Chapter V
Natural and Cultural Resources

West Warwick Comprehensive Plan

CHAPTER V
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." -- Rhode Island Comprehensive Planning and Land Use Regulation Act

V.1 Introduction

West Warwick is one of the most densely populated towns in Rhode Island with more than five people per acre. Of Rhode Island's 39 cities and towns, West Warwick has the 12th largest population with 27,026 people in 1980, and is ranked 36th in land area with 5,090 acres. Many of West Warwick's natural resources have been exploited to accommodate development. As of 1975, 56 percent of the Town's area was committed to either residential, commercial, industrial, transportation, or other types of land use which are considered irreversible.[1] Some of the 2,230 acres of non-committed land in 1975, has since been developed, mostly for residential use. Much of the land which remains undeveloped today is limited by the presence of wetlands, water bodies, steep slopes, and soils with properties unsuitable for most types of development.

The natural systems which remain in undeveloped areas are typically surrounded by development and do experience direct and indirect impacts as a result of that development. Because there are so few natural areas left in the Town it is of vital importance that they be recognized as valuable resources which add to property values and quality of life. Proper use 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.[2]

Topography - In terms of topography statewide, West Warwick sits in the middle of a thin band of Narragansett Lowland which separates the Interior Uplands to the west from the Narragansett Bay Area to the east. The Narragansett Lowland landform ranges in elevation from sea level at the mouth of the Providence River to about 400 feet above sea level in Cumberland. Most of the land is low level coastal plain with some rolling hills and glacial boulders.[3]

Much of the Town consists of gently sloping, round-topped hills which are underlain primarily with granite. The highest elevation (390 feet) is reached at Andrews Hill in the extreme southern part of the Town near the East Greenwich boundary. Natick Hill, along the northern Town boundary, reaches an elevation of 280 feet, as does the hill on which St Joseph's cemetery is located. West Warwick High School, on Prospect Hill, reaches an elevation of 260 feet above sea level. The lowest elevations occur along the rivers. Both the north and south branches of the Pawtuxet River enter the Town at approximately 150 feet. The Pawtuxet

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1 Rhode Island Department of Administration, Division of Planning, Land Use 2010: State Land Use Policies and Plan, June 1989.

2 Developer's Handbook, State of Connecticut Department of Environmental Protection, Allen Carroll, reprinted February, 1984, page 4.

3 RI Department of Environmental Management Planning and Development Department. A Survey of the State's Scenic Areas. 1990.

River drops 100 feet in elevation by the time it reaches the Warwick line, and at the Cranston City line is less than 50 feet above sea level.[4]

Topography has not played a major factor in the Town's development. All but the steepest slopes, which occur along the rivers, have been subject to development. The Town's land-form, however, contributes significantly to its visual character. Views from higher elevations provide encompassing views of the rivers and valleys below. Locations along Wakefield Street, and at St. Josephs cemetery, in particular provide outstanding views of the community.

Soils - An assessment of West Warwick's soil types is important when considering future development potential. A mixture of unsorted soil and rocks, commonly known as till, covers most of West Warwick. Glacial till is characterized as consisting of clay, silt, sand and boulders transported and deposited by glacial ice. Outwash deposits are found in the valleys along rivers and other low-lying areas. Outwash is stratified sand and gravel produced by glaciers and carried, sorted and deposited by water that originated mainly from the melting of glacial ice. These are areas which tend to carry larger volumes of water and is the material which has the best potential for groundwater. Areas of outwash are found along portions of the South and North branches of the Pawtuxet River. A small lobe of outwash extends east, away from the South Branch outwash area and then hooks south along Hardig Brook to East Greenwich Avenue.

Certain soil characteristics lend themselves to use for building or transportation routes, while others may serve well as locations for crops and pastures. 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.

The Soil Survey for Rhode Island was issued in 1981 and is limited in the information it provides. Any decisions regarding development applications should be based upon site specific soils data. For the purposes of this Plan, soils are defined as follows (Appendix V-A includes soils types in each soil group):

- Soils with moderate constraints to development (Residential soil group A) - 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. Examples include gravel pits, cut and fill areas, and paved areas.

- Seasonal high water table (19 inches to 42 inches depth) (Residential soil group B)- soils in this group 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 bedrock and slope constraints (greater than 15 percent slope - 15 feet of vertical rise over 100 feet of horizontal distance) (Residential soil group C) - soils in

4 Rhode Island Historical Preservation Commission. Historic and Architectural Resources of West Warwick, Rhode Island: A Preliminary Report. 1987.

this group have slopes in excess of 15 percent, and/or have significant shallow to bedrock areas. The 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.

- Hydric soils - severe wetland constraints (0 - 18 inches depth) (Residential soil group D) - these soils have water at, or near, the surface for significant periods of the year. These soils generally classify as "hydric soils."

- Other severe constraints (rock, sand etc.) (Residential soil group E) - This group consists of miscellaneous soil types that have significant constraints for residential development.

- Prime agricultural soils - Prime agricultural soils are defined as those best suited for producing food, fee, forage, fiber and oilseed crops, and also available for these uses.

