

Environmental Review Team Report

# JORDAN BROOK SEWER EXTENSION

Waterford,  
Connecticut



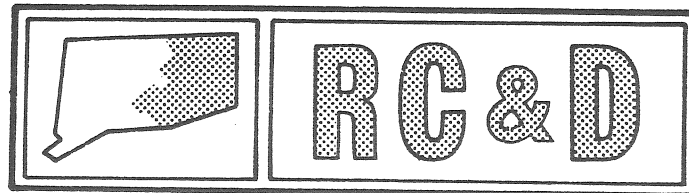
EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT AREA, INC.

Environmental Review Team  
Report

# JORDAN BROOK SEWER EXTENSION

Waterford, Connecticut

June 1985



Eastern Connecticut Resource Conservation & Development Area

Environmental Review Team

PO Box 198

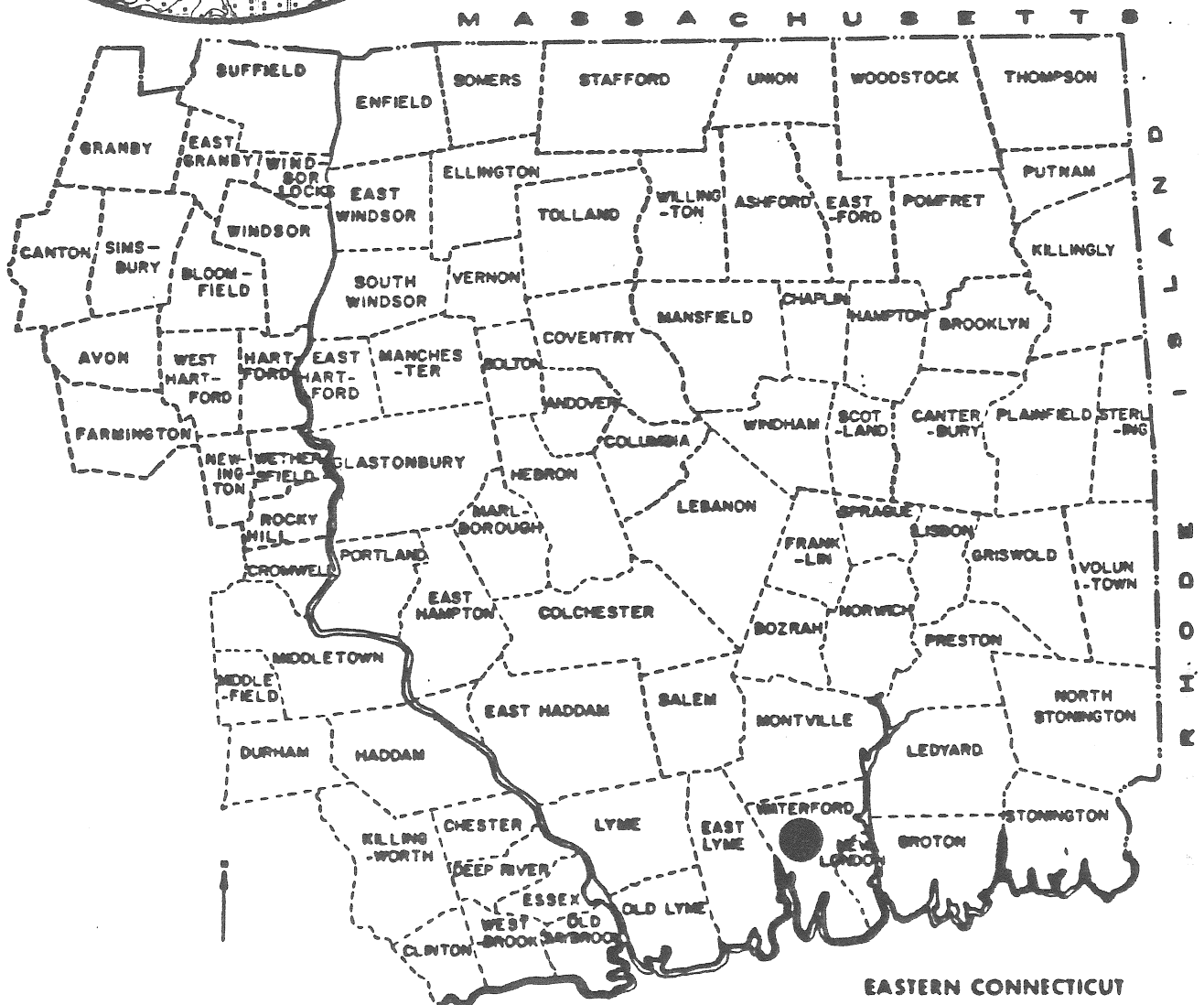
Brooklyn, Connecticut 06234



# Location of Study Site

JORDAN BROOK SEWER EXTENSION

WATERFORD, CONNECTICUT



EASTERN CONNECTICUT  
RESOURCE CONSERVATION AND DEVELOPMENT PROJECT

ENVIRONMENTAL REVIEW TEAM REPORT  
ON  
JORDAN BROOK SEWER EXTENSION  
WATERFORD, CONNECTICUT

This report is an outgrowth of a request from the Waterford Conservation Commission to the New London 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: Barry Cavanna, District Conservationist, Soil Conservation Service (SCS); Bill Warzecha, Geologist, Connecticut Department of Environmental Protection (DEP); Tom Seidel, Regional Planner, Southeastern Connecticut Regional Planning Agency; Judy Wilson, Wildlife Biologist, DEP; and Jeanne Shelburn, ERT Coordinator, Eastern Connecticut RC&D Area.

The Team met and field checked the site on Tuesday, February 5, 1985. 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 Waterford. 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.

