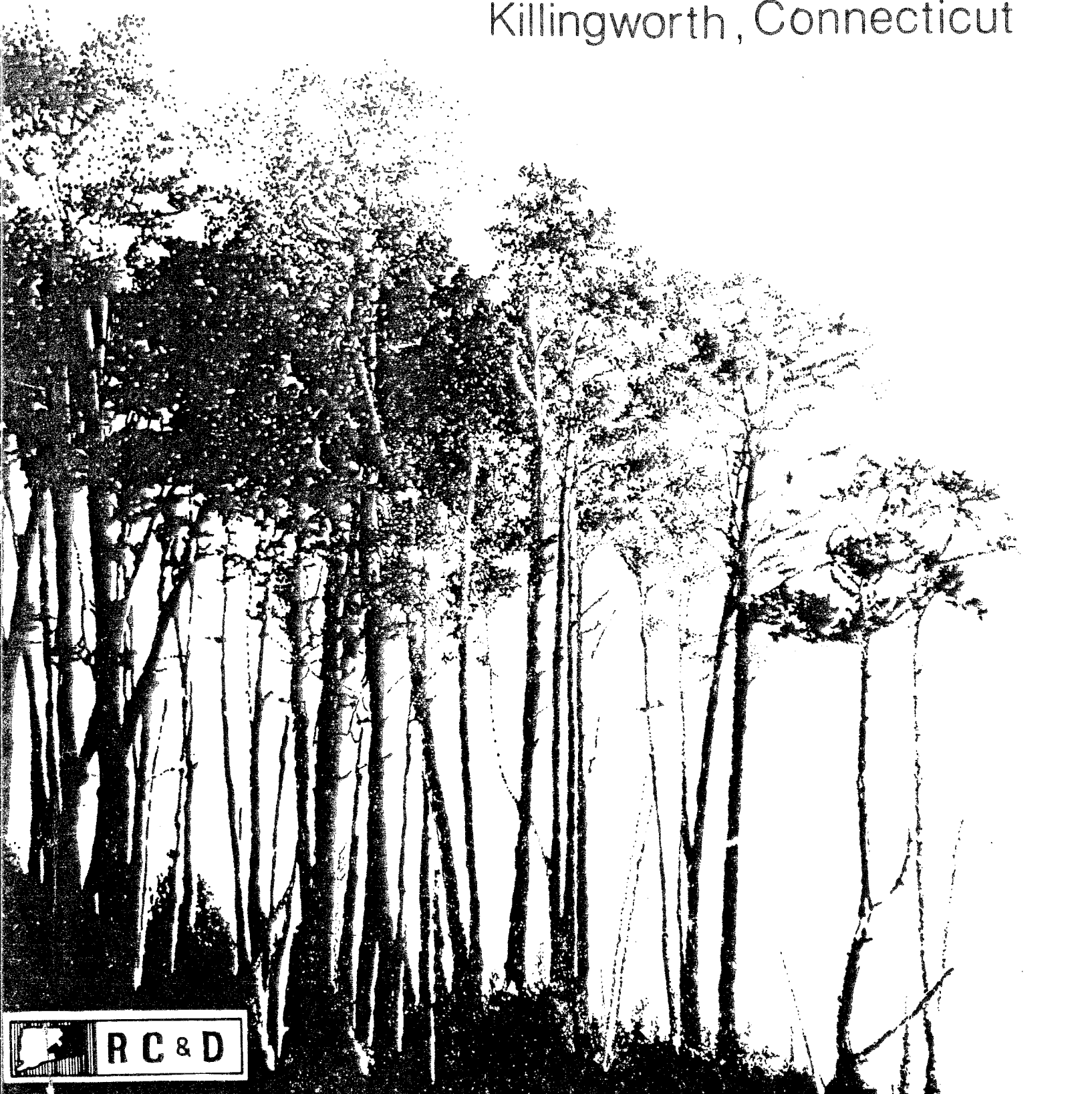


Environmental Review Team Report  
Hammonasset River Diversion  
Killingworth, Connecticut



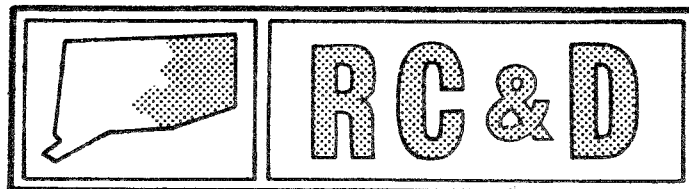
EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT AREA, INC.

