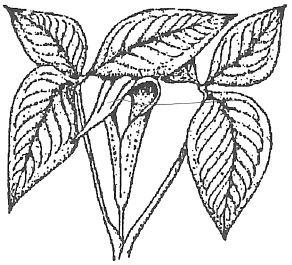
INDIAN SPRINGS SUBDIVISION

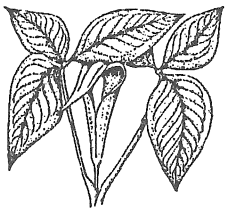
BOZRAH, CONNECTICUT



EASTERN CONNECTICUT ENVIRONMENTAL REVIEW TEAM REPORT

Eastern Connecticut Resource Conservation & Development Area, Inc.

INDIAN SPRINGS SUBDIVISION
BOZRAH, CONNECTICUT



ENVIRONMENTAL REVIEW TEAM REPORT

Prepared by the
Eastern Connecticut Environmental Review Team
of the
Eastern Connecticut
Resource Conservation and Development Area, Inc.

for the
First Selectman
Bozrah, Connecticut

April 1997

CT Environmental Review Teams
1066 Saybrook Road
P.O. Box 70
Haddam, CT 06438
(860) 345-3977

ACKNOWLEDGMENTS

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

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

The field review took place on Tuesday, February 25, 1997.

Nicholas Bellantoni	State Archaeologist UCONN - CT Museum of Natural History (860) 486-5248
Michelle DeCormier	District Manager New London County Soil & Water Conservation District (860) 887-3604
Doug Hoskins	Wetland Specialist/Environmental Analyst III DEP - Bureau of Water Management Inland Water Resources Division (860) 424-3903
Dawn McKay	Biologist/Environmental Analyst III DEP - Natural Resources Center (860) 424-3592
Brian Murphy	Fisheries Biologist DEP - Eastern District Headquarters (860) 295-9523

Phillip Renn	Water Resources Coordinator USDA - Natural Resources Conservation Service (860) 487-4016
Thomas Seidel	Regional Planner Southeast Connecticut Council of Governments (860) 889-2324

I would also like to thank Richard Serra, town planner for Bozrah, Howard McGarvey, chairman of the inland wetland and conservation commission, Ray Barber, the first selectman, Pat Benjamin, the applicant's engineer and all the concerned citizens of Bozrah for their cooperation and assistance during this environmental review.

Prior to the review day, each Team member received a summary of the proposed project with location and soils maps. During the field review Team members were given additional information. Following the review, reports from each Team member were submitted to the ERT coordinator for compilation and editing into this final report.

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

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

If you require additional information please contact:

Elaine Sych, ERT Coordinator (860) 345-3977
CT ERT Program
P.O. Box 70
Haddam, CT 06438

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INTRODUCTION

The First Selectman of Bozrah has requested assistance from the Eastern Connecticut Environmental Review Team in conducting an environmental review of the proposed Indian Springs Subdivision. The proposal has been withdrawn at this time and will be resubmitted at a later date after receiving comments and review.

The 114 acre site is located on Route 163 and was reviewed in 1989 by the Environmental Review Team under the name " Mending Wall at Bozrah." The current proposal is for the same parcel with changes made to the number, size and layout of lots, and the road layout and width.

The Indian Springs proposal is for 54 single family houselots with individual wells and septic systems. The lots range in size from 1.18 to 3.11 acres in size. The Town of Bozrah owns a 2.96 acre parcel in the central portion of the site known as "Mineral Springs." Adjacent to this town parcel open space amounting to 8.28 acres is proposed. The subdivision will be accessed from Route 163 by a single 24 foot road that creates a loop. Three lots will have direct access on Route 163.

Objectives of the ERT Study

The ERT review will provide an update to the 1989 ERT "Mending Wall at Bozrah" report with recommendations specific to this new proposal. The Team has been asked to especially assist the Bozrah Inland Wetlands and Conservation Commission with a review of the present proposal in regard to impacts to regulated areas on and off site. Information and concerns addressed includes a review of drainage calculations, impacts to wetlands and watercourses, a review of stormwater management, erosion and sediment control and a discussion of planning issues.

The ERT Process

Through the efforts of the First Selectman this environmental review and report was prepared for the Town of Bozrah.

This report provides an information base and a series of recommendations and guidelines which cover the topics requested by the Town. Team members were able to review maps and supporting documentation provided by the applicant.

The review process consisted of four phases:

1. Inventory of the site's natural resources;
2. Assessment of these resources;
3. Identification of resource areas and review of plans; and
4. Presentation of education, management and land use guidelines.

The data collection phase involved both literature and field research. The field review was conducted on February 25, 1997. The emphasis of the field review was on the exchange of ideas, concerns and recommendations. Being on site allowed Team members to verify information and to identify other resources.

Once Team members had assimilated an adequate data base, they were able to analyze and interpret their findings. Individual Team members then prepared and submitted their reports to the ERT coordinator for compilation into this final ERT report.

Figure 1

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Location and Topographic Map

Scale 1" = 1000'