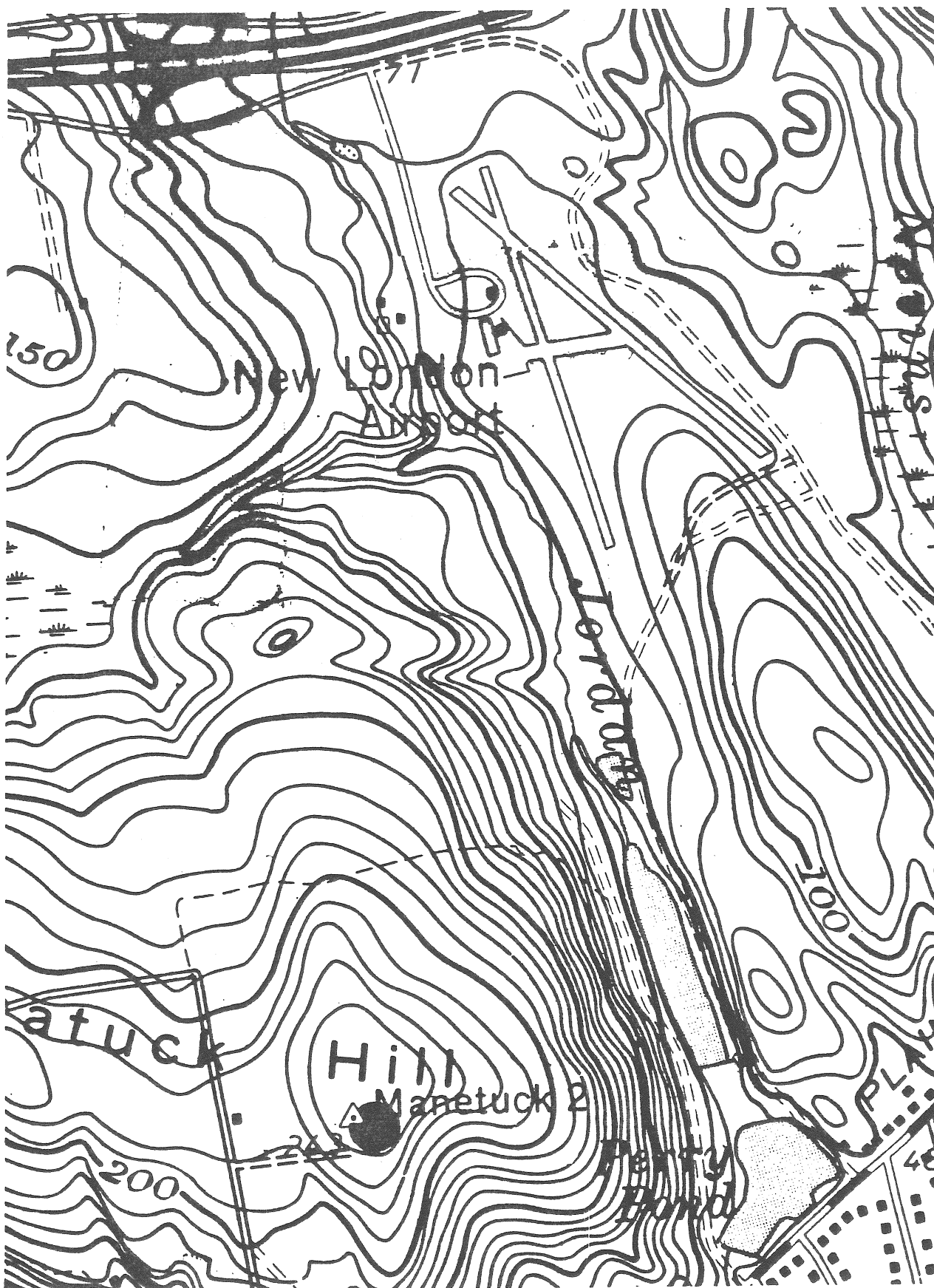
If you require any additional information, please contact Ms. Jeanne Shelburn, Environmental Review Team Coordinator, Eastern Connecticut RC&D Area, Route 205, Box 198, Brooklyn, Connecticut 06234, 774-1253.



# Topography

— Site Boundary

0 660'  
scale



## INTRODUCTION

The Eastern Connecticut Environmental Review Team was asked to prepare an environmental assessment for a proposed sewer main and industrial/commercial development in the Town of Waterford. The proposed 18" sewer main is "gravity feed" and will be located along Jordan Brook, from its intersection with Fog Plain Road to South Frontage Road. This sewer line is expected to serve future industrial/commercial development at the Waterford Airport.

