Newberry Village

An Active Adult Community

East Windsor, Connecticut

Eastern Connecticut Environmental Review Team Report

Eastern Connecticut
Resource Conservation & Development Area, Inc.

Newberry Village

An Active Adult Community

East Windsor, 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
Conservation/Inland Wetland Watercourse Agency
East Windsor, Connecticut

April 2004

Report No. 580

CT Environmental Review Teams
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ACKNOWLEDGMENTS

This report is an outgrowth of a request from the East Windsor Conservation/Inland Wetland Watercourse Agency to the North Central Conservation District (NCCD). The NCCD 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 Wednesday, July 9, 2003.

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I would also like to thank Nancy Rudek, zoning and wetland enforcement officer, Timothy Coon and Jay Ussery, J. R. Russo & Associates, George Logan and James McManus, Rema Ecological Services, David Kuzmak, applicant representative, and Ann Kilpatrick, DEP - Wildlife, 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 and additional information. Some Team members made separate site visits. Team members received the final environmental assessment report from the applicant's consultant in February 2004. Following the review, and receipt of consultant reports and revised plans, 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 landowner. This report identifies the existing resource base and evaluates its significance to potential and existing development, and also suggests considerations that should be of concern to the town and landowner. 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 the reviewing plans for this active adult community.

If you require additional information please contact:

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INTRODUCTION

Introduction

The East Windsor Inland Wetlands Commission has requested assistance from the Eastern Connecticut Environmental Review Team in conducting a review of a proposed active adult community.

The 117.45 acre project site is located on the north side of Newberry Road at the intersection of Winkler Road. The site is mostly wooded with some areas of meadow and shrubland. 44.9 acres of the site are wetlands which include over 50 wetland depressions. There are 13 confirmed vernal pools habitats with many more considered "potential" vernal pools.

The proposed project is for the construction of an age restricted community consisting of 116 units in 67 buildings. The site will be served by public utilities, including sewer and water. Access will be from both Newberry Road and Winkler Road.

Objectives of the ERT Study

The East Windsor Conservation Commission/Inland Wetland Watercourse Agency has requested assistance because they are concerned with the sensitive nature of the property, which exhibits unique habitat conditions and vernal pools, and how the proposed construction will affect wetlands and uplands. Major concerns include: hydrology and stormwater management, potential

impacts to wetlands, impacts to vernal pool habitats and site design compatibility relative to proximity to wetlands and uplands.

The ERT Process

Through the efforts of the conservation commission/inland wetland watercourse agency this environmental review and report was prepared for the Town of East Windsor.

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 town and 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 Wednesday, July 9, 2003. Some Team members made a site visit on a different day. 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. The final environmental assessment report by the applicant's consultant was made available in February 2004, as well as revised plans.

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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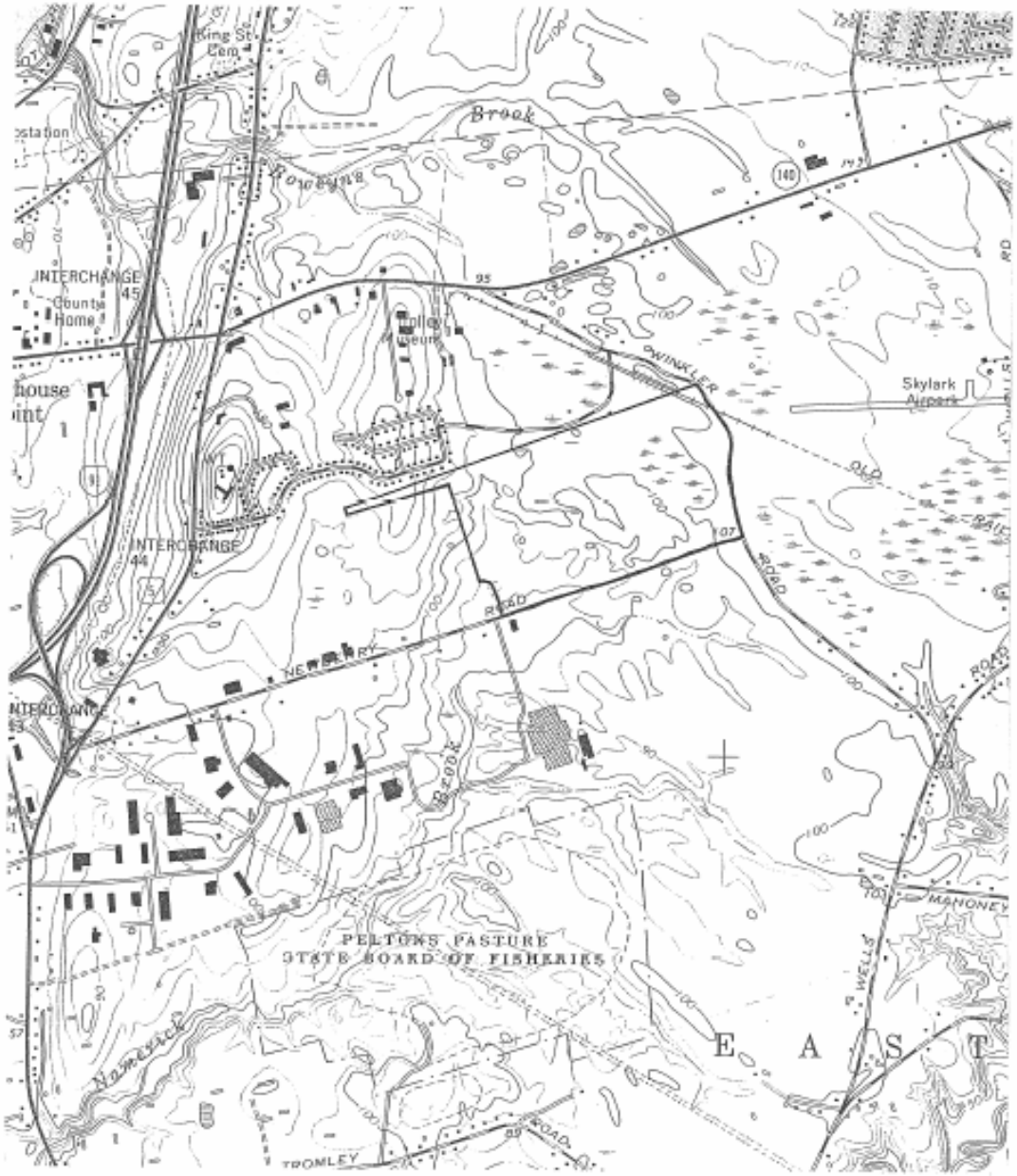
Location/Topographic Map

Scale 1" = 2000'



N

LTP Realy, Inc. Property
Newberry and Winkler Roads, East Windsor, Connecticut
Showing Wetlands and Watercourses on a
April 20, 1995 Aerial Photograph (CT DEP #48-15)

Date: 7/9/03

Approximate Property Boundary
Watercourse/Waterbody
Wetland Boundary *(Approx.)*
Proposed Limits of Clearing *(Approx.)*

Figure 2

N.T.S.

Rema Ecological Services, LLC
164 East Center Street, Suite 8
Manchester, CT 06040
860.649.REMA

Geology and Topography

Background

20,000 to 15,000 years ago the last Great Ice Age was coming to an end and warming climates began melting the glacial ice in southern New England. The weight of the ice, which was more than one kilometer thick, depressed the land. As the ice to the south (modern coastal Connecticut) melted, the land bobbed back up. The resulting increase in land elevation to the south along with a pile of debris in the Rocky Hill area created a dam that backed up melt-water forming a long narrow lake, referred to as Glacial Lake Hitchcock, in what would become the Connecticut River Valley. The lake persisted for several thousand years (Bell, 1985, p.20-21) and all the while silt and clay settled to its bottom, accumulating to a thickness of approximately 100' at the Newberry Village site. Along the edges of the lake, sand and gravel were deposited as beaches and, where rivers of melt-water (and their heavy load of entrained sediment) entered the lake, as deltas. The pile of debris at Rocky Hill finally eroded, creating a channel through which the lake could drain. For some time after the lake emptied, cold winds coming off the nearby glaciers blew fine sand and silt across the dry lake bottom (Thorson and Schile, 1995), covering it with several feet of dune sand and eolian silt. The proposed village is sited on land that is underlain by lacustrine deposits (silt and clay) that are overlain by laminated sand and silt (beach terrace?) and discrete irregularly shaped piles of dune sand.

