

The Village at Gibson Hill Subdivision Sterling, Connecticut



Eastern Connecticut Environmental review team Report

Eastern Connecticut Resource Conservation & Development Area, Inc.

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Environmental Review Team Report

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

for the

Inland Wetlands and Watercourses Commission
Sterling, Connecticut

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Acknowledgments

This report is an outgrowth of a request from the Sterling Inland Wetlands and Watercourses Commission (SIWWC) to the Eastern Conservation District (ECD) and the Eastern Connecticut Resource Conservation and Development Area (RC&D) 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, Wednesday, December 13, 2007.

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I would also like to thank Joe Theroux, Sterling IWWC agent, and Normand Thibeault, Jr., project engineer 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 plans. Additional reports and revised plans were sent to Team members at a later date. Some Team members made separate or follow-up visits to the site, while others conducted a map review only. 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 and applicant. This report identifies the existing resource base and evaluates its significance to the proposed use, 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 reviewing the proposed residential subdivision.

If you require additional information please contact:

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Introduction

Introduction

The Sterling Inland Wetlands and Watercourses Commission have requested Environmental Review Team (ERT) assistance in reviewing a proposed residential subdivision.

The 74.72 acre site is located on the northerly side of Gibson Lane and the westerly side of Jencks Road adjacent to the Rhode Island state line. The site is an old farm with the farmhouse and a few buildings still standing, but they will be removed. The site is currently mostly wooded with several small interior wetlands and a larger wetland complex along the westerly side of Jencks Road at the northeastern corner of the property. The original plans shown to Team members proposed 23 lots with on-site sewage disposal and water supply wells. Later plans eliminated one lot. The lots range in size from 2 to 5 acres. A 1700 foot cul-de-sac road is proposed to access the majority of the lots, while the remainder will be accessed from Gibson Road.

Objectives of the ERT Study

The town has requested the ERT to assist in a review of the project due to the concerns of the neighbors and adjacent landowners. The major concerns include: stormwater management, flooding and drainage; impacts to on-site and off-site wetlands; septic system design; impacts to wildlife resources, open space design and traffic and access.

The ERT Process

Through the efforts of the Sterling Wetlands and Watercourses Commission this environmental review and report was prepared for the Town of Sterling.

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, plans and supporting documentation provided by the applicant.

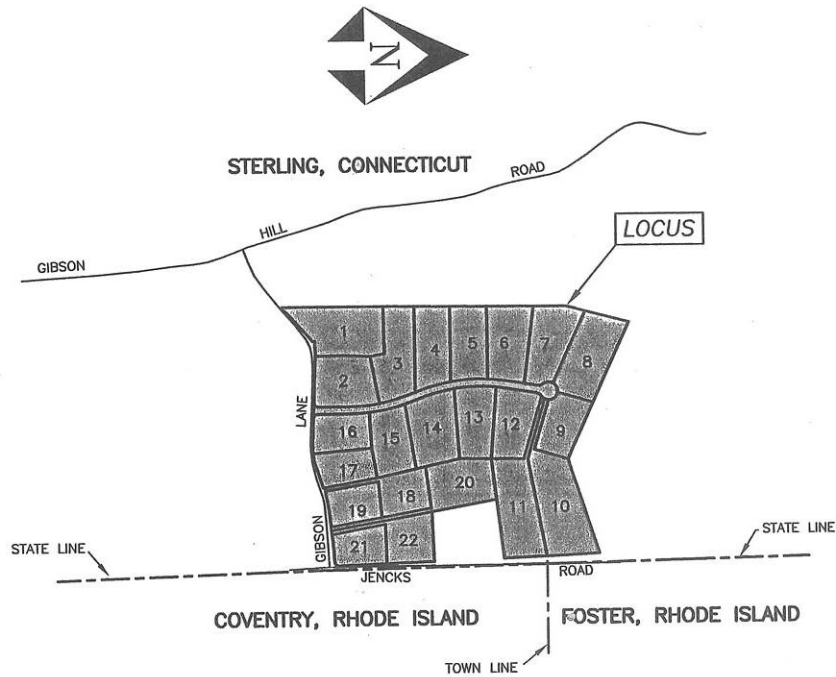
The review process consisted of four phases:

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 Tuesday, December 13, 2006. The emphasis of the field review was on