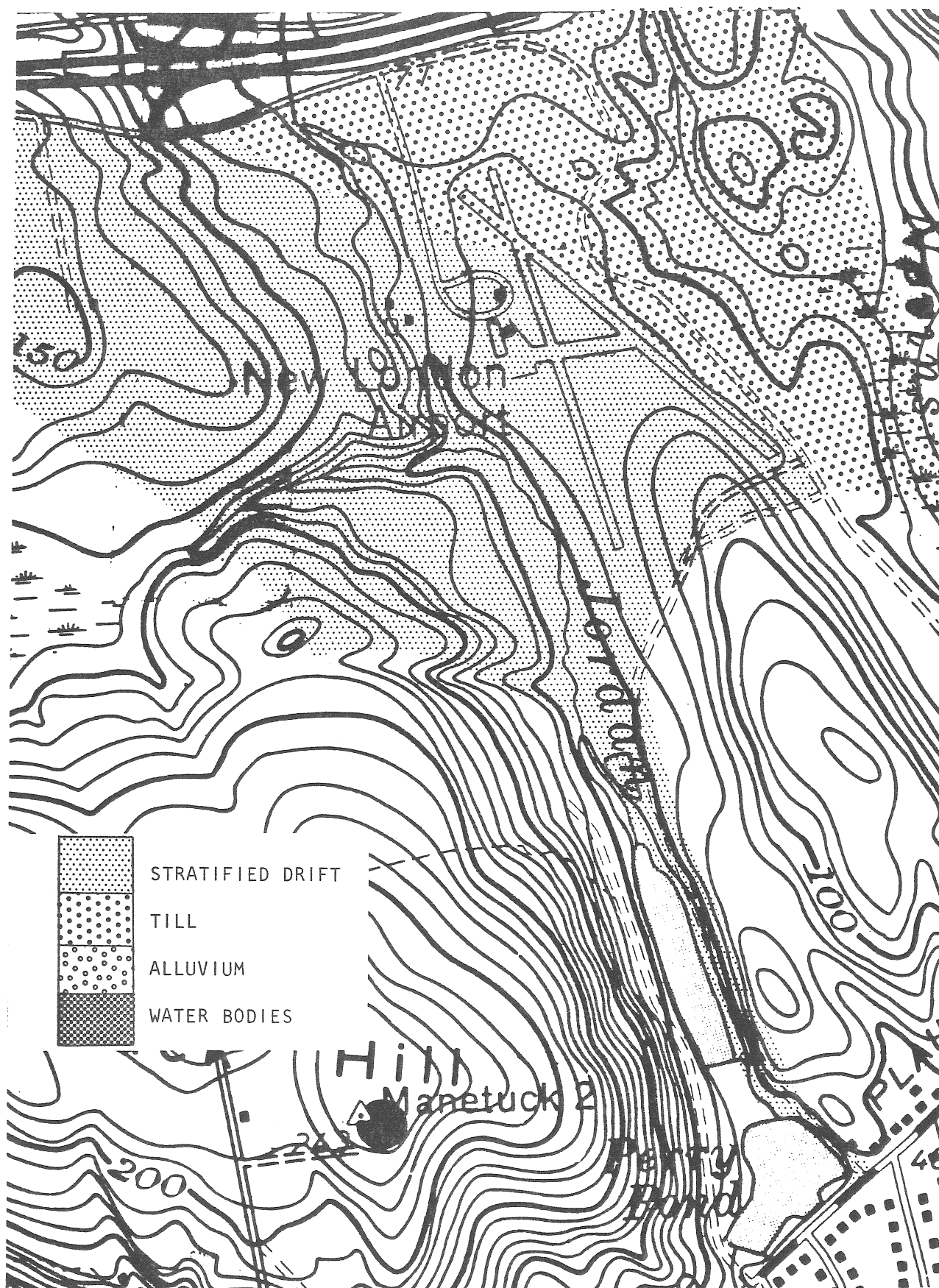
The schematic plans for the proposed industrial park show a site of approximately 188 acres with 33 building lots of 3 to 7 acres each. Thirty acres will remain in open space. Approximately 9,800 feet of linear roadway is proposed for the park. All industries will be served by municipal sewer and water.

The proposed route originally called for the installation of the sewer line through the east central part of Perry Pond. However, according to town officials on the review day, this route has been changed so that the sewer line installation will infringe only on the eastern edge of the pond. As a result, it appears only minor filling will be required in this area in order to install the sewer line. This part of the pond did not contain water on the field review day. However, it seems likely that during periods of precipitation and/or during the wet time of the year (springtime) surface water would probably cover this area.

Based on present plans, the proposed sewer line route calls for the re-routing of Jordan Brook and crossing of wetland areas in order to install the line. An "alternate" route walked by team members on the review day would not require re-locating Jordan Brook and would disrupt little, if any, wetland areas along route. It would appear that this alternate route should be seriously considered as the most environmentally sound route for the sewer line. A detailed discussion of these issues is found in the following sections of this report.

# Bedrock Geology

0 660  
scale



## ENVIRONMENTAL ASSESSMENT

### TOPOGRAPHY

Both the "proposed" and "alternate" sewer line route lies within Jordan Brook Valley. The topography along the route is characterized by relatively flat to gentle slopes controlled by those unconsolidated materials overlying bedrock (see geology section). Land surface rises steeply east and west to the top of bedrock controlled hills.

Based on visual observations during the field review, the first  $\pm 1,500$  feet of the sewer line route (from Fog Plain Road) has been disturbed, i.e., filled, modified, excavated, etc. by man in the past.

### GEOLOGY

The proposed activity is located in a section of Waterford which is included in the Niantic quadrangle. The bedrock and surficial geologic maps of the quadrangle by Richard Goldsmith (Maps GQ-575 and GQ-329, respectively) have been published by the U.S. Geological Survey.