Site Observations

Most of the property has very little topographic relief (<20' except for the northwest corner) and resulting slopes are gentle. The higher elevations (except for the pan-handle at the northwest corner) are piles of well-sorted fine-grained sand. The windblown sand does not form a blanket but is localized into several irregularly shaped dunes (see Fig. 3 & 4). The dunes were deposited on top of a veneer (blanket) of terrace sand that is pebbly in places. Both the dune sand and terrace sand are permeable and adequately drained (no erosion, such as gully formation, was observed during this Team member's limited traverses). The sand and silt were, however, deposited above relatively impermeable silt and clay, which are exposed in Namerick Brook just south of the site (Colton, 1965). Precipitation readily soaks into the sand but cannot easily penetrate the clay and silt. This results in high water table conditions, which is manifest by numerous swamps and seasonal pools on the site.

Recommendations

Seasonal high water table should be determined for all buildings with basements so that basements may be waterproofed if necessary.

Test borings should be made to determine depth to the clay layers and, if the clay is close to the surface, the load bearing strength of the overlying sandy layers should be calculated to ensure that footings are properly designed for potentially unstable ground.

References

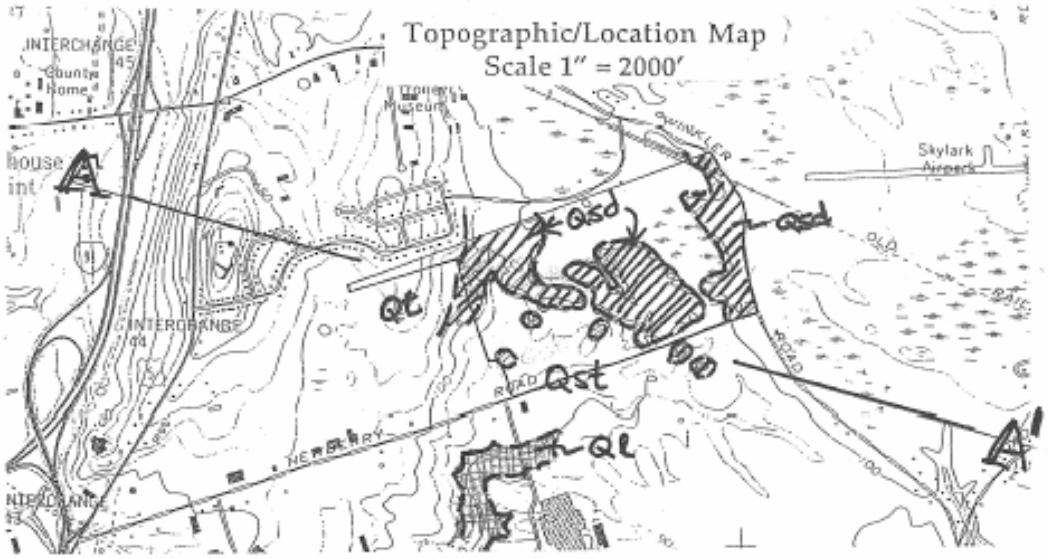
Bell, Michael, 1985, *The Face of Connecticut*. State Geological and Natural History Survey of Connecticut, Bull. 110, 196p.

Colton, R.B., 1965, Geological Map of the Broad Brook Quadrangle, Hartford and Tolland Counties, CT: U.S. Geol. Surv., Geological Quadrangle Map #GQ-434.

Thorson, R.M., and Schile, C.A., 1995, Deglacial eolian regimes in New England. Geol., Soc. Am. Bull. 107:751-761 .

Figure 3

Map showing surface materials at Newberry Village site and showing lake deposits near site. A-A′ is line of cross-section shown below. After Colton, 1965.



Qsd — Sand dunes and other eolian deposits; well sorted very fine-grained sand.

Qst — Terrace deposits; yellowish brown well laminated sand, silt and clay, locally pebbly. Up to 20' thick.

Qt — Lake deposits: elevation of top at +75-80' Laminated moderate yellowish brown to gray clayey silt, silt and sand, partly varved (varves are annual layers consisting of alternating thin laminae of silt deposited during summer and clay deposited during winter).

Qt — Till, non-sorted, unstratified mixture of clay, silt, sand, pebbles, cobbles and boulders. Forms mantle over bedrock; deposited beneath glacier.

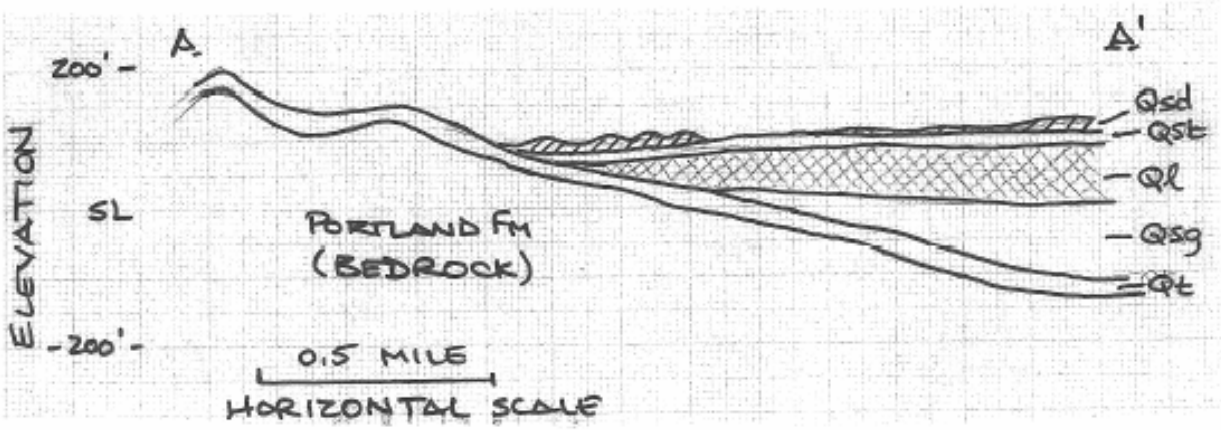


Figure 4
Cross section of A-A′ showing stratigraphy of uncomsolidates deposits. From Colton, 1965.

Conservation District Review

Introduction

Information reviewed includes a comprehensive Environmental Assessment for the Proposed Newberry Village Active Adult Housing Community..., prepared by REMA Ecological Services, LLC, dated February 2, 2004. In addition, plans for the project, sheets 1-24, prepared by J.R. Russo & Associates were reviewed.

The District reviewed proposals on this site in November 1997, May 1999, and March 2003. Those reviews are incorporated here by reference. The previous reviews focused on the unique character of the site due to the presence of numerous potential vernal pools. The applicant has submitted a substantial amount of detailed information. While the information submitted is critical to understanding existing conditions and the proposed development, the comments below focus on the conclusions put forth in the Environmental Assessment and the site plan, with a focus on vernal pools.

In an effort to assist the town with their review, the following also includes discussion of the decision-making process within the framework of the State of Connecticut Inland Wetlands and Watercourses statute, and reflects the District's general understanding of the statutes and municipal regulations. If the Inland Wetland and Watercourses Agency requires legal interpretation of the statutes or municipal regulations, the town attorney should be consulted. The following comments are advisory in nature and are presented to assist the municipality with their review.