Environmental Review Team  
Report

Hammonasset River  
Diversion

Killingworth, Connecticut

April 1985

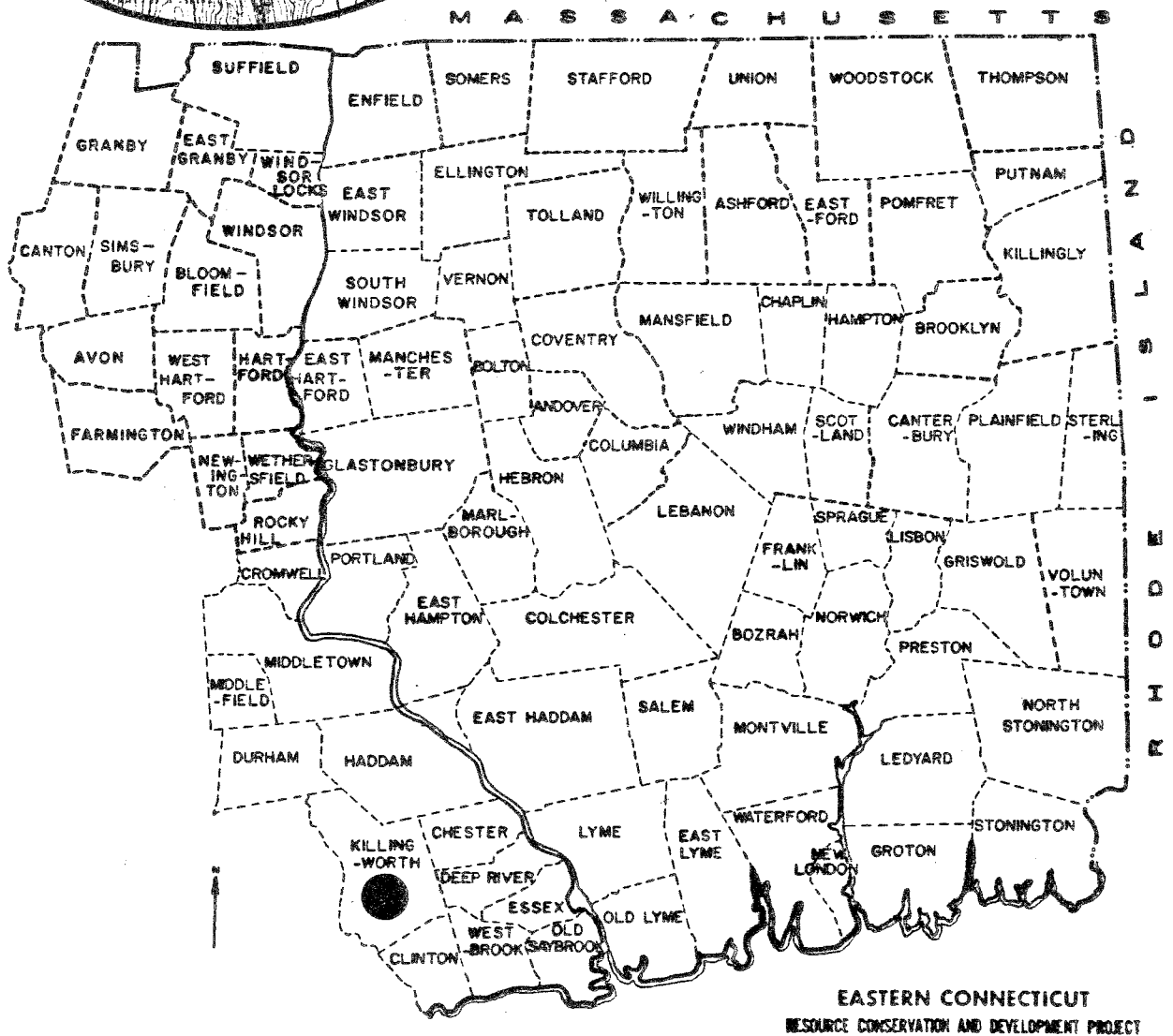
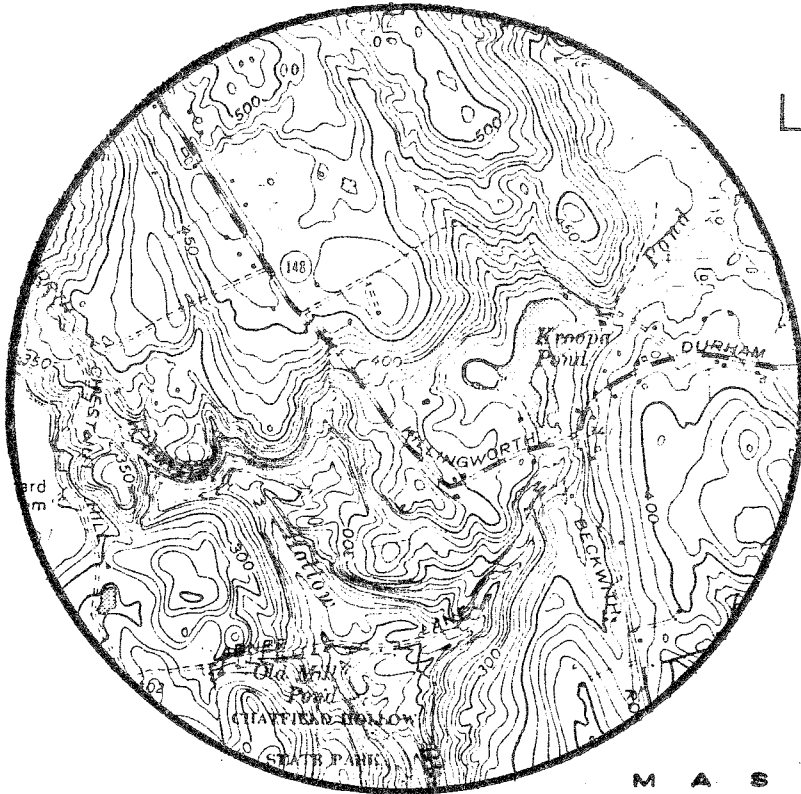


Eastern Connecticut Resource Conservation & Development Area

Environmental Review Team  
PO Box 198  
Brooklyn, Connecticut 06234

# Location of Study Site

HAMMONASSET RIVER DIVERSION  
KILLINGWORTH, CONNECTICUT



ENVIRONMENTAL REVIEW TEAM REPORT  
ON  
HAMMONASSET RIVER DIVERSION  
KILLINGWORTH, CONNECTICUT

This report is an outgrowth of a request from the Killingworth Inland Wetlands Commission 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 ERT that field checked the site consisted of the following personnel: Pat Scanlon, District Conservationist, Soil Conservation Service (SCS); Bill Warzecha, Geologist, Connecticut Department of Environmental Protection (DEP); Rob Rocks, Forester, DEP; Richard Joly, Regional Planner, Connecticut River Estuary Regional Planning Agency; Karl Lutz, Wildlife Biologist, DEP; and Jeanne Shelburn, ERT Coordinator, Eastern Connecticut RC&D Area.

The Team met and field checked the site on Tuesday, June 21, 1983. 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 Killingworth. 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.

## INTRODUCTION

The Eastern Connecticut Environmental Review Team was asked to prepare an environmental assessment for a proposed water gauging station installation and subsequent diversion of the East Branch of the Hammonasset River into Lake Hammonasset. Lake Hammonasset is a water supply reservoir for the South Central Connecticut Regional Water Authority (New Haven Water Company), the group proposing this diversion.

The Water Authority would like to locate the gauging station somewhere near the outlet of Kroupa Pond. Preliminary information indicates that the diversion will take place in the area of Abner Lane Road, piping diverted waters into Water Authority lands and into the Hammonasset Reservoir. Under the Water Diversion Policy Act (PA 82-402), it would appear that a diversion permit would be necessary in order to proceed with this project, although a diversion permit would probably not be necessary for establishment of the gauging station.