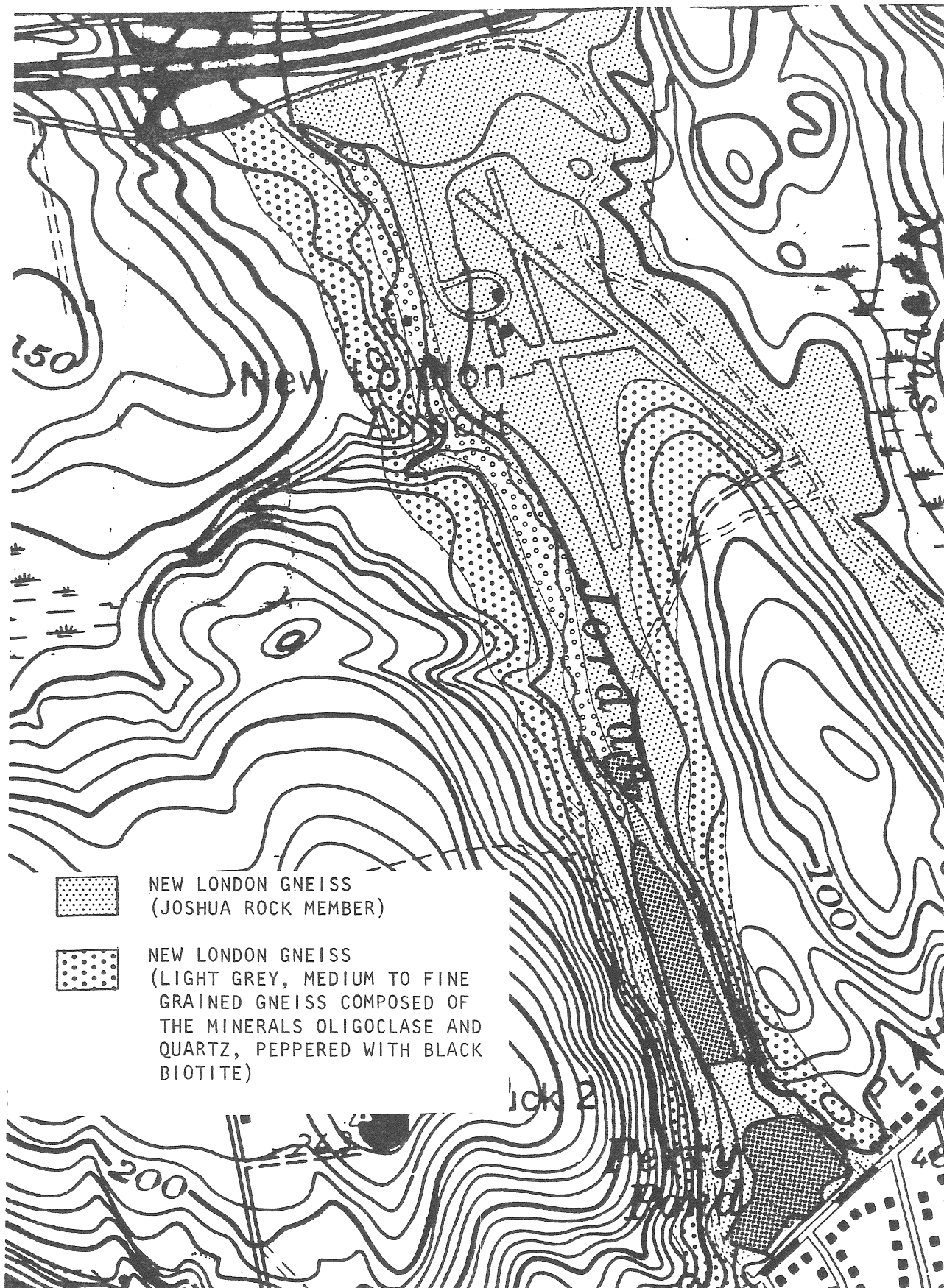
The bedrock underlying the proposed sewer line route consists of a crystalline, metamorphic rock (rocks deformed by heat and pressure within the earth's crust). These rocks are very old and have a long and complicated history. Bedrock is visible at the southern end of the route near Fog Plain Road. Goldsmith classifies these rocks as a subunit of the New London Gneiss referred to as the Joshua Rock Member. It consists of a medium gray, medium-grained gneiss composed of the minerals microperthite, quartz, albite, aegerine-augite, and magnetite. When the rock weathers, small, cherry-red spots, are visible in the rock. These "red spots" are borne out of a common iron mineral called hematite. The term "gneiss" refers to a rock in which elongate minerals alternate in layers with more rounded minerals.

The shallowest depth (perhaps less than 10 feet) to bedrock appears to be along the first 2,000 feet of the route from Fog Plain Road (Source: Connecticut Water Resources Bulletin, No. 15). Depending upon the depth of the sewer line along this part of the route, it may be necessary to blast the underlying bedrock in order to install the line. Additional borings may be needed along the new route, especially along the first 2,000 feet to determine subsurface conditions, i.e., depth to bedrock, depth to groundwater table, etc.

The surficial geologic materials overlying bedrock along the proposed and alternate routes consists largely of "glacial stream deposits." These sediments,

# Surficial Geology

0 660'  
scale





which are comprised predominantly of sands and gravels were deposited by glacial meltwater streams. When the glacier ice began to melt, it sent forth streams of meltwater. These streams were filled with rock debris from the ice, and they redeposited this debris (sand and gravel) in well-sorted to poorly sorted layers. Glacial meltwater deposits or "stratified drift" deposits in the state are most commonly found in stream valleys.

Another type of glacial sediment which is called till may be encountered beneath the stratified drift deposits along the first 2,000 feet. Till is a non-sorted, non-stratified sediment of glacial debris that is composed largely of rock particles with widely ranging shapes and size. Till was deposited directly by glacial ice.

A post-glacial surficial geologic material which will be encountered under the "proposed" route is alluvium. "Alluvium" consists of poorly to well sorted silt, sand and gravel in flood plain of Jordan Brook. These deposits overlie "stratified drift" at the northern end of the route in the area where Jordan Brook is proposed to be relocated. It does not appear that alluvial deposits would be encountered under the alternate route.

A critical concern for the installation of the sewer line is the possibility of "cutback cave-ins" in the stratified drift deposits. The trenches in these sandy and gravelly soils should have the pipes placed and backfilled as soon as possible after excavation. Proper shoring of sides should be accomplished in trenches over 5 feet deep. Running sewers across drainageways is another area of special concern; disturbed areas should receive protection from any running water. Any wetland areas approved for filling or modification should be accompanied by a comprehensive erosion and sediment control plan.