Severely constrained soils have varying characteristics which result in difficulty for urban development, including poor drainage, unsuitability of infiltration rate for septic tanks, difficulty in excavation due to stoniness, or slopes of greater than 15 percent. Soils rated moderately constrained for development have similar characteristics, but to a lesser extent, i.e., slight drainage limitations or lesser slope limitations.

Soils with moderate constraints to development are found throughout the Town. Further land capability analysis will likely show that a large percentage of these soils have been developed, since they are generally the easiest to build on and would be the logical choice of land.

Seasonal high water tables are found in small pockets around the Town, generally in association with hydric soils. A large area of soil with a seasonal high water table is found in the area north of Wakefield Street, in the north-central part of Town.

Soils having bedrock and slope constraints are more prevalent in the northern part of the Town, between the Pawtuxet River and Wakefield Street, in the Phenix area, and in small pockets along the South Branch of the Pawtuxet.

Hydric soils are more often found in the southern half of the community, although small pockets are also located in the north central part of the Town.

Wetlands - Wetlands are generally defined as those areas in which the amount of moisture in the soil exceeds the amount necessary for the growth of most plants. The formation of "hydric" (water-saturated) soils, and certain plants and animals which have adapted to living in a "wet" environment, indicate the presence of a land in which the water table is at, near or above the ground surface, i.e., wetland. Many wetlands occur between uplands and open water bodies, others are found in upland areas where there is a seasonally high water table.

Of the Town's total acres, 11 percent, or 556+/- acres are classified as hydric soils. Wetlands provide several important functions which, in West Warwick, are classified as follows:

- *Flood control* - ability of a wetland to reduce flood velocity and provide storage capacity for flood waters;

- *Planning elements* - aesthetic appeal, educational value, recreational value, buffer capacity, and vulnerability to development or modification;

- *Ecological parameters* - value to wildlife, wildlife diversity, wetland size, type of site (streamside, lakeside, pondside), and vegetative diversity; and,

- *Groundwater potential* - the ability of a wetland to contribute to collect runoff from surrounding areas and recharge the groundwater system, as well as acting as filters for polluted runoff;

The U.S. Fish and Wildlife Service has classified wetlands and water bodies in the wetlands of Rhode Island as part of the National Wetlands Inventory (see Figure V-1).[5] Wetlands are classified by ecological system and further by bottom characteristics and vegetation types.

The ecological systems include estuarine, palustrine (vegetated wetlands), riverine (rivers, streams and brooks), marine and lacustrine (lakes and ponds). Wetlands in West Warwick are either palustrine, riverine or lacustrine.

The dominant type of palustrine wetland in West Warwick is the forested wetland, commonly known as the wooded swamp. All of the wooded swamps are vegetated with broad-leaved deciduous trees and include a variety of species including red maples, gum, oak and others. The scrub/shrub swamp, another wetland type within the palustrine ecological system, though not as common as the wooded swamp, is found in most areas of the Town. They are characterized by a dominance of shrubs or tree saplings less than 20 feet tall, broad-leaved shrubs and other low growing plants including bottombush, sweetgale, highbush blueberry, swamp azalea, winterberries, and many others. Emergent wetlands are vegetated by nonpersistent grasses, rushes, sedges, and other herbaceous or grass-like plants. Emergent wetlands are often associated with the shrub/scrub or wooded swamps.[6]

Rhode Island Freshwater Wetlands Act - This act requires that a permit be obtained from RIDEM Freshwater Wetlands Section before any freshwater wetland is altered in any way. Filling, grading, clearing of vegetation or construction is considered alteration of a wetland.[7]

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 flowage and flooding. 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, along 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. The Town has the option of placing more restrictive regulations upon wetlands within its boundaries, but may not require less than that required by the State.

Drainage Basins - West Warwick lies within the Narragansett Basin, the largest of the State's six major drainage basins. Portions of four smaller sub-basins are found within West Warwick's borders. Drainage basins, or watersheds, are defined by topography which governs the path that water follows as it moves from higher to lower elevations.[8]