The October 2003 Connecticut State Supreme Court decision, commonly referred to as "AvalonBay" is relevant to the current proposal regarding the regulation of vernal pools and associated upland habitat. The fall 2003 issue of The Habitat, prepared by the Connecticut Association of Conservation and Inland Wetlands Commissions, Inc. has a comprehensive review of the decision, including practical recommendations for Inland Wetland Agencies. Attached are some of the relevant sections of The Habitat for review (see Appendix). It is generally accepted that the decision restricts the ability of municipal wetland agencies from considering impacts to obligate wetland wildlife that occur outside of a wetland. Therefore, the following discussion focuses on impacts that the proposed development may have on the physical characteristics of the vernal pools.

A number of organizations have been working with the State Legislature to revise the Inland Wetlands and Watercourses Act to specifically address some of the issues raised by the AvalonBay case.

Existing Information

The information submitted in the Environmental Assessment is comprehensive regarding existing conditions. It includes detailed information regarding wetland functions, vernal pools, and wildlife habitat. The site plan is complete and detailed.

No specific information has been submitted regarding potential hydrological impacts of the development on individual vernal pools. While there is some discussion in Environmental Assessment regarding stormwater management and water quality, there is little information analyzing smaller drainage units around individual pools. In some cases over 50% of the drainage area surrounding individual pools will be developed. Direct stormwater discharges to vernal pools have been minimized and most of the remaining discharges are treated. However, development around individual pools is significant and

increased runoff and decreased infiltration is inevitable in the drainage areas effecting a number of pools. Vernal pools and potential pools numbered 7F, 7D, 8A, 9A, 10, 21, 23C, 23D are examples of pools where a significant portion of the drainage area surrounding the pool is developed.

There is one substantial error in the plans relating to vernal pools. In the Environmental Assessment, Vernal Pool Habitat Profile, vernal pool 24C is described as a confirmed vernal pool. It is not shown as such on the overall plan, sheet 4 of 24. In addition, on the 40' scale, sheet 8 of 24, the pool is not shown relative to the development. Blue Spotted Salamander eggs were identified in this pool.

Existing and Proposed Conditions

In summary, the parcel covers approximately 117 acres, approximately 45 acres of which are wetland. There are 53 surface water depressions on the parcel (these are a subset within the 45 acres of wetland). Within the proposed development envelope, including areas within 100 feet of proposed disturbance, there are 15 potential vernal pools and 10 confirmed vernal pools. The proposal is for 116 units within 67 free standing buildings. Two roads are proposed.

Wetlands

The Environmental Assessment does a good job of characterizing the site and provides an assessment of wetlands. The applicant has done a good job of avoiding direct alterations to wetlands, with only 3897 square feet of impact area. The proposal includes a comprehensive mitigation plan in the form of wetland creation (4000 square feet) and vegetation restoration and management plan. The District does not have any particular concerns about the development related to other functions and values of the wetland system other than issues related to the vernal pools.

Vernal Pools

The northern Connecticut River valley, especially areas with glacio-lucustrine deposits associated with glacial lake Hitchcock, is known to have regionally significant concentrations of vernal pools. (Michael W. Klemens, Ph.D., personal communication). Of particular significance on this parcel is the interconnected nature of the vernal pools and their proximity to one another. The concentration of pools provides protection to obligate vernal pool species during periods of climatic stress because different pools can be utilized depending on conditions (Michael W. Klemens, Ph.D., DEP Bulletin 32, 2000). The presence of Blue-Spotted salamander in pools 24C and 7B, a Connecticut Species of Special Concern, is also significant, and is often an indicator that other important species, such as Spotted Turtles are present (as confirmed in the Environmental Assessment) (Michael W. Klemens, Ph.D., personal communication).

The scientific literature regarding vernal pools has been developing over the last twenty years or so and a significant body of science has developed regarding the impacts to vernal pool breeding populations as a result of development. In 2002, the Wildlife Conservation Society published Best Development Practices, Conserving Pool-Breeding Amphibians in Residential and Commercial Development in the Northeastern United States in an attempt to provide some practical guidelines for development based on the science to date. The document has detailed information regarding the known effects of development on vernal pools, with a summary of some of the background science (see attached page 10 in the Appendix).

Some of the information in the publication involves impacts to adjacent terrestrial habitat, which should not be considered during review by the Inland Wetlands Agency in light of the AvolonBay decision. However, there is some discussion of the functions of the area immediately adjacent to vernal pools, which the authors describe as the *Vernal Pool Envelope*. This area has a direct

physical relationship to the pool in that it "maintains the water quality of the pool depression" and "provides a source of leaves, which constitute the base of the pool food web." Consequently, any impact within this area is likely to have a direct impact on the adjacent vernal pool in terms of hydrology, water quality, and habitat value associated with energy dynamics.

The following table is a summary of impact areas adjacent to potential and confirmed vernal pools within the area proposed for development. Impacts are divided into the following categories:

Structures within 50': Major roads and buildings proposed within 50' of a vernal pool, using the limits of the pool shown on the 40' scale plans, sheets 5-9. It excludes drainage structures and driveways.

Minimum Feet to Disturbance/Clearing: Distance is based on the closest disturbance associated with any clearing or land grading, assuming that the closest silt fence is the limit of disturbance.

Potential Thermal Impacts: This is a conservative thumbnail approximation based on the site plan. A "Yes" indicates that over 50% of the vegetation within 50 feet of the south side of the vernal pool will be removed. It assumes that under existing conditions the pool is shaded, since the site is predominantly wooded. The amount of canopy cover is shown on Table 4 in the Environmental Assessment.

Impacts within 100 feet and within the drainage area of Vernal Pool: This indicates the total number of structures, including stormwater basins, within 100 feet of a vernal pool *and* within the drainage basin of the pool. Structures within 100' may have impacts to the hydrological regime of the pool by decreasing existing infiltration rates and increasing runoff.

Confirmed Vernal Pool	Potential Vernal Pool	Structure within 50'	Minimum Feet to Disturbance/ Clearing	Potential Thermal Impacts	Impacts within 100' and within drainage area of Vernal Pool
	16	Unit #2	10'	Yes	Road Detention Basin 1 Unit
	14A	No	45'	No	1 Unit Stormwater Structure
	14B	Unit #52 Unit #56 Road	20'	Yes	3 Units Road
11A		None	20'	Yes	3 Units Road Water Quality Basin
10		Unit #9 Unit #11	20'	No	3 Units Road
	9A	Unit #17 Unit #21 Unit #23	15'	No	3 Units Road
9B		Unit #15	15'	No	1 Unit
	8A	Road	2'	Yes	1 Unit Road
	17	Unit #43 Unit#45 Road	0'	Yes	2 Units Road
7F		Unit #49 Road	25'	No	1 Unit Road
7 D		Unit #49	10'	Yes	2 Units Road
	18	#5 Cedar Ln. #7 Cedar Ln.	10'	Yes	2 Units Driveway
21		Unit #55 Unit #61	15'	No	5 Units Road
	22	Unit #61 Unit #63	15'	No	3 Units
23B		#10 Cedar Ln. Driveway	30'	No	3 Units Driveway
23C		#12 Cedar Ln. Road	0	No	1 Unit Road
23 D		Road	2'	No	Road Detention Basin
	24A	#17 Cedar Ln. Road	15	Yes	1 Unit Road
	24B	#19 Cedar Ln. Road	25	Yes	1 Unit Road

Vernal Pool Productivity vs. Value

The Environmental Assessment discusses the results of field-work conducted by REMA Ecological Services Inc. Out of the total of 53 pools, there are 13 confirmed vernal pools with known breeding activity involving obligate vernal pool species. The remaining pools are considered potential vernal pools, although no breeding activity was observed. Based on a review of recent literature, extinction and colonization amongst proximate vernal pools may be a typical occurrence and may reflect changes in hydroperiod and canopy cover over time (Skelly). Use of different pools may also reflect normal fluctuations in pool populations based on annual weather conditions (Michael W. Klemens, Ph.D., personal communication). Therefore, for the purposes of review, potential vernal pools and confirmed pools should be considered equally.