## HYDROLOGY

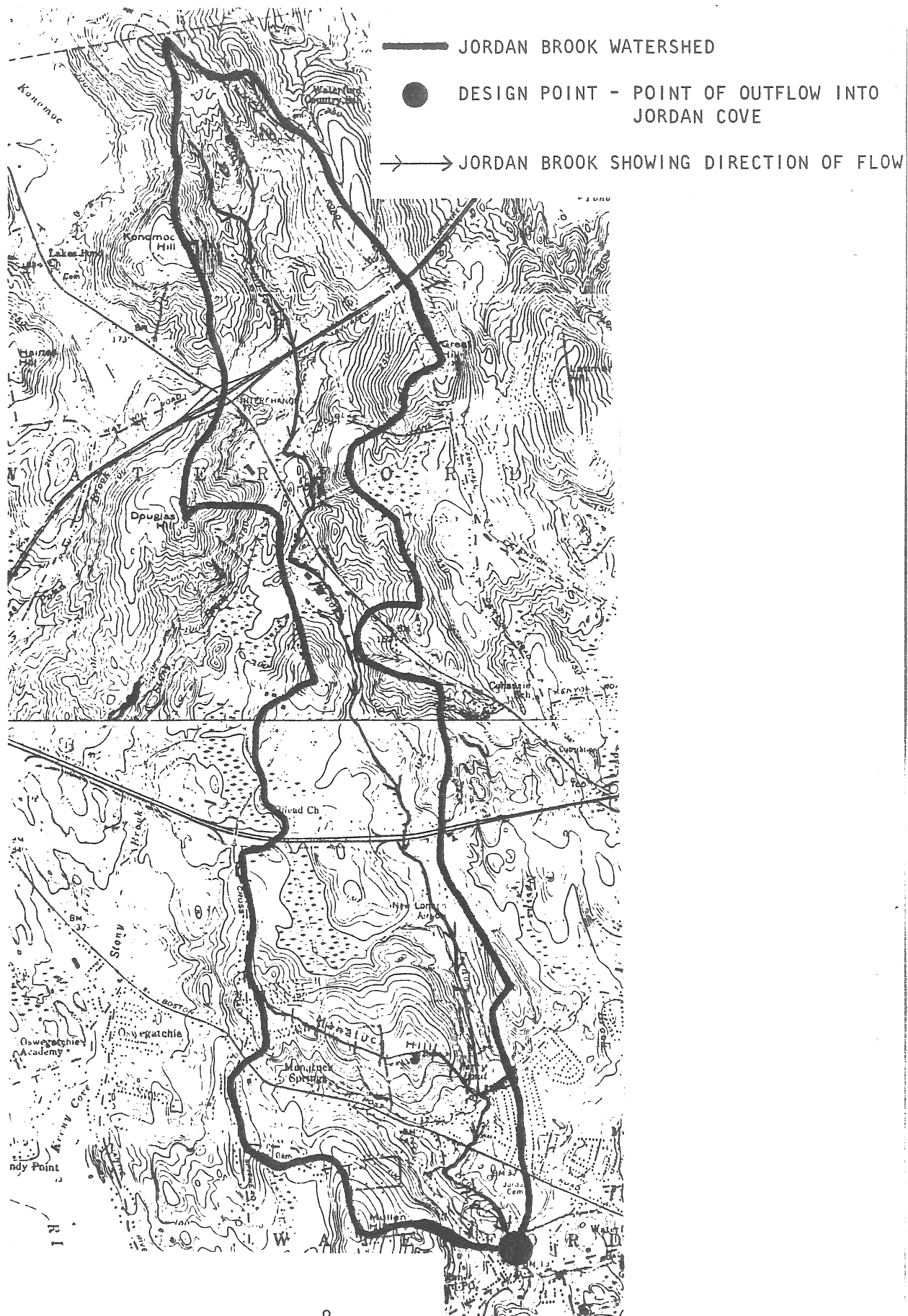
The proposed sewer line extension is located within the Jordan Brook watershed. Jordan Brook arises 1.4 miles north of Route 395 in northern Waterford and meanders south some 4.25 miles to the inlet of Jordan Cove. The watershed, which is narrow-shaped comprises about 2,544 acres or 3.97 square miles at the point where Jordan Brook empties into Jordan Cove. According to town officials, 1,000 foot long section of the Brook north of Perry Pond was mined as a source for commercial sand and gravel.

As mentioned earlier in the report, the "proposed" sewer line route would require that a portion of Jordan Brook be relocated and some of its accompanying wetlands (alluvial soils) filled in. Filling or modifying wetlands can have severe environmental impacts because of their important role in (1) maintaining water quality through biochemical processes; (2) providing sediment control; (3) reducing runoff through flood storage; (4) providing flood conveyance; and (5) providing habitat for wildlife. Because of the important hydrologic and ecologic functions wetlands provide, any activities such as filling, modifications and/or excavations are regulated under Public Act No. 155. Therefore, prior to approving any activity which involves the filling, modification or excavation of wetlands, the town



## Drainage Areas

NOT TO SCALE



should first require that the applicant assess all of the risks involved in permitting a particular wetland area to be filled.

Because wetland soils are water saturated and because they are unstable soils, they will probably be a poor substrate for installing the sewer line. In order to properly install the sewer line through a wetland area, the wetland soils will need to be drained, excavated and refilled with a proper fill material or may require special structural support. This undoubtedly would be very expensive.

Perry Pond, the excavated portion of Jordan Brook, as well as the wetland areas astride the brook, serve a valuable role in diminishing the potential peak flow in Jordan Brook and thereby reducing the chances for flooding downstream. Based on topographic maps and aerial photographs, the Jordan Brook watershed is most intensely developed in the bottom third, moderately developed in the central portions and only lightly developed in the top third. Future developments in the central and upper parts of the watershed can be expected to lead to increased runoff under certain storm events. The commercial and industrial uses proposed at the airport would tend to require more impervious surface area (as for parking lots and bigger buildings). Therefore, the runoff increases for that type of development would be expected to be high. As a result, by destroying the valuable flood storage capacity provided by wetlands along Jordan Brook as well as Perry Pond, the chances of increasing flooding problems downstream would appear to be greater.