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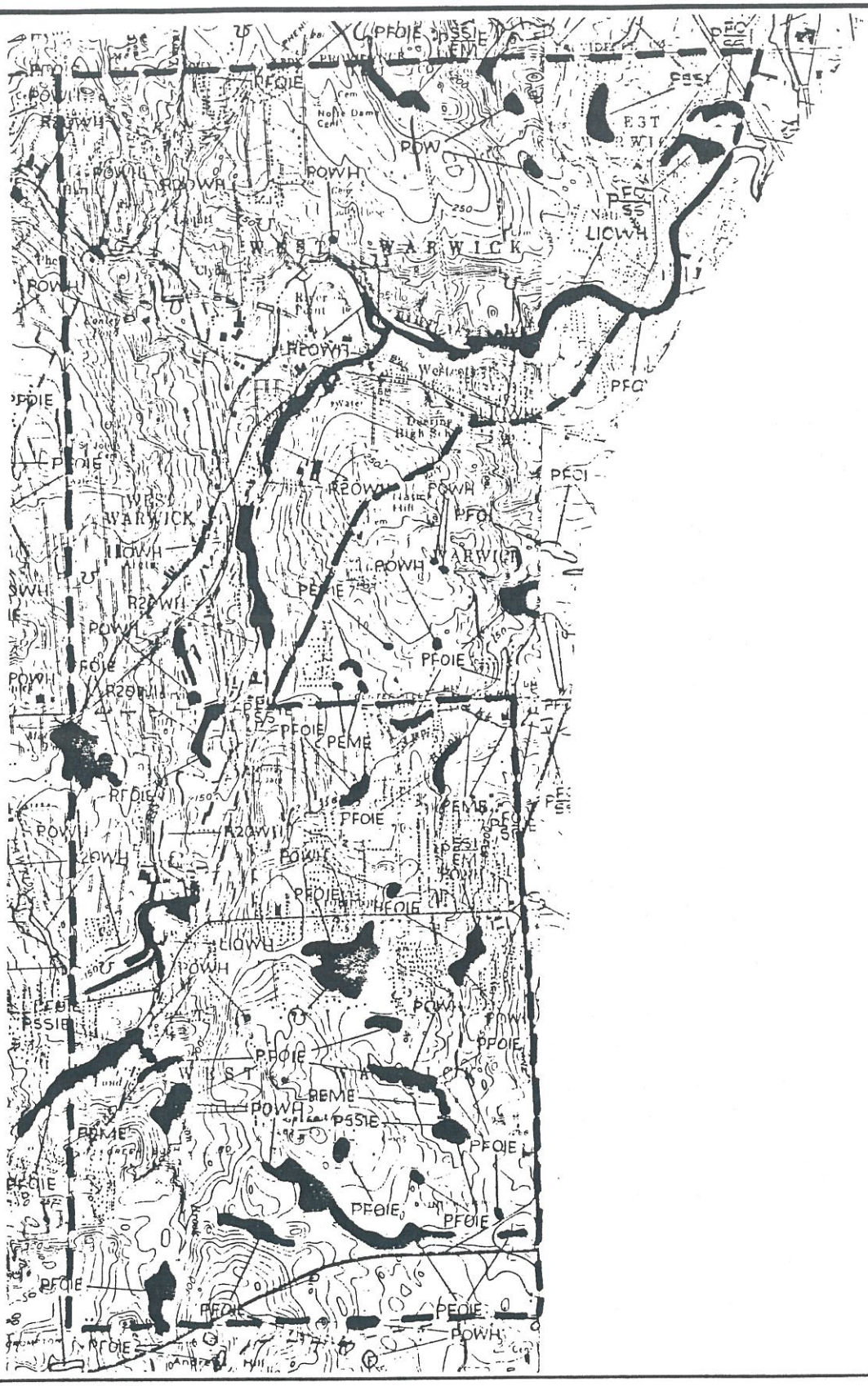
5 Considers wetlands of one-half acre or greater.

6 United States Department of the Interior Fish and Wildlife Service, Wetlands of Rhode Island, September, 1989.

7 Freshwater Wetlands Act Information Sheet, Rhode Island Department of Environmental Management.

8 An Introduction to Watershed Management, The Land Management Project.



COMPREHENSIVE PLAN
Town of West Warwick
Source: National Wetlands Inventory

GENERAL WETLAND AREAS
Figure V-1

Most of West Warwick's land area drains to the South Branch of the Pawtuxet River or the Pawtuxet River; a small portion of the Town drains to the North Branch, and another small portion of land drains to the Potowomut River. Land use activities within these areas can indirectly or directly influence the quality of the water in the Pawtuxet, its tributaries and other small waterbodies within the watershed.

The South Branch Pawtuxet River Basin encompasses an area of about 75 square miles including most of the area of eastern Coventry, and eastern West Greenwich, the majority of West Warwick and small portions of Foster, Scituate and Exeter. The basin includes areas of hilly upland in the west, and lowland sections in the east. The largest population concentrations within the basin are found in eastern Coventry and West Warwick.

The North Branch Pawtuxet River Basin extends from the south central portions of Glocester, encompasses a large portion of Foster, all but a small portion of Scituate, the extreme western portions of Cranston and the north-east corner of Coventry. The basin covers about 105 square miles, of which about seven miles are covered by impounded water. Water in the six reservoirs in this basin have a useable storage capacity of sufficient amount to supply the City of Providence, all or parts of the City of Cranston and Warwick and the Towns of Johnston, North Providence and Smithfield. The basin is sparsely populated; the highest population concentrations are found in the village of North Scituate and in the southern most reaches in Coventry and West Warwick.

Most of the northern part of Town is included in the Providence-Warwick drainage area which covers most of the City of Providence, Warwick and Cranston, part of Smithfield and a portion of North Providence. This basin has the highest concentration of people in the State.

A small portion of West Warwick drains to the Potowomut River. The Potowomut River Basin encompasses all but a small portion of East Greenwich, most of North Kingston and the southern portions of Warwick. It covers an area of about 59 square miles and includes the basins of the Potowomut and Annaquatucket Rivers.