Of the confirmed pools, REMA categorizes the productivity of individual pools as low to moderate, and the entire site as moderately productive based on the total number of pools. The overall "value" of the site should not be confused with the terms aimed at characterizing productivity. In most wetland assessment methods, the presence of vernal pools elevates the value of wetlands. Also, according to the authors of Best Development Practices - Conserving Pool-Breeding Amphibians in Residential and Commercial Developments in the Northeastern Unites States, "egg mass numbers may vary regionally" and low egg mass numbers in clustered pools may indicated dispersed breeding within the pools. Therefore, low to moderate productivity within the vernal pools does not reduce their "value" as important habitat.

There is a statement in the Environmental Assessment that "the existing configuration of this site and the plethora of seasonal ponds compared to upland terrestrial habitat is wholly incompatible with the widely cited Calhoun/Klemens model (2002), with upland rings of 100 to 750-feet wide around a central pool." It should be noted that the publication discussed, and

cited above, does not present a "model" of particular vernal pool configurations. Rather, it discusses the science related to on-going studies and uses that information to present practical guidelines. Consequently, the information in the document is relevant to this site, with the exception of discussions about critical terrestrial habitat, in light of AvalonBay.

Summary of Potential Impacts

Given the amount of disturbance adjacent to many of the vernal pools, impacts to the hydrology of vernal pools are likely due to decreased infiltration and increased run-off. Thermal changes (heating) of surface waters within the pools are also likely where significant areas of shade are removed around the pool. Changes in the amount of woody debris and leaves contributed to the vernal pools from surrounding areas may alter the energy dynamics of the pools and associated wetlands. Finally, degradation of surface water quality is likely given the location of numerous structures and driveways within the drainage area of many vernal pools. For example, roofs may be a source of dissolved metals and driveways are known to accumulate both nutrients and metals (The Practice of Watershed Protection, Article 15).

Proposed Mitigation Measures

The applicant has proposed numerous measures to allow for wildlife movement through the site, including drift fences along roads, Cape Code style curbing, and box culverts to allow wildlife passage under roads.

To protect water quality, the applicant proposes a number of measures including particle separators, water quality swales, and water quality basins.

While the proposed measures will allow greater wildlife movement and help reduce water quality degradation, it is still likely that concentrated development

around pools will result in changes to hydrology, water quality, and energy dynamics of the pools.

Alternative Assessment

The following discussion assumes that the Inland Wetlands and Watercourses Regulations of the Town of East Windsor are consistent with The Connecticut Inland Wetland and Watercourses Act and Model Inland Wetland Regulations developed by the DEP. The Act describes the Criteria for Decision for agencies evaluating permit applications and contains the following language regarding information the agency "shall take into consideration":

"The applicants purpose for, and any feasible and prudent alternatives to, the proposed regulated activity which alternatives would cause less or no environmental impact to wetlands or watercourses." Other language in the statute further defines alternatives as "feasible and prudent" and provides definitions for the terms.

The applicant has submitted two proposed alternatives that were previously considered and abandoned. While the current proposal has less direct alteration of wetland, there are any number of possible alternatives that would "cause less or no environmental impact to wetlands or watercourses." Impact areas associated with vernal pools are outlined above and the goal of any plan for this property should address proposed development within close proximity to vernal pools. While the Wetland Agency ultimately has the responsibility of balancing proposed development of the site and expected impacts to vernal pools, the following are possible alternatives that could be discussed with the applicant.

1. Reduce the number of units within 100 feet of vernal pools under the existing road configuration.
2. Terminate Cedar Lane and make it a cul-de-sac prior to the wetland crossing between pools 24B and 24. This would maintain 8 units along Winkler Road

and save the cost of constructing the remaining road, while eliminating 13 additional units. Cedar Lane cuts through the center of the most productive complex of vernal pools and allows development close to a number of productive pools. The road is also a significant disturbance within 100 feet of at least 7 of the vernal pools.

3. Eliminate Units #43, #45, and #49 next to productive pools 7D, and 7F.

These are just a few of the possible alternatives that could be discussed. If the applicant maintains that any of the alternatives discussed are not feasible or prudent, the applicant must demonstrate such to the Wetland Agency.

Summary

This parcel is unique and regionally significant due to the number of vernal pools. The plan as proposed consists of multiple significant disturbances within 100 feet of many confirmed and potential pools and this disturbance is likely to alter physical characteristics of the pools. It is recommended that alternative proposals be explored that reduce the amount of alteration within 100 feet of vernal pools.

A project like this points to the importance of identifying ecologically significant parcels either in the process of developing the municipal Plan of Conservation and Development or during preparation of an open space plan. The applicant has invested significant time and effort in studying the site and has prepared a plan that attempts to minimize direct wetland disturbances. The town is faced with the difficult task of balancing its charge to protect wetlands and the legitimate rights of the owner to develop the parcel. The District can assist the town to identify similar parcels and develop planning strategies for those sites.

References

Klemens, Michael W., Amphibians and Reptiles in Connecticut: A Checklist With Notes on Conservation Status, Identification, and Distribution. 2000. Page 13. Bulletin 13. Department of Environmental Protection.

Calhoun, Aram J. K., Ph.D., Klemens , Michael W. 2002 Best Development Practices - Conserving Pool-Breeding Amphibians in Residential and Commercial Development in the Northeastern United States. MCA Technical Paper No. 5, Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, New York.

Skelly, David K., Werner, Earl E., Cortwright, Spencer A. 1999. Long-Term Distribution Dynamics of a Michigan Amphibian Assemblage. Ecology, V80, I7, p. 2326.

Schueler, Thomas R., Holland, Heather K. 2000. Stormwater Pollution Source Areas Isolated in Marquette, Michigan. Technical Note #105 from Watershed Protection Techniques. 3(1):609-112. Article 15 *in* The Practice of Watershed Protection.

Wetland Resources

The Watershed

The parcel exists in the very top of the of the Namerick Brook watershed. Wetlands at the top of the watershed are considered the hydrologic source for the watercourse that forms downstream through a combination of surface runoff and groundwater recharge. Namerick Brook has been mapped as having a water quality of "A" by the CT Department of Environmental Protection. Namerick Brook has its outflow directly into the Connecticut River.

The watershed is approximately 1,638 acres in size. A first-cut (very) rough approximation of land use in the watershed is as follows:

39% or (~635) acres is currently in riparian areas and /or farms;

29% (~479 acres) Dr. R. John E. Flaherty Wildlife Area; Permanent Open Space;

21.5% (~352 acres) is in residential and commercial development;

9% is this parcel (although about 71% of the site is proposed as open space);

1.5% (~24 acres) East Windsor High School property.

The Site

Geologically/historically the site itself is unique. The combination of post glacial wind blown dunes over glacial lake bed sediments occur only in a very few places in the state. Its low-lying, generally flat position on a glaciolacustrine plain incurred the sand dunes from the post glacial winds across the newly exposed

lake bed. (i.e.: once glacial Lake Hitchcock drained, the glacial ice was gone and the winds moved around a lot of loose "dirt" particles ultimately forming dunes).

Briefly, the two wetland soils present on the site: Scitico and Walpole, are quite level and poorly drained.

Comments

This a challenging site because of the density of the vernal pools. As the REMA report indicates some of these were breeding pools at the time of the field observations and some were not. Regardless, vernal pools, whether breeding pools or not, are wetlands by definition and it falls to the town to protect these wetland resources.

There is much that is not known about vernal pools. Especially the interactivity within groups or clusters of them. In other words: are the dynamics that allow for the characteristics of any given pool influenced or tied into the characteristics of other neighboring pools? The answer to this question is far beyond the scope of any one research project - if for no other reason than the time frame over which a study such as this would have to take place. (The ERT team itself has visited sites that have been previously touted as being prolific breeding habitats - only to find that the season of our visit found them almost sterile of amphibian life.)

What is known is that there are recommendations for Best Management Practice setbacks from breeding pools to protect all the dynamics including surface runoff, canopy cover, land slope, etc. These are the physical attributes that are integral parts of the vernal pool ecology.

REMA's thorough report provides a profile of each individual pool. The characterization of each pool is thorough and, along with the photographic documentation, provides the reader with an unparalleled overview of each entity.