The Act defines diversions broadly: any activity which causes, allows or results in the withdrawal from or the alteration, modification, diminution of the volume of water that would occur in the ground or surface water at a given point at any moment constitutes a diversion. Examples of common diversions include withdrawal by gravity or pumping in excess of 50,000 gallons of water in any 24 hour period from any surface or ground waters and construction of dams, storm drainage or flood control systems or stream relocation and bypass channels which collect water from a drainage area 100 acres or more in size. Diversions for public water supplies, hydropower, heat pumps, processing and cooling water, agriculture, drainage or flood control, recreation, or to prepare a site for development, may be subject to the permitting requirements of the Act. A copy of the application required for obtaining a diversion permit and highlights from the Water Diversion Policy Act (PA 82-402) is found in the appendix to this report.

It has been particularly difficult for the Team to determine the effect of the proposed diversion on the water body in question, downstream water bodies and recharge areas, as the actual gallonage for this diversion has not been determined to date. There is also a lack of "low flow" data from the East Branch of the Hammonasset River. The Team has provided general information in the following sections of this report which we hope will be of use in making preliminary decisions regarding this proposal.

## ENVIRONMENTAL ASSESSMENT

### TOPOGRAPHY/GEOLOGY

The route of the proposed diversion of the East Branch, Hammonasset River by the South Central Connecticut Water Authority extends from the outlet of Kroupa Pond to Lake Hammonasset Reservoir. It should be noted that the East Branch, Hammonasset River comprises both Pond Meadow Brook and Chatfield Hollow Brook. According to a water company official and a draft environmental impact statement, plans are to divert the water through a thirty-six inch pipe which has a capacity of  $\pm 27$  million gallons per day (mgd).<sup>1</sup> The water would be piped westward, along the northside of Abner Lane for a distance of  $\pm 6,000$  feet to a point northwest of the intersection of North Chestnut Hill Road and Abner Lane. The water will then discharge into an open canal which will carry the water into the Reservoir.

The topography along the proposed diversion route consists of a gently rolling terrain. From the outlet of Kroupa Pond, the land slopes moderately (10-15%) westward to Chatfield Hollow Brook. Land surface in this area is generally flat. It then rises in elevation from Chatfield Hollow Brook to a high point which is  $\pm 1,000$  feet from the intersection of North Chestnut Hill Road and Abner Lane. From this high point to the area of the proposed outlet, the land surface is relatively flat to gently sloped.

The bedrock unit underlying or cropping out in the area of the proposed pipeline route is a metamorphic (rocks altered by great heat and pressure) rock known as gneiss. They are rocks characterized by banding, thin bands of dark platy, flaky or elongate minerals that alternate with layers of lighter, more granular minerals.

According to the published bedrock geologic map of the Haddam quadrangle, QR-37 in which the potential water diversion route is located, the gneiss is gray and composed largely of the minerals quartz and feldspar with amphibolite layers. "Amphibolites" are rocks which are dark colored and composed predominantly of the minerals, hornblende, amphibole and plagioclase feldspar. The map, which was prepared by Laurence Lungren, Jr., is on file with the Natural Resource Center of the Department of the Environmental Protection.

Some bedrock outcrops were observed along Abner Lane approximately 1,000 feet east of the intersection of North Chestnut Hill Road and Abner Lane. Depth to bedrock in this area probably ranges from zero where outcrops occur to probably

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<sup>1</sup>New Haven Water Co. Proposed Diversion East Branch, Hammonasset River, Killingworth, Connecticut. Cahn Engineers, Inc. and Applied Science (New Haven, 1979), page 5.

less than ten feet in between outcrops. The exact location of the pipeline was not made available to the Team at the time of the review. Nevertheless, based on bedrock and surficial geologic maps and visual inspection of the general area, there appears to be a chance that bedrock may be encountered along the way. If bedrock is encountered, it may necessitate blasting in order to install the pipeline.

The surficial geology of the Haddam topographic quadrangle has been mapped and described in the Surficial Geologic Map of the Haddam Quadrangle, (Map QR-36) by R. F. Flint and J. L. Rolston.

Till is the predominating surficial material overlying bedrock along the proposed route. The till deposits consist of round to angular rock fragments of widely varying size which were deposited directly from the glacier ice. Because of its stony, compact texture, groundwater movement through till is usually very slow and excavation with hand tools is difficult. Thickness of the till varies from zero in bedrock outcrop areas to probably not more than seven feet in areas between outcrops. Scattered surface boulders which were observed at various points along the northside of Abner Lane may pose a problem during the excavation of the pipeline trench.

Other surficial deposits in the area of the proposed route include ice contact stratified drift in the western section and alluvial deposits throughout the middle section. "Ice contact stratified drift" consists of sand, gravel, silt and clay which were formed by glacial meltwater streams flowing either under, against or on top of the melting glacier ice. The thickness of these deposits are probably not more than 10 feet. "Alluvium" consist of recent stream sediments deposited along the two principal streams, Chatfield Hollow Brook and Pond Meadow Brook which make up the East Branch, Hammonasset River. These sediments consist of sand, silt and gravel occurring as a thin cover on some valley floors throughout the Haddam quadrangle.

Due to the topography, complexity of soils and close proximity to several water-courses within the area of the proposed pipeline route, care must be taken to closely monitor the excavation of the trench for the pipeline so as to minimize the amount of erosion and sedimentation that may occur along the route. Although no plans of the actual proposal were made available to team members, it is recommended that an erosion and sediment control plan be prepared and implemented should the diversion be permitted. Assistance in the preparation and review of erosion and sediment control plans may be available from the Middlesex County Soil and Water Conservation District. There are also erosion and sediment control practices described in the "Erosion and Sediment Control Handbook-Connecticut" (U.S.D.A. Soil Conservation Service, 1976). Some basic principles which should be followed include: (1) efforts to keep soil and vegetation disturbance as far back from streams, wetland, etc., as possible; (2) keep soil disturbance during installation to a minimum; (3) regrade and vegetate exposed areas as soon as possible; (4) use erosion and sediment controls such as haybale-check dams at strategic points and in close proximity to easily eroded or disturbed areas, particularly to protect inland-wetlands if encountered along the route.