Approximate Site

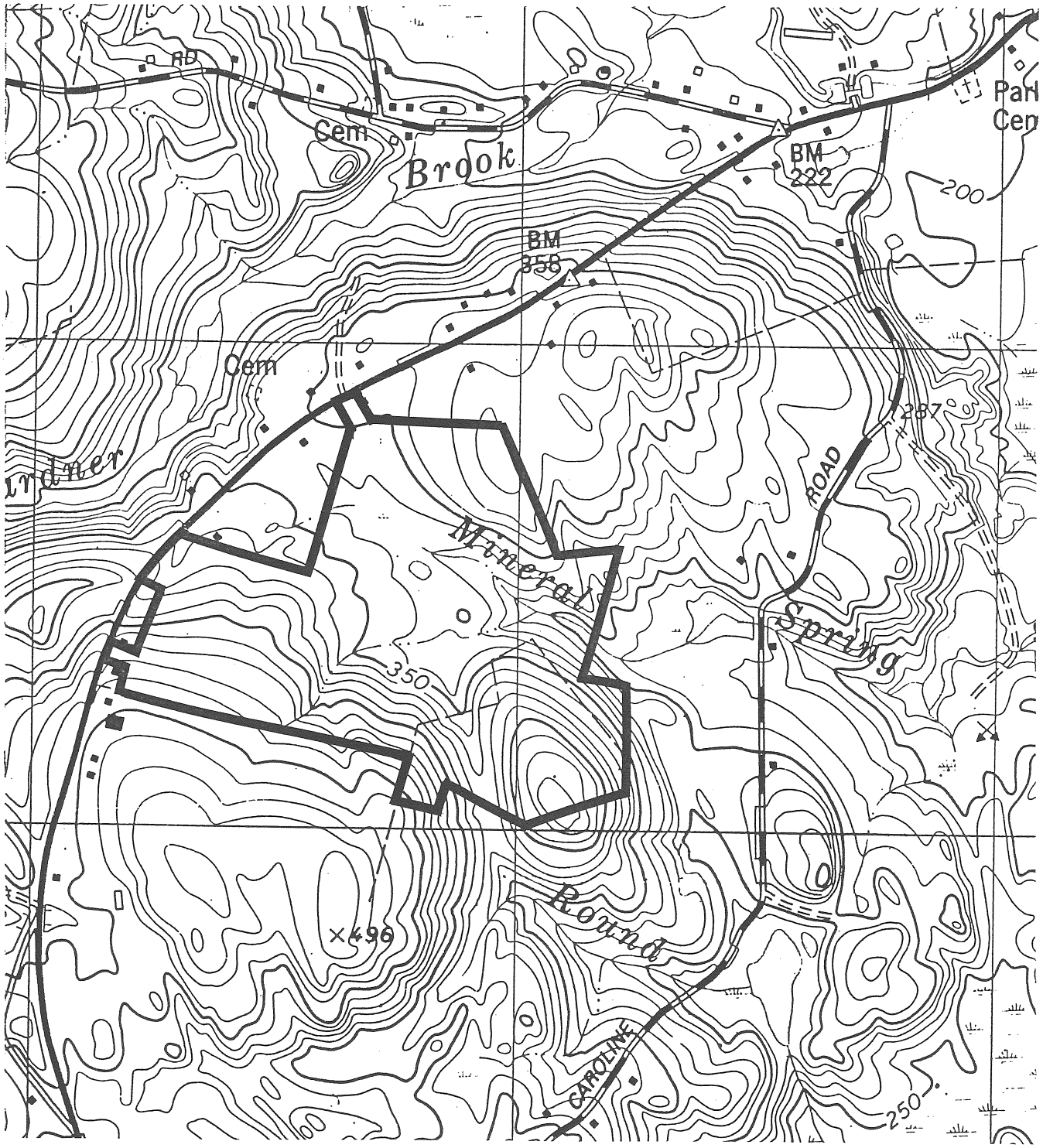

Figure 2

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Lot and Road Configuration

No Scale Given

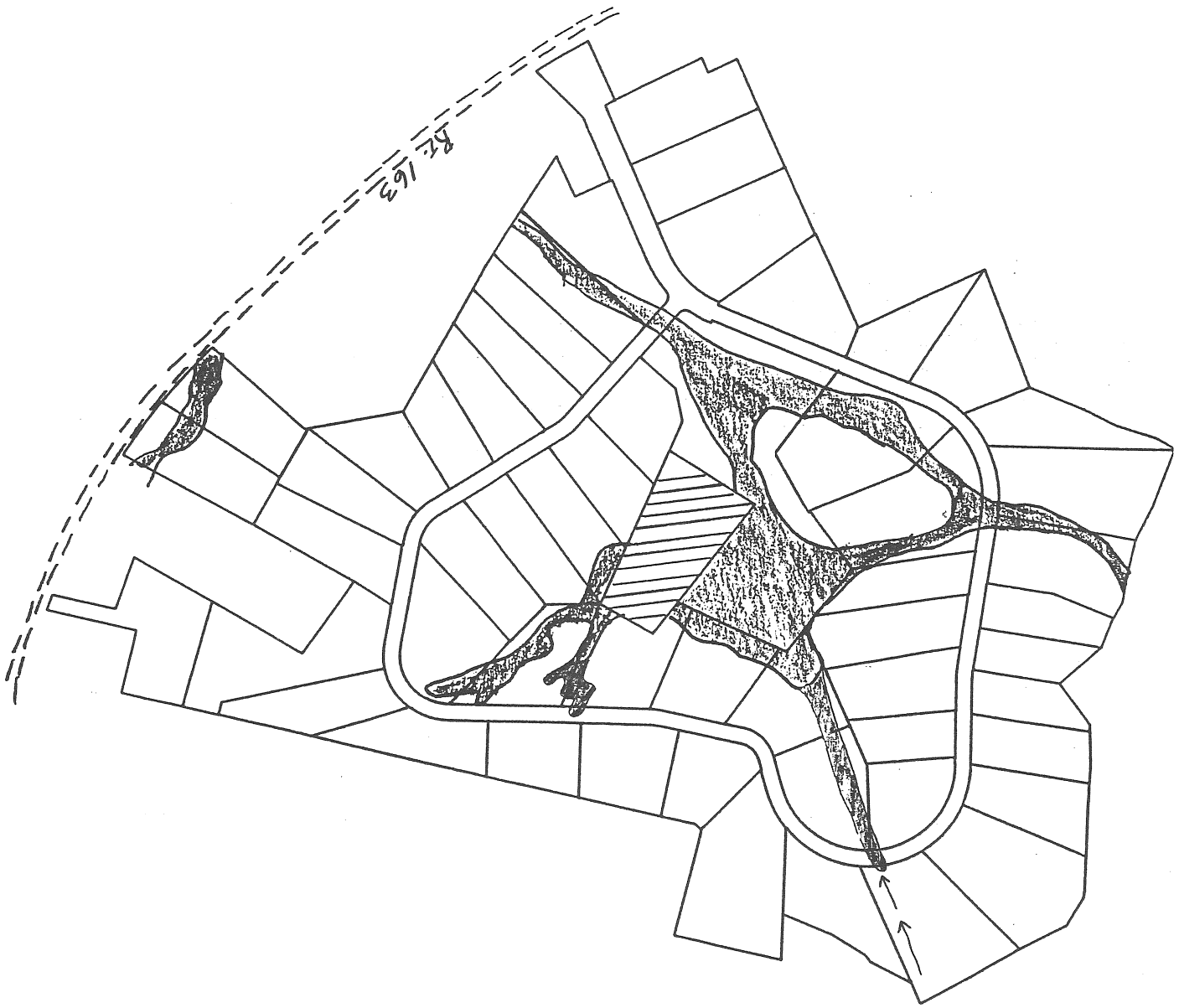

Figure 3 Subdivision Plan

WETLAND RESOURCES

The general site conditions and wetland functions for this parcel were adequately addressed within the 1989 ERT report ("Mending Wall at Bozrah," a 42 lot conventional subdivision) and will not be repeated here. Most of the recommendations made within that report appear to have been responded to by the designers of the current plan with the exception of #3 (in the Wetland Review section on page 20) which recommended that two lots along the Mineral Spring Brook (33 and 37) be eliminated and that deed restrictions in the form of conservation easements be placed on the remaining lots containing wetlands.

Due to the fact that the general configurations of the subdivision as well as the lot numbers themselves have changed since 1989, and that the Team wetland specialist has not yet received a requested copy of the plan that was the subject of the 1989 ERT, he is assuming that lots 33 and 37 are now lots 50 and 51. Even if this assumption is not true, after reviewing the current site plan, the elimination of lots 50 and 51 is currently recommended as part of this review. The incorporation of this upland "island" into the proposed open space parcel would not only reduce overall wetland impacts by eliminating a required drive crossing, but it would also significantly increase the value of the preserved open space area, the majority of which is currently proposed to be comprised of wetlands. This resulting diversification of habitat within the open space parcel would primarily tend to increase its value to wildlife.