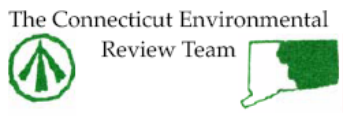
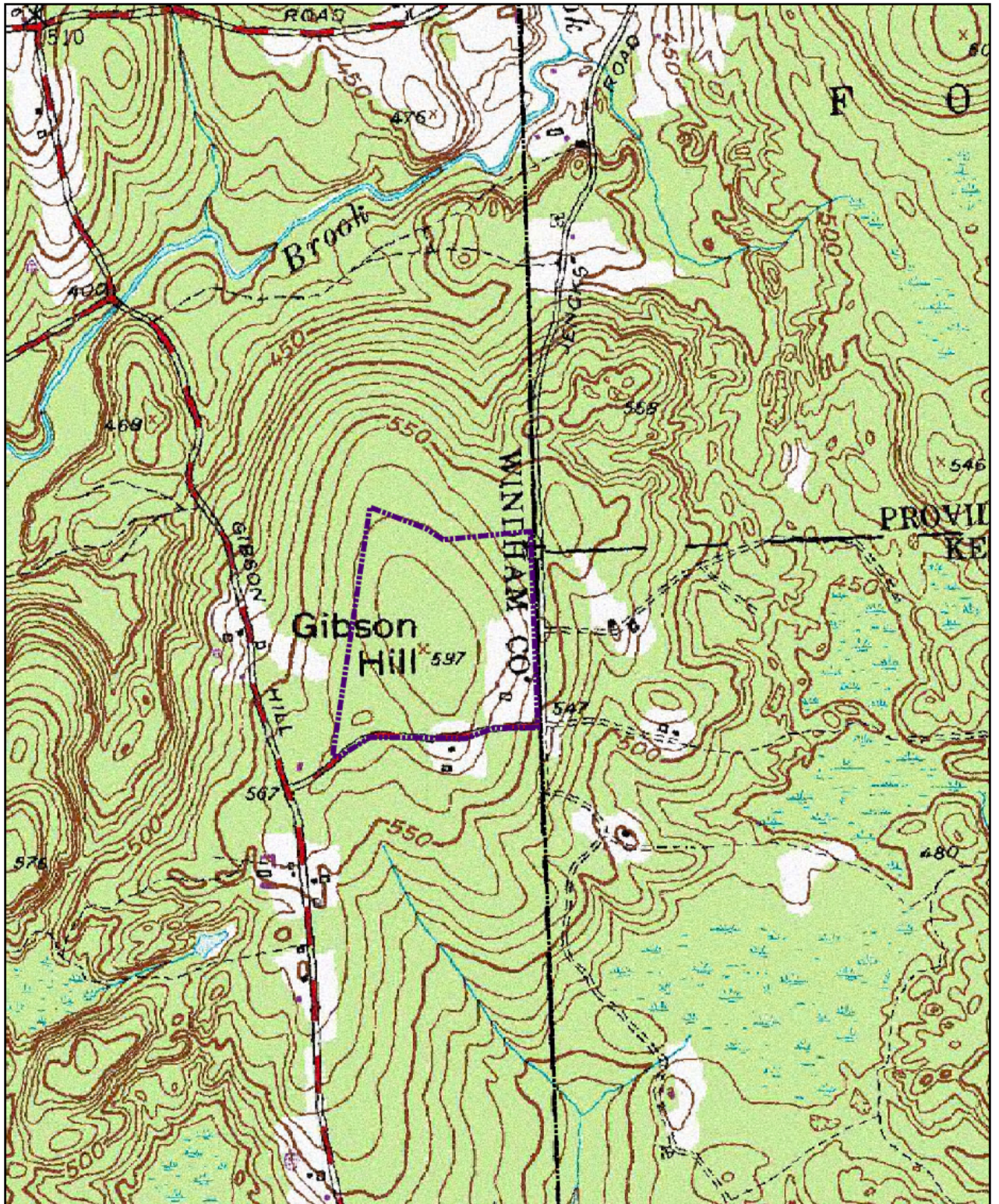
the exchange of ideas, concerns and recommendations. Being on site allowed Team members to verify information and to identify other resources.

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.



LOCATION MAP
SCALE: 1" = 1000'

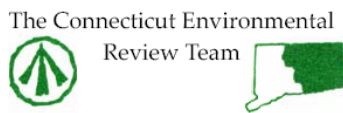
Gibson Rd & Jencks Rd Subdivision Location Map




This map was prepared by Amanda Fargo-Johnson for the Connecticut Environmental Review Team. This map is for educational use only. It contains no authoritative data. November 2006.

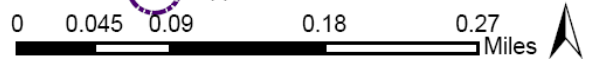


Gibson Rd & Jencks Rd Subdivision Aerial Map



This map was prepared by Amanda Fargo-Johnson for the Connecticut Environmental Review Team. This map is for educational use only. It contains no authoritative data. November 2006.

 Approx. Site Location



Sterling, CT



Topography and Geology

Topography

The proposed subdivision straddles the crest of Gibson Hill. Gibson Hill is a smoothly-contoured hill that is somewhat elongate in a NNW-SSE direction (Fig. 1). It has rather gentle slopes in all directions, particularly within the parcel under consideration. The hill has a relief of 200 +/- feet, but only 50 feet of relief are found on the parcel. Gibson Hill has the shape of a drumlin. It was formed beneath glacial-ice during the last Ice Age by both erosional and depositional processes.

Geology

Most aspects of the geology of the site are discussed by a report dated January 3, 2007 from CME Associates, signed by Wayne Bugden. This writer concurs with the geologic section of that report. There is an additional observation concerning the depth to bedrock that this reviewer would add.

The parcel is completely covered with a veneer of glacial till, deposited by the last Ice Age glacier. In most places the till is greater than 6 feet in thickness, as indicated by test-pit descriptions¹ submitted with the proposal plans. It is mapped as “thick-till” on the State Quaternary Map (see Fig. 1, after Stone and others, 2005). Two notable exceptions are found along the southern half of the property.

One area in the southwest corner of the parcel has bedrock within 4 feet of the surface (test pits #1, 2 in lot #1). This is notable because just up-slope from this bedrock high is a wetland.

A more extensive bedrock high stretches from lot #16 through lots # 17, 18, 19, and 22. This area reached within 16” of the surface on lot 17. The high is associated with an outcrop off the parcel that is composed of “leucogranite” (see Bugden’s description) and possibly owes its existence to the greater resistance to erosion of the leucogranite compared to the surrounding bedrock. This high area may affect excavation on the lot. What is more notable, however, is the coincidence of the southern extent (down-slope) of the mapped wetlands with the area of this bedrock high.

It seems likely that both bedrock high areas inhibit subsurface drainage and result in surface wetlands up-slope of the highs.

