

# VERNON PLAN OF CONSERVATION & DEVELOPMENT



**Prepared For:**

**Vernon Planning and Zoning Commission**

**Prepared By:**

**Harrall-Michalowski Associates, Inc.  
in association with  
Milone & MacBroom, Inc.**

**VERNON  
PLAN OF  
CONSERVATION  
&  
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**June 2001**

## FOREWARD TO THE MASTER PLAN OF CONSERVATION AND DEVELOPMENT

The Plan of Conservation and Development will serve the needs of the residents of Vernon well during the decade 2000-2009 and would not have been possible without the assistance of volunteers who contributed much time and talent to the creation of the plan. On behalf of the Planning & Zoning Commission we extend our sincere thanks to all who helped make this plan possible.



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Planning & Zoning Commission

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Mayor

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## INTRODUCTION

This Plan of Conservation and Development has been formulated through a variety of approaches including neighborhood meetings, public hearings, consultation with the Open Space Task Force, field research and analysis, use of GIS-based natural resource analysis, review of existing reports and studies, consultation with Town staff and input from the Commission. The Plan presents extensive information on existing conditions which will provide valuable information to a variety of Town commissions. There are projections as to future development potential and a discussion of the implications of such development. An extensive section presenting policies, goals and objectives has been included in the Plan. The Plan concludes with a recommended Land Use Plan and strategies to achieve key components of the Plan.

## I. PUBLIC INPUT

In order to gain input from Vernon residents a series of neighborhood meetings was held as an initial phase of the Plan of Conservation and Development update. The Town was divided into six areas in order to provide for a focus on neighborhood issues as well as town-wide concerns. The meetings were held at the following schools sites:

Skinner Road School  
Center Road School  
Northeast School  
Lake Street School  
Talcotville School  
Maple Street School

Announcements of the meetings were placed in the local media and notices were sent home with the students in each of the schools where a meeting was to be held. The meetings were generally well attended considering the absence of one controversial issue. The comments made at the meetings were generally of a constructive nature and there was a depth of fondness for Vernon shown by its residents. There was very little parochial discussion concerning one's own property, street or neighborhood, but rather much discussion of the overall future of the Town.

At each meeting discussion was organized under the general categories of:

- ▶ What's Good About Vernon That Should Be Protected?
- ▶ What's Bad About Vernon That Should Be Corrected Or Not Allowed To Expand?
- ▶ What Should Be The Overall Priorities To Keep In Mind As The Planning Process Proceeds?

A series of maps presenting existing conditions in Vernon was used to provide background material for the discussion. In general, several common themes emerged at the meetings. These themes included:

- Need to preserve open space for perpetuity in a positive, planned manner with adequate financial resources devoted to this program. A goal of 20% open space might be considered.
- Retail development should be limited to prevent Vernon from becoming another Manchester in the Route 84 corridor or like the Berlin Turnpike along other major corridors in Town. Attention should be given to how development looks as well as the measurable reports such as increased traffic.
- Older properties and buildings should be re-utilized rather than developing vacant land possibly through the use of regulatory incentives.
- Multi-family housing should be limited in the future with an emphasis on single family homeownership.
- The water quality of the Town's lakes and rivers as well as groundwater should be protected.
- Several areas which currently give the Town its rural character such as Valley Falls Road and Park, Belding property, farms, Newhoca Camp, Shenipsit Lake, Hockanum River, Risley Reservoir and other areas should be protected.
- Rails to Trails concept should be extended.
- There should be a review of how non-residential and residential areas interface and resulting impacts.
- The Town should be willing to spend money to protect the quality of life.
- The Plan of Conservation and Development should propose specific actions, assign responsibility for carrying out these actions and monitor progress towards achievement on a regular basis.
- The issue of blighted buildings in Rockville must be addressed and new businesses must be attracted to Rockville Center.
- Additional parking is needed to support overall neighborhood revitalization in Rockville.
- Need more attractions for Rockville and continue to work to reverse the negative perception of the area.

The input received at the meetings provided focus to the technical tasks undertaken in the update process. Woven throughout the chapters which follow are several themes that emerged during the meetings. These themes can also be found in the policies, goals and objectives.

## II. ENVIRONMENTAL FEATURES

### A. INTRODUCTION

Understanding the composition and distribution of Vernon's natural resources is a key component in planning for the Town's future. As identified in the Town's current Open Space Plan, the natural environment helps define the Town's character and contributes greatly to the community's quality of life. In Vernon, this environment includes a diverse topography, major and minor rivers which traverse the landscape, unique plant and animal habitats, scenic vistas and vast underground aquifers serving existing and potential public water supply.

The community's natural environment has not changed substantially since the town last updated its Plan of Conservation and Development. That plan identified significant natural and cultural resources and incorporated consideration of those resources into the current Plan of Conservation and Development. Still the general emphasis in town planning has continued to shift since that last update to place even stronger value on conservation and a more discerning regard of where to allow new development.

Often natural environmental features tend to be examined exclusively as constraints upon development or as important resources in support of development (water supply). In more recent years, the importance of the natural environment as an asset in its own right has been recognized and given new priority for preservation. The proliferation of environmental conservation groups and the State's recent commitment to open space protection is testament that this shift in perspective has taken root in Connecticut. In Vernon, the active participation of a wide variety of conservation groups in the initial phases of the Plan update process also illustrates how natural resource protection has continued to become important priority within the Town.

This chapter is prepared with an eye to presenting an inventory of key natural features and areas which merit conservation, regardless of suitability for development. A more detailed analysis prioritizing conservation areas as well as an analysis of the Town's development potential is included in two separate chapters of this report.

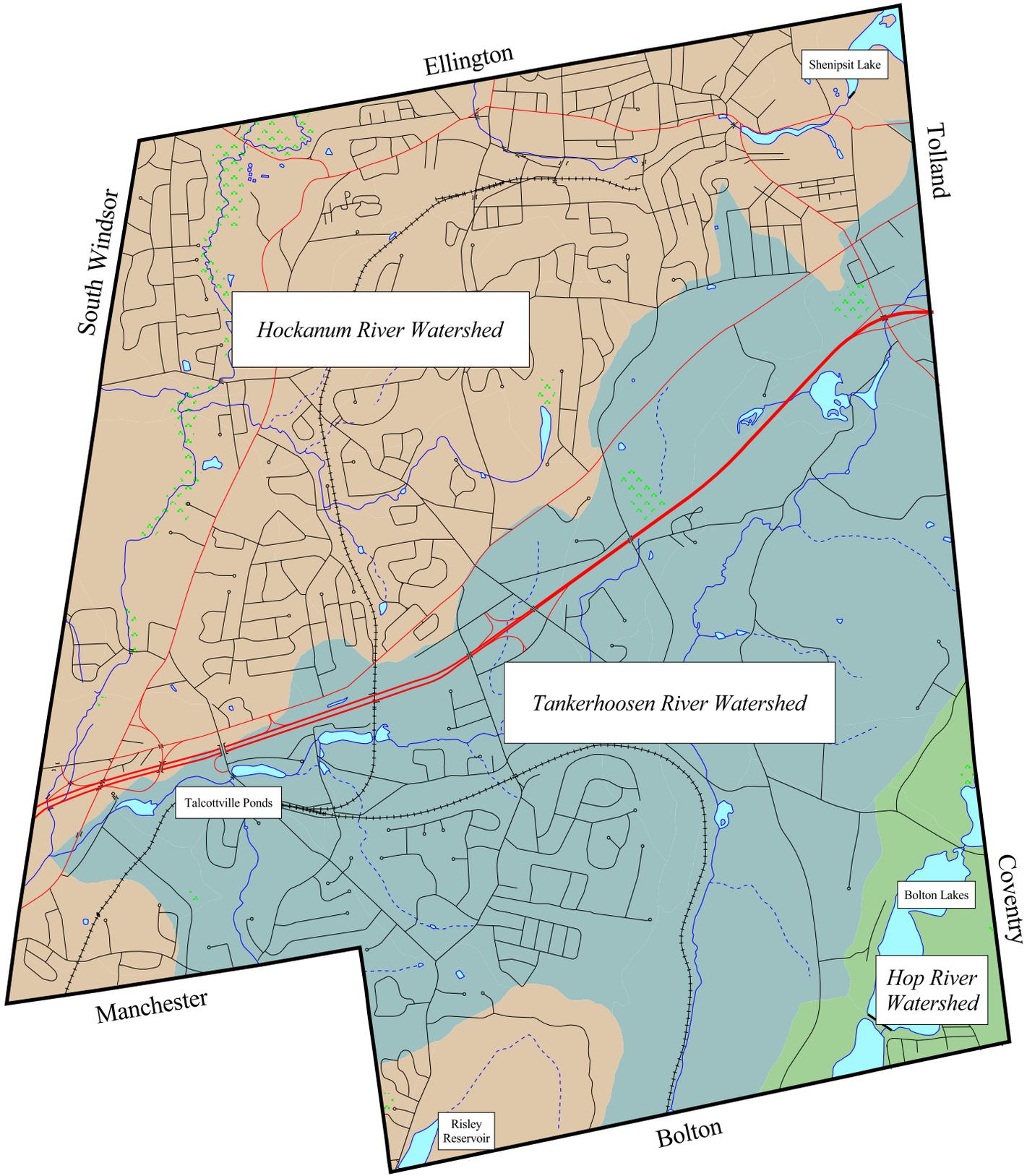
## **B. INVENTORY OF KEY NATURAL FEATURES**

### **1. WATER RESOURCES**

The Town of Vernon contains three main sub-regional watersheds, which include the Hockanum River, Tankerhoosen River, and Hop Brook watersheds as illustrated on the Watershed Map. Portions of the Hockanum River watershed around Shenipsit Lake and Risley Reservoir are identified by the State Department of Public Health as active public water supply. Collectively these rivers provide drainage to Vernon's 18.6 square miles. It is interesting to note that two rivers – the Hockanum and the Tankerhoosen have their headwaters in Vernon. These rivers are in effect “born” in Vernon. The attached photos show several of these water resources.

#### *The Hockanum River*

The Hockanum River is one of the two principal rivers that flow through Vernon. With its headwaters at Shenipsit Lake, the river traverses to the west through the Rockville District, takes a northerly turn into Ellington and then back into Vernon where it continues through the Talcottville District on its southwesterly path eventually flowing into the Connecticut River in the town of East Hartford. The river is a multi-use resource for recreational activity as well as habitat for state listed species and communities. The river also receives effluent from the Vernon municipal sewage treatment plant. Land use along the river is an eclectic mix of urban, agricultural, residential, commercial, and industrial and pockets of undeveloped land. Water quality in the river has been classified by the Connecticut Department of Environmental Protection (DEP) as Class “C” with a goal of “B” (see Appendix A). It is not considered potential public water supply.



**LEGEND**

- Hop River Watershed
- Hockanum River Watershed
- Tankerhoosen River Watershed

**Watersheds**

Plan of Conservation and Development

Vernon, Connecticut



HARRALL-MICHALOWSKI ASSOCIATES, Incorporated

Hamden, Connecticut

June 2001

Source of Data:  
University of Connecticut  
Map and Geographic Information Center  
Storrs, CT

Connecticut Department of Environmental Protection  
Environmental and Geographic Information Center  
Hartford, CT

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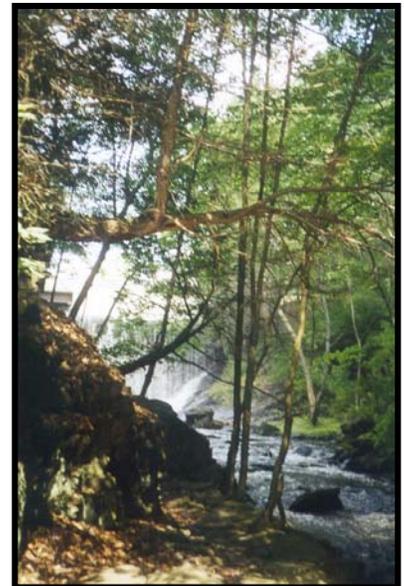
Scale: 1:40,000



According to the Water Quality Standards published by the DEP, Class C water quality results from conditions which are usually correctable through implementation of established water quality management programs to control point and non-point sources of pollution. The Hockanum River represents a significant component of the Vernon community identity in terms of aesthetics and recreational value. The Hockanum River Linear Park provides a beautiful scenic walk with mixed forest, wildlife, river views, and is a popular recreational outlet for many citizens. There are extensive wetlands along the course of the river, especially in the vicinity of Dart Hill Road and the Ellington town line and there is an aquifer which underlies the area it traverses. The State Plan of Conservation and Development identifies the river corridor as a proposed preservation and conservation area and the Town of Vernon's current Plan of Conservation and Development indicates a proposed greenway along the entire length of the river. The 100-year floodplain elevations are up to about 515' at Shenipsit Lake, to about 237' at the Ellington town line and to about 217' where the river re-enters Vernon from Ellington and about 176' at the Manchester Town Line.

#### *The Tankerhoosen River*

The Tankerhoosen River is the other principal river that flows through Vernon. With its headwaters at Gages Brook, the river bisects the Town on the south side of Interstate 84 and meanders through the DEP owned Tankerhoosen Lake, Dobsonville Pond and Talcottville Pond before converging with the Hockanum River in vicinity of Talcottville. Land use along the river is largely undeveloped land and protected open space in the upper reaches and a mix of commercial and residential in the mid-to-lower stretches. At points in Talcottville the river is in close proximity to Route 84. A walk along the river offers an interesting contrast between the natural



**Tankerhoosen Gorge**

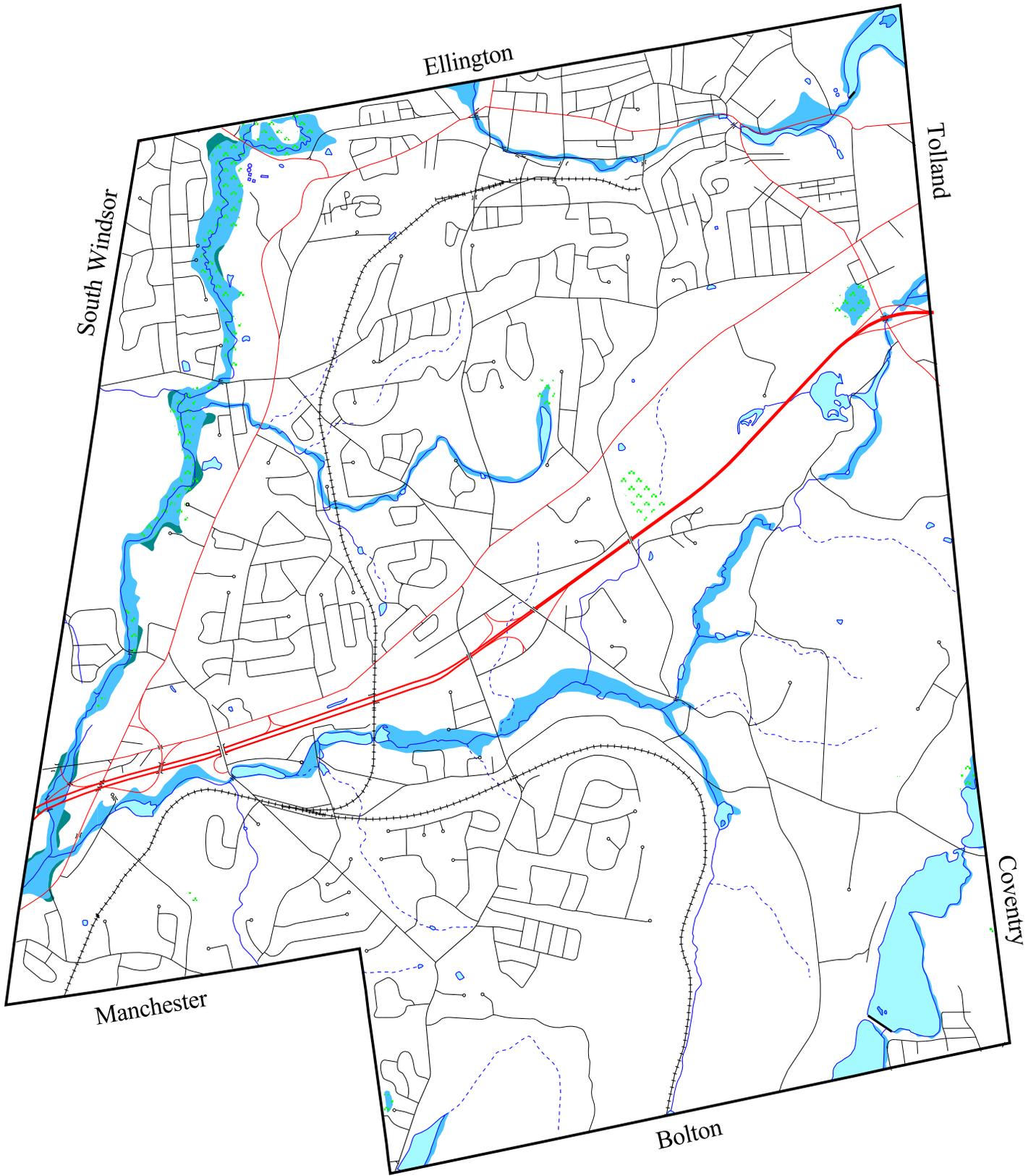
environment and the built environment. Water quality in the river has been classified as “A” from the headwaters to Tankerhoosen Lake and “B” with a goal of “A” from the lakes down to the confluence with the Hockanum River. According to the DEP, pollution due to in large part to non-point source runoff in the watershed is a likely cause of the “B” classification. The river is not considered a potential water supply. Locally, the river is an aesthetic and recreational resource. The State Plan of Conservation and Development identifies the riverway as a proposed preservation and conservation area and the Town of Vernon Conservation Commission has proposed the creation of a major greenway of 2000 acres along the river of which approximately 40% is already protected open space. The 100-year floodplain elevations are about 306’ at the confluence with Railroad Brook to about 267’ at Tankerhoosen Lake and to about 253’ at Dobsonville Pond, and 181’ at the Hockanum River confluence.

*Other Streams and Brooks*

Other smaller streams and brooks that are tributaries to the larger waterways include:

- |                    |                 |
|--------------------|-----------------|
| Gages Brook        | Barrows Brook   |
| Rickenback Brook   | Clarks Brook    |
| Railroad Brook     | Tucker Brook    |
| Tillinghasts Brook | Tunnel Brook    |
| Broll Brook        | Campbells Brook |
| Ogden Brook        |                 |

The Federal Emergency Management Agency has identified 100-year and 500-year flood hazard zones along waterways in Vernon and published Flood Insurance Rate Maps (FIRM), which illustrate the special hazard zones. These zones are illustrated on the FEMA Floodplains Map. The maps were revised and updated as of August 9, 1999. The flood zones identify areas subject to coverage of 1 to 3 feet of floodwater in a 100-year storm. There is one FIRM map to cover the Town of Vernon. Generally the floodway tends to be narrowly confined.



**LEGEND**

- 100-Year Floodplain
- 500-Year Floodplain

0.25 0 0.25 0.5 Miles

Scale: 1:40,000

**FEMA Floodplains**

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Vernon, Connecticut



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Hamden, Connecticut

June 2001

Source of Data:  
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Storrs, CT

Connecticut Department of Environmental Protection  
Environmental and Geographic Information Center  
Hartford, CT

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### *Bolton Lakes*

The Bolton Lakes network, located in the southeast corner of Town, consists of three water bodies spanning the towns of Coventry, Vernon and Bolton. Middle Bolton Lake is located entirely in the town of Vernon and is used for extensive recreational activity including picnicking, fishing and swimming.



**Bolton Lake**

The Town operates Newhoca Park & Camp Newhoca, but the water rights and underlying lands are owned by the Department of Environmental Protection. Due to their recreational appeal, the lakes are considered a large asset to the town and draw many residents during the summer months. The attached photos show this area.

### *Shenipsit Lake*

Located in the northeast corner town and spanning into the communities of Tolland and Ellington, Shenipsit Lake is one of two active reservoirs within Vernon operated by the Connecticut Water Company. Due to its active public water supply status, Shenipsit Lake boasts a DEP water quality classification of “AA”. The lake is also the headwaters to the Hockanum River.

### *Tankerhoosen Ponds (Tankerhoosen Lake, Talcottville Pond & Dobsonville Pond)*

Located south of I-84 between the Manchester Town Line and Tunnel Road, this chain of DEP owned water bodies accepts flow from the Tankerhoosen River. With hiking trails available at the adjacent municipal Phoenix Mill & Tankerhoosen Parks, and fishing allowed in the ponds, this area draws a variety of recreation enthusiasts. The DEP has classified the water quality in these water bodies as “B” with a goal of “A”. According to the DEP, the most likely cause of the “B” classification is non-point source pollution runoff from the residential and commercial development surrounding the ponds.

### *Risley Reservoir*

Located in the southwest corner of Town, along the Bolton Town Line, this active public water supply reservoir is one of two active reservoirs in Town. With a significant amount of undeveloped land on its eastern side, the reservoir has a water quality classification of AA". The reservoir drains to Lydall Brook, which flows in a southwesterly direction until its confluence with the Hockanum River at Union Pond in Manchester



**Risley Reservoir**

### *Walker Reservoir*

Walker Reservoir, located just south of 84 along the Tolland Town line, is not an active public water supply reservoir. Rather it is a popular year-round recreational outlet attracting hikers, fishermen, and ice skaters. Adjacent Town owned Walker Reservoir Park has a short, but scenic blazed trail popular in the summer months. Surrounded by substantial undeveloped acreage, Walker Reservoir serves as the headwaters to the Tankerhoosen River.



**Walker Reservoir West**

### *Other smaller ponds include:*

Ano-coil Pond	Paper Mill Pond
Runde Pond	Bamforth Road Pond
Belding Ponds	Webster Pond
Valley Falls Pond	Bolton Club Pond
Ackerly Pond	Ogden Brook Pond
Envelope Pond	Ecker Pond
Garden Barn Road	South Street Pond

### *Wetlands*

Wetlands in Connecticut are designated by soil classification, as opposed to plant life or water cover. Those lands (including submerged land) having soil conditions that are classified as poorly drained, very poorly drained, alluvial, or floodplain by the Natural Resource Conservation Service (NRCS) are considered wetlands under the provisions of state statutes and Vernon's Inland Wetland Regulations. Therefore, wetlands can include both areas which are associated with water features or simply result from an isolated depression in the landscape, disassociated with any drainage system. Still others are important components of major drainage systems, absorbing and storing water in times of heavy stream flow and slowly releasing water during drier periods. As such, they serve as excellent natural flood control features. Wetlands also have important ecological value. They provide habitat for a variety of plants and animals, many of which are listed on the States Threatened or Endangered Species list. Areas containing the soil conditions listed above are displayed on the Wetland Soils Map.

The wetlands found throughout Vernon represent significant natural resources and should be reviewed carefully when related to any development proposals. Among the largest and most productive wetlands are those found along the Hockanum River north of Dart Hill Road in the Skinner Road neighborhood. This wetland system plays host to a variety of unique plant and animal species including some State protected species as identified by the DEP Natural Diversity Database. Numerous other wetland systems are located throughout the town. Most are associated with the several rivers and streams identified on the preceding pages.

Of Vernon's 18.2 square miles of land area, approximately 1104 acres or 1.7 square miles are classified as wetlands. This represents approximately 9.5 percent of the total town area. It is important to note that this area differs than the wetland regulated area, which is defined within the Town's Inland Wetland Regulations. The area referenced here is specific to the wetland soil types only not the regulated area that includes setbacks and other regulatory controls.

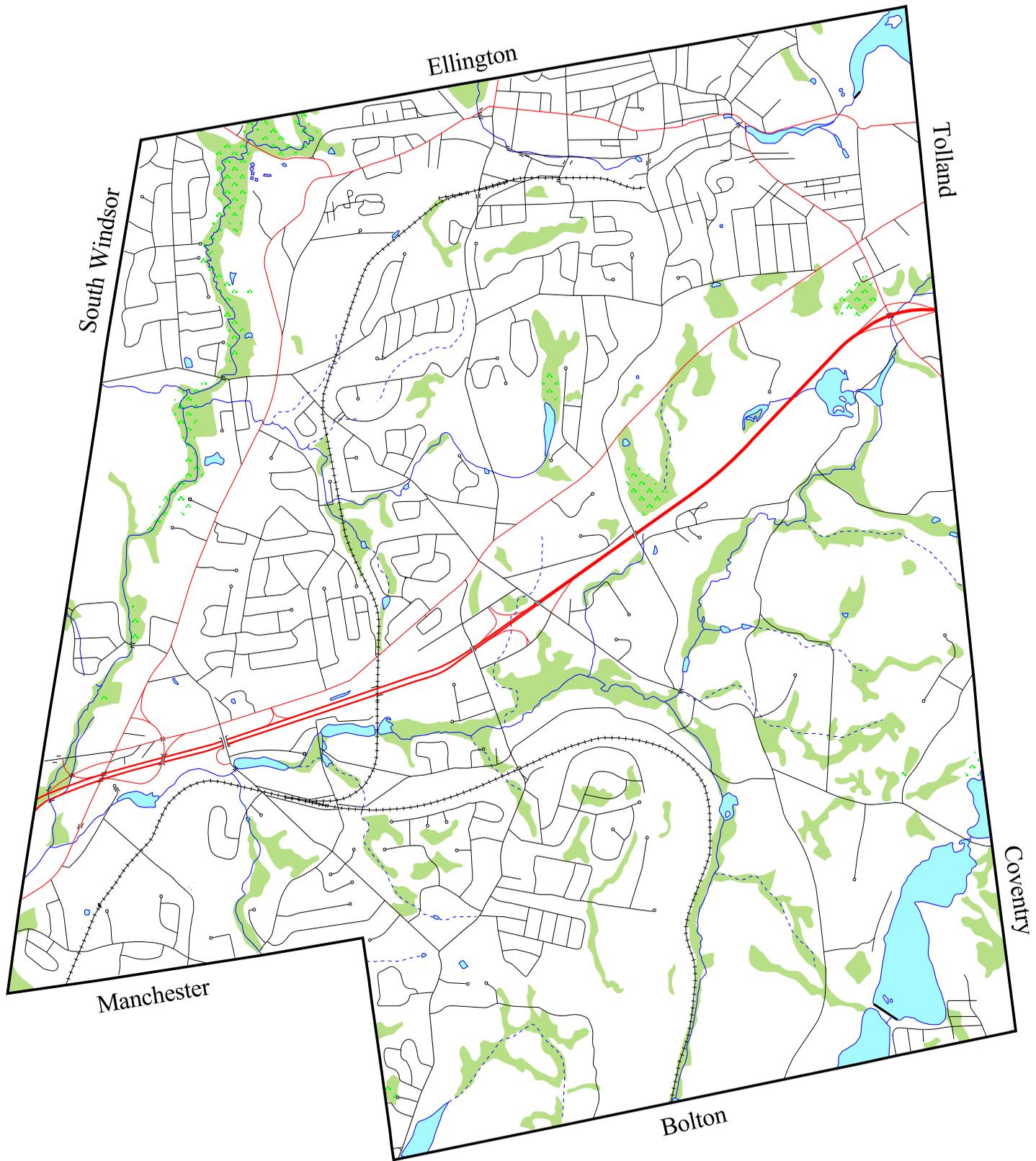
### *Aquifers*

Aquifers can generally be categorized into two types depending on their geologic environment: stratified drift and bedrock-till aquifers. Stratified drift aquifers, a name which derives from the way the deposits were laid down over thousands of years by flowing waters, are found in loose sand and gravel deposits within river valleys. Bedrock-till aquifers are comprised of many different rock types and are covered by glacial till, a residual mix of rocks, sand, silt and clay.

In 1988, the Town commissioned an Aquifer Management Study, which found that 36 percent of the Town contains stratified drift and contributes 64 percent of the recharge to the Town's aquifers. Bedrock-till occupies the remaining 64 of the Town's land area while contributing 36 percent of the recharge to the Town's aquifers.

Within the stratified drift deposits are zones designated as Favorable Aquifer Areas where saturated thickness of sand and gravel exceeds 30 feet. The Unconsolidated Aquifers and Aquifer Protection Areas Map shows these areas. Three major favorable aquifers have been identified in the following areas:

- Northwest Vernon from Shenipsit Lake southward along Gages Brook to Baker Road
- Land adjacent to the Hockanum River in the Talcottville area
- Land generally east of the Hockanum River from the Ellington town line to the Dobson Road Area.
- Other small favorable aquifers have also been identified:
- Northwest and southwest of Vernon Center
- West of Phoenix Street southwest of Vernon Village
- North of Tankerhoosen Lake
- Land along the Tankerhoosen River west of Tunnel Road



**LEGEND**

 Wetland Soils

**Wetland Soils**

Plan of Conservation and Development

Vernon, Connecticut



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Hamden, Connecticut

June 2001

0.25 0 0.25 0.5 Miles



Scale: 1:40,000

Source of Data:  
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Map and Geographic Information Center  
Storrs, CT

Connecticut Department of Environmental Protection  
Environmental and Geographic Information Center  
Hartford, CT

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**LEGEND**

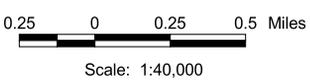
-  Favorable Aquifer Area  
Already Developed By Wells
-  Favorable Aquifer Area  
Saturated Greater Than 30 Feet
-  Stratified Drift Aquifer and  
Primary Recharge Area
-  Preliminary (Level B)  
Aquifer Protection Area

Source of Data:  
University of Connecticut  
Map and Geographic Information Center  
Storrs, CT

Connecticut Department of Environmental Protection  
Environmental and Geographic Information Center  
Hartford, CT

Aquifer Management Study  
Town of Vernon  
August, 1992

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**Unconsolidated Aquifers & Aquifer Protection Areas**

Plan of Conservation and Development

Vernon, Connecticut



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Hamden, Connecticut

June 2001



The Town has the potential of developing municipal ground water supplies from existing stratified drift aquifers. However, care must be taken to ensure that these groundwater resources remain pure. Underground storage tanks are a major threat to groundwater quality. According the referenced study, 60 of the 186 underground storage tanks located over stratified drift aquifers within the Town have exceeded their 15-year life expectancy. In addition, several sources of contamination exist within the Town that would need to be addressed if development of the aquifers were to be pursued. These include wastewater discharges, oil and chemical spills, sand and gravel extraction, and road salt storage and application.

In an effort to address potential contamination to remaining groundwater resources, the State of Connecticut passed legislation establishing an aquifer protection program (codified CGS §22a-354). This program intends to enhance groundwater protection by designating Aquifer Protection Areas, establishing consistent land use regulations within Aquifer Protection Areas and creating technical assistance and education programs on groundwater protection.

The aquifer protection legislation requires the DEP to adopt comprehensive land use regulations for those land areas that contribute / recharge any public water supply well serving more than 1000 people. While still under review, these regulations will serve as a model ordinance to assist towns in adopting required land use regulations by defining regulated activities, mandatory best management practices, and procedures for local program management.

The DEP with cooperation from the Connecticut Water Company has identified two aquifer protection areas within the Town of Vernon as shown on the Unconsolidated Aquifers and Aquifer Protection Areas Map. To date, these areas have been mapped at a preliminary level (Level B). Level B mapping identifies the general area of aquifer contribution / recharge based primarily on topography.

According to the aquifer protection legislation, a more detailed level of mapping (Level A) is required no later than 3 years after the adoption of regulation standards. As explained above, final regulation standards have yet to be released.

## **2. OTHER NATURAL RESOURCES**

### *Steep Slopes*

The terrain in Vernon is notable in part for its varying topography. In this assessment, steep slopes are defined as those soil types with a slope of 15% or greater. This varying terrain helps form the physical character of the Town, provides scenic vistas and allows for unique habitats for a variety of flora and fauna. These slopes can also limit development due to the difficulty of building on such steep topography. In the past, steep slopes have limited development to the valleys and other relatively flat areas of the Town. Over the years advances in building techniques and technology has allowed development to begin encroaching on the Town's steep topography. While the technology is available to build in these steep areas, it is expensive and in many cases not practical.

Soil survey data produced by the Natural Resource Conservation Service can identify the general location of steep slopes. It is important to mention that utilizing soil data to identify steep slopes has limitations. This is because the slope information that is contained within the data is averaged over soil units that can often times cover many acres. This causes the data to over estimate the slope in some areas and under estimate it in others. However, for general planning purposes, the soil data does a good job at identifying which sections of Town contains steep terrain. As illustrated on the Steep Slope Soils Map, the southeast and northeast quadrants of Town, especially around the Valley Falls region, contain the greatest concentration of slopes greater than 15%.



Source of Data:  
 University of Connecticut  
 Map and Geographic Information Center  
 Storrs, CT

Connecticut Department of Environmental Protection  
 Environmental and Geographic Information Center  
 Hartford, CT

\*Only soil types with a minimum slope of 15% have been depicted on this map. Other soils that have a minimum slope of less than 15% and a maximum slope of greater than 15% may and do exist.

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### LEGEND

 Steep Slope Soils\*  
 (15% minimum slope by soil unit)



Scale: 1:40,000

## Steep Slope Soils

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Vernon, Connecticut



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### *Prime / Important Farmland Soil*

Prime and Important farmland soils is land that has been identified by the United States Department of Agriculture (USDA) as having the best combination of physical and chemical characteristics for producing food, feed, forage, fiber and oil seed crops. These lands have the soil quality, growing season and moisture supply needed to economically produce sustained crop yields when treated and managed according to modern farming methods. In recent years, concern over the loss of these prime and important farmland soils due to expanding development has led to the formation of many different farm protection initiatives including the Connecticut Department of Agriculture's Farmland Preservation Program. The identification of these areas as shown on the Prime/Important Farmland Soil Map is important to these initiatives because it illustrates where the most sustainable farmlands are located.

### *Endangered, Threatened & Special Concern Species*

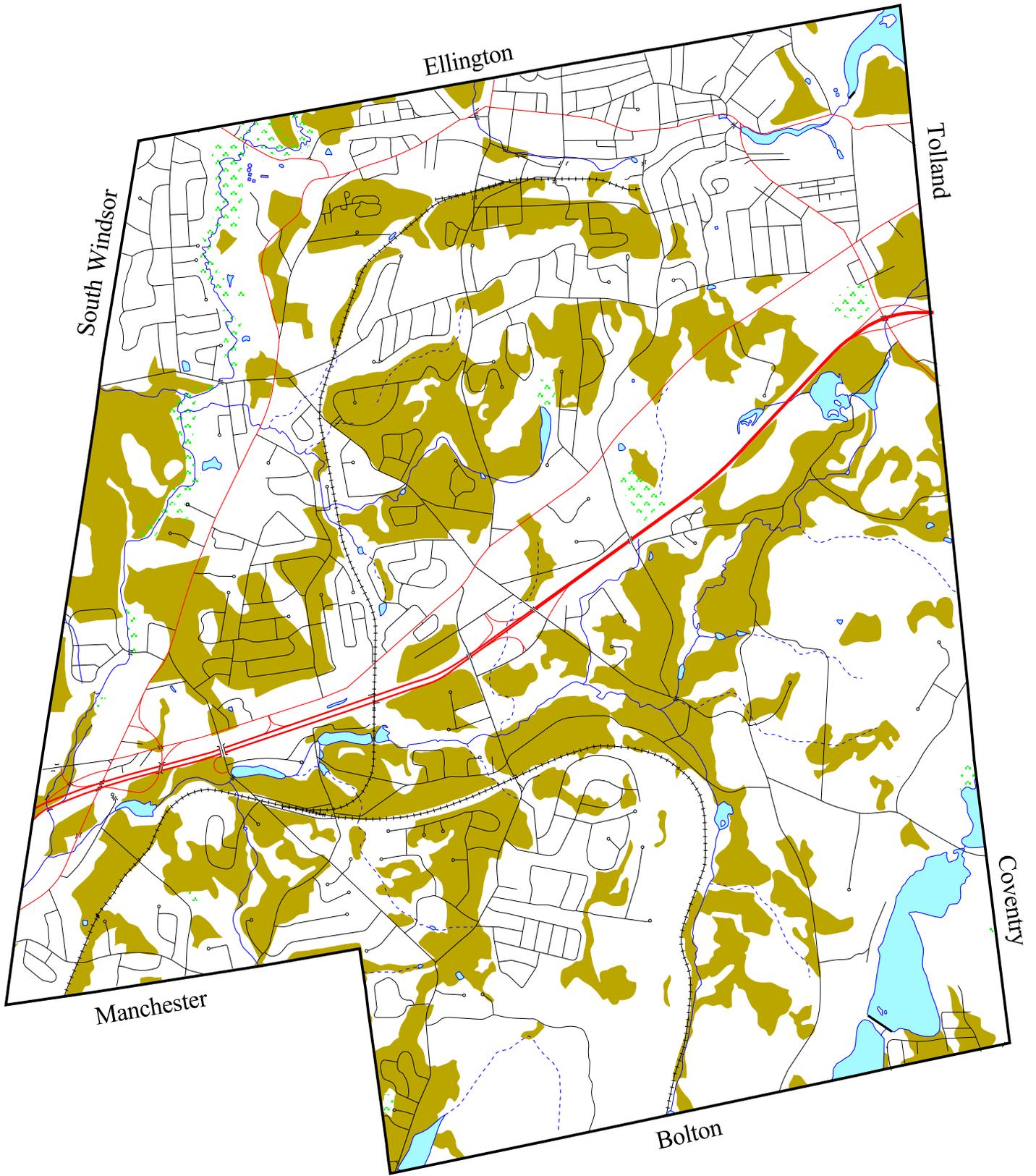
In 1996, the DEP Natural Diversity Database initiated Endangered Species Mapping for Municipalities Project to assist towns in protecting their share of the state's bio-diversity. This project makes available the generalized locations of State & Federal listed species and significant natural communities for municipalities to use in preliminary endangered species reviews of proposed projects. The generalized area represents a buffered zone around known species or community location. Because these sites have been buffered, listed species and significant natural communities will generally occupy only a portion of the area illustrated on the map. The exact location of the species or community falls somewhere in the area, but not necessarily in the center. Representing the information this way maintains the confidentiality of the precise species and community locations. Confidentiality provides protection from collection and disturbance for sensitive species and protects landowner's rights whenever a species occur on private property.

The locations of species and natural community occurrences depicted on the Natural Diversity Areas Map are based on data collected over the years by the Environmental and Geographic Information Center's Geologic and Natural History Survey, other units of the DEP, private conservation groups and the scientific community. A proposed project occurring within one of the identified areas simply triggers a review by the DEP to assess what impact, if any, it will have on the affected species. Mapping of these areas is important to the Plan of Conservation and Development because it defines those areas of the town that have maintained the unique habitat requirements of a plant or animal rare to scientific community. Preservation of these areas helps maintain Vernon's share of the state's bio-diversity.

