

Element I

Natural and Cultural Resources

"Shall provide an inventory of the significant natural resource areas such as water, soils, prime agricultural lands, natural vegetation systems, wildlife, wetlands, aquifers, coastal features, flood plains and other natural resources and the policies for the protection and management of such areas. The element shall include policies for the protection of historic and cultural resources of the municipality and the state. The policies and implementation techniques must be identified for inclusion in the implementation program element."

- Comprehensive Planning and Land Use Regulation Act of 1988, the Natural and Cultural Resources Element.

West Greenwich is rich in natural resources: scenic open spaces, with vast acreage in public ownership such as the University of Rhode Island's Environmental Campus at Alton Jones, Arcadia Management Area, and the Big River watershed area, valuable wetlands, high quality surface water, prime agricultural lands and unique historical areas. The Town's natural environment adds immeasurably to its quality of life. Although many large areas of undeveloped land exist in West Greenwich, these lands are feeling direct and indirect impacts from residential and other forms of development. As documented in the Housing Element, standard subdivisions account for much of the recent development in the Town, adding to the burden of Town services. Development impacts not only affect land use but all natural resources such as ground water and air quality. Proper management and protection of natural resources may require greater initial expense, but it is generally far less costly to anticipate environmental problems and take measures to avoid them than to correct past mistakes. Certain resources, such as groundwater, require a community-wide effort to ensure that its quality is maintained and improved where possible. Other resources, such as clean air, must be protected on a regional and statewide basis. Compliance with federal and state standards, including monitoring of air quality, become important factors in the overall protective measures within the scope of this element of the Comprehensive Plan.

Among the unique characteristics of the Town are its rural character, open spaces and natural beauty, the type of which has been lost to development in other communities in Rhode Island. Standard suburban type development is slowly eroding the Town's character to the point that there is a danger of the Town becoming one massive urban/suburban sprawl. Most of the Town's non-public lands are susceptible to development as rising property values continue to spur more intensive land uses. Fortunately, the Town has recognized that choices are available; planning for the future is an option to manage the growth of the Town and preserve valuable parts of the land for recreation, conservation and agricultural purposes.

Purpose

The Comprehensive Planning and Land Use Regulation Act requires that this element "...provide an inventory of the significant natural resource areas such as water, soils, prime agricultural lands, natural vegetation systems, wildlife, wetlands, aquifers, coastal features, floodplains and other natural resources and the policies for protection and management of such areas. The element shall include policies for the protection of historic and cultural resources of the municipality and the state. The policies and implementation techniques must be identified for inclusion in the implementation program." This element considers the nature of the environment, the ability of the Town's natural resources to support future development, the impact the Town's current regulations have upon the environment, and how the resources can be best protected in the future.

The element also considers the Town's cultural resources. The Town's historical heritage continues to influence the present character of the community, and this element considers the importance of preserving the Town's past while serving a modern purpose. The first section of this element addresses the community's natural resources, followed by its cultural and historical resources.

PART A - NATURAL RESOURCES

The Town of West Greenwich, Rhode Island is located in Kent County, approximately twenty-five (25) miles south of Providence, along Interstate 95. The State of Connecticut lies to the west, while the Towns of Coventry, Exeter, and East Greenwich share the northern, southern and eastern boundaries, respectively. The Town comprises approximately 33,000 acres or 51 square miles. West Greenwich has a population of approximately 3,800 full time residents. The Town is characterized as a rural community with numerous active farms, forested areas and open meadows. Industry consists primarily of the Technology Park.

The existing and potential future impacts that are imposed upon the Town's natural and cultural resources by increased development are numerous. The Town's attraction to early settlers, which drew residents to this community, now faces disruption by increasing demands placed on them by the growing population. Mitigating the effects of human habitation on the Town's natural resources while providing a balanced climate in which residents can live, work and play is the challenge of this Plan element.

Natural Features

The natural features of West Greenwich, combined with its cultural context, help to create the unique character of the Town. This subsection presents a synopsis of the natural features and some of the management implications relating to these features. The following figures describe the general geographic status of the community.

Area

Total	51.14 square miles or 32,755 ± acres
Land area	50.26 square miles or 32,166 ± acres
Inland water	0.88 square mile 563 ± acres

Climate

Mean Temperature in January	28.9° F
Mean Temperature in July	71.1° F
Mean Annual Precipitation	40.25 inches

United States Geological

Survey Quadrangles: Oneco, Voluntown, Coventry, Hope Valley,
 Crompton & Slocum

State Compliance

The Comprehensive Planning and Land Use Regulation Act of 1988 requires that the Natural and Cultural Resources Plan Element demonstrate consistency with the following State Guide Plan Elements:

- 152 - Ocean State Outdoors
- 121 - Land Use 2010: State Land Use Policies and Plan
- 161 - Forest Resources Management Plan
- 710 to 715 - Water Resources Management and Water Quality Management Plans
- 721 - Water Supply Policies for Rhode Island

In addition, this Element will establish compliance with:

- The programs and regulations of the Rhode Island Department of Environmental Management with respect to wetlands, water quality classifications, non-point source pollution management, groundwater protection, endangered species, other natural resource areas and related features.
- The protection goals of the Rhode Island Natural Heritage Program with respect to rare and endangered species, significant ecological communities, and other unique natural features.
- The designations, rules, plans and policies of the Rhode Island Coastal Resources Management Council, where applicable.
- Surveys, plans, policies and register listings of the Rhode Island Historical Preservation Commission with respect to historic places and archeological resources.

The following Goals of the Act are relevant to this Element:

- (1) To promote orderly growth and development that recognizes the natural characteristics of the land, its suitability for use and the availability of existing and proposed public and/or private services and facilities.

- (4) To promote the protection of the natural, historic and cultural resources of each municipality and the state.
- (5) To promote the preservation of the open space and recreational resources of each municipality and the state.
- (6) To encourage the use of innovative development regulations and techniques that promote the development of land suitable for development while protecting our natural, cultural, historical and recreational resources and achieving a balanced pattern of land uses.

Finally, this Element must be consistent with other plan elements of the Town's overall Comprehensive Plan.

SECTION I
INVENTORY & ANALYSIS - NATURAL RESOURCES

A. Inventory & Analysis Physical Land Characteristics

1. Topography

The Town is characterized by steep slopes and hills. Many of these are at 15% grade or greater, thus creating severe constraints to development. See Map 1, Topography. Those areas noted as severe are deemed environmentally sensitive land formations greater than or equal to 15% slope and are recommended to be preserved from development. It is noted that areas less than 15% slope also require on-site soil erosion and sedimentation plans where applicable.