Precipitation falling in any of these basins either runs off over the surface and enters a surface water body or percolates through the soil and becomes part of a groundwater system. In the North Branch River Basin much of the precipitation which reaches the ground is returned to the atmosphere by evapotranspiration , or runs off to surface water bodies. Little precipitation enters the saturated zones of the substratum because of the compact character of the till which is found in most areas of this basin.

The South Branch Basin, unlike the North Branch Basin, is underlain by extensive outwash deposits which are not covered by surface water. These areas are more permeable due to the underlying soils, and allow for greater percolation of surface water.

Groundwater - The area beneath the land surface can be divided into two zones. In the upper zone, known as the unsaturated zone, open fractures in rocks or open spaces between soil particles are only partially filled with water. Beneath this zone all the open spaces are filled with water. This completely filled zone is termed the *saturated zone*. Water within this zone is called *groundwater*, and its upper boundary is known as the water *table*.

Swamps, streams, ponds and wetlands are places where the land surface intersects with the water table. Under natural conditions, these are discharge areas for groundwater, not recharge areas. Wells penetrate the saturated groundwater zone some distance below the water table and

intercept this slow moving resource before it reaches natural points of discharge, such as wetlands and streams.[9]

Two types of water sources, direct and indirect recharge, replenish stratified drift aquifers. The major source of direct recharge is precipitation that falls directly on and infiltrates into the ground, flows through the unsaturated zone to the water table, and then down the hydraulic gradient to streams and ponds. Under natural conditions, groundwater will move from the aquifer to the stream. If a pumping well is located near the stream, the water table gradient may be reversed and water from the stream may infiltrate the aquifer and flow toward the center of the pumping, and is defined as indirect or induced recharge.

Stratified drift is unconsolidated, sorted sediment composed of layers of sand, gravel, silt or clay, deposited by meltwater from glaciers. Coarse-grained stratified drift contains space between the gravel and sand particles which can hold large amounts of water without restricting its flow. Stratified drift deposits with a saturated thickness of greater than 40 feet, and which have a transmissivity of 4,000 feet per day are considered to be groundwater reservoirs and have an excellent chance of yielding large quantities of water.

A mixture of unsorted soil and rocks, commonly known as till, covers most of West Warwick. Glacial till is characterized as consisting of clay, silt, sand and boulders transported and deposited by glacial ice. Outwash deposits are found in the valleys along rivers and other low-lying areas. Outwash is stratified sand and gravel produced by glaciers and carried, sorted and deposited by water that originated mainly from the melting of glacial ice. These are areas which tend to carry larger volumes of water and is the material which has the best potential for groundwater. Areas of outwash are found along portions of the South and North branches of the Pawtuxet River. A small lobe of outwash extends east, away from the South Branch outwash area and then hooks south along Hardig Brook to East Greenwich Avenue.

The largest outwash deposits in West Warwick are found in a narrow channel which extends from the Flat River Reservoir in the South Branch Pawtuxet River Basin. This channel which swings north at the West Warwick border has a lenses of sand and gravel which have a saturated thickness of more than 100 feet in some areas. Much of the flow in the South Branch Pawtuxet River is derived from ground-water discharge.[10] A lobe of stratified drift extends south and east away from the South Branch Pawtuxet River and stops just short of the West Warwick-Warwick Town line in the Crompton Village area. Another smaller area of this type of deposit is located along the North Branch of the Pawtuxet River from the Clyde Village area east along the Pawtuxet, and into Warwick. The State has also mapped a groundwater reservoir which lies primarily in the City of Warwick, but extends into West Warwick in the vicinity of the wastewater treatment plant.

While outwash deposits in West Warwick are thick enough to be considered groundwater reservoirs, Kent County Water Authority does not currently utilize them for water supply. The Water Authority operates groundwater wells in Coventry and East Greenwich, utilizing the South Branch Pawtuxet River aquifer and the Hunt-Annaquatucket-Pettaquamscutt aquifer system.

Shared Resource - A small portion of the Hunt-Annaquatucket-Pettaquamscutt aquifer system extends into West Warwick in the southern part of Town. This aquifer is considered a sole source aquifer. Land use practices within the sole source aquifer should be carefully

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9 Protecting Connecticut's Groundwater - A Guide to Groundwater Protection for Local Officials, Connecticut Department of Environmental Protection, p. 4.

10 Gonthier Joseph B. Hydrologic Data for the South Branch Pawtuxet River Basin, Rhode Island.

monitored as they may effect the drinking water of East Greenwich and North Kingstown which rely on ground water for more than 50 percent of their drinking water needs.[11]

Wellhead Protection Program - This is a program developed by the Groundwater Section of RIDEM to prevent contamination of groundwater resources that are used by public drinking water systems. It applies to public wells which provide drinking water to 15 or more service connections, or regularly serves an average of at least 25 individuals daily, at least 60 days of the year. This includes community wells that serve resident populations such as trailer parks, nursing homes, major municipal wells, and non-community wells that serve hotels, restaurants, schools etc.