1. The till is composed of two parts. The upper part is approximately 24” thick and is sandy and not very compact. It is described in the test-pit descriptions as sandy-loam. This till is referred to as melt-out till, the last debris left by the melting ice. The lower part of the till is generally more compact and less sandy than the upper till. It was deposited beneath the moving ice and thus compacted by the weight of the overlying glacier. It is generally of poor permeability and is referred to in many of the descriptions as “pan”.

Reference

Stone, J.R., Schafer, J.P., London, E.H., DiGiacomo-Cohen, M.L., Lewis, R.S., and Thompson, W.B., 2005, Quaternary Geologic Map of Connecticut and Long Island Sound Basin (1:125,000). U.S. Geol. Surv. Sci. Invest. Map # 2784.

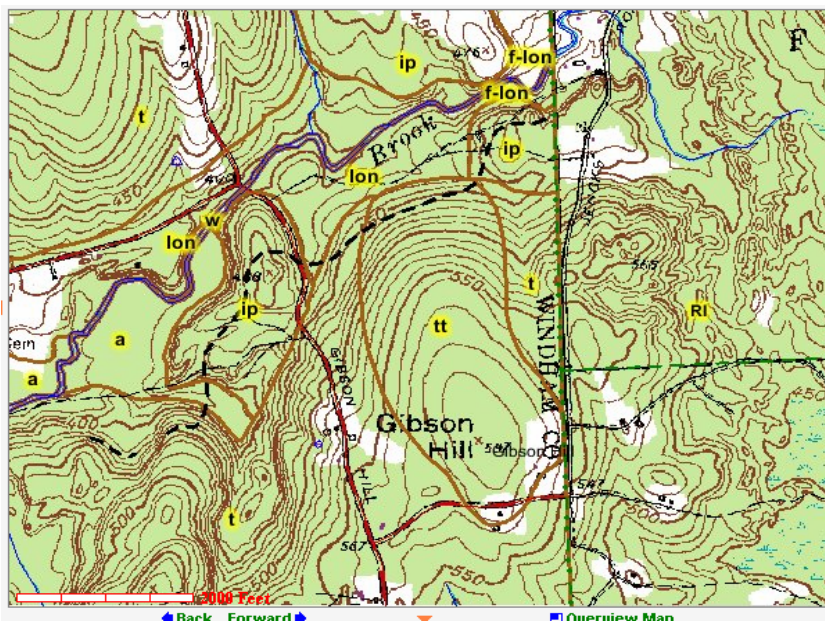


Figure 1. Topographic map of Gibson Hill showing boundaries of Quaternary deposits (after Stone *et. al.*, 2005). t = glacial till, tt = thick till, ip = ice-contact deposit (stratified), lon = lake deposits, a = modern alluvium. Black dashed line indicates position of glacial ice margin slightly more than 16,500 y.b.p.

Wetlands Review

The wetlands were field visited on January 16, 2007 with Dr. Randolph Steinen who reviewed the geology. It had rained for the previous three days.

General Information

The wetlands were reviewed and described in the C. Webb & Associates, LLC report dated January 10, 2007. There is no need to reiterate the descriptions covered therein. Instead, this report will touch upon subjects that were not part of that report.

The proposed 74.7 acres project abuts, and is immediately north of, Gibson Lane, and abuts and is west of Jencks Road, which is generally concurrent with the Rhode Island border. There is private property to the west and to the north.

The wetlands are located in four areas on the property. These are:

- 1.) The wetland along the west parcel boundary, on proposed lots 3 and 4;
- 2.) The small wetland on proposed Lot 2;
- 3.) The hilltop wetland on proposed lots 12, 13, 14 and 20; and
- 4.) The wetlands on proposed lots 10, 11, 23 and 22 which are part of a much larger wetland system.



All of these wetlands are classified as Palustrine wetlands, that is: non-tidal wetlands that are substantially covered with emergent vegetation-trees, shrubs, moss, etc.

This photo depicts the wetlands typical of the system occurring on proposed lots 10, 11, 23 and 22. These forested wetlands have thick organic surface levels with dense deciduous shrub and tree layers.

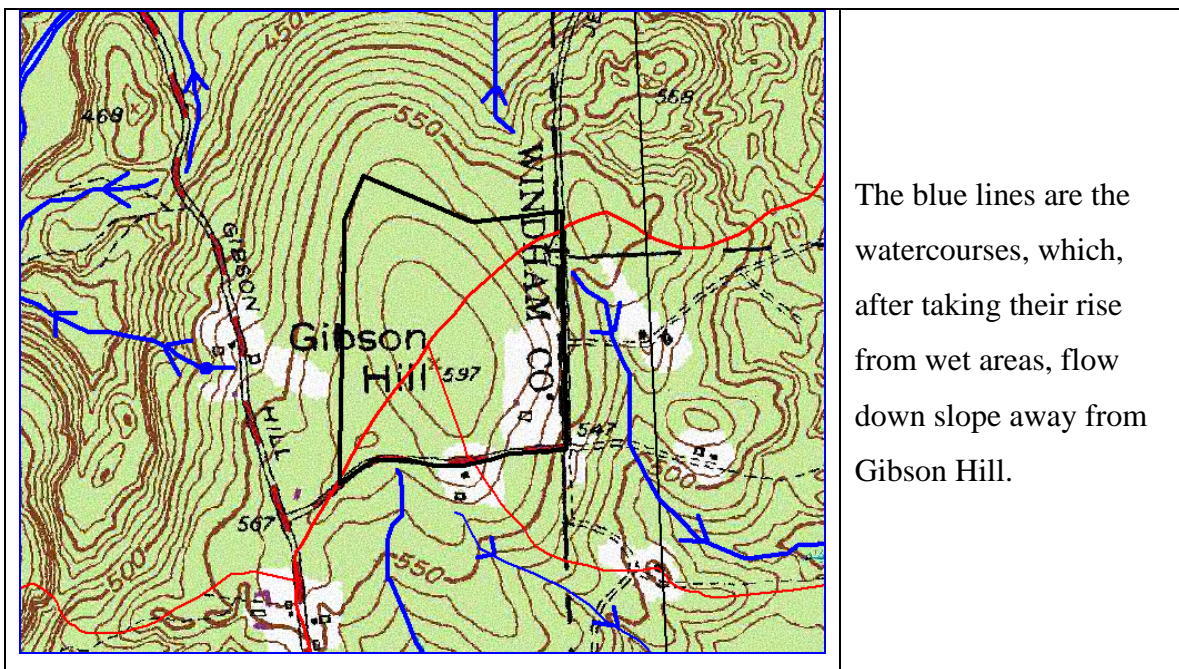
The wetland review area is 75 feet. The Team however received engineering drawings depicting the wetland review area often tied into the conservation easements, which offers better protection. But some wetlands showed no review area at all. Specifically, the

