Excavation is difficult because of the shallow soil depth to bedrock in many places. On-site septic systems require very careful and often, special design and installation.

Ninigret fine sandy loam is a nearly level (0 to 5%), moderately well-drained soil on outwash plains and stream terraces. This soil has a seasonal high water table at a depth of about 20 inches from late autumn until mid-spring. Wetness is the major limitation of this soil, thus Ninigret has a fair potential for

community development. On-site septic systems need careful design and installation, and in places they can cause pollution of groundwater.

Gravel pits consist of areas that have been excavated for sand and gravel. These areas generally have no vegetation except for a few sparse, drought-resistant plant species. The permeability of this unit is rapid or very rapid. In places, the water table is at or near the surface most of the year. Areas of this unit require on-site investigation and evaluation for most land-use decisions.

Woodbridge extremely stony fine sandy loam is a moderately well-drained soil commonly located on side slopes of drumlins and glacial till uplands. Stones and boulders cover 3 to 15 percent of the surface. This soil has a seasonal high water table at a depth of about 18 inches from autumn until mid-spring. This soil has fair potential for community development. It is limited mainly by wetness and the slowly-permeable or very slowly-permeable substratum. On-site septic systems need very careful design and installation, and sites require filling in places.

TRANSPORTATION/TRAFFIC CONCERNS

The proposed roadway for the Deep River Industrial Park is planned to intersect with Connecticut Route 80 on its south side near CL&P pole #1059/#1060. This intersection location has a preliminary approval from the Connecticut Department of Transportation, Bureau of Highways division.

Improvements to Connecticut Route 80 and its southern right-of-way will be necessary to improve the line of sight to this intersection. Trees and brush within this southern right-of-way should be cleared from CL&P pole #446 down to the intersection. If possible, the soil in this area should be regraded to allow for better visibility. Signs to slow traffic and warn oncoming vehicles of the intersection should be posted at the top of the hill.

Should development of the industrial park proceed as planned, a comprehensive review of the project as required under the Connecticut General Statutes (Section 14-311) must take place. The Town must reapply to the State Traffic Commission for final approval at that time.

IMPACT OF THE PROPOSED ACTION/ MITIGATION MEASURES

Development of the project site for commercial/industrial use would increase the amount of runoff during periods of precipitation. Runoff increases would result primarily from (1) removal of vegetation; (2) placement of impervious surfaces such as roofs, paved parking areas and roads, etc., over the soil; and (3) soil compaction. Since the commercial and industrial uses would tend to require more impervious surface for parking lots and larger buildings, the runoff increases for that type of development would be expected to be higher than, for example, a low density residential development. In regard to this, it is important that a detailed engineering study (stormwater management plan) of the

pre- and post-development runoff from the entire site be prepared prior to any development.

Regardless of the type of development, it is important that groundwater resources in the area be protected from potential contamination. For this reason, it would be most desirable to limit commercial or industrial establishments which would need to dispose of large quantities of wastewater. Light industrial uses, such as warehouses, distribution centers, or low density business or commercial developments would probably pose slight to moderate risks of groundwater pollution. On-site septic systems serving low-density industrial or commercial development should not be a serious concern, provided that the engineering requirements for such systems can be met on the parcel. Runoff from parking lots carrying sand, salt and automobile residues would probably be the principal source of surface water contamination. With judicious planning, the harmful effects of such runoff can be mitigated.

In dealing with the erosive nature of the soil, excavation should be such that sediment would deposit and remain on site as much as possible, rather than reach a haybale dam or a siltation basin before being trapped. This would reduce the chances of deposition into the wetland. Even so, some deposition and discoloring may occur during heavy rainfalls. During the construction of the access road, the erosion potential is great and erosion control measures should be specifically discussed.

In solving the revegetation concern, care should be taken to select plants which will tolerate adverse growing conditions. The intended use for the completed area must be considered in choosing the proper vegetation. Even the method of revegetation should be considered. For example, hydroseeding is commonly utilized in reseeding. Jute mesh or tobacco netting is sometimes needed for controlling erosion until the seed has taken hold. It may be necessary in this project. Shrubs and trees that can tolerate acid, well-drained soils, heavy use and which have a deep root system should be considered.

Construction of the access road and industrial park could have a severe effect on the swimming pond directly downstream from this development.

As previously mentioned, additional surface runoff can be expected, which in turn will enter the water supply pond for an adjacent sand and gravel operation. The outlet to this pond is a culvert leading into a ditch that flows directly into the swimming pond. Total distance between the ponds is 250 feet.

At present, this ditch is severely eroded, and a large sediment delta has formed in the swimming pond. Additional water will accelerate this erosion. The ditch runs along the toe of a dike that is being undercut, and active erosion is occurring. The structural integrity of this dike is questionable and the continued erosion along its toe sets conditions for possible failure of the dike, thus outletting the muddy water from the settling pond as well as tons of sediment directly into the swimming pond.