What is also known is that dry upland is an important part of the vernal pool ecosystem. Part of the movement of the energy that makes up the pool's ecosystem is gained in the uplands and brought to the pools during breeding season.

The Proposal

It is clear that the applicant has gone out of his way to submit as complete a plan as possible. Many features regularly missing from proposed plans are present here including: engineer seal and signature, a workable legend, soil stockpile locations, construction phases, etc.

And a good bit of additional work has been proposed to accommodate the typical amphibian and reptile issues on a proposal of this nature including: Cape Cod curbing, wildlife corridors, tunnels versus round concrete culverts, guidance fencing, and the like. The proposed removal of invasives from the site is commendable as is the creation of the upland meadow, and wildlife friendly plantings. And in fact, in excess of 71 % of the site will be placed under permanent conservation easement.

Still, a review of the plan shows a dense development concept (116 units on 33.5 acres along with much impermeable road and driveway area). The footprints of many of the units are found in what is typically reserved for wetland setbacks (~50 feet) (see the table of this issue in the Conservation District Review section).

The question of the interchange of energy among the pools over time remains unanswered.

The REMA Report

From the REMA report the reader gleans (among many other helpful facts) that some wetlands stand out among all those described. The stand-out wetlands that are likely to be effected most by the proposal are:

- Wetlands 22, 23b, 23c, 23D; Page 52 of the REMA report states groundwater recharge is a principle function;

- Wetlands 7f, 23b, 23c, and 11a; Page 54 of the REMA report lists as valued highly for production export and wildlife habitat;

- Wetlands 23c and 23d; Page 57 of the REMA report cites as the highest educational value because they are "... confirmed productive vernal pools with diverse fringe vegetation, which are excellent outdoor classroom."

- Wetlands 23b, 23c, 23d, 7d, 7f, 24a; the report concludes are the most important throughout the site.

Reviewing the above findings, it is easy to see there are at least eight wetland/vernal pools that emerge as being important for a variety of functions and values reasons: 7d, 7f, 11a, 22, 23b, 23c, 23d, 24a.

In addition, it is likely that vernal pools 21, 10b, and 14b will be functionally lost due to their isolation and change in water chemistry from fertilizers, pesticides and yard waste runoff from the proposed neighboring houses.

Connecticut State Statutes, Some Applicable Sections

Sec. 22a-36. **Inland wetlands and watercourses.** "The wetlands and watercourses are an interrelated web of nature ..", providing a variety of functions for surface and ground water and essential to the existence of, "... many forms of animal, aquatic and plant life."

The preservation and protection of the wetlands and watercourses ... [from] disturbance or destruction is in the public interest..." It is, therefore, the purpose of [these] sections to protect the citizens of the state by making provisions for the protection, preservation, maintenance and use of the inland wetland and watercourses by minimizing their disturbance..." and, "... by providing an orderly process to balance the need for the economic growth of the state and the use of its land with the need to protect its environment and ecology in order to forever guarantee to the people of the state the safety of such natural resources for their benefit and enjoyment and for the benefit and enjoyment of generations yet unborn.

"Watercourses" means rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps, bogs and all other bodies of water, natural or artificial, vernal or intermittent, public or private, . . .'", (Sec.22a-38)

Sec. 22a-41. Factors for consideration of commissioner. Finding of no feasible or prudent alternative. (a) ..., the commissioner shall take into consideration all relevant facts and circumstances, including but not limited to:

(1) The environmental impact of the proposed regulated activity on wetlands or watercourses,

(2) (2) The applicant's purpose for, and any feasible and prudent alternatives to, the proposed regulated activity which alternatives would cause less or no environmental impact to wetlands or watercourses,

Sec. 22a-42. Municipal regulation of wetlands and watercourses. Action by commissioner.

(a) To carry out and effectuate the purposes and policies of Sections 22a-36 to 22a -45a, inclusive, it is hereby declared to be the public policy of the state to require municipal regulation of activities affecting the wetlands and watercourses within the territorial limits of the various municipalities or districts.

Conclusions

- In the final agreement, strict language should be agreed upon by the town and the homeowner's association to ensure plans for Integrated Pest Management are carried out, waste dumping lot lines, etc. are observed. The town should be able to contact one individual within the homeowners association for maintenance of the environmental concerns.

- The "seeding" of vernal pools to initiate amphibian breeding should be seen only as an experiment and not as a mitigative effort to replace breeding pools functionally lost due to construction.

- It is clear that there is a variety of vernal pools on this site that are valuable wetlands for a variety of reasons. On this point the REMA report helps immensely.

- The biggest unknown is the interaction of the many wetland functions within the complex of vernal pools.

- It is clear that from the above statutes that the commissions are required to preserve the wetlands.

- It is also clear that from the above statutes that the commissions are required to balance the need for the economic growth within the state.

- Therefore, it is the opinion of this Team member that the commission should solicit and review alternatives to this proposal which protect the wetlands that have been cited as functionally valuable and to protect those that would, under this proposal, be functionally isolated as the result of road, home, and driveway construction.

Stormwater Management

The proposed Newberry Village active adult housing community is a proposed 116-unit development on approximately 117 acres on the north side of Newberry Road west of Winkler Road. Approximately 32 acres will be developed, including impervious coverage of 9.3 acres for the construction of roads, driveways, sidewalks and houses. The remainder of the parcel will be dedicated as open space. Public sewer, gas and water systems will serve the site. Newberry Road borders the site the south, Winkler Road borders to the east and other residential property borders to the north and west. The proposed lots are arranged along a central loop road off Newberry Road and an additional access road from Winkler Road to the east. There are numerous areas of wetlands and vernal pools within and surrounding the development. The wetland areas surrounding the developed area will be protected by conservation easements. The plans show that less than a tenth of an acre of wetlands will be disturbed. A wetland replication area will be constructed to compensate for this disturbance.

The site is fairly level with some gently sloping areas. The existing drainage pattern for the site consists of five drainage areas. Two drain to the north and eventually to Boweyn's Brook while the remaining three drain to the south and west, eventually discharging to Namerick Brook.

The proposed drainage system consists of catch basins and piping within the road system and discharges to several detention/water quality basins. These basins include integrated sediment forebays and a discharge structure consisting of ten feet of perforated 4-inch PVC pipe surrounded by filter fabric and 3/4-inch stone. A cap covers the discharge of this pipe with a drilled hole sized to the design of

the individual basin. The basins are designed primarily to encourage infiltration and water quality treatment but also provide some detention. The discharges from these basins all flow to the existing wetland system on the site, which provides additional natural flood storage detention. Areas of the site not collected in the drainage system run by sheet flow into the wetlands.

Design plans were submitted along with drainage calculations. The plans submitted address erosion and sedimentation control for the site. Since the site is fairly flat, erosion and sedimentation control should not be too difficult. However, given the proximity of wetlands to construction activities all around the site, particular care must be taken to properly place, inspect and maintain erosion control measures. Wetland boundaries should be reflagged and construction limits established before clearing and grubbing commence.

Total disturbance for road and lot construction will be over 5 acres, which will require registration for the General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities. The plans, with the water quality basins, appear to meet the goal of 80% long-term sediment removal in the general permit. A maintenance plan should be included covering the long-term care of these basins. Also, the current design for the sediment forebays calls for an earthen berm separating them from the main basin. This berm should be modified to be a pervious berm. This can be done with the placement of a riprap berm "core" covered by filter fabric and a layer of 3/4-inch stone. This will help limit the possible transport of sediment into the main basin and simplify sediment removal during maintenance. In addition, the high level overflows from the basins are currently riprap spillways. These outlets could possibly be better served by riprap level spreaders, if flow rates allow.