Within Vernon, four general areas have been identified by the Natural Diversity Database as containing listed species or significant natural communities. These areas include:

- Hockanum River marshes north of Dart Hill Road to the Ellington border
- Vicinity around Walker Reservoir
- Valley Falls in the vicinity of Bolton & Wildwood Road
- Talcottville in the vicinity of Route 30 & the South Windsor border

Because new information is continually being added to the Natural Diversity Database and existing information updated, the areas listed above are reviewed on an annual basis by the DEP. Areas can be removed or added based upon the results of the review.



**LEGEND**

 Prime / Important Farmland Soil

**Prime / Important Farmland Soil**

Plan of Conservation and Development

Vernon, Connecticut



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Hartford, CT

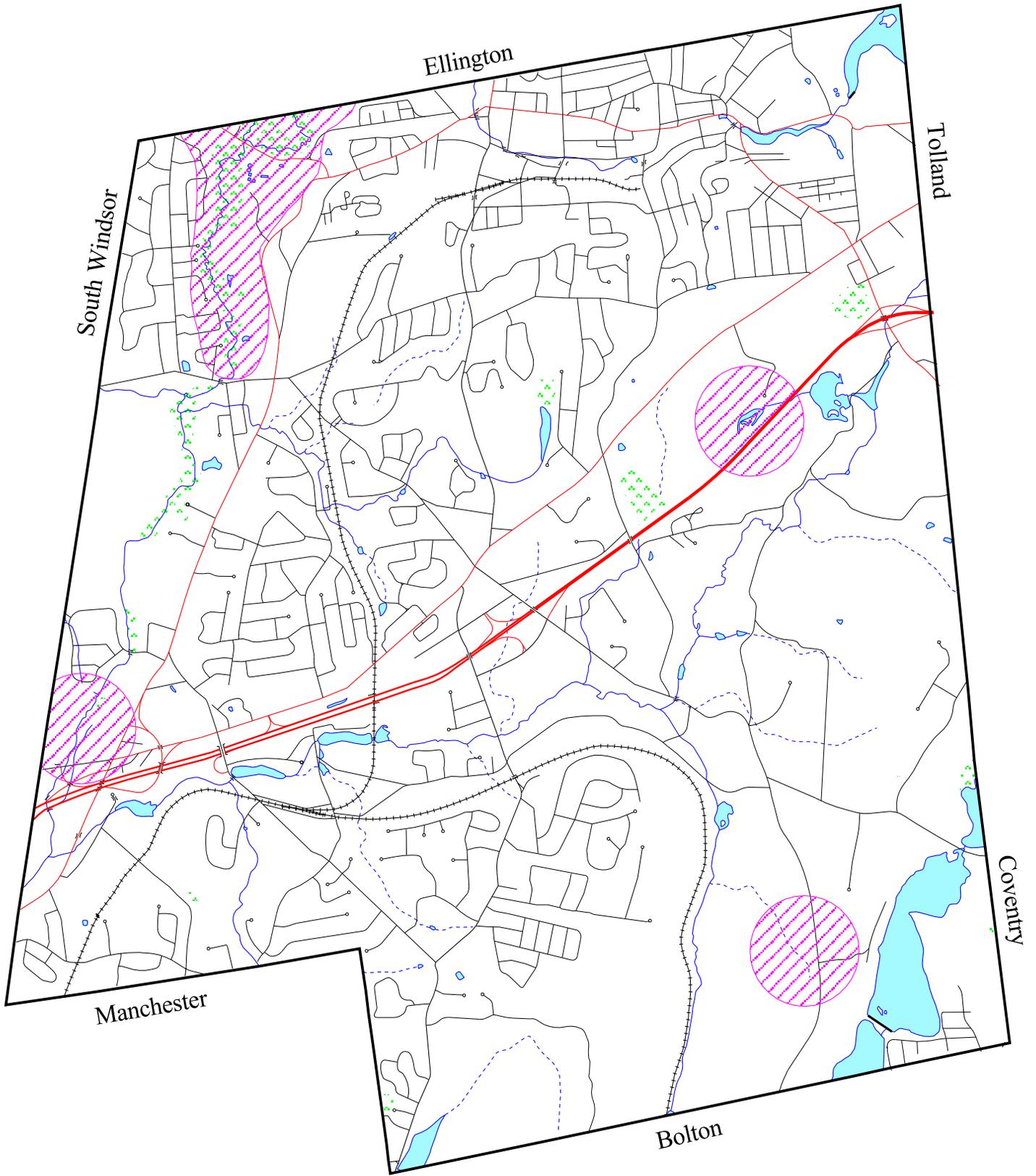
THIS MAP WAS DEVELOPED FOR USE AS A PLANNING DOCUMENT. DELINEATIONS MAY NOT BE EXACT.

0.25 0 0.25 0.5 Miles



Scale: 1:40,000





Source of Data:  
 University of Connecticut  
 Map and Geographic Information Center  
 Storrs, CT

Connecticut Department of Environmental Protection  
 Environmental and Geographic Information Center  
 Hartford, CT

Locations of species and natural communities are based on data collected by the CT Geological & Natural History Survey, other units of DEP, private conservation groups and the scientific community and compiled by the Natural Diversity Database. The information is not necessarily the result of comprehensive or site-specific field investigations; in some cases locations have been derived from literature or museum searches or historic records. Date: October, 1999

### LEGEND

 General Locations of Listed Species and Natural Communities



Scale: 1:40,000

## Natural Diversity Areas

Plan of Conservation and Development

Vernon, Connecticut



HARRALL-MICHALOWSKI ASSOCIATES, Incorporated

Hamden, Connecticut

June 2001

THIS MAP WAS DEVELOPED FOR USE AS A PLANNING DOCUMENT. DELINEATIONS MAY NOT BE EXACT.



## **C. SUMMARY**

Throughout the process of the Plan update, the natural features inventory was used to assist the Commission and the community in the formulation of land use policies. Specific use of this inventory in the planning process will include the calculation of the extent of buildable areas as well as identification of key features to receive possible open space protection as well as special consideration in the review of development proposals. For purposes of clarity of review, a map entitled Areas Sensitive to Development has been prepared. This map shown on the following page presents a composite of the various natural features discussed above.





Ellington

Tolland

South Windsor

Manchester

Bolton

Coventry

**LEGEND**

- Wetland Soils
- Steep Slope Soils\* (15% minimum slope by soil unit)
- 100-Year Floodplain (FEMA)
- 500-Year Floodplain (FEMA)
- Natural Diversity Concentration Area
- Public Water Supply Watershed
- Level B Aquifer Protection Area

Source of Data:  
University of Connecticut  
Map and Geographic Information Center  
Storrs, CT

Connecticut Department of Environmental Protection  
Environmental and Geographic Information Center  
Hartford, CT

\*Only soil types with a minimum slope of 15% have been depicted on this map. Other soils that have a minimum slope of less than 15% and a maximum slope of greater than 15% may and do exist.

THIS MAP WAS DEVELOPED FOR USE AS A PLANNING DOCUMENT. DELINEATIONS MAY NOT BE EXACT.

0.25 0 0.25 0.5 Miles

Scale: 1:40,000

**Areas Sensitive To Development**

Plan of Conservation and Development

Vernon, Connecticut



HARRALL-MICHALOWSKI ASSOCIATES, Incorporated

Hamden, Connecticut

June 2001



### **III. POPULATION AND HOUSING**

#### **A. INTRODUCTION**

The population of the Town of Vernon is analyzed to identify past and current trends and to project future Vernon population. Understanding demographic characteristics and changing patterns is important to the process of preparing a Plan of Conservation and Development. Such information is critical to estimating likely future space needs and service requirements to be provided by the Town and incorporated into a long range plan.

The analysis here examines overall population trends and makes some comparisons with neighboring towns, and the larger region. The comparisons help to provide some gauge of how trends in Vernon are similar or different from other communities. The analysis is divided into two components. One is a look back at past trends and the other is a look at future projections.

Within the overall population some detailed attention is paid to the age distribution. This is a characteristic which can be quite dynamic even in a population with a stable total number of persons. Age characteristics are important influences on the need for child care, educational and recreation facilities. Age distribution also impacts the types of housing that will be in demand and the local labor force available to operate the economic base, as well as the extent of services that may be required for the elderly.

#### **1. TOTAL POPULATION**

Since 1970, Vernon's population has increased from 27,237 to 28,063 as of 2000. Vernon experienced a population decline after 1990. In contrast, Capital Region and Tolland County continued to experience increased population growth. The County growth is reflective of the continuing preference for low density suburban/rural life style and the outward movement of population from higher density core communities to lower density rural and suburban areas. The tables below present various population estimates.

**Table 1**  
**Past Population Trend Totals**

	<b>1970</b>	<b>1980</b>	<b>1990</b>	<b>2000</b>
State of Connecticut	3,032,217	3,107,580	3,287,116	3,405,565
Capitol Region	661,537	668,483	709,404	721,320
Tolland County	103,440	114,823	128,699	136,364
Town of Vernon	27,237	27,974	29,841	28,063

Source: CT DECD Market Data Reports and Town Profiles

**Table 2**  
**Past Population Trend Rate of Change**

	<b>1980</b>	<b>1990</b>	<b>2000</b>
State of Connecticut	+2.49%	+5.78%	+3.60%
Capitol Region	+1.05%	+6.12%	+1.68%
Tolland County	+11.00%	+12.08%	+5.96%
Town of Vernon	+2.71%	+6.67%	-5.96%

Source: HMA Tabulation

**Table 3**  
**Vernon Population as Percent of Various Regions**

	<b>1970</b>	<b>1980</b>	<b>1990</b>	<b>2000</b>
State of Connecticut	.9%	.9%	.9%	.8%
Capitol Region	4.12%	4.18%	4.21%	3.89%
Tolland County	26.33%	24.36%	23.19%	20.58%

Source: HMA Tabulation

**Table 4**  
**Population Forecast**

	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>
State of Connecticut	3,364,080	3,435,400	3,512,240	3,593,860
Capitol Region	713,930	725,990	758,720	752,450
Tolland County	136,830	142,250	146,850	151,320
Town of Vernon	29,490	30,490	31,360	32,140

Source: CT Office of Policy and Management Series 95-1 projections.

Going forward, the Vernon population has been forecast by Connecticut’s Office of Policy and Management in its 1995 forecast to demonstrate a renewed, but modest growth trend. Vernon population is forecast to be 32,140 persons in 2020. That is an increase of 4,077 from the 2000 Census, growth of about 14.5% over a 22 year period. Due to the decline in the 2000 Census population from previous estimates, it could be anticipated that OPM may re-examine their year 2020 projection.

## 2. AGE DISTRIBUTION

Tables in this section show the distribution of Vernon’s population by age and the changing patterns of that distribution over time. The several age groups are categorized and tracked in three basic ranges. First the pre-school and school age populations are shown, then the labor force population and finally the elderly population. Changes in each group are noted along with the implications of such change.

**Table 5**  
**Trend in Pre-School & School-Age Population**  
**1990 - 2000**

<b>YEAR</b>	<b>1990</b>	<b>1995</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>
Preschool (0-4)	2,173	2,276	2,029	1,899	1,912	1,982	2,038
Elementary (5-9)	1,841	1,925	1,988	1,868	1,810	1,817	1,871
Middle (10-14)	1,716	1,704	1,786	1,911	1,842	1,788	1,794
High School (15-19)	1,785	1,458	1,474	1,602	1,759	1,685	1,625
<b>Total School-Age (5-19)</b>	<b>5,342</b>	<b>5,087</b>	<b>5,248</b>	<b>5,381</b>	<b>5,411</b>	<b>5,290</b>	<b>5,290</b>

Source: HMA Tabulation from CT OPM 95-1 Series.

The pre-school population has declined over the past five years and is expected to continue declining to 2010 after which time there will be some modest increases close to the current level. The elementary school age group is shown to have increased since 1990, but is forecast to decline over the next ten years and then increase slightly. Middle school age groups have increased modestly over the past ten years. This cohort is expected to increase more sharply in the next five years and then decline. The high school age group dropped sharply over the past ten years, but is forecast to rise steadily

through 2010 and then decline, but to a level still higher than the present. Total school age population is down from 1990, but up from 1995 and expected to rise to 2010 and then decline again to a level close to present numbers. If local school capacities and other youth service facilities are adequate for the present population, the trend in age group size does not seem likely to change so greatly as to mandate additional facilities. Other factors such as educational standards, facilities standards, union contracts and physical conditions of facilities may nevertheless present cause for replacement, expansion or modernization.

**Table 6**  
**Trend in the Labor Force Population**  
**1990 - 2020**

<b>YEAR</b>	<b>1990</b>	<b>1995</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>
Labor Force (20-64)	18,812	18,081	17,501	17,686	18,107	18,383	18,437

Source: HMA Tabulation from CT OPM 95-1 Series

The age groups that generally comprise the labor force have declined since 1990. This trend is not expected to continue. A modest increase in this age cohort is expected over the next five years with further increases in the more distant future.

**Table 7**  
**Trend in Elderly Population**  
**1990 - 2020**

<b>YEAR</b>	<b>1990</b>	<b>1995</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>
65 - 74	2,040	2,137	2,154	2,165	2,453	2,922	3,196
75+	1,474	1,760	2,077	2,361	2,607	2,784	3,180
<b>Total</b>	<b>3,514</b>	<b>3,897</b>	<b>4,231</b>	<b>4,526</b>	<b>5,060</b>	<b>5,706</b>	<b>6,376</b>

Source: HMA Tabulation from CT OPM 95-1 Series

Vernon's elderly population has increased since 1990 and is expected to continue to increase in the years ahead. The increase in this total age group is forecast to be 50% over the next 20 years. Communities around Connecticut have been experiencing this aging trend for decades. In years past, this trend was the impetus for age-restricted communities and condominium lifestyle with property maintenance by an association.

More recently, the extended life expectancy of the population is providing support for congregate living and assisted living facilities. As the population continues to age there will be even greater need for facilities and services to meet the needs and desires of this age group.

### **3. CONCLUSION**

Based upon a review of available data summarized above, it would appear that Vernon will not experience a substantial population increase over the next decade and beyond. The only age group which will experience a substantial increase is the elderly population. This projected increase could lead to increased demand for specialized housing, increased community services and transportation alternatives to address the needs of the elderly and mobility restricted population. There may also be increased support for open space preservation to be enjoyed by active adults among the senior population.

## **B. HOUSING**

Residential activity tends to be the land use which predominates the developed areas of most communities. The condition, design, appearance, availability and affordability of a community's housing are key variables in the definition of community character and resident satisfaction.

The Connecticut General Statutes (CGS) Section 8-23 establishes the standards for a municipal Plan of Conservation and Development and in part it reads, “ *Such plan shall make provision for the development of housing opportunities, including opportunities for multi-family dwellings consistent with soil types, terrain and infrastructure capacity..... Such plan shall also promote housing choice and economic diversity in housing, including housing for both low- and moderate-income households*”.

Vernon has recognized three challenges in regards to housing. First, there is a need to provide enough housing for the population. Second, there is a need to provide adequate

housing relative to household characteristics. And third, there is a need to provide housing that is affordable.

This segment of the Plan of Conservation and Development reviews the housing inventory and its characteristics and considers the inventory in relation to specific needs of segments of the population. The analysis included here considers the number and type of housing units, the availability of units for sale or for rent, levels of new construction, vacancy rates and trends in pricing. The analysis also references municipal programs geared to meet particular housing needs.

Vernon's Plan of Conservation and Development has identified shelter as a basic human need. Protection from the elements and a place of security are essential needs. The provision of housing is a fundamental social and economic need of society. In fact, the primary developed land use in Vernon is residential and the major objectives of land use and building regulations are related to housing.

Housing is an economic commodity which responds to the influences of supply and demand. But it has also become a social commodity influenced directly and indirectly by a variety of governmental programs and regulations to meet needs otherwise disregarded by normal market trends. This update of the housing component of Vernon's Plan of Conservation and Development reviews changes and trends in housing supply and demand in order to determine adjustments which may be appropriate to land use, planning and zoning policies intended to lessen housing problems and increase the benefits of regulated development.

## **1. HOUSING SUPPLY-THE INVENTORY**

Vernon's housing inventory has increased continuously over the recent decades. The 1960 census recorded an inventory of 5,408 housing units. By 1990, the inventory was 12,748. Data from the State of Connecticut Department of Economic and Community Development indicates the inventory had increased to 12,879 at the close of 1998. The forecast estimates from Claritas, Inc. predict the inventory to increase to 13,761 by the

end of 2004. Fulfillment of that forecast would mean an average annual addition of about 150 units of new housing in Vernon, which is a much more rapid pace of development than demonstrated in recent years.

**Table 8**  
**Growth of Vernon Housing Inventory**  
**Comparison to State and Region**

<b>Area</b>	<b>1960<sup>1</sup></b>	<b>1970<sup>1</sup></b>	<b>1980<sup>1</sup></b>	<b>1990<sup>1</sup></b>	<b>1998<sup>2</sup></b>
State of Connecticut	818,544	981,603	1,158,884	1,320,850	1,383,597
Capitol Region	170,878	214,280	247,063	282,484	294,490
Tolland County	20,281	29,735	38,039	46,677	47,556
Town of Vernon	5,408	8,608	10,611	12,748	12,897

<sup>1</sup> Vernon Plan of Development

<sup>2</sup> CT DECD 1998 Construction Report

The most recent inventory totals are notable for very much reduced rate of growth compared to prior periods. The percentage change in growth trends decline as the size of the inventory increases as a simple mathematical function. However, in the 1990's the decline was much greater. The growth in the 1990's in the Town of Vernon was only about a 1% increase - compared to increases of more than 20% in the 1970's and 1980's.

The slow-down is attributable in main to the recession which impacted the State of Connecticut at the start of the 1990's combined with overbuilding that had occurred at the end of the 1980's. It has only been in 1999 that Connecticut employment has returned to the pre-recession level. If the economy remains strong it should be expected that housing growth will return to rates above the recent past.

**Table 9**  
**Changes in Housing Inventory Growth**

	<b>1960-1970</b>	<b>1970-1980</b>	<b>1980-1990</b>	<b>1990-1998</b>
State of Connecticut	19.9%	18.1%	14.0%	4.8%
Tolland County	46.6%	27.9%	22.7%	1.9%
Capital Region	25.4%	15.3%	14.3%	4.2%
Town of Vernon	59.3%	23.3%	20.1%	1.2%

Source: Vernon Plan of Development; CT DECD 1998 Construction Report

In addition to the economic trends influencing housing development, demographic trends have also impacted housing needs. In 1970, the average household size in Vernon was over three persons. In 1980, the average size was 2.7 persons. In 1990, the household size had declined again to 2.43 persons. The declining household size reflects changing lifestyle patterns and an increasing need for dwelling units within a stable overall population size. Since 1990, the household size in Vernon (Claritas, Inc. estimate) has been comparatively stable, declining only to 2.40.

Within the total inventory, the housing available can be distinguished according to the types of units, such as single family, apartments or mobile homes. The inventory can also be distinguished by type of occupancy, either owner-occupied or rental.

In general, Vernon's housing inventory tends to be less predominately single family detached than the State or County. 1997 data reported by DECD in Connecticut Town Profiles shows Vernon housing to be 51.4% single units. That compared to 62.9% single units statewide and 72.8% single units in Tolland County.

**Table 10**  
**Vernon Housing Inventory Composition**

<b>Building/Unit Type</b>	<b>1990 Census</b>	<b>Construction 1990-98</b>	<b>Estimate 1/99</b>
Single Detached	6,093	190	6,283
Single Attached	650	1	651
Two-Unit	765	12	777
3 - 4 Unit	1,223	3	1,226
5+ Units	3,622	0	3,622
Mobile/Other	395	0	395
Demolitions 97 -98	-	(57)	(57)
<b>Total</b>	<b>12,748</b>	<b>149</b>	<b>12,897</b>

Source: 1990 Census; CT DECD Construction Report 1990 – 1998

While the Vernon housing inventory tended historically to be less predominately single family than the County and the State, recent new construction has been overwhelmingly one-family detached. Over 90% of new residential construction in the 1990's was single family.

**Table 11**  
**New Construction by Type and Year**  
**Vernon, Connecticut**

	Single Family Detached	Single Family Attached	2 Units	3-4 Units	5+ Units	Other	Demo
1990 Census Count	6,093	650	765	1,223	3,622	395	-
1990 Construction	22	-	8	-	-	-	12
1991 Construction	14	-	-	3	-	-	3
1992 Construction	23	-	-	-	-	-	8
1993 Construction	14	-	-	-	-	-	3
1994 Construction	16	-	-	-	-	-	7
1995 Construction	16	1	2	-	-	-	10
1996 Construction	27	-	2	-	-	-	5
1997 Construction	27	-	-	-	-	-	8
1998 Construction	31	-	-	-	-	-	1
<b>Total</b>	6,283	651	777	1,226	3,622	395	(57)

Source: U.S. Census and CT DECD Annual Construction Reports

## 2. DEMOGRAPHIC TRENDS-HOUSING DEMAND

How much housing will Vernon require in the future? Housing and population in local planning are a “chicken and egg” combination. Which comes first?

If we consider that over the past nine years the net increase in Vernon’s housing inventory has been 149 units, then we might project an average annual increase in the future of about 16-17 units. If we take a longer view back to 1980, the inventory has increased 2,286 since then and on that basis we might project an average annual increase of about 120 units.

In 1980, the Vernon population was 27,974. The 2000 Census population is 28,063. That is an increase of 89 persons associated with a housing inventory increase of 2,286 units. Housing growth is clearly moving ahead of population growth. This is most likely due to the declining household size noted previously. With the current estimated dwelling unit count of 12,897 and a population of 28,063, the household size would be 2.2. This situation should be reviewed when more detailed 2000 Census data becomes available for housing statistics.

If household size stabilizes at 2.2 and net housing growth averages 16 units per year then a population growth of about 352 persons per decade might be expected. If the net annual growth is 120 units then a population increase of 2,640 could be expected over a decade.

The State of Connecticut Office of Policy and Management has prepared population projections. The latest forecasts are the 95-1 series. This series estimates Vernon's population to decline from 1990 through 2005 and then rise from 2005 through 2020, when it reaches a total of 32,140. At this projected population level in 2020 and if household size remained stable, there would need to be 13,392 dwelling units to accommodate the population. If allowance for 5% vacancy were built into the calculation the total inventory at that point in the future would need to be about 14,060 units.

From 1999 through 2020 the required increase in housing would need to be 1,163 units, approximately 55 new units per year.

**Table 12**  
**Vernon Population Trend & Forecast**

	1960	1970	1980	1990	2000	2010	2020
Population per OPM95-1 series	16,961	27,237	27,974	29,841	29,010	30,490	32,140
Prior OPM				28,300	28,250	27,800	-
Vernon				29,840	30,350	30,470	-

Source: CT Office of Policy and Management

With the recent 2000 Census population count and the yet to be released housing unit count, it is expected that OPM may revise these projections in the future.

Should Vernon see the currently projected pace of new construction it would represent a level of development about mid-way between the accelerated pace of the 1980's and the slower pace of the 1990's. A key component in the preceding calculation has been a stable household size. A decline in household size could increase the required number of housing units to achieve population projections.

It should also be noted that the 95-1 OPM series of forecasts represents an increased growth forecast from the population forecasts made previously by OPM. Earlier projections were about 10% lower. The earlier estimates had been criticized in the 1990 Vernon Plan of Conservation and Development as seeming to be too low. Actual projections applied in the Plan were very close to the most recently revised OPM numbers. The Plan had projected a 2010 population of 30,470 which was 2,670 higher than the earlier OPM estimate for that date, but just 20 persons short of the most recent OPM revised forecast.

The revised OPM forecast and the 1990 Vernon POCD estimate both support a likely population at 2010 of approximately 30,470 - 30,490. The anticipated housing for this population in the Plan was about 13,850 dwelling units at an average household size of 2.2. That household size is lower than the actual reported size in 1990 and lower than recent estimates by Claritas, Inc. but seems to be consistent with 2000 Census population and current estimates of dwelling units. The Claritas estimates for 1999 are 2.4 persons per household. However, the Census and Claritas data is for occupied households and the 1990 Vernon POCD data appears to have included vacant units in the statistical tabulation.

While the above estimated housing need is generally consistent with the gross need identified in the 1990 Vernon POCD, there is a notable change in the population forecasts

by OPM with significant implications for housing need. The change is mainly the extent of elderly residents forecast in Vernon.

As presented in the 1990 Vernon POCD, OPM forecasts for 65 and over population were for about 3,290 elderly persons in 1990 growing gradually to 3,910 elderly persons in 2010. That is about 19% growth over the forecast period. In the updated predictions, the actual census count identified 3,514 persons over 65 in 1990 and the count is forecast to increase by 44% from 1990 to 2010 and then increase 26% again to 2020. This accelerated increase in the over 65 population is a critical demographic change since the last plan was written.

**Table 13**  
**Elderly Population Trend**

	1990	1995	2000	2005	2010	2015	2020
OPM <sup>1</sup> over 65	3,290	3,540	3,560	3,580	3,910	-	-
OPM <sup>2</sup> over 65	3,514	3,897	4,231	4,527	5,060	5,706	6,376
OPM <sup>2</sup> over 75	1,474	1,760	2,077	2,361	2,607	2,784	3,180

<sup>1</sup> 1990 - Series included in Vernon POCD

<sup>2</sup> 1995-1 Series.

The increase in the elderly population will be about 30% higher than earlier estimates indicated. The population over 75 is expected to increase over 50% between 2000 and 2020. This change in the character of the population could create demands for housing products different from past traditions.

### **3. HOUSING PRICES-HOUSING AFFORDABILITY**

Affordability in common parlance is a relative term. Different income levels and circumstances determine how basically affordable a house of a set price is to a particular household. However, the State of Connecticut has established a definition of affordable housing as costing less than 30% of household income on a monthly basis.

Still, cost is a moving target. It depends on price, interest rates, taxes and utilities. In terms of the major element of cost - price - Vernon has a history of being relatively lower priced than neighboring towns and the state generally. The trend in the “all sales” median home price in Vernon is shown below.

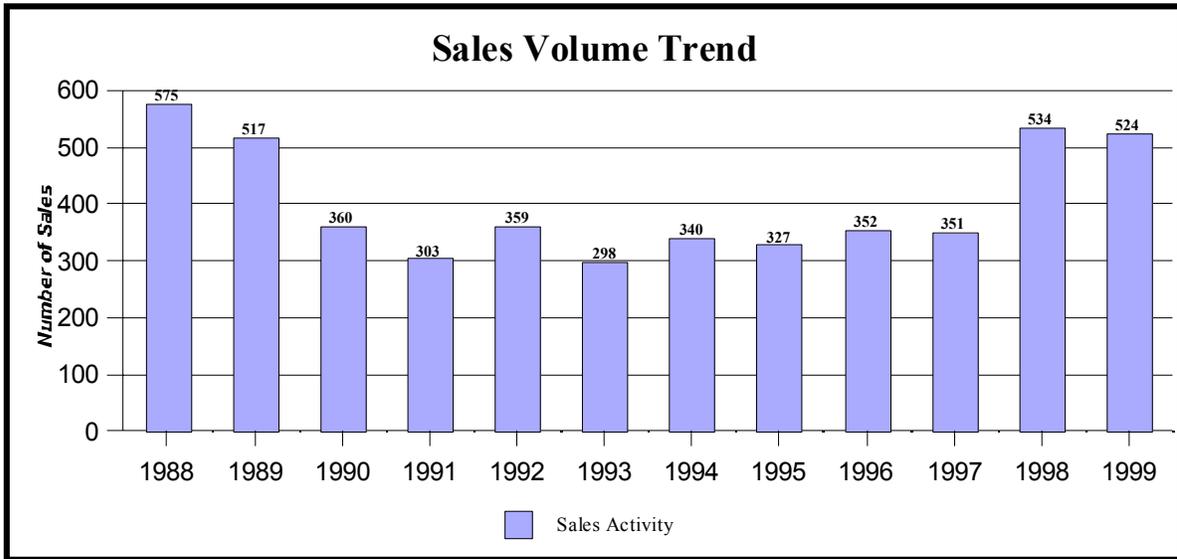


Source: Commercial Record Town Sales Statistics

1999 estimates of household income by Claritas, Inc. indicate the Vernon median income to be \$50,614. At that income level an affordable housing budget would be \$1,265 per month. In the prevailing market the median price of single-family homes is \$130,000 and the median priced condominium is \$56,500. At this price level the housing inventory in Vernon is generally affordable in so far as units are available at prices within the affordable housing budget of a median income household.

The sales price and sales volume trends in Vernon are not unusual for Connecticut. They display a peak level of activity in 1988 - highest sales volume combined with highest price level. Then there is a pattern of declining sales and declining prices. Sales bottomed out at 327 in 1995 and then began to increase slowly in 1996 and 1997, but then jumping close to 1980's levels in 1998 and 1999.

The recovery of prices has tended to trail the recovery in sales volume. Prices bottomed in 1996 and have shown very modest upward movement in 1997, 1998 and 1999. Median price at the end of 1999 was still 20% below the median level in 1988. Throughout the ups and downs of the real estate cycle the median price level in Vernon tended to range 17% - 23% below the state-wide median price level.



Source: Commercial Record Town Sales Statistics

In addition to offering homes in a price mix that is characterized as affordable in common parlance. The Town of Vernon is also one of the most affordable communities in Connecticut in terms of the statutory measure of affordability which considers only government-assisted, government-financed and deed-restricted units as affordable. The 1999 report of the Connecticut Department of Economic and Community Development on Housing Affordability lists Vernon as having 2,770 affordable units. That is estimated at 21.5% of the total Vernon housing stock. This places Vernon among the ten most affordable communities in the State of Connecticut by percentage of housing inventory, and among the top 20 communities in absolute number of such units.

Designated affordable units in Vernon include housing owned and operated by the Vernon Housing Authority, Section 8 rental vouchers allocated to Vernon, privately-owned properties assisted by federal and state programs, homes mortgaged by CHFA or

FMHA and deed-restricted dwelling units. The actual count of affordable units can change year to year. The Vernon Housing Authority (VHA) and inventory of privately developed/government-assisted units is fairly stable, but there will be fluctuation in the number of CHFA and FMHA mortgages and the number of rental vouchers available. In fact, a quirk has developed in the Section 8 program whereby more than 65 certificates were issued by the Vernon Housing Authority to eligible households who used the vouchers to obtain housing in Hartford. Affordable Housing Reports by the Connecticut Department of Economic and Community Development breakout Vernon’s affordable housing inventory by type.

**Table 14**

	<b>Total Housing</b>	<b>Government-Assisted</b>	<b>CHFA/FMHA</b>	<b>Deed-Restricted</b>	<b>Total Affordable</b>	<b>Percent</b>
1999 Estimate	12,868	2,238	436	96	2,770	21.53%
1994 Estimate	12,797	2,061	285	0	2,346	18.32%

Source: CT DECD 1994 and 1999 Reports on Affordable Housing

The comparison of the affordable units from 1994 to 1999 shows that Vernon has continued to increase the number of units in each affordable category.

An on-going strategy of the Vernon Housing Authority associated with the increase in “deed-restricted” units is a program of homeownership development. The Authority looks to acquire and rehab owner-occupied housing that has been neglected and then bring in qualified homeowners to buy the units. This approach is a combined housing and neighborhood revitalization program focused on the Rockville section. It aims to provide affordable housing, upgrade the housing stock and the neighborhood appearance and put neglected properties back into the tax rolls.

While there is a large amount of assisted housing available, there is nevertheless a waiting list for Section 8 rental vouchers at the Vernon Housing Authority. The list has grown from 239 persons when the 1990 Plan was completed to a current waiting list of

318. The breakout of the list by housing unit size is shown in the following table. All categories have increased since 1990.

**Table 15**  
**1990 - 2000 Change in Vernon Housing Authority's**  
**Section 8 Waiting List**

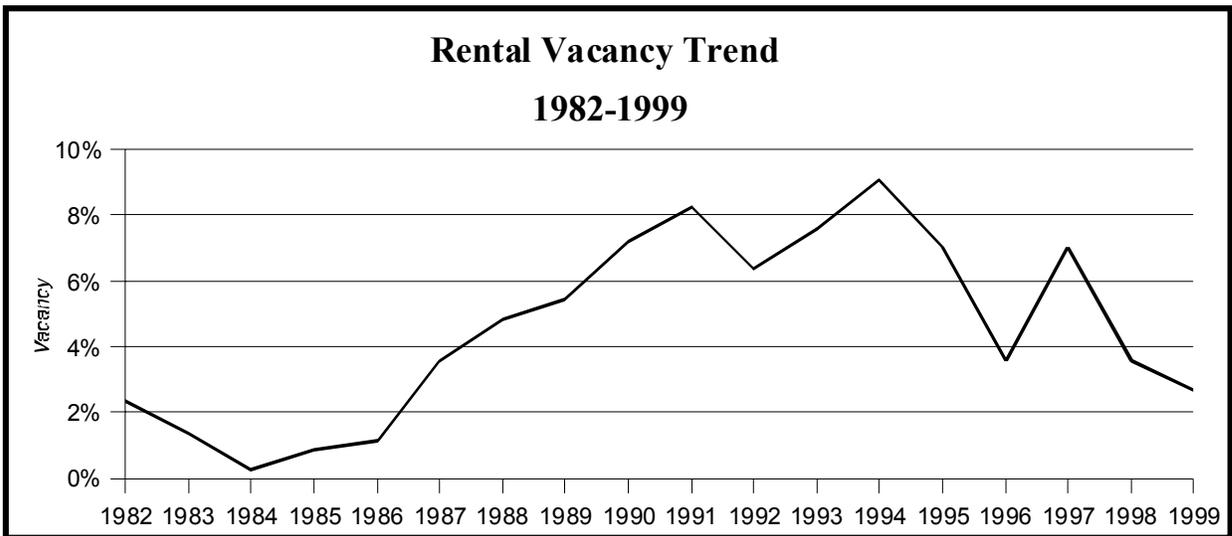
<b>Type of Unit</b>	<b>1990 Waiting List</b>	<b>2000 Waiting List</b>
One Bedroom	-	25
Two Bedroom	150	177
Three Bedroom	75	99
Four Bedroom	14	17
<b>Total</b>	<b>239</b>	<b>318</b>

Source: Vernon Housing Authority

#### **4. VACANCY TRENDS**

The balance of supply and demand for housing is reflected in the level of vacancy within the housing inventory. In the review of sales prices and sales activity it was observed that most recently the sales activity has been about 525 units annually. The total 1 - 4 family inventory is about 8,731 units and the sales volume represents about a 6% turnover factor. Generally, this would be considered within the “normal” range for this category of housing.

The Vernon Department of Planning has been conducting a vacancy factor survey of Vernon’s rental units since 1982. In September of 1999, the Town Planner mailed out 104 questionnaires to landlords. The return rate was 61 responses representing 2,400 apartments, roughly two-thirds of the rental inventory. The 1999 response indicated 64 units of the responding landlords were vacant, a vacancy rate of 2.66%. The historic pattern of apartment rental vacancy in Vernon is shown in the chart below.



Source: Vernon Planning Department Annual Rental Surveys

From the trend in the chart it can be seen that vacancy has ranged from under 1% to just over 9%. A 5% to 10% vacancy factor for apartments would be a “normal” condition indicating a well-balanced market. For most of the past ten years the vacancy factor has been in the normal range, which provides prospective tenants some choice of units and affords landlords an opportunity to refurbish units. During the immediate past two years there was a notable drop in the vacancy factor to a level that is below normal and indicative of a tightening supply.

## 5. TOWN OF VERNON - ROLE IN THE HOUSING MARKET

The Town of Vernon is involved in the housing market in a variety of ways. The basic municipal services provided by the Town and the level of taxes required to deliver those services is a key influence on the overall desirability of housing in Vernon. One objective of the Plan of Conservation and Development is to assess trends and needs and formulate a municipal strategy over the long run to assure continued delivery of services adequate to create a desirable community character with stable property values.

There are additional areas where the Town steps more directly into the housing market. There is the planning and zoning process which regulates the density and character of housing development. There are the programs of the Vernon Housing Authority which owns and operates housing for qualified families and administers rental subsidy and homeownership assistance programs for units they don't own directly. The Town has

also been an on-going participant in the Small Cities Community Development Block Grant Program. The program has been used to assist in the rehabilitation of properties occupied by low- and moderate income residents. In addition, there are the permit and inspection programs of Building and Health Departments which serve as a quality control on the condition of Vernon's housing stock.

Looking forward over the coming ten-year planning period a series of issues and strategies are brought to mind by the data and trends observed in this housing analysis. First, the Town of Vernon housing stock is generally priced below the state average and the housing stock includes a comparatively high concentration of affordable dwelling units. This high level of affordability would indicate that needs in this area are not severe. On the other hand there may be a need to employ strategies and programs to raise the median price level of homes as a means to enhance the local tax base and the fiscal stability of the community. During the neighborhood meetings, several people commented on the need to provide more high end housing in Vernon. Such housing would offer a housing choice for Vernon residents wishing to "trade up" while remaining in Town.

This strategy can be threefold. First, older deteriorated properties need to be rehabilitated to put value back into them. This strategy is in place in Rockville with the programs of Rockville NRZ, Vernon Housing Authority and Small Cities CDBG. Second, established, but newer neighborhoods need to have their character and desirability conserved and enhanced. Traffic congestion, school needs, recreation facilities requirements should be monitored and any problems identified should be corrected. These areas might also be enhanced with open space acquisitions to serve as buffers between residential and non-residential areas and links to recreation areas and community facilities. The third approach is subdivision management of undeveloped areas. The regulation of residential density and the design of new construction might be managed toward a higher price bracket. This would have multiple benefits. It would upgrade the grand list and fiscal strength of the community. It would also create an inventory that would not be directly competitive with more moderately priced older

neighborhoods, which would support increasing values in those older areas. It would also provide an increased high end inventory for Vernon residents wishing to purchase within the Town.

With regards to the needs of the growing elderly population, Vernon's existing zoning code already recognizes the need for facilities and housing to accommodate this age group. Assisted living facilities, convalescent and nursing homes, adult day care and housing for the elderly are all included as possible uses in various Vernon zoning districts. The Vernon Housing Authority is addressing this issue directly through two programs - Congregate Housing Program and Assisted Living Program. Both of these programs provide affordable housing with a variety of support services.