Steep terrain is associated with problems in building construction, stormwater runoff and erosion. The topography of an area directly affects planning and engineering costs. Information sources used to determine slope percentage included U.S.G.S. Topographic Maps, 1975 and the Rhode Island Soils Conservation Service (SOS) Soil Survey Manual, 1976.

The application of a methodology referred to as "rise over run" was utilized (based on topographic contour lines at a scale of one inch equal to two-thousand feet). This method determines the slope of terrain by dividing vertical distances by horizontal distances. This calculation yields a site's slope percentage.

Three-quarters of an inch, or 1,500 feet, was selected as the horizontal constant (based on an assumption relating to accuracy). Therefore, if the vertical elevation rose 225-feet over a 1,500 foot area, it would be calculated as a 15% slope, and classified (by SCS standards) as steep terrain that is considered a SEVERE constraint to development.

Both the U.S.G.S. and the SCS maps were essential in the determination of slope percentage, stream flow direction, watershed boundaries, and other pertinent geologic and topographic data.

Map 1
Town of West Greenwich
Topography

2. Groundwater Resources

Aquifers/Groundwater Reservoirs

A groundwater reservoir, or aquifer, is a geologic formation that can store and release large amounts of subsurface water. In Rhode Island, the most productive aquifers consist of deep sand and gravel deposits, commonly referred to as glacial outwash or stratified drift, where water is stored among the grains of sand. Groundwater reservoirs have their own watersheds, known as recharge areas, which consist of all the land contributing subsurface flow to a common location. In recharge areas, surface waterbodies and groundwater are often interconnected.

RIDEM Groundwater Division has delineated the critical portions of the recharge areas to the state's significant stratified drift aquifers (groundwater reservoirs) as part of classifying groundwater resources. Groundwater reservoirs are those portions of the stratified drift aquifers with the greatest potential for significant water supply development. The groundwater reservoir is defined by areas of stratified drift with a saturated thickness greater than 40 feet and a transmissivity of 4,000 feet squared per day.

See Map 2 - Hydrographically Sensitive Areas in the Town of West Greenwich.

Map 2
Town of West Greenwich
Hydrographically Sensitive Areas

Groundwater Quality Regulations have been prepared by RIDEM to fulfill the requirements of the R.I. Groundwater Protection Act (R.I.G.L. 46-13.1). The regulations classify all of the groundwater of the state into four different classes, establish standards for each class and set forth procedures for determining compliance with the standards. The purpose of the regulations is to protect the quality of the state's groundwater resources for use as drinking water and for other beneficial uses, and to promote restoration of contaminated groundwater to drinking water quality where feasible or to a quality that assures protection of the public health and the environment.

Figure 1 indicates Groundwater Classifications which are defined as follows:

Figure 1
Town of West Greenwich
Groundwater Classification

GAA: Groundwater sources suitable for public drinking water use without treatment. Includes the critical portions of the recharge areas to the significant stratified drift aquifers and wellhead protection areas for community water supply wells.

GA: Groundwater sources that may be suitable for public or private drinking water without treatment.

GB: Groundwater sources that may not be suitable for public and private drinking water without treatment due to known or presumable degradation. Includes certain areas of waste disposal and highly urbanized areas of the state.

GC: Groundwater sources that may be suitable for certain waste disposal practices. Defined as the area extent of active landfills.

Wellhead Protection

The Town's Conservation Commission is currently completing an inventory of wellhead protection sites in accordance with the RIDEM "Inventory of Potential Sources of Groundwater Contamination in Wellhead Protection Areas," December 1992. RIDEM has defined a wellhead protection area (WHPA) as the critical portion of a three-dimensional zone surrounding a public well or wellfield through which water will move toward and reach such well or wellfield. The DEM delineation's are based on reasonably available information regarding the hydrogeologic environment and the well characteristics. The WHPAs for the smaller non-community wells are a circle with a radius of 1,750 feet, which was derived from a hydrogeologic calculation.

The purpose of the WHPA is the protection of the groundwater resource within an area of public water supply wells. The process is to delineate the area of concern, identify threats to groundwater quality and minimize potential for future contamination.

3. Soils

High soil fertility contribute to the purification and filtering systems for the maintenance of groundwater quality. Fertile soil, rich in organic matter with high biological activity, has

the capacity to remove most but not all heavy metals and many organic chemicals before they reach the underlying groundwater. Topsoil does have a finite capacity to remove pollutants. If it has poor fertility or if its fertility has been killed by contaminants, its lack of purification capacity becomes a threat to groundwater quality.

Certain soil characteristics lend themselves to use for crops and pastures, while others may serve well as locations for buildings or transportation routes. Soils with poor drainage and high flooding frequency may be unsuitable for development. Soils with a high water table, rapid permeability or shallow depth to bedrock may preclude installation of on-site septic systems unless special design features are incorporated to mitigate these problems.

Decisions regarding individual development applications should be based upon site specific soils data. To assist in this process, a Soils Analysis Map created by RIGIS, which is on file in the West Greenwich Planning Department and is considered a technical appendix to this Element, should be used as an evaluative tool in the review of development proposals. The following Table classifies and summarizes soils based on constraints to development (based on RIGIS data). A descriptive analysis defining each classification follows.

TABLE 1 - RIGIS SOILS

RIGIS SOILS ANALYSIS CATEGORIES	ACRES
Moderate Constraints to Development	3,145
Seasonal High Watertable (19" - 42" depth)	3,913
Bedrock and Slope Constraints (> 15% slope)	3,366
Hydric Soils - Severe Constraints (0" - 18" depth)	5,079
All Others - Severe Constraints, rock, sand, etc.	52
Prime Agricultural Soils	2,907
TOTAL	18,462
Total Acreage (RIGIS)	32,733
Soils with Constraints listed above	56.4%

Soils with Moderate Constraints to Development - Soils which are generally suited to residential development. Some soils in this group have moderate soil constraints for development and evaluations must be made on a case by case basis. The constraints consist of: 1) very rapidly permeable soils which have a higher potential for groundwater contamination; 2) slowly permeable soils which tend to have greater septic system failure rates and 3) extremely stony soils, which are expensive to excavate and grade for residential development. Also included are disturbed areas which are often suitable for residential development, but which need site specific evaluation. Prime agricultural soils, defined as those best suited for producing food, feed, forage, fiber and oilseed crops, and also available for these uses, are also classified as having moderate constraints to development.

Soils with High Constraints to Development - Soils in this group have slopes in excess of 15 percent (greater than 15 percent slope - 15 feet of vertical rise over 100 feet of horizontal distance), and/or have significant shallow to bedrock areas, or seasonal high water tables. Steep slopes increase the potential for soil erosion during construction, and make construction of on-site septic systems difficult. Shallow soils, and rock outcrops impair the construction of roads, buildings, buried utilities and on-site septic systems.