Since the "alternate" route will encounter little or no wetland areas, the town should consider investigating this route instead of the "proposed" route. From an environmental standpoint, the "alternate" route would appear to have an advantage over the proposed route. A decision to keep the wetland areas and Perry Pond free from modification and/or filling is a judicious one.

It should be pointed out that each developer in the watershed should do his part in controlling post-development runoff flows from a particular site so that flooding conditions do not arise in downstream areas.

Another water related concern expressed by town officials at the pre-review meeting was the effect of the sewer line installation on Waterford's potential public water supply well. This well is located near the confluence of Nevins and Jordan Brook about 500 feet north of Route 156 and 400 feet west of North Road. The site is about 3,000 feet downstream from the point where Jordan Brook passes under Fog Plain Road. It seems likely that if the sewer line is installed before the well site is developed, it will have little or no effect on water quality or quantity. The availability of a sewer line to the proposed industrial/commercial use at the airport as well as potential residential development east of the sewer extension should greatly reduce the risk of significant groundwater contamination in the watershed.

If the sewer line is extended after a potential well is drilled every effort should be taken to protect the well from pollutants. For example, a comprehensive erosion and sediment control plan should accompany the plan, particularly any activity near Jordan Brook.

Consideration should also be given to evaluating potential industrial/commercial user in the watershed as to the type of industrial wastes and methods for handling and disposing of such wastes. Certain types of industries may pose too great a risk to the potential well site.

## SOILS CONCERNS

As discussed during the field review, the Team would strongly suggest that the proposed sewers be kept out of the floodplain and the brook not be relocated as planned. The extensive fill planned will reduce the size of the floodplain, which could raise water levels upstream. In addition, the construction and relocation would destroy the character of the entire wetland in this area. In addition, removal of the trees may result in higher summer stream temperatures. It might be beneficial to have a fisheries biologist review this issue.

If the relocation is approved, it should be noted that 1:1 side slopes are extremely difficult, to impossible to stabilize with grass. There are no typical cross sections that correspond to page 30-3.

Page 30-3 shows a typical hay bale erosion check incorrectly. The hay bales must be placed a minimum of 4 inches into the ground or the water will run underneath them rendering them useless. In addition, the use of stone as a spillway for the hay bale check is not standard practice, as it is difficult to seal the interface between the stone and the hay bales.

It is also recommended that the project have a detailed Sediment and Erosion Control Plan consisting of the following:

A. A narrative describing:

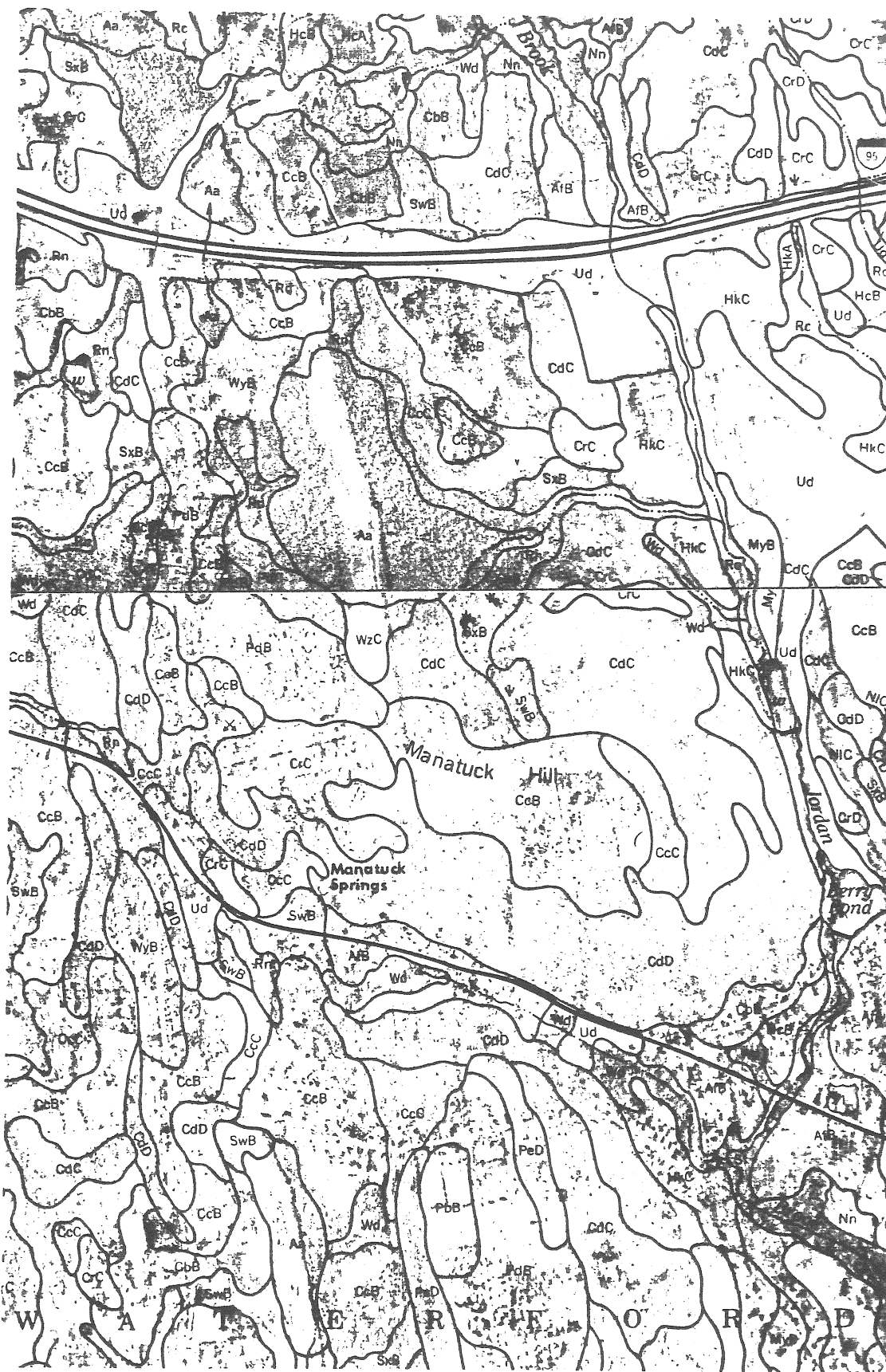
1. the development;
2. the schedule for grading and construction activities including:
  - a. start and completion dates;
  - b. sequence of grading and construction activities;
  - c. sequence for installation and/or application of soil erosion and sediment control measures;
  - d. sequence for final stabilization of the project site;
3. the design criteria for proposed soil erosion and sediment control measures and storm water management facilities.
4. the construction details for proposed soil erosion and sediment control measures and storm water management facilities.
5. the installation and/or application procedures for proposed soil erosion and sediment control measures and storm water management facilities.