wetland that is divided by the then proposed lots 22 and 23 shows no 75 foot review area delineation. Subsequently, proposed Lot 23 was eliminated, but the Town of Sterling should look for the 75 foot hachure lines around that wetland as well as the narrow corridor of wetland along the east side of proposed Lot 22.

Vegetated buffers have a great capacity to filter runoff and help maintain local and downstream water quality. The location of this subdivision being at the top of three watersheds puts it in a position to highly impact the downstream waters.

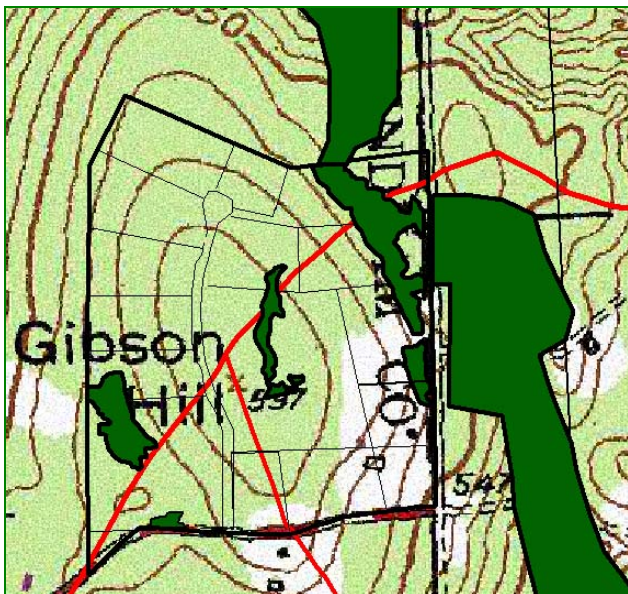
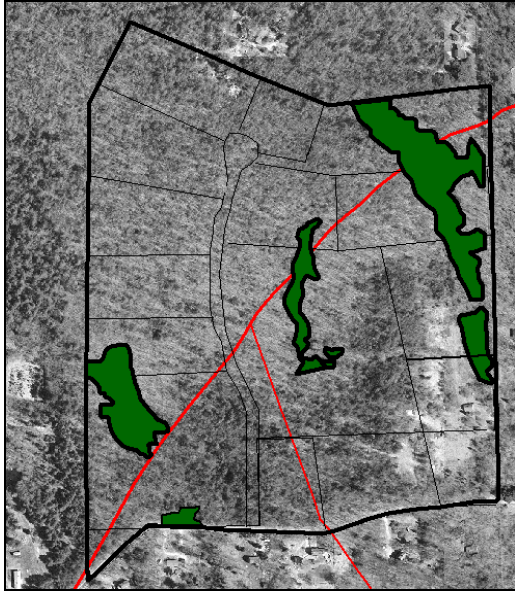
Drainage

As seen in the image below, the high point on Gibson Hill is the top of the drainage divide for three separate watersheds (as delineated by the red lines). The northwest division makes up about 47 percent of the parcel and drains to the north, northwest and west. The triangle of land in the south central portion drains approximately 13 percent of the parcel. The balance, which drains to the east and southeast into Rhode Island, accounts for about 40 percent of the property.



Because of the nature of both the topography and the wetland soils (Ridgebury, Leicester, Whitman complex) the wetlands are located on the top, sides and bottom of the slopes.

This is due in part to the nature of the soil and subsoil base they exist on. The soil complex that makes up these wetlands is based on glacial till. They are typically on a shallow slope, and are poorly drained with an average thickness of 16 to 24 inches which lies above a denser, more impenetrable layer.



The wetlands on the site are part of a much larger complex that knows no municipal or state boundaries.

All lines on these maps are for general reference only.

In theory, drainage passes downslope in this two foot layer of (relatively) loose till until it empties into a low spot on the landscape. But, as described in the geology section of this report, some elevated bands of resistant bedrock exist downslope, perpendicular to flow, possibly providing a pooling effect of the downslope flow and giving rise to the wetlands on proposed Lot 2, proposed lots 3 and 4, and the wetland on then proposed lots 22/23. Indeed, as seen in the graphic above, the wetland systems are vast and extensive in this area.