RIDEM will provide the Town with wellhead protection area delineations and other technical assistance, and will review the local protection programs. The Town will be responsible for developing the wellhead protection plan, including potential pollution source inventories, protection strategies and contingency plans. These are due to RIDEM in mid-1992. The Town will work with local suppliers, such as the fire districts, to develop and implement strategies. Management options include public education, land acquisition, groundwater monitoring, groundwater amendments to local zoning ordinances and local regulations for design and operating standards.

In addition, RIDEM has embarked on a program of revising aquifer and recharge area boundaries based upon more recent techniques of defining these areas. It is suggested that the Town review the revised boundaries at the earliest possible time, and make the necessary revisions to the groundwater aquifer zoning district boundaries.

Potential Sources of Groundwater Contamination - Known or potential sources of groundwater pollution have been identified by the Rhode Island Department of Environmental Management. RIDEM includes landfills, underground storage tanks, salt piles and surface impoundments in its mapping of those known or potential sources. The Department of Labor also maintains a list of those businesses and industries which store or use hazardous materials, information which is available through the Town's Fire Department under the Hazardous Materials Right-to-Know Law.

In West Warwick, identified sources of potential groundwater pollution include:

- DeMay Testing, Summit Avenue;
- West Warwick Wastewater Treatment Plant;
- Inactive West Warwick Landfill, at Riverpoint Park;
- Junior Street Garage;
- Roch Cleaners, Main/Washington Streets;
- Kensal's Norge, Cowesett Avenue;
- Superb Cleaners, Route 2;
- Advanced Interconnections, Energy Way, Industrial Park;
- Amtrol, Industrial Park;

In addition to these identified sources, others may exist which present an equal or greater threat for pollution to the Town's water systems.

Surface Water Resources - West Warwick is dominated by the Pawtuxet River, one of the State's largest rivers. The Pawtuxet River, which forms a portion of the Town's north-east

11 Rhode Island Department of Environmental Management, The State of the State's Groundwater, April, 1990.

boundary with Warwick, is created by the junction of the North Branch and South Branch rivers. The North Branch flows from the Scituate Reservoir north and west of the Town, and flows through the the villages of Phenix, Lippitt, and Clyde before joining the South Branch in River Point. The South Branch flows generally north through West Warwick, and originates at the Flat River Reservoir in Coventry and West Greenwich. The South Branch flows through Crompton, Centerville and Arctic before reaching River Point.[12] River flow is interrupted by dams at the Crompton mill complex, in Arctic and again by a dam just short of the confluence. From the confluence the Pawtuxet River backs up into long, narrow Natick Pond. The River turns north shortly after passing the dam at the eastern end of Natick Pond, and forms the boundary between West Warwick and Warwick for less than a mile before meandering into Warwick.

The Pawtuxet River and the North and South Branches of the Pawtuxet are considered Class-C waters. Class C can be considered for recreational use, fish and wildlife agricultural and industrial water supply, industrial cooling, sewerage discharges and other legitimate uses, including navigation. [13] A list of other brooks and streams is found in Table V-1.

Table V-1
Small Brooks and Watercourses
West Warwick, Rhode Island

Name of System	Origin	Destination	Class
Hawkinson Brook	Wetlands at the East Greenwich town line.	South Branch Pawtuxet River	B
Cedar Brook	Pond and wetlands in north of Greenwich Ave.	Harwig Brook	B
Hardig Brook	Wetlands in the Crompton Village area	Apponaug Cove	B
Lippitt Brook	Wetlands at the base of Lippitt Hill in Cranston	North Branch Pawtuxet River	B

Numerous un-named and unclassified brooks and drainageways are found in the Town. Unclassified water bodies are assumed to be Class-B water unless they flow into a Class-A water body. No Class-A water is found in West Warwick, therefore all unclassified streams are given a Class-B rating by default.

Lakes and Ponds - West Warwick's landscape is dotted with small ponds. Some are man-made, however most are natural water bodies left by the receding Laurentide glacier. Natick Pond, the largest water body, is formed by the damming of the Pawtuxet River in the northeastern part of Town. Matteson Pond, is located on the Coventry border in the Centerville area. None of the surface water bodies are used for drinking water supply.

The potential contamination of the Town's surface water resources is of concern, in terms of both point and nonpoint pollution sources. Point sources are those which are discharged from

12 Rhode Island Historical Preservation Commission. Historic and Architectural Resources of West Warwick, Rhode Island: A Preliminary Report. 1987.

13 Rhode Island Department of Environmental Management, Division of Water Resources. Water Quality Standards 1986.

a discrete pipe or location, and include sources such as wastewater treatment plants and industrial plants, etc. Nonpoint sources result from many human activities and are generally associated with surface water runoff from a diffuse area. Nonpoint sources are closely tied with land use, and include stormwater runoff from farms and urban areas, erosion/sedimentation and septic tanks. Numerous methods are available to reduce the amount of nonpoint pollution, including:

- Best management practices, engineering techniques which control post-development peak floodwater discharge rates to pre-development levels by providing temporary detention/storage time - may be grassed swales (channel lined with grass or erosion-resistant plant cover), artificial wetland (wetland soils and vegetation are used to prevent or delay pollutant influx to receiving waters), vegetated buffer strips (attenuates pollutants - acts as a filter).