Soils with a seasonal high water table (19 inches to 42 inches depth) are considered to have high constraints to development. They generally have a seasonal high water table at a depth of 1.5 to 3.5 feet from the surface for significant periods during the year. Many of these soils have additional constraints to development, such as slow permeability or, in a few instances, very rapid permeability.

Soils with Severe Constraints to Development - These are hydric (wet) soils (0 - 18 inches depth) which have water at, or near, the surface for significant periods of the year. Other severe constraints (rock, sand etc.) which consist of miscellaneous soil types that have significant constraints for residential development. Development on or near hydric soils poses many more concerns in terms of potential water resource and/or wetlands impacts, as well as many of the above-mentioned concerns. In most cases, development on soils in this group is not possible because of State wetlands regulations. Presence of hydric soils on a development site should trigger further investigation of wetlands, and the potential impacts that such development may have on the function of the wetlands.

The Soil Conservation Service Soil Survey of Rhode Island contains detailed soil maps of the locations of all of the soil types in the state, in addition to identifying information relative to the predicted soil behavior and properties affecting various land uses. The Survey also identifies limitations or hazards to land uses that are inherent in the soil, improvements needed to overcome these limitations and the impact selected land uses will have on the environment.

The Soil Survey provides detailed coverage and descriptions of each soil type. All soils are classified according to physical and chemical properties and suitability for various land uses. The soil series are mapped on aerial photographs showing the locations of soils in the Town. Planners, community officials, engineers, developers, builders and homeowners can use this information to plan land use, select sites for construction, develop and enhance soil resources, or identify any special practices that may be needed to insure proper performance.

The following Table 2 indicates approximate acreage of all soil types in West Greenwich according to the SCS Soil Survey.

TABLE 2 - APPROXIMATE ACREAGE OF SOILS IN WEST GREENWICH

SYMBOL	SOIL NAME	ACRES
Aa	Adrian Muck	1,095
Af	Agawan fine sandy loam	410
Bh	Bridgehampton silt loam	60
Bm	Bridgehampton silt loam, till substratum	115
Bn	Bridgehampton-Charlton complex, very stony	755
Bo	Bridgehampton-Charlton complex, extremely stony	440
Br	Broadbrook silt loam	185
Bs	Broadbrook very stony silt loam	90
Ca	Canton-Charlton - Rock outcrop complex	735
Cd	Canton & Charlton fine sandy loams	595
Ce	Canton & Charlton fine sandy loams, very rocky	825

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Ch	Canton & Charlton very stony fine sandy loams	9,810
Ck	Canton & Charlton extremely stony fine sandy loams.	690
Co	Carlisle muck	730
Dc	Deerfield loamy fine sand	200
Du	Dumps	5
Ef	Enfield silt loam	160
Gh	Gloucester-Hinckley very stony sandy ~loams	185
Hk	Hinckley gravelly sandy loam	3,390
Hn	Hinckley-Enfield complex	155
Lg	Lippitt gravelly sandy loam, very rocky	95
mm	Merrimac sandy loam	815
Na	Narragansett silt loam	10
Nb	Narragansett very stony silt loam	345
Nc	Narragansett extremely stony silt loam	115
Nt	Ninigret fine sandy loam	95
Pa	Paxton fine sandy loam	125
Pb	Paxton very stony fine sandy loam	480
PC	Paxton extremely stony fine sandy loam	35
Pg	Pits, gravel	270
Pp	Podunk fine sandy loam	5
Ra	Rainbow silt loam	95
Rb	Rainbow very stony silt loam	965
Rc	Raypol silt loam	25
Re	Ridgebury fine sandy loam	10
Rf	Ridgebury, Whitman & Leicester extremely stony fine sandy loams	2,260
Rp	Rock outcrop - Canton complex	95
Ru	Rumney fine sandy loam	25
Sb	Scarboro mucky sandy loam	425

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Sd	Scio very stony silt loam	30
Ss	Sudbury sandy loam	470
St	Sutton fine sandy loam	35
Su	Sutton very stony fine sandy loam	1,060
Sv	Sutton extremely stony fine sandy loam	275
Tb	Tisbury silt loam	60
UD	Udorthents - Urban land complex	580
Wa	Walpole sandy loam	570
Wb	Wapping silt loam	45
WC	Wapping very stony silt loam	240
Wd	Wapping extremely stony silt loam	85
Wg	Windsor loamy sand	625
Wh	Woodbridge fine sandy loam	155
Wo	Woodbridge very stony fine sandy loam	1,070
Wr	Woodbridge extremely stony fine sandy loam	50
	Water	390
TOTAL		32,660

SOURCE: Soil Survey of Rhode Island, Soil Conservation Service

**TABLE 3 - SOIL UNITS THAT QUALIFY AS PRIME FARMLANDS
IN WEST GREENWICH**

SYMBOL	SOIL NAME - PRIME FARMLANDS	ACRES
Af	Agawan fine sandy loam	410
Bh	Bridgehampton silt loam	60
Bm	Bridgehampton silt loam, till substratum	115
Br	Broadbrook silt loam	185
Cd	Canton & Charlton fine sandy loams	595
Ef	Enfield silt loam	160
Mm	Merrimac sandy loam	815
Na	Narragansett silt loam	10
Nt	Ninigret fine sandy loam	95
Pa	Paxton fine sandy loam	125
Pp	Podunk fine sandy loam	5
Ra	Rainbow silt loam	95
Ss	Sudbury sandy loam	470
St	Sutton fine sandy loam	35
Tb	Tisbury silt loam	60
Wb	Wapping silt loam	45
Wh	Woodbridge fine sandy loam	155
TOTAL PRIME FARMLANDS		3,435

Source: USDA, Soil Conservation Service.

**TABLE 4 - SOIL UNITS THAT QUALIFY AS ADDITIONAL FARMLANDS OF
STATEWIDE IMPORTANCE IN WEST GREENWICH**

SYMBOL	SOIL NAME - ADDITIONAL FARMLANDS	ACRES
Dc	Deerfield loamy fine sand	200
Hk	Hinckley gravelly sandy loam	3,390
Hn	Hinckley-Enfield complex	155
Rc	Raypol silt loam	25
Re	Ridgebury fine sandy loam	10
Ru	Rumney fine sandy loam	25
Wa	Walpole sandy loam	570
Wg	Windsor loamy sand	625
Total		5,000

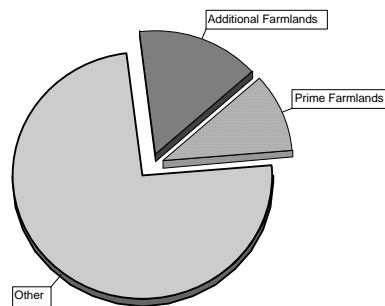
Agricultural Soils - West Greenwich soils that are designated as prime agricultural comprise only 10% of the total acreage. This soil grouping is highly susceptible to development. These areas are found scattered in Town. In many areas, prime farmland soils are limited by a seasonally high water table.