It is recommended that this ditch and outlet from the supply pond be moved further north, away from the dike. A properly sized and stabilized ditch, lined with stone, is recommended. The banks and toe of the existing dike need to be repaired, regraded, and stabilized with permanent vegetation.

Another area of possible consequence to the swimming pond is where the proposed access road is to cross the corner of the pond and connect to Route 80. Runoff from Route 80 collects in an adjacent road ditch which outlets into the pond in several locations. In most cases these outlets are eroded, and sediment and road salts are entering the pond. This problem needs to be addressed in the final plan.

One corner of the pond will have to be filled for the construction of the access road, and this may present a severe impact to the pond. The soils in this area are very erosive and unstable. This corner of the pond is quite deep, with steep side slopes. It is prone to sloughing. Filling in this area for heavy loads needs to be carefully studied, for it too will be subject to sloughing and unstable conditions.

With the construction of the road directly adjacent to the pond, there exists a good chance for pollution to occur from storm water runoff. Road salts, petroleum products and sediment pose dangers to the pond. This road will pose additional problems to users of the Town park and swimming pond due to visual and noise impacts, which could not be easily screened out. Exhaust fumes could also be a factor.

All these possible effects to the Town's park and swimming pond need to be carefully studied and eliminated if the Town hopes to retain the quality of its park facility. Water management and sediment and erosion control plans should be included in the final plans for development, and implemented during construction. Connecticut's Erosion and Sediment Control Handbook, published by the Soil Conservation Service, provides standards and specifications for both structural and vegetative practices, and is available at the Middlesex County Soil & Water Conservation District office in Haddam.

Appendix

Soils

0 1320' scale

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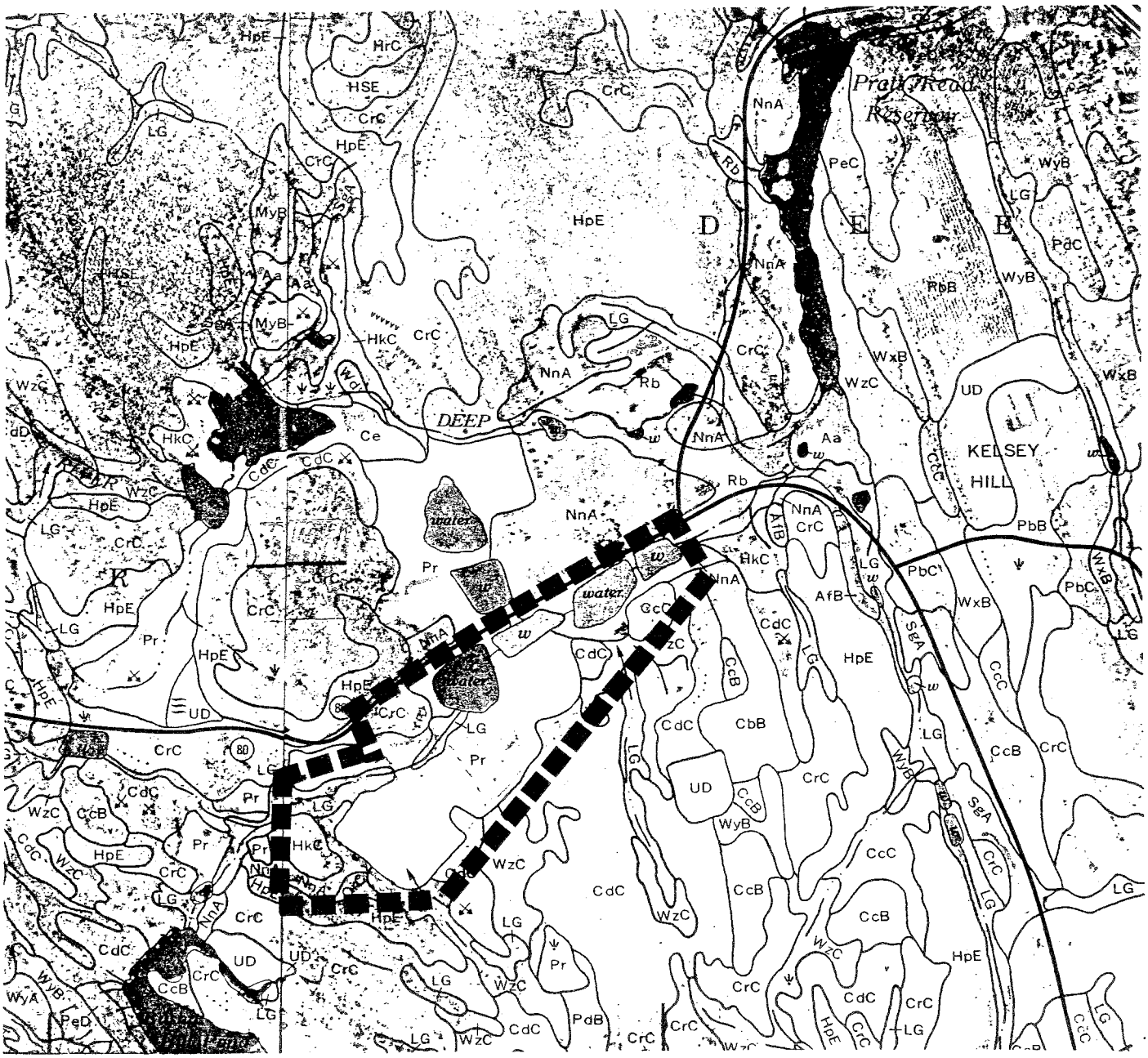