In sum, the changes in the Vernon housing inventory and the demographic characteristics of the Town since the last plan update suggest that on matters of housing the direction for the next ten years is "steady as she goes" with an emphasis on increasing the percentage of homeownership within the housing inventory and addressing the growing needs of the elderly population. As discussed elsewhere, there should be an overall policy of improving quality of life to retain Vernon's attractiveness as a residential community. The promotion of 55 and over deed restricted housing should be encouraged as a viable use of sensitive undeveloped land. Development of this type does not add to education costs for the town, and should create a positive flow towards Vernon's tax base. Additionally, it conforms to the predicted growth of elderly population as shown on Table 13.

## **IV. ECONOMIC BASE**

### **A. INTRODUCTION**

Land use demand and development in every community stems from the structure of the underlying economy. Changes in the underlying economy inevitably lead to changes in the community's land use pattern.

Historically, Vernon's economic base was concentrated in manufacturing mills focused in Rockville on the Hockanum River. A close knit urban pattern of stores, institutions and residences developed there. However, in more recent years manufacturing and the particular industries associated with those mills have declined. Modern development has seen service and retail facilities spread along the principal arterial highways in Vernon. In addition, as the regional economy has grown, more and more local residential subdivision has occurred to accommodate residents who commute out of town to their work.

It is noteworthy that the State of Connecticut's economy has gone through a recessionary cycle since the 1990 Vernon Plan of Development. The economy, in terms of employment, hit a low point in 1992 and it was only in 1999 that employment returned to its pre-recession level. Because the recessionary and recovery conditions predominated the past decade, land use development activity during that period may not be a good indicator of future trends in a healthy economy.

### **B. EMPLOYMENT ANALYSIS**

A comparative employment profile is presented in the table below. It identifies the level of employment in eight (8) sectors of Vernon's economy and compares the Vernon profile to employment profiles for the County and the labor market area. In general terms, the jobs in Vernon represent about 27% of Tolland County jobs and about 1.5% of Hartford Labor Market Area jobs.

**Table 16**

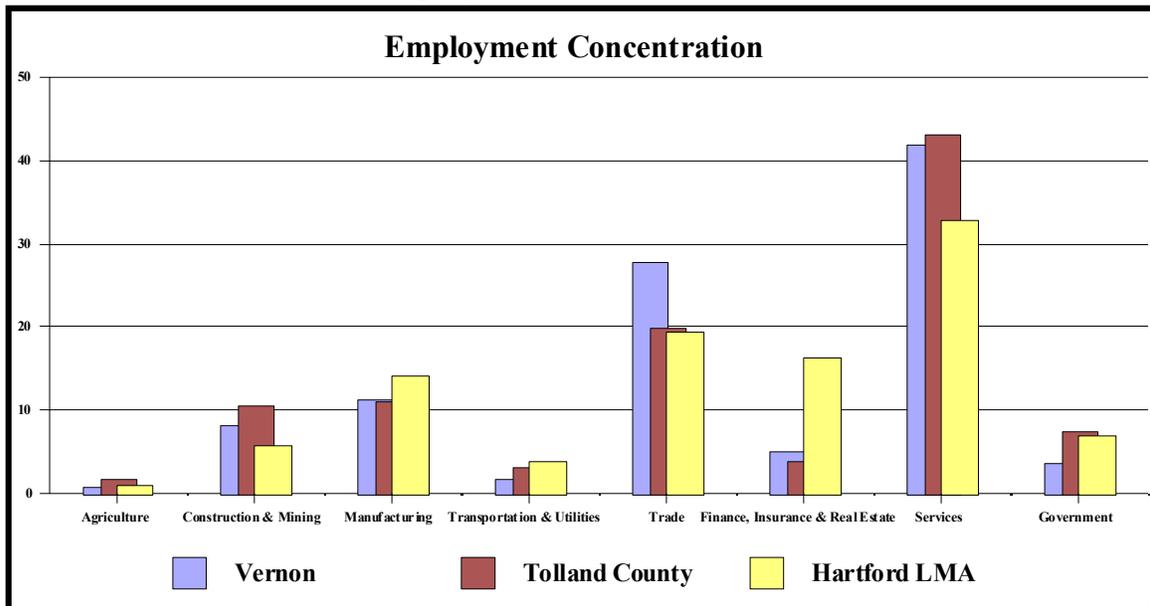
**Comparative Employment Profile**

	Agriculture	Construction & Mining	Manufacturing	Transportation & Utilities	Trade	Finance, Ins. & Real Estate	Services	Government
Vernon	61	825	1,141	171	2,783	497	4,218	357
Tolland County	600	3,914	4,044	1,110	7,339	1,373	15,946	2,721
Hartford LMA	6,748	37,172	91,616	25,443	126,269	106,746	214,105	45,349

When the concentration of employment in different sectors is compared between Vernon and the larger areas, the comparison helps to identify the strengths of the Town economy. In Vernon, the two strongest sectors are services with 42% of local jobs and trade with almost 28% of local jobs. These two sectors account for about 70% of local employment. The local concentration in these sectors is more pronounced than the County or LMA distribution. The flip side of this concentration in trade and service is that Vernon is less focused than the labor market area on manufacturing, transportation and utilities, financing, insurance and real estate, and government.

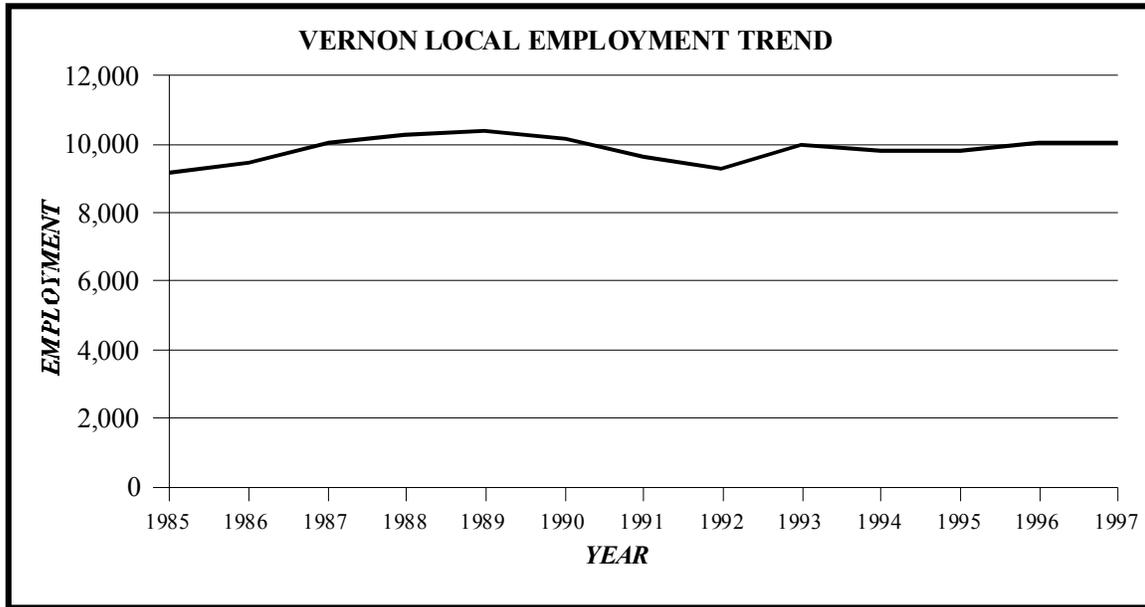
**Table 17**

**Employment Concentration**



The trend in Vernon’s local employment has been fairly stable over the past decade. There was a modest increasing trend from 1985 to 1989. Then, as the State economy went into recession, there was a decline to a low period in 1992. Between 1989 and 1992, 1,010 jobs were lost locally - - about 10% of the local economic base.

**Table 18**  
**Vernon Local Employment Trend**



Since 1992, there has been employment growth in line with the general economic recovery of the State. By 1996, local jobs were back over the 10,000 threshold.

The State recovery has been very close to projections made by the State of Connecticut Office of Policy and Management in 1995. In a report on “Goals and Benchmarks for the Year 2000 and Beyond”, OPM forecast Connecticut employment to be 1,626,000 in the Year 2000. The January 2000 Labor Force Data Report from the Connecticut Department of Labor indicated employment was 1,635,300. The State OPM forecasts going forward are presented in the table below.

**Table 19**  
**State of Connecticut Employment Forecast**  
**2005-2020**

	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>
Employment	1,709,000	1,796,000	1,888,000	1,984,000
Periodic Change	+5.1%	+5.1%	+5.1%	+5.1%

Source: 2005-2015 forecasts by CT OPM; 2020 forecast straight-line extrapolation by HMA.

The Department of Labor Data does not break out the current employment by job location. Historically, employment located in Vernon has been about 1.5% of LMA jobs and about .056% of Connecticut jobs as reported by Connecticut Department of Economic and Community Development in their Town Profile Data.

If the .056% share of jobs is applied to the State forecast presented in the previous table, then the forecast for employment in Vernon will be as shown in the table below.

**Table 20**  
**Vernon Employment Forecast**  
**2005-2020**

	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>
Employment	9,570	10,050	10,570	11,110

Source: 2005-2015 forecasts by CT OPM; 2020 forecast straight-line extrapolation by HMA.

Actual local employment was reported by DECD to be over 10,000 jobs in 1996 and increasing slowly. The peak of local employment had been in 1989 when there were 10,320 local job opportunities. Locally, jobs rose about 2.5% annually in 1985-1989. Then jobs fell at a rate of about 2.4% annually from 1989 - 1992. From 1992 - 1997 the rate of recovery was an average annual increase of about 1.3%. Over the ten-year period 1985 - 1994 which included both boom and bust periods, the average annual increase in local jobs was about 0.07%. Considering the historic trends and the cyclical nature of the economy, the forecast of about 11,110 jobs in Vernon in 2020 is considered reasonable for planning purposes.

## C. LABOR FORCE

The Vernon labor force actually is much larger than the local employment. Table 6 presents a comparison of employment for Vernon, Tolland County and the Hartford Labor Market for 1997 as published in the most recent DECD Town Profile Data Book.

**Table 21**  
**Labor Force Distribution (1997)**

	<b>Labor Force Total</b>	<b>Employed</b>	<b>Unemployed</b>	<b>Unemployment Rate</b>
Vernon	16,415	15,686	729	4.4%
Tolland County	69,117	66,320	2,797	4.0%
Hartford LM	588,120	556,591	31,529	5.4%

Source: Connecticut DECD 1998-1999 Town Profile Data Book. (1997 data for this feature).

Total labor force available in Vernon, as reported by the Connecticut Department of Labor in their January 2000 data, was 15,804 persons. Employed persons totaled 15,499 and the unemployment rate was 1.9%. This current unemployment rate of 1.9% is the lowest level of unemployment over the past decade. This low rate is attributable to a combination of trends. The economy has been recovering strongly and adding jobs since the recession concluded. Connecticut population out-migration and declining labor force during the recession years results in a tight labor market supply and low unemployment rate.

**Table 22**  
**Vernon Historic Unemployment Trend**



**Table 23**  
**Commuter Pattern (1990)**

Commuters into Town from:		Town Residents Commuting to:	
Vernon	3,733	Vernon	3,733
Manchester	837	Hartford	3,449
Ellington	8	Manchester	2,068
Tolland	828	East Hartford	1,389
Stafford	442	South Windsor	972
South Windsor	398	Tolland	442
Massachusetts	267	Ellington	400
Willington	218	Windsor Locks	360
Coventry	209	Windsor	328
Enfield	190	Bloomfield	302

Source: 1990 Census

The most recent journey to work data for Vernon is from the 1990 Census. New data will become available following the completion of the 2000 Census. The 1990 data shows that about 9,700 local workers commute to jobs outside of Vernon. Hartford is far and away the destination for the greatest number of local residents. Manchester, East Hartford and South Windsor are other area communities that draw a large number of local workers. Lesser, but still significant, are the commuters traveling to Tolland, Ellington, Windsor Locks, Windsor and Bloomfield.

About 4,200 workers commute into Vernon for work. Largest numbers are from Manchester, Ellington and Tolland. Persons who both work and live in Vernon were counted as 3,733 in the 1990 Census.

Considering the changing patterns of economic development and increased mobility of the work force, it is anticipated that the 2000 Census count will show a continuing pattern of net outward commuting.

#### **D. CONCLUSION – ECONOMIC TRENDS**

Based on the preceding data and analysis it appears that Vernon's economy is generally healthy. Local employment has been increasing and local residents have enjoyed declining rates of unemployment. However, there has been a trend towards increasing out-migration for employment with the number of employed persons exceeding the number of employment opportunities in Vernon by growing numbers. It is expected that 2000 Census data will confirm this trend. Also, the shift from manufacturing employment to services and trade employment will continue. These trends are indicative of a suburban, bedroom community less than an economic diverse community that Vernon once was.

## **E. ECONOMIC BASE AS RELATED TO DEVELOPMENT TRENDS**

As discussed earlier, the Connecticut economy has been improving for the past few years from the recession that ended in 1991. However, recovery has been slow and manufacturing employment in particular has continued to decline. New office construction in Connecticut has been mostly located in Fairfield County. One sub-segment of the office market which has been seen some statewide growth is the expansion of medical services, including individual physicians practices, hospital affiliated outpatient facilities and specialized treatment centers.

Throughout the State, over the past 5-7 years the steadiest segments of the market have been the construction of new single family homes and the construction of new retail facilities. Vernon has participated in this market segment as evidenced by retail expansion in the vicinity of Vernon Circle. An emerging growth area is the apartment market. Recent reports have indicated that suburban apartment vacancy levels are at 5% or less and there is renewed interest in building upscale apartment complexes. As discussed earlier, local survey by the Town of Vernon Planning Department indicated the Vernon apartment vacancy rate is only about 2.66%.

In terms of overall employment trends which would reflect demand for facilities, the Connecticut Department of Labor estimate increase employment in all categories except manufacturing. Sectors anticipated to show strongest recovery are: construction 20.1%; retail trade 15.5% and services 16.3%. Other sectors will grow less than 10% and manufacturing will continue to decline. Even with the anticipated renewed growth, only retail and transportation /utilities/communications are expected to show net expansion levels of the late 1980's.

The demand for new construction is not driven solely by the number of employees in an industry. Technologies change, locations change in desirability and some companies with no increase in employment desire to trade up to better facilities. It is demand for new construction which translates to a demand for new sites and business parks. On the

other hand, demand for retail and service space is driven more by the increase in disposable income in a market area and competition among retailers in specific industry components to capture their market share. Many service sectors such as the medical field are driven by demographic changes (aging population), technology changes (more out-patient rather than in-hospital services) and changes in medical insurance coverages leading to group practices.

The Town of Vernon can be considered to compete for its economic development activity in the Greater Hartford Metropolitan area, but principally in an “east of the river” sub-market along the I-84 corridor. Principal competitive towns are taken to be South Windsor, Manchester and Ellington.

Other neighboring towns - Coventry, Bolton and Tolland generally do not have the utility infrastructure to be competitive and are more strictly rural communities. East Hartford is almost entirely built-up so that opportunities for new construction are mostly through redevelopment. The future reuse of Rentschler Field in East Hartford is somewhat of a “wild card” in regional economic development. It’s development is uncertain, but could have wide ranging spin-off impacts on surrounding towns.

Within the immediate region, Vernon tends to trail other communities in the amount of new construction. The “Windsor’s” - South Windsor, Windsor and East Windsor - tend to lead the market in industrial construction. Manchester has been far and away the leader in new retail development. Manchester and Windsor have been the market leaders in new office construction.

## **F. SUMMARY**

Based on the preceding data and analysis it appears that Vernon's economy is generally healthy. Local employment has been increasing and local residents have enjoyed declining rates of unemployment. However, there has been a trend towards increasing out-migration for employment with a number of employed persons exceeding the number of employment opportunities in Vernon by growing numbers. It is expected that 2000 Census data on place of work/place of residence will confirm this trend. Also, the shift from manufacturing employment to services and trade employment will continue. These trends are indicative of a suburban, bedroom community less than an economic diverse community that Vernon once was. As the Town moves forward over the next decade, it should recognize these market forces. However, the Town does have the ability to influence development patterns through its land use policies as well as infrastructure investments.

## V. COMMUNITY FACILITIES

### A. INTRODUCTION

In preparing to update Vernon's Plan of Conservation and Development several neighborhood meetings were convened to discuss features which residents like or disliked in Vernon. The commentary at the meetings suggested high levels of local satisfaction with many community facilities. Among these were the schools, the library, the fire services, the EMS response, the hospital and recreation facilities. The feature that was repeatedly and overwhelmingly identified as inadequate was open space. There were also some concerns raised about the trend toward increasing class sizes at the schools, a need for additional space at the library, the desire for a community swimming pool and tennis courts. There were also some concerns expressed for improved traffic control and increased police presence.

Certain facilities drew no commentary. In this category are the sewage treatment plant and sanitary sewer system, the public works facilities such as the garage and the transfer station and the several fire stations. The police station, town hall administrative offices, the senior center and the animal shelter were other community facilities which drew no comments.

In addition to the public perception and satisfaction with local facilities, it is important to take into account the standards, guidelines and advice associated with each type of facility and the experience of the local professionals operating the facilities.

The facilities component of the Plan of Conservation and Development is one of its most important sections because the number, type and quality of facilities are items very much within the direct control and responsibility of the Town. Where many other features such as land use or traffic are regulated by the Town, most community facilities are owned and operated by the Town. This means that the Town has a much more direct ability to make

changes in this area and experiences a much more direct fiscal impact from decisions it makes on the level of service to be provided.

In the following section, the existing community facilities are surveyed. They are identified by type and location. Most are Town-owned, but there are some state and federal facilities as well as non-profit organizations. The focus of this section is on developed facilities. There has been a steady input of advice that more open space is needed, but this is raised as a conservation element of the Plan as opposed to a development component and the open space inventory and strategy is included in a separate section of the Plan.

Generally, community facilities in Vernon appear to be adequate for their purpose, with anticipated capital improvements in the Town's Capital Improvement Program being mostly renovations, utility upgrades and parking lot resurfacing. In the recreation area, there are a variety of improvements scheduled to enhance existing facilities such as field renovations, new lighting, playscapes and parking lot paving.

The most significant community facility projects planned for the next five years are (1) a new community center with gymnasium (2) the Citizens block parking garage (3) renovations to Town Hall and Town Hall annex (4) cemetery land acquisition (5) the Walkins Reservoir Dam Reconstruction and (6) the Valley Falls Renovation Project.

## **B. COMMUNITY FACILITIES SURVEY**

The survey of community facilities groups the Town's several properties into functional categories on a general basis: administrative, public safety, education, public works and recreation. It is typical that there can be some overlap in functions of individual facilities. Often school buildings and properties serve both an education and recreational purpose. Facilities are discussed below.

**Town Hall Complex - 14-28 Park Place**

The Town of Vernon operates its general administrative services from the Vernon Town Hall. This is actually a complex of structures including about 60,000 square feet in three buildings. The administrative operations located here are the Town Manager’s Office, Office of the Town Clerk and the Town Assessors, also the planning, zoning, engineers, building and economic development departments. The main building includes meeting rooms for commissions and the legislative chambers. The building is handicapped accessible. Associated with these administrative offices is a parking lot for municipal employees. The new senior citizens center is also located within this municipal complex. The parking lot has recently been paved and exterior walls are scheduled for restoration in 2000/2001. Substantial renovations to Town Hall are planned for 2001/2002 and renovations to the Annex will be made in 2003/2004.



**Town Hall**



**Senior Center**



**Town Hall Annex**

**Government Building - 55 West Main Street**

This is the former court building. It is 5,334 square feet on a half acre site and is currently under renovation to accommodate departments including the Building Department and Fire Marshal.

**Public Safety**

***Fire Co. #1 Fire Station - 724 Hartford Turnpike*** - This is a 9,508 square foot facility on 2.16 acre site. The station was built in 1961. Parking lot paving is scheduled for this facility in 2000/2001.



**Fire Station**

**Fire Co. #2 Fire Station - 59 Birch Road** - This is a 4,490 square foot facility on a 4.90 acre site. The station was built in 1980. Parking lot paving is scheduled for this facility in 2000/2001.

**Fire Co. #3 Fire Station - 100 Hartford Turnpike** - This is a 6,864 square foot facility on a 0.40 acre site. The station was built in 1957. Parking lot paving is scheduled for this facility in 2000/2001.

**Fire Co. #4 Fire Station - 15 Nye Street** - This is a 10,031 square foot facility on a 0.81 acre site. The station was built in 1973. Parking lot paving is scheduled for this facility in 2000/2001.

**Fire Co. #5 Fire Station - 5 Prospect Street** - This is a 4,480 square foot facility on a 0.10 acre site. The station was built in 1912.

**Vernon Police Department - 765 Hartford Turnpike** - This is a 19,128 square foot facility located on part of an 11 acre municipal facilities campus. The station was built in 1978. Capital improvements scheduled include a building addition for a juvenile holding area and added storage, parking lot paving, updated air-conditioning and community room renovations.



**Police Department**

**Civil Defense and Emergency Medical Service 280 West Street** - This is a 2,680 square foot facility located on part of an 11 acre municipal facilities campus. The facility was built in 1960. As noted above, the EMS services provided by this facility are considered by residents to be very good. Planned improvements include a generator replacement.



**Emergency Service**

**Public Works**

***Public Works Department 383 Hartford Turnpike*** - This is a 28,800 square foot facility including 6 buildings on a 3.94 acre site. The



**Public Works Garage**

various buildings were erected at different dates from 1962 to 1988. The facilities are a combination of garage and storage buildings.

***Marshaling Yard, Waste Disposal, Recycling and Transfer Facility Hockanum Boulevard*** This is a 7.5 acre site just off Talcottville Road.

***Highway Department Garage*** - This highway garage is situated on a 1.0 acre site along West Street at parcel 22-49-7.

***Sewage Treatment Plant*** - The treatment plant is located on a 11.12 acre site at 100 Windsorville Road. The plant facilities include 53,988 square feet of office building, laboratory and process facilities. The dog pound is also at this location. Associated with the sanitary sewer system are pump stations located at Hartford Turnpike (0.5 acres), 755



**Sewage Treatment Facility**

Dart Hill Road (0.61 acres), and Phoenix Street (0.7 acres), Highland View and Warren Avenue.

**Education**

***Board of Education Administrative Offices. 30 Park Street*** - This is a 26,656 square foot 3 story facility on a 1.0 acre site in Rockville.



**Board of Education Office**

***Rockville High School*** - The high school is a 251,600 square foot facility located on a 65.7 acre site along Loveland Hill Road. The April 2000 enrollment was 1,130 in grades 9-12. The capital improvement program includes renovations to lower and upper playing fields and reconstruction of the football field.



**Rockville High School**

***Vernon Center Middle School (VCMS)*** - The middle school is located on a 78.4 acre site at 777 Hartford Turnpike. The middle school April 2000 enrollment was 929 in grades 6-8. The capital improvement program includes lighting the athletic fields at this site in 2003/2004.

***Northeast School*** - This is an elementary school located on a 12 acre site at 69 East Street. The school was constructed in 1954. The facility is 38,016 square feet plus an additional 5,644 square foot basement. The April 2000 enrollment was 347. The building serves grades K-5. Class size ranges from about 18 to 24 in grades 1-5 and kindergarten class size is about 15.



**Northeast School**

***Lake Street School*** - This is an elementary school located on a 9.18 acre site at 205 Lake Street. The school was constructed in 1959. The facility includes 24,918 square feet. The April 2000 enrollment was 334. The building serves grades K-5. Class size ranges from about 16 to 34 in grades 1-5 and is about 15 in kindergarten. The well system is being upgraded at the school in the 2000/2001 fiscal year.



**Lake Street School**

***Maple Street School*** - This is an elementary school set on a 6.0 acre site at 20 Maple Street. The school was constructed in 1940. The facility includes 48,387 square feet. The April 2000 enrollment was 416. The building serves grades K-5. Class size ranges from about 19 to 24 students in grades 1-5. Kindergarten class size is about 18.

***Talcottville School*** - This is an ADT educational facility set on a 1.0 acre site 97 Main Street. The facility includes 13,475 square feet. The April 2000 enrollment was 22. The building serves special education needs.

***Center Road School*** - This is an elementary school on part of an 11.0 acre municipal facilities campus along Center Road, West Street and Hartford Turnpike. The school was

constructed in 1969. The facility is a 1 and 3 story building of 75,268 square feet. The April 2000 enrollment was 565 students. The building serves grades pre-K - 5. This is Vernon's largest elementary school. In addition to the main building there is a 2,464 square foot accessory facility. Class size in grades 1-5 ranges from about 17 to 23 and class size in kindergarten is about 15.



**Center Road School**

**Skinner Road School** - This is an elementary school set on a 10.2 acre site at 90 Skinner Road. The school was constructed in 1970. The facility is 46,935 square feet, single story construction. The April 2000 enrollment was 384. The building serves grades K-5. Class size in grades 1-5 ranged from about 16 to 26 and kindergarten was about 15.



**Skinner Road School**

### **Recreation and Open Space**

**Camp Newhoca** - The facilities at the camp include an administration building, a storage building, an arts and crafts building, a dining hall, a bath house, a boathouse and a shed. The camp occupies 28.8 acres at 21 Anchorage Road. Improvements planned to the camp include recreation hall renovations and ADA compliance.

**Valley Falls Park** - Facilities at the park include a park pavilion, barn, concession stand and restroom building. The park encompasses 193 acres at 30 Valley Falls Road. A major project planned for this park is the reconstruction of the dam and spillway, the renovation of the pond and beach area, installation of a playscape and nature center and repaving the parking lot.

**Henry Park** - Facilities at this park include the Lottie Frank Memorial Building, a swimming pool and bath house, Fox Hill Tower, and various storage sheds. The park is 42 acres located on South Street. Improvements planned here are a new picnic pavilion and baseball field lighting, also the Fox Hill Tower Promenade restoration.

***Boulder Crest Lane Park*** - The park is 18.6 acres on Boulder Crest Lane and includes a pavilion building.

***Talcott Park*** - This park is 2.0 acres and used for passive recreation. The park is located on Elm Street.

***Central Park*** is 1.0 acres for passive recreation located on Park Place. The fountain here will be renovated and an irrigation system installed.

***Walkers Reservoir*** - This is a passive recreation area that includes 13.1 acres along Reservoir Road. A major expenditure in the capital improvement program over the next five years will be reconstruction of Walkers Dam.

***Hockanum River Linear Park*** - This combination of active and passive recreation areas that includes multiple parcels. Two parcels on Phoenix Street include 5.4 acres, a Dart Hill Road parcel is 15.74 acres and a recently acquired parcel at Hockanum Boulevard is about 11 acres. Total dedicated lands along the river in Vernon totals 32.14 acres. The capital budget anticipates expenditures to further develop Dart Hill Park, north and south and to install restroom facilities.

In addition to the above Town properties classified as parks, the Town owns several sites designated as “open space”. These include 5.2 acres on Tracey Drive, 6.62 acres on Legion Drive, 2.0 acres on Cross Drive, 1.76 acres with a skating pond on South Street, and sites in subdivisions at Boulder Ridge and Tunnel View Terrace. The Town also owns a playground at a site at 35-37½ Village Street.

Other Town-owned lands labeled as “vacant land” rather than open space or park include properties at Richard Road, Tankerhoosen Road, Jonathan Drive, Windingbrook Drive, Range Hill Road Legion Drive, River Street, Daryl Drive, High Street, Baverift Place, Hammond Street, 222 Hartford Turnpike, Pleasant View, Franklin Street, Windsorville Road, Dobson Road, Brookview Drive, Brighton Lane, Hale Street and Crestwood Road.

These parcels range in size from less than a quarter acre to 13.7 acres. The total acreage included in this vacant land category is about 39.5 acres.

**Cemeteries**

*Elmwood Cemetery* is 4.8 acres on Cemetery Road.

*Talcottville Cemetery* is 0.5 acres at 160 Talcottville Road. A major expense in the capital budget for 2000/2001 and 2001/2002 is acquisition of cemetery land.

**Miscellaneous**

*Center 375* - This facility occupies a 9.75 acre site at 375 Hartford Turnpike. It is a mixed use facility that includes Public Works offices, a municipal teen center, the area office for State of Connecticut Department of Mental Retardation and some privately occupied office space. The building is a former elementary school which the Town renovated and converted for multi-tenant use. Some of the space is being rented to the State and private users. Some interior renovations re included in the capital improvement program.



**Center 375**



**Swimming Pool at  
Center 375**

## **C. FUTURE COMMUNITY FACILITY NEEDS**

As indicated earlier, there is a general satisfaction with community facilities among Vernon residents. The concerns raised during the neighborhood meetings focused more on the need to properly maintain existing facilities rather than provide additional facilities. However, there were some specific facility needs mentioned that should be discussed as the Plan update proceeds. These facilities include a community swimming pool, expanded library and a teen center. In addition, several comments were received as to the need for additional open space acquisition and protection. This issue will be specifically addressed in the Open Space chapter.

The subject of community facility needs must of course go beyond the issue of satisfaction with existing facilities and need expressed by the current population. Consideration must be given to future needs based upon development and growth in the community. Previous chapters have discussed the extent of projected population growth in Vernon with the conclusion that such growth will be modest in terms of the number of people. However, continued household formation and a trend towards smaller households will lead to residential development. As described in the next chapter, much of this new residential development will occur in the portion of Vernon south of I-84 which is currently the least densely developed area of Town. Such development may result in the need for additional community facilities to supplement existing facilities which are beyond the service area of the potential growth area. Most likely the demand for such facilities would fall in three categories: schools, fire protection and active recreation. Dialogue around these facilities needs and the location of such facilities will continue over the next 10 years. As discussed in the Policies, Goals and Objectives chapter, there should be a monitoring of needs and integration with the Capital Improvement Program process.

## **VI. DEVELOPMENT POTENTIAL**

### **A. INTRODUCTION**

Balancing the demands for housing or new commercial and industrial development with the physical constraints of the landscape and existing regulatory controls can prove to be a significant challenge. Once factors such as availability of the necessary public facilities, adequacy of road infrastructure and protection of valuable natural resources are considered, the balance gets even more complicated. This challenge is compounded by the reality that there is only a finite amount of land available for development. Understanding where the developable land is located within the Town and how much development can be accommodated based on existing regulatory controls and physical constraints on the landscape is the first step in establishing a development plan for the future. Once this is accomplished, issues such as infrastructure limitations and natural resource protection can be considered and new growth can be properly planned.

As a component to the Vernon Plan of Conservation and Development, an analysis was conducted assessing the development potential for the town. This analysis looks at vacant or undeveloped residential and non-residential zoned land for its physical capacity to support new or expanded growth. This growth is expressed in terms of potential dwelling units for vacant land areas zoned for residential use, and potential building area (sq. ft.) for vacant land areas zoned for non-residential use. The methodology and assumptions used in this analysis are described herein.

### **B. RESIDENTIAL DEVELOPMENT POTENTIAL**

The gross amount of vacant or undeveloped privately owned land which is not committed to open space or conservation<sup>1</sup> totals approximately 2,200 acres, of which approximately 1,913 acres or 87% are zoned for residential use. Appendix C contains a list of the

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<sup>1</sup> “Open space and conservation” is defined as land areas identified as open space, utility owned, state owned, parks and cemeteries, or schools, fire, police and other according to the Vernon Land Use Map (6/99) as compiled by the Vernon Conservation Commission.

parcels included in this inventory. These figures do not include the mixed use development zone along the South Windsor border, which currently has development proposals in process.

In determining vacant or undeveloped land areas, two sources of information are available to us. The first source involves assessing aerial photographs taken between 1990 and 1995 to determine general undeveloped land areas. This process was conducted and augmented by field verification to identify any new development since 1995. The second source is land use data compiled by the Vernon Conservation Commission from the tax assessor's database, which was used to create the map titled "Land Use In Vernon- 6/99". This map classifies undeveloped land by parcel separately from other open space categories. After comparing the two sources of information and finding them both very similar in content, it was determined that the land use data compiled by the Conservation Commission was the best source to use due to the fact that it was compiled on a parcel basis rather than the more generalized approach used in assessing aerial photographs.

For the purposes of facilitating land area calculations, contiguous vacant or undeveloped residentially zoned parcels were grouped together into "planning areas". Wetlands and slopes exceeding 15% by soil unit were then subtracted from each planning area to determine the developable land area. An additional 10% of the remaining land area was then removed to account for new road infrastructure resulting in a total net developable land area. The minimum lot size, as dictated by the underlying zoning regulations within each of the planning areas was then applied to determine the potential number of dwelling units that could be constructed within the planning area. For example, those planning areas that fall within the R-22 zone require 22,000 sq. ft. minimum lot area for one single-family structure. If the planning area contains 220,000 sq. ft. or approximately 5 acres of net developable land, than 10 single family structures could potentially be built.

For those planning areas within the “Planned Residential Development Zone”, the number of dwelling units possible was based on the calculations included in Appendix B. An average number of units per acre were assumed based on the figures for each type of unit. The results of this calculation allow for 8 units per acre to be built in the Planned Residential Development Zone.

**Results**

The results of the residential portion of the development potential analysis estimate that under existing physical and regulatory conditions, an additional 1,718 dwelling units could be constructed. These results are aggregated by census tract and illustrated in Table 1 below and on the map titled “Undeveloped Residentially Zoned Land”. This aggregation allows for a basis of comparison to statistics compiled during the 1990 census as terms of the number of dwelling units.

**Table 24  
Residential Development Potential**

<b>Census Tract</b>	<b>Potential Dwelling Units</b>
5301	68
5302	77
5303.01	22
5303.05	110
5304	99
5305	177
5306	1,165
<b>Total</b>	<b>1,718</b>

It is important to note that the results illustrated here come with the caveat that land suitable for development may change if the regulations controlling development are modified. What this means is that even though steep slopes and wetlands are regulated features, the regulations within these areas can change resulting in an increase or decrease in the overall development potential. This is exemplified by the fact that the current zoning regulations allow wetlands and steep slopes to be built upon by issue of special

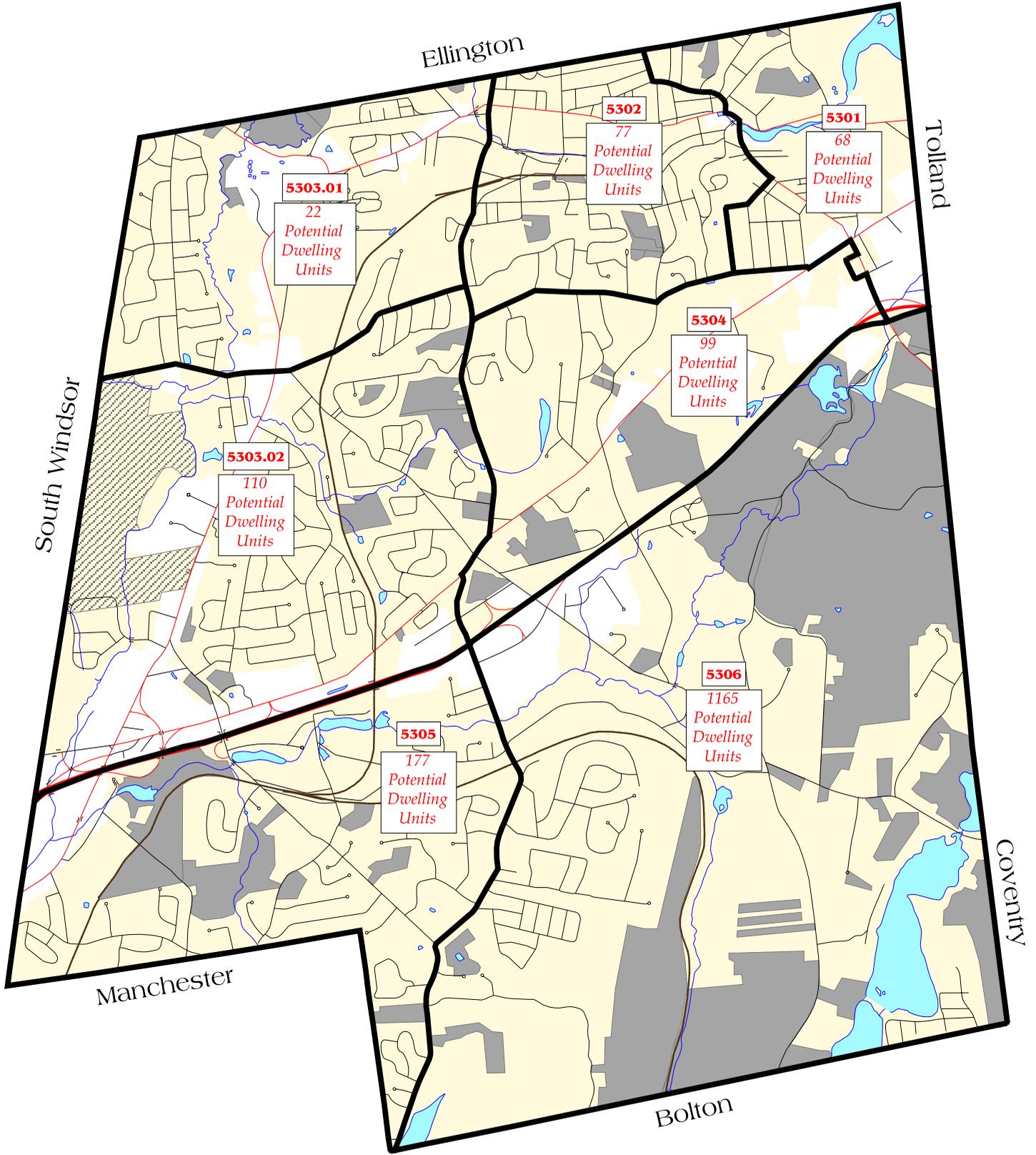
permit. Conversely, additional constraints can be imposed, such as restrictive floodplain regulations, which may in fact decrease development potential depending on the distribution of that particular resource in relation to the developable acreage. In addition, it is important to keep in mind that the results presented here represent full build-out of residentially zoned vacant land. The likelihood of this scenario becoming reality during the 10-year life of this Plan of Conservation and Development is low. Therefore these numbers are only a point of reference and not an expected scenario. In sum, the development potential totals given here are for planning purposes and subject to variations based on the factors discussed above.

### **C. NON-RESIDENTIAL DEVELOPMENT POTENTIAL**

In analyzing Vernon's non-residential development potential, this analysis focuses on the non-residential zones along the Route 30/I-84 corridor as well as the Route 83 corridor. While non-residential zones exist in other areas of the Town, this analysis is limited to these corridors, which over the years have experienced significant non-residential development and will most likely continue to experience non-residential growth in the future. Furthermore, during the neighborhood meetings, it was these areas which received the most comments.