Floods and Floodplains - Floods in West Warwick occur in every season of the year. Spring floods are common and are caused by rainfall combined with snowmelt. Floods in late summer and fall are usually the result of hurricanes or other storms, and winter floods often result from occasional thaws, particularly in years of heavy snowfall. Flood zone A is a special flood hazard area inundated by 100-year floods. Zone B is the area between the special flood hazard area and the limits of the 500 year flood, including areas subject to certain types of 100-year shallow flooding, where depths are less than 1.0 foot, and areas subject to 100-year flooding from sources with drainage areas less than 1 square mile.

Areas in flood hazard zones A and B exist along most of the major rivers, brooks, swamps, and ponds in West Warwick. The broadest areas of land subject to flooding are found in the flood plains west of the Pawtuxet River on the West Warwick - Warwick border. Many homes, streets and other types of development are located in this area which is primarily flood hazard zone A. Low lying urban areas along Lippitt Brook in Lippitt and Clyde are subject to flooding from a 100 year storm. Property along Industrial Drive in Clyde is in an area subject to flooding from a 500 year storm. A portion of the commercial district and surrounding residential area in Arctic is in a B flood hazard zone. A smaller area north of the railbed is in flood hazard zone A. Portions of Baker and Walnut street would be flooded by a 100 year storm. Streets and homes along sections of Hawkinson and Hardig Brooks are in flood hazard zones A and B.

Air Quality - The Clean Air Act requires that air quality must meet standards designed to protect human health and welfare. The Environmental Protection Agency (EPA) sets these standards based on information contained in its air quality criteria documents, which are summaries of the latest information on the sources, chemistry and deleterious effects of a particular pollutant. Rhode Island has adopted these standards. Areas that do not meet air quality standards are called nonattainment areas. During 1989, the entire State was considered nonattainment for ozone, but was in attainment for other standards, including sulfur dioxide (largely from stationary source coal and oil combustion), total suspended particulates (dust, dirt, soot, smoke and liquid droplets directly emitted into the air by sources such as factories, power plants, cars, etc.), carbon monoxide (largely from transportation sources), lead, precipitation pH, oxides of nitrogen, PM-10 and gross beta activity (for Millstone nuclear reactor and Narragansett RIAEC Research Reactor).

Planning for emergency evacuation of areas of Town during a hazardous material release into the air is currently underway. A local emergency plan committee has been established for a number of regions in the State, which has the responsibility of producing a local emergency plan for response to emergency situations. The Town's fire chief is the designated participant in this program. RIDEM indicates that the process is moving along slowly, and Town's should encourage the participation of their local representatives in the planning process.

Vegetation and Wildlife - Much of the forestland which covered West Warwick was cleared for farming. Subsequently, most of the farmland has been developed for housing, commercial and industrial uses. Remnants of the once productive forest and agricultural lands are found in the less intensively developed areas north of the Pawtuxet River between Natick and Clyde villages, and in areas south of Crompton village. Stands of mixed hardwoods dominated by maples and oaks are found in wet areas which are unsuitable for development.

Wooded areas, even though they are surrounded by urban development, support a variety of wildlife including pheasants, quail, redtail hawks, sparrow hawks, doves, and woodcock. In addition to avian species, these areas are also inhabited by a number of mammals which typically exist in Rhode Island, i.e., fox, rabbit, skunk, woodchuck, deer, etc. Wetlands and the land immediately surrounding them are often left in their natural state and provide another valuable type of wildlife habitat. Animals utilizing these habitats include wood ducks, black ducks, mallards, snipe, rails, herons, kingfishers, marsh hawks, muskrats, mink and otter.

Wildlife preservation, particularly in an urban area such as West Warwick, requires larger expanses of undeveloped land for species to form territories. Clearly this is a difficult proposition in West Warwick, as large open spaces are non-existent. One area which still serves as habitat to numerous plant and animal species, Wakefield Hill, is an important resource in terms of its ability to provide living space for wildlife. The ecological integrity of this area is high due in part to the large number of acres which exist as a single block of land, the variation of habitat types and vegetational communities represented, the presence of the river, lack of land development within the continuous acreage and relative low human disturbance factors.[14]

Rare and Endangered Species and Habitats - The historical and current status of species of plants and animals suspected of being rare or declining has been monitored for the past decade by the Rhode Island Natural Heritage Program (NHP). Currently there are no species of plants or animals in West Warwick which the NHP considers rare or endangered. It is important for the Town to stay in contact with the NHP for an annual update on rare and endangered species within Town boundaries.

Agricultural Land - Prime agricultural land is defined as: land best suited for producing food, tee, forage, fiber and oilseed crops, and also available for these uses.[15] It has the soil quality, growing season, and moisture supply needed to produce high yields of crops economically when treated and managed, including water management, according to modern farming methods. In West Warwick, the Soil Conservation Service has identified prime agricultural soils throughout the Town. A large area of prime farmland soil is located along Wakefield Street in the northern part of Town, and small pockets of prime farmland soils are found throughout the southern portion of the Town. Many prime farmland areas identified in the 1980 SCS survey have since been developed with land uses which are considered irreversible, and therefore can no longer be considered prime farmland.