## HYDROLOGY

The proposed diversion structure lies within the watershed of the Pond Meadow Brook section of the East Branch, Hammonasset River from its upper reaches, which extends from the Town of Haddam to the point of the proposed structure, the watershed covers an area of approximately 6.0 square miles or  $\pm 3,840$  acres. This section of the river flows in a southerly direction through the watershed into Kroupa Pond. At the outlet of Kroupa Pond, the river takes a southeasterly course emptying into the Chatfield Hollow Brook section of the East Branch, Hammonasset River. The Chatfield Hollow Brook section of the river flows south through three ponds, all of which are presently used for recreational bathing, until it finally discharges into the main stem of the Hammonasset River. The size of this watershed which includes the Pond Meadow Brook Watershed mentioned above is  $\pm 11.4$  square miles or 7,296 acres.

By definition, the watershed of the East Branch, Hammonasset River comprises all land from which water may drain into the river.

As shown on the accompanying topographic base map, the watershed boundary tends to follow the crests of local hills and ridges.

At the present time, there is no gauging station at the outlet of Kroupa Pond from which streamflow data can be obtained. It appears necessary to install such a device in order to properly address certain water related concerns expressed by the Town, State and Connecticut Water Company officials during the review. These concerns included what effects the proposed diversion would have on (1) the public water supply wells downstream, particularly those owned by the Connecticut Water Company located on the Hammonasset River; (2) downstream, private residential water supply wells which are in close proximity to the river; (3) the recreational bathing areas at Schreeder Pond at Chatfield Hollow State Park, Foster Pond and Deer Lake. A gauging station should be properly located on a stable area in the channel of a well defined stream which would easily be accessible for construction equipment needed to build the station. Once the gauging station is installed, it should enable water company officials to extract important stream flow data which will be necessary to properly address the concerns mentioned above. During the review a Connecticut Water Company official expressed a concern as to what effects the diversion would have on their public water supply wells which are located on the Hammonasset River  $\pm 13,000$  feet downstream from the confluence of the East Branch, Hammonasset River and the main stem of the Hammonasset River. In addition, there would also be a need to address the impact the proposed diversion may have on private water supply wells serving residential homes, particularly those which are located near the rivers. Since the river may provide recharge to wells downstream, it seems likely the diversion could potentially affect well yields. The diversion may result in a reduction of groundwater recharge to the aquifer being tapped by the wells. Therefore, it is recommended that the South Central Connecticut Water Authority conduct a thorough study with regard to this concern, assuring that water supply wells (public and private) downstream will not be adversely affected.

Also, since the Town of Killingworth currently has no public water service, the Town should investigate the potential need for such service in the future. The Town should develop a local water supply plan which would help to determine the availability of potential public water supplies should the need arise.



During the review, the Town, as well as the State Departments of Environmental Protection and Health, expressed concern regarding the diversion and its effect on existing swimming facilities downstream from Kroupa Pond. These swimming areas include Schreeder Pond at Chatfield Hollow State Park operated by the Parks and Recreation Unit of the Department of Environmental Protection, Foster Pond which is presently owned by the State, and Deer Lake, a summer camp operated by the Central Connecticut Council, Inc. Boy Scouts of America. According to the draft environmental impact statement prepared by Cahn Engineers, Inc. and Applied Science, Inc., no water would be diverted during the months of July and August; however, swimming areas at Chatfield Hollow State Park normally open from May 31 to Labor Day, reducing the flow of water from the river, which feeds all three ponds during certain months. This may lead to difficulties at a later date, resulting in limiting the use of the ponds as swimming areas. Of particular concern would be Schreeder Pond, because of its frequent use by bathers during the summer months. A reduction of flow into the ponds, in conjunction with increased bathing, could lead to significant water quality problems such as high coliform counts during the summer. This would result mainly from decreased water circulation and dilution. There is the possibility that high coliform counts may necessitate treatment such as a circulatory and chlorination system for the recreation ponds. If high bacteria problems persist despite treatment efforts, the pond or ponds could possibly be closed. Therefore, it is recommended that prior to the diversion, the water company evaluate the water budget of the drainage areas and determine the effects, if any, of the diversion on the water quality year round of all recreational bathing areas downstream.

Other water related concerns associated with possible reduced flows in the East Branch, Hammonasset River below the diversion structure, which should be addressed includes the effects on the water quality, i.e., dissolved oxygen, rise in water temperature, siltation, etc. of the river. Also, it will be important to evaluate the effects of the diversion on the main stem of the Hammonasset River as well as Lake Hammonasset.

Prior to permitting the diversion, all applicable sections of Sec. 221-365-22a-378, inclusive of the Connecticut General Statutes which pertains to water diversions must be complied with.

As mentioned earlier, Pond Meadow Brook is tributary to Chatfield Hollow Brook which is a stocked stream. Therefore, Kroupa Pond would be subject to the minimum stream flow regulation adopted pursuant to Sec. 26-141a-1 to 26-141a-6 inclusive of the regulations of Connecticut State Agencies. This would require the release of a minimum flow so as to insure stream conditions suitable for stocking fish, protecting aquatic life, promoting public recreation and protecting public health. A minimum flow release is also required in the diversion permitting process as a condition of a permit.

## VEGETATION

The proposed diversion of the East Branch of the Hammonasset River into Lake Hammonasset by the New Haven Water Company will have some impact on the vegetation directly adjacent to Chatfield Hollow Brook. This impact should, however, be minimal providing minimum flow levels are maintained during the driest months.

This diversion will have little or no significant impact on the vegetation in the surrounding area.

During the mid-summer months, the availability of adequate moisture directly adjacent to Chatfield Hollow Brook will be critical for the survival of many of the water loving herbaceous plants which are present. If adequate moisture is not available, many of the herbaceous plants which are now present, will fall from dominance and plants more tolerant of a drier environment will become established and flourish.

At present, the East Branch of the Hammonasset River flows through several vegetation types which gradually grade into one another. These include the hardwood swamp type, the lowland mixed hardwood type and the upland mixed hardwood type.

Directly south of Kroupa Pond, the East Branch of the Hammonasset River flows through a hardwood swamp area. This area is dominated by a dense growth of red maple with occasional black gum, white ash and yellow birch. The understory vegetation is made up of spice bush, sweet pepperbush, swamp azalea, highbush blueberry along with button bush, silky willow and leather leaf in the more open areas. Skunk cabbage, tussock sedge, sphagnum moss, large blue flag, cinnamon fern and sensitive fern form the ground cover vegetation in this area.