The non-residential component of this analysis differs from the residential component in one significant area. The land area analyzed in the non-residential analysis is done on a parcel-by-parcel scale whereas the residential analysis was conducted on a more generalized "planning area" scale. The reason for this difference is the more limited amount of land available for non-residential development. As such, a more detailed analysis is warranted to ensure all vacant, undeveloped and underutilized land is accounted for.

The parcel boundaries used in the analysis were digitized directly from the digital tax assessor maps, which were made available to us by the Town. Vacant, undeveloped or underutilized parcels were identified by conducting a "windshield survey" of the land



### LEGEND

-  Undeveloped Residential Zoned Land
-  Residential Zones
-  Census Tract Boundaries
-  Mixed Use Development (MUD) Zone

### Undeveloped Residential Zoned Land

Plan of Conservation and Development

Vernon, Connecticut



HARRALL-MICHALOWSKI ASSOCIATES, Incorporated

Hamden, Connecticut

June 2001

0.25 0 0.25 0.5 Miles



Scale: 1:40,000

Source of Data:  
University of Connecticut  
Map and Geographic Information Center  
Storrs, CT

Connecticut Department of Environmental Protection  
Environmental and Geographic Information Center  
Hartford, CT

Field Survey  
May 2000

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NOT BE EXACT.



uses along the non-residential corridors. Of the 2,200 acres of vacant or undeveloped, privately owned land that is not committed to open space or conservation, approximately 270 acres or 12% is considered undeveloped or underutilized and are zoned for non-residential use. These figures do not include the mixed use development zone along the South Windsor border, which currently has development proposals in process.

To account for the physical constraints that could affect development, wetlands and slopes exceeding 15% by soil unit were subtracted from each vacant, undeveloped or underutilized parcel to determine the net developable land area. Unlike residential development potential, which is expressed in dwelling units, non-residential development potential is expressed in term of floor area or building square footage. Due to the fact that it is impossible to predict exactly what type of development will occur within a given zone, some assumptions were made (Appendix B). For example, one assumption used in this analysis is that all identified parcels will be built as a single unit with one structure. This assumption produces the maximum amount of building square footage whereas subdividing the parcels lessens the amount of buildable area by increasing the area reserved for setbacks, buffers, roads, etc.

Once the physical constraints were removed from the developable area, the zoning requirements for each parcel were applied. This includes applying the maximum lot coverage<sup>2</sup> allowed within each zone as well as the required parking allotments<sup>3</sup>. In estimating building coverage, the net developable land area (parcel area minus slopes and wetland constraints) was compared to maximum building coverage allowed within the governing zone and the lesser of the two areas was used in the analysis. For example, if a parcel were determined to have a gross land area of 100,000 sq. ft. and a net buildable area of 80,000 sq. ft. and the maximum coverage allowed within the governing zone was 60% or 60,000 sq. ft., then 60,000 sq. ft. was used in the analysis because this is the *maximum* building area allowed for the parcel. However, if it were determined that a

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<sup>2</sup> The maximum lot coverage allowed in a zone is based on the coverage allowed by zoning regulations without requiring a special permit

<sup>3</sup> Parking requirements are based on common requirements for commercial and industrial uses as well as Town of Vernon, CT Zoning Regulations, §12

parcel had a gross land area of 100,000 sq. ft. and a net developable land area of 50,000 sq. ft. and the maximum coverage allowed within the governing zone was 60% or 60,000 sq. ft, then 50,000 sq. ft. was used in the analysis because this is all the land that is available for development on that parcel given the existing development constraints.

The maximum lot coverages used in this analysis are as follows:

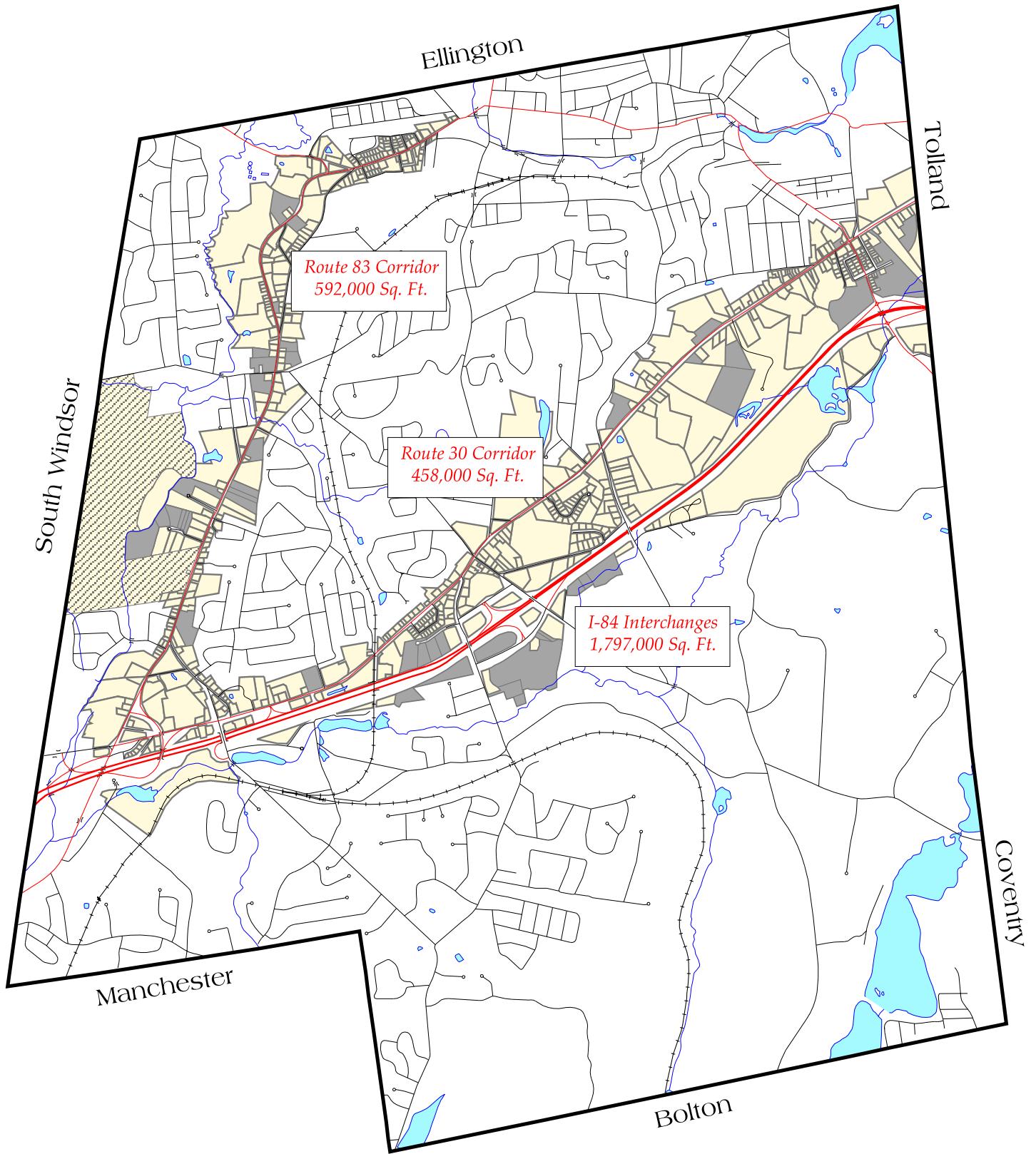
- |    |                                     |              |
|----|-------------------------------------|--------------|
| 1. | Commercial zone                     | 60% coverage |
| 2. | Industrial zone                     | 40% coverage |
| 3. | Planned Commercial zone             | 55% coverage |
| 4. | Special - Economic Development zone | 65% coverage |

Parking requirements used in the analysis are based on common requirements for commercial and industrial uses as well as requirements outlined within the Vernon zoning regulations (§12). These requirements are as follows:

1. 2 spaces per 1000 square feet of buildings in Industrial zones.
2. 4 spaces per 1000 square feet of buildings in Commercial and Planned Commercial zones.
3. 3 spaces per 1000 square feet of buildings in Special - Economic Development zones.
4. In addition, according to industry standards, one parking space is equal to 300 square feet. This figure includes the actual parking space as well as the associated roads and landscaping/curbing. The parking requirements for each parcel was estimated based on its governing zone and the required land area for parking was subtracted out resulting in a maximum building area allowed for each parcel.

## **Results**

The results of the non-residential portion of the development potential analysis estimate that under existing physical and regulatory conditions, an additional 2,847,000 sq. ft. of building area could be accommodated along the Route 30 and Route 83 corridors as well as at the I-84 interchanges. The differentiation between the Route 30 corridor and I-84 interchange categories assumes access from Route 30 for those parcels included in that corridor. These results are summarized in Table 24 below as well as on the map titled “Non-residential Undeveloped or Underutilized Land”.



### LEGEND

- Undeveloped or Underutilized Parcels
- Corridor Parcels
- Mixed Use Development (MUD) Zone

### Non-Residential Undeveloped or Underutilized Land

Plan of Conservation and Development

Vernon, Connecticut



HARRALL-MICHALOWSKI ASSOCIATES, Incorporated

Hamden, Connecticut

June 2001

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Field Survey  
May 2000

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**Table 24**  
**Non-residential Development Potential**

<b>Corridor</b>	<b>Square Feet</b>
Route 83	592,000
Route 30	458,000
I-84	1,797,000
<b>Total</b>	<b>2,847,000</b>

As with the residential development potential, it is important to note that the results illustrated here come with the caveat that land suitable for development changes as a result of pressure to develop. Therefore, the development potential totals given here are for planning purposes and subject to change. It is also important to point out that the estimates contained herein do not take into account market demand or other locational factors. The purpose of the analysis is to estimate the potential development under existing zoning, which can then be compared with other factors such as the capacity of the Town to serve this level of development with utilities, public services and accommodations for traffic. It will be helpful in addressing the impacts, both favorable and otherwise, for the Town to determine whether it would prefer to increase, decrease, or maintain the proportion of land devoted to economic development, and the densities and other standards it would like to encourage.

Furthermore, it should be made very clear that the estimates of development potential should not be considered recommended development. As stated above, it represents “potential” under existing zoning with the caveats discussed above.



## VII. OPEN SPACE

### A. INTRODUCTION

The quality of life in a community is largely determined by the quality, quantity and distribution of its cultural and natural resources. Protection of these resources through the preservation of their supporting landscape is therefore one of the key critical functions of open space planning. The second key reason for protecting open space land is to provide for the community's recreational needs and the basic human needs for fresh air, sunlight, physical exercise and psychological release.

Ideally, a growing community should gradually expand its legally designated open space areas in order to meet the increasing demand for recreation areas and to protect its diminishing resources. In Vernon, the unusually rapid change from a rural to a suburban environment that has been experienced within the last 25 years has evoked recent public concern for the continuing loss of our green spaces and agricultural lands. With the improving economy and the accompanying pressure for development, the need to preserve open space is stronger than ever. With the State initiative to increase the percentage of land which is open space by providing funding in the budget for land purchases, the opportunity for the Town to increase its percentage of open space will never be greater. Comments of citizens, through the planning process, consistently indicate that open space preservation is a strong community value. However, beyond that, open space provides specific functional benefits such as protection of wildlife and, perhaps, economic benefits.

It is the purpose of this open space plan to establish policy and make recommendations which will ensure the protection of resources and preserve the unique character of our community. It is also the purpose this plan, to provide adequate open space areas to meet the recreational needs of the growing population of Vernon in the years to come. Enhancement of the quality of life in our community through a viable open space plan

ultimately reaps positive public benefits. It establishes a reputation for the Town of Vernon as a desirable place to live, thereby enhancing real estate values and stimulating quality economic development within its borders.

Much of the detail in this open space plan has been provided by the Vernon Conservation Commission and future revisions should be approved by the Commission.

### *OPEN SPACE PLANNING: THE PROCESS*

#### Document Existing Open Space & Significant Natural Resources

The process of open space planning first requires the careful documentation of the significant elements of our natural and cultural heritage. These elements include water resources (rivers, ponds, lakes, vernal pools); land resources (ravines, ridge tops, soils); unique plant and animal species; areas of scenic value; and areas of historic significance and prime agriculture land. Also included in this documentation is an inventory of existing open spaces, both publicly and privately-owned. The principal reason for this documentation is to ensure that these unique local values are not lost and that the essential elements and character of the community are recognized and preserved. It is the responsibility of the Conservation Commission to keep an index of these critical resources for the purpose of obtaining information on the proper use of such areas. To accomplish this objective, the Commission may hire an environmental consultant to help with the initial survey. The Conservation Commission should consider maintaining an Open Space Task Force as a permanent subcommittee. The membership should be diverse and include representation from several organizations, land trusts, real estate/development interests, and other interested volunteers. It may also be of benefit to the town to incorporate the results into a Geographic Information System (GIS) to help organize, analyze & map the inventoried data.

#### Develop Policies, Goals, Objectives & Strategies

The second and most sensitive step in this process is the proper allocation of the use of these finite land and water resources among the many competing demands for them. This

process must maintain the delicate balance between preservation and development by directing inappropriate land use away from sensitive areas while at the same time guiding growth and development so that it can exist in harmony with these critical open space areas.

To advance this vision it is important that we understand all available alternatives in developing land protection plans and strategies. It should be a comprehensive vision of how to make conservation of land compatible with development proposals. Without a clear definition of what is wanted, open space advocates will take a reactive and negative stance to many new development projects.

Towards this end this open space plan incorporates a new approach to open space preservation: a planning strategy which is designed to link or expand existing open space areas and local or regional parks, thereby establishing a network of green spaces and greenways which will improve our natural infrastructure, provide close-to-home recreation opportunities, buffer existing parks and generally enhance our experience as we move through the landscape.

In particular, this strategy recognizes that environmental resources and recreational experiences do not stop at park borders, but are part of the continuous web of land use that constitutes our landscape. It creates a greenway of land protected by conservation easements, scenic roads and trails, historic sites and viewpoints, all within the context of our extensive urban and suburban development. Ultimately the strategy results in a system of protected open spaces that helps determine where growth and development should occur while at the same time preserving our unique cultural and natural resources.

#### Explore Acquisition Methods

Finally, consideration must be given in open space planning to land acquisition methods. Basic to an acquisition philosophy are the following precepts:

- Growth will continue to take place;

- Land is a basic and finite resource and control of its use is essential to the public welfare;
- The Town has the power and the responsibility to preserve open space through planning and the regulation of land-use;
- The Town has the legal authority to acquire open space and to administer and maintain the property in the best public interest.

Most communities typically find themselves with limited funds for open space purchase; open space is considered a luxury that they cannot afford while more urgent and tangible needs receive priority. It is therefore important that, in addition to the more commonly used methods of acquisition of public lands, a number of tools that protect the land while still allowing private use be employed. Some of these tools include the use of private conservation easements; better employment of land use regulations; and the creation of incentives that help private owners maintain public values and a sense of stewardship in their land. Other tools include maximizing the use of public land preservation programs such as the Connecticut State Open Space Grant Program administered by the Department of Environmental Protection or, as mentioned in the Environmental Features section of the Plan, the Farmland Preservation Program administered by the Department of Agriculture. These specific programs include state funding for the protection of open space.

The strategy of this open space plan is to pursue all means of providing a revenue stream to allow the purchase of desirable parcels. The revenues could come from referendums, taxes, donations, fundraisers, or other means. Purchases would be made by the Town alone, or in conjunction with the State or Federal government or possibly Land Trusts. Vernon has already made strides in this direction by recently passing an ordinance establishing a reserve for land acquisition and preservation. This initiative will continue with annual review of the fund by the Town Council as required in the ordinance.

## **B. EXISTING OPEN AREAS & SIGNIFICANT NATURAL RESOURCES**

### **1. Existing Open Areas**

It is the specific responsibility of the Vernon Conservation Commission to classify and update the open areas inventory in Vernon on a continuing basis. The figures below are drawn from currently available data; considerable work is required to complete the update and classification and is expected to be a focus of the Commission's effort on an ongoing basis. It is strongly recommended that the Commission maintain this activity as a high priority.

Vernon's open space property has been divided into the following categories and illustrated on the map entitled Existing Open Areas:

- Land Trust Open Space – These properties include those areas owned by private conservation organizations, primarily land trusts.
- State Owned Land – These properties include those areas owned by state agencies such as the Department of Environmental Protection, The Department of Transportation.
- Town Owned Parks & Cemeteries – These properties include those areas owned by the Town and managed by the Parks and Recreation Department and the Cemetery Commission. These areas are may contain active as well as passive recreational uses.
- Other Town Owned Land – These properties include town owned land such as schools, police stations, fire stations, water treatment facility & transfer station.
- Utility Owned Lands – These properties include those areas owned by utility companies such as Connecticut Water Company, Yankee Gas, SNET & CL&P

**Table 25  
Vernon Open Area Inventory**

<b>Description</b>	<b>Acres</b>	<b>% of Town</b>
Land Trust Open Space	193	1.6
State Owned Land	674	5.7
Town Owned Parks & Cemeteries	592	5.0
Other Town Owned Land	233	2.0
Utility Owned Land	199	1.7
<b>Total</b>	<b>1,891</b>	<b>16%</b>

Source: Land Use In Vernon, June 1999, updated July 2000

In addition to developing an open space inventory, the Open Space Task Force has taken on the task of developing an inventory of privately owned undeveloped land (Appendix C). This land is owned by private citizens and makes up the bulk of land available in the town for possible conservation as well as development. Because the fate of this land has yet to be determined, it represents an opportunity to balance growth in a way that is sensitive to all the needs of the community.

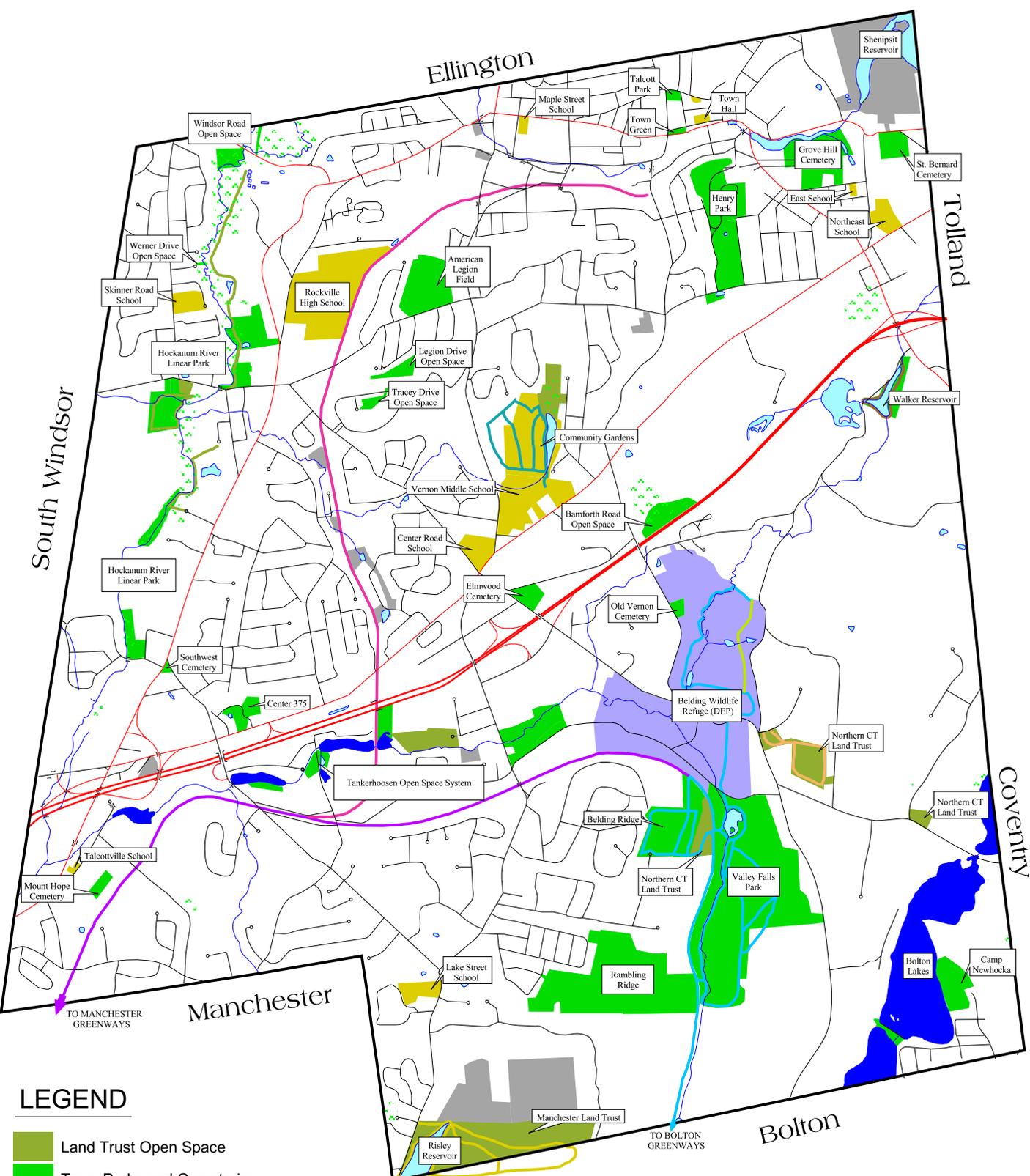
Conservation & recreation, economic development & housing are just some of the possible uses of this land, which are addressed in the Plan and will need to be balanced as the community continues to grow. It is helpful to list these land areas in the open space section of the Plan because they represent opportunities for open space protection. It should be noted that these parcels are not specifically proposed for open space protection in this Plan of Conservation and Development. In fact, these same parcels are included in Section VI as part of the development potential analysis since specific re-use of such parcels has not been determined at this time.

**Table 26  
Vernon Privately-Owned Undeveloped Land**

<b>Description</b>	<b>Acres</b>	<b>% of Town</b>
Undeveloped Land	2,450	20.6
Total	2,450	20.6

Source: Land Use In Vernon, June 1999, updated July 2000

In 1998, the State of Connecticut developed a plan to preserve 21% of the State's land area as permanently protected open space by the year 2023. The State is encouraging all towns in the state to conduct open space assessments to determine existing inventories



## LEGEND

- Land Trust Open Space
- Town Parks and Cemeteries
- State Owned Land
- Other Town Owned Land
- Utility Owned Land
- Protected Waterbody

### Existing Trail Systems

- Risley Pond Trails
- Shenipsit Trail
- Belding Path
- Northern CT Land Trust
- Hop River Linear Park: Rail to Trail
- Rockville Spur: Rail to Trail
- Community Gardens
- Hockanum River Trail
- Walker Reservoir

## Existing Open Areas

Plan of Conservation and Development

Vernon, Connecticut



HARRALL-MICHALOWSKI  
ASSOCIATES, Incorporated

Hamden, Connecticut



June 2001

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0.25 0 0.25 0.5 Miles

Scale: 1:40,000



and open space needs. In addition, the State is making available matching fund on a competitive grant basis for open space purchases to help bolster the state inventory. Vernon has been very successful in acquiring funds from this program and will continue to take advantage of this new opportunity. In the last two years, 136 acres of open space have been preserved. The Town is very much in support of the State's position on open space protection and has established a goal to permanently protect 21% of Vernon's total acreage by the year 2023. This raises the question of how close is Vernon to this goal and what is considered permanently protected open space? According to the Vernon Conservation Commission, Vernon's acreage of permanently protected open space is 1,011 acres or 8.5% of the town's total acreage as of July, 2000. This figure includes all land trust open space listed in Table 25, the DEP-owned Belding Wildlife area, DOT-owned Rail Trails, Town-owned Valley Falls Park 60% of the Vernon Center Middle School site, 50% of Henry Park and miscellaneous other Town-owned properties included in the open space inventory provided by the Open Space Task Force.

The concern of those who commented at the neighborhood meetings held at the beginning of the planning process is that these are the only open space properties that can be assured to forever remain in an undeveloped state. All other land listed in Table 25 has at least some potential to be sold for development. While the likelihood in most cases is low, the potential still exists. This means that in order to meet the state and town goal of protecting 21% of the land area as open space, an additional 12.5% or 1,488 acres would need to be acquired or transferred into permanently protected status. This would bring the total permanently protected open space to approximately 2,500 acres.

## **2. Significant Natural and Cultural Resources Inventory**

An overview of Vernon's natural environment has already been discussed in the Plan, however, it is important to the open space planning process to refine this overview by identifying significant natural resources that are important to the unique natural and cultural character of the Town. The resources identified here should be stand out as unique assets that should be protected and preserved through an aggressive acquisition strategy and through careful land use regulation.

### Water resources

- Hockanum River (including the environmentally significant marsh area between the Ellington line and Dart Hill Rd)
- Tankerhoosen River
- Bolton Lakes
- Shenipsit Lake
- Ecker Pond
- Valley Falls Pond
- Tankerhoosen Ponds (3)
- Walker Reservoir
- Paper Mill Pond
- Belding Ponds (2)
- Ogden Brook
- Gages Brook
- Railroad Brook
- Risley Reservoir
- Stratified drift aquifers and primary recharge areas
- Wetlands

### Significant open & wildlife areas

- Major Existing Preserved Open Space Areas (Valley Falls Park, Belding Reserve, portion of Henry Park, Dart Hill Park, Northern Connecticut Land Trust properties, Rambling Ridge Property, Dart Hill North Park, 585 Talcottville Road, Manchester Land Trust Properties, Chelsea Ridge Homeowners Property, Tunnel Road (Risley) Property)
- Connecticut Water Company land at Shenipsit Lake
- Rockville Fish & Game Club
- Property Tankerhoosen Gorge Area
- Strong Farm
- Clark Farm
- Rails-To-Trails
- Manchester Water Company lands at Risley Pond
- Town-owned parks (not preserved) portion of Henry Park, Camp Newhocka, Boulder Ridge Park, VCMS fields, School Playgrounds, Legion Field, Walker Reservoir Park
- Tancanhoosen LLC Property

### Rare, endangered or locally unique plant & animal species and communities (As identified in the DEP Natural Diversity Database)

#### Vernal Pools

Vernal pools are a wetland feature and are generally described as basins that contain water for two or three months in the spring and summer.

These basins provide habitat to certain invertebrates and amphibian species including traditional flora & fauna. Protection of vernal pools habitat is essential for species dependant on this type of wetland. Currently no inventory exists for these wetland areas; however, they are identified as significant nonetheless. The Conservation Commission recommends that a vernal pool inventory be conducted and added to the inventory of significant natural and cultural resources. In addition, it is recommended that the town consider adopting the Connecticut State Vernal Pool Regulations when they are released by the DEP.

#### Scenic roads, ridgelines & vistas

- Bolton Road (Bread & Milk Road to Valley Falls Road)
- Strong Farm (West Road and Route 30) vista of Hartford from the West Road parcel
- Vista of Rockville, Vernon, Ellington from Henry Park Site
- Reservoir Road and Fish & Game Road area
- Vista of Hockanum Falls at Dart Stone Mill - Rockville
- Vista of Hartford from Rambling Ridge Property
- Vista of Valley Falls Park from Knapp property
- Vista looking south from Rt. 30 at the Police Station on Rt. 30 (Hartford Turnpike)

#### Historic sites

- Rockville Historic District
- Talcottville Historic District
- Vernon Center Area
- Old Cemeteries on Pitkin St and Bamforth Rd
- The Tunnel on Tunnel Rd
- Beach Estate Stables and Grounds, corner Valley Falls Road and Bolton Road
- National Historic site in Valley Falls Park at Old Mill site

#### Archaeologically significant sites

- Old Mill Ruins (Phoenix Mill, Talcott Mill, Tankerhoosen Gorge mill site)
- Native American Sites (as identified by the State Archeologist)

## **B. OPEN SPACE POLICIES, GOALS AND OBJECTIVES**

### ***Policy***

Establishment of a clear, concise resource conservation policy is essential to the formulation of an Open Space Plan. The policy statement establishes the Plan's goals and objectives; provides a foundation for regulation; and guides the actions and strategies for land acquisition. As describe in the preceding sections as well as in other sections of the Plan, Vernon has a wealth of natural resources worth preserving. With this in mind it is the overall policy of the Open Space Plan to enhance the quality of life in the town of Vernon through protection of its resources and through provision of adequate outdoor recreational lands. With this policy statement in mind, the following represents the goals and objectives of the Open Space Plan.

***Goal: Identify and protect ground and surface water supply sources to ensure sufficient clean water supply for future generations of Vernon residents.***

### **Objectives:**

- Develop mechanisms to protect and preserve groundwater supply sources;
- Continue to maintain as open space the lands which are presently preserved as open space for the protection of a public water supply system.

***Goal: Provide a wide variety of high quality outdoor active and passive recreational opportunities to all citizens of Vernon***

### **Objectives:**

- It is the primary objective of the plan to preserve 21% of Vernon's total acreage as open space by the year 2023.
- Encourage continued evaluation of the potential use of rivers and water bodies for recreation by providing access for canoes, kayaks and fishing as well as for aesthetic purposes.
- Provide sufficient open space areas to meet future requirements for organized sports;
- Identify and preserve tracts of land particularly suited for passive recreational purposes;
- Require that a management plan of land and recreational use be produced for any municipally owned open space recreational area within the town limits. Plans should include comments from the Department of Parks and Recreation, Conservation Commission, Inland Wetlands commission and other knowledgeable boards, agencies or Commissions.

- Provide a network of interconnected greenways which serve to expand passive recreation opportunity and to increase public accessibility to park areas.
- Encourage the development of a network of trails for walking, cross country skiing, snowshoeing, and flora and fauna observations.
- Create linkages to existing trails maintained by the Town & by other public and private entities such as neighboring towns or the Connecticut Forest & Park Association.

***Goal: Protect and preserve the scenic, historic, cultural and natural resources including flora and fauna of the town of Vernon***

**Objectives:**

- Preserve the historic and cultural heritage of Vernon through a strengthened program of historic preservation;
- Identify and protect areas of critical environmental concern;
- Identify and protect critical habitat areas including vernal pools;
- Encourage expansion of our preserved open space areas and greenways, particularly those sites which would link existing open space areas;
- Give full support to the preservation of areas which contribute to the scenic value and special character of a neighborhood;
- Take advantage of opportunities which expand our existing wildlife corridors and which ensure the survival of local wildlife species;
- Establish a preserved buffer area of 100 feet from the 500-year floodplain on either side of the river or stream bank. This will ensure protection of watersheds and the riparian zones. This should apply to the Hockanum and Tankerhoosen rivers and to Ogden, Gages and Railroad brooks;
- Preserve areas containing slopes which exceed 15%;
- Establish a logging ordinance;
- Conduct an updated DEP Natural Diversity Survey on properties being considered for open space preservation, or being reviewed for usage designation. Ideally, these surveys should be performed during optimal spring/summer seasons, not in a dormant stage.
- Formulate an "open space brochure" for the town of Vernon;
- Review and incorporate recommendations and information from the State Plan of Conservation into the master plan of conservation and development whenever necessary;
- Hire a part-time environmental officer;
- Ensure that all deeds for true open space state that the property is to remain open space in perpetuity;
- Ensure that Town zoning regulations base the intensity of development in given areas upon the capacity of the natural resources of those areas to sustain that development.

***Goal: Protect and maintain areas which serve a critical function in providing for the health and safety of the residents of Vernon***

**Objectives:**

- Support actions which protect floodplains and limit the use of flood prone areas;
- Support actions which ensure the continued ability of wetlands areas to function as water storage areas or as groundwater recharge areas;
- Ensure the maintenance of and adherence to proper soil conservation practices as well as soil erosion and sedimentation control procedures.

***Goal: Establish greenways within the Town of Vernon and extending greenways to adjacent communities.***

**Objectives:**

- Support the concept of greenways and actions that enable the establishment and growth of greenways, in accordance with Public Act. No. 95-335 - An Act Concerning Greenways and Denial or Modification of Certain Zoning Permits Because of Off-Site Traffic Impacts.
- Support the recommendations of the State Greenways Committee more particularly defined in "Greenways for Connecticut", a report to the Governor from the Connecticut Greenways Committee, December 1994.
- Actively pursue the establishment of the Hockanum, Tankerhoosen & Box Mountain Greenway's.

***Goal: Establish protected ridgelines***

**Objective:**

- Identify key ridgeline areas and develop a plan for their protection.

## **D. PRIORITY AREAS FOR OPEN SPACE PROTECTION**

The priority areas for open space protection, as identified by the Vernon Open Space Task Force, are focused along the Hockanum River and Tankerhoosen River with the goal of creating contiguous greenways along the entire length of both river corridors. A description of these priority areas is organized in the report titled “Proposed Open Space System” prepared by the Vernon Open Space Coalition. The purpose in identifying these priority areas is to focus open space protection efforts in the Town rather than just acquiring open space because the land becomes available for purchase. Having a focused strategy allows the Town to be more proactive in implementing the open space strategy outlined in the above-mentioned report as well as in the overall open space plan. To help facilitate this effort, it is recommended that an open space review procedure be established that allows the Conservation Commission an opportunity to review development proposals within the priority areas. This review procedure would include a referral from the Planning and Zoning Commission to the Conservation Commission of all applications affecting properties within the priority areas. The Planning and Zoning Commission would consider recommendations from the Conservation Commission in its review of such applications. The focus of Conservation Commission review should be on how the proposed development affects the open space priorities outlined in the open space plan. These priority areas are illustrated on the map titled Potential Open Space System. In addition, a description of the benefits greenway protection can provide the town is included below.

### ***Greenways***

A greenway is a corridor of protected open space managed for conservation and recreation purposes. Greenways follow natural land or water features and link areas such as cultural and historical features, nature preserves and parks, natural or manmade features. Greenways are planned and can be publicly or privately owned.

The benefits of a greenway include:

1. Quality of life: by preserving our natural resources and ecology, communities can be "linked" with their natural world and be provided outdoor recreation to provide a better understanding of natural wealth.
2. Preservation and Conservation of natural resources.
3. Protection of biological diversity of plant and animal species by maintaining connectivity between natural communities.
4. Minimize the appearance of urban/suburban landscapes with greenery that improves the quality of life and enhances property values.
5. Function as outdoor classrooms.
6. Can provide alternative transportation routes.
7. Continuous forested areas for wildlife.

The town must be willing to purchase land, seek donations, obtain concentration easements, regulate usage, and have a proactive approach to the conservation of existing resources.

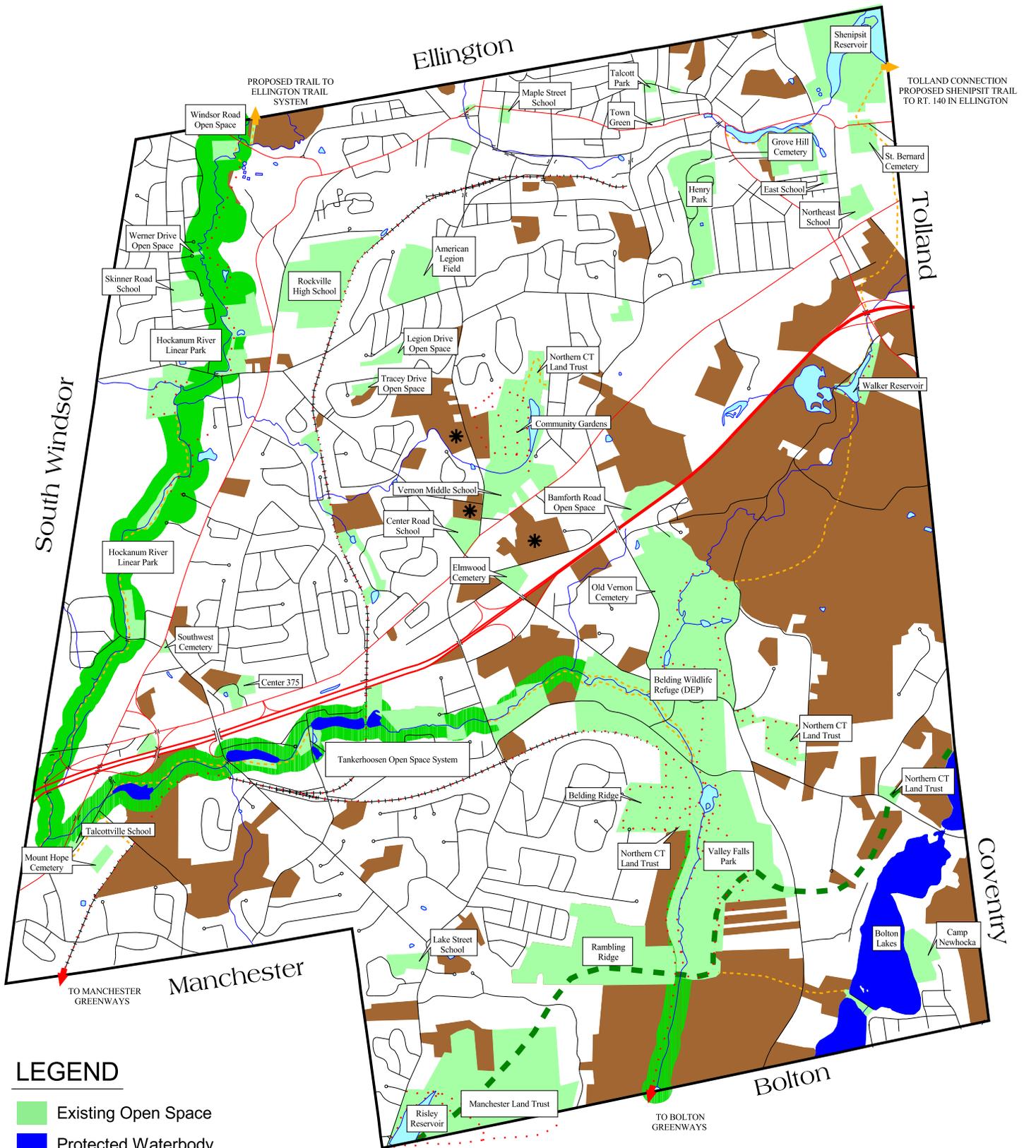
***Existing Greenways Include:***

- The Hockanum River Linear Park
- The Tankerhoosen River Linear Park
- The Hop River Linear Rails-To-Trails (Taylor St. past Valley Falls Park)
- The Rockville Linear Rails-To-Trails

The Potential Open Space System Map shows the Box Mountain Greenway which is an additional proposed greenway.

***Other Priority Open Space Areas***

In addition to the above priority open space areas, and pursuant to the provisions of Section 12-107e of the Connecticut General Statutes, as amended, all farmland, forest land, and land which is not presently built upon located in the following zones: R-10, R-



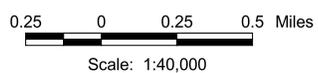
**LEGEND**

- Existing Open Space
- Protected Waterbody
- Proposed River Protection Overlay District
- Privately Owned Undeveloped Land\*

- Proposed Box Mountain Greenway
- Existing Trails
- Proposed Trails

\* Privately owned undeveloped land areas identified with an asterisk include those areas of active agriculture use in the Vernon Center region.