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14 Rhode Island Rural Development Committee, Rural Enterprise Team, West Warwick, Rhode Island, March 1988.

15 The source of this information, and that which follows regarding the definition of prime agricultural land is from the U.S.D.A. Soil Conservation Service, Eastern Rhode Island Conservation District Newport County. Important Farmlands.

Land that has the potential to be Farmland of Statewide Importance is land that is nearly prime farmland and that economically produces high yields of crops when treated and managed according to modern farming methods. Small areas of farmland of Statewide Importance are also found in Town.

Farming has not been a staple of the West Warwick economy since the early 19th century. Despite a small agrarian population, and the small amount of land which remains open and is suitable for agriculture, preserving the Town's agricultural heritage should be considered in future planning efforts.

Visual and Aesthetic Resources - Visual resources, simply defined, are represented by the character of the physical environment and the perception we have of that particular environment. Research into human perception has established that visual quality in the environment makes a significant contribution to a community's overall quality of life. The character and interplay between topographic features, natural and man-made landmarks, the form of open space and development, as well as historic and culturally meaningful structures and sites, creates a community identity; what planner J.B. Jackson referred to as "a sense of place."

Incongruous elements in, or aberrations to this perceived landscape or the lack of a perceivable form and order adversely affects residents' and visitors' attitudes toward the community. As such, the erosion of the visual and cultural character of a community can have not only psychological impacts, but very real economic impacts through depreciated real estate and failing marketability to prospective new businesses and residents.

Too often, concern for the visual environment has been dismissed as being a nonessential appurtenance to land use decision-making. Such an attitude is both archaic and unresponsive to public need.

A detailed inventory and evaluation of West Warwick's visual resources is beyond the scope of this study. Such an endeavor requires a separate comprehensive study that should be undertaken in the future. However, for the purpose of developing a Town policy toward visual quality, a generalization of important elements is provided.

West Warwick's urban form is a series of small mill villages surrounded by less developed lands and open spaces. Because much of the Town is developed the majority of the aesthetic resources are found in a mix of natural and man-made settings. Often it is the combination of natural and man-made features that makes for a visually pleasing environment. However, the balance is often delicate, and can be lost if development is allowed without consideration for aesthetics and the natural surroundings.

Wetlands and watercourses provide essential open space in urbanized environments. In addition to the open space issue, water resources have special inherent characteristics that have been documented as providing highly valued visual experiences. Steps must be taken to preserve the natural and aesthetic values these water resources offer and make them accessible to the public.

The Town of West Warwick is characterized by areas of unusual natural and manmade beauty. Views of mill buildings and village, historic districts, wooded areas, together with the Pawtuxet River, small ponds and streams give the Town a unique character. Important views and vistas include, but are not limited to, the following:

1. View of Town from St. Joseph Cemetery;
2. View from Riverpoint Park to forested area on Wakefield Hill;

3. View from Wakefield Street south to Arctic/other villages;
4. View from Murray Square north along Pawtuxet River toward mill buildings;

Preservation of the scenic qualities of the community is one way of preserving the character which residents value highly. Various techniques exist to achieve this, including scenic criteria and design guidelines in the zoning ordinance, site plan review, visual easements, and public education programs.

Protection of these visually important spaces may be achieved through a variety of techniques, including:

- Purchase acquisition of land;
- Conservation restrictions - limits what an owner can do with his/her property and/or enables others to use the property for specific purposes. State law defines such restrictions. Conservation restrictions may be drafted to conform to almost any situation, such as a restriction against cutting trees or removing stone walls.
- Purchase of development rights - acquisition of a conservation easement for the rights of development of a parcel to ensure preservation of the property as an undeveloped open space in perpetuity.
- Visual easements - a conservation restriction or easement which protects the visual or scenic elements of a parcel of land;
- Revised zoning and subdivision regulations with scenic criteria and design guidelines included; and,
- Public education.

V.2 Cultural Resources

The purpose of this section is to protect and preserve the Town's historic resources and to integrate historic preservation into the comprehensive planning process. The intent of this planning process is to *integrate* the Cultural Resources Element into the overall Comprehensive Plan. While the element alone is a complete planning document, with independent goals policies and implementation actions, it also merges preservation goals with those of other Plan elements. This interrelationship defines the comprehensiveness of the Plan, as opposed to an assemblage of unrelated plans.

The West Warwick Planning Board is the agency charged with primary responsibility for the Comprehensive Plan, with advisory assistance from the Comprehensive Plan Advisory Committee (CPAC). The CPAC is composed of representatives of the Planning Board and citizen members. Its membership is open to all major interests and constituencies to assist Town planning staff and consultants to develop the overall comprehensive plan. In addition, the research for the Cultural Resources Element included the participation of the Pawtuxet Valley Preservation and Historical Society (Historical Society) and the Rhode Island Historical Preservation Commission (HPC).