If this is not possible, relocation of the driveway to road station 24+00 so that the wetland crossing may be located off of what is now the northerly boundary of lot 49 would be preferred for two reasons: 1) a small, unimproved wetland crossing already exists at this location and, 2) this wetland area is narrower and of lower quality than the proposed crossing area.

Other significant recommendations include:

1) The area of direct impact the Team wetland specialist has calculated for this project (0.94 acres) is significantly higher than that listed in the municipal permit application dated 11/25/96 (0.48 acres). Please refer to

Table 1 for a detailed description of direct and indirect impacts related to this project. This major discrepancy is difficult to account for. Perhaps the figure listed in the application does not reflect additional proposed impacts that would occur in response to the additional wetland mapping that was recommended as part of the 1989 ERT.

2) If feasible, it is recommended to "slide" the "T"-junction at road station 9+50 to the northwest as far as possible. This would result in a wetland crossing in an area that may be narrower and would definitely be of lower quality than the currently proposed crossing (the value of this wetland appears to decrease as you move up-gradient in the wetland corridor to the northwest).

3) If feasible, it is recommended that the road tangent from 10+00 to 17+00 be moved as far as possible to the northeast to avoid indirect buffer impacts that are currently proposed for high quality wetlands located within 20 feet of road station 17+00.

4) Alternative locations for the stormwater outlet and level-lip spreader located on lot 41 should be investigated. The additional wetland mapping subsequent to the 1989 ERT report now has this structure located directly in a wetland. In general, this and all other stormwater outlets that are in or near wetland areas should be located as far away from wetlands as possible, given proper ground conditions, to allow as much treatment of storm water prior to wetland entry.

5) The footing drain on lot 41 should also be relocated out of wetlands.

6) Strict enforcement of the clearing limits as proposed on the plan is critical. Retainment of as much existing ground cover as possible will mitigate for the loss of natural "functions" proposed for this property. Marking and maintaining the clearing limits in the field should be included as a step in the construction sequence on the plan.

7) The proposed phasing of this project will limit the impacts to wetlands and watercourses that are commonly associated with the construction process, however, it is recommended that concrete specifications be listed as to when one phase may be deemed complete and one another may be initiated.

Table 1

LOCATION	DIRECT IMPACTS	ACREAGE (s. f.)	INDIRECT IMPACTS
Lot 40 road crossing @ 46+50	house footing drain fill	13,589	
Road Crossing @ 67+00	fill culvert	8,000	
Road Crossing @ 22+00	fill with box culvert	7,719	
Road Crossing @ 35+00	fill culverting	4,232	stormwater outflow w/in 20' of wetland
Lot 50/51 common drive	crossing with box culvert	3,966	
Lot 41	stormwater outlet and spreader	2,412	house w/in 15' of wetland
Stormwater outflow @ 49+00	pipe sediment chamber	621	stormwater outflow within 15' of wetland
Caroline Road	culvert upgrade	400 (temporary)	
Lot 41	footing drain	287	
Lot 44			footing drain w/in 15'
Lot 1			stormwater outflow w/in 25' of wetland
Lot 2			house w/in 50' from stream
17+00			road within 20' of wetland
stormwater outflow discharge from sediment basin #3			w/in 10' of wetland
stormwater discharge from 64+50			@ wetland boundary
Lot 39			road w/in 40' of wetland
Total		41,226 (0.94 acres)	

8) An additional note should be added that any significant changes to the plans, as deemed necessary once the project begins, should be approved by the appropriate municipal or regional employees or consultants prior to initiation.

9) The embossed seal of the project engineer should be added to the plans prior to approval by municipal commissions.

10) References to the stormwater detention system of previous designs should be removed from the notes page, specifically "B1."

11) It appears that the entire schedule in column one on sheet 35 is redundant given the schedule in column five.

12) It is recommended that a separate construction sequence be formulated for the Caroline Road crossing improvements. It should be stipulated that construction take place during seasonal low-flow periods. Silt fencing is currently proposed to be placed directly in the watercourse during construction. This is not a recommended practice due to the design limitations of this erosion and sediment control measure. In general, sedimentation control in perennially flowing streams is accomplished through the proper use of water flow diversions or in larger streams, coffer dams. Refer to the Fisheries section of this ERT report for further guidelines regarding construction at this location.

13) It was agreed in the field, during the ERT site visit, that the wetland boundary, as represented on the site plan would be adjusted at two locations: lot 2 and lot 13.

14) Other minor items which would augment the erosion and sedimentation control plan include:

- An erosion and sedimentation control narrative including the basic principles to be followed and discussion of any potentially serious erosion and sedimentation problems;
- a locus map of project at a scale of 1"=2000' including project limits, north arrow, street names, major drainage ways and watershed limits;
- planned temporary vegetation if disturbed areas are to remain for thirty (30) days or more, and

- maintenance requirements for permanent measures after the construction period including the name and phone number of the person responsible for this maintenance.

Other Applicable State and Federal Regulatory Programs

If this project will impact between 5,000 square feet and one (1) acre, project review is required by both the U.S. Army Corps of Engineers (A.C.O.E.) and this division of the CT-DEP. If this project will impact more than 1 acre of inland wetlands, an individual 404 application to the A.C.O.E. will be required. However, these are basic guidelines. A.C.O.E. or CT-DEP action may be required for other specific activities proposed for wetland areas. For questions regarding these regulatory programs contact the A.C.O.E. at 617-647-8338 / 800-343-4789 or Sally Snyder of the CT-DEP at 424-3019.

Inasmuch as it causes the alteration, modification, or diminution of the instantaneous flow of the waters of the state, all or some of the proposed watercourse crossings may require a permit from this division as called for in the Connecticut Water Diversion Policy Act (sections 22a-365 through 22a-378 of the Connecticut General Statutes). It is recommended that the applicant call Bob Gilmore of this division at 424-3019 to determine the need for such a permit.

If construction activities covering five acres or more are approved, the applicant is required to apply to the CT-DEP for a general permit for the discharge of stormwater under the National Pollutant Discharge Elimination System (NPDES) program. For further information on this permit program contact Christopher Stone of the DEP Permitting Enforcement and Remediation Division at 424-3850.

FISHERIES RESOURCES

Fisheries comments provided in the 1989 Mending Wall at Bozrah ERT report are still pertinent to the new proposal known as Indian Springs Subdivision. Below are comments specific to the new proposal.

- To achieve fish passage at the Caroline Road Crossing, the Fisheries Division concurs with design plans that show culverts sunken approximately 6 inches below existing grade. However, only one culvert should be set below grade and this culvert should be aligned such that it conveys the average daily flow regime. The adjacent culvert installed at grade would accommodate higher flow regimes. Culverts within the subdivision and upstream from the Caroline Road Crossing do not have to be designed for fish passage.