THIS MAP WAS DEVELOPED FOR USE AS A PLANNING DOCUMENT. DELINEATIONS MAY NOT BE EXACT.



**Potential Open Space System**

Plan of Conservation and Development

Vernon, Connecticut

**HMA**

**HARRALL-MICHALOWSKI ASSOCIATES, Incorporated**

Hamden, Connecticut



June 2001



15, R-22, R-27, and R-40 and containing four (4) or more acres, is designated as open space land, and may be classified as such by the Vernon Town Assessor. No lot which is created through subdivision or resubdivision will be eligible for the classification of open space. Following the approval of a subdivision, resubdivision or Plan of Development, all land classified as open space by the Town Assessor shall be removed from the open space classification, and a conveyance paid, as required by Connecticut General Statutes, Sections 12-504a and e.

## **E. RECOMMENDED LAND ACQUISITION STRATEGY**

Pursue acquisition of those parcels which meet the following criteria:

- Protect a natural or cultural resource as listed in this plan or as further documented by the conservation and historic commissions, or;
- Link or expand existing open space areas, or;
- Enhance close-to-home recreation opportunities for the general public

Evaluation of a particular parcel for acquisition should include a detailed review of all available resource data and mapping overlays for the site and then to consider the parcel in light of the above criteria. The intent is to focus on the ultimate public benefits of the parcel and determine how the parcel fits into the overall open space plan, thus avoiding an arbitrary and illogical action.

Although final decisions on land acquisition are required first by the Planning & Zoning Commission and then the Town Council, the review process should actively incorporate comment from all the land use commissions and the Recreation Department. Of particular importance is the new Conservation Commission whose state-mandated role is the documentation of natural resources for the Town of Vernon. Input from the Northern Connecticut Land Trust should also be sought.

Of great importance in the evaluation process is the location of the parcel with respect to other open space areas. Parcels which expand or link open space areas (greenways) greatly enhance the benefits of the existing open areas by maintaining the wildlife corridors within that area and avoiding encirclement and destruction of some species which can be caused by isolation of a parcel. Recreational opportunity is also enhanced, extending hiking trails and generally increasing public access, if desired, to the total open area.

Particular focus should be placed in linking the open space areas in the southeast quadrant of Vernon. Within this area there are four large, significant open space sites: Valley Falls Park (193 acres, Town-owned), the Belding Reserve (280 acres, State-owned), and the Rockville Fish and Game Club (72 acres, privately owned) and Rambling Ridge (103 acres, Town-Owned) all of which play a major role in protecting the Tankerhoosen watershed and its environs.

## **F. RECOMMENDED RESOURCE PROTECTION ACTIONS**

### *Existing Municipal Open Space:*

All existing municipal open space being utilized for passive or active recreation should remain, as is, for those particular uses. These areas should be protected to ensure that those particular areas are preserved for passive or active recreational uses. The defined uses for municipal open space should not be changed without input from the Conservation Commission. In addition, Municipal open space should not be sold, transferred, or exchanged without complete notification to the Conservation Commissions.

### *Large open space parcels:*

- Take an aggressive approach in building the dedicated open Space funding; actively pursue state and federal open space grant funding and such other mechanisms as discussed in section D of this plan.

- Priority sites for large parcel acquisition should be remaining farmland parcels, or part thereof. If these areas are subject to a development proposal, the proposal should be reviewed carefully to identify resources which should be preserved in the development, such as elements that contribute to our cultural heritage: stone walls, farm structures (silos, e.g.) and archeological sites; and elements that contribute to the supporting systems of our natural resources (wetlands, streams, particularly old trees, e.g.)

*Small open space parcels:*

- In evaluation of proposed plans of development, aggressively implement the use of conservation easements for areas which serve to link or expand open space areas or which will preserve a resource. Particular focus should be placed on parcels in the southeast quadrant.
- In evaluation of proposed plans of development within the urban areas, consider the incorporation of small sitting parks and play areas in the Plan of Development. These areas require very little space yet greatly enhance the visual appearance of a site and provide close-to-home recreation opportunity to the public.
- Evaluate rezoning of the particularly steep-sloped, low depth-to-bedrock areas in the southeast quadrant of town from one-acre to two-acre minimum lot size. Many environmentally fragile areas characterize this section of town and some areas are not served by the Town sewer system.

*Hockanum River Linear Park:*

Aggressively pursue the broad objective of the Hockanum River Linear Park to establish a greenbelt corridor along the entire length of the river.

The Hockanum River Linear Park (HRLP) is a planned regional riverscape and recreational park incorporating the lands along the twenty-mile length of the Hockanum River, from its origin at Shenipsit Lake to its confluence with the

Connecticut River. This regional plan includes the four towns through which the river flows: Vernon, Ellington, Manchester and East Hartford. Each of the four towns is responsible for developing and managing that section of the river which lies within its town borders.

Given the important role that the Hockanum River has played in the history of the community and given the considerable watershed lands that lie along its five-mile length in Vernon, it is an obvious and imperative step that the objectives and strategies for development of this linear park become an integral part of Vernon's Open Space Plan.

These objectives and strategies are detailed in two documents which are hereby incorporated by reference into The Plan of Conservation and Development:

(1) "A Plan for the Hockanum River Linear Park", prepared for the Department of Environmental Protection by Roy Mann Associates, Inc., Boston, Massachusetts, June 1981.

(2) "The Hockanum River Linear Park Proposal: Connecting Our Community" prepared for the Vernon Town Council by the Hockanum River Linear Park Committee, Vernon, Connecticut, April, 1989.

The first document is the initial feasibility study and plan of development for the HRLP. It identifies two major park sites, Tankerhoosen Park (180 acres) incorporating the Talcottville Gorge area and the Tankerhoosen lakes; and Dart Hill Park (16 acres) located off Dart Hill Road on the Hockanum River. The town of Vernon purchased the Dart Hill Park site in 1991. In addition to these two large areas, two small urban park areas along the river in Rockville and another small site in Windsorville are proposed as potentially desirable passive recreation areas.

The second document makes key recommendations for park development, outlines a work plan for use of grant funds, and proposes near term and long-term land acquisition strategies. This report was accepted and approved by the Vernon Town Council in April 1989.

Of overriding importance to these documents is the comprehensive Master Plan of Development for the linear park, prepared by the landscape architectural firm of Johnson and Richter. This master plan for the park details the location of walking and hiking trails, picnic sites, nature observation points, and historic sites of interest along the river. This HRLP Master Plan is hereby incorporated by reference into The Plan of Conservation and Development. Since the HRLP plan referenced above is over 10 years old, it is recommended that a review of this plan be undertaken in light of various initiatives which have been accomplished since the plan was prepared. The plan should be revised as needed and be incorporated as a future amendment to the Plan of Conservation and Development.

## **G. RECOMMENDED REGULATORY ACTIONS**

Full implementation and enforcement of local land use regulatory powers as permitted by state enabling legislation.

Land use in Vernon is currently regulated by three agencies: the Planning and Zoning Commission, the Zoning Board of Appeals, and the Inland Wetlands Commission. These agencies control the use of our Lands through implementation and enforcement of the Zoning Regulations, the Subdivision Regulations, and the Inland Wetlands and Watercourses Regulations.

In addition to these currently-implemented regulations, there are several other land protection tools authorized by state legislation which the Town should pursue as resource preservation actions, detailed below:

- Implement and enforce aquifer protection regulations (C.G.S. 8-2; 8-23);
- Adopt a scenic roads and vistas ordinance (C.G.S. 7-149a);
- Establish a conservation easement program which aggressively pursues the use of conservation easements, both public and private;
- Apply to the state DEP "Rivers Protection Program" for designation of the Hockanum and Tankerhoosen rivers as protected river corridors (25-102pp-vv);
- Strengthen enforcement of land use regulations; it is recommended that a new full-time zoning/wetlands enforcement officer be added to the town planning and engineering department;

A specific regulatory initiative that should be considered is the adoption of a Hockanum and Tankerhoosen River Protection Overlay District. The District should include the three major tributaries: Ogden, Railroad and Gages Brooks. The purpose of these Districts would be to establish a contiguous and parallel buffer strip on either side of these rivers which together constitutes culturally significant and environmentally sensitive river corridors.

The proposed districts would supplement the inland wetland, floodplain, and underlying zoning regulations with the added provisions that the land within the buffer designation as well as the river itself remains in a natural, undisturbed state. It is often cited that these districts provide a variety of benefits including the prevention of water pollution caused by erosion, sedimentation & contaminated runoff, protection of fisheries and wildlife habitat and the conservation of the ecological, recreational and aesthetic nature of the river. While these benefits are significant and well documented, another important purpose of implementing a river protection overlay district is in carrying out the recommendations of the Town as well as the State's Plan of Conservation and Development which designate these river corridors as priority preservation areas.

Designation of a river protection overlay district may seem redundant considering that inland wetland regulations are already in place. However, there would be differences

between the two regulatory programs. First of all, the overlay district would not replace the inland wetland regulations or interfere in the process of wetland review. Rather, the overlay district would simply place more rigorous controls on what can occur within the designated buffer area. Examples of the controls that might be considered within the buffer area include:

- Prohibitions on new buildings or structures or additions to existing building or structures,
- Prohibitions on impoundments, dams or other obstructions to the flow of the river,
- Prohibitions on removal of trees, shrubs, or other vegetation with the exception of invasive species as identified by the DEP
- Maintenance of the natural, indigenous vegetation

Currently, most of these examples are already considered regulated activities under Vernon's inland wetland regulations. However, in order for these activities to be prohibited, they must constitute having a substantial adverse affect on the wetland and surrounding regulated area. The river protection overlay district would prohibit these activities in all circumstances creating a uniform corridor of natural vegetation to assist in protecting the river and the adjacent environmental integrity.

According to the American Planning Association, a 100-foot buffer would take about 5 percent of the total land area in any given watershed out of production. While 5 percent may seem relatively modest, it can represent a significant hardship on landowners whose property abuts the river. Many communities are legitimately concerned that controls such as river protection overlay districts can represent an uncompensated taking of property, subject landowners to unwarranted public access to their land or create an unnecessary burden. The community can address these concerns by educating the public about buffer limits and uses, as well as in ensuring fairness in how the program is ultimately administered.

The key point in administering a river protection program and addressing the taking issue, both regulatory and otherwise, is that the buffer *cannot remove all economically beneficial use of the property*. In general, the courts have considered buffer ordinances void of the takings issue because the land is retained in private ownership and provides a compelling public safety, welfare and environmental benefits to the community that justify *partial* restrictions on the land. In Vernon’s case, a buffer ordinance is further justified because it supports the goals and objectives outlined in the Town and State’s Plan of Conservation and Development.

One way to ensure that all economically beneficial uses of the property are not removed is implementing controls which ensure buffer flexibility along the river protection district. This can be accomplished by including provisions which “grandfather” in existing uses, account for existing protected open space and account for unusually small lots or variations in the land use patterns along the river corridor. Such provision may include buffer averaging, density compensation, conservation easements and variances. These provisions are further explained in the American Planning Association PAS Memorandum on Urban Stream Buffer Architecture and the Connecticut River Joint Commission’s Memoranda on Riparian Buffers and Guidance for Communities. These Memoranda should prove useful if the Town implements the Regulations in Support of Riparian Buffers. These documents also contain useful information on alternatives for defining the buffer width and in administering uses within the river protection overlay district. . These documents are incorporated as Appendix E within this Plan.

## **H. RECOMMENDED ACQUISITION METHODS**

There are a number of means by which the town may acquire control of and preserve land for open space and recreation purposes. Essentially these means come under three broad categories: (1) Fee Simple Acquisition; (2) Less than Fee Simple and (3) Public Land Trusts. Appendix D discusses these possible methods.

As mentioned before, one of the strategies of this open space plan is to pursue all means of providing a revenue stream to allow the purchase of desirable parcels. The revenues could come from referendums, taxes, donations, fundraisers, or other means. Purchases would be made by the Town alone, or in conjunction with the State or Federal government or possibly Land Trusts. Vernon has already made strides in this direction by recently passing an ordinance establishing a reserve for land acquisition and preservation. The challenge will be ensuring this reserve stays adequately funded. It is recommended that the Town of Vernon aggressively pursue building its dedicated open space fund through the Planning and Zoning process.

## VIII. TRAFFIC AND CIRCULATION

### A. EXISTING CONDITIONS

Areas within Town are in many ways defined by the roadways that serve them, primarily Route 30 (Hartford Turnpike), Route 83 (Talcottville Road), Interstate 84, SR 533 (Tunnel Road), SR 541 (Bolton Road/South Frontage Road), Route 31 (Reservoir Road) and Dart Hill Road. The following describes roadway and traffic characteristics for each of the above-mentioned roads. In the preparation of this section other studies that are either complete or on going have been reviewed. A few of these studies include the following:

- Site Traffic Evaluation Study – The Mansions at Hockanum Crossing, The Park at Hockanum Crossing, Hockanum Boulevard
- Traffic Study - The Village at Ferguson Road
- Traffic Impact Study – Quail Hollow Senior Housing
- Town of Vernon – 1995 Update to the Master Plan of Development

Route 30 (Hartford Turnpike) is a two-way, east-west State roadway with a posted speed limit varying between 35, 40 and 45 miles per hour (mph). The roadway is classified as a minor arterial. Route 30, within the Town of Vernon, begins at the Town of South Windsor/Vernon town line and ends at the Tolland/Vernon town line. Two-lane and four-lane sections of roadway are present along Route 30; generally the four-lane sections lay west of Vernon Center. The pavement is variable in width ranging between 36 and 52 feet. Exclusive turn lanes are provided at select intersections.

The traffic on Route 30 is a mix between residential and commercial/retail trips. In an effort to minimize the impact of traffic on Route 30 from commercial development, the use of common curb cuts has been encouraged where feasible. With any development within the commercial area of Route 30 it is encouraged that common curb cuts be provided and the elimination of unnecessary driveways be required. Because of its close proximity to Interstate 84, Route 30 is attractive for retail development. Plans for development that are in close proximity to Interstate 84 need to consider existing

intersection constraints and properly address proposed traffic. In some cases it may be beneficial to prohibit left turns into or out of a site, eliminating the opportunity for accidents and improving traffic operations. Average Daily Traffic (ADT) volumes along Route 30 are shown below.

**Table 27**  
**Route 30 Average Daily Traffic**

Location	ADT <sup>(1)</sup>
East of Route 83 / Kelly Road	
EB	7,400
WB	6,900
Total	14,300
West of Dobson Road	
EB	11,700
WB	7,400
Total	19,100
West of Merline Road	
Both Directions	13,100
West of Tunnel Road	
Both Directions	10,800
East of Tunnel Road	
Both Directions	14,000
East of Bolton Road	
Both Directions	19,400
East of Dart Road	
Both Directions	9,800
West of Grove St/Reservoir Rd	
Both Directions	10,500

(1) Latest available data, 1996.

There are 11 signals on Route 30 in Vernon. Of these signals, 6 operate within time-based coordinated systems. The remaining signals operate as isolated intersections.

Route 83 (Talcottville Road) is a two-way north-south State roadway with a posted speed limit ranging between 30 and 40 mph. The roadway is classified as a principal arterial. Within Vernon, Route 83 begins at the South Windsor / Vernon town line and terminates at the Ellington / Vernon town line. Two-lane and four-lane sections of roadway are present throughout the corridor. The pavement width is variable ranging between 30 feet and 45 feet. Exclusive turn lanes are provided at select intersections.

Traffic on Route 83 is a combination of commercial/retail and residential trips. Similar to Route 30, minimizing curb cuts and encouraging the sharing of access points has been and should continue to be encouraged.

As identified in earlier reports, Route 83 between Dart Hill Road and Route 74 (Windsorville Road) has different characteristics from the section south of Dart Hill Road. This section of roadway is narrower and it handles less traffic as evident in the average daily traffic volumes shown in Table 28.

**Table 28  
Route 83 Average Daily Traffic**

Location	ADT <sup>(1)</sup>
North of Kelly Road / Rt 30	
NB	7,600
SB	13,900
Total	21,500
South of Dart Hill Road	
NB	11,100
SB	12,900
Total	24,000
North of Dart Hill Road	
NB	9,900
SB	9,900
Total	19,800
East of Windermere Avenue	
Both Directions	18,400

(1) Latest available data, 1996.

There are currently 17 signals along Route 83, most of which are controlled by time-based coordination or hardware systems.

SR 541 (Bolton Road/South Frontage Road) is comprised of two sections of roadway. The first section of SR 541 runs between Tunnel Road and Bolton Road and the second between Interstate 84 EB On ramp / South Frontage Road and Route 30. At its intersection with Tunnel Road SR 541 provides 2 lanes of travel WB and at its intersection with Bolton Road, SR 541 provides 2 lanes of travel EB. A flashing beacon is located at the Bolton Road intersection. The intersection of Bolton Road and Route 30 is signalized.

Route 31 (Reservoir Road) between Route 30 and Interstate 84 EB Ramps varies between 2 and 4 lanes. The section south of the Interstate 84 WB Ramps provides 3 lanes of travel and a signal is provided at the Interstate 84 EB ramps. North of this location, with the exception of the multilane segment at the intersection, Reservoir Road is two lanes of travel. The intersection of Route 30 and Reservoir Road is signalized and provides for exclusive NB left, through and right lanes.

Dart Hill Road is an east-west roadway that provides access to Skinner Road and properties located in South Windsor. The section of Dart Hill Road that lies east of Skinner Road is classified as a major collector. The roadway runs between the South Windsor/Vernon town line and Route 83. The posted speed limit is 25 mph. A three-way stop is located at its intersection with Skinner Road.

Numerous improvements related to Dart Hill Road were identified in the 1995 Update to the Master Plan of Development. However, within this new Plan of Conservation and Development, it is recommended that no immediate improvements to Dart Hill Road be made. If traffic associated with new development is anticipated to result in deteriorated roadway conditions, the Town should require the developer to conduct an engineering study to identify any deficiencies and provide solutions.

Average daily traffic volumes on Dart Hill Road are summarized in Table 29.

**Table 29**  
**Dart Hill Road Average Daily Traffic**

Location	ADT <sup>(1)</sup>
West of Skinner Road	3,800
East of Skinner Road	8,500
West of Route 83	6,600

(1) Latest available data, 1996.

Based on the available ADT's it appears motorists use Thrall Road to gain access to Dart Hill Road and Skinner Road. This routing of traffic is likely the result of the signal at Route 83 and Dart Hill Road in combination with the location of the school on Skinner Road and the connection to Ellington. In coordination with proposed development, traffic patterns between Route 83, Thrall Road and Skinner Road should be developed and traffic circulation evaluated. It is recommended that a license plate study be undertaken in this area to determine the degree of cut-through traffic. If cut through traffic is found to be a significant problem an overall traffic circulation plan should be developed incorporating traffic calming devices such as speed humps, signed turn restrictions, physical turn restrictions, one-way sections, islands or diverters. A discussion of traffic calming can be found in Section C.

Tunnel Road is a north-south roadway with varying speed limits (25, 30, 35 mph). The roadway runs between Route 30 and Lake Street and provides access to Interstate 84. The roadway is classified as a minor arterial. An exclusive westbound left turn lane into Tunnel Road is provided on Route 30. A stop sign controls Tunnel Road traffic entering Route 30 and a three-way stop condition is present at Lake Street. The pavement is in good condition and varies in width between 26 and 52 feet wide.

Tunnel Road permits two-way travel except in the vicinity of the existing one-lane tunnel. The tunnel is located just south of Warren Venue and stop signs on either side of the tunnel meter traffic through the tunnel. Most of the traffic south of SR 541 (South

Frontage Road) is residential in nature. Since large, undeveloped areas with residential growth potential are located in the southern part of Vernon, served by Tunnel Road, the installation of a traffic signal at the tunnel to better meter traffic should be evaluated as development increases.

Average daily traffic volumes for Tunnel Road are summarized below.

**Table 30**  
**Tunnel Road Average Daily Traffic**

Location	ADT <sup>(1)</sup>
North of SR 542	
Both Directions	4,500
North of SR 541	
Both Directions	5,900
South of SR 541	
NB	3,000
SB	2,900
Both Directions	5,900
North of Driggs Road	
Both Directions	4,300
North of Lake Street	
Both Directions	3,900

(1) Latest available data, 1996.

Traffic is controlled by a flashing beacon at the Tunnel Road / SR 542 (Whitney T. Ferguson III Road) and Keynote Drive intersection and a fully actuated signal controls traffic at SR 541 (South Frontage Road). It appears that the signal operates under flash for some time periods.

#### Accident Analysis

Accident data was gathered from the Town of Vernon for Dart Hill Road and Skinner Road for the years 1997, 1998, and 1999 and from the State of Connecticut Department of Transportation (ConnDOT). This information reveals 20 accidents occurred on Dart

Hill Road and 14 occurred on Skinner Road. These accidents were primarily turning, intersecting path and rear end type accidents. The Suggested List of Surveillance Study Sites (SLOSSS) generated by ConnDOT for the years between 1994 and 1996 was also reviewed. The following locations were identified as areas in need of immediate accident reduction or highway safety improvements. With any plans for development, accident mitigation measures need to be addressed within and surrounding the project corridors.

Route 30

At Welles Road Between South St. and 1000 feet east of South St.

At Route 31 (South Grove Street)

Route 74

Between Route 83 and Maple Street

Route 83

At Route 30 (Hartford Tpk) and Kelley Road

Between Green Circle and I-84 Off Ramp (A)

Between I-84 Off Ramp (A) and I-84 Off Ramp (B)

Between Merline Road and Regan Road

## **B. FUTURE TRAFFIC CONDITIONS BASED UPON POTENTIAL DEVELOPMENT AND SUGGESTED MANAGEMENT PLAN**

As described in an earlier chapter, an analysis has been completed as to potential levels of non-residential and residential development in Vernon. Once again it should be remembered that these are long range projections with no specific time frame within which such development may occur if in fact it does occur. These projections do not represent proposed levels of development, but rather indicate potential under existing zoning. However, for long range planning purposes it is important to understand the implications of such potential development on the systems serving the community - both natural and built. One of the most apparent impacts of development is on traffic and the capacity of the street network to accommodate such increased traffic. The following

material presents a discussion of such long term potential impacts within a planning framework. The reader is cautioned that the planning level of analysis used is not a level associated with traffic analysis for site specific development proposals. Rather this planning analysis is intended to provide guidance to the Planning and Zoning Commission and community in its future consideration of future development decisions and to identify locations where site specific development proposals might require detailed traffic analysis. Road network improvements discussed later in this chapter are not intended to be recommendations but rather the result of analysis of the implications of development at the levels discussed above.

Furthermore, any proposed development that abuts a state property and is larger than 100,000 square feet or 200 parking spaces will need to apply to the State Traffic Commission (STC) for a certificate of operation. Should the development exceed these thresholds and not abut state property a determination by the STC as to whether a certificate is necessary will be required.

The following material discusses the possible impact on the road network from potential development and suggestions for management of these impacts. It should be noted that the Land Use Plan Chapter further discusses management in several corridors.

#### Anticipated Non-Residential Site Traffic

Within identified corridors, 36 parcels were identified as being areas with potential for future non-residential development. To pinpoint areas of attention related to traffic, 5 study corridors were identified. They are as follows:

- Route 83
- Tunnel Road
- Bolton Road
- Route 30
- Reservoir Road

These areas were further classified as commercial, industrial, planned commercial or special economic development in order to calculate the amount of square footage which could be developed. In an effort to evaluate future traffic operations in the area

anticipated vehicle trips were estimated for each parcel. Based on information published by the Institute of Transportation Engineers in Trip Generation the following land uses or combination of uses were used to estimate anticipated traffic: General Office Building (LU 710), Shopping Center (LU 820), Industrial Park (LU 130).

The following describes general considerations that should be made if full development occurs. Traffic distributions are based on existing traffic patterns and percentages found in other area traffic studies.

### Route 83

The developable parcels on Route 83 are generally located north of Allan Drive and in the vicinity of Dart Hill Road. It is encouraged that developments within this area consist of low traffic generators or uses that do not impact the peak hour travel periods. With the exception of traffic exiting from the Interstate 84 off ramp, much of the traffic accessing parcels along Route 83, south of Pitkin Road, will be through movements. The through movements in this area, under full build-out, total an estimated 660 vehicles NB and 830 vehicles SB during the AM and PM peak hours, respectively.

Anticipated volume increases for the Interstate 84 EB Off Ramp, making a right turn to travel northbound on Route 83, are anticipated to increase by approximately 375 vehicles during the A.M. peak hour. It is recommended that queue detectors be in place and properly operating to ensure vehicles do not back up to Interstate 84. An evaluation of the existing number of lanes and queues will be required, however, it appears an additional right turn lane will be required.

Development of the 3 parcels in the vicinity of Dart Hill Road may require restricting left turns into and/or out of the sites. These parcels are in close proximity to the Route 83/Dart Hill Road intersection and permitting lefts into the site will likely result in longer delays and the potential for accidents. Due to the existing signalized intersection and the exclusive NB left turn lane into Dart Hill Road, access via Dart Hill Road is encouraged.

For development located west of Route 83 in the vicinity of Hockanum Boulevard, the Town of Vernon is planning to extend Hockanum Boulevard westerly across the Hockanum River via the construction of a bridge and realigning Wilshire Road northerly, opposite Hockanum Boulevard. Plans include signaling this new intersection and installing left-turn lanes on Route 83. These improvements are expected to be in place by the spring of 2001. Roadway plans within this development should complement both the existing and proposed roadway network. A connection between the roadway serving the Quail Hollow Senior Housing Development and the Hockanum Boulevard development area is encouraged. In combination with this connection, appropriate signing routing truck traffic to Route 83 should be installed. To discourage high amounts of truck traffic on the connector roadway, traffic calming techniques (see Section C) should also be considered.

#### Tunnel Road

Non-residential development along this roadway in its northern segment is expected to minimally affect area roadways because of its close proximity to Interstate 84. Impacts associated with development in this area, generally affect the Interstate 84 ramps and adjacent intersections. The following is a general list of traffic items that should be considered with parcel development along this corridor.

- There exists a potential for increased queue lengths for left turning traffic on Route 30 and northbound traffic on Tunnel Road. Storage requirements will need to be evaluated and the provision of a traffic signal needs to be evaluated.
- Corner radii at the Route 30 / Tunnel Road intersection will need to be evaluated to ensure large trucks do not encroach into the opposing lane of travel.
- It is recommended that queue detectors be installed on all impacted Interstate ramps to ensure vehicles do not back up to Interstate 84.
- The installation of traffic signals and exclusive turn lanes as a result of proposed development will need to be evaluated to determine feasibility and need. Intersection operations should not deteriorate to the point of unsafe operations.

- Alternating one-way traffic flow through the tunnel will likely be impacted by growth in the area, resulting in longer delays. The installation of a traffic signal at the tunnel should be evaluated as development occurs.

### Bolton Road

Anticipated development east of Bolton Road will have minimal overall impacts due to the close proximity of these parcels to Interstate 84. Generally, roadway improvements may include the installation of traffic signals and exclusive turn lanes to accommodate anticipated site traffic. Also, as discussed in the previous section, it is recommended that queue detectors be in place and properly operating to ensure vehicles do not back up to Interstate 84.

### Route 30 Corridor

Anticipated traffic associated with available property on Route 30 will likely require improvements at intersections accessing Interstate 84, Exit 66 and Exit 67. The following is a list of traffic items that should be considered with parcel development along this corridor.

The first is an evaluation and installation of turning lanes at the Bolton Road / Center Road / Route 30 intersection. Current operations indicate turn lanes are lacking or deficient resulting in excessive queues and delays. In an effort to preserve Vernon Center, it is recommended that proposed improvements incorporate ‘village’ type improvements such as brick pavers, decorative fixtures, or traffic calming devices. In addition, because Route 30 is a State roadway, the Town may desire to assemble an Advisory / Liaison Committee for the Vernon Center area. This Committee could meet with the Connecticut Department of Transportation during the design process to offer suggestions for minimizing historic, environmental and roadway impacts. As discussed elsewhere, a Village District designation should be considered for this area.

- Evaluation and installation of turning lanes at the Reservoir Road / Grove Street / Route 30 intersection.

- Evaluation of an exclusive SB left turn lane at the Reservoir Road / Interstate 84 EB Exit 67 Ramps.
- Evaluation of an additional lane for vehicles exiting the Interstate 84 EB Exit 67 off ramp. Currently there are two lanes (left, left-through-right). Two exclusive left turn lanes will likely be required. It is recommended that queue detectors be in place and properly operating to ensure vehicles do not back up to Interstate 84.
- Evaluation and installation of turn lanes at the Reservoir Road / Interstate 84 WB Exit 67 Ramps.

### Reservoir Road Corridor

Development parcels evaluated in this corridor include parcels located east of Route 31 and east and west of Reservoir Road. The following is a list of traffic items that should be considered with parcel development along this corridor.

- Provision of an exclusive WB right turn lane at the Reservoir Road / Interstate 84 WB Exit 67 off ramp.
- Provision of an additional lane for vehicles exiting the Interstate 84 EB Exit 67 off ramp. Currently there are two lanes (left, left-through-right). Two exclusive left turn lanes will likely be required if development in this area is to occur. It is recommended that queue detectors be in place and properly operating to ensure vehicles do not back up to Interstate 84.
- Provision of an exclusive NB right turn lane at the Reservoir Road / Grove Street / Route 30 intersection.
- Evaluation of WB left turn lane storage at the Reservoir Road / Grove Street / Route 30 intersection

### Anticipated Residential Traffic

Approximately 60 planning areas have been identified as future residential development. Assuming these parcel are developed as single-family homes, approximately 1700 new homes may be constructed. A review of the locations of these parcels indicate approximately 65% of these homes would be built in the southeast quadrant of the Town,

approximately 25% north of I-84 and the remaining 10% in the southwest quadrant of the Town.

In an effort to quantify the future traffic volumes associated with these homes, the number of trips associated with these homes was made using information published by the Institute of Transportation Engineers in Trip Generation. Specifically, Land Use Code 210, Single Family Detached Housing was used. The Table below summarizes the number of trips expected from the 1700 homes. Anticipated access points for the residential areas were assumed based on existing topography and the existing roadway network. It is anticipated that the major impacts as a result of full build out of residential property will occur on Bolton Road, Reservoir Road, Elm Hill Road, Brandy Hill Road, and Fish and Game Road.

**Table 31**  
**Single-Family Detached Housing**  
**1700 Dwelling Units**  
**Vernon, CT**

	<b>A. M. Peak</b>	<b>P.M Peak</b>
Enter	450	1100
Exit	1300	600
Total	1750	1700

The following summarizes possible roadway improvements associated with the 1700 single-family homes.

- With the development of larger residential parcels (south of I-84 and east of Tunnel Road), Town intersections and roadways should be monitored to ensure the capacity of these facilities are not exceeded. The Town should consider amending the zoning regulations to require the submission of a Traffic Impact Study for a residential development consisting of 50 units or more.

- The Town should implement a traffic counting program to monitor activities in the vicinity of these large tracts of land. This program should include traffic signal warrant studies.
- The Town should consider implementing design standards for the construction of bypass lanes. Additionally, the Town may wish to consider implementing the deeding of property from developers to permit future reconstruction of Town roads to a uniform width.

### **C. TRAFFIC CALMING RECOMMENDATIONS**

Traffic Calming is broadly defined as a way to reduce the negative effects of automobile use, alter driver behavior and improve conditions for the property owner, retailer, walker and bicyclist. This ‘calming’ is achieved by the use of physical treatments that affect the driver’s perception of the street and cause a change in behavior. Typically, traffic calming measures are implemented to alter conditions on an existing street where the initial design no longer supports the transportation patterns.

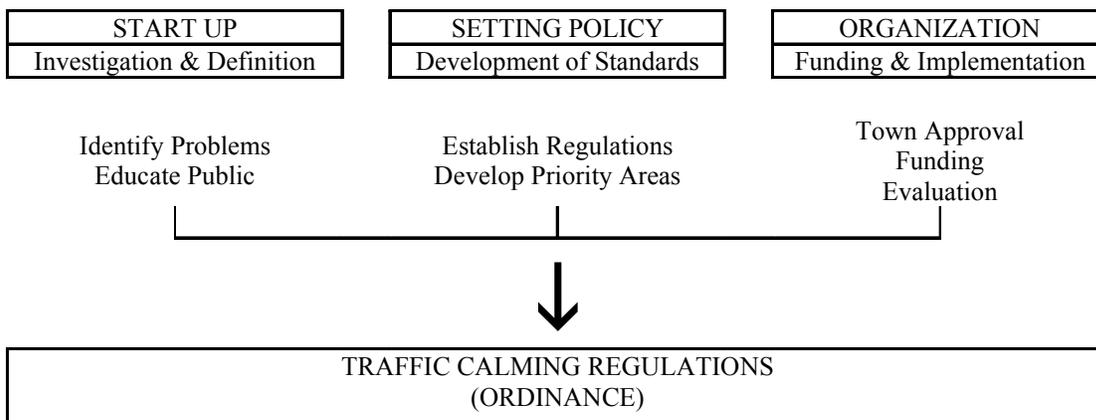
Traffic calming addresses three major factors: access and mobility, safety, and the quality of life. Related to safety, traffic travels slower on calmed streets resulting in fewer, less-severe accidents. Safer streets help to balance mobility and access for all users, especially pedestrians and bicyclists. Traffic calming, related to the quality of life, improves livability by reducing the number of vehicle trips thereby decreasing levels of congestion, pollution and traffic-related noise. Devices that calm traffic sometimes provide additional landscaping, sidewalk and pedestrian sheltered areas.

New roadway construction should be designed to eliminate after-the-fact retrofits. One key design element in reducing speeds is to keep streets physically or visually narrow. Other elements should help to shape streets and influence driver behavior. A few

examples of traffic calming techniques or tools include the following: curb extensions (bulbouts), gateways, medians, speed humps, and roadway narrowing.

Most communities follow a traffic calming program that assures communications, consensus and rational allocation of resources. Table 32 identifies the traffic calming process.

**Table 32  
Traffic Calming**



The first step is to identify, investigate and define areas of concern. Generally neighborhood residents or local officials that monitor traffic flow and accident data are able to pinpoint these areas. Traffic counts, surveys, and speed checks should be conducted and existing accident information and roadway widths should be compiled to pinpoint the concerns and issues. Educating the public and bringing them together to identify problems can help develop workable solutions.

The second step involves working with all Town agencies; especially the Legal Traffic Authority, Engineering, Public Works and emergency response agencies, to develop standards. A priority schedule should be developed to address key improvements.

Upon the development of standards and prioritization, funding and implementation needs to be addressed. It is stressed that implementation does not end with the completion of

construction. The treatments and strategies that have been implemented need to be evaluated for future planning.

In summary it is recommended that the Town of Vernon:

- Conduct a public outreach and education program in the region to determine issues and traffic calming needs.
- Hold community meetings on traffic calming.
- Compile a 'tool box' that consists of a variety of traffic calming tools or techniques to serve as a reference guide for the Town
- Install temporary devices to obtain neighborhood feedback
- Develop standards and traffic calming regulations.

#### Skinner Road Case Study for Traffic Calming

Skinner Road is a two-way, two-lane major collector roadway running between the Ellington / Vernon town line and Dart Hill Road. The latest available average daily traffic volumes on Skinner Road range between 5,100 recorded north of Wolcott Lane to 6,500 recorded north of Dart Hill

Road. The difference in volume is likely due to the location of Skinner Road School. The pavement is variable in width ranging between 28 and 34 feet and a double yellow centerline divides the two-lanes of travel. The posted speed limit is 25 miles per hour (mph) in the vicinity of the school and 30 mph in other areas. The land use is residential.



**Skinner Road**

As discussed in the existing conditions section, a license plate study should be conducted to determine the degree of cut-through traffic. Generally summarizing, congestion on the arterial streets creates delays that frustrate motorists resulting in alternative travel paths (ie. cut through traffic). These alternative paths are typically residential-type streets

where traffic lights and congestion can be avoided. Solutions to reducing cut-through traffic include the following:

- Move traffic back to the arterial system by making the arterial street a more desirable option.
- On the arterial, reduce intersection delays through improved signal timing and exclusive turn lanes.
- On neighborhood streets, implement traffic calming features such as intersection chokers, intersection medians and one-way out streets.

As illustrated in the photo, buildings and plantings on Skinner Road are setback from the street making the roadway appear overly wide possibly resulting in excessive vehicle speeds. In an effort to reduce speeds, minimize any potential cut-through traffic and calm traffic the use of a physical or geometric landmark (ie. Gateway) may be desired. Gateways may be a combination of street narrowing, medians, signs or other identifiable features. Generally these gateways alert motorists that they have reached a specific place must reduce speeds. The use of other tools such as neckdowns and curb extensions or bulbouts to reduce the pavement width in some sections may be desired. These tools calm traffic speeds by tightening overly wide streets and improve pedestrian crossings by shortening crossing distances.