The vegetation adjacent to the river and along the lower valley (lowland mixed hardwoods type) is characterized by a mix of red maple, sugar maple, American beech, red oak, tulip tree, black birch and yellow birch. Understory vegetation includes spice bush, witch-hazel, mountain laurel, flowering dogwood and blue beech. Ground cover consists of skunk cabbage, false hellebore, wild geranium, violets, wild sarsparilla, wood aster, poison ivy, evergreen wood fern and club moss.

The upland mixed hardwood vegetation type is located on the side hills above the river valley. The dominant tree species which are present include, white oak, chestnut oak, black oak, red oak, shagbark hickory, mockernut hickory, red maple, black birch and American beech. Mountain laurel, witch-hazel, maple-leaved viburnum, American chestnut sprouts and hardwood tree seedlings are present in the understory. Ground cover is made up of club moss, lowbush blueberry, huckleberry, Canada mayflower, Pennsylvania sedge and Christmas fern.

## WILDLIFE

Without knowing the specific amount of water volume being removed from the East Branch of the Hammonasset River, it is difficult to make comments on how this diversion proposal will affect the wildlife resource.

In general, the more water that is removed from the river, the more it will drain the river associated wetlands along the water course. If these wetlands are allowed to dry out, many of the less mobile animals (mostly reptiles and amphibians) may be placed under an unusual stress. This situation may have negative effects in several of the animal's life functions, including reproduction, food gathering, and hibernation. Also, reduced water levels force other animals to seek food in other areas.

Further assistance is available from the Wildlife Office in Marlborough (295-9523).

## FISHERIES

Due to the regulatory capacity of the DEP Fisheries Unit in reviewing this diversion proposal, no preliminary comment will be made concerning the impact on aquatic life at this time.

## PLANNING CONCERNS

There are several areas of concern in relation to this proposal to divert waters from the East Branch of the Hammonasset River. Chatfield Hollow State Park and the Boy Scout Reservation are important regional recreation facilities. Both of these facilities are dependent on the ponds that are fed by the East Branch of the Hammonasset River. The value of these recreational facilities would be greatly lessened if the water level of these ponds were to fall significantly.

There is a large groundwater area on the lower Hammonasset River below the site of this proposed water diversion which is described as a "favorable aquifer" by the United States Geological Survey. The East Branch of the Hammonasset River feeds into this area and may well be an important source for recharge of this aquifer. The Connecticut River Estuary's Regional "Plan of Development" projects a significant water supply deficit for the region in the future and notes that groundwater is an important source that should be considered when working to meet this deficit. The value of this aquifer is indicated by the fact that the Connecticut Water Company already has well fields using it. This aquifer is, therefore, an important regional resource.

The data available at this point is not sufficient to develop a detailed review of this proposal. It is important that the South Central Connecticut Regional Water Authority provide data concerning the specific amount of water that it proposes to divert. A visual inspection of the site brought about the question of whether there is much excess flow that could be diverted without causing harm. The small amount of water going over the spillway at Kroupa Pond would seem to indicate a low flow rate. If the diversion is carried out, it is suggested that a policy be considered under which water would not be diverted when there is low flow. The idea of not diverting water during July and August as initially mentioned by the South Central Connecticut Regional Water Authority would not seem to be adequate because of the low flow rate observed in June.

Another possibility which might be considered would be to engineer a system in which only a safe amount of water would be diverted. Such a system would allow water that is in excess of an amount that has been determined to be adequate to be diverted. No water would be diverted until this overflow stage is reached. This would avoid the problem of seasonal and daily fluctuations in water flow rates.

# Appendix



STATE OF CONNECTICUT  
DEPARTMENT OF ENVIRONMENTAL PROTECTION



INSTRUCTIONS  
APPLICATION FOR WATER DIVERSION PERMIT

CONNECTICUT WATER DIVERSION POLICY ACT (PA 82-402)  
(Section 22a-365 through 22a-378 of the General Statutes)

The Connecticut Water Diversion Policy Act requires that diversions of water after July 1, 1982 or use of existing unregistered diversions after July 1, 1983 which have not been specifically exempted by the Act, be approved by the Department of Environmental Protection to be lawful. A PERMIT APPLICATION FORM SHOULD BE USED TO APPLY FOR A GROUND OR SURFACE WATER DIVERSION PERMIT FOR NEW WATER DIVERSIONS WHICH DIVERT MORE THAN 50,000 GALLONS OF WATER IN ANY TWENTY-FOUR HOUR PERIOD OR WHICH COLLECT OR DIVERT THE SURFACE WATER RUN-OFF OF AN AREA OF 100 ACRES OR MORE. Do not use a PERMIT application form for a diversion which was constructed or initiated on or before July 1, 1982 unless the proposed diversion will modify the capacity of an existing registered or exempt diversion. Contact the Department at the address below to obtain application forms for unregistered diversions. For unregistered diversions request the application form titled: "APPLICATION FOR DETERMINATION OF PERMIT NEED."

The Act defines diversions broadly: any activity which causes, allows, or results in the withdrawal from or the alteration, modification or diminution of the volume of water that would occur in the ground or surface water at a given point at any moment constitutes a diversion. Examples of common diversions include withdrawal by gravity or pumping in excess of 50,000 gallons of water in any twenty-four hour period from any surface or ground waters and construction of dams, storm drainage or flood control systems or stream relocation and bypass channels which collect water from a drainage area 100 acres or more in size. Diversions for public water supplies, hydropower, heat pumps, processing and cooling water, agriculture, drainage or flood control, recreation, or to prepare a site for development may be subject to the permitting requirements of the Act.

The following diversions are exempt from the provisions of the Act and do not require a diversion permit:

1. One or more wells joined in one system whose combined maximum withdrawal will not exceed 50,000 gallons of water during any twenty-four hour period.
2. The maximum withdrawal of 50,000 gallons of surface water during any twenty-four hour period.