Development on prime farmland soils is generally attractive because permitting requirements are generally few when soils are flat, well-drained and land development costs are usually lower with less site work involved. Impacts to the community which may be associated with development on these soils are not necessarily low, however, and may include loss of water purification capability, loss of visual and scenic qualities, loss of open field and field edge type habitats, economic impacts in terms of the loss of active agricultural businesses, and others.

Techniques the Town may consider to avoid significant impacts from farmland soil development include land acquisition programs, conservation restrictions, purchase of development rights, design guidelines, and visual easements.

TABLE 5 - SOIL TYPES

West Greenwich



From the above table and analysis it is clear that prime farmland is almost depleted. There is a need to identify those prime farmland soils worthy of protection and to be used for farming, woodlands or purchase of development rights.

The following Soil Analysis Map (Map 3) classifies soils based on slight, moderate, and severe constraints to development. Soil Conservation Service methodology with the addition of steep slope, hydrographically-sensitive areas and state management/park areas, have been factored in. All state-owned property has been classified as a severe constraint to development. This map shall also be utilized as an evaluative tool for development applications.

Map 3
Town of West Greenwich
Soils Analysis Map

4. Surface Water Resources

Watershed Areas

A watershed is the land area which drains to a common outlet, such as the outflow of a lake, the mouth of a river, or any point along a stream channel. A drop of water falling in a watershed that does not evaporate or is not used by plants, will leave the watershed at this outlet.

The drainage divide is the outer boundary of a watershed, and is formed by the ridges and hills surrounding a waterbody and the location selected as the downstream outlet.

The watershed of most lakes and rivers consists of a network of intermittent drainages, man-made channels and storm drains, streams, wetlands and the surrounding upland. At any point in the watershed, precipitation runs off the land surface and collects in these natural and man-made drainage pathways, following the topography. Precipitation often seeps into the ground where it moves through the soil and may emerge at a nearby surface waterbody; some infiltrates more deeply to replenish regional groundwater supplies.

The following Surface Water Map (Map 4) depicts major and minor watersheds in the Town of West Greenwich.

Map 4
Town of West Greenwich
Surface Water

The Pawcatuck Watershed

The Pawcatuck Watershed is located in southwestern Rhode Island and portions of southeastern Connecticut, encompassing ten Rhode Island towns and four Connecticut towns. Total acreage of the Pawcatuck Watershed is 194,000 acres.

The Pawcatuck Watershed is drained by seven major rivers and their tributaries: the Chipuxet, Chickasheen, Wood, Queen and Pawcatuck Rivers of Rhode Island; and the Shunuck and Green Fall Rivers of Connecticut.

5. Floodplains

West Greenwich is not a coastal community and therefore not subject to coastal wave action. The Federal Emergency Management Agency (F.E.M.A.) has designated coastal communities with category "V Zones" which are areas subject to 100-year coastal flooding with potentially damaging wave action. Landward of the V zones are "A zones" which are also subject to flooding during 100-year storms, but are not exposed to wave action. Development in these areas is subject to damage or destruction during severe storms. Adjoining these areas in some locations are "B zones" which include land between the limits of the 100-year and 500-year flood zones, or certain areas subject to 100 year flooding with average depths less than one foot.

Ponds and streams with adjoining "A zone" flood hazard areas include several isolated areas in the Town (see Hydrographically Sensitive Areas Map). Copies of the Flood Insurance Rate Maps (FIRM) for the Town of West Greenwich, dated January 3, 1986 are on file in the Tax Assessor's, Town Planner's and Building Official's offices at the Town Hall. Development in special flood hazard areas has the potential to reduce flood storage capacity by increasing the amount of impervious surface in a flood zone. As such, monitoring of all development applications requires local officials to utilize these resources to ensure compliance with applicable federal and state mandates.

6. Wetlands

Wetlands provide a valuable habitat for a wide variety of fish and wildlife species. Wetlands improve water quality by filtering nutrients, wastes and sediment from upland runoff. Wetlands also provide flood and storm damage protection, erosion control, water supply, groundwater recharge and recreational opportunities.

According to "Best Management Practices," buffering wetlands from areas of human activity will help to remove additional pollutants before they reach the wetland. Buffer widths have been recommended from 25 feet to 300 feet, depending on the nature of the receiving water body, the significance of the habitat, soil types, slope conditions and other factors. Currently the Town provides for a buffer of 200 feet between structures and/or septic systems and the edge of any pond or stream. When the area to be disturbed is determined to be a significant wildlife habitat, a buffer of at least 300 feet is suggested.¹ This is considered the minimum distance that will prevent disturbance of wildlife from development, noise, pollution and other human activities. Many states have established ranking systems to determine appropriate buffer widths, based on criteria such as soil conditions, slope, quantity and quality of vegetation, potential water quality impacts from the activity and proximity of the activity to valuable resource areas. An evaluation of buffer widths should be an undertaking for the future.

Wetlands in West Greenwich are regulated by the State Freshwater Wetlands Act, (R.I.G.L. 2-1-18, et. seq.). The Act requires that a permit be obtained from RIDEM Freshwater Wetlands Section before any wetland is altered in any way. Filling, grading, clearing of vegetation or construction is considered alteration of a wetland. The Act protects land that is clearly wet, such as ponds, rivers, marshes, streams and bogs, as well as those areas which may seem dry for much of the year, such as wooded swamps, where water is not observed on the surface, and areas subject to storm flow and flooding.

Wetlands include swamps of 3 or more acres, marshes of 1 or more acres, bogs and ponds of 1/4 acres or greater. The law also considers as wetlands certain areas which might be dry all year round, such as the area 50 feet around ponds, marshes, swamps and bogs, land with the area 100 feet from flowing bodies of water less than 10 feet in width and the area 200 feet from flowing bodies of water greater than 10 feet in width.

Wetland systems in the Town of West Greenwich are threatened by a variety of actions, including road runoff, sewerage disposal systems, and erosion and sedimentation. Regulatory actions

¹ The Land Management Project, Land Use and Water Quality Series,

Vegetated Buffer Strips, Best Management Practices Fact Sheet No. 4, September, 1990.

necessary to prevent and mitigate degradation of wetlands are administered by RIDEM.

Wetlands, such as wooded swamps, marshes and bogs, have important hydrologic and water quality functions in addition to the fish and wildlife habitat value associated with these areas. Wetlands slow the flow of incoming water and temporarily store this water before slowly releasing it downstream. By metering flow, wetlands protect downstream areas from flooding. Slow movement of water through wetland vegetation also helps to settle sediments and remove certain pollutants, thereby improving water quality. When wetlands are filled or channelized these natural functions are lost.