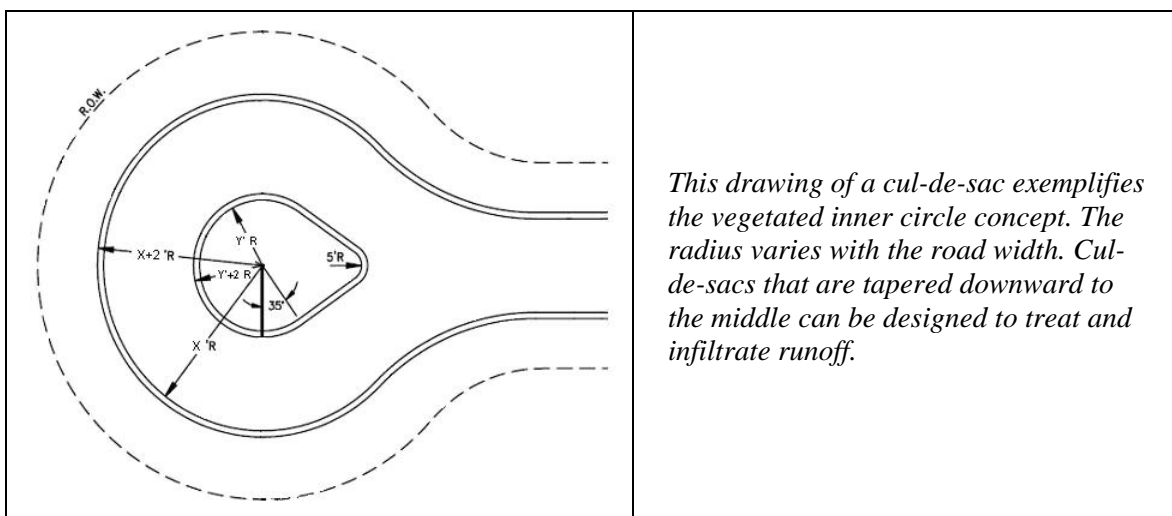
Concerns

Road width / impervious surfaces

As described above, the wetlands are fed by downslope water movement. Precipitation currently has an excellent chance of infiltration because of the heavily wooded nature of the property. Leaf accumulation and woody debris on the forest floor stop the downslope surface flow thereby providing on-site retention and infiltration opportunity.

Impervious surfaces which direct stormwater towards detention basins change the hydrologic regime on the landscape. Some techniques can help counter this issue:

- Road widths should be kept to a minimum and where possible eliminate the use of curbs to allow lateral water shedding and infiltration (typically on shallow slope areas);
-
- Roof runoff should be directed into the ground or away from the homes into the woodlands (not into the storm water system). In this proposal, 22 homes with 1,760 square feet of roofing yields nine tenths of an acre of impervious surface.
-
- A further reduction of impervious surface can be had by vegetating the inner circle of the cul-de-sac. These circles can be tapered to a low point within their center to further contain/reduce runoff. In addition, vegetated circles within cul-de-sacs are generally regarded as more aesthetically appealing than those that are fully paved.



Storm Water Ponds: Maintenance and Access

Wetlands at the headwaters of the watershed are, in large measure, responsible for providing clean water downstream. Thus, maintaining the integrity of the water quality of

the water that leaves the site is imperative to downstream ecology. In that regard it is necessary that storm water be handled well.

A long term, stabilized access for heavy equipment needs to be provided to maintain the efficiency of the sediment basins. By their nature the basins will collect sediments making them increasingly less effective with the passing of time. A regular schedule of maintenance should be submitted to the town in plan form and subsequent access for that maintenance should be built into the proposal.

As the number and width of road surface miles per basin increase so does the amount of road sand applied during the winter months. Some things to keep in mind:

- Because Connecticut has little tolerance for snow and ice on its roads, large quantities of road sand are applied every winter to keep the travel ways safe. The DEP estimates that on average in urban settings more than 40,000 pounds (20 1/4 tons) of sand is applied per road mile every year. Of that total, approximately 30-50% is collected in the spring through street sweeping. Thus, ~12 tons of sand are left on every mile of road annually.
- Because of the nature of the Connecticut's hill and valley topography, roads are often in close proximity to wetlands and watercourses. This aspect of the landscape makes it highly likely that over time much of the uncollected sand will move downslope into the wetlands, watercourses and sediment basins (which must be cleaned out periodically). These sediments can destroy aquatic habitat and fill in water bodies. The impacts of sand deposition (typically in combination with elevated salt levels) on wetlands with close proximity to roads are well documented. Road sand can be a major pollutant source by carrying nutrients, oil, and metals with it to the rivers, streams, and lakes. In the springtime, after the danger of icing, if the road sands are swept/collected later than sooner, the impacts are worse. This is because the constant grinding of automobile tires reduces sand particle size. These finer particles are held in suspension longer and thus carried further downstream.

As a result of these impacts towns are urged to sweep the roads as soon as possible in the spring and maintain their catch-basin clean out schedule.

Behind the Barn foundation

The Town of Sterling might want to consider soil testing for petroleum product pollution behind the old barn that is now only a concrete foundation. On the following page is a photograph of the farmstead in April of 1934. The L shaped barn in the middle of the photo is very clear as is the house just to the northeast. It was typical of the time to discard used petroleum products (gas, oil) and solvents (degreasers) used for cleaning machinery out 'behind the barn'. Thus it might be appropriate for the soils to be tested near lots 17 and 19 for this potential at, and downslope of, the barn site.



Aerial survey of Connecticut, 1934. Connecticut State Library photograph 08995

Any petroleum product infiltrating into the soil has a good chance of continuing into the groundwater and being released into surface water bodies (ponds, rivers, etc.). The travel time of pollutants through soil can vary depending on the make-up of the soil. Everything flows more quickly through loose, sandy soil versus denser, clayey soils. Thus, because of the position of the parcel at the headwaters of the watershed, it is important to keep both the stormwater from transporting pollution to surface water bodies, and equally important to maintain and/or renovate contaminated subsurface soils.