3. Discharges permitted under the provisions of Section 22a-430 of the General Statutes.
4. A storm drainage system which collects the surface water runoff of an area of less than 100 acres.
5. Water for fire emergency purposes.
6. Diversions within, extensions and relocation of water supply system distribution mains.
7. Roadway crossings or culverts which allow for continuous flow or passage of an existing watercourse.

Additional exemptions from the provisions of the Connecticut Water Diversion Policy Act are provided by Section 22a-377(b)-1 of the Regulations of Connecticut State Agencies. Copies of these Regulations are available through the Department.

#### GENERAL INSTRUCTIONS

The Act requires DEP to hold a public hearing on all diversion permit applications and requires that applicants provide several public notifications concerning the permit application. The applicant's responsibilities are outlined below. However, applicants are advised to review the applicable sections of the Act; in all cases the requirements of the Statutes will govern.

To initiate the permit application process, the following steps must be taken by the applicant at his or her own expense:

1. Thirty full days prior to formally filing the application with DEP:
  - a. notify the chief executive officer of the town(s) in which the diversion will occur that a permit application is to be submitted to DEP, and
  - b. Publish a "Notice of Intent to File" the application in a newspaper of a general circulation in the county(s) in which the diversion will take place or have effect.

#### THIS IS REQUIRED BY SEC. 22a-370 OF THE STATUTES

2. The suggested format for the above notices is as follows:
  - a. To notify the chief executive officer, send a letter, certified mail return receipt requested (or hand delivered; obtain a receipt or other acknowledgement), which includes the following completed for the particulars of your project:

Dear...:

In accordance with the notification requirements of Sec. 22a-370 of the Connecticut General Statutes, this is to inform you of my intent to file an application for a water diversion permit with the Commissioner of Environmental Protection. The proposed diversion...(BRIEFLY DESCRIBE THE PROJECT, THE NATURE OF THE DIVERSION, AND THE NAME AND LOCATION OF THE WATERCOURSE, WATERBODY OR GROUNDWATER INVOLVED). The purpose of the proposed diversion is...(STATE THE PURPOSE OR THE DIVERSION AND THE USE OF THE DIVERTED WATER).

(Include the applicant's name, address and telephone number and that of his or her agent)

It is a good practice to add pertinent additional information in the above letter so that the chief executive officer and other town officials and agencies will fully understand what the applicant is proposing to do.

b. To prepare the "Notice of Intent to File" which is to be published in the newspaper, fill in the blanks in the following text as appropriate for the proposed project. Be as brief, but as explicit as possible; the legal sufficiency of this notice is the responsibility of the applicant.

\*\*\*\*\*

NOTICE OF INTENT TO FILE FOR PERMIT  
CT WATER DIVERSION POLICY ACT

Pursuant to Sec. 22a-370 of the CT General Statutes,...(name and address of applicant) serves notice of intent to file an application with the Commissioner of Environmental Protection to divert...(name of watercourse, waterbody, or simply "ground water" in the case of wells) located...(location where diversion will occur) in the town(or city) of.... The purpose of the proposed diversion is...(brief description of what is proposed and its purpose).

Dated:

\*\*\*\*\*

Additional information may be added the above notice at the discretion of the applicant.

An affidavit of publication should be requested from the newspaper when your notice is submitted for publication. This may be required to prove when and where the notice was published. A copy of the newspaper itself may not be sufficient.

3. The permit application may not be formally filed or officially recieved by the Commissioner of DEP until 30 days after the date of the above notices. However, applicants may submit preliminary application materials to DEP Water Resources Unit Staff at any time.

4. After the 30 day advance notice period has expired, the application may be formally filed by mail or hand delivered to the Water Resources Unit of DEP at the address indicated at the end of these instructions.

5. DEP will notify the applicant when the application is deemed complete and of the time and place for the required public hearing.

The applicant must, at his or her own expense, publish notice of this hearing at least two times in the same newspaper as in item 2 above. DEP will provide the minimum copy and format for these notices of public hearing and will indicate the time frame for publication in accordance with the requirements of Section 22a-371(e) of the Statutes.

IT IS THE APPLICANTS RESPONSIBILITY TO CHECK THE NOTICE FOR ACCURACY AND LEGAL SUFFICIENCY AND TO PUBLISH IT PROPERLY.

At the applicant's descretion, additional descriptive information may be added to the notice for the hearing.

As with the earlier "Notice of Intent to File," an affidavit of publication should be requested from the newspaper when your publication orders are made.

#### FORM AND CONTENT OF THE APPLICATION

1. The application consists of the completed application form and supporting plans, drawings and appendices.

2. SIX copies of the entire application package including supporting appendices, plans and reports are required to process the permit request.

3. All applications must include plans or drawings. At a minimum, these should include:

a. Vicinity or location map. A schematic plan or location of the proposed diversion and water system must be drawn on a United States Geological Survey (USGS) topographical quandrangle map. This is required to ensure that the project may be accurately located by reviewers. An original map or a photocopy of a portion of an original map may be used as appropriate for the application. It should show the location of the proposed diversion including withdrawal, distribution and discharge points in relation to surrounding lands. Label the pertinent features of the project area



including waterways, waterbodies, and roads in addition to the major components of the proposed diversion. Include a north arrow and a distance scale.

USGS quadrangle maps are available at major office supply firms or may be purchased through the Department's Natural Resources Center. Write to "Publications Sales," Natural Resources Center, State Office Building, 165 Capitol Avenue, Hartford, Connecticut 06106 or telephone (203) 566-3540.

b. Plans. Show existing and proposed conditions for the land and watercourse or waterbody affected by the proposed diversion. Show the location and general design of the diversion distribution and discharge structures. The location of wetlands and the ordinary high water line of inland watercourses (mean high water and local extreme high water on tidal waters) affected by the project must also be delineated. Plans should show the bounds of the applicant's property and the location of abutting properties. Attach the names and mailing addresses of owners of record of the abutting properties (excluding transmission lines). Include on the plans any proposed mitigation including construction sequence and erosion/sedimentation controls.

The nature of the proposed diversion dictates what specific information plans and drawings should contain. All plans should be drawn and clearly labeled to make clear what is being proposed, where, and by whom. In general, detailed construction plans for existing or proposed structures incidental to the diversion, withdrawal, distribution or discharge, will not be required for purposes of application review and processing. In the majority of situations, schematic drawings showing the location of the work in relationship with actual site conditions are acceptable. Construction drawings may be required as a condition of permit approval. However, in the case of stream channelization and flood management structures, the minimum plan requirement is usually preliminary construction drawings.