The previously-cited Surface Water Map depicts wetland areas in West Greenwich. While this map is not indicative of any officially-accepted designation of wetlands, it shall, nonetheless, be extremely valuable in the review of development applications.

7. Rare & Endangered Species

Rhode Island Natural Heritage Program

The Rhode Island Natural Heritage Program is a joint venture of the Rhode Island Department of Environmental Management and The Nature Conservancy, a national nonprofit land conservation group. The Program identifies significant natural areas through a comprehensive statewide inventory in order to provide information about representative native plant communities, rare plant and animal species, aquatic habitats and special landscape features.

The Program maintains maps which give detailed information on the existence, numbers, condition, status, and location of plant and animal species and communities, as well as on geologic, aquatic and landscape features. The information provided by the Natural Heritage Program can point to fragile areas in planning for minimal adverse impact on the environment or degradation of the landscape.

This information can determine which areas should be preserved and which could be negatively impacted by development. Once areas are identified, strategies for protection can be planned, recommended and implemented.

On file at the Town Hall are copies of topographic maps, provided by the Natural Heritage Program, showing the approximate

boundaries of rare species habitat areas in West Greenwich. The Planning Board and Conservation Commission can make use of these maps to review the siting of proposed development projects. If proposals are submitted for development or alteration of land on or near rare species habitat areas, a more detailed inventory can be conducted and land management strategies can be incorporated into the review and approval process.

Seven sites have been identified by the Program as being of particular interest. These sites are included in Map 5, Open Space and Other Sensitive Areas.

The following area descriptions of the seven significant sites were provided by the Natural Heritage Program:

1. The Arcadia Management Area is among the state's most significant sites for biological diversity. Included within its boundaries are a multitude of habitat types, including mixed hardwood forests, riparian corridors, pitch pine/scrub oak barrens, level bogs, and coniferous swamps. The variety of rare species present is equally impressive: At least thirty-three occurrences of rare plant and animals have been confirmed by the Heritage Program. The area is also of critical importance in providing large, relatively unfragmented forested tracts required by some animals, notably birds, unable to compete with species associated with "edge" habitats (roads, powerlines, developed areas, etc.). Tippecansett Pond forms a sub-site within Arcadia; the presence of a coastal plain quagmire community and a regionally rare sedge species confer special significance to this pond and its shoreline. As Arcadia as a whole is owned by the state and thus spared development pressures, the imminent conservation task involves proper management of the land.
2. The Alton Jones Campus of the University of Rhode Island also offers a variety of habitats for rare species. Several rare animals occur in the dry, rocky oak/white pine woods in the vicinity of ephemeral ponds; the mixed hardwood forests and emergent wetlands support a variety of state-listed plant species; and the eaves of the barn at the demonstration farm provide nesting habitat for the rare cliff swallow. This site is under protective management, and threats to the rare species populations are minimal.

Map 5
Town of West Greenwich
Open Space and Other Sensitive Areas

3. The pitch pine/scrub oak barrens surrounding the Trestle Trail in Coventry, extending southward into West Greenwich, represent one of the finest examples of this community type in Rhode Island. The health of this ecosystem is evident in the invertebrate fauna present. Recent sampling has revealed at least nine species of butterflies and moths that rely on the particular conditions present at this site. Other community types represented here include small kettlehole bogs in the undulating terrain, the open sandy grassland along the railroad embankment, a mesic forest, and the riparian corridor along the Moosup River. The state has been active in acquiring land in this area for preservation, although some privately owned tracts may continue to be threatened by development. Management of the site may involve prescribed, or controlled burning to ensure the continued health and viability of the barrens ecosystem.
4. The dry field, pondshore and pitch pine/scrub oak barrens habitat at the Division Road site support several state-listed plants and animals, including the Grasshopper Sparrow, a State Threatened species. The field ecosystem is gradually reverting to woodland with the lack of vegetation management to keep the habitat open, and the barrens habitat, although still of value, has been fragmented and degraded through the sand mining activities. This site, part of the Big River Reservoir Area, is a prime candidate for management through elimination of further degradation and mowing of the field to keep the habitat open.
5. The large area within the Big River Reservoir Area provides a contiguous coniferous forest (predominantly white pine) with associated bottomlands, including some Atlantic white cedar swamp. This habitat is utilized by various rare birds needing large forested tracts.
6. The Wickaboxet Pond site is comprised of red oak/white pine/pitch pine forest community, an acidic seepage swamp, a coastal plain pondshore, and the riparian corridor along the Falls River. In addition, the abundant small vernal swamps and ponds at this site provide breeding habitat for several state-listed amphibians. The state has purchased the old Pine Top ski area, which abuts the site, however, development threatens the remaining privately owned parcels.
7. The Pysz Farm, north of Weaver Hill Road, offers a diversity of habitats including mixed woodlands, riparian areas, a good quality fen, and open fields. The development rights for this parcel have been purchased by the state.

Table # 6 is a list of rare species either presently or historically occurring in West Greenwich.

TABLE 6
RARE SPECIES & EXEMPLARY NATURAL
COMMUNITIES IN WEST GREENWICH

COMMON NAME	FAMILY	PROTECTION STATUS	DATE OF LAST OBSERVATION
Small Whorled Pogonia	Orchidaceae	FE	1965
Yellow Fringed Orchid	Orchidaceae	SE	1916-07-26
Pale Green Orchid	Orchidaceae	SE	1979
Grasshopper Sparrow	Emberizidae	ST	1986-05
Grasshopper Sparrow	Emberizidae	ST	1985-SUMM
Grasshopper Sparrow	Emberizidae	ST	1981
Upland Sandpiper	Scolopacidae	ST	1986-SUMM
Cliff Swallow	Hirundinidae	ST	1986
Buck Moth	Saturniidae	ST	1986-10-13
Slender Gerardia	Scrophulariaceae	ST	1913-07-28
Wild Senna	Fabaceae	ST	1971
Autumn Coralroot	Orchidaceae	ST	1971
Lily-Leaved Twayblade	Orchidaceae	ST	1971
Lily-Leaved Twayblade	Orchidaceae	ST	1971
Lily-Leaved Twayblade	Orchidaceae	ST	1980-06
One-Flowered Wintergreen	Ericaceae	ST	1971
One-Sided Pyrola	Ericaceae	ST	1979
Ditch Stonecrop	Saxifragaceae	ST	1964
Cross-Leaved Milkwort	Polygalaceae	ST	1913-08-26
Tall Beaked Rush	Cyperaceae	ST	1920-09-22
Smooth Gooseberry	Grossulariaceae	ST	1970-07-16
Long Beech Fern	Aspleniaceae	ST	1962-06-07
Wood Turtle	Emydidae	SSI	1989-07-06
Acadian Flycatcher	Tyrannidae	SSI	1989-06-20
Acadian Flycatcher	Tyrannidae	SSI	1989-06-12
Water Shrew	Soricidae	SSI	1970-05-20
Water Shrew	Soricidae	SSI	1989-06-03
Wild Leek	Liliaceae	SSI	1982
Poke Milkweed	Asclepiadaceae	SSI	1979
Daisy-leaf Grape-Fern	Ophioglossaceae	SSI	1979
Dwarf Grape-Fern	Ophioglossaceae	SSI	1979
Large Coralroot	Orchidaceae	SSI	1965
Early Coralroot	Orchidaceae	SSI	1965
Early Coralroot	Orchidaceae	SSI	1962-05
Round-Leaved Dogwood	Cornaceae	SSI	1965
Horsetail Spike-Rush	Cyperaceae	SSI	1986-07-15
Horsetail Spike-Rush	Cyperaceae	SSI	1988