Clean up all dump areas

It is clear that large trash debris is present at various points. All dumpage should be removed from the location, especially tires which provide such fertile mosquito breeding areas.



Typical farm dump scene on the Jencks Road property.

The two photographs below show the standing water in the wetland on proposed Lot 2 which nearly abuts Gibson Lane.



Eastern Conservation District Review

Based on a review of the materials provided and an inspection of the site, it is ECCD's position that this project can be constructed without causing significant negative impacts to the natural resources in the area. However, this position is based on the premise that best management practices will be utilized in all phases of the project. Below are listed specific concerns/recommendations which are provided for consideration by the Town in the interest of further minimizing the impacts of this project.

General Observation

The overall impression is that the applicant has submitted a proposal which maximizes use of the property for residential development, and has laid the subdivision out using traditional methods. ECCD recommends that the Town consider adopting regulations which allow, encourage, and/or require innovative subdivision design practices and "low impact development" BMPs which help conserve natural resources.

The primary natural resources provided by this property at this time are stormwater infiltration/watershed protection, forested land cover, and wildlife habitat. It is the ECCD's opinion that the property's beneficial contributions related to stormwater will be reduced. The plan proposes that most of the stormwater will continue to be infiltrated on-site. However, the addition of 22 homes, driveways, road, etc. will negatively impact water quality by means of road salts, lawn chemical, and other pollutants. The forested area will be reduced and fragmented. The most significant result of this will be the loss of wildlife habitat.

Wetlands

As mentioned above, the subdivision layout has maximized use of the property, with the plans showing land disturbance right up to the boundary of the upland review area in several locations. If there is to be any revision to the subdivision layout, it is suggested that less land use in such close proximity to the wetlands would reduce the chances for negative impacts on the wetlands. Based on the field inspection of the wetland crossing shown on the plans, it is believed that this crossing will have minimal impact on the wetland.

Conservation Easements

ECCD supports the conservation easements proposed. However, the easements are quite narrow in several locations. ECCD understands that these narrow easements are intended to provide space for trails which will access and interconnect larger conservation areas. ECCD is in favor of the proposed easements, but suggest that wider easements will protect more natural habitat for wildlife and stormwater infiltration.

Stormwater Management

The proposed plan incorporates some infiltration measures, rather than a design proposing a completely piped storm sewer system, and ECCD strongly supports that effort. ECCD believes it would be possible to incorporate more infiltration measures into the plan, but overall, the proposed stormwater management plan is acceptable. However, it is suggested that the shapes of the stormwater basins be changed to more irregular configurations, thereby appearing to be more natural, and providing a better fit for the surroundings.

Erosion and Sedimentation Control Plan

The E&S Plan submitted appears to be adequate for reviewing this proposed subdivision. However, when actual construction begins, decisions will need to be made at the site as to how best to install the E&S measures. If this project is constructed, it is recommended that the Town have a knowledgeable inspector work with the contractor to ensure that effective E&S measures are properly installed and maintained.

Sewage Disposal Review

This section provides technical comments pertaining to septic system design and siting on a 23-lot subdivision (before one lot was removed in a plan revision) being proposed in Sterling, CT. The 74-acre wooded site is located on the northern side of Gibson Lane and the western side of Jencks Road adjacent to the Rhode Island border. The CT Department of Public Health participated in a site visit of the property on December 2, 2006 with the engineering firm of Provost & Rovero, Inc and the Northeast District Department of Health (NDDH). Deep-hole test pits on several lots were also evaluated at the time of the site visit.

Based on a cursory review of the preliminary plans, it is evident that all proposed lots are greater than 2 acres in size with each individual 75 foot well radius being located within the lot's property lines. Percolation rates of the soils ranged from 5 to 20 minutes per inch. Minimum leaching system spread requirements ranged from 45 to 140 linear feet. Slopes varied between 1.7 and 8.7 percent. Seasonal high maximum groundwater levels ranged from 18 to 29 inches below existing grade. Three bedroom houses are being proposed with leaching systems sized at a minimum 675 square feet of effective leaching area. Shallow ledge (less than 48 inches) was discovered in several locations on the subdivision property, but septic systems were positioned to avoid those areas.

The following general comments are offered on the plans:

- Test pits are required on both ends of the primary and reserve areas, and in some cases up to 50 downgradient from the proposed system if soil conditions warrant it. Additional soil testing may be required by NDDH for individual lot plans submittals.
- Minimum spread requirements have been determined using percolation rates ranging between 5-20 minutes per inch. Recommend that all spread calculations be based on a 10.1-20 minute per inch percolation factor or require additional perc testing during the wet season.
- Leaching system areas should be laid out and not "boxed" out as submitted. It is not clear if several of the lots can meet minimum separation distance requirements based on the location of the proposed leaching system and the center-to-center spacing requirements for the primary and reserve areas. (Lots #10, #11)
- All portions of stone walls within 25 feet of a leaching system shall be removed and replaced with "select fill" material as necessary. (Lots # 3, #16)
- Septic tanks and pump chamber locations have not been provided on the plans. They must be located a minimum 75 feet away from all private wells, 25 feet away from footing drains, and meet all other separation distances specified in Section 19-13-B103 of the Public Health Code.