  Plans call for the placement of riprap within the stream channel in the area of the culvert inlet and outlet. A surface layer of riprap placed in lieu of natural substrates represents an unfavorable medium for the colonization of macroinvertebrates and for use as cover habitat by juvenile and adult finfish. It is recommended that plans be modified in these areas to eliminate the use of a layer of riprap as "surface armourment." Rather, the surface layer could include natural substrates that could be scraped from the existing area, saved and then placed back as a top streambed armourment over a sublayer of riprap. Another alternative would be the installation of a surface layer of a heterogeneous mixture of large gravel to small cobbles ranging anywhere from 2-6 inches in diameter (these materials are commonly referred to as tailings at local gravel operations). Again, this layer would be utilized as surface armourment over a sublayer of riprap. The Fisheries Division believes this recommendation will satisfy both engineering concerns for scour protection as well as fisheries concerns for preserving and maintaining natural streambed substrates in this area.

- Care should be exercised so as not to increase turbidity levels in Mineral Springs Brook when installing culverts. As a Best Management Practice, any unconfined instream work should be restricted to the period from June 1 to September 30, inclusive. A June 1 through September 30 timeframe can be utilized as an effective mitigation measure for construction related disturbances due to the following reasons: (1)

timeframe will serve to protect the spawning, egg incubation, and fry development of resident fishes, (2) timeframe does not interfere with seasonal migratory behaviors, and (3) timeframe coincides with historic low rainfall levels in Connecticut; a period in which instream construction activities such as dewatering, excavation, trenching, and cofferdam placement are most effective.

- Subdivision development will not result in a significant increase in the amount of impervious surfaces to cause any correspondent increase in surface water temperature to nearby watercourses. Thus, thermal loading is not a serious concern with this development. Thermal loading is typically observed in situations where you have stormwater runoff from large parking lot areas. Any slight increases in ambient surface water temperatures will be ameliorated by the thick and dense riparian overstory associated with Mineral Springs Brook.

HYDROLOGY MODEL COMMENTS

- Present condition discharges are overstated because:
  a) runoff curve numbers for "fair" woods were used instead of "good" woods (the chart is for use nationally, northeastern forest conditions are considered "good"); and
  b) Area C runoff curve number for the area left undeveloped by the subdivision proposal was shown to be higher before development.

- The first segment of the path for the time of concentration in Subarea D changed from woods before development to a woods/grass mixture after development. This change should cause the Tc to be lower after development.

- Area A2 appears to exit under Route 163 into another watershed so this area should not be part of Mineral Spring Brook. The four small culverts under the highway may be impacted by the subdivision.

- The subwatershed map isn't clear as to the watershed divide between areas B2 and E1.

- The design of the new culvert under Caroline Road to accommodate the increased flows from the subdivision does not address the issue of the impacts throughout Mineral Spring Brook from these increased flows. Also, this is one of many possible changes within the Yantic River watershed which can cause an incremental discharge increase, thereby, resulting in increased flood heights. Therefore, on-site infiltration and/or detention should be evaluated.

Please contact Phillip Renn, Water Resources Coordinator, NRCS, at (860) 487-4016 should any comments need clarification.

SOIL AND WATER CONSERVATION DISTRICT REVIEW

- Soils are not identified on the site plan. Soils are mapped from the New London County Soil Survey. Soil descriptions and charts depicting the limitations of the soils for various uses are included in the appendix of this report. As discussed in the 1989 Mending Wall at Bozrah ERT report, probable soil limitations include the presence of moderate to steep slopes, "hardpan" (soil is susceptible to seasonally high water table) in some soils on site, shallow depth to bedrock and medium to rapid runoff potential. The limitations do not prohibit development of the land, but rather warrant special planning.

- Soil properties have been considered and management techniques have been incorporated into the plan. Shallow surface water drains and footing drains are proposed to be installed on appropriate lots. Some footing drains will discharge and infiltrate on lawns. This infiltration will help prevent the unnecessary discharge of excess water off site. The design and installation of on site septic systems will need to be carefully engineered to prevent effluent from seeping to the surface in areas down slope from the leaching system.

- An erosion and sediment control plan is provided. Erosion and sediment control plans for individual lots should be reviewed as development occurs. The plan provided includes a narrative and map. The construction of the roadway and storm water drainage system is proposed to occur in four (4) phases. This will minimize erosion by reducing the extent of disturbed area. Any existing vegetation that can be saved will help prevent erosion. Construction drawings and details for temporary and permanent measures are provided. The location and selection of these measures are appropriate for the site. Also provided is a sequence of operations and a plan for the maintenance of control measures.

- A couple items should be added to the erosion and sediment control plan. A maintenance program for the method and

frequency of removal and disposal of solid waste materials from the temporary sediment basins should be provided. Also, the name of a person or organization responsible for the installation and maintenance program for all proposed erosion and sediment control measures should be assigned.

- The plans indicate the construction of a few steep sloped driveways, lots 16, 19, 20, 21, 28 and 29. These areas may need additional erosion control measures. The installation of additional sediment barriers to slow velocities, divert flows and trap sediment may be required. The installation of gravel along side slopes will help stabilize the slope. The quick establishment of vegetative cover and the use of mulch and netting will also help control erosion in these and other areas with steep slopes.

- The storm water drainage system is appropriate for a subdivision. A system of catch basins with sumps, particle separators, level lip spreaders and protected storm water outlets are effective storm water control measures. Particle separators are new technology designed to trap sediment and oil. The contractor or supplier of particle separators should be able to provide information about other installations including successful maintenance schedules. The effectiveness of the separators, like catch basins, is dependent upon proper maintenance. It is imperative that the town pubic works department has equipment to clean the sediment traps. A maintenance schedule will need to be developed. The size of the sediment chamber will affect maintenance needs.

- The decision on road width will be made by the town. It is a trade off between safety and storm water management. An increase in road surface will increase runoff and further concentrate flows entering the storm water system. This increase may displace the proposed locations of catch basins, particle separators and level lip spreaders. Adjustments may have to made to accommodate increased flow and velocities.

- Currently, the level lip spreaders are in close proximity or on the edge of the wetlands on site. The possibility of relocating these farther back form the wetland should be considered if drainage calculations allow for it. This could reduce direct discharge of

storm water into the wetland. However, if storm water runoff was to increase due to an increase in road surface, the level lip spreaders may be pushed into the wetland as a result of realignment of the storm water system components.

- An effort should be made to preserve existing vegetation on site. If possible, extensive lawns and improper, excessive applications of fertilizers should be discouraged. The runoff of excess nutrients could degrade the wetland and stream ecosystems. Lawn maintenance and design issues are difficult to control unless there exists a subdivision regulation.

- The conservation and drainage easements have been designated to protect the wetlands on site. Maintenance of these areas is important. The existing vegetative buffer should be maintained to trap sediment and infiltrate and attenuate nutrients delivered by runoff.

- Wetlands occupy large portions of lots 39, 40, 41, 50 and 51. The option to not develop these lots or to decrease the number of lots developed in these areas should be considered in order to maintain the ecological integrity of the wetlands. If lots 50 and 51 are to remain developed a shared driveway with a pull out is recommended.

- An open arch culvert with a natural bottom instead of a box culvert is recommended for the proposed location of culvert #1 on the plans. This will better preserve the aquatic habitat and be more esthetically pleasing.