<i>Town of West Greenwich</i>	<i>Natural and Cultural Resource</i>	<i>Comprehensive Plan</i>
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Golden Heather	Cistaceae	SSI 1978
River Quillwort	Isoetaceae	SSI 1964-08-25
Mountain Honeysuckle	Caprifoliaceae	SSI 1979
Mountain Fly-Honeysuckle	Caprifoliaceae	SSI 1971
Climbing Fern	Schizaeaceae	SSI 1934-01-10
False Dragonhead	Lamiaceae	SSI 1965
Sand Cherry	Rosaceae	SSI 1979
Green Pyrola	Ericaceae	SSI 1978
Goat's-Rue	Fabaceae	SSI 1989-07-15
Flat-Leaved Bladderwort	Lentibulariaceae	SSI 1965
Large-Leaved White Violet	Violaceae	SSI 1979
Marbled Salamander	Ambystomatidae	C 1981
Marbled Salamander	Ambystomatidae	C 1985-07-03
Marbled Salamander	Ambystomatidae	C 1987-04-06
Marbled Salamander	Ambystomatidae	C 1985-03-30
Turkey Vulture	Cathartidae	C 1980-06-01
Worm-Eating Warbler	Emberizidae	C 1989-05-30
Worm-Eating Warbler	Emberizidae	C 1989-06-01
Four-Toed Salamander	Plethodontidae	C 1982-08-24
Four-Toed Salamander	Plethodontidae	C 1987-SPRG
Four-Toed Salamander	Plethodontidae	C 1987-04-18
Four-Toed Salamander	Plethodontidae	C 1987-04-29
Eastern Hognose Snake	Colubridae	C 1971-10-22
Smoky Shrew	Soricidae	C 1979-03-30
Northern Redbelly Snake	Colubridae	C 1975-CA
Northern Redbelly Snake	Colubridae	C 1990-05-08
Eastern Ribbon Snake	Colubridae	C 1985-05-09
Eastern Ribbon Snake	Colubridae	C 1989-06-15
Winter Wren	Troglodytidae	C 1989-05-30
Winter Wren	Troglodytidae	C 1989-06-30
White-Throated Sparrow	Emberizidae	C 1962-06-07
White-Throated Sparrow	Emberizidae	C 1989-06-30
Blunt-Leaved Milkweed	Asclepiadaceae	C 1965
Blunt-Leaved Milkweed	Asclepiadaceae	C 1984
Blunt-Leaved Milkweed	Asclepiadaceae	C 1987-09-12
Maidenhair Spleenwort	Aspleniaceae	C 1971
Grass Pink	Orchidaceae	C 1914-08-12
Wild Lupine		C 1980
Wild Lupine		C 1980-05-01
Ostrich Fern	Aspleniaceae	C 1924-08-28
Ostrich Fern	Aspleniaceae	C 1971
Ostrich Fern	Aspleniaceae	C 1971
Ostrich Fern	Aspleniaceae	C 1979
Black Spruce	Pinaceae	C 1988
Snake Root	Asteraceae	C 1967-08-29
Grass-of-Parnassus	Saxifragaceae	C 1913-07-25
New England Coastal Plain Quagmire		1986-07
New England Pitch Pine/Scrub Oak Barren		1988-06

Southern New England Level Bog

1987-06

RHODE ISLAND NATURAL HERITAGE PROGRAM - DEFINITIONS OF STATE STATUS:

The following definitions generally describe the conditions necessary for a species listing in a particular category:

(SE) State Endangered

Native species in imminent danger of extirpation from Rhode Island. These species meet one or more of the following criteria:

1. A species currently under review for listing by the U.S. Fish and Wildlife Service as Federally endangered or threatened.
2. A species with one or two known or estimated total occurrences in the state.
3. A species apparently globally rare or threatened, and estimated to occur at approximately 100 or fewer occurrences range-wide.

(ST) State Threatened

Native species which are likely to become state endangered in the future if current trends in habitat loss or other detrimental factors remain unchanged. These species meet one or more of the following criteria:

1. A species with 3 to 5 known or estimated occurrences in the state.
2. A species with more than 5 known or estimated occurrences in the state, but especially vulnerable to habitat loss.

(SSI) State Interest

Native species not considered to be State Endangered or State Threatened at the present time, but occur in 6 to 10 sites in the state.

(C) Species of Concern

Native species which do not apply under the above categories but are additionally listed by the Natural Heritage Program due to various factors of rarity and/or vulnerability, or for which status information is presently not well known.

(SX) State Extirpated

Native species which have been documented as occurring in the state but for which current occurrences are unknown. When known, the last documentation of occurrence is included. If an occurrence is located for a SX species, that species would automatically be listed in the State Endangered category.

(FE) Federally Endangered

Listed as Federally Endangered. (FT) Federally Threatened Listed as Federally Threatened.

8. Forest Land

The large acreage of forest lands in West Greenwich provide a variety of economic benefits such as providing lumber, firewood and other assorted wood products. A number of private sawmills provide employment cutting, hauling and processing timber. Many other residents supplement their incomes by cutting and selling firewood on a part-time basis.

The Rhode Island Primary Wood Producers Directory, published in May, 1990 by RIDEM Division of Forest Environment lists two commercial sawmills in West Greenwich: Rathbun Sawmill on Plain Meeting House Road and Harrington Lumber Company on Henry Brown Road. The major products listed are grade lumber, landscape ties, pallet stock, fuelwood, post & beam and dimension stock using a variety of tree species including red oak, white pine, mixed hardwoods, hickory, white ash, red maple and white oak.