- Storm water detention basins must be located a minimum 25 feet away from the septic systems and a minimum 50 feet away if located downgradient from the septic system. (Lots #5 thru #8, #11, #21)
- Excessive grade cuts must be avoided when located within 50 feet of the leaching field. If not possible, then additional soil testing shall be required in those areas and the design engineer must evaluate how these cuts will impact the ability of the leaching systems to properly treat the effluent. Plans should also indicate if there are any storms drains or underdrains in the road within 50 feet of the septic system. (Lots #10, #11, #17, #21, #22)
- The number of bedrooms that each leaching system is sized for and the type of leaching system proposed should be noted on each individual lot. In many areas of the State, four bedroom houses are becoming the minimum norm for new construction.
- As noted on the plans, each individual lot will require that engineered plans be designed due to the classification as an “area of special concern” in accordance with PHC Section 19-13-B103d(e).

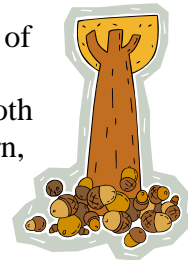
Wildlife Resources

Proposed site development plans, a site walk, and aerial photos were used to evaluate existing wildlife habitat on the property. The proposed development site is approximately 75 acres in Sterling. The site is mostly forested with wetlands throughout and a small area of early successional, old field habitat (approximately 2 acres). Wetlands are found in the southeast corner, along the central portion, and along the northern portion of the property and include red maple swamp, moist forest, and shallow pools. The proposed development is for 22 homes with lots ranging from two to five acres. A 1,700-foot cul-de-sac road is to be built to provide access for 16 lots, with the remaining lots accessed from existing roads.

Existing Wildlife Habitats

Upland forested area

Forested areas are found in the central portions of the property, with deciduous trees dominant in the north and coniferous stands dominant in the southern portions. Wetlands (including wet forest) are found within the forested areas, on the northeastern, central, and western portions of the property. Housing units and a 1,700-foot road are proposed for the forested areas around the wetlands. Forested areas are valuable to wildlife, providing cover, food, nesting and roosting places and denning sites. Mast produced by oaks provides excellent forage for a wide variety of mammals and birds including white-tailed deer, southern flying squirrel, eastern chipmunk, white-footed mouse, and eastern wild turkey. Trees, both living and dead, also serve as a home for a variety of insects, which, in turn, are eaten by many species of birds, including woodpeckers, warblers and nuthatches. Other wildlife species capable of using this habitat type include white-breasted nuthatch, American redstart, barred owl, broad-winged hawk, redback salamander and northern ringneck snake.



Wetlands



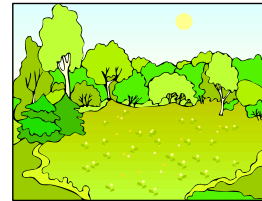
Wetlands found on the property include red maple swamp and shallow pools. The red maple swamp areas include such shrub species as highbush blueberry, sweet pepperbush and arrowwood, all of which are berry producers with high food value for wildlife.

Shallow pools that are typically filled in spring, do not contain any fish populations, and are generally found in confined basins with no inlet or outlet, often support amphibian breeding habitat critical to the survival of many species, such as the

gray tree frog and the spotted salamander. According to the Environmental Review Report prepared for the site by C. Webb & Associates, LLC, Environmental Consulting Services, there is one shallow pool located along the north side of Gibson Lane. This pool should be checked in spring for the presence of breeding amphibians.

Open Fields

There are approximately two acres of old field habitat on the property, including grassy areas as well as scrub/shrub areas. These types of habitats are valuable to a large number of species, many of which are declining in Connecticut, including meadow jumping mouse and field sparrow. Other species that make use of old fields include herbivores such as cottontails and reptiles such as garter snakes and black racers. Old fields such as this are in significant decline in Connecticut due to a combination of increased development and the decline of farmland abandonment.



Impacts

This site currently provides good wildlife habitat due to its diversity of habitats (including upland forest, early successional habitat and wetlands), and development with single-family homes will negatively affect the existing wildlife habitat. Although portions along the western edge, central portions, and northeastern corner will be held under a conservation easement, these remaining undeveloped areas will have extremely limited wildlife value. The developed portions of the site will be saturated with housing structures, access, and roadways, leaving extremely small, isolated areas that cannot provide for the needs of wildlife that may be currently using the property.

Outright habitat loss in the forested area will significantly change the species composition in the upland area because many species require specific habitat conditions (including habitat size) and are unable to adapt to a suburban environment. Species diversity, both plant and animal, in the forested area is likely to decrease and the composition will shift to those species typically associated with suburban habitat (for example, American robin and blue jay are likely to become the more common bird species).

Wetland species that require large parcels of upland habitat in addition to wetland breeding pools are likely to decline in two ways: First, outright loss of habitat will make the area unsuitable for those species that require minimum forested acreages above the amount that will remain; second, because juveniles need to migrate from the pools in which they develop to the upland habitat they utilize as adults, the addition of a roadway, driveways, and other hazards will certainly negatively impact populations. Calhoun and

Klemens (2002) recommend that the upland areas around breeding pools up to a distance of 750 feet be considered critical upland habitat, that at least 75% of that zone be kept undisturbed and that a partially closed-canopy stand be maintained.

Reducing impacts

Given the number of single-family housing units proposed, as well as the layout, reducing impacts to wildlife will be virtually impossible under the current proposal. At the very least, the development plans should maintain adequate buffer zones around the wetlands (including any breeding pools). According to the best science available, a buffer of at least 750 feet from the wetlands into the uplands is needed to somewhat reduce the impacts to reptile and amphibian species using the upland forest area in conjunction with the wetland. The proposed open space amount would be much more valuable if it was contiguous and connected with less developed areas, allowing a portion of the parcel to function as a wildlife corridor. Significantly reducing the number of proposed lots to no more than 10 (given the same size) and laying them out in the southeast and northwest portions of the property would allow the site to retain some of its wildlife value.