- The installation of a new culvert on Caroline Road should be an improvement to the existing metal pipe culvert. Two 6' box culverts are proposed, however one larger culvert (10'3 to 12' in width) that maintains a natural stream bottom may be better suited to preserving the stream ecosystem (please call the Team fisheries biologist (860-295-9523) if interested in pursuing this option. He can discuss the pros and cons of a single culvert versus the use of two). No erosion was apparent immediately downstream of the existing culvert on the day of the site visit. This area should be inspected during construction to ensure that

the downstream area is not eroded or laden with sediment. Additional control measures may need to be installed.

ARCHAEOLOGICAL REVIEW

A review of the State of Connecticut Archaeological Site Files and Maps show no known archaeological resources in the project area. In addition, the majority of the property consists of relatively steep topographical relief which suggests a low-to-moderate archaeological sensitivity for prehistoric Native American sites. Nonetheless, knoll areas adjacent to Mineral Spring Brook that consist of well drained soils may have a high sensitivity for cultural resources. These areas appear to be associated with wetland buffers and open space. Any knoll areas near the wetlands should have an archaeological survey prior to any construction activities if they will be adversely effected by development plans.

The property also contains a series of historic stone walls. While it is realized that the preservation of all these stone structures may not be feasible, the Office of State Archaeology does recommend that an effort be made to preserve as many of the walls as possible to maintain the historic rural effect of the area.

The majority of the project area contains slopes that suggest a low sensitivity for archaeological resources, however, knolls adjacent to the brook systems may have been occupied by prehistoric Indians during hunting and gathering rounds. If such areas are planned to be disturbed by development activities, they should be field tested prior to that activity. Also, an effort should be made to maintain as many of the stonewalls as feasible. Stone structures that are to be dismantled should be photo-documented and mapped for historic reference.

The Office of State Archaeology is prepared to offer any technical assistance to the developer and the Town of Bozrah in preserving and protecting any prehistoric or historic archaeological site on the project area. Please feel free to contact the State Archaeologist at UConn should there be any questions.

PLANNING REVIEW

The proposed 54-lot subdivision is located on the east side of Route 163 in the southwestern section of Bozrah. Caroline Road is located approximately one half mile east of the proposed subdivision. Surrounding land uses are low density residential and undeveloped, forested land. The Bozrah solid waste transfer station is located on the westerly side of Route 163 across from the proposed road entrance. This current subdivision represents a 29 percent increase in lots over the 42 lots proposed for this same site in 1989 (Mending Wall at Bozrah).

The area of the proposed subdivision is depicted as low density uses on the adopted Regional Development Plan, with recommended residential densities of more than 1.5 acres per dwelling unit.

The area is zoned RU-1 residential with 80,000 square foot lot sizes and a street frontage requirement of 200 feet. Twenty-two of the proposed lots meet this area requirement and thirty-two do not meet this area requirement. Of these thirty-two lots, most average 1.5 acres in area, with ten of them indicated at less than 60,000 square feet in area. In areas with development limitations extra caution must be exercised in small-lot development with on-site utilities to insure that future negative environmental impacts are not created. The developer indicated at the ERT meeting that because of wetlands and other reasons, it appears that lots 13, 40 and 41 may not be developed.

The proposed open space is located in the center of the proposed subdivision adjacent to the proposed roads and the mineral springs town property. It represents about ten percent of the total subdivision area which meets the requirements of the subdivision regulations. If the open space will not be owned by the Town, then the right-of-way for access to the mineral springs town property should be indicated, most likely along the existing access driveway and the edge of the open space and lot 34.

The Bozrah subdivision regulations require a road pavement width of 32 feet centered in a 50-foot right-of-way. The proposed subdivision depicts 24 feet of pavement centered foot right-of-way. The subdivision regulations also require that a development serving over 30 lots have two means of access for safety reasons. The proposed subdivision shows one access. The property in

question has two other access points with Route 163. However, because of vertical and horizontal curve and site line problems at these locations, they would be very difficult to use for access. Bozrah's town engineer should review these two access points to evaluate their potential use as street access.

The driveway onto Route 163 for proposed lot 54 will have a difficult site line and possibly could be combined with driveways serving lots 10 or 11.

Conceivably a boulevard road could be utilized at the currently proposed road access location to eliminate another town road and wetlands crossing connection to Route 163. The boulevard would effectively function as two town roads. Each access road should have 18-20 feet of pavement, or 36-40 feet total for the two roads, with a 10-15 foot median. This median should be regarded as a design feature with appropriate plantings and landscaping. Serious consideration should be given to increasing the street right-of-way to 80 feet in the vicinity of lots 31, 32 and 33 to accommodate this design. Some brush clearing will be required at the intersection of the boulevard with Route 163 to provide the sight lines required in the subdivision regulations and by the Connecticut Department of Transportation. The subdivision regulations allow a maximum road slope of ten percent. This is the road slope indicated from the vicinity of station 23 (lots 25 and 49) to station 30 (lots 20 and 45) of the proposed subdivision. The subdivision regulations require that where land abutting a road slopes toward the road, a six-inch underdrain be installed below the curb in the area of the slope. The proposed road profiles show underdrains in many areas of the subdivision. The town engineer should review this design for adequacy and also for the width and slope of land abutting the proposed roads. In most cases the plans depict a seven-foot strip of land adjacent to road pavements.

Data from the Institute of Transportation Engineers indicate that a single-family development can be expected to generate ten daily trips per home. Fifty-four single-family units would mean 540 daily new trips using Route 163 when the project is completed. In 1987 Route 163 had an average daily traffic (ADT) count of 1,300 in the area of the proposed development. In 1995 this had increased by 23 percent to 1,600. No major highway improvements are indicated in the Regional Transportation Plan for Route 163 in this area of Bozrah.

THE NATURAL DIVERSITY DATA BASE

The Natural Diversity Data Base maps and files have been reviewed for the project site. According to our information, there are no known extant populations of Federal or State Endangered, Threatened or Special Concern Species that occur at the Indian Springs site.

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

If there are further questions please call 860-424-3592. Also be advised that this is a preliminary review and not a final determination. A more detailed review may be conducted as part of any subsequent environmental permit applications submitted to DEP for the proposed site.

APPENDIX

Soils Map
Soils Descriptions
Soils Limitations

Figure 4

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Soils Map

Scale 1" = 1320'

CrC Charlton-Hollis fine sandy loams, very rocky, 3 to 15 percent slopes.
CrD Charlton-Hollis fine sandy loams, very rocky, 15 to 45 percent slopes.
PdB Paxton and Montauk very stony fine sandy loams, 3 to 8 percent slopes.
PdC Paxton and Montauk very stony fine sandy loams, 8 to 15 percent slopes.
Rn Ridgebury, Leicester, and Whitman extremely stony fine sandy loams.
WyB Woodbridge very stony fine sandy loam, 0 to 8 percent slopes.
WzC Woodbridge and Rainbow extremely stony soils, 3 to 15 percent slopes.