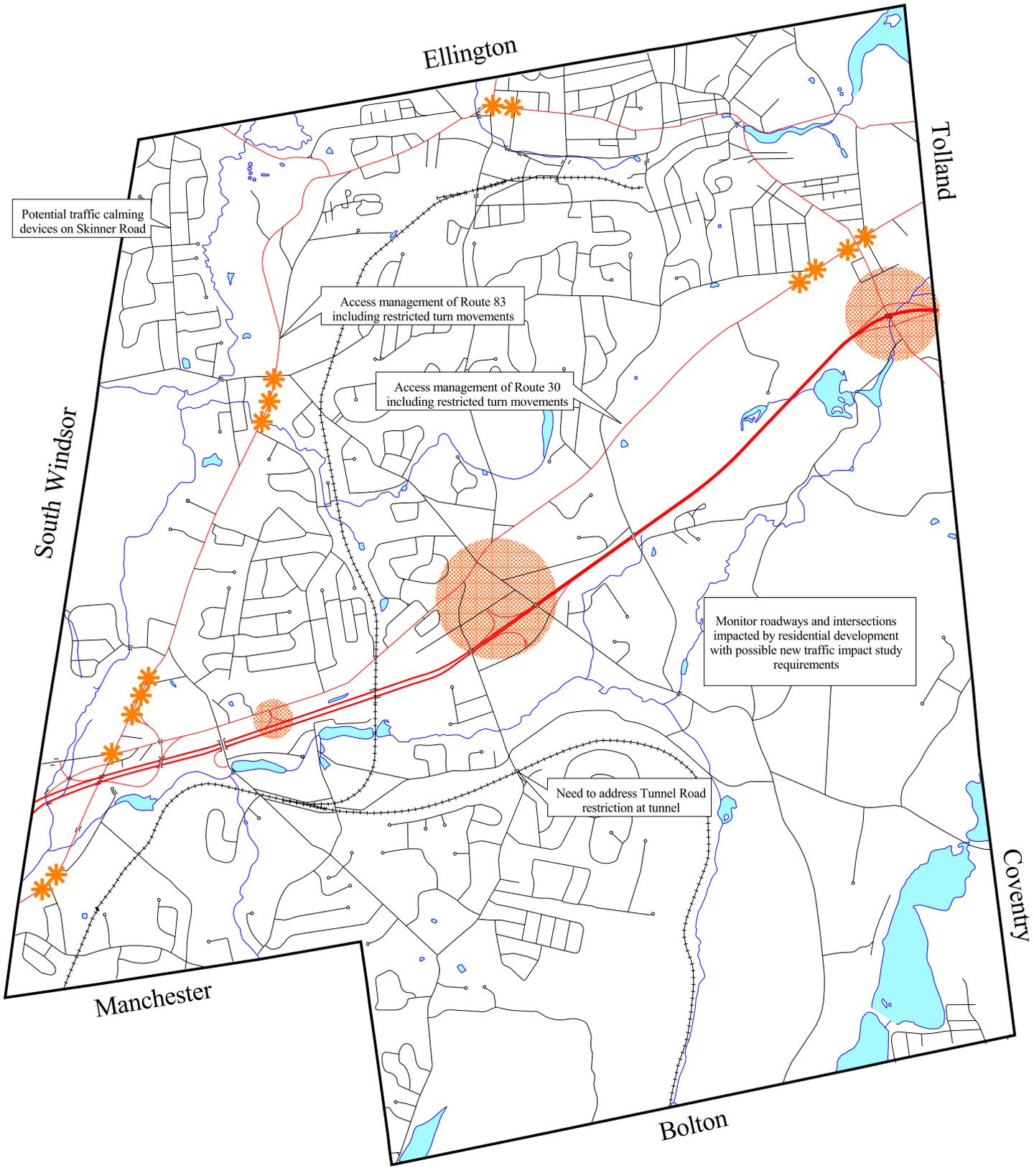
## **D. SUMMARY OF FINDINGS**

The information discussed in this chapter is meant for discussion purposes and should help aid in developing an overall traffic circulation plan for the Town. Anticipated future improvements associated with potential development areas range from minor roadway widening to the possible installation of traffic signals and new roadway construction. Generally summarizing our findings:

- Left-turning vehicles on roadways, especially Routes 83 and 30, cause delays for through traffic. Restricting movements to right in, right out is encouraged whenever possible.
- Offset intersections should be discouraged with the development of any new parcels. They result in increased turbulence, contributing to congestion and complicating traffic signal timing.
- Existing intersections where the geometry creates delays and disrupts traffic flow should be evaluated and possibly realigned to provide improved connections.
- Low traffic generators or land uses that do not impact the peak hour travel periods should be encouraged within the Route 83 corridor.
- Exclusive left turn and right turn lanes will likely be required in areas that access Interstate 84.
- Queue detectors on the Interstate 84 Off Ramps should be installed if not already in place.
- All intersections should ensure existing turning radii are sufficient for heavy truck movements.
- Signalization, where warranted, should be installed and wherever possible coordinated.
- The installation of a traffic signal in the vicinity of the existing one-lane tunnel on Tunnel Road should be evaluated.
- Traffic calming devices such as speed humps, signed turn restrictions, physical turn restrictions, one-way sections, islands or diverters may need to be implemented to eliminate cut-through traffic in the Dart Hill Road / Skinner Road area.
- If traffic associated with new development in the Dart Hill Road area is anticipated to result in deteriorated roadway conditions, the Town should require the developer to conduct an engineering study to identify any deficiencies and provide solutions.
- Accident mitigation measures such as advance signing or sight line improvements are encouraged for identified SLOSSS locations.

- With developable residential areas located south of Interstate 84, Town intersections and roadways should be monitored to ensure capacity is not exceeded. The Town should consider implementing design standards for bypass lanes and revising traffic impact requirements. The attached map shows some of these findings.
- In an effort to preserve Vernon Center, it is recommended that proposed improvements incorporate ‘village’ type improvements such as brick pavers, decorative fixtures or traffic calming devices.

The attached map entitled Traffic Management Proposals presents some of these findings in graphic form. An underlying principal of traffic management is to integrate land use policies with transportation policies. In this regard, the focus on Management Areas such as the Route 30 and 83 corridors as well as areas surrounding the I-84 interchange is very important. For example, as discussed later, various zoning designations in the Exit 66 area adjacent to Vernon Center could be an approach to manage traffic impacts. Vernon should encourage dialogue between the town and the State of Connecticut with regard to the interfacing of state owned roads and town owned roads. Vernon, with it’s unusual blend of city and suburb, should take the lead on the issue of how a town can change it’s developed infrastructure to improve and enhance its quality with innovative concepts for diminishing traffic and congestion without the expansion of roads or adding lanes and traffic signals.



Potential traffic calming devices on Skinner Road

Access management of Route 83 including restricted turn movements

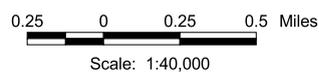
Access management of Route 30 including restricted turn movements

Monitor roadways and intersections impacted by residential development with possible new traffic impact study requirements

Need to address Tunnel Road restriction at tunnel

### LEGEND

-  Address Accident Mitigation
-  Potential Exclusive Turn Lanes and Queue Management



## Traffic Management Proposals

Plan of Conservation and Development

Vernon, Connecticut



**HMA** HARRALL-MICHALOWSKI ASSOCIATES, Incorporated  
Hamden, Connecticut

June 2001

Source of Base Data:  
Connecticut Department of Environmental Protection  
Environmental and Geographic Information Center  
Hartford, CT

University of Connecticut  
Map and Geographic Information Center  
Storrs, CT 1997

Town of Vernon  
Engineering Department

THIS MAP WAS DEVELOPED FOR USE AS A PLANNING DOCUMENT. DELINEATIONS MAY NOT BE EXACT.



## IX. DESIGN CONSIDERATIONS

Throughout the process of public input, many residents commented on the need to improve the aesthetic quality of development throughout Vernon. These comments often focused on the Route 30 and 83 corridors as well as the need to protect the historic colonial look of many properties. Currently the corridors, particularly Route 83, are characterized by development which has a minimum of landscaping and/or visual buffers. Recently there have been efforts to address this issue. The photographs to the right present clear examples of this situation. There is an example of automobiles for sale parked practically on the curb with no landscaping or buffers. This situation is most common along the entire Route 83 corridor. A recently landscaped Dunkin Donuts shows how a more sensitive approach can address this issue with landscaping and use of berms. A third photo shows a vacant property adjacent to the Dunkin Donuts where car stops are practically at the curb with no buffers. Future occupancy of this property with the current configuration of the parking area will continue a very unattractive situation. One way to address this issue could be to permit additional building coverage on a parcel if landscaped buffers are provided. In addition, the parking requirement might be reduced to allow such landscaping.



Within residential subdivisions there should be an effort to retain as much of the natural vegetation as possible. An example of this is shown on the attached photo of development in the Boulder Ridge Subdivision. All



applicants for subdivision should be required to show the location of existing trees over 4 inch caliper and show how homes and roads will be constructed to preserve as many of these trees as possible.



The Vernon Zoning Regulations currently contain Section 21, Architectural & Design Review. This section specifies a process and criteria for design review. Therefore, the framework for design review is in place. It is recommended that a task force be established to review these regulations and to suggest methods by which this design review function can become more proactive in order to improve the quality of the design of the built environment throughout the town.

## **X. POLICIES, GOALS AND OBJECTIVES**

Based upon public input received as well as the topical analysis completed to date, a series of policies, goals and objectives have been prepared in draft form. This material is organized in accordance with the major components of the Plan of Conservation and Development. These policies, goals and objectives were subject to review by the Planning and Zoning Commission as well as the public prior to inclusion in this Plan of Conservation and Development.

### **A. HOUSING POLICIES, GOALS AND OBJECTIVES**

#### ***Policy***

The Town of Vernon currently has a diverse housing inventory which provides for housing choice throughout the community. This inventory includes a substantial number of multi-family rental and condominium units. In terms of affordable housing, Vernon has over 21% of such units or twice the percentage of units needed to be exempt under Section 8-30g (Affordable Housing Appeals) of the Connecticut General Statutes. It shall be the policy of the Town to maintain this diversity in the housing inventory. However, particular attention shall be given to increasing the percentage of homeownership, providing housing types appropriate for the anticipated aging of the population and increasing the amount of housing available to meet the high end of the market. An underlying premise of housing policy shall be the provision of housing at locations and in a form which is supportive of preservation of Vernon's natural environment and can be served by the Town's infrastructure and community facilities.

#### ***Goal: Increase Homeownership Opportunities Within the Housing Inventory***

- Utilize flexible zoning approaches and financial incentives to increase homeownership in Rockville through the conversion of multi-family structures to single family homeownership.

- Retain zoning patterns which reserve appropriate areas of the Town for single family homeownership.

***Goal: Provide Housing Types Appropriate to Meet the Needs of an Aging Population***

- Consider zoning regulations which encourage innovative housing approaches such as accessory apartments and home sharing.
- Support public and non-profit agency initiatives to provide housing for various segments of the aging population.
- Support private initiatives to provide assisted living and other housing appropriate to meet the emerging needs of the aging population.

***Goal: Increase the Supply of Housing in the High End of the Market***

- Encourage high standards of site development through revisions to the Subdivision Regulations.
- Consider increasing minimum floor area requirements above the 1,000 square feet in the R-40 Zone.
- Consider the establishment of a larger lot zone than the R-40 district in appropriate areas based upon the natural environment of such areas and extent of infrastructure.
- Consider the re-zoning of some R-27 areas to R-40.

## **B. ECONOMIC BASE POLICIES, GOALS AND OBJECTIVES**

***Policy***

The Town of Vernon should pursue a policy of diversity of its economic base in order to support the quality of life desired by its residents. Public input during the Plan of Conservation and Development update favored economic development, but not at the expense of the character of the community or at risk to the natural environment. A policy

of quality development over quantity should be pursued with careful consideration of design as well as development sustainable by existing or reasonably improved infrastructure systems.

***Goal: Attract Development to the Route 84 Corridor Which is Primarily Non-Retail and Non-Residential***

- Review the provisions and location of the Special Economic Development Districts within the I-84 Corridor to determine appropriateness and effectiveness.
- Development in the I-84 Corridor should be reviewed within the context of its relationship to Route 30.
- No extensions of commercial zoning districts should be considered for the Route 84 Corridor.

***Goal: Interfaces Between Residential and Non-Residential Areas Should be Adequately Buffered***

- Existing land use patterns should be reviewed in order to determine the need for zoning district boundary revisions to protect residential areas from the impacts of non-residential development.
- A requirement of a minimum landscaped buffer strip between non-residential uses and residential districts should be incorporated into the Zoning Regulations. Such strips may exceed the 25 foot depth currently required based upon the nature and intensity of the non-residential use.
- Performance standards for non-residential uses should be reviewed to determine the need for revision to assure minimal impact on residential areas. Issues such as hours of delivery and operation, idling of trucks and outdoor storage should be reviewed.

***Goal: Encourage the Occupancy and Re-Use of Existing Structures***

- The Zoning Regulations currently allow higher lot coverage in commercial and industrial districts as a special permit if it will not increase off-site storm water run-off beyond acceptable levels. Consideration might be given to establishing a set coverage for various districts with special permits for additional coverage only allowed for sites currently developed at some established threshold.
- Special mixed use regulations might be considered which provide for flexible density and parking requirements to encourage adaptive re-use of existing structures.

**C. DESIGN POLICIES, GOALS AND OBJECTIVES**

***Policy***

The Town of Vernon has examined a wide range of design quality in its built environment. The public dialogue during the Plan of Conservation and Development update process often focused on the need to achieve a higher design quality in the future. Standards should achieve the desired goals. Design review should discourage aesthetic mediocrity and encourage quality design solutions.

***Goal: Promote Aesthetically Pleasing Developments***

- The Planning and Zoning Commission should consider providing design guidelines for specific neighborhoods or sections of the community to provide overall guidance to the design review process. This might involve design charettes to gain public input.
- The design review process should be revised to increase the degree of coordination between the Design Review Advisory Committee and the Planning and Zoning Commission. Requirements for when such a review is required and formalized reporting for the Advisory Committee should be reviewed and possibly modified.

***Goal: Preserve the Special Character of Existing Neighborhoods***

- The use of the Planned Neighborhood Development District which allows flexibility in various lot coverage, yard requirements and height requirements might be extended to additional areas of Town with the use of special permit procedures.
- Zoning incentives should be considered to encourage the re-use of vacant structures and parcels within developed areas in order to support revitalization and reduce pressures for development in undeveloped areas of Town.
- The Planning and Zoning Commission should consider adoption of Village District regulations for appropriate areas of the Town.

***Goal: Protect the Public Health, Safety, Convenience, Welfare and Natural Environment***

- The design concepts contained in development regulations should have an overriding objective of protection of the Town's citizens and the natural environment. Particular attention should be given to pedestrian and vehicular safety, appropriate lighting, preservation and addition of natural vegetation and the reduction of impervious surfaces.

**D. COMMUNITY FACILITIES POLICIES, GOALS AND OBJECTIVES**

***Policy***

The Town of Vernon provides a network of community facilities with which residents have expressed general satisfaction throughout the Plan of Conservation and Development update process. Some concern has been expressed as to the need to increase maintenance activities to prevent deterioration resulting from overuse. This concern has been expressed in specific relation to recreation facilities. The policy of the Town should be to commit funds necessary for maintenance of facilities. In addition, the impact of development, both residential and non-residential, on community facilities should be reviewed as part of the development permitting process. The Capital Improvement

Program should be coordinated with growth management to insure the continued adequacy of community facilities.

***Goal: Maintain Existing Community Facilities to Serve the Needs of Town Residents***

- Appropriate Town departments should prepare an assessment of facilities and identify repair needs. An on-going maintenance program should be established.
- Where appropriate, specific maintenance tasks might be identified where community groups can provide volunteer services. The most common example of this approach is an Adopt-A-Park or Adopt-A-Spot program

***Goal: Manage Growth in Coordination with Community Facilities Capacity Analysis***

- All special permit applications should contain a requirement wherein the applicant must identify any anticipated impacts on community facilities. Such a requirement might be considered for residential developments proposing over an established number of units.
- All referrals for municipal improvements under Section 8-24 should be reviewed in accordance with the Plan of Conservation and Development with particular attention to the development potential analysis included as part of this Plan. The Planning and Zoning Commission should establish a process for consultation on community facilities site selection prior to the stage of referral under Section 8-24.

***Goal: Coordination of Capital Improvement Program Process Should Include the Active Participation of the Planning and Zoning Commission***

- In order to coordinate growth management with Town investment decisions, the Planning and Zoning Commission should have an integral role in the preparation of the Town's Capital Improvement Program. This role will enhance the effectiveness of the referral process under Section 8-24.

- In the review of development applications, the Planning and Zoning Commission should take the lead in the coordination of improvements required of an applicant and scheduled improvements contained in the Capital Improvement Program.

## **E. TRANSPORTATION POLICIES, GOALS AND OBJECTIVES**

### ***Policy***

The residents of Vernon have expressed concerns about the general increase in traffic volumes with resulting congestion and threats to safety. Several streets and/or sections of the town have been cited as areas of concern. This increased traffic and resulting impacts are adversely affecting the quality of life in Vernon. The transportation policy for Vernon is to manage growth and resulting demands on the transportation network to reduce and/or minimize such impacts on the quality of life in the community.

***Goal: Manage growth within Vernon’s business corridors to avoid negative impacts on the transportation network***

- All development proposals requiring a special permit shall be required to submit a traffic impact study which provides evidence to the Planning and Zoning Commission that the LOS at any affected intersection shall not be reduced below Level D. If existing conditions are below Level D there shall be no further lowering.
- An access management plan shall be prepared for all corridors and development application proposals will be reviewed for consistency with the plan. As an incentive to reduce driveways, a coverage bonus will be provided to developed properties when existing curb cuts are eliminated.
- As appropriate, the Planning and Zoning Commission will consider re-zoning within the corridors to reduce the traffic generation potential.

***Goal: Reduce the Use of Residential Streets for By-Passes or Cut-Throughs by Non-Local Traffic***

- Where possible, improvements to corridors and major collector roads should be made to reduce the use of residential streets for such purposes.
- Traffic calming techniques should be used to discourage through traffic on residential streets.
- In the review of development applications requiring a traffic study, an analysis of the potential impact on residential streets should be required in addition to Level of Service intersection analysis. Such analysis would be part of the general traffic assignment prepared by the applicant.

***Goal: Improved Pedestrian and Bicycle Linkages Should be Provided as Both Public Facility Improvements and as Part of Private Development Proposals.***

- The Planning and Zoning Commission shall prepare and adopt a Pedestrian and Bicycle Network Plan.
- All special permit applications as well as residential projects over an established number of units would be required to provide an analysis of potential pedestrian and bicycle linkages internally and with adjacent developments. Consistency with the Pedestrian and Bicycle Linkages Plan would be required.

***Goal: Off-Street Parking Should be Provided in a Sufficient Amount and at Appropriate Locations to Support Sound Development***

- Off-street parking facilities should be provided in Rockville for both residents and in support of business, institutional and government uses.
- The parking requirements of the zoning ordinance should be reviewed to determine adequacy. Consideration might be given to permitting joint use of spaces when in the opinion of the Commission such use would meet parking requirements.

## F. OPEN SPACE POLICIES, GOALS AND OBJECTIVES

### *Policy*

Establishment of a clear, concise resource conservation policy is essential to the formulation of an Open Space Plan. The policy statement establishes the Plan's goals and objectives; provides a foundation for regulation; and guides the actions and strategies for land acquisition. As describe in the preceding sections as well as in other sections of the Plan, Vernon has a wealth of natural resources worth preserving. With this in mind it is the overall policy of the Open Space Plan to enhance the quality of life in the town of Vernon through protection of its resources and through provision of adequate outdoor recreational lands. With this policy statement in mind, the following represents the goals and objectives of the Open Space Plan.

***Goal: Identify and protect ground and surface water supply sources to ensure sufficient clean water supply for future generations of Vernon residents.***

### **Objectives:**

- Develop mechanisms to protect and preserve groundwater supply sources;
- Continue to maintain as open space the lands which are presently preserved as open space for the protection of a public water supply system.

***Goal: Provide a wide variety of high quality outdoor active and passive recreational opportunities to all citizens of Vernon***

### **Objectives:**

- It is the primary objective of the plan to preserve 21% of Vernon's total acreage as open space by the year 2023.

- Encourage continued evaluation of the potential use of rivers and water bodies for recreation by providing access for canoes, kayaks and fishing as well as for aesthetic purposes.
- Provide sufficient open space areas to meet future requirements for organized sports;
- Identify and preserve tracts of land particularly suited for passive recreational purposes;
- Require that a management plan of land and recreational use be produced for any municipally owned open space recreational area within the town limits. Plans should include comments from the Department of Parks and Recreation, Conservation Commission, Inland Wetlands commission and other knowledgeable boards, agencies or Commissions;
- Provide a network of interconnected greenways which serve to expand passive recreation opportunity and to increase public accessibility to park areas;
- Encourage the development of a network of trails for walking, cross country skiing, snowshoeing, and flora and fauna observations;
- Create linkages to existing trails maintained by the Town & by other public and private entities such as neighboring towns or the Connecticut Forest & Park Association;

***Goal: Protect and preserve the scenic, historic, cultural and natural resources of the town of Vernon***

**Objectives:**

- Preserve the historic and cultural heritage of Vernon through a strengthened program of historic preservation;
- Identify and protect areas of critical environmental concern;
- Identify and protect critical habitat areas including vernal pools;
- Encourage expansion of our preserved open space areas and greenways, particularly those sites which would link existing open space areas;

- Give full support to the preservation of areas which contribute to the scenic value and special character of a neighborhood;
- Take advantage of opportunities which expand our existing wildlife corridors and which ensure the survival of local wildlife species;
- Establish a preserved buffer area of 100 feet from the 500-year floodplain on either side of the river or stream bank. This will ensure protection of watersheds and the riparian zones. This should apply to the Hockanum and Tankerhoosen rivers and to Ogden, Gages and Railroad brooks;
- Preserve areas containing slopes which exceed 15%;
- Establish a logging ordinance;
- Formulate an "open space brochure" for the town of Vernon;
- Review and incorporate recommendations and information from the State Plan of Conservation into the master plan of conservation and development whenever necessary;
- Establish a logging ordinance;
- Hire a part-time environmental officer;
- Ensure that all deeds for true open space state that the property is to remain open space in perpetuity;
- Ensure that Town zoning regulations base the intensity of development in given areas upon the capacity of the natural resources of those areas to sustain that development.

***Goal: Protect and maintain areas which serve a critical function in providing for the health and safety of the residents of Vernon***

**Objectives:**

- Support actions which protect floodplains and limit the use of flood prone areas;
- Support actions which ensure the continued ability of wetlands areas to function as water storage areas or as groundwater recharge areas;

- Ensure the maintenance of and adherence to proper soil conservation practices as well as soil erosion and sedimentation control procedures.

***Goal: Establish greenways within the Town of Vernon and extending greenways to adjacent communities.***

**Objectives:**

- Support the concept of greenways and actions that enable the establishment and growth of greenways, in accordance with Public Act. No. 95-335 - An Act Concerning Greenways and Denial or Modification of Certain Zoning Permits Because of Off-Site Traffic Impacts.
- Support the recommendations of the State Greenways Committee more particularly defined in "Greenways for Connecticut", a report to the Governor from the Connecticut Greenways Committee, December 1994.
- Actively pursue the establishment of the Hockanum, Tankerhoosen & Box Mountain Greenway's

***Goal: Establish protected ridgelines***

**Objective:**

- Identify key ridgelines areas and develop a plan for their protection

## **XI. LAND USE PLAN AND STRATEGY**

A Land Use Plan and Strategy has been prepared. The Land Use Plan is comprised of various components which can also be considered stand alone plans or strategies such as the Open Space Plan. The Land Use Plan reflects a vision for Vernon which has emerged through community dialogue as well as review and discussion of previously presented materials. The emphasis of the Land Use Plan is on management of development and conservation to preserve those features of Vernon which have been identified as contributing to the quality of life in the community. Existing development patterns and natural resources create the framework within which the Land Use Plan has been prepared. Interstate 84 as it passes through Vernon in many ways forms a physical delineation of the community. To the north is the older developed area of the Town including Rockville and many mature neighborhoods. This area also contains the Route 83 and Route 30 corridors which are developed to varying degrees with retail and other non-residential development. To the south is the more rural portion of the community with significant open space and natural areas. This area contains the bulk of the undeveloped land in the Town. Along Interstate 84 itself, there is significant land available for development at interchanges, particularly exits 66 and 67. Future development at these locations will have a significant impact upon adjacent areas as well as the economic base of the Town. Therefore, management of land use issues in these areas is an important aspect of the Land Use Plan and Strategy.

The following is a summary of the material presented on the Land Use Plan.

### **A. ROUTE 83 AND ROUTE 30 CORRIDORS**

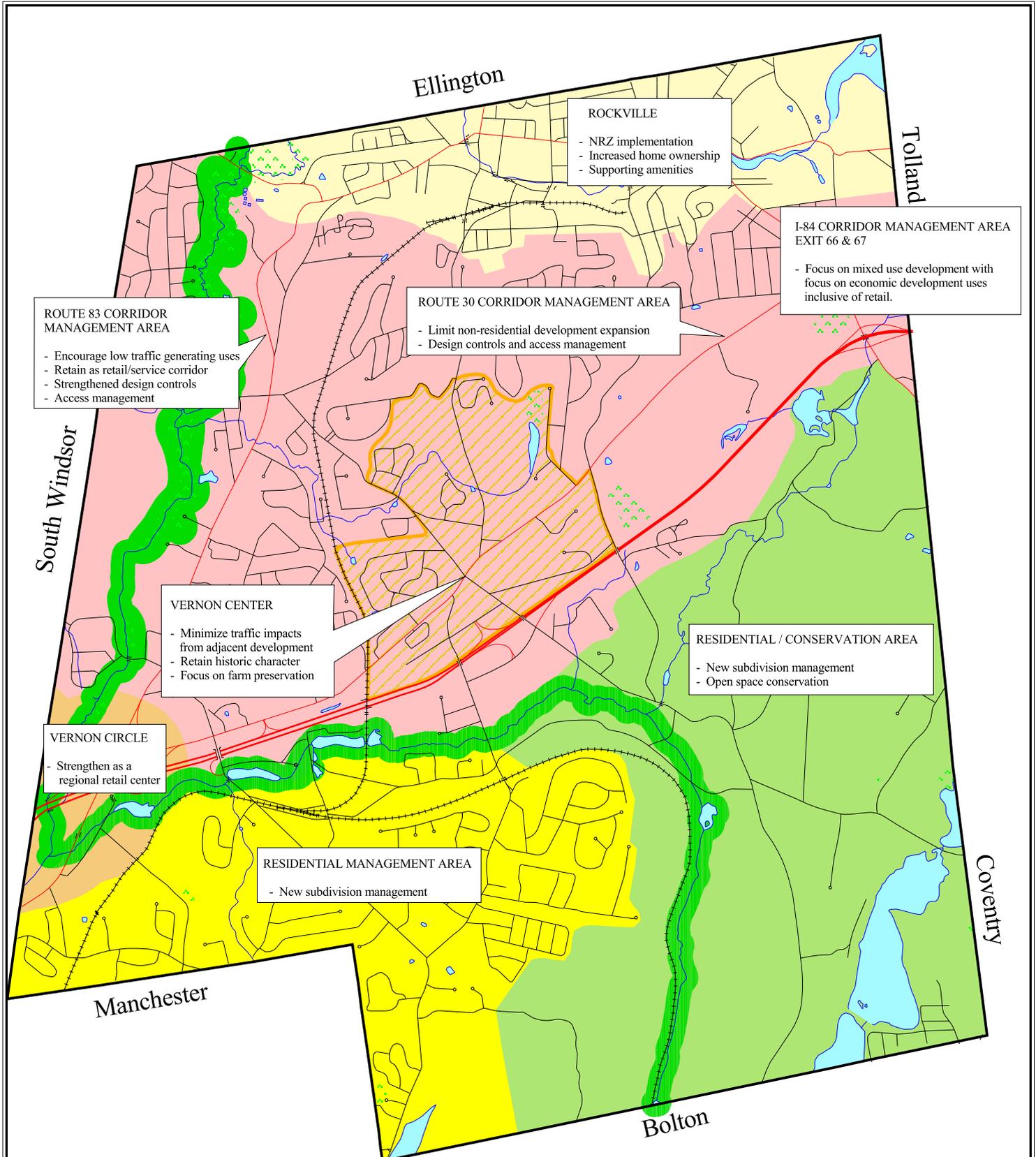
In many ways Vernon is defined by the highway corridors running through the community. It is these corridors that are most heavily traveled by both residents and non-residents. The nature of development in these corridors impacts upon the community on a daily basis. In terms of the corridors, there is a distinct difference in character between

the Route 83 and Route 30 corridors. Route 83 has become for all intent and purposes a commercial corridor with very few residential uses. The residential uses in the corridor tend to be multi-family developments. Much of the retail and service development has been long present and was developed before aesthetic and traffic management concerns were as significant as they are today. This has resulted in a situation where people perceive the area to be somewhat unattractive and incapable of handling current and future traffic volumes. More recently, efforts have been made to address this situation through more stringent site design controls and traffic improvements related to specific development applications. Future treatment for the Route 83 corridor should focus on additional design controls possibly combined with development incentives to improve the aesthetics. There should also be an access management plan prepared and put in place.

A key development strategy for the corridors, particularly the Route 83 corridor, which supports overall management is the effective re-use of vacant or underutilized buildings. Rather than constantly looking for development opportunities on vacant sites, the development community should be encouraged to invest in these properties. Consideration should be given to amending the zoning regulations to provide an incentive for such re-use. These incentives might include density and coverage bonuses, reduced parking requirements and innovative mixed-use approaches. An overlay zone might be considered which would allow such incentives through a special permit process with appropriate performance standards applied to the special permit process. Such performance standards might include reduced curb cuts, shared access points, extra landscaping and buffers, shared parking and design review. A key criteria for review would be the mitigation of potential adverse impacts on adjacent residential areas.

The Route 30 corridor presents a different situation than Route 83. Much of this area is still residential and does not have the general proliferation of retail and service uses found on Route 83. Most importantly, the Vernon Center area within the corridor still retains much of the character of Vernon's heritage as well as Town





Ellington

Tolland

**ROCKVILLE**  
 - NRZ implementation  
 - Increased home ownership  
 - Supporting amenities

**I-84 CORRIDOR MANAGEMENT AREA EXIT 66 & 67**  
 - Focus on mixed use development with focus on economic development uses inclusive of retail.

**ROUTE 83 CORRIDOR MANAGEMENT AREA**  
 - Encourage low traffic generating uses  
 - Retain as retail/service corridor  
 - Strengthened design controls  
 - Access management

**ROUTE 30 CORRIDOR MANAGEMENT AREA**  
 - Limit non-residential development expansion  
 - Design controls and access management

**VERNON CENTER**  
 - Minimize traffic impacts from adjacent development  
 - Retain historic character  
 - Focus on farm preservation

**RESIDENTIAL / CONSERVATION AREA**  
 - New subdivision management  
 - Open space conservation

**VERNON CIRCLE**  
 - Strengthen as a regional retail center

**RESIDENTIAL MANAGEMENT AREA**  
 - New subdivision management

Coventry

Manchester

Bolton

**LEGEND**

- Vernon Circle
- Residential Management Area
- Residential/Conservation Management Area
- Neighborhood Conservation Area
- Priority Open Space Conservation Area
- NRZ Boundary

**Land Use Plan and Strategy**

Plan of Conservation and Development

Vernon, Connecticut

**HMA**

**HARRALL-MICHALOWSKI ASSOCIATES, Incorporated**

Hamden, Connecticut



June 2001

Source of Base Data:  
 Connecticut Department of Environmental Protection  
 Environmental and Geographic Information Center  
 Hartford, CT

University of Connecticut  
 Map and Geographic Information Center  
 Storrs, CT 1997

Town of Vernon  
 Engineering Department

**THIS MAP WAS DEVELOPED FOR USE AS A PLANNING DOCUMENT. DELINEATIONS MAY NOT BE EXACT.**



functions such as the police station. What is particularly unique about the area is the presence of several farms as shown on the attached photos. These agricultural uses provide a visual and environmental respite which should be maintained. In fact, the overall policy for the Route 30 corridor should be to limit non-residential use to those areas currently zoned for such uses and do not allow Route 30 to become similar to Route 83.



**Farms in the Vernon Center Area**

## **B. I-84 CORRIDOR**

Over the course of the Plan update process, much attention and public dialogue has been focused on the future of Route I-84 Corridor. Management of development in this corridor must balance what at times appear to be conflicting goals as expressed by various groups in the community. These goals must recognize the reality of market forces which impact the corridor. Opinions expressed concerning the I-84 corridor have included:

- Development in the corridor must not be allowed to adversely impact upon Vernon Center.
- Property owners in the corridor have a right to develop their property and retail development has the highest market potential.
- Retail development which will negatively impact older commercial sections of Town such as Rockville should not be allowed in the I-84 Corridor.
- The SED zoning designation in place for some areas in the corridor is too restrictive in that it does not permit retail.
- The I-84 Corridor represents an important opportunity to broaden the tax base since economic development opportunities are very limited elsewhere in Town.

- The I-84 Corridor with its vacant parcels of substantial acreage provides the opportunity for Traditional Neighborhood Development (TND) with a mixing of uses to reduce the dependency on the automobile.

When one considers community desires, market forces and interstate accessibility factors in the I-84 Corridor, a management plan which is based on a performance based mixed-use approach might make the most sense. This approach entails looking at the specific nature of development as it relates to the concerns expressed in the planning process. Less focus should be placed on attempting to prescribe specific permitted and non-permitted uses. Rather the quantity, quality and mix of uses should be managed to best meet what might be considered the conflicting goals summarized above.

Key to the creation of a of a sound management plan is the recognition that land-use patterns, natural resource habitats and the ease of accessibility varies as one examines the I-84 corridor as it passes through Vernon. There are distinct environments generally clustered around and adjacent to the three interchange areas: Exit 64/65, Exit 66, and Exit 67. Therefore, given the differences between these areas, a “one-size-fits-all” approach is neither logical nor advisable. The following description presents a land use plan and strategy for each of these areas.

1. Exit 64/65 Vernon Circle

This area is characteristically a fairly mature retail cluster containing a wide variety of goods and services primarily serving the Vernon Community. In addition, there are typical highway interchange uses such as lodging, auto service, and fast food restaurants which benefit from proximity to the interchange. The land use plan and strategy for this area should be one of management of infill development of uses consistent with existing development. Focus should be placed on upgrading the site development and design standards in order to improve the appearance of the area. At the same time, an access management plan should be developed which mitigates impacts on the road network and possibly improves the functionality of the area. In addition, growth limits should

be established which manage and limit the extension of the intensity of development found at Vernon Circle in a northerly direction on Route 83 and in an easterly direction on Route 30.

2. Exit 66/ Vernon Center

The land use plan and strategy must recognize the relationship between potential development in the Exit 66 area and Vernon Center. Land use management which addresses this relationship is critical. The non-full interchange design with the use of service roads necessitates land use and circulation decisions appropriate for this area. A mix of compatible uses within a well designed, performance based built environment should be the goal for management of future development. The protection of the uniqueness of Vernon Center should be an underlying premise of such management. At the same time, the property rights of owners of sites in proximity to the interstate must be addressed.

It is recommended that two mixed-use zones be adopted for areas adjacent to I-84. Each of these designations would contain provisions intended to address the unique characteristics of the area. The specific recommendations are as follows.

- The SED Zone in the Keynote Drive area should be designated as a Mixed Use Development A Zone. Within this zone, the following uses would be permitted as a special permit: professional office, commercial recreation, housing for the elderly including nursing homes and assisted living facilities, and multi-family residential. Specific approval criteria related to compatibility of development with Vernon Center would be a requirement of the Zone. The inclusion of multi-family residential as a use would facilitate development which is more consistent with the residential nature of Vernon Center. At the same time, it would provide property owners with a market responsive development alternative which could provide a reasonable financial return. The physical design and site layout requirements would be structured to ensure compatibility with Vernon

Center Heights to the north. Such development would provide a visual and noise buffer between Vernon Center Heights and I-84. Another design requirement might be linkages with the rail to trail system to the west and provide for pedestrian linkages. The bulk and density requirements for this zone would be similar to those for the Planned Mixed Use Development Zone. This Zone would not have the 40 acre minimum requirement for the PMUD. A five acre minimum is recommended.

- The Commercial Zones to the South of I-84 would be designated as a Mixed Use Development B Zone. This zone would be modeled on the Planned Mixed Use Development Zone recently adopted for the Gerber Farms area. Special provisions would be included in this zone to provide protection for the Tankerhoosen River which runs east-west adjacent to the southerly portion of the current Commercial Zone. This portion of the Zone would be particularly appropriate for residential development which requires less impervious surface than retail use. In addition, residential development could be designed to integrate with the Tankerhoosen Open Space System proposed in the Open Space Plan.
- During the preparation of this Plan, there was discussion of the possible designation of Vernon Center and Rockville as Village District areas in accordance with Section 8-2j of the State Statutes. It would seem that Vernon Center as well as Rockville may be appropriate for such designation. The advantage of this approach is that the design review function could be focused on areas of the Town which have the greatest identity for all residents. However, the Commission does not propose to initiate such a designation process. If residents of these areas express interest in designation at some time in the future, the Commission will consider the initiation of such a process.

3. Exit 67 Area

The Exit 67 area represents another distinct environment within the I-84 corridor. This area is farthest removed from the retail clusters in Manchester and at Vernon Circle. In addition, unlike Exit 66, this area is served by a full diamond interchange, providing a greater capacity to accommodate vehicles entering and exiting I-84. Lastly, there is a limited residential development in close proximity. Therefore, it is recommended that all parcels surrounding the interchange be designated as a Mixed Use Development C Zone. This would include the area at the southeast corner which is currently zoned residential. The specifics of this zone would be similar to the PMUD zone currently in place in a portion of the area. However, the 40 acre minimum size standard would be lowered to 5 acres in order to make more sites eligible for inclusion. This zoning designation would permit retail with no limitations other than required access onto a state route. In this case, Route 31 would provide such access. As with the existing PMUD zone, positive fiscal impact would need to be proven as a condition for approval. The criteria for approval would include special attention to the natural resource habitat of Walker Reservoir. It should be made clear that any designations of Mixed Use Development Zones at either Exit 66 or 67 would only occur following a specific re-zoning process in accordance with applicable regulations. The specific content of regulations for such zones would be prepared as part of this process. The active participation of property owners impacted by such zones would be expected and encouraged.

## **C. RESIDENTIAL DEVELOPMENT**

As discussed in the Development Potential Chapter, the majority of future residential development potential is in the area south of I-84 particularly in the southeast quadrant of Town. This is also the area which contains many important natural resources including Bolton Lake, Walker Reservoir and Risley Reservoir. There are also many interesting vistas and valleys due to the topography in the area. As discussed in the Open Space

Plan, this is an area where open space preservation is a high priority. Currently the area is primarily zoned R-40 which is the largest minimum lot zone in the Town. While an increase in the minimum lot size in this area may not be required, a policy of new subdivision management and open space conservation should be adopted for this area. This policy should encourage consideration of the natural environment and topography which is unique to the area as well as protection of water resources.

The area to the south of I-84 in the southeast quadrant has more areas subdivided for residential use than the southwest quadrant. However, there is still potential for additional development in this area. The focus should be on the management of such development in order to protect existing neighborhoods and to ensure that the infrastructure can accommodate such development. As described elsewhere in this Plan, attention should be given to high quality design principals. Such design principals will support an increase in high end residential development needed to balance the overall housing stock in the Town.

The residential areas north of I-84 are fairly mature in their development. Within this area there should be a focus neighborhood conservation and on the management of new development of this area. Within Rockville and some other older areas of Town, the focus should be on housing preservation as well as the protection from intrusion by non-residential uses. A particular focus for Rockville is the encouragement of increased homeownership as well as the provision of amenities which support neighborhood revitalization as part of the NRZ.