DEEP RIVER INDUSTRIAL PARK

Soil Limitations

Symbol	Name	Local Roads and Streets	Small Commercial Buildings	Lawns & Landscaping	Roadfill
CcC	Canton & Charlton very stony fine sandy loams, 3-8% slopes	Moderate: slope	Severe: slope	Moderate: slope, large stones	Good
CdC	Canton & Charlton extremely stony fine sandy loams, 3-15% slopes	Moderate: large stones	Severe: slope, large stones	Severe: large stones	Fair: large stones
CrC	Charlton-Hollis very stony fine sandy loams, 3-15% slopes	Moderate: slope	Severe: slope, depth to rock with Hollis	Charlton-moderate Hollis-severe	Charlton-good Hollis-poor: thin layer, area reclaim
HkC	Hinckley gravelly sandy loam, 3-15% slopes	Moderate: slope	Severe: slope	Severe: small stones, droughty	Good
HpE	Hollis-Charlton extremely stony, 15-40% slopes	Severe: slope, depth to rock	Severe: slope, depth to rock, large stones	Severe: slope, depth to rock, large stones	Poor: slope, thin layer, area reclaim
LG *	Leicester, Ridgebury & Whitman extremely stony fine sandy loam	Severe: wetness, frost action	Severe: large stones, wetness, frost action	Severe: large stones, wetness	Poor: wetness, frost action
NnA **	Ninigret fine sandy loam, 0-5% slopes	Moderate: frost action, wetness	Moderate: wetness	Slight	Fair: frost action
Pr	Gravel pits				
WzC	Woodbridge extremely stony fine sandy loam, 3-15% slopes	Severe: frost action	Severe: slope, frost action, large stones	Severe: large stones	Poor: frost action

* Inland wetland soil regulated under PA 155
** Prime farmland

SOIL INTERPRETATIONS FOR URBAN USES

The ratings of the soils for elements of community and recreational development uses consist of three degrees of "limitations:" slight or no limitations; moderate limitations; and severe limitations. In the interpretive scheme various physical properties are weighed before judging their relative severity of limitations.

The user is cautioned that the suitability ratings, degree of limitations and other interpretations are based on the typical soil in each mapping unit. At any given point the actual conditions may differ from the information presented here because of the inclusion of other soils which were impractical to map separately at the scale of mapping used. On-site investigations are suggested where the proposed soil use involves heavy loads, deep excavations, or high cost. Limitations, even though severe, do not always preclude the use of land for devel opment. If economics permit greater expenditures for land development and the intended land use is consistent with the objectives of local or regional development, many soils and sites with difficult problems can be used.

Slight Limitations

Areas rated as slight have relatively few limitations in terms of soil suitability for a particular use. The degree of suitability is such that a minimum o time or cost would be needed to overcome relatively minor soil limitations.

Moderate Limitations

In areas rated moderate, it is relatively more difficult and more costly to correct the natural limitations of the soil for certain uses than for soils rated as having slight limitations.

Severe Limitations

Areas designated as having severe limitations would require more extensive and more costly measures than soils rated with moderate limitations in order to overcome natural soil limitations. The soil may have more than one limiting characteristic causing it to be rated severe.

About the Team

The Eastern Connecticut Environmental Review Team (ERT) is a group of professionals in environmental fields drawn together from a variety of federal, state, and regional agencies. Specialists on the Team include geologists, biologists, foresters, climatologists, soil scientists, landscape architects, archeologists, recreation specialists, engineers and planners. The ERT operates with state funding under the supervision of the Eastern Connecticut Resource Conservation and Development (RC&D) Area.

The Team is 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 activitis. To date, the ERT has been involved in reviewing a wide range of projects including subdivisions, sanitary landfills, commercial and industrial developments, sand and gravel operations, 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 officials 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. This request letter should include a summary of the proposed project, a location map of the project site, written permission from the landowner allowing the Team to enter the property for purposes of review, and a statement identifying the specific areas of concern the Team should address. When this request is approved by the local Soil and Water Conservation District and the Eastern Connecticut RC&D Executive Council, the Team will undertake the review on a priority basis.

For additional information regarding the Environmental Review Team, please contact Jeanne Shelburn (774-1253), Environmental Review Team Coordinator, Eastern Connecticut RC&D Area, P.O. Box 198, Brooklyn, Connecticut 06234.