NONTECHNICAL SOILS DESCRIPTION REPORT
ERT Soils Report

Map Symbol	Soil name and description
CrC	Charlton-Hollis fine sandy loams, very rocky, 3 to 15 percent slopes This map unit consists of very deep and shallow gently sloping to sloping, well drained and somewhat excessively drained soils on hills and ridges of glacial till uplands. The areas of this map unit are mostly irregular in shape. Slopes are mostly complex and 100 to 200 feet long. Stones cover 1 to 8 percent of the surface, which is marked by a few narrow, intermittent drainageways and small, wet depressions. This map unit is about 55 percent Charlton soils, 20 percent Hollis soils, 15 percent other soils, and 10 percent exposed bedrock. The Charlton and Hollis soils are in such a complex pattern that it was not practical to map them separately. The water table in this unit is commonly at a depth of more than 6 feet. The available water capacity is moderate in the Charlton soils and very low or low in the Hollis soils. Both soils have moderate or moderately rapid permeability and medium to rapid runoff. Hard unweathered schist bedrock is at a depth of 14 inches in some areas.
CrD	Charlton-Hollis fine sandy loams, very rocky, 15 to 45 percent slopes This unit consists of very deep and shallow moderately steep to steep, well drained and somewhat excessively drained soils on hills and ridges of glacial till uplands. Areas of this map unit are mostly long and narrow or oval in shape. Slopes are mainly convex and 100 to 500 feet long. Stones and boulders cover 1 to 8 percent of the surface. This map unit is about 55 percent Charlton soils, 20 percent Hollis soils, 15 percent other soils, and 10 percent exposed bedrock. The Charlton and Hollis soils are in such a complex pattern that it was not practical to map them separately. The water table in this map unit is commonly at a depth of more than 6 feet. The available water capacity is moderate in the Charlton soils and very low or low in the Hollis soils. Both soils have moderate or moderately rapid permeability and medium to rapid runoff. Hard unweathered schist bedrock is at a depth of 14 inches in some areas.

NONTECHNICAL SOILS DESCRIPTION REPORT
ERT Soils Report

Map Symbol	Soil name and description
PdB	Paxton and Montauk very stony fine sandy loams, 3 to 8 percent slopes These gently sloping, well drained soils formed in compact glacial till. They are on the tops and side slopes of drumlins and hills of glacial till uplands. Stones cover from 1 to 8 percent of the soils surface. Depth to bedrock is commonly more than 60 inches below the surface. These soils have a seasonal high water table perched at a depth of about 2 feet for several weeks in the spring. Permeability in the Paxton soil is moderate in the surface layer and subsoil and slow to very slow in the substratum. Permeability in the Montauk soil is moderate or moderately rapid in the surface layer and subsoil and moderately slow or slow in the substratum. Surface runoff is medium and the available water capacity is moderate.
PdC	Paxton and Montauk very stony fine sandy loams, 8 to 15 percent slopes These sloping, well drained soils formed in compact glacial till. They are on the tops and side slopes of drumlins and hills of glacial till uplands. Stones cover from 1 to 8 percent of the soils surface. Depth to bedrock is commonly more than 60 inches below the surface. These soils have a seasonal high water table perched at a depth of about 2 feet for several weeks in the spring. Permeability in the Paxton soil is moderate in the surface layer and subsoil and slow to very slow in the substratum. Permeability in the Montauk soil is moderate or moderately rapid in the surface layer and subsoil and moderately slow or slow in the substratum. Surface runoff is rapid and the available water capacity is moderate.
Rn	Ridgebury, Leicester, and Whitman extremely stony fine sandy loams

NONTECHNICAL SOILS DESCRIPTION REPORT
ERT Soils Report

Map Symbol	Soil name and description
	These nearly level, poorly drained and very poorly drained soils formed in compact and friable loamy glacial till. They are in depressions and drainageways of glacial till uplands. Depth to bedrock is commonly more than 60 inches below the surface. From 8 to 25 percent of the surface of these soils are covered with stones and boulders. The soils were mapped together because they have no significant differences in use and management. These soils have a seasonal high water table at or near the surface from fall through spring. Permeability is moderate or moderately rapid in the surface layer and subsoil of these soils. The permeability is slow to very slow in the substratum of the Ridgebury and Whitman soils and moderately rapid in the substratum of the Leicester soils. Runoff is slow. The available water capacity is moderate in these soils.
WyB	Woodbridge very stony fine sandy loam, 0 to 8 percent slopes This gently sloping, moderately well drained soil formed in compact glacial till. It is on the top and side slopes of large drumlins and hills on glacial till uplands. Depth to bedrock is commonly more than 60 inches below the surface. From 1 to 8 percent of the soil surface is covered with stones and boulders. The soil has a seasonal high water table at a depth of about 20 inches from fall to spring. Permeability is moderate in the surface layer and subsoil and slow to very slow in the substratum. Surface runoff is medium and the available water capacity is moderate.
WzC	Woodbridge and Rainbow extremely stony soils, 3 to 15 percent slopes

NONTECHNICAL SOILS DESCRIPTION REPORT
ERT Soils Report

Map Symbol	Soil name and description
	This nearly level to sloping, moderately well drained soil formed in compact glacial till. It is on the top and side slopes of large drumlins and hills on glacial till uplands. Depth to bedrock is commonly more than 60 inches below the surface. From 1 to 8 percent of the soil surface is covered with stones and boulders. The soil has a seasonal high water table at a depth of about 20 inches from fall to spring. Permeability is moderate in the surface layer and subsoil and slow to very slow in the substratum. Surface runoff is medium to rapid and the available water capacity is moderate.

HYDRIC SOILS LIST
MAPUNITS WITH HYDRIC COMPONENTS
ERT Soils Report

The "Hydric Soils Criteria" columns indicate the conditions that caused the mapunit component to be classified as "Hydric" "Non-Hydric". These criteria are defined in "Hydric Soils of the United States" (USDA Miscellaneous Publications No. 1491, June, 1991. The "FSA Criteria" columns contain information needed for the Food Security Act determinations required by Section 512.11(h)(4) of the National Food Security Manual (August, 1991). See the "Criteria for Hydric Soils" endnote to to determine the meaning of these columns. Spot symbols are footnoted at the end of the report.

Map Symbol Mapunit Name	Component(C)/ Inclusion(I)	Hydric	Local Landform	Hydric Soils Criteria				FSA Criteria and Information	
				Hydric Criteria Code	Meets Saturation Criteria	Meets Flooding Criteria	Meets Ponding Criteria	Natural Condition of Soil	Needs On-Site
Rn:									
Ridgebury, Leicester, and Whitman extremely stony fine sandy loams	Ridgebury (C)	YES	Depression	2B3	YES	NO	NO	Wooded	
	Leicester (C)	YES	Depression	2B3	YES	NO	NO	Wooded	
	Whitman (C)--	YES	Depression	2B3,3	YES	NO	YES	Wooded	
	ADRIAN (I)---	YES	Swamp	1,3	NO	NO	YES		
	RAINBOW (I)--	NO							
	PALMS (I)----	YES	Swamp	1,3	NO	NO	YES		
	WOODBRIDGE (I)---------	NO							

HYDRIC SOILS LIST
MAPUNITS WITH HYDRIC INCLUSIONS
ERT Soils Report

The "Hydric Soils Criteria" columns indicate the conditions that caused the mapunit component to be classified as "Hydric" "Non-Hydric". These criteria are defined in "Hydric Soils of the United States" (USDA Miscellaneous Publications No. 1491, June, 1991. The "FSA Criteria" columns contain information needed for the Food Security Act determinations required by Section 512.11(h)(4) of the National Food Security Manual (August, 1991). See the "Criteria for Hydric Soils" endnote to to determine the meaning of these columns. Spot symbols are footnoted at the end of the report.