Within all residential areas there should be management of both new non-residential and residential development to assure that proper relationships with established neighborhood areas are maintained or in some cases created. This can be accomplished by proper attention to access and related traffic impacts; the retention of natural buffers or the creation of new buffers; and proper site planning of new development. These issues will become increasingly important over the next 10 years as in-fill development becomes the prevalent development form. Site plan review requirements for such in-fill development

which addresses relationships with existing development and neighborhoods will be an important aspect of this overall management effort.

In terms of housing form i.e, multi-family versus single family, it is recognized that Vernon has a large percentage of multi-family units within its overall housing stock. Therefore, an increase in the number of such units should not be a land use and housing policy. However, there may be instances when multi-family housing is an appropriate use for a particular site. In that situation, proposals for such housing should be evaluated in terms of its impact upon surrounding neighborhoods as well as the overall fiscal impact.

#### **D. OPEN SPACE**

The Open Space Plan chapter presents a detailed strategy for open space conservation and preservation. This strategy includes increasing the amount of preserved open space as well as creating linkages between open space areas. The Land Use Plan reflects this strategy through the identification of priority open space preservation areas along the Hockanum and Tankerhoosen River corridors. In addition, the southeastern quadrant of the Town which contains significant open space and natural resource areas is designated for low density residential development and conservation activities.



## **APPENDICES**

**APPENDIX A**  
**Connecticut Surface Water Classifications**

**Appendix A**  
**Connecticut Surface Water Classifications (1997)**

<b>Class</b>	<b>Designated Use</b>	<b>Compatible Discharges</b>
<b>AA</b>	Existing or proposed public drinking water supply impoundments and tributary surface waters	Treated backwash from drinking water treatment facilities; minor cooling water; clean water
<b>A or SA*</b>	May be suitable for drinking water supply (Class A), may be suitable for all other water uses including swimming, shellfish resource; character uniformly excellent; may be subject to absolute restrictions on the discharge of pollutants	Treated backwash from drinking water treatment facilities; minor cooling water; clean water
<b>B or SB</b>	Suitable for swimming, other recreational purposes, agricultural uses, certain industrial processes, and cooling; excellent fish and wildlife habitat; good aesthetic value	Those allowed in Class AA, A; major and minor discharges from municipal and industrial wastewater treatment
<b>C or SC*</b>	May have limited suitability for certain fish and wildlife, recreational boating, certain industrial processes, and cooling; good aesthetic value; not suitable for swimming. Quality considered unacceptable; goal is B or SB	Same as B or SB
<b>D or SD*</b>	May be suitable for swimming or other recreational purposes; certain fish and wildlife habitat, certain industrial processes, and cooling; may have good aesthetic value. Present conditions, however, severely inhibit or preclude one or more of the above resource values. Quality considered unacceptable; goal is B or SB	Same as B or SB

\*Designates salt or brackish water

## **APPENDIX B**

### **Assumptions for Development Potential Calculations**

## Assumptions for Residential Development Potential

1. Contiguous vacant residential parcels within the same zoning district were grouped together into 'planning areas' for the purpose of facilitating calculation of the gross developable acreage potential.
2. Wetlands and steep slopes (greater than 15%) were then subtracted from each of the 'planning areas' to determine the developable land area.

This assumption may create an understatement of potential dwelling units since the area of wetlands and slopes may be counted toward total lot area to meet the minimum lot size requirement, with the structure being placed on the non-wetland or steep slope portion of the parcel. Also, wetlands and steep slope areas may be built upon by special permit. However, this understatement will be assumed to be offset by an overstatement created by the application of the zoning minimum lot size to the 'planning area' (see #4).

3. Accounting for new road construction within the potentially developable vacant residential areas was accomplished by subtracting 10% of the land area from each of the 'planning areas'. The remaining land area in each of the 'planning areas' is considered to be the net developable land area.
4. The minimum lot size, as dictated by the underlying zoning regulations within each of the planning areas, was then applied to determine the potential number of single family residences that could be constructed within the planning area.

An overstatement of the number of dwelling units may be created by the application of the zoning minimum lot size to the 'planning area' since the 'planning area' is a aggregation of the underlying individual parcels. If the zoning regulation minimum lot size were applied to the individual parcels there would be land that remains in each parcel that is too small to equal another lot at the minimum required size. These remainders are added together by using a 'planning area' comprised of individual lots. The combined remainders thereby allowed for more lots, and in turn more dwelling units than actually possible. However, this overstatement may be offset by the understatement of dwelling units created by the wetlands and steep slopes assumption discussed at #2.

5. For those planning areas within the "Planned Residential Development" the number of dwelling units possible was based on the following calculations using the applicable values for the district as dictated by the zoning regulations.

### Land area required:

3 bedroom	7,500 sq. ft. of land required per unit
2 bedroom	5,500 sq. ft. of land required per unit
1 bedroom	3,500 sq. ft. of land required per unit

(Assuming that units are not higher than 2 stories as the land requirements lessen for units on a 3<sup>rd</sup> story or higher.)

Open space required:

Two times the residential floor area.

Minimum floor area:

550 sq. ft. for 1 bedroom, plus 125 sq. ft. per each additional bedroom.

Open space requirement at minimum floor area:

3 bedroom	1,600 sq. ft. open space per unit
$(550 \text{ sq. ft.} + 250) \times 2$	
2 bedroom	1,350 sq. ft. open space per unit
$(550 \text{ sq. ft.} + 125) \times 2$	
1 bedroom	1,100 sq. ft. open space per unit
$(550 \text{ sq. ft.}) \times 2$	

Total area required per unit: (combination of required land area and open space)

3 bedroom	9,100 sq. ft. total area required
$(7,500 + 1,600)$	
2 bedroom	6,850 sq. ft. total area required
$(5,500 + 1,350)$	
1 bedroom	4,600 sq. ft. total area required
$(3,500 + 1,100)$	

Possible number of units per acre:

3 bedroom	4.8 units per acre
$(43,560 \div 9,100)$	
2 bedroom	6.4 units per acre
$(43,560 \div 6,850)$	
1 bedroom	9.5 units per acre
$(43,560 \div 1,100)$	

An average number of units per acre was then assumed based on the above figures for each type of unit. This figure of 8.0 units per acre was applied to the net developable acreage for the planning areas in the "Planned Residential Development" zone to determine the possible number of dwelling units at maximum build-out.

6. Outside of the "Planned Residential Developments" it was assumed that all the dwellings to be built would be single-family structures.

## Assumptions for Non-residential Development Potential

1. All parcels developed as a single unit with one structure. This produces the maximum amount of building square footage. Subdividing the parcels lessens the amount of building square footage by increasing the area reserved for setbacks, buffers, roads, etc.
2. All buildings constructed as a single story. This is most common for industrial and retail/commercial uses and is consistent with the type of development currently found within the study area.
3. Parking requirements are based on common requirements for commercial and industrial uses as well as Town of Vernon, CT Zoning Regulations, §12.

These requirements include:

- a. 2 spaces per 1000 square feet of buildings in industrial zones.
  - b. 4 spaces per 1000 square feet of buildings in commercial and planned commercial zones.
  - c. 3 spaces per 1000 square feet of buildings in special – economic development zones.
  - d. 1 parking space is equal to 300 square feet. This figure includes the actual parking space as well as the associated roads and landscaping/curbing. This figure is based on an industry standard assumption.
4. The maximum lot coverage allowed in a zone is based on the coverage allowed without requiring a special permit.  
These requirements include:
    - a. Commercial zone 60% coverage
    - b. Industrial zone 40% coverage
    - c. Planed Commercial zone 55% coverage
    - d. Special – Economic Development zone 65% coverage

The maximum coverage includes all impervious surfaces (i.e. buildings and parking areas).

5. Wetlands, as defined by the official Inland Wetland and Water Course Map, and slopes of greater than 15%, as defined by USGS Topographical Maps, were not included as land that could be built upon, but were included in the total lot size. Therefore, the total buildable area of a parcel was the lesser of maximum lot coverage (determined by multiplying the maximum coverage percentage for the zone by the parcel size) and the area not constrained by slopes and wetlands (determined by subtracting the area in wetlands and steep slopes from the total parcel size).
6. Parcels that were covered with wetlands and steep slopes that made building construction impractical were discounted from the build-out calculation.

7. All lots included in the analysis meet the requirements of the Vernon, CT Zoning Regulations for frontage and minimum lot width.
8. Required setbacks and buffers were assumed to fall in the areas outside developable building area.
9. Assumptions regarding data sources include:
  - a. Wetland, zoning and parcel boundaries provided by the Town Engineer are geographically coordinated.
  - b. Tax maps provided by Town Assessor are the most accurate representation of parcel boundaries
  - c. Acreage provided on the tax maps is the most accurate representation of parcel area
  - d. Zoning boundaries as identified on the map titled Town of Vernon Zoning Map is the most accurate representation of zoning boundaries
10. On parcels where a use is present, but only occupying a small percentage of the parcel the parcel was included in the build-out analysis.

Parking / Building Relation Formulas:

- **Commercial and Planned Commercial**

Assume: 4 spaces per 1,000 square feet of building area  
 1 parking space = 300 square feet  
 1 story building

$x$  = parking area (sq. ft.)  
 $d$  = developable acreage (sq. ft.) -- Given  
 $b$  = building size

Ratio of building size to parking area: 1000 square feet building per 1200 square feet parking.

$$1000/1200 = 10/12 = 5/6$$

1.  $x + 5/6x = d$   
 $x(1 + 5/6) = d$   
 $1.83333x = d$   
 $x = d/1.83333$

2.  $d - x = b$

- **Industrial**

Assume: 2 spaces per 1,000 square feet of building area  
1 parking space = 300 square feet  
1 story building

$x$  = parking area (sq. ft.)  
 $d$  = developable acreage (sq. ft.) -- Given  
 $b$  = building size

Ratio of building size to parking area: 1000 square feet building per 600 square feet parking.

$$1000/600 = 10/6 = 5/3$$

1.  $x + 5/3x = d$   
 $x(1 + 5/3) = d$   
 $2.66667x = d$   
 $x = d/2.66667$

e.  $d - x = b$

- **Special – Economic Development**

Assume: 3 spaces per 1,000 square feet of building area  
1 parking space = 300 square feet  
1 story building

$x$  = parking area (sq. ft.)  
 $d$  = developable acreage (sq. ft.) -- Given  
 $b$  = building size

Ratio of building size to parking area: 1000 square feet building per 900 square feet parking.

$$1000/900 = 10/9$$

1.  $x + 10/9x = d$   
 $x(1 + 10/9) = d$   
 $2.11111x = d$   
 $x = d/2.11111$

f.  $d - x = b$

## **APPENDIX C**

### **Inventory of Privately Owned Undeveloped Land**

JOIN_MBL	ID_	MAP	BLK	PARC	ACRE	ADDRESS	OWNER	USE	EC	ZONE
02-0011-00018	38	2	11	18	6	10 PITKIN RD.	VERNON CIRCLE ACQUISITION CORP	6-2	4	R-27
02-0156-00008	81	2	156	8	32	MAIN ST (TALC)	TALCOTT, JOHN - TRUSTEE	6-1		IP
03-0004-00009	115	3	4	9	88	243 TALCOTTVILLE RD	LYMAN, FAITH	6-1		SED
04-0004-00001	33	4	4	1	104	606 DART HILL RD	GERBER, EDWIN	6-1	2	IP
04-0004-0008A	112	4	4	8A	83	TALCOTTVILLE RD	CHAPMAN, GARDNER	5-1	4	GI
06-0002-0001A	145	6	2	1A	6	WINDSORVILLE RD	CAMPELLI, PIETRO & RUTH	5-1	4	R-22
06-0002-0007C	144	6	2	70	3	WINDSORVILLE RD	HOERLE, CHRISTIAN	5-1	4	R-22
07-02AA-00001	143	7	2AA	1	5	WINDSORVILLE RD	FAMILY STATIONS INC	5-1	4	R-22
07-02AB-00001	142	7	2AB	1	28	WINDSORVILLE RD	FAMILY STATIONS INC	2-1	1	CAX
08-0002-0016A	111	8	2	16A	5	529 TALCOTTVILLE RD	D.F.&D. REALTY TRUST	5-2	3	C-20
08-0024-00005	92	8	24	5	3	REGAN RD	JARVIS, ALICE	2-1	1	CAX
09-015H-0026A	107	9	15H	26A	4	380 TALCOTTVILLE RD	JARVIS, ALICE	2-1	2	CAX
09-015H-0026D	109	9	15H	26D	4	360 TALCOTTVILLE RD	JARVIS, ALICE	2-1	3	CAX
09-015H-0026E	108	9	15H	26E	2	370 TALCOTTVILLE RD	JARVIS, ALICE	5-2	2	C-20
10-015R-00037	113	10	15R	37	7	206 TALCOTTVILLE RD	LUDWIG, ROBERT	1-1		R-22
11-0011-00003	37	11	11	3	4	51 DOBSON RD	ARK REALTY CO.	1-1	3	C-20
11-0015-17-1A	41	11	15	17-1A	6	ELEANOR ST	TALARSKI, EDWARD - TRUSTEE	5-1	4	R-27
11-0155-09A1C	133	11	155	9A10	14	133 WASHINGTON ST	CHARBONNEAU, ANDRE	6-3		
12-0155-0002C	163	12	155	20	13	253 PHOENIX ST	STEELE, GLADYS	6-3	2	R-27
12-0155-00031	155	12	155	31	8	174 ELM HILL RD	WINTRESS, KAREN & JAMES	6-3	3	R-27
12-0155-00033	47	12	155	33	7	140 ELM HILL RD	YEDZINIAK, LENA	6-2	2	R-27
12-0155-00034	44	12	155	34	46	ELM HILL RD	TALCOTT, JOHN -TRUSTEE	6-3	2	R-27
12-0155-0031B	43	12	155	31B	10	ELM HILL RD	HAYES, CAROLYN	6-3	3	R-27
12-0155-0033A	42	12	155	33A	17	ELM HILL RD	HAYES, CAROLYN	6-2	1	R-27
12-0156-0008A	46	12	156	8A	5	48 ELM HILL RD	TALCOTT, JOHN -TRUSTEE	6-2	3	R-27
12-0162-00001	45	12	162	1	32	ELM HILL RD	TALCOTT, JOHN	5-1	3	R-27
13-0153-0016A	77	13	153	16A	10	60 LAKE ST	PLATT, CHARLES & NATALIE	6-3		
13-0153-0023A	164	13	153	23A	4	PHOENIX ST	PAQUETTE, ROBERT	6-3		
13-0153-0023B	161	13	153	23B	4	144 PHOENIX ST	MERZ, JEAN	6-3		
13-0165-0069C	162	13	165	69C	6	228 PHOENIX ST	LAM, MICHELLE	6-3		
14-0142-00111	165	14	142	111	7	19 ROSEWOOD DR	YAMARIK, GEORGE & SANDRA	6-3	3	
14-0142-00121	102	14	142	121	6	41 ROSEWOOD DRIVE	STILLBACH, CHRISTOPHER	6-3		
14-0143-0038C	DEL	14	143	38C	2	LAKE ST	STAVENS, ROBERT	6-3	2	R-27
14-0143-0039C	160	14	143	39C	19	310 LAKE ST	GOTTIER, ARTHUR	5-1	2	R-27
14-0166-00013	76	14	166	13	11	271 LAKE ST	PETRIN, ROGER	6-2	4	R-27
16-0142-00155	22	16	142	155	171	BOX MOUNTAIN RD	ENGLAND, WILLIARD	1-2	1	R-27
16-0142-0168A	21	16	142	168A	5	BOX MOUNTAIN RD	FISH, DONALD & SHARON	1-1	4	R-27
16-0142-0169A	146	16	142	169A	18	BOX MOUNTAIN DR	JOHNSON, THOMAS	1-1	4	R-27
19-0016-0007A	60	19	16	7A	1	HARTFORD TPKE	VERNON, DELETE <2.AC.	1-1	3	R-27
20-0018-00042	30	20	18	42	243	CENTER RD	RUPNER, ILMAR	1-1	4	R-27
20-0018-0004V	71	20	18	4V	16	JONATHAN DRIVE	BENEVIDES, GARRY & LYNN	1-1	4	R-27
20-0021-00049	32	20	21	49	24	CRESTRIDGE DR	LEE, RICHARD	1-3	4	R-22
21-021F-0002A	137	21	21F	2A	10	152 WEST ST	LUGINBUHL, EDWARD & ALMA	6-1	4	PRD
22-0039-00003	140	22	39	3	2	WINDERMERE AVE				

22-0061-0026A	86	22	61	26A	2 MORRISON ST	LEE, RICHARD	2	R-10
23-091A-00006	51	23	91A	6	3 GRAND AVE	DROST, BARBARA	1-1	R-10
24-0062-00008	158	24	62	8	7 28 HIGHLAND AVE	CAMPELLI, ANTONIO & ELLEN	6-3	
25-0021-0003A	135	25	21	3A	40 WEST ST	DOHERTY, DONALD ETAL	6-1	R-27
25-0065-0003A	136	25	65	34	18 WEST ST	STRONG, NORMAN	6-1	R-27
26-0068-0010A	3	26	68	10A	4 BAMFORTH RD	BAMFORTH COURT DEV CORP	4	R-27
26-0072-00031	59	26	72	31	8 933 HARTFORD TPKE	KANIA, WILLIAM & HELEN	3	C
26-065B-00027	128	26	65B	27	1 276 VERNON AVE	STOLARONEK, AMELIA	1-1	R-22
26-065B-0030C	130	26	65B	30C	2 290 VERNON AVE	KARAHALIOS, KONSTANTIA	1-3	R-22
27-0017-0009C	171	27	17	9C	10 WHITNEY FERGUSON RD	BRAY, STANLEY & KUNZLI...	5-3	
27-0019-00004	170	27	19	4	7 274 WEST ST	STRONG, NORMAN & GERALDINE	6-1	
27-0021-00008	139	27	21	8	2 WEST ST	MCCOY, FRANK & JEANETTE	1-1	R-27
27-0066-00018A	29	27	66	18A	4 25 CEMETARY RD	BROWN, MILTON & MARION TRUSTEE	6-3	R-27
28-0066-00029	57	28	66	29	33 HARTFORD TPKE	STRONG, NORMAN	6-1	R-27
28-0133-00006	6	28	133	6	3 120 BOLTON RD	SERRAMBANA, VICTOR	1	IP
28-0133-0005K	70	28	133	5K	8 55 INDUSTRIAL PARK AVE	PRIMUS FAMILY TRUST	6-2	IP
28-0133-0005N	DEL	28	133	5N	2 31 INDUSTRIAL PARK AV	PRIMUS FAMILY TRUST	6-2	
29-0134-00001	105	29	134	1	38 60 SOUTH FRONTAGE RD	SOUTH FRONTAGE VERNON LLC	5-3	C-20
29-0135-00001	169	29	135	1	6 250 TUNNEL RD	ROSENBERGER, JOAN	6-3	
30-0133-0001J	149	30	133	1J	7 255 BAMFORTH RD	TRIGGS, ROBERT & ANN	6-3	
30-0133-0005E	150	30	133	5E	2 186 BOLTON RD	PRIMUS FAMILY TRUST	6-1	
30-0134-00008	124	30	134	8	24 95 VALLEY FALLS RD	CLARK, EDWARD	6-1	R-27
31-0142-0221A	40	31	142	221A	10 ECHO RIDGE DR	SANTA FE TRUST	1-1	R-27
32-0142-00223	39	32	142	223	30 ECHO DRIVE	OLSON, PATRICIA A.	5-1	R-27
33-0135-00025	17	33	135	25	3 BOLTON RD	LAKEVIEW PARTNERS	6-3	R-40
33-0135-00027	13	33	135	27	43 BOLTON RD	HATHAWAY, MILTON	6-2	R-40
33-0135-00029	14	33	135	29	10 BOLTON RD	HATHAWAY, MILTON	6-2	R-40
33-0135-0023A	7	33	135	23A	38 729 BOLTON RD	MAFFESSOLI, SALVATORE	6-2	R-40
33-0135-0024-1	11	33	135	24-1	74 BOLTON RD	ROBERTS, ROSS & D. JAMES&	6-2	R-40
33-0135-0026A	12	33	135	26A	5 BOLTON RD	MALONE, JOANNE M.	6-3	R-40
35-0143-0003C	122	35	143	3C	30 VALLEY FALLS RD	KNAPP, ANNE WEBSTER	6-2	R-27
36-0137-0004S	159	36	137	4S	5 79 INDIAN TRAIL	ROMEO, ELAINE	6-3	
37-0068-00012	157	37	68	12	40 942 HARTFORD TPKE	NICOTERA, JOSEPH & FRANCES	6-2	
37-0132-00001	2	37	132	1	53 RESERVOIR RD	TANCANHOUSEN LLC	6-2	R-27
37-0139-0004A	97	37	130	4A	118 RESERVOIR RD	TANCANHOUSEN LLC	6-2	R-27
38-0068-00023	54	38	68	23	20 HARTFORD TPKE	SANTINI, EVANDRO	5-2	IP
38-0068-0021A	58	38	68	21A	6 HARTFORD TPKE	SANTINI, EVANDRO	2-1	IP
39-062C-00045	131	39	62C	45	5 VERNON AVE	MAIN RIDGE APART. ASSOC.	1-1	R-22
39-062C-0042A	129	39	62C	42A	8 VERNON AVE	CAMPELLI, PIETRO & RUTH	6-3	R-22
40-0109-00031	50	40	109	31	8 46 GAYNOR PLACE	MCKEOWN, JOHN & GERALD	1-2	PRD
40-0109-00046	31	40	109	46	24 CHESTNUT ST	ERCOLINI, ROBYN	1-1	PND
41-0114-9994A	80	41	114	4A	2 LAWRENCE ST	KAMIENSKI, BEVERLY	5-1	R-10
41-0115-00005	167	41	115	5	7 33 SNIPISIC ST	KALINA, MARK	6-3	
41-0115-00007	166	41	115	7	7 25 SNIPISIC ST	GRABOWSKI, CHESTER &	6-3	
42-0122-00026	42	42	122	26	HALE ST	COLOR IT RED	5-2	R-10

43-0130-00003	99	43	130	3	2 RESERVOIR RD	TANCANHOUSEN LLC	5-1	4	R-27
44-0129-0002B	98	44	129	2B	70 RESERVOIR RD	TANCANHOUSEN LLC	6-2	4	R-27
44-0131-00002	100	44	131	2	226 RESERVOIR RD	TANCANHOUSEN LLC	6-2	4	R-27
46-0068-00061	94	46	68	61	45 75 RESERVOIR RD	LEE & LAMONT	5-3	3	CAX
46-0071-00019	67	46	71	19	36 HYDE AVE	HAYES/CONYER PARTNERSHIP	5-2	2	CAX
46-0071-0021A	68	46	71	21A	5 HYDE AVE	GUNTHER FAMILY PARTNERSHIP	1-1	1	IP
47-0127-00001	84	47	127	1	11 MILE HILL RD	BRAY, WILLIAM & MERLENE ANNE	1-1	2	R-27
47-0129-00001	85	47	129	1	47 MILE HILL RD	BRAY, WILLIAM & WAYNE	6-2	3	R-40
48-0129-00003	49	48	129	3	19 FISH & GAME RD	ROCKVILLE FISH & GAME	6-2		R-40
48-0129-00003	49	48	129	3	20 FISH & GAME RD	ROCKVILLE FISH & GAME	6-3		R-40
48-0131-00001	156	48	131	1	32 FISH & GAME RD	ROCKVILLE FISH & GAME CLUB	6-2		
49-0131-00003	152	49	131	3	14 178 BRANDY HILL RD	ROBINSON, KENNETH	6-3		
49-0131-0003A	24	49	131	3A	20 BRANDY HILL RD	ROBINSON, KENNETH	6-3	4	R-40
49-0131-0003B	168	49	131	3B	44 SUTTON DR	PAW INDUSTRIES LLC	6-2		
51-0131-0006B	64	51	131	6B	29 HATCH HILL RD	PASSARETTI, PAULA			
51-0131-006B4	63	51	131	6B4	7 147 HATCH HILL RD	PASSARETTI, PAULA		3	R-40
51-0138-00003	66	51	138	3	63 HATCH HILL RD	O'MALLEY, VIRGINIA - TRUSTEE		3	1-40
51-0139-00082	65	51	139	82	5 70 HATCH HILL RD	SCRANTON, THOMAS & NOLENE	6-2	2	R-40
51-0139-00086	62	51	139	86	23 200 HATCH HILL RD	FINCH, FRANCES		4	R-40
51-0139-082-6	61	51	139	82-6	6 132 HATCH HILL RD	GRISWOLD, THOMAS & KIM	6-3	4	R-40
51-0139-083-13	91	51	139	83-13	6 90 RAVENSCROFT	CRAIG, GREGORY & PATRICIA	1-3	3	R-40
52-0140-00042	53	52	140	42	61 GRIER RD	COMM'L SERVICE OF PERRY INC	1-1	3	R-40
53-0141-0004-1	10	53	141	4-1	28 BOLTON RD	ROBERTS, ROSS & D. JAMES&	6-2	3	R-40
53-0141-0006A	16	53	141	6A	836 BOLTON RD	HAYES, RICHARD	1-1	2	R-40
54-0135-00019	9	54	135	19	9 679 BOLTON RD	FOLEY, GRACE R.		3	R-40
54-0135-0018B	15	54	135	18B	11 BOLTON RD	MARTINELLI, JOSEPHINE	1-1	4	R-40
54-0135-016A1	5	54	135	16A1	5 BOLTON RD	CARUOLO, ANTONIO & DOROTHY		4	R-40
55-0131-00004	25	55	131	4	45 BRANDY HILL RD	PRIDDY, ROBERT & BETTY	6-2	3	R-40
55-0131-00005	153	55	131	5	29 212 BRANDY HILL RD	SILHAVY, LOUIS & RUTH	6-2		
55-0139-0085A	151	55	139	85A	4 478 BOLTON RD	DARICO, WILLIAM & OLGA	6-3		
55-O131-00006	23	55	131	6	35 BRANDY HILL RD	STEVENSON, MARIANNE		3	R-40
<b>Total Private Non-developed Land:</b>					<b>2453 Acres</b>				

**APPENDIX D**  
**Preservation and Acquisition Methods**

## **PRESERVATION AND ACQUISITION METHODS**

### **Fee Simple Acquisition**

- Outright purchase by Town.
- Life estates - Town purchases land with provision for owner to continue living on the land until his death, after which Town acquires all rights. Usually less expensive to purchase since it allows continual use of property by owners, and the costs may be spread over a period of years.
- Gift - either directly to Town or through a land trust.
- Lease - may be useful if length of lease is at least equal to the expected life of contemplated development (buildings and other facilities). A problem with this arrangement is that the site may be prohibitively expensive to purchase after expiration of the lease. If purchase option is included this flaw may be avoided.
- Condemnation - the legal right of a government to take private land for public purposes with just compensation to owner. Rarely used except in extreme problem cases.
- Mandatory dedications - Vernon currently requires that up to 20 percent of a subdivision be dedicated to Town for open space.
- Purchase and leaseback - Town acquires property and leases land back to owner or another party for a certain use or development.
- Impact fees or in lieu fees (in place of land dedication) to buy land.
- Transfer of land among levels of government.

### **Less Than Fee Simple**

In lieu of having to acquire all the rights to ownership, preservation of land and resources may also be achieved by restricting the rights of the owner. These restricted rights are defined in a legal agreement called a conservation agreement.

Conservation easements may be categorized or named according to the resource which they protect, such as:

- Land Conservation Easements: preserve significant values of a particular land parcel.
- Historic Preservation Easements: preserve the facade and surroundings of historic structures or sites.
- Agricultural Preservation Easements: preserve an agricultural operation.

- Scenic Easements: preserve a particularly scenic area.

The restrictions of each easement may be tailored to the particular property and to the interests of the individual owner. For example,

- The easement may or may not allow public access to the parcel.
- The restrictions may be temporary or permanent.
- The easement may be limited to a small hiking trail on a parcel, or it may apply to an entire parcel.

The property owner retains private ownership of the land or resource but conveys the right to enforce the easement's restrictions to a qualified conservation recipient. The recipient may be a public agency, such as the Town of Vernon itself, or it may be a privately incorporated non-profit group such as the Audubon Society, the Nature Conservancy or a local land conservation trust, described below:

#### Land Conservation Trust

A Land Conservation Trust is a private non-profit organization incorporated for purposes of preservation of locally significant parcels of natural areas and open space. A voluntary board of directors runs the trust and its membership is open to the public. It may receive properties through any one of the acquisition methods described above. A land trust may be organized to serve on town or it may encompass several towns.

In Vernon, the Northern Ct Land Trust was organized and incorporated in 1988. Its goal is to preserve significant natural areas located primarily within the Town of Vernon. As a private, non-profit organization it can receive gifts and donations of land; tax benefits are thus allowed to the donator according to the IRS charitable donation regulations.

#### Purchase of Development Rights

Land owner retains ownership of property and remains on tax rolls yet on a lower rate because of restricted use. This is a common method used for farm preservation.

**APPENDIX E**

**American Planning Association PAS Memorandum**

**And**

**Connecticut River Joint Commission's Memoranda**

## Urban Stream Buffer Architecture

By Tom Schueler

Headwater streams make up as much as 75 percent of the total stream and river mileage in the contiguous United States. These critical headwater streams are often severely degraded by urbanization. As a consequence, many communities have adopted stream buffer requirements as part of an overall urban watershed protection strategy.

In the past, buffer requirements have been relatively simplistic—the “design” of a stream buffer often consisted of just drawing a line of uniform width on a site plan. Buffers designed this way often are invisible to contractors, property owners, and even local governments. As a result, many stream buffers fail to perform their intended function and are subject to disturbance and encroachment.

In addition, while communities frequently cite pollutant removal as the key benefit when justifying the establishment of stream buffers in urbanizing areas, the ability of buffers to remove pollutants in urban stormwater is fairly limited. Much of the pollutant removal by rural and agricultural buffers appears to be due to relatively slow transport of pollutants across the buffer or under it in shallow groundwater. This relatively slow movement promotes greater pollutant removal by soils, roots, and microbes.

These conditions are rarely encountered in urban watersheds, where rainfall is rapidly converted into concentrated flow. Once flow concentrates, it forms a channel that effectively short-circuits the buffer. In urban areas, stormwater flows quickly concentrate within a short distance. Consequently, as much as 90 percent of the surface runoff generated in an urban watershed will become concentrated before it reaches the buffer, and ultimately will cross it in an open channel or an enclosed storm drain pipe. As a result, some kind of structural best management practice (BMP) is often needed in addition to the buffer to remove pollutants from runoff before it enters the stream.

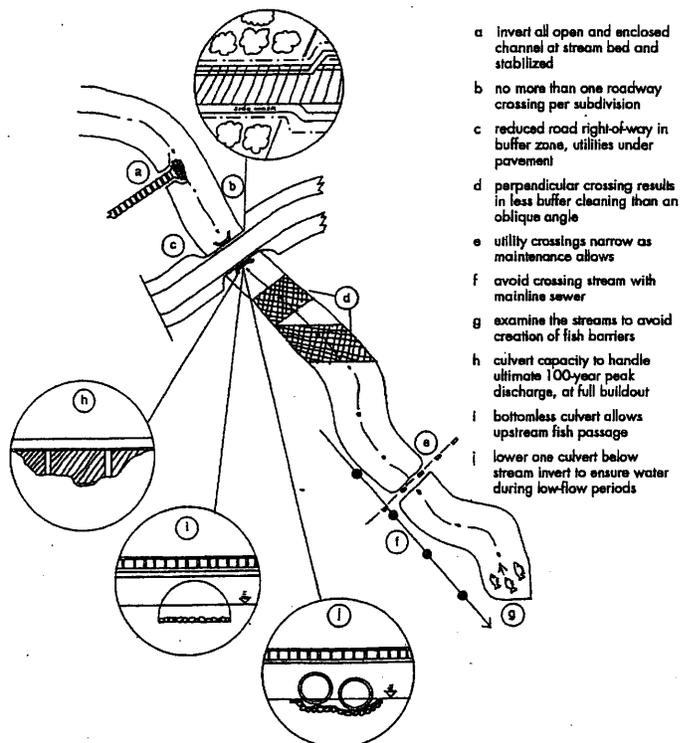
The ability of a particular buffer to actually realize its many benefits depends to a large extent on how well the buffer is planned or designed. This *PAS Memo* presents a scheme for stream buffer design, drawn from field research and local experience across the country. The suggested urban stream buffer design is based on 10 practical performance criteria that govern how a buffer will be sized, delineated, managed, and crossed, and how it will handle stormwater. In addition, the buffer design contains several provisions to respect the property rights of adjacent landowners.

### Minimum Total Buffer Width

Most local buffer criteria are composed of a single requirement, that the buffer be a fixed and uniform width from the stream channel. Urban stream buffers range from 20 to 200 feet in

width on each side of the stream, according to a national survey of 36 local buffer programs, with an average of 100 feet. Most jurisdictions arrive at their buffer width requirement by adopting other state and local criteria, from local experience, and/or through political compromise during the buffer adoption process. Most communities require that the buffer include all land within the 100-year floodplain. Others may extend the buffer to pick up adjacent wetlands, steep slopes, or critical habitat areas. In general, a minimum base width of at least 100 feet is recommended to provide adequate stream protection. In most regions of the country, this requirement translates to a buffer that is perhaps three to five mature trees wide on each side of the channel.

Figure 1: Crossing the Stream Buffer



### Three-Zone Buffer System

Effective urban stream buffers divide the total buffer width into three zones: streamside, middle core, and outer zone. Each zone performs a different function and has a different width, vegetative target, and management scheme.

The streamside zone protects the physical and ecological integrity of the stream ecosystem. The vegetative target is mature riparian forest that can provide shade, leaf litter, woody debris, and erosion protection to the stream. The minimum width is 25 feet from each stream bank—about the distance of one or two mature trees from the streambank. Land use is highly restricted, limited to stormwater channels, footpaths, and a few utility or roadway crossings.

The middle core zone extends from the outward boundary of the streamside zone and varies in width depending on stream order, the extent of the 100-year floodplain, any adjacent steep slopes, and protected wetland areas. Its functions are to protect key stream components and provide further distance between upland development and the stream. The vegetative target for this zone is also mature forest, but some clearing may be allowed for stormwater management, access, and recreational uses. A wider range of activities and uses are allowed within this zone, such as bike paths and stormwater BMPs. The minimum width of the middle core is about 50 feet, but it is often expanded based on stream order, slope, or the presence of critical habitats (see Buffer Expansion and Contraction).

The outer zone is the buffer's buffer, an additional 25-foot setback from the outward edge of the middle core zone to the nearest permanent structure. In many instances, this zone is within a residential backyard. The vegetative target for the outer zone is usually turf or lawn, although the property owner is encouraged to plant trees and shrubs. Few uses are restricted in this zone. Gardening, compost piles, yard wastes, and other common residential activities are promoted within the zone. The only major restrictions are no septic systems and no new permanent structures.

### Predevelopment Vegetative Target

The ultimate vegetative target for the streamside and middle zones of most urban stream buffers should be the plant community present before development, which is usually mature forest. Notable exceptions include the prairie streams of the Midwest and arroyos of the arid West that may have a grass or shrub cover.

A vegetative target has several management implications. First, if the streamside zone does not currently meet its vegetative target, it should be managed to ultimately achieve it. For example, a grassy area should be allowed to grow into a forest over time. In some cases, active reforestation may be necessary to speed up succession. Second, a vegetative target implies the buffer will contain mostly native species adapted to the floodplain. Non-native or invasive tree, shrub, and vine species should be avoided and removal of exotic shrubs and vines, like multiflora rose or honeysuckle, should be encouraged.

### Buffer Expansion and Contraction

Many communities require that the minimum buffer width be expanded under certain conditions. Thus, while the streamside and outer zones of the buffer are fixed, the width of the middle zone may expand to include the entire 100-year floodplain; all undevelopable steep slopes (greater than 25 percent); steep slopes from five to 25 percent slope (adding four additional feet of buffer for every one percent increment of slope above 5 percent); and adjacent delineated wetlands or critical habitats.

The middle zone can also expand to protect streams of higher order or quality. For example, the middle zone may increase from 75 feet for first- and second-order streams to 100

feet for third- and fourth-order streams, and as much as 125 feet for fifth- or higher order streams and rivers. The buffer width can also be contracted in some circumstances, to accommodate unusual or historical development patterns, shallow lots, stream crossings, or stormwater ponds (see Buffer Flexibility).

### Buffer Delineation

Three key decisions must be made when delineating the buffer boundaries: the mapping scale at which the streams will be defined, the place where the stream begins and the buffer ends, and the point from which the inner edge of the buffer should be measured.

*Mapping scale.* The traditional mapping scale used to define stream networks are the U.S. Geological Survey 7.5 minute quadrangle maps (1 inch = 1,000 feet), which denote streams with blue lines. It should be kept in mind that these blue lines are only a first approximation for delineating streams. This scale does not always fully reveal all first-order perennial streams or intermittent channels in the landscape, or precisely mark the transition between the two. Consequently, the actual location of the stream channel should be confirmed in the field.

**Table 1. Example of the Use of Density Credits (to compensate developers for excessive land consumption by buffers)**

Percentage of site lost to buffers	Density* credit
1 to 10%	1.0
11 to 20%	1.1
21 to 30%	1.2
31 to 40%	1.3
41 to 50%	1.4
51 to 60%**	1.5
61 to 70%**	1.6
71 to 80%**	1.7
81 to 90%**	1.8
91 to 99%**	1.9

Adapted from Burns, 1992.

\*Additional dwelling units allowed over base density (1.0)

\*\*Credit may be transferred to a different parcel

*Stream origin.* The origin of a first-order stream is always a matter of contention. As a practical rule, it can be defined as the point where an intermittent stream forms a distinct channel, indicated by the presence of an unvegetated streambed and high water marks. Other regions define the stream origin as the upper limit of running water during the wettest season of the year. Identification problems have frequently been reported where the stream network has been extensively modified by prior agricultural drainage practices.

*Buffer measurement.* The inner edge of the buffer can be defined from the centerline of small first- or second-order streams. The accuracy of this method is questionable in higher order streams with wider channels. Thus, for third and higher order streams, the inner edge of the buffer is measured from the top of each streambank.

### Buffer Crossings

Two major goals of a stream buffer network are to maintain an unbroken corridor of riparian forest and the upstream and downstream passage of fish in the stream channel. It is not always possible to meet both goals everywhere along the stream buffer network. Some provision must be made for linear forms of development that must cross the stream or the buffer, such as roads, bridges, fairways, underground utilities, enclosed storm drains, or outfall channels.