For any areas collecting runoff from more than two acres, the general permit requires temporary construction sedimentation basins or swales providing storage of 134 cubic yards per acre drained. For areas collecting runoff from 2 to 5

acres, this can be accomplished with gravel and silt fence check dams along roadway swales or any diversion swales. For areas collecting over 5 acres, a sedimentation basin with filtered outlet must be provided. If the water quality basins are to serve this purpose, this should be specified on the plans along with regular maintenance procedures. The locations of any sedimentation swales, if used, should also be shown on the plans including details of filtration measures. During road construction and before final pavement is placed, the rough graded road beds can serve as collection swales for site runoff, posing a significant erosion hazard. Measures should be shown on the plans and details for gravel and/or haybale check dams or other measures to mitigate this potential problem. The details should also show how catch basins will be protected during construction.

Disturbed areas must be stabilized as soon as activity has ceased for more than 7 days. A narrative plan for stabilization and maintenance of the disturbed areas should be provided including procedures for stabilizing the site for the winter. A registration for the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction activities must be submitted at least 30 days prior to the start of construction. A Stormwater Pollution Control Plan must also be prepared and submitted at the same time. Properly constructed and maintained, the site should have minimal impact on the adjacent wetlands.

WILDLIFE REVIEW

A review has been made of the information sent by REMA Inc. and J. R. Russo rev. 2/2/04 with regards to the least environmentally damaging alternatives to reptile and amphibian species. The Wildlife Biologist Team member concurs with fellow Team member David Askew's assessment and suggestions (Conservation District Review section), he did an exemplary job categorizing the impacts using the Best Development Practices - Conserving Pool-Breeding Amphibians in Residential and Commercial Developments in the Northeastern United States (Calhoun/Klemens (2002).

The blue spotted salamander *(Ambystoma laterale)*, a state species of special concern, has been reported at this site. Best management practices around the breeding pools should be used and any canopy cover around the pools saved to keep the area forested, which is what they require Since the blue spotted salamander is a listed species if any state permits are required or should state involvement occur in some other fashion, specific restrictions or conditions relating to this species may apply. Spotted turtles *(Clemmy guttata)* were listed as a wildlife species of regional conservation concern in the Northeast United States in 1999 by the Northeast Endangered Species and Wildlife Diversity Technical Committee. While data on population abundance and distribution is limited, some information available suggests that populations are declining throughout the region and the decline may be attributed primarily to habitat loss and habitat fragmentation The DEP Wildlife division is concerned with the vulnerability of this species. Spotted turtles were found at REMA location PVP11 B. This Team member could not determine from Russo sheet 5 of 24 whether Water Quality Basin #2 will affect the spotted turtle.

There are concerns with the Mitigation as described on p.108-110 of the REMA report. The developer cannot assume low road mortality to animals on rainy spring nights based on the age of the residents. Vernal pools are a unique and vulnerable type of wetland that is inhabited by many species of wildlife, some of which are totally dependent on vernal pools for one or more stages of their life cycle. Most wildlife vernal pool species are long-lived and navigate under leaf litter basically crawling on their stomachs to return to their natal areas for breeding every year or every two years. If the surrounding habitat is lost to development, the placement of box culverts does not guarantee use by any of the impacted species. Additionally, salamanders have narrow ecological requirements that may be affected by acidification of wetlands, habitat alteration, and nutrient, chemical and thermal pollution. Permanent fencing doesn't guarantee "that these amphibians will find and establish new territories in the nearby undeveloped forest" (REMA p.110). The Wildlife Division has recently reviewed the use of pit falls and drift fences and determined that there are problems with indiscriminate capture and the possibility that state-listed species may be inadvertently killed using these types of capture techniques. Reptiles and amphibians can accumulate along drift fences, guidance or funnel fences, and the proposed permanent exclusionary fence, and potentially die of desiccation or predation. The mitigation monitoring report is only proposed for 3 years and the monitoring done only one night during the height of amphibian movement. The Wildlife Division is recommending traps and fences only be approved as part of a long-term study. If these fencing mitigation measures are the applicant's strategy they will have to be monitored every 24 hours during the breeding season in perpetuity.

If the surrounding habitat around a vernal pool or a breeding pool is lost to development, then even if water is left in the pool it will become non-viable. The proposed Cedar Street and associated units are not recommended as they effectively ring the vernal pools with development. The wildlife value of this property is high with so many pools of water, the applicant should work to keep

this site's unique water features as a focal point for future homeowners. The DEP Wildlife Division is willing to provide comment on any additional proposals or changes concerning this property.

Archaeological Review

The Office of State Archaeology (OAS) and the State Historic Preservation Office (SHPO) note that the proposed subdivision location possess a moderate to high sensitivity for prehistoric and historic archaeological resources. Although no archaeological resources have been reported for the project area, the proximity to the Connecticut and Scantic Rivers and its current environmental and topographic characteristics suggests the likelihood of undiscovered Native American archaeological sites. In addition, prehistoric stone tools have been recovered from neighboring agricultural fields.

It is further noted that the project limits encompass a 50-foot right-of-way in favor of the Connecticut Electric Railroad Association, Inc. (East Windsor Trolley Museum). It is recommended that extant mature vegetation be retained as a visual buffer between the trolley right-of-way and all new construction in order to maintain the rural character of the trolley experience.

The Office of State Archaeology and the State Historic Preservation Office recommend that a Phase I reconnaissance survey be conducted for the sensitive portions of the project area, in order to identify and mitigate any cultural resources on the project area that would be effected by construction activities. All archaeological studies should be conducted in accordance with the Connecticut Historical Commission's *Environmental Review Primer for Connecticut's Archaeological Resources*. In addition, the OAS and the SHPO are prepared to offer any technical assistance in conducting the survey.

APPENDIX

Is There Life In The Wetlands? Some Preliminary Thoughts In Light of AvalonBay Communities, Inc. v. Wilton by David H. Wrinn[1]

The Supreme Court's recent decision in *AvalonBay Communities, Inc. v. Inland Wetlands Commission of the Town of Wilton*, 266 Conn. 150 (2003), restricting wildlife habitat considerations in the processing of permits to conduct regulated activities under the state's Inland Wetlands and Watercourses Act ("I.W.W.A."; "the Act"), Conn. Gen. Stat. § 22a-36 *et seq.*, is being identified as a matter that calls out for a legislative "fix." Whether the General Assembly will agree, and what specific form any such proposed amendment to the I.W.W.A. might take, are matters for future resolution. The first order of business for municipal inland wetlands and watercourses commissions right *now* is how to implement the Court's ruling until such time, if any, that there is legislative action. The purpose of the following discussion is to set forth some pertinent reflections upon the limits of the decision's legal reach and also some strategies for decision making in light of it.

It is well to review the following facts from the case. AvalonBay Communities, Inc. ("AvalonBay") applied for an inland wetlands and watercourses permit to construct affordable housing units on property containing inland wetlands, but none of the proposed construction activities in the revised application were to be located within the regulated inland wetlands and watercourses or the associated upland review area regulated by Wilton's inland wetlands and watercourses commission ("the commission").[2] The commission held a public hearing and determined that proposed construction activities would have a detrimental impact upon the *upland* habitat of the spotted salamander, a wetland obligate species[3] sighted on the property during the application review process. The commission denied AvalonBay's permit application. The issue on appeal of the commission's final decision thus focused upon the extent of the agency's regulatory jurisdiction. As framed by the Supreme Court, the issue was whether the Act, in addition to protecting wetlands "from physical damage or intrusion" could afford protection to wildlife that "might rely on the wetlands for a portion of its life cycle." In concluding that the I.W.W.A. did not do so, the Court specifically rejected the commission's claim that the Act "should be construed liberally to include protection of the biodiversity of the wetlands." The Court therefore set forth its decision as a *limitation* on the reach of the I.W.W.A. by its own terms.

One should not underestimate the significance of the Court's approach to the statutory construction of the Act, beginning first with its invocation of *Connecticut Fund for the Environment v. Stamford*, 192 Conn. 247 (1984). That case stands for the proposition that municipal inland wetlands agencies cannot delve into environmental issues outside their specific charge set forth in the Act respecting inland wetlands and watercourses.[4] But in *AvalonBay*, the *CFE* citation signals the Court's view that the I.W.W.A. itself is narrower than all the subject matters that might seem logically related to wetlands and watercourses as natural resources and to their conservation and protection. The Court accomplished this narrowing construction by, essentially, "detaching" the legislative finding contained in Section 22a-36 of the Act from the rest of the statute, and by laying particular emphasis upon the definitional sections. Finally, the Court enlisted the exemptions section of the Act (Conn. Gen. Stat. § 22a-40) as an aid to its construction of the reach of the non-exempt, authorizing, sections that form the nucleus of an inland wetlands and watercourses agency's regulatory jurisdiction.