Map Symbol Mapunit Name	Component(C)/ Inclusion(I)	Hydric	Local Landform	Hydric Soils Criteria				FSA Criteria and Information	
				Hydric Criteria Code	Meets Saturation Criteria	Meets Flooding Criteria	Meets Ponding Criteria	Natural Condition of Soil	Needs On-Site
PdB:									
Paxton and Montauk very stony fine sandy loams, 3 to 8 percent slopes	Paxton (C)	NO							
	Montauk (C)	NO							
	BROADBROOK (I)	NO	Depression	2B3	YES	NO	NO		
	CHARLTON (I)	NO							
	RIDGEBURY (I)	YES							
	WOODBRIDGE (I)	NO							
PdC:									
Paxton and Montauk very stony fine sandy loams, 8 to 15 percent slopes	Paxton (C)	NO							
	Montauk (C)	NO							
	BROADBROOK (I)	NO							
	CANTON (I)	NO	Depression	2B3	YES	NO	NO		
	CHARLTON (I)	NO							
	RIDGEBURY (I)	YES							
	WOODBRIDGE (I)	NO							

HYDRIC SOILS LIST
MAPUNITS WITH HYDRIC INCLUSIONS--Continued
ERT Soils Report

The "Hydric Soils Criteria" columns indicate the conditions that caused the mapunit component to be classified as "Hydric" "Non-Hydric". These criteria are defined in "Hydric Soils of the United States" (USDA Miscellaneous Publications No. 1491, June, 1991. The "FSA Criteria" columns contain information needed for the Food Security Act determinations required by Section 512.11(h)(4) of the National Food Security Manual (August, 1991). See the "Criteria for Hydric Soils" endnote to to determine the meaning of these columns. Spot symbols are footnoted at the end of the report.

Map Symbol Mapunit Name	Component(C)/ Inclusion(I)	Hydric	Local Landform	Hydric Soils Criteria				FSA Criteria and Information	
				Hydric Criteria Code	Meets Saturation Criteria	Meets Flooding Criteria	Meets Ponding Criteria	Natural Condition of Soil	Needs On-Site
WyB:									
Woodbridge very stony fine sandy loam, 0 to 8 percent slopes	Woodbridge (C)	NO							
	MONTAUK (I)	NO							
	PAXTON (I)	NO							
	RAINBOW (I)	NO	Depression	2B3	YES	NO	NO		
	RIDGEBURY (I)	YES							
	SUTTON (I)	NO							
WzC:									
Woodbridge and Rainbow extremely stony soils, 3 to 15 percent slopes	Woodbridge (C)	NO							
	Rainbow (C)	NO	Depression	2B3	YES	NO	NO		
	BROADBROOK (I)	NO							
	LEICESTER (I)	YES							
	MONTAUK (I)	NO	Depression	2B3	YES	NO	NO		
	PAXTON (I)	NO							
	RIDGEBURY (I)	YES							
	SUTTON (I)	NO							

HYDRIC SOILS LIST
NON-HYDRIC MAPUNITS
ERT Soils Report

The "Hydric Soils Criteria" columns indicate the conditions that caused the mapunit component to be classified as "Hydric" "Non-Hydric". These criteria are defined in "Hydric Soils of the United States" (USDA Miscellaneous Publications No. 1491, June, 1991. The "FSA Criteria" columns contain information needed for the Food Security Act determinations required by Section 512.11(h)(4) of the National Food Security Manual (August, 1991). See the "Criteria for Hydric Soils" endnote to to determine the meaning of these columns. Spot symbols are footnoted at the end of the report.

Map Symbol Mapunit Name	Component(C)/ Inclusion(I)	Hydric	Local Landform	Hydric Soils Criteria				FSA Criteria and Information	
				Hydric Criteria Code	Meets Saturation Criteria	Meets Flooding Criteria	Meets Ponding Criteria	Natural Condition of Soil	Needs On-Site
CrC:									
Charlton-Hollis fine sandy loams, very rocky, 3 to 15 percent slopes	Charlton (C)	NO							
	Hollis (C)	NO							
	CANTON (I)	NO							
	NARRAGANSETT (I)	NO							
	PAXTON (I)	NO							
CrD:									
Charlton-Hollis fine sandy loams, very rocky, 15 to 45 percent slopes	Charlton (C)	NO							
	Hollis (C)	NO							
	CANTON (I)	NO							
	MONTAUK (I)	NO							
	NARRAGANSETT (I)	NO							
	PAXTON (I)	NO							

HYDRIC SOILS CRITERIA CODES AND DEFINITIONS

Endnote -- HYDRIC SOILS LIST

The column 'Natural Condition of the Soil' indicates the following information: 'Wooded' indicates the soil supports woody vegetation under natural condition; 'Farmable' indicates the soil can be farmed under natural conditions without removing woody vegetation or other manipulation; and 'Neither' indicates neither of the above conditions are met.

1. All Histosols, except Folists, or

2. Soils Aquic suborder, Aquic subgroup, Albolls suborder, Salorthids great group, Pell great group of Vertisols, Pachic subgroup, or Cumulic subgroups that are:

   a. somewhat poorly drained and have a frequently occuring water table less than 0.5 feet from the surface for a significant period (usually 14 consecutive days or more) during the growing season, or
   b. poorly drained or very poorly drained and have either:

      (1) a frequently occuring water table less than 0.5 feet from the surface for a significant period (usually 14 consecutive days or more) during the growing season if textures are coarse sand, sand, or fine sand in all layers within 20 inches, or for other soils,

      (2) a frequently occuring water table less than 1.0 feet from the surface for a significant period (usually 14 consecutive days or more) during the growing season if permeability is equal to or greater than 6.0 in/hr in all layers within 20 inches, or

      (3) a frequently occuring water table less than 1.5 feet from the surface for a significant period (usually 14 consecutive days or more) during the growing season if permeability is less than 6.0 in/hr in any layers within 20 inches, or

3. Soils that are frequently ponded for long or very long duration during the growing season, or

4. Soils that are frequently flooded for long or very long duration during growing season.

SANITARY FACILITIES
ERT Soils Report

(The information in this report indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
CrC:					
Charlton	Moderate: slope	Severe: seepage, slope	Severe: seepage	Severe: seepage	Fair: small stones, slope
Hollis	Severe: depth to rock	Severe: seepage, depth to rock, slope	Severe: depth to rock, seepage	Severe: depth to rock	Poor: depth to rock, thin layer
CrD:					
Charlton	Severe: slope	Severe: seepage, slope	Severe: seepage, slope	Severe: seepage, slope	Poor: slope
Hollis	Severe: depth to rock, slope	Severe: seepage, depth to rock, slope	Severe: depth to rock, seepage, slope	Severe: depth to rock, slope	Poor: depth to rock, slope, thin layer
PdB:					
Paxton	Severe: percs slowly	Moderate: slope	Moderate: wetness	Moderate: wetness	Fair: small stones, wetness
Montauk	Severe: percs slowly, wetness	Moderate: slope	Slight	Severe: seepage	Poor: seepage
PdC:					
Paxton	Severe: percs slowly	Severe: slope	Moderate: wetness, slope	Moderate: wetness, slope	Fair: small stones, slope, wetness
Montauk	Severe: percs slowly, wetness	Severe: slope	Moderate: slope	Severe: seepage	Poor: seepage