However, it is possible to minimize the impact to the continuity of the buffer network and fish passage (see Figure 1). Performance criteria should specifically describe the conditions under which the stream or its buffers can be crossed. Some performance criteria could include:

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- Crossing width: define a minimum width for maintenance access.
- Crossing angle: direct right angles are preferred, because they require less buffer clearing than oblique crossing angles.
- Crossing frequency: allow only one road crossing within each subdivision, and permit no more than one fairway crossing for every 1,000 feet of buffer.
- Crossing elevation: have all direct outfall channels (the places where effluent is discharged into receiving waters) discharge at the invert elevation, or the lowest point of the stream channel.

Underground utility and pipe crossings should be located at least three feet below the stream invert elevation, so that future channel erosion does not expose them, creating unintentional fish barriers. All roadway crossings and culverts should be capable of passing the ultimate 100-year flood event. Bridges should be used in lieu of culverts when crossings require a 72 inch or greater diameter pipe. The use of corrugated metal pipe for small stream crossings should be avoided, as these often tend to create fish barriers. The use of slab, arch, or box culverts are much better alternatives. Where possible, the culvert should be "bottomless" (i.e., the natural channel bottom should not be hardened or otherwise encased), to ensure passage of water during dry weather periods.

### **Stormwater Runoff**

Buffers can be an important component of a stormwater treatment system. They cannot, however, treat all the stormwater runoff generated within a watershed (generally, a buffer system can only treat runoff from less than 10 percent of the contributing watershed to the stream). Therefore, some kind of structural BMP must be installed to treat the stormwater runoff from the remaining 90 percent of the watershed. Often the most desirable location for BMPs is within or adjacent to the stream buffer.

*Using buffers for stormwater treatment.* The outer and middle zone of the stream buffer may be used as a grass/forest filter strip under limited circumstances. For example, the buffer cannot treat more than 75 feet of overland flow from impervious areas and 150 feet from pervious areas, such as backyards or rooftops. The designer should compute the maximum runoff velocity for both the six-month and two-year storms from each overland flow path, based on the slope, soil, and vegetative cover. If the calculations indicate that velocities will be erosive under either condition (greater than three feet per second (fps) for a six-month storm, five fps for a two-year storm), the allowable length of contributing flow should be reduced.

When the buffer receives flow directly from an impervious area, the designer should include curb cuts or spacers so that runoff can spread evenly over the filter strip. The filter strip should be located three to six inches below the pavement surface to prevent sediment deposits from blocking inflow to the filter strip. A narrow stone layer at the pavement edge often works well. The stream buffer can be accepted as a stormwater filtering system if basic maintenance can be assured, such as routine mowing of the grass filter and annual removal of accumulated sediments at the edge of the impervious areas and the grass filter. The existence of an enforceable maintenance agreement that allows for public maintenance inspection is also helpful.

*Location of stormwater ponds and wetlands within buffer.* A particularly difficult management issue involves locating

stormwater ponds and wetlands in relation to the buffer. Should they be located inside or outside of the buffer? And if they are allowed within the buffer, where exactly should they be placed?

Several arguments can be made for locating ponds and wetlands within the buffer or on the stream itself. Constructing ponds on or near the stream allows the greatest possible drainage area to be treated at one topographic point. Also, ponds and wetlands require the dry weather flow of a stream to maintain water levels and prevent nuisance conditions. Lastly, ponds and wetlands add a greater diversity of habitat types and structure and can add to the total buffer width in some cases. On the other hand, placing a pond or wetland in the buffer can create environmental problems, including localized clearing of trees, sacrifice of stream channels above the BMP, creation of a fish migration barrier, modification of existing wetlands, and stream warming.

Locating ponds and wetlands in buffers will always be a balancing act. Given the effectiveness of stormwater ponds and wetlands in removing pollutants, one should not completely prohibit their use within the buffer. When choosing pond and wetland sites, employ performance criteria that will restrict the use of ponds or wetlands, such as defining a maximum size (e.g. 100 acres), placing them only within the first 500 feet of a stream channel, clearing the streamside buffer zone only for the pond or wetland's outflow channel (if the pond is discharging from the middle zone into the stream), putting them within the middle or outer zone of the buffer, or using ponds only to manage stormwater quantity within the buffer.

### **Plan Review and Construction**

The limits and uses of stream buffer systems should be well defined during each stage of the development process, from initial plan review through construction. The following steps are helpful during the planning stage:

- Require that the buffer be delineated on preliminary and final concept plans;
- Verify the stream delineation in the field;
- Check that buffer expansions are computed and mapped properly;
- Check suitability of use of buffer for stormwater treatment;
- Ensure other BMPs are properly integrated in the buffer; and
- Examine any buffer crossings for problems.

Stream buffers are vulnerable to disturbance during construction. Steps to prevent encroachment include:

- marking buffer limits on all plans used during construction;
- conducting a preconstruction stakeout of buffers to define limit of disturbance;
- marking the limit of disturbance with silt or snow fence barriers and signs to prevent the entry of construction equipment and stockpiling; and
- familiarizing contractors with the limit of disturbance during a preconstruction walk-through.

### **Buffer Education and Enforcement**

Protecting the future integrity of the buffer system requires a strong education and enforcement program. This can be supported by encouraging greater buffer awareness and stewardship among adjacent residents and the community. Several simple steps can accomplish this:

Burns, D. 1992. *Environmental Protection and Resource Conservation Plan*. City of Lacey, Wash.

Desbonnet, A., P. Pogue, V. Lee, and N. Wolff. 1994. *Vegetated Buffers in the Coastal Zone: A Summary Review and Bibliography*. Coastal Resources Center. University of Rhode Island.

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Leopold et al., 1964. *Fluvial Processes in Geomorphology*. W.H. Freeman. San Francisco.

*Model Buffer Ordinance*. Available at [www.cwp.org/Model%20Ordinances/buffer\\_model\\_ordinance.htm](http://www.cwp.org/Model%20Ordinances/buffer_model_ordinance.htm)

Schueler, Tom. 1995 "The importance of imperviousness." *Watershed Protection Techniques*. Vol. 1, No. 3.

\_\_\_\_\_. *Site Planning for Urban Stream Protection*. Center for Watershed Protection. Silver Spring, Maryland.

\_\_\_\_\_. 1994. *The Stream Protection Approach*. Center for Watershed Protection. Terrene Institute, Washington, D.C.

- Mark the buffer boundaries with permanent signs that describe allowable uses;
- Educate buffer owners about the benefits and uses of the buffer with pamphlets, streamwalks, and meetings with homeowners associations;
- Ensure that new owners are fully informed about buffer limits/uses when property is sold or transferred;
- Engage residents in a stewardship program that includes reforestation and backyard "bufferscaping" programs;
- Conduct annual bufferwalks to check on encroachment.

Most encroachment problems reflect ignorance rather than contempt for the buffer system. Awareness and education measures can increase buffer recognition within the community. Not all residents, however, will respond to this effort. A limited enforcement program may be necessary. This usually involves correction notices and site visits, with civil fines used as a last resort if compliance is not forthcoming. Some buffer ordinances allow the full cost of buffer restoration to be charged as a property lien. A fair and full appeals process should accompany any enforcement action.

### Buffer Flexibility

In most regions of the country, a 100-foot buffer will take about five percent of the total land area in any given watershed out of production. While this constitutes a relatively modest land reserve at the watershed scale, it can be a significant hardship for a landowner whose property is adjacent to a stream. Many communities are legitimately concerned that stream buffer requirements could represent an uncompensated taking of private property. These concerns can be reduced if a community incorporates several simple measures to ensure fairness and flexibility when administering its buffer program.

Buffer ordinances that retain property in private ownership generally are considered by the courts to avoid the takings issue, as buffers provide compelling public safety, welfare, and environmental benefits to the community that justify partial restrictions on land use. Most buffer programs meet the "rough

proportionality" test advanced by the U.S. Supreme Court. Indeed, stream buffers are generally perceived to have either a neutral or positive impact on adjacent property value. The key point is that the buffer reservation cannot take away all economically beneficial use of the property. Buffer averaging, density compensation, conservation easements, and variances can help protect property owners from this negative impact.

**Buffer averaging.** Here a community provides some flexibility in the buffer width, permitting the buffer to become narrower at some points along the stream as long as the average width meets the minimum requirement. In general, allowing the buffer to be narrower in places is permitted sparingly, to ensure that the streamside zone is not disturbed and that no new structures are allowed within the 100-year floodplain (if this is a greater distance than the buffer width).

**Density compensation.** This scheme grants a developer credit for additional density elsewhere on the site to compensate for developable land lost to the buffer. Developable land is defined as the buffer area remaining after the 100-year floodplain, wetland, and steep slope areas have been subtracted. Credits are granted when more than five percent of developable land is consumed, using the approach shown in Table 1. The density credit is accommodated by allowing greater flexibility in setbacks, frontage distances, or minimum lot sizes. Cluster development also allows the developer to recover lots that are taken out of production due to buffers and other requirements.

**Conservation easements.** Landowners should be afforded the option of protecting lands within the buffer with a perpetual conservation easement. The easement puts conditions on the use of the buffer and can be donated to a land trust as a charitable contribution, reducing an owner's income tax burden. Alternately, the conservation easement can be donated to a local government in exchange for a reduction or elimination of property tax on the parcel.

**Variations.** The buffer ordinance should have provisions that enable an existing property owner to be granted a variance, if the owner can demonstrate severe economic hardship or unique circumstances make it impossible to meet some or all buffer requirements. The owner should also have access to an appeals process should the request for a variance be denied.

### Conclusion

Urban stream buffers are an integral element of any local stream protection program. By adopting some of these rather simple performance criteria, communities can make their stream buffers more than just a line on a map. Better design and planning also ensure that communities realize the full environmental and social benefits of stream buffers.

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R I V E R

B A N K S &

B U F F E R S

No. 1



# Introduction to Riparian Buffers

*for the Connecticut River Watershed*

Riparian buffers are the single most effective protection for our water resources in Vermont and New Hampshire. These strips of grass, shrubs, and/or trees along the banks of rivers and streams filter polluted runoff and provide a transition zone between water and human land use. Buffers are also complex ecosystems that provide habitat and improve the stream communities they shelter.

Natural riparian buffers have been lost in many places over the years. Restoring them will be an important step forward for water quality, riverbank stability, wildlife, and aesthetics in the Connecticut River Valley. Landowners, town road agents, local governments, farmers, and conservation organizations can all help restore and protect the riparian buffers which in turn restore and protect the quality of our streams.

## HOW BUFFERS GO TO WORK

### **Sediment Filter**

Riparian buffers help catch and filter out sediment and debris from surface runoff. Depending upon the width and complexity of the buffer, 50–100% of the sediments and the nutrients attached to them can settle out and be absorbed as buffer plants slow sediment-laden runoff waters. Wider, forested buffers are even more effective than narrow, grassy buffers.

**For water  
quality**

### **Pollution Filter, Transformer, and Sink**

The riparian buffer traps pollutants that could otherwise wash into surface and groundwater. Phosphorus and nitrogen from fertilizer and animal waste can become pollutants if more is applied to the land than plants can use. Because excess phosphorus bonds to soil particles, 80–85% can be captured when sediment is filtered out of surface water runoff by passing through the buffer. Chemical and biological activity in the soil, particularly of streamside forests, can capture and transform nitrogen and other pollutants into less harmful forms. These buffers also act as a sink when nutrients and excess water are taken up by root systems and stored in the biomass of trees.

### **Stream Flow Regulator**

By slowing the velocity of runoff, the riparian buffer allows water to infiltrate the soil and recharge the groundwater supply. Groundwater will reach a stream or river at a much slower rate, and over a longer period of time, than if it had entered the river as surface runoff. This helps control flooding and maintain stream flow during the driest time of the year.

### **Bank Stabilizer**

Riparian buffer vegetation helps to stabilize streambanks and reduce erosion. Roots hold bank soil together, and stems protect banks by deflecting the cutting action of waves, ice, boat wakes, and storm runoff.

**For bank  
stability**

### **Bed Stabilizer**

Riparian buffers can also reduce the amount of streambed scour by absorbing surface water runoff and slowing water velocity. When plant cover is removed, more surface water reaches the stream, causing the water to crest higher during storms or snowmelt. Stronger flow can scour streambeds, and can disturb aquatic life.

### **Wildlife Habitat**

The distinctive habitat offered by riparian buffers is home to a multitude of plant and animal species, including those rarely found outside this narrow band of land influenced by the river. Continuous stretches of riparian buffer also serve as wildlife travel corridors.

**For fish and wildlife**

### **Aquatic Habitat**

Forested riparian buffers benefit aquatic habitat by improving the quality of nearby waters through shading, filtering, and moderating stream flow. Shade in summer maintains cooler, more even temperatures, especially on small streams. Cooler water holds more oxygen and reduces stress on fish and other aquatic creatures. A few degrees difference in temperature can have a major effect on their survival. Woody debris feeds the aquatic food web. It also can create stepped pools, providing cover for fish and their food supply while reducing erosion by slowing flow.

### **Recreation and Aesthetics**

Forested buffers are especially valuable in providing a green screen along waterways, blocking views of nearby development, and allowing privacy for riverfront landowners. Buffers can also provide such recreational opportunities as hiking trails and camping.



## **THE BETTER BUFFER**

For every buffer there is a reason. Whether it is pollution filtration, erosion control, wildlife habitat, or visual screening, the size and vegetation of the buffer should match the land use and topography of the site.

### **Topography**

A buffer is more important for water quality in areas that collect runoff and deliver it to streams, and less critical on land that tips away from the water. Steeper slopes call for a wider riparian buffer below them to allow more opportunity for the buffer to capture pollutants from faster moving runoff. This is also true at both ends of a flood chute, or the path a river takes across a meander at high water.

### **Hydrology and Soil**

The ability of the soil to remove pollutants and nutrients from surface and ground water also depends upon the type of soil, its depth, and relation to the water table. On a wetter soil, a wider buffer is needed to get the same effect.

### **Vegetation**

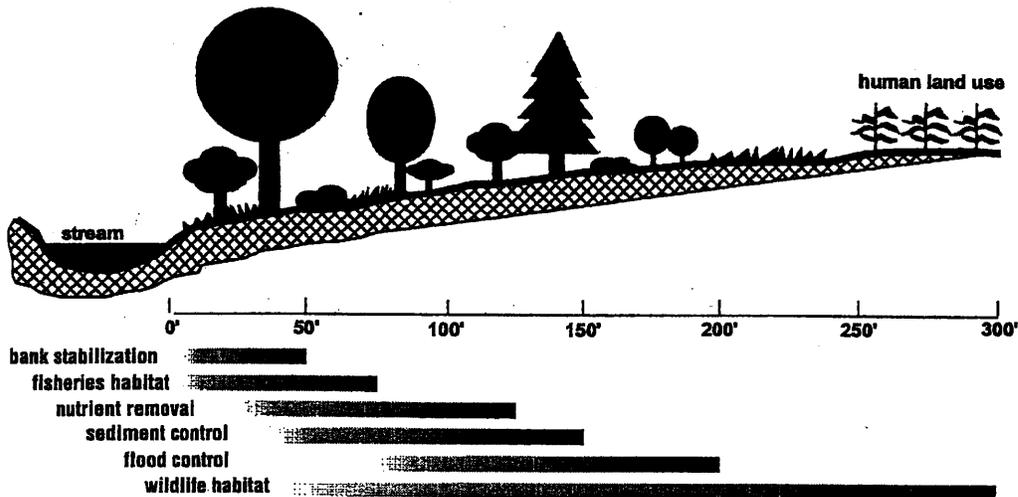
The purpose(s) of the buffer will influence the kind of vegetation to plant or encourage. In urban and residential areas, trees and shrubs do a better job at capturing pollutants from parking lots and lawn runoff and providing visual screening and wildlife habitat.

Between cropland and waterways, a buffer of shrubs and grasses can provide many of the benefits of a forested buffer without shading crops, and trees can be used on the north side of fields.

Trees have several advantages over other plants in improving water quality and offering habitat. Trees are not easily smothered by sediment and have greater root mass to resist erosion. Above ground, they provide better cover for birds and other wildlife using waterways as migratory routes. Trees can especially benefit aquatic habitat on smaller streams. Native vegetation is preferable to non-native plants.

## BUFFER WIDTH

How big should a buffer be? One size doesn't fit all. It depends on what you want the buffer to do. There isn't one generic buffer which will keep the water clean, stabilize the bank, protect fish and wildlife, and satisfy human demands on the land. The minimum acceptable width is one that provides acceptable levels of all needed benefits at an acceptable cost. **The basic bare-bones buffer is 50' from the top of the bank. You get more with every foot.**



### ***To Stabilize Eroding Banks***

On smaller streams, good erosion control may require only covering the bank with shrubs and trees, and a 35' managed grass buffer. If there is active bank erosion, or on larger streams, going beyond the bank at least 50' is necessary. Severe bank erosion on larger streams requires engineering to stabilize and protect the bank - but this engineering can be done with plants. For better stabilization, put more of the buffer in shrubs and trees.

### ***To Filter Sediment and Attached Contaminants from Runoff***

For slopes gentler than 15%, most sediment settling occurs within a 35' wide buffer of grass. Greater width is needed on steeper slopes, for shrubs and trees, or where sediment loads are particularly high.

### ***To Filter Dissolved Nutrients and Pesticides from Runoff***

A width up to 100' or more may be necessary on steeper slopes and less permeable soils to allow runoff to soak in sufficiently, and for vegetation and microbes to work on nutrients and pesticides. Most pollutants are removed within 100', although in clay soils, this may not happen within 500'.

### ***To Protect Fisheries***

Buffer width depends on the fish community. For cold water fisheries, the stream channel should be shaded completely. Unless there are problems with algae blooms, warm water fisheries do not require as wide a buffer or as much shade, but they still benefit from water cleaned by a buffer's filtering action. Studies show that at least up to 100', the wider the buffer, the healthier the aquatic food web.

### ***To Protect Wildlife Habitat***

Buffer width depends upon desired species: 300' is a generally accepted minimum. Much larger streamside forest buffer widths are needed for wildlife habitat purposes than for water quality purposes. The larger the buffer zone, the more valuable it is. Larger animals and interior forest species generally require more room. Some use so much habitat that it

would be nearly impossible to protect the size buffers they require. A narrow width may be acceptable for a travel corridor to connect larger areas of habitat. Continuity is important — even small patches of trees are better than none at all when it comes to migrating birds.

### **To Protect Against Flood Damage**

Smaller streams may require only a narrow width of trees or shrubs; a larger stream or river may require a buffer that covers a substantial portion of its flood plain. This is why it is not a good idea to build a permanent structure where a river can get at it.

### **To Grow Valuable Products**

Buffer width depends upon the desired crop and its management. Don't forget to consider tax incentives and cost-share programs when looking at the economic return from a riparian buffer.

## **DECIDING ON THE RIGHT WIDTH FOR YOUR PROPERTY**

From the top of the streambank, turn back and take 15 long paces. This should carry you 50' from the bank. This area should be covered with native vegetation. Another 15 paces brings you about 100' from the bank. The ability of a buffer to remove pollutants is uncertain if it is narrower than this. A 100' buffer will generally remove 60% or more of pollutants, depending on local conditions. It will also provide food, cover and breeding habitat for many kinds of wildlife but only fulfill a few needs for others, such as travel cover.

### **Remember, a bigger buffer is needed to do the job if:**

- the riverside land is sloped and runoff is directed here
- the land above is sloped (the steeper the slope, the wider a buffer should be)
- land use is intensive (crops, construction, development)
- soils are erodible
- the land is floodplain
- the stream naturally meanders
- the land drains a large area (ratio of drainage area to buffer area is more than 60:1; based on the soil loss factor in the Connecticut River Valley)
- more privacy is desired

### **Fact sheets in the series *Riparian Buffers for the Connecticut River Watershed***

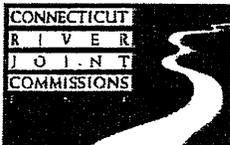
- No. 1 Introduction to Riparian Buffers
- No. 2 Backyard Buffers
- No. 3 Forestland Buffers
- No. 4 Buffers for Habitat
- No. 5 Buffers for Agricultural Land
- No. 6 Urban Buffers
- No. 7 Guidance for Communities
- No. 8 Planting Riparian Buffers (& plant list)
- No. 9 Field Assessment
- No. 10 Sources of Assistance

See also the companion series for land owners:

### **The Challenge of Erosion in the Connecticut River Valley, Connecticut River Joint Commissions, 1998.**

Part of the *Living with the River* series. May be reprinted without permission.

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R I V E R

B A N K S &

B U F F E R S

No. 7



# Guidance for Communities

*in the Connecticut River Watershed*

*Our most fertile soils, our most valuable fish and wildlife habitat, and some of our most expensive real estate are found along rivers and streams. Add to that the power of flooding waterways to destroy private property, and here is a situation which begs for sensible town policy.*

## THE CHALLENGE

The high quality of life offered in the beautiful valley of the Upper Connecticut River, with waters clean and attractive once again, brings with it both the promise of growth and the threat of losing a landscape our children will recognize in the years ahead.

Our region has a long tradition of respect for the rights of individual property owners. This understanding must include concern for the rights of neighbors and, along rivers, for those downstream who can be directly affected by the actions of a single landowner. In the tug of war between unlimited freedom in the use of private property, and the need to protect both private property and the public good from harm, many town decision-makers are recognizing that it is in their own economic and environmental self-interest to guide development near moving water. Allowing development too close to a waterway has too often led to damage or loss of roads and buildings, and pollution of the river, not to mention a growing threat to the rural character which is the signature of the Connecticut River Valley.

The flood and erosion "insurance" provided by a riparian buffer is all the more important now that weather patterns are taking a turn. Whether global climate warming is natural or human-induced, New England is seeing a definite shift toward heavy storms that deliver several inches of rain in a single day. Sturdy buffers are the best protection for private property. Smaller tributaries are just as important as the larger streams they supply. If land adjacent to small streams is altered to reduce its flood control function, the cumulative impact will result in worse flooding in the mainstem, even if mainstem flood plains are safeguarded against further development.

Development pressure inevitably means pressure on aquifers. Nature's own water treatment facilities, riparian buffers help cleanse and recharge wells and groundwater supplies. They are a real bargain compared to a multi-million dollar piece of infrastructure.

Land conversion also brings traffic closer to waterways. In the upper Connecticut River Valley, roads and railroads often closely follow rivers and streams, pinching the riparian zone. These may have longer lasting impacts on riparian land than any other type of human land use.

Local officials can help by utilizing town wetland and zoning regulations to protect stream buffers in areas that have not yet been developed, and by encouraging buffer restoration in developed areas. Developers and property owners can help by maintaining or restoring adequate stream buffers before, during, and after construction.

### **Rewards of Riparian Buffers**

#### *Economic services*

- ❖ protect citizens against property loss through flood damage and erosion
- ❖ recharge aquifers
- ❖ protect quality of public drinking water supplies
- ❖ support the recreation and tourism industry
- ❖ support sustainable yields of timber

**Riparian  
buffers are  
a river's  
right-of-way.**

**Small streams  
need buffers,  
too.**

### *Social services*

- ❖ protect clean surface water for public recreation
- ❖ protect prime agricultural soils from permanent loss through development
- ❖ provide natural fences, visual screens, and noise control
- ❖ provide outdoor laboratories for teaching and research
- ❖ offer places for camping, nature study, hunting and fishing
- ❖ improve air quality
- ❖ recycle nutrients
- ❖ trap heavy metals and toxins
- ❖ store excess sediments
- ❖ trap excess carbon dioxide

### *Biological services*

- ❖ support predators of rodent and insect pests
- ❖ protect fish and wildlife habitat
- ❖ provide corridor for movement of wildlife



## FIRST STEPS

Build public support and awareness by assembling citizens interested in their town's future who can offer experience in engineering, home building, and conservation issues. Look at existing local policy with both small streams and large rivers in mind: master plan, zoning ordinance, subdivision regulations, and site plan review. Consult your regional planning commission for expert advice, model ordinances, or an evaluation of how well streams and riparian buffers fare under your town's current zoning provisions.

Your regional planning commission can perform a build-out analysis to show the density and pattern of development that could occur under current zoning. This jump into the future can identify where adjustments should be made today to avoid an unwelcome tomorrow.

Develop guidelines that remain flexible to site-specific needs. There is no one-size-fits-all buffer width adequate to protect water quality, habitat, and human interests. These policies should establish a clear link between water quality protection and riparian buffers.

## THE TOWN PLANNER'S TOOL BOX

### **MASTER OR TOWN PLAN**

The entire community and its waterways will benefit from a natural resources inventory that includes streams, their flood ways, and flood plains, as well as the town's stated resource protection goals and objectives. Refer to the *Connecticut River Corridor Management Plan* for information. In Connecticut river front towns, this plan can be adopted as an adjunct to the master plan following a public hearing, in New Hampshire by vote of the planning board, and in Vermont by vote of the selectmen. This provides the footing for a zoning ordinance that will help the town protect its waterways, and can also help the town foster connections among conservation lands.

Stating the town's support of riparian buffers in the master plan, however, is only window dressing if the zoning ordinance does not back it up. Towns can also employ a number of non-regulatory tools for promoting buffers.

### **ZONING ORDINANCE**

Don't prohibit development—guide its location. Apply shoreland and buffer guidelines on small streams as well as on larger rivers. Small streams are most vulnerable because they respond most dramatically to changes in adjacent land uses, tend to be located on the steepest sloping and erosion-prone lands, and often have the highest quality remaining habitat. The zoning ordinance can apply a shoreland protection overlay district to all year-round streams within its borders, with the guidelines that follow. To encourage use of the various shoreland conservation techniques presented below, allow them by right, rather than by special exception.

**Shoreland conservation zoning is not a "taking"—because it doesn't reduce density.**

### ***Suggested allowable uses***

Encourage agriculture and forestry, provided they use best management practices established by NH and acceptable management practices established by VT; parks, recreation areas with minimal structural development; non-motorized trails; utility transmission lines. Encourage passive use of land for recreation and nature appreciation. Maintain wetlands, flood plains, seeps, and bogs in their natural condition. Allow harvest of timber for firewood or commercial use, consistent with state forestry harvesting guidelines.

### ***Suggested prohibited uses***

All uses that present a higher potential for pollution: filling stations, car washes, junkyards, bulk fuel storage, truck terminals, any facilities handling hazardous material. Campgrounds other than dispersed forested tenting sites should be excluded because of their tendency toward deforestation and soil compaction. Towns may wish to guide use of ATVs and mountain biking to less sensitive locations since these higher impact uses can contribute to vegetation loss and erosion. Buildings that do not depend on proximity to water should be sited outside a riparian buffer.

### ***Lot coverage***

Discourage impervious surfaces. The quality of life in a stream goes distinctly downhill when its watershed reaches 10-15% of impervious cover. A stream whose watershed is more than 25% impervious can no longer support aquatic life. Encourage developers to use alternatives that allow rain and snowmelt to soak in rather than run off, including retention of open space. Reducing the overall area of impervious surfaces and suburban lawns by encouraging conservation zoning, which minimizes site disturbance, will result in a lower total volume of stormwater runoff. Manicured lawns might as well be green asphalt, since they shed most of the water that falls on them. Encourage developers to retain natural vegetation already at work protecting the town's waterways.

### ***Lot size and density***

Some communities have actually done away with minimum lot sizes in order to guide development away from a stream buffer or other sensitive land. Allow flexibility so that developers can establish the same number of lots on the parcel outside the riparian buffer as they would in a conventional cookie-cutter layout, considering the total amount of land that is high, dry, and flood-free. A community can even give density bonuses for land-conserving design, and density disincentives to actively discourage land-consuming layouts. Experience shows that the added value of open space for views and for passive and active recreation can balance and even outweigh the conventionally perceived lower value of smaller lots.

### ***Minimum frontage and road setbacks***

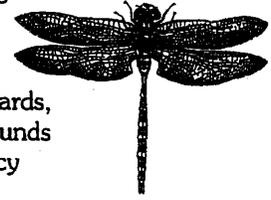
The larger these are, the more they tend to intrude on the riparian buffer. A flexible design should be allowed, even on small properties, when there is a possibility of increasing a riparian buffer. It is better to site a building closer to a road than to a stream.

### ***Open space/cluster development***

Cluster development concentrates construction on land with less conservation value, and allows owners of house lots in the development to share undivided ownership and enjoyment of the portion of the property remaining in a scenic and natural condition. This usually decreases the developer's costs for road and utility construction, and increases both the initial and the resale value of each lot, resulting in economic incentives for the developer and attraction to the buyer. The land can be managed by a homeowner's association, land trust, or the town.

### ***Stream setback***

The town can establish a riparian buffer similar to a utility right-of-way, whose width is determined before construction begins. Buffer averaging allows flexibility to account for the 100-year flood plain, steepness of slopes, adjacent wetlands, limited lot size, stormwater ponds, and pre-existing structures. The town can adopt the provisions of the NH Comprehensive Shoreland Protection Act for those waters not covered under the Act. On the mainstem of the Connecticut and its larger tributaries, towns should consider enacting stronger local protection that better reflects the flood and erosion potential of



**Building on  
the 100-year  
flood plain is  
inherently  
unsafe.**

these larger rivers. It is best to deter building on the 100-year flood plain; construction here is inherently unsafe.

### **Buffer Width Options**

See *Introduction to Riparian Buffers*, No. 1 in this series, for more on buffer widths for various functions.

**Fixed width** — select a distance to protect most desired functions: for example, a 75' buffer for 1st and 2nd order (small) streams, 100' for 3rd and 4th order (medium-sized) streams, and 150' for large rivers, 5th order and higher. This is simplest to administer but will be more than adequate in some situations and inadequate in others.

**Variable width** — based on site-specific conditions such as slope and intensity of land use. Since every stream, parcel, and land use is different, buffers are better tailored to the land rather than to a cookie-cutter approach. While more science-based, this requires more site evaluation and is more difficult to administer.

**Combination of the above** — determine a standard width, and specify criteria for expanding or contracting, such as to include the 100-year flood plain, undevelopable steep slopes, and/or adjacent wetlands or critical habitats. For example, Weathersfield VT requires a 50' minimum buffer for land with 0-10% slope next to streams wider than 10', and adds 20' in buffer width for each 10% increase in slope.

### **Protected slope areas**

Address slope gradient, soil erodability, and proximity to stream channels, since increasing slope results in a need for an increase in buffer width.

## **SUBDIVISION REGULATIONS**

### **Map of existing resources & site analysis**

The single most important document is a map prepared at the outset, showing

- ✦ streams, wetlands, and their buffers
- ✦ 100-year flood plains
- ✦ soil types and contours with areas of slopes over 15% indicated
- ✦ other valued natural resources such as farmland, aquifers and public water supply protection areas, woodlands, & significant wildlife habitat
- ✦ cultural resources such as historic/archeological features, and also views into and out of the site.

Information for this map is readily available, requires little or no cost or engineering except for the slopes and soils, and will form the basis for all the major design decisions. Much information can be gained from aerial photographs available from the county Natural Resources Conservation Service office.

Encourage a pre-application meeting and schedule a site visit early in the review process in order to discuss the conservation potential of the property and to help the developer save time and expense designing around it. This is a good opportunity to discuss the value of a riparian buffer and the reasons to keep existing vegetation.

Applicants should be asked to submit a lightly engineered sketch showing the maximum number of lots they could reasonably expect to gain under a conventional layout after discounting unbuildable land. This better reflects the development capacity of the property, and gives the developer and the town time to work together before investing in an engineered "preliminary plan."

Then use the approach used by successful designers of golf course developments: locate house sites around the most valuable natural features just as one might around a fairway or putting green, keeping structures as far away from the stream as possible. Finally, align streets and trails, and draw in lot lines.

### **Wastewater management specifications**

Include erosion and sedimentation control, stormwater management, landscaping, and provisions for special investigative studies. It is appropriate to incorporate the NH Comprehensive Shoreland Protection Act criteria here.

### **Road design specifications**

Flexible road width dimensions will help make room for greater setbacks from streams.

**Urge  
developers to  
retain natural  
riparian  
vegetation.**

### ***Drainage design specifications***

Providing buffers should reduce the cost and size of stormwater detention basins needed on the site, freeing land and funds for other uses. Promote forested buffers as part of stormwater management planning and allow the pollution removal effectiveness of buffers to be credited in stormwater plans and calculations, but ensure that the size of the proposed buffer is adequate to handle the job. Criteria of state regulations such as NH RSA 483-B can be added as written after reviewing them for consistency with locally adopted language. Include sections on erosion and sedimentation control.

### ***Innovative land use controls***

The town can allow transfer of development rights from riverfront lands to other parts of town designated for more intensive development. This protects the property value of the riverfront land while keeping it on the job protecting the river.

### **A WORD ABOUT ARCHEOLOGICAL RESOURCES**

Since stream corridors have been powerful magnets for human settlement throughout history, it is not uncommon for historic and prehistoric resources to be buried by sediment or obscured by vegetation along stream corridors. Contact the State Historic Preservation Office to identify any potential cultural resources before beginning work. If a site is uncovered unexpectedly, all activity that might adversely affect it must cease. The SHPO will determine the significance of the site and advise on how to proceed to avoid delay.

## **NON-REGULATORY OPTIONS FOR PROTECTING RIPARIAN BUFFERS**

Encourage road agents to avoid mowing vegetation in riparian buffers where roads are close to streams. The often-too-small strip of grass, ferns, and other volunteer plants has a big job to do to keep trash, road pollutants, and sand out of the water.

Encourage the local conservation commission to educate townspeople about the value of buffers and the ways in which personal choices can have lasting effects, both good and bad, on the region's water resources. Let them know how unintentional encroachment such as dumping, understory removal, or altering drainage can reduce buffer function. Contact your county conservation district office to visit a riparian buffer demonstration site. Recognize landowners who do maintain buffers: designate "watershed friendly farms," make an annual award from the conservation district or conservation commission, and provide publicity.

Work with a local land trust to acquire development rights through purchased or donated conservation easements. The landowner continues to use and enjoy the land within the limits of the easement. An easement should include both the streambank and a buffer around it. Guidance on timber harvesting, land conversion, construction, or road building within the buffer can be written into the easement. This will run with the land forever, providing for continuity of management as owners change. A conservation easement need not require the landowner to provide public access, and it can offer significant tax advantages.

The town can also consider providing property tax incentives for landowners who set aside buffers, and can acquire especially sensitive waterfront lands for public space, perhaps using funds from the Land Use Change Tax.



## **EXISTING STATE & LOCAL REGULATIONS**

Since riparian buffers are among the very best ways to protect both private property and the quality of rivers and streams, state and many local authorities have taken steps to protect them. In both Vermont and New Hampshire, septic systems must be set back 75' from rivers and streams, and many municipalities also have setbacks for structures. Some require vegetated buffers of a standard width, while others prescribe a range and assign a width appropriate to the site, often based on slope.

**New Hampshire:** The Comprehensive Shoreland Protection Act (RSA 483-B) protects existing natural woodland buffers within 150' of the public boundary line on 4th order streams, including lower portions of the Ashuelot, Ammonoosuc, Cold, Gale, Israel, Mascoma, Mohawk, Sugar, Little Sugar, and Upper Ammonoosuc Rivers, and the lower parts of Mink, Partridge, and Stocker Brooks. On these waterways, not more than 50% of the basal area of trees and a maximum of 50% of the total number of saplings can be removed in a 20-year period. A healthy, well-distributed stand of trees, saplings, shrubs, and ground covers and their living, undamaged root systems must be left in place. RSA 483-B does not protect smaller streams. While the Connecticut River mainstem was also exempt from this law at the time of printing, its provisions may apply in the future.

While forestry is exempt from RSA 483-B, the Basal Area Law (RSA 227-J:9) requires that within 150' of 4th order streams and great ponds, 50% of the pre-harvest basal area must be maintained, and that 50% of the preharvest basal area must be maintained within 50' of all perennial streams, rivers, and brooks.

**Vermont:** *There is no shoreland protection law in Vermont as of this writing.* The Agency of Natural Resources has adopted a Buffer Procedure pursuant to 3 V.S.A. § 835 which is not a rule or regulation, but may be used as guidance in conditioning permits. *The Manual of Acceptable Management Practices* for forestry specifies that except for stream crossings, a protective strip shall be left along streams in which only light thinning or selection harvesting can occur, so that breaks made in the canopy are minimal and a continuous cover is maintained. Log transport machinery must remain outside a 25' margin along the stream. Including this 25' margin, the width of the protective strip shall be 50' for land sloping 1-10%, adding another 20' for each additional 10% increase in grade.

#### **FURTHER READING**

*The Connecticut River Corridor Management Plan*, Connecticut River Joint Commissions, 1997. Copies of this plan were provided to each member of the board of selectmen, planning board/commission, and conservation commission of the 53 NH & VT riverfront towns, and to each town's library, school, and historical society. It is also available on the Web ([www.crjc.org](http://www.crjc.org)).

*Buffers for Wetlands and Surface Waters: A Guidebook for NH Municipalities*, Chase, Deming, & Latawiec. Audubon Society of NH, NH Office of State Planning, NRCS, UNH Cooperative Extension, 1997

*A Guide to Developing and Re-Developing Shoreland Property in New Hampshire*, North Country Resource Conservation & Development Area, 1999.

*Stormwater Management and Erosion and Sediment Control Handbook for Urban and Developing Areas in NH*. NH Department of Environmental Services, 1992.

*Growing Greener — Putting Conservation into Local Plans and Ordinances*, Randall Arendt. Island Press, Washington DC, 1999.

*Dealing with Change in the Connecticut River Valley: A Design Manual for Conservation and Development*, Center for Rural Massachusetts. Lincoln Institute of Land Policy & the Environmental Law Foundation, 1988.

*Natural Resources: An Inventory Guide for New Hampshire Communities*, Upper Valley Land Trust & UNH Cooperative Extension Service, 1992.

*Watershed Guide to Cleaner Rivers, Lakes & Streams*, Brian Kent. Connecticut River Joint Commissions, 1995

*Wildlife illustrations by New Hampshire naturalist David M. Carroll*

#### **Fact sheets in the series *Riparian Buffers for the Connecticut River Watershed***

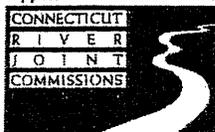
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- No. 6 Urban Buffers
- No. 7 Guidance for Communities
- No. 8 Planting Riparian Buffers (& plant list)
- No. 9 Field Assessment
- No. 10 Sources of Assistance

See also the companion series for land owners:

**The Challenge of Erosion in the Connecticut River Valley**, Connecticut River Joint Commissions, 1998.

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