The Court emphasized that "wetlands" are defined as a soil type; that "watercourses" are merely bodies of water; and that "intermittent watercourses," are chiefly identified by permanent channels and banks. The Court further emphasized that these definitions were "narrowly drawn" and "limited to physical characteristics." Therefore, by this reasoning, wildlife *per se* was beyond the reach of the Act, and biodiversity could not be a characteristic of these natural resources afforded protection. As an aside, the Court speculated that there might be some other "extreme case" where species loss or other negative impact "might" have a "negative consequential effect" upon the physical characteristics of a wetlands or watercourse. The Court, however, gave no indication or example of what it had in mind (this is, more likely than not, a legal "place keeper"); rather, the point that the Court chose to emphasize was that the General Assembly did not allow for the term "wildlife" (or "resources," or even "biodiversity") in the definitional section of the Act.

Aside from concluding that the definitions within the Act were "narrow," the Court interpreted the legislative finding in Section 22a-36 as speaking to the protection of wildlife only "as a secondary effect of protecting the wetlands and watercourses themselves." In other words, wildlife or

Wetlands, continued on page 4

Wetlands, continued from page 3

diversity issues were simply subordinate considerations. The reasoning of the Court in support of this observation focuses upon the "conservation of . . . wildlife" as a "non-regulated use" of wetlands and watercourses under the exemption provisions (Conn. Gen. Stat. § 22a-40(b)(1)), and upon its view that the legislative finding in Section 22a-36 deems wildlife to be "beneficial" not as "integral" to fully functional wetlands and watercourses, but only as an enhancement, and so, as a matter of secondary importance in the Act. This marks the first occasion upon which the Court has declined to use the legislative finding as a key to a broad, remedial construction of the Act.[5]

It would, however, be wrong to conclude that this decision deconstructs its own precedent or renders more difficult the effective protection of inland wetlands and watercourses. The Court made plain what it was *not* deciding. It expressly stated that it was *not* interfering with the line of precedent beginning with *Aaron v. Conservation Commission*, 183 Conn. 532 (1981), and continuing through *Queach Corporation v. Inland Wetlands Commission*, 258 Conn. 178 (2001), that interpreted the Act to allow municipal wetlands and watercourses agencies to regulate outside the bounds of the resources themselves and even the setback areas designated around them ("upland review areas") where activities were deemed likely to cause an impact upon inland wetlands and watercourses. It affirmed that Section 22a-42a(f) "merely codified" the reach of jurisdiction articulated previously in *Aaron*. Such impacts as are demonstrable as having an adverse effect upon the wetlands or watercourses are deemed "regulated activities" and thus within the jurisdiction of these agencies.

This last point is not at odds with the fact pattern of *AvalonBay*. The administrative record contained no factual findings by the commission of intrusion into or use of the wetlands or watercourses on the site as a result of the proposed construction activities. No habitat issues arose, therefore, from an impact to the wetlands or watercourses themselves (for example, elimination of habitat owing to the filling of a wetland), and the Court could have stopped its analysis of the facts at this point. If the salamander, as was argued and rejected by the Court, could be viewed as a "wetland resource," then the ecological linkage of species to wetland in *AvalonBay* contained no findings that the destruction of some of the upland habitat of the spotted salamander would prevent the creature and the wetland from, in effect, "linking up" during the "obligate" portion of the former's lifecycle. One must inquire, "Was it necessarily true that the impact upon upland habitat would have a cause and effect negative impact upon the wetlands?"[6] One may also ask on this record, "Was it likely that the salamander population could have moved from the disturbed areas to other upland areas without impairing their relationship to the wetlands system?" Without a tight linkage to the regulated inland wetlands, the Court was left to fear that AvalonBay had aptly portrayed the jurisdiction of the commission as traveling "on the backs" of the salamander.[7] The point pursued by the Court is that focusing upon the salamander took the spotlight off the wetlands and watercourses themselves, obscuring the "primary" and necessary regulatory question "What's happening *to* the wetlands and watercourses?"

Commissions who view their charge under the I.W.W.A. as broadly protective of the ecology of wetlands and watercourses will not draw much comfort from the regulatory decision making limitations imposed by the Court in *AvalonBay*. The Act is no longer available for the broad protection of certain species, like amphibians, that have an ecological connection to wetlands and watercourses. Nevertheless, while the decision remains in place as the law of the I.W.W.A., municipal commissions must follow and apply its reasoning. How, then? Inland wetlands and watercourses commissions should concentrate their inquiry on what effect (*i.e.*, impact) the proposed regulated activity will or will likely have upon the wetlands and watercourses proper—as set forth in the factors for consideration contained in Section 22a-41 of the Act—by considering, for example:

- Do the proposed activities involve physical intrusion, recalling that the terms "material", "discharge" and "pollution" are defined broadly in the I.W.W.A.?
- Do the proposed activities involve filling, grading, draining or excavation, recalling that "remove" and "deposit" are broadly defined as well?
- Do the proposed activities involve siltation, the likely release of sediments or erosive discharges during site preparation or afterwards, as a result of the construction or use?
- Will the proposed activities alter or obstruct water flow?

These remain the major activities to be examined with care under the Act, and they are unaffected by the *AvalonBay* decision.

Resource inventories commonly associated with inland wetlands and watercourses applications in many communities are rendered more problematic in light of the *AvalonBay* decision. It all depends upon how the information is handled: commissions are not precluded from inquiring about habitat or diversity impacts, *but they may not make these issues the primary or sole ground for their decision making under the Act*. The rating of wetlands, for example, by their value, a place where

Wetlands, continued on page 5

Wetlands, continued from page 4

diversity findings have been utilized, was never the object of the Act anyway: wetlands and watercourses are to be protected and conserved "because they are there." One might even say that, in this respect, the Court has made it easier to protect such resources as vernal pools. These watercourses are part of the regulatory "inventory" whether or not there is evidence of their habitat value; their physical identification is enough for jurisdiction to attach. If evidence of habitat assessment and impact is received on the record, is it related to an impact that in turn implicates a physical characteristic? For example, if an application to put fill in a watercourse and build out a dock were to impinge upon or even eliminate a habitat area for fish, the nexus or connection between the physical characteristics of the watercourse and the habitat and the species would be easier to comprehend as authoritative but not necessarily jurisdictionally overreaching under the reasoning of *AvalonBay*. Similarly, an activity that drains or alters the course of water flow through a wetland area may have an adverse impact upon habitat and fit within the jurisdictional scheme outlined by the Supreme Court.

In summary, it is not so much the holding or conclusion of the *AvalonBay* case that is unsettling, but the overall approach of the Supreme Court to the I.W.W.A. The Court has effectively shelved the proposition that remedial legislation—of which environmental legislation is the preeminent example—should be broadly construed. This point of view leads to unfortunate interpretative results: discounting legislative findings; and reading definitional sections very narrowly. It is an orientation that appears to be at odds with statements of the Court in the past that "[t]he [I.W.W.A.] allows a wetlands commission enough flexibility to adapt 'to infinitely variable conditions for the effectuation of the purposes of these statutes.'" *Queach Corp.*, 258 Conn. at 199, quoting *Aaron*, 183 Conn. at 541. This is not to say that *AvalonBay* should have come out differently, only that the Court may have gone farther than was necessary to reverse on the decisional record made by the Wilton commission. The outcome of this appeal mandates the exercise of care by all municipal commissions in marshalling their fact finding and, ultimately, in their decision making under the I.W.W.A.; and, one may add as a parting observation, that should be so whether the Act is further amended or not.