4. Reports. The nature, complexity or scope and potential impact of some projects will necessitate that certain applications be supported by engineering, geological, hydraulic, hydrological, biological or other professional analyses of existing and proposed conditions.

5. Policy on Certification and Seals. All surveys, plans and reports showing boundaries of land ownership must be prepared by a Connecticut registered land surveyor and bear his certification and seal. All surveys, plans and reports for projects wherein public welfare or the safeguarding of life, public health or property is involved or wherein design criteria need to be incorporated, must be prepared by an engineer or architect registered in Connecticut and must bear his certification and seal.

6. Coastal Management. When the proposed diversion is within or will have a significant effect within the coastal boundary, the applicant must demonstrate that the project is consistent with the provisions of Connecticut's Coastal Management Act (Section 22a-90 et. seq. of the General Statutes). Copies of coastal management site plan work sheets and coastal resource information may be obtained from the Department's Coastal Management Office, 71 Capitol Avenue, Hartford, Connecticut 06106. Telephone (203) 566-7404.

7. Water companies. Applications by water companies should include the "Public Water Supply" section of the permit application forms which concern water use and service area information. Copies of this section may be obtained from the Water Resources Unit at the address below.

Applicants are advised to review the Water Diversion Statutes and Regulations as in all cases their provisions will govern application review and the Department's final determination on the permit request.

SIX SIGNED COPIES OF THE APPLICATION FORM AND SIX COPIES OF ALL MAPS, PLANS, REPORTS AND OTHER SUPPORTING DOCUMENTS ARE REQUIRED FOR A COMPLETE APPLICATION.

Mail or hand deliver SIX COPIES of the application to:

Commissioner of Environmental Protection  
Water Resources Unit, Room 207  
State Office Building  
165 Capitol Avenue  
Hartford, Connecticut 06106

For assistance or questions concerning the Connecticut Water Diversion Policy act, write to the Department at the above address or call (203) 566-7280 or 566-7220.

APPLICATION FOR WATER DIVERSION PERMIT  
CONNECTICUT WATER DIVERSION POLICY ACT

THIS APPLICATION FORM IS DESIGNED FOR GENERAL USE AND THE CONVENIENCE OF APPLICANTS. ALL SECTIONS WILL NOT APPLY IN EVERY SITUATION. APPLICANTS SHOULD REVIEW THE APPLICATION INSTRUCTIONS AND SECTIONS 22A-369 AND 22A-372 OF THE GENERAL STATUTES PRIOR TO COMPLETING THIS FORM. IF ADDITIONAL RESPONSE SPACE IS NEEDED ATTACH FACSIMILE SHEETS, REPORTS, OR PAGES AS REQUIRED TO FULLY RESPOND AND PRESENT THE PROPOSED DIVERSION. IN ALL CASES, THE REQUIREMENTS OF THE STATUTES WILL GOVERN.

1. \_\_\_\_\_ (owner) hereby makes application pursuant to Section 22a-369 of the General Statutes to divert the waters of \_\_\_\_\_ (name of waterbody, watercourse or write "groundwaters") located in the town(s) of \_\_\_\_\_. The length of time for which a diversion permit is sought is \_\_\_\_\_. If the applicant is not the owner of the diversion, state what the legal interest of the applicant is in it : \_\_\_\_\_.

2. The chief executive officer of \_\_\_\_\_ (town or towns) was notified of this filing on \_\_\_\_\_ and Notice of Intent to File this application was published in the \_\_\_\_\_ (name of newspaper) on \_\_\_\_\_ (date). Copies of these notices are attached.

3. Diverted waters will be discharged to (name of watercourse, treatment plant, or groundwater, etc.): \_\_\_\_\_

4. List the titles of plans, drawings, reports, studies or appendices which are attached and a part of this application.

5. Describe the proposed diversion, its purpose and the general method of operation of the diversion. Include all facilities for diverting, withdrawing, distributing and discharging water which are pertinent to an understanding of the diversion. If the diversion involves the alteration or modification of a waterbody or watercourse, describe the nature and scope of these modifications. The physical features of the diversion and water system outlined here should be included on the application drawings or plans.

1. Describe the need for the proposed diversion and any alternatives to the diversion considered by the applicant and the reason(s) for their rejection. This discussion should include cost factors and the feasibility of alternatives.

7. Describe existing conditions and water systems at the project site and existing water uses where the diversion is proposed or will have effect, including the area of any wetlands or watercourses to be altered. The location of these site features should be included on application plans or drawings.

8. Is the diversion designed or will it be operated to provide a minimum instantaneous flow or release of surface waters in the natural downstream direction below the proposed diversion?

yes  no

If yes, the flow is \_\_\_\_\_ cfs; describe how this minimum instantaneous flow will be provided or maintained.

9. List each surface water impoundment to be constructed or to be used as a source of water. Indicate whether the impoundment is existing (Ex) or proposed (Prop). State storage volumes in millions of gallons (mg). Usable storage is the volume of water in the impoundment above the invert of the withdrawal structure.

Impoundment (Ex/Prop)	Total storage volume(mg)	Useable storage volume(mg)	Surface area (acres)	Average depth (feet)
1. _____	_____	_____	_____	_____
2. _____	_____	_____	_____	_____
3. _____	_____	_____	_____	_____
4. _____	_____	_____	_____	_____

10. List each withdrawal structure or facility at the top of the table and give the proposed percentage of water use on an annual basis for each system.

<u>Withdrawal Facility:</u>	# _____	# _____	# _____	# _____
Irrigation/agriculture	_____	_____	_____	_____
Non-contact cooling	_____	_____	_____	_____
Boiler feed	_____	_____	_____	_____
Process water	_____	_____	_____	_____
Washing	_____	_____	_____	_____
Heat pump	_____	_____	_____	_____
Potable water	_____	_____	_____	_____
Public water supply	_____	_____	_____	_____
Hydropower	_____	_____	_____	_____
Other (describe) _____	_____	_____	_____	_____
Lost	_____	_____	_____	_____
Discharged(not used)	_____	_____	_____	_____
<b>Total:</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

11. Is withdrawal of water to be metered? \_\_\_ yes \_\_\_ no  
 Is consumption or use of water to be metered? \_\_\_ yes \_\_\_ no  
 If withdrawal and/or water consumption or use is not metered,  
 how will they be measured or controlled?