Summary

The proposed project will almost totally replace the existing habitats with residential housing, resulting in direct habitat loss. Development in the forested area (including the wetlands) will affect the number and composition of species found. Even for the wetland areas with no development planned, there are still potential impacts to the reptile and amphibian species that use the wetlands in conjunction with the adjacent uplands. Most reptile and amphibian species are not very mobile and cannot easily seek out suitable habitat elsewhere once disturbance has occurred. Species that currently use this area for migration will no longer be able to do so. Given the layout of the proposed development, the impacts to wildlife should be expected to be significant.

References

Calhoun, A. J. K. and M.W. Klemens. 2002. Best Development Practices: Conserving Pool Breeding Amphibians in Residential and Commercial Developments in the Northeastern United States. MCA Technical Paper No. 5, WCS, Bronx NY, 57 pp.

The Natural Diversity Data Base

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

Natural Diversity Data Base information includes all information regarding critical biological 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 substitutes 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.

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.

Archaeological and Historical Review

The Office of State Archaeology has had an opportunity to review the report submitted by PAL, Inc. for The Village at Gibson Hill Subdivision. The Office of State Archaeology (OAS) finds that the survey was performed in compliance with the State Historic Preservation Office's *Environmental Review Primer for Connecticut's Archaeological Resources* and reflects state-of-the-art archaeological standards. In addition, the OAS concurs with the report's recommendations that no further archaeological investigations are warranted in regards to the project area and the associated stonewalls and piles.

While the origins and cultural affiliation of stone piles are being debated among many individuals that approach the subject from a number of differing methods, PAL, Inc. has conducted their research in a scientific framework of historical documentation and archaeologically investigation of empirical data collection, and have concluded that the builders of the stonewalls and piles on the project area were Euro-American farmers such as the Gibson family. Negative evidence cannot be used in science, that is, not finding evidence of burials does not mean burials exist. There are thousands of stone piles in Connecticut alone, as there are thousands of stonewalls, all on the same properties. Although they exist together, to assume that one culture built the stone piles and another culture built stonewalls during two different time periods requires a greater assumption than that they were constructed by the same people at the same time. The OAS recognizes the debate will continue and that differing interpretations may result at different sites.

While the Office of State Archaeology concurs with the interpretation of Euro-American farming activities, namely field clearing, of the stone piles and stonewalls, they encourage the preservation of as many of these features as is feasible within the approved plans. Every effort should be made during construction activities to avoid the stone features that are not in the direct road right-of-way or in house and septic areas. Preservation of our colonial and historic agrarian lifestyles serves to maintain an important part of heritage of eastern Connecticut.



Planning Concerns

Site Design

Better site design can reduce the amount of impervious cover; increase natural lands set aside for conservation, and use pervious areas for more effective storm water treatment. The proposed subdivision calls for one road to form a cul-de-sac and two rear lots. This conventional site design is not desirable from an environmental standpoint. A redesign of the site to be more environmentally sensitive may be possible if fewer houses are proposed. Due to the location of wetlands, this site would lend itself well to a cluster development.

If it is determined that the cul-de-sac is the only feasible option for this site, NECCOG would suggest two alternatives to the traditional cul-de-sac. The radius of the cul-de-sac should be the minimum required to accommodate emergency and maintenance vehicles. The current site plan includes a cul-de-sac of 60 feet in radius creating a large circle of needless impervious surface. One option is to reduce the radius of the turnaround bulb. Several communities have implemented this successfully and the smaller radii can range from 33 to 45 feet. Since vehicles only use the outside of a cul-de-sac when turning, a second option is to create a pervious island in the middle of the cul-de-sac.

Storm Water Management

The site pre-development has a history of poor drainage and flooding. There is significant concern that once the land is developed increased flooding will adversely impact the properties of the adjacent land owners on Jencks Road and Gibson Lane. Development of the proposed project will create impervious surfaces (roofs, roads, driveways, etc.) within the project area that will increase both the volume and rate of storm water runoff from the site. Reducing the impervious surface on the site will improve the capacity of the proposed storm water systems to effectively catch and treat all runoff.

Wildlife

The land currently provides significant wildlife habitat. The development of the site will result in both temporary and permanent impacts to wildlife. It can be expected that the new residential sites will be frequented by displaced deer and other species which may result in conflict. An increase in the percentage of designated open space would help to mitigate some of the impacts to wildlife. This open space will be most beneficial if contiguous and located in a manner that will enable wildlife to access nearby habitat.

Transportation

No significant adverse impacts to transportation are expected. The proposed subdivision is located off of narrow local roads with minimal traffic volume. However, some increases in air emissions and noise levels will likely result primarily due to the increase in traffic volumes. In addition, there are potential safety concerns with the increased traffic if the drainage is not improved on Jencks Road and the road continues to flood and freeze during winter months.

Conclusion

In conclusion, the town should require the highest percentage allowed by regulations to be maintained as open space and if possible alter the proposed site design in order to minimize the potential negative impacts of the proposed subdivision. It is also suggested that the town review current regulations to determine whether these regulations will result in desirable future development and offer developers the option to produce environmentally sensitive design.

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, 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, active adult, 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 and/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 Conservation District and the ERT Coordinator. A request form should be completely filled out and should include the required materials. When this request is reviewed by the local Conservation District and approved by the ERT Subcommittee, 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, e-mail: cert@comcast.net