Footnotes

[1] The author is an Assistant Attorney General with the Environment Department of the State of Connecticut Office of the Attorney General. The views expressed herein are those of the author and do not constitute an official opinion of the Attorney General.

[2] The commission initially denied a request for a declaratory ruling on the revised application that no regulated activities were involved in the proposal.

[3] The Court noted that the spotted salamander was neither an "endangered species," nor a "threatened species," nor even a "species of special concern" as those terms are used in the General Statutes (Conn. Gen. Stat. §§ 26-304a; 26-306; 26-307), respectively. It is not obvious what difference it would have made to the outcome of this decision were the spotted salamander have been characterized by one of these other designations. By the same token, it is unclear whether the ruling in the Commissioner of Environmental Protection's proposed "bag limits" on the taking of spotted salamanders really has any difference to the outcome of the decision. At most, these references underscore the extent to which the Court was interpreting that species concerns are suitable for separate statutory treatment and not less implicitly as might have been previously assumed through the application of the I.W.W.A.

[4] Air quality and noise, for example, were issues raised before the inland wetlands agency in the *Cioffoletti* case.

[5] One of the important purposes served by legislative findings is to insulate an enactment from being read too narrowly and out of step with its goals. Legislative findings are authoritative, even though they are in the nature of statements of legislative policy. In essence, they are intended to be there as a guide to interpretation. Moreover, in the context of an enactment such as the I.W.W.A. that will be primarily enforced by lay commissioners, lacking the Commissioner of Environmental Protection's array of scientific resources, the findings, as "legislative facts," before the *AvalonBay* decision had the effect of long shifting many of the proceedings conducted by a municipal agency these important observations respecting the function and value of inland wetlands and watercourses without need for further explanation on the record.

[6] Whether the upland habitat of the salamander lay in the "upland review area," or beyond is a distinction without a difference in this respect. By the Court's reasoning, neither area would, with respect to the same facts as in *AvalonBay*, have had any adverse effect upon the physical characteristics of the wetlands on the site. Loss of the salamander and its impact upon biodiversity did not fall within the "extreme case" that the Court had reasoned in footnote 9 "might have a negative consequential effect on the physical characteristics of a wetland or watercourse." That a reduction in the number of a species that utilized the wetland as does the salamander "or a loss of diversity would be deemed insufficient to support a finding of an impact" to the regulated resource is also an indication of the Court's narrowing focus.

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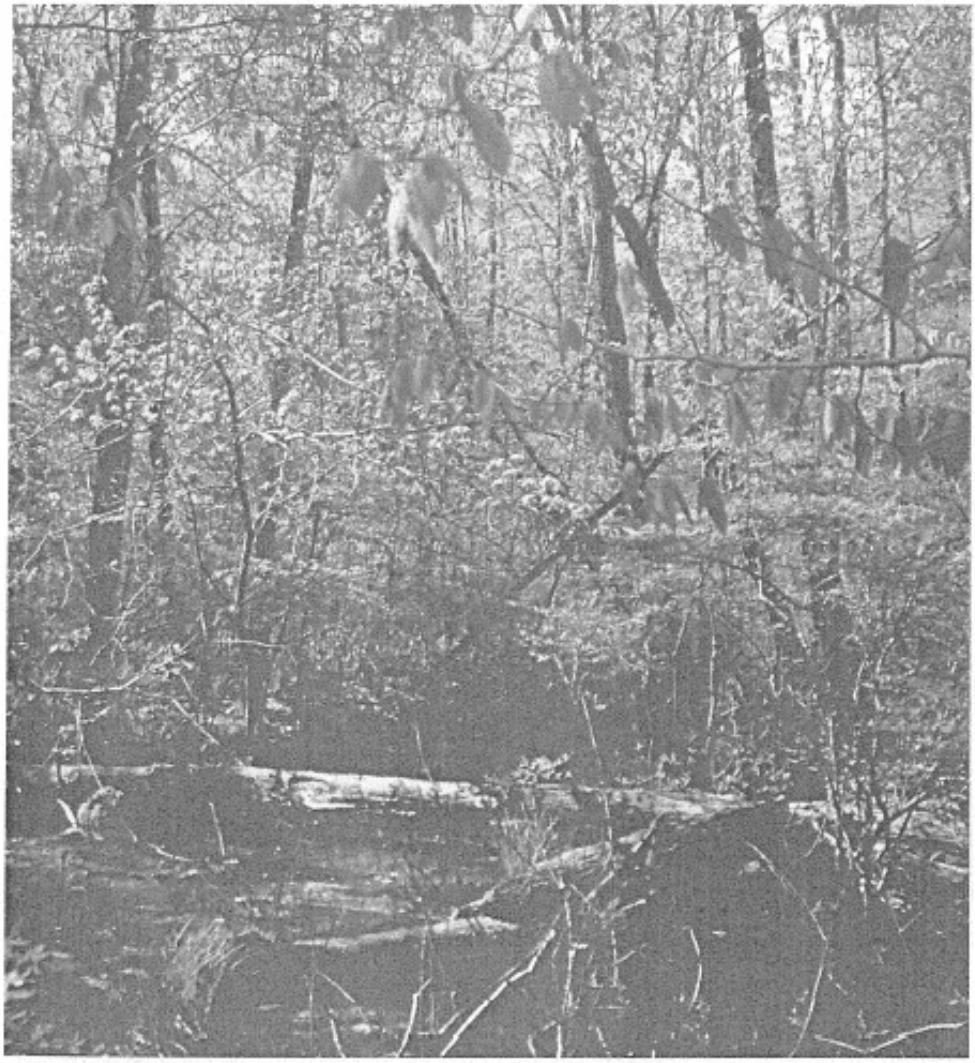
Best Development Practices



Conserving Pool-Breeding Amphibians in Residential and Commercial Developments in the Northeastern United States

METROPOLITAN CONSERVATION ALLIANCE

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TRANSLATING SCIENCE INTO CONSERVATION

Very little published research has addressed conservation concerns as they relate to vernal pool habitats and wildlife. Therefore, the recommendations made in this document are based primarily upon decades of field observations made by the authors. Those observations have repeatedly demonstrated that pool-breeding wildlife populations experience precipitous declines in response to developments within vernal pool envelopes and critical terrestrial habitats.

Vernal pool research conducted in Massachusetts by Bryan Windmiller (unpub. data) corroborates the authors' conclusions. In one study, 25 acres (10 hectares) of upland forest adjacent to a vernal pool in an urban setting was almost completely cleared. Within two years, the pool's wood frog population was extirpated (i.e., wood frogs became locally extinct). This occurred despite the maintenance of an untouched 150-foot wide buffer of forested upland around the pool and a forested wetland corridor adjacent to the pool. These findings underscore the fact that narrow buffers alone—which are usually less than 150 feet—are insufficient to protect wildlife populations.

In a second study, Windmiller tracked large populations of spotted salamanders, blue-spotted salamanders, and wood frogs over a five-year period at two vernal pool breeding sites located in close proximity. The land surrounding one of the pools remained largely intact throughout the five years. At the second pool, approximately 25% of the existing forested upland within about 1,000 feet (300 meters) was cleared for residential development after the first year of the study. That development also greatly fragmented the remaining forested upland, although a 100-foot wide buffer was left untouched.

Within four years of the beginning of construction, spotted salamander numbers declined by 53%; the wood frog population was reduced by 40%. Blue-spotted salamander numbers also declined over a two-year period following initial construction but subsequently recovered to pre-development levels. In contrast, there was no reduction in amphibian breeding population sizes at the undeveloped pool.

This study demonstrated that even a relatively small degree of development—covering approximately 25% of the surrounding critical terrestrial habitat—can negatively impact vernal pool wildlife. As in the first study, these impacts occurred despite the maintenance of a forested buffer.

The recommendations in this document would limit the footprint of development to <25% of the area surrounding productive vernal pools. This is a relatively conservative recommendation, given the results of the second study. However, this threshold may be less detrimental to resident amphibians if impacts are further reduced by following site-specific recommendations made in Section III of this document.

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.