Soils

0 1320'

scale

N



6. the operations maintenance program for proposed soil erosion and sediment control measures and storm water management facilities.
- B. A site plan map at a sufficient scale to show:
1. the location of the proposed development and adjacent properties;
  2. the existing and proposed topography including soil types, wetlands, watercourses and water bodies;
  3. the existing structures on the project site, if any;
  4. the proposed area alterations including cleared, excavated, filled or graded areas and proposed structures, utilities, roads and, if applicable, new property lines;
  5. the location of the design details for all proposed soil erosion and sediment control measures and storm water management facilities;
  6. the sequence for grading and construction activities;
  7. the sequence for installation and/or application of soil erosion and sediment control measures;
  8. the sequence for final stabilization of the development site.

#### WILDLIFE CONCERNS

Brooks and their associated wetlands are important areas for many species of wildlife because these areas, along with wooded and old field areas, provide the habitat requirements needed for survival.

Not only are brooks and their associated wetlands important to wildlife, but also to man. Brooks act as a collection area for water and wetlands act as absorption areas to help prevent flooding. There is usually severe inherent limitations in developing wetlands due to poorly drained unstable soil types.

Developing near a brook often requires that the brook be channelized with a cement culvert or cemented bottom. This creates an artificial situation which can result in a decrease in diversity and growth of vegetation and perhaps the elimination of some species of vegetation. Since wildlife's survival ultimately depends on the type and stage of succession of plants in an area, vegetation is very important in determining which species will be present or not present.

Development of the area will decrease the amount of habitat simply because the land will be occupied by physical buildings, roads and parking lots. The quality of the habitat will be decreased because an undeveloped area of land will be broken up with buildings and increased automobile traffic and human activity.

Some species of wildlife which require larger undeveloped areas will probably be forced out or will reduce their use of the area. They may be able to move into adjacent undeveloped areas if there is suitable habitat available and the competition with other species already occupying the area is not too great. Other species which are more adaptable to man's presence will probably remain. Some new species may even be attracted to the area. Species which sometimes are considered a "nuisance" to man could increase in the area due to the creation of conditions favorable to them. Such conditions include an increase in trash that, which if not properly disposed of, might attract raccoons and starlings, etc.

### Wildlife Concerns

If carried out, the following wildlife recommendations can help lessen the impact to some species using the area.

#### Design and Development.

If possible, certain recommendations should be considered in order to lessen the impact on wildlife to some degree, however small.

Industrial parks can be designed in two basic ways. Plants can be built in large separate lots or the plants can be built close together leaving more open space. Each individual development proposal should be evaluated before deciding which design is best. In general, the more area left undisturbed, the better for wildlife because they have more habitat available to them.

A buffer area of uncut vegetation should be left along the entire length of the watercourse. This will provide food, cover and nesting sites for many species.

#### Clearing.

When the initial clearing for building is done, try to leave as many trees and shrubs as possible, especially those useful to wildlife. Some useful species include:

white oak ( <i>Quercus alba</i> )	quaking aspen ( <i>Populus tremuloides</i> )
red oak ( <i>Quercus rubra</i> )	red-osier dogwood ( <i>Cornus stolonifera</i> )
black cherry ( <i>Prunus serotina</i> )	apple ( <i>Malus</i> spp.)

#### Landscaping.

On any acreage with many buildings, landscaping can do a great deal to provide habitat and make an area attractive to wildlife. First, leave as many trees as possible around the buildings. This will not only benefit wildlife by providing food, cover, and nesting sites (especially for songbirds), but will also be more aesthetically pleasing for the employees and area residents.

Leave as many snag trees (standing dead trees) and den trees (trees with holes) as possible. These trees are used by insect eating birds and cavity nesting birds and mammals.



Plant trees and shrubs which are useful to wildlife and landscaping such as:

Japanese barberry ( <i>Berberis vulgaris</i> )	American mountain ash ( <i>Sorbus americana</i> )
flowering dogwood ( <i>Cornus florida</i> )	autumn-olive ( <i>Elaeagnus umbellata</i> )
honeysuckle ( <i>Lonicera</i> spp.)	winterberry ( <i>Ilex verticillata</i> )
juniper ( <i>Juniperus</i> spp.)	American cranberrybush ( <i>Viburnum trilobum</i> )
bayberry ( <i>Myrica pensylvanica</i> )	red maple ( <i>Acer rubrum</i> )
maple-leaved birburnum ( <i>Viburnum acerifolium</i> )	
alternate-leaf dogwood ( <i>Cornus alternifolia</i> )	
American holly ( <i>Ilex opaca</i> )	red-osier dogwood ( <i>Cornus stolonifera</i> )
	chokecherry ( <i>Prunus virginiana</i> )