12. List each withdrawal facility at the top and complete the table. "Max. 24hr withdrawal" is the maximum quantity of water in millions of gallons per day (mgd) to be diverted and distributed by the facility during any twenty-four hour period. "Max. rating" is the rated capacity of the pump for the facility, or the capacity of the withdrawal facility itself if gravity operated, in gallons per minute (gpm) or millions of gallons per day (mgd). "Total drainage area" is the area of watershed above the point of diversion in square miles (sq. mi.). "Area of drift" is the area of stratified drift in the watershed above the point of diversion in square miles.

WITHDRAWAL FACILITY:	#	#	#	#
A. Max. 24hr withdrawal (mgd)	_____	_____	_____	_____
B. Max. rating (gpm/mgd circle one)	_____	_____	_____	_____
C. Total drainage area (sq. mi.)	_____	_____	_____	_____
D. Area of stratified drift (sq. mi.)	_____	_____	_____	_____

13. WELLS List all wells at the top of the table and give the following information for each well.

	Well#	Well#	Well#	Well#
Latitude	_____	_____	_____	_____
Longitude	_____	_____	_____	_____
Well depth (feet)	_____	_____	_____	_____
Well diameter (inches)	_____	_____	_____	_____
Well type (dug, drilled driven, gravel-packed etc.)	_____	_____	_____	_____
Aquifer type (bedrock or drift/till)	_____	_____	_____	_____

ATTACH A COPY OF THE WELL DRILLER'S LOG FOR EACH WELL

14. HYDROPOWER FACILITIES. Complete this section for diversions involving hydroelectric power generating facilities.

- A. Name of facility \_\_\_\_\_
- B. Existing dam            \_\_\_yes    \_\_\_no
- C. Number of turbines \_\_\_\_\_
- D. Total watershed drainage area above facility \_\_\_\_\_(sq.miles)
- E. Minimum operational head            \_\_\_\_\_(feet)
- F. Maximum operational head            \_\_\_\_\_(feet)
- G. Average operational head            \_\_\_\_\_(feet)
- H. Usable storage of reservoir        \_\_\_\_\_(mg)
- I. Total storage of reservoir        \_\_\_\_\_(mg)
- J. Length of diverted stream channel \_\_\_\_\_(feet)

K. Turbine capacity: For each turbine, list the minimum, maximum and average operational flows in cubic feet per second (cfs).

	Min.	Max.	Ave.
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

L. Kilowatt output: For each turbine, list the minimum, maximum and average kilowatt output per day for the flows listed in item K above.

	Min.	Max.	Ave.
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____



15. PHYSICAL MODIFICATION OF WATERCOURSES; STORMWATER OR FLOOD MANAGEMENT SYSTEMS

- A. Name of project or area to be served \_\_\_\_\_
- B. Total watershed area draining into the system \_\_\_\_\_ (acres)
- C. Storm frequency design \_\_\_\_\_ (year)
- D. Detention/retention basins?  yes  no

If yes, complete the following:

1. The minimum frequency storm, or flow which is retained is \_\_\_\_\_ year/cfs (circle one).
2. Maximum design storage volume is \_\_\_\_\_ ac/ft.
3. Is a permanent pool maintained?  yes  no
4. Length of time to drain basin from maximum storage is \_\_\_\_\_ hours/days (circle one).

- E. Total length of watercourse to be modified is \_\_\_\_\_ feet.
- F. The total length of watercourse to be contained in culverts is \_\_\_\_\_ feet.
- G. Are low flow channels incorporated in the design of the channelized or relocated portions of the diversion?  
 yes  no
- H. Are additional habitat mitigation measures (e.g. pools, riffles, bottom diversity, tree cover) provided in the design of altered stream beds?  yes  no
- I. Is low flow provided for in the design of the culverted portions of the diversion?  
 yes  no
- J. Design flood profile (100 year event) is: \_\_\_\_\_ equal to lower than \_\_\_\_\_ higher than (check one) the preconstruction flood profile by \_\_\_\_\_ feet.
- K. Do the application plans include a description of proposed erosion and sedimentation control?  yes  no

16. Does the proposed diversion involve an interbasin transfer of water (SEE INSTRUCTIONS)?  yes  no If yes, attach the "Environmental Impact Report" required by Section 22A-369(10) of the General Statutes.

17. Describe water conservation measures taken, or to be taken, to conserve water supplies as applicable to the proposed diversion. A long-range water conservation plan may be required-see CGS Section 22a-369(9).

18. Attach as appendices to this application the applicant's evaluation of the effect of the proposed diversion on the following factors as applicable to the project (see 22a-369 of the Statutes):

Check the appendices attached to this application

- A. Public water supplies \_\_\_\_\_
- B. Water Quality \_\_\_\_\_
- C. Wastewater treatment needs \_\_\_\_\_
- D. Flood management \_\_\_\_\_
- E. Water-based recreation \_\_\_\_\_
- F. Wetland habitats \_\_\_\_\_
- G. Waste assimilation \_\_\_\_\_
- H. Agriculture \_\_\_\_\_
- I. Fish and wildlife \_\_\_\_\_
- J. Low flow requirements \_\_\_\_\_
- L. Groundwater \_\_\_\_\_
- M. Adjacent wells \_\_\_\_\_

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I HEREBY CERTIFY THAT THE INFORMATION PROVIDED IN THIS APPLICATION AND SUPPORTING DOCUMENTATION IS TRUE AND I AM AWARE OF THE PENALTIES PROVIDED IN SECTION 22a-376 OF THE GENERAL STATUTES FOR KNOWINGLY PROVIDING FALSE OR MISLEADING INFORMATION.

Name and address of applicant-owner:

Name and address of authorized agent:

Date:

Date:

Signature:

Signature:

Telephone:

Telephone:

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SIX COPIES OF THIS FORM AND ALL MAPS, PLANS, REPORTS AND SUPPORTING DOCUMENTS ARE REQUIRED FOR A COMPLETE APPLICATION  
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# 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.