SANITARY FACILITIES--Continued
ERT Soils Report

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Rn:					
Ridgebury	Severe: percs slowly, wetness	Slight	Severe: wetness	Severe: wetness	Poor: wetness
Leicester	Severe: wetness	Severe: seepage, wetness	Severe: seepage, wetness	Severe: seepage, wetness	Poor: wetness
Whitman	Severe: percs slowly, ponding	Slight	Severe: ponding	Severe: ponding	Poor: ponding
WyB:					
Woodbridge	Severe: wetness, percs slowly	Moderate: slope	Severe: wetness	Moderate: wetness	Fair: small stones, wetness
WzC:					
Woodbridge	Severe: wetness, percs slowly	Severe: slope	Severe: wetness	Moderate: wetness, slope	Fair: small stones, slope, wetness
Rainbow	Severe: wetness, percs slowly	Severe: slope	Severe: wetness	Moderate: wetness, slope	Fair: small stones, slope, wetness

SANITARY FACILITIES

Endnote -- SANITARY FACILITIES

This report shows the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered "Slight" if soil properties and site features generally are favorable for the indicated use and limitations are minor and easily overcome; "Moderate" if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and "Severe" if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. This report also shows the suitability of the soils for use as daily cover for landfills. A rating of "Good" indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; "Fair" indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated "Good"; and "Poor" indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

SEPTIC TANK ABSORPTION FIELDS are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 to 72 inches is evaluated. The ratings are base on soil properties, site features, and observed performance of the soils. Permeability, a high water table, depth to bedrock or to a cemented pan, and flooding affect absorption of the effluent. Large stones and bedrock or a cemented pan interfere with installation. Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Groundwater can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

SEWAGE LAGOONS are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. This report gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, depth to bedrock or to a cemented pan, flooding, large stones, and content of organic matter. Excessive seepage due to rapid permeability of the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor.

SANITARY LANDFILLS are areas where solid waste is disposed of by burying it in soil. There are two types of landfill, trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil form a source away from the site. Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of groundwater pollution. Ease of excavation and revegetation need to be considered. The ratings in this report are based

SANITARY FACILITIES

Endnote -- SANITARY FACILITIES--Continued

on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock or to a cemented pan, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium affect trench type landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rate "Slight" or "Moderate" may not be valid. Onsite investigation is needed.

DAILY COVER FOR LANDFILL is the soil material that is used to cover compacted solid waste in an area type sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste. Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils may be sticky or cloddy and are difficult to spread; sandy soils are subject to soil blowing. After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter than the rest of the profile, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

BUILDING SITE DEVELOPMENT
ERT Soils Report

(The information in this report indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
CrC:						
Charlton	Moderate: slope	Moderate: slope	Moderate: slope	Severe: slope	Moderate: slope	Moderate: large stones, slope
Hollis	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock	Severe: slope, depth to rock	Severe: depth to rock	Severe: depth to rock
CrD:						
Charlton	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Hollis	Severe: depth to rock, slope	Severe: slope, depth to rock	Severe: depth to rock, slope	Severe: slope, depth to rock	Severe: depth to rock, slope	Severe: slope, depth to rock
PdB:						
Paxton	Moderate: dense layer, wetness	Moderate: wetness	Moderate: wetness	Moderate: wetness, slope	Moderate: wetness, frost action	Moderate: large stones
Montauk	Moderate: dense layer, wetness	Moderate: wetness	Moderate: wetness	Moderate: wetness, slope	Moderate: wetness, frost action	Moderate: small stones, large stones
PdC:						
Paxton	Moderate: dense layer, wetness, slope	Moderate: wetness, slope	Moderate: wetness, slope	Severe: slope	Moderate: wetness, slope, frost action	Moderate: large stones, slope
Montauk	Moderate: dense layer, wetness, slope	Moderate: wetness, slope	Moderate: wetness, slope	Severe: slope	Moderate: wetness, slope, frost action	Moderate: small stones, large stones, slope

BUILDING SITE DEVELOPMENT--Continued
ERT Soils Report

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns landsca
Rn:						
Ridgebury-------	Severe: wetness	Severe: wetness	Severe: wetness	Severe: wetness	Severe: wetness, frost action	Severe: wetness
Leicester-------	Severe: wetness	Severe: wetness	Severe: wetness	Severe: wetness	Severe: wetness, frost action	Severe: wetness
Whitman---------	Severe: ponding	Severe: ponding	Severe: ponding	Severe: ponding	Severe: frost action, ponding	Severe: large sto ponding
WyB:						
Woodbridge------	Severe: wetness	Moderate: wetness	Severe: wetness	Moderate: wetness, slope	Severe: frost action	Moderate: large stor wetness
WzC:						
Woodbridge------	Severe: wetness	Moderate: wetness, slope	Severe: wetness	Severe: slope	Severe: frost action	Moderate: large stor wetness, slope
Rainbow---------	Severe: wetness	Moderate: wetness, slope	Severe: wetness	Severe: slope	Severe: frost action	Moderate: large ston wetness, slope

BUILDING SITE DEVELOPMENT

Endnote -- BUILDING SITE DEVELOPMENT

This report shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are "Slight", "Moderate", or "Severe". The limitations are considered "Slight" if soil properties and site features are generally favorable for the indicated use and limitaions are minor and easily overcome; "Moderate" if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and "Severe" if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

SHALLOW EXCAVATIONS are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock, a cemented pan, or a very firm dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or bands to sloughing or caving is affected by soil texture and the depth to the water table.

DWELLINGS AND SMALL COMMERCIAL BUILDINGS are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, depth to bedrock or to a cemented pan, large stones, slope, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 or 6 feet are not considered.

LOCAL ROADS AND STREETS have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material, a base of gravel, crushed rock, or stabilized soil material, and a flexible or rigid surface. Cuts and fills are generally properties, site features, and observed performance of the soils. Depth to bedrock or to a cemented pan, a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost action potential, and depth to a high water table affect the traffic-supporting capacity.

LAWNS AND LANDSCAPING require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, depth to bedrock or to a cemented pan, the available water capacity in the upper 40 inches, and the content of salts, sodium, and sulfidic materials affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

ABOUT THE TEAM

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

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

PURPOSE OF THE TEAM

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

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

REQUESTING A REVIEW

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

For additional information and request forms regarding the Environmental Review Team please contact the ERT Coordinator: 860-345-3977, Eastern Connecticut RC&D Area, P.O. Box 70, Haddam, Connecticut 06438.