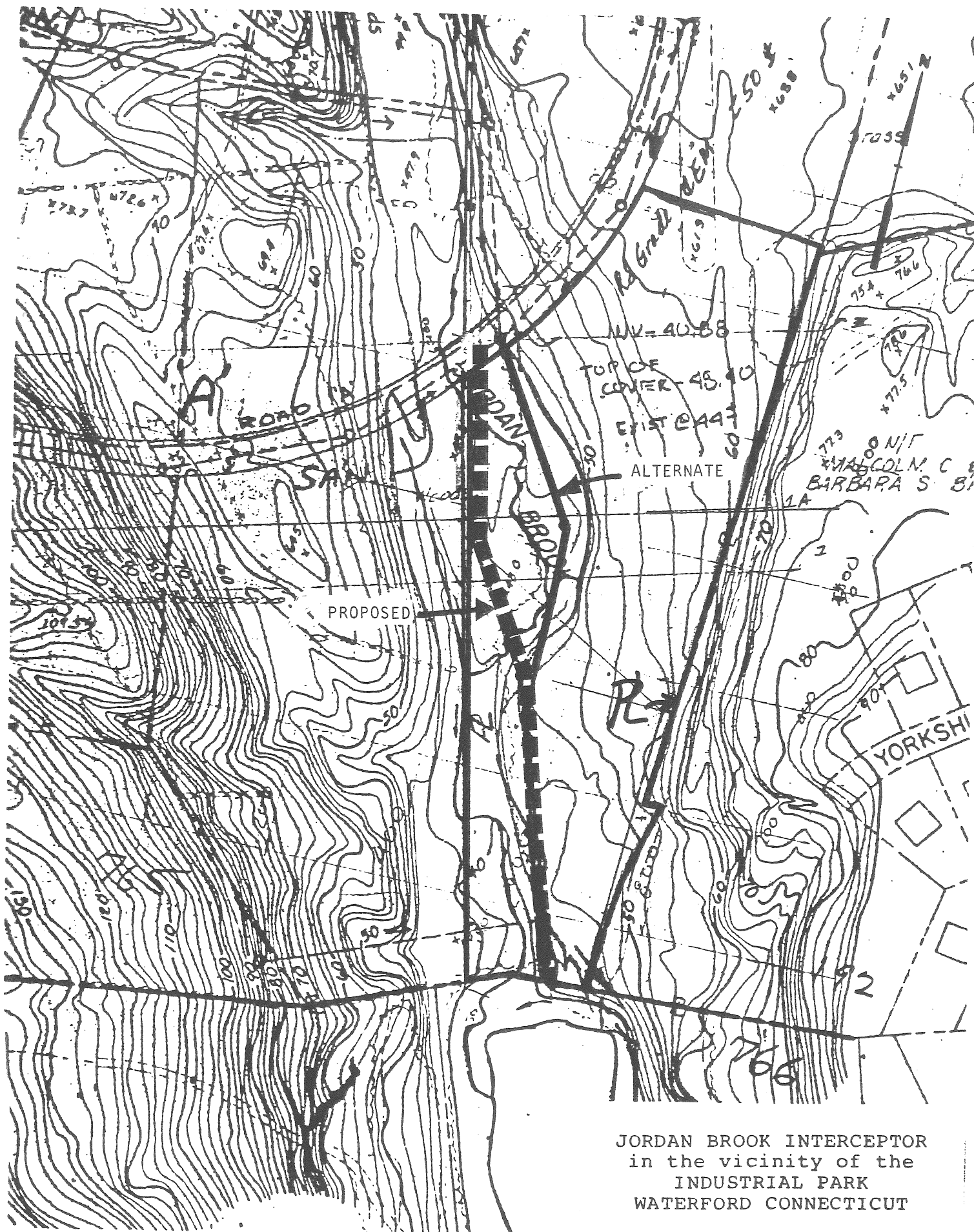
A variety of trees and shrubs should be used. Most species of wildlife need to have cover when they move from place to place. By leaving corridors of vegetation, this will allow wildlife to utilize the area and also have access to adjacent areas. Large expanses of lawn with no trees or shrubs present should be discouraged. These factors will allow wildlife to better utilize the area and thus make it more attractive to wildlife.

#### PLANNING CONCERNS

Public sewers are a necessity for the development of a modern industrial park. This is especially true in this case because the downstream portion of Jordan Brook has potential as a groundwater supply area. The recharge areas to this aquifer can be better protected with the use of public sewers rather than the use of on-site sewerage systems.

Two areas of concern are presented concerning the sewer interceptor location. The first of these is the proposed crossing of the former Perry Pond adjacent to Fog Plain Road. In addition to being a wetland, this former pond also provides storage capacity for stormwater runoff in the watershed. The landowner in this area has indicated he would be interested in granting the town a sewer easement east of the former pond if the sewer were to be located within the right-of-way of his proposed subdivision access road. This would be a better location than through Perry Pond. Any road constructed on the east side of Jordan Brook could be tied into Yorkshire Street which currently ends south of the airport.

The second concern is the proposed relocation of Jordan Brook and the location of the sewer interceptor in the southern portion of the industrial park between lots 7 and 31. The current proposal shows the interceptor closely following the property line between lots 7 and 31. At this particular point, the side yard and standard flood hazard area requirements will prohibit development of industrial buildings. Therefore, moving the proposed interceptor to the east of Jordan Brook will not affect the buildable portion of Lot 7 since this is a large lot (9+ acres) and will not require brook relocation. The economic value of Lot 7 should not be decreased with this new location east of Jordan Brook. Lot 31 to the west will have sewer service via the main in the Industrial Park road so its value as a lot should not be decreased with this change.





# 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 activities. 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.