In addition to economic benefits, the Town's forest lands support a diversity of wildlife and recreational activities; serve as watershed and groundwater recharge areas; soil erosion and sedimentation control; provide education and research areas; air and water pollution abatement; and are an important component of rural landscape and open space preservation.

9. Composite Constraints

The inventory of Natural Resources depicts those environmentally-sensitive areas within the Town of West Greenwich which pose constraints to development in one way or another. The following map, the Composite Map, is an attempt to combine these constraints into a single reference map. This Composite Map (Map 6) classifies sensitive resources into three categories: SEVERE, MODERATE, and SLIGHT constraints to development. This map will assist the Town in evaluating and reviewing development proposals in light of the three constraints categories. It can also be useful in determining areas for protection on the local Zoning Map.

Map 6
Town of West Greenwich
Composite Map

**SECTION II
GOALS & POLICIES**

A. NATURAL RESOURCES

GOALS:

- G#1** Identify, inventory, preserve and protect the Town's natural resources and rural traditions that reinforce community identity
- G#2** Protect the Town's natural resources to preserve the rural character unique to this community
- G#3** Develop water resource management strategies designed to preserve lakes, ponds, rivers, wetlands and associated buffer strips
- G#4** Protect ground water resources and recharge areas used for existing and potential public water supply from contamination from point and non-point pollution sources
- G#5** Promote conservation of prime farmland, open space land, and other natural resources utilizing various growth management methodologies/techniques
- G#6** Protect natural resources through the promotion of environmental education to all age groups

POLICIES:

- P.1** Amend development regulations to encourage growth in areas of limited land constraints and discourage development in environmentally-sensitive or scenic areas
- P.2** Identify and protect the Town's potential public ground water resource areas can be achieved through the adoption of flexible zoning methodologies/techniques
- P.3** Prohibit direct storm water discharges from all development into lakes, ponds, streams or wetlands
- P.4** Promote continued operation of farming activities and the preservation of prime agricultural soils

- P.5 Prohibit development in those environmentally-sensitive areas where slopes greater than or equal to 15% are present
- P.6 Ensure protection of wetland systems recognized as valuable natural resources that provide functions of flood storage, water quality protection, wildlife habitat, recreation, and pollution control by requiring compliance with provisions of state law and local ordinances
- P.7 Promote awareness and a sense of community through environmental education
- P.8 Promote the Town of West Greenwich as a regionally significant GREENWAY as the Town is located amidst adjacent communities that have formed a large greenbelt separating urban areas
- P.9 Identify and promote preservation of the Town's scenic vistas and visual diversity which are recognized as important to the rural character of West Greenwich
- P.10 Encourage and ensure preservation of wildlife habitat and rare species of flora and fauna as identified in the Natural Resource inventory
- P.11 Establish a local Zoning Map based on existing and proposed land use patterns, available infrastructure, and those environmental constraints to development as determined by the COMPOSITE constraint map(s) on-file in the Planning Office. Said maps shall be instrumental in allowing both the Conservation Commission and the Planning Board the opportunity to jointly recommend potential increases in minimum lot sizes based on the COMPOSITE map classification of "severe" constraints to development
- P.12 Identify and protect natural and cultural resources through subdivision and development plan review, design guidelines, and flexible development location
- P.13 Require 100-foot wide conservation easements for land in new subdivisions bordering water bodies--to enhance greenway corridors
- P.14 Strengthen the Earth Removal Ordinance to require land reclamation/restoration plans and to modify bonding requirements

- P.15** Place emphasis on the management of growth and development to enhance the traditional rural landscape and natural environment of the Town through flexible land use regulations and techniques (designed to guide growth and development in a direction that preserves the inherent natural landscape of the Town)
- P.16** Adopt changes to zoning/subdivision regulations to require all development applications to identify the on-site presence of natural resources and constraints to development (use of Development Impact Statement (DIS) ordinance would be beneficial in select applications. DIS's require applicants for development to submit a written report (DIS) that analyzes and maps potential adverse impacts on cultural and natural resources or other on-site constraints to development; it also requires the submission of a quantitative-qualitative cost-revenue Fiscal Impact Analysis (FIA) describing the cumulative impact the proposed development would have on the Town's service/infrastructure demands and financial resources)
- P.17** Preserve environmentally-sensitive areas to the greatest extent possible through flexible development options and alternatives in relation to the COMPOSITE constraint map(s)
- P.18** Consideration shall be given to utilizing flexible zoning/subdivision techniques such as cluster development, building setback variations, DIS, and unbuildable/expanded buffers as a means of preserving environmentally-sensitive areas
- P.19** Investigate the establishment of a public land trust as an entity which can acquire or receive donations of land to be preserved for the public good (those significant areas determined to protect rural character and/or provide wildlife habitat or public recreation)

SECTION III - ACTION & IMPLEMENTATION PROGRAM

G=GOAL

P=POLICY

I=ACTION/IMPLEMENTATION

IDENTIFY & PRESERVE NATURAL RESOURCES

G#1 Identify, inventory, preserve and protect the Town's natural resources and rural traditions that reinforce community identity

P.11 Establish a local Zoning Map based on existing and proposed land use patterns, available infrastructure, and those environmental constraints to development as determined by the COMPOSITE constraint map(s) on-file in the Planning Office. Said maps shall be instrumental in allowing both the Conservation Commission and the Planning Board the opportunity to jointly recommend potential increases in minimum lot sizes based on the COMPOSITE map classification of "severe" constraints to development

P.12 Identify and protect natural and cultural resources through subdivision and development plan review, design guidelines, and flexible development location

P.16 Adopt changes to zoning/subdivision regulations to require all development applications to identify the on-site presence of natural resources and constraints to development (use of Development Impact Statement (DIS) ordinance would be beneficial in select applications. DIS's require applicants for development to submit a written report (DIS) that analyzes and maps potential adverse impacts on cultural and natural resources or other on-site constraints to development; it also requires the submission of a quantitative-qualitative cost-revenue Fiscal Impact Analysis (FIA) describing the cumulative impact the proposed development would have on the Town's service/infrastructure demands and financial resources)

P.17 Preserve environmentally-sensitive areas to the greatest extent possible through flexible development options and alternatives in relation to the COMPOSITE constraint map(s)

P.18 Consideration shall be given to utilizing flexible zoning/subdivision techniques such as cluster development, building setback variations, DIS, and unbuildable/expanded buffers as a means of preserving environmentally-sensitive areas

I#1 The Conservation Commission and Planning Board shall utilize available and generated COMPOSITE constraint maps and other tools, as needed, to review development plans and to minimize natural resource impact.

I#2 Revise the Town's Zoning Ordinance and Map to strengthen natural resource protection strategies utilizing some combination, including, but not limited to the following planning tools:

- a. flexible/cluster zoning;
- b. overlay districts;
- c. setback requirements;
- d. buffer zones;
- e. interior building lots; and
- f. development plan review.

A more extensive discussion of flexible and cluster zoning concepts is included in the Land Use Element.

I#3 Revise the Town's Subdivision Regulations to reflect land use goals and policies adopted in the Comprehensive Plan, including requiring land dedication of a certain percentage of appropriate land for the protection of open space or recreation areas and reviewing each subdivision for wildlife habitats, wetlands, scenic qualities, contiguous open spaces, and other natural resources.

P.19 Investigate the establishment of a public land trust as an entity which can acquire or receive donations of land to be preserved for the public good (those significant areas determined to protect rural character and/or provide wildlife habitat or public recreation)

- I#1** A "West Greenwich Community Land Trust" should be created to acquire easement or ownership of threatened natural resources and to coordinate other land conservation techniques such as conservation easements, purchase development rights, grants, conservancies, foundations, and funding through non-profit agencies such as Trust for Public Land and others.

PRESERVE RURAL CHARACTER

- G#2** Protect the Town's natural resources to preserve the rural character unique to this community

- P.1** Amend development regulations to encourage growth in areas of limited land constraints and discourage development in environmentally-sensitive or scenic areas
- P.5** Prohibit development in those environmentally-sensitive areas where slopes greater than or equal to 15% are present
- P.6** Ensure protection of wetland systems recognized as valuable natural resources that provide functions of flood storage, water quality protection, wildlife habitat, recreation, and pollution control by requiring compliance with provisions of state law and local ordinances
- P.8** Promote the Town of West Greenwich as a regionally significant GREENWAY as the Town is located amidst adjacent communities that have formed a large greenbelt separating urban areas
- P.9** Identify and promote preservation of the Town's scenic vistas and visual diversity which are recognized as important to the rural character of West Greenwich
- P.10** Encourage and ensure preservation of wildlife habitat and rare species of flora and fauna as identified in the Natural Resource inventory
- P.13** Require 100-foot wide conservation easements for land in new subdivisions bordering water bodies--to enhance greenway corridors

P.14 Strengthen the Earth Removal Ordinance to require land reclamation/restoration plans and to modify bonding requirements and soil erosion and sedimentation controls

P.15 Place emphasis on the management of growth and development to enhance the traditional rural landscape and natural environment of the Town through flexible land use regulations and techniques (designed to guide growth and development in a direction that preserves the inherent natural landscape of the Town)

I#1 Local Boards and officials shall work closely with the Department of Environmental Management to ensure compliance with state laws governing the protection of natural resources including freshwater wetlands, water quality, and generation of solid and hazardous waste.

I#2 Encourage and ensure preservation of wildlife habitat and rare species of flora and fauna, as identified in the Natural Resource inventory, through coordinated review of development plans by the Town's Conservation Commission and Planning Board.

WATER RESOURCE MANAGEMENT STRATEGIES

G#3 Develop water resource management strategies designed to preserve lakes, ponds, rivers, wetlands and associated buffer strips

P.3 Prohibit direct storm water discharges from all development into lakes, ponds, streams or wetlands

GROUNDWATER PROTECTION

G#4 Protect groundwater resources and recharge areas used for existing and potential public water supply from contamination from point and non-point pollution sources

P.2 Identify and protect the Town's potential public groundwater resource areas can be achieved through the adoption of flexible zoning methodologies/techniques

- I#1** Develop a comprehensive local groundwater protection strategy.
- I#2** Consider zoning ordinance and map amendments to include an aquifer protection overlay district.
- I#3** Develop an inventory of potential contamination sources.
- I#4** Amend the Zoning Ordinance to prohibit hazardous waste generators from polluting groundwater quality for potential public wells.

CONSERVATION OF PRIME FARMLAND

G#5 Promote conservation of prime farmland, open space land, and other natural resources utilizing various growth management methodologies/techniques

P.4 Promote continued operation of farming activities and the preservation of prime agricultural soils

- I#1** Amend RIGIS soils map to identify and enumerate those potential Prime Agriculture Soils worthy of possible consideration for protection.
- I#2** Continue to support existing program and strengthen the Town's Farm/Forest/Open Space Tax Program as a tax incentive to landowners to keep forest and open space land undeveloped. Develop specific criteria based on land capacity to fulfill open space and natural resource goals in order to provide tax incentives to landowners for long term conservation of parcels.

ENVIRONMENTAL EDUCATION

G#6 Protect natural resources through the promotion of environmental education to all age groups

P.7 Promote awareness and a sense of community through environmental education

- I#1** Collaborate with the URI Alton Jones Campus, local school system, Southern Rhode Island Conservation District, and the Wood-Pawcatuck Watershed

Association to develop curriculum or newsletters designed to enhance environmental awareness

- I#2** Undertake an environmental education program to increase public awareness of natural resource values and encourage property owners to protect ecologically important areas via flexible siting, management, easements, etc. Wood-Pawcatuck Watershed association worked with Southern R.I. Conservation District for school curricula.
- I#3** Work with Exeter/West Greenwich Regional School District to promote environmental awareness for students.
- I#4** Educate landowners about alternative development options to encourage preservation and conservation of natural resources and develop a range of tools to compensate landowners who participate in limited growth land use options: purchase of development rights, flexible zoning, local land trust, etc.

SPECIFIC ACTIONS

1. LAKE MISHNOCK - SPECIAL DISTRICT

Purpose

Lake Mishnock and its associated swamp and wetlands complex have been identified as an important natural resource for a variety of reasons including recreational, drinking water supply, groundwater reservoir and critical portion of the recharge area to the Mishnock aquifer. Areas that have inadequate or failed septic systems require immediate attention to prevent further pollution of the watershed.

Recommended Action

1. Provide grants or low interest loans to qualified home owners (ex. Home Repair Program) to correct or upgrade septic systems.
2. Educate residents in area of problems associated with failed septic systems, along with assistance from the Mishnock Beach Association, Fire Company. Public workshops at places

like the fire station would make residents aware of the problems and solutions.

3. Provide technical assistance for interested citizens to form a "Watershed Watch" organization.
4. Investigate sewer system in Mishnock area to prevent water quality degradation due to development, septic systems, road runoff, etc.
5. Coordinate efforts of Kent County Water Authority (KCWA) to preserve wellhead watershed area.
6. Revise zoning ordinance provisions to require septic system upgrade if building permit, special exception or variance is needed for expansion. DEM ISDS regulations require a Systems Suitability Determination application to determine whether the system is adequate for expanded use.
7. Take measures to prevent non-point sources of pollution that would potentially degrade water quality. Specific measures include controlling road runoff.