Context For Preservation Planning - The Cultural Resources Element responds to the following questions posed by the HPC:

1. What historic resources exist? Where are they located? In what fashion do they relate to the past and future development of the community?

2. What preservation activities have already taken place or are in progress? How effective have they been?

3. Have the identified resources been adequately documented and evaluated? Are there resources (or entire groups of resources) which have not been identified, documented or evaluated?

4. How and in what way are the Town's historic resources threatened?

5. What are the Town's goals for its historic resources?

6. How will the town achieve these goals? Through which specific actions? Who are the actors?

7. To what extent is preservation part of the Town's overall plan for its development? Does the Town intend to integrate preservation into other aspects of its planning?

8. Given the identified resources and the present level preservation activity, which strategies and actions are most important? Most urgent? Which are least important?

The cultural resources element includes the following material to answer these questions: an historical overview to establish the context for preservation activities; an inventory of documented properties, historic sites, and historic cemeteries and graveyards; an evaluation of historical preservation activities in West Warwick; an evaluation of known and likely threats to historic resources; and a set of priorities for addressing issues. Finally, the element presents goals, policies and actions for preservation.

Preservation planning goals, objectives and policies reflect the needs of the Town as expressed by the members of the CPAC and Historical Society. The policies lead to specific recommendations on specific actions and strategies, such as historic district zoning, creating an historical district commission, and setting into place specific mechanisms to preserve and protect archaeological resources.

West Warwick's historic resources have been well documented by the Rhode Island Historical Preservation Commission through the local historic survey prepared in 1987.[16] This document presents an inventory of historic resources and districts. The historical overview is presented in narrative form and is based on the HPC historic survey. This narrative, prepared by William M. Woodward of HPC is designed to reflect a context for preservation activity and is not intended to be presented as a definitive history of West Warwick. The status of past historic preservation planning was derived from an interview with members of the Historical Society.

Historical Overview - West Warwick is located near the geographical center of Rhode Island, and is one of the most densely populated towns in the State of Rhode Island. The material evidence of the Town's history reflects the process of industrial development which has shaped the Pawtuxet Valley, an enormously significant chapter in the history of Rhode Island.

16 Historical and Architectural Resources of West Warwick, Rhode Island: A Preliminary Report, Rhode Island Historical Preservation Commission, 1987.

Colonists moving out from Samuel Gorton's Warwick, first settled in the area in the Seventeenth Century. No known material evidence of these early settlers remains.

In the Eighteenth Century, the Town was home to a thinly scattered farming population, and the common unit of settlement was the family farm. Although they are no longer surrounded by fields and have been somewhat altered, at least three Eighteenth-Century farmhouses remain. The Carr-Levalley House (c.1722) at 42 Fairview Avenue is probably the oldest structure remaining in West Warwick, the Nathaniel Arnold House (c.1760) at 101 Quaker Lane has a similar size and roof shape, and the James Greene House at 75 West Warwick Avenue is a somewhat later and larger structure. Agriculture remained the principle economic activity in the Town throughout the century.

During the Nineteenth Century, West Warwick was transformed from a farming area into one of Rhode Island's most heavily industrialized towns. Textile mills were built along the Town's rivers and became the nuclei of small villages. The creation of these villages - Centerville, Crompton, Natick, Lippitt, Phenix, Riverpoint, Clyde, and Arctic - gave the Town its characteristic arrangement and flavor which it retains even now. Significant structures from this era, such as the Lippitt Manufacturing Company Mill, one of earliest and best preserved of Rhode Island's textile factories, and the mill houses at Phenix, which may be the oldest of their type in West Warwick, remain at almost all of these villages.

Later in the century, some of these villages, especially Phenix and Arctic, grew into genuine urban centers. Several new factories were constructed in West Warwick and many additions were made to existing mills to accommodate both increased production and refinements in textile technology. Textile manufacturing companies continued to build large numbers of houses for their workers. As the scale of production increased in the Town's mills, the growth of the villages surrounding them kept pace. The mill villages, which began as small hamlets, acquired many of the institutions which would serve the needs of the community - schools, churches, post offices, stores, and banks - and became the focus of the area's economic and social life.

This steady growth is visible in the architectural resources of Arctic Village today. The village retains an array of buildings that are interesting both architecturally and historically. The core of this village, the Arctic Mill Village Historic District at Border and Earl Streets, contains a large collection of well-preserved and maintained nineteenth-century buildings which reflect its earlier growth and prosperity. This complex includes Arctic's original mill, all the original worker's houses, several stone buildings, associated water control structures, and a former store. All of the structures in the village, ranging from these mid-nineteenth century mill buildings to late twentieth century gasoline stations, are makers in the continuum of history. All contribute to an understanding of the history, growth, and development of the area and are part of West Warwick's treasury of cultural resources.

In 1913, West Warwick was incorporated as a separate town. Development in the preceding century had no focused on a single institution or commercial center; the Town was essentially a federation of mill villages. The new town set up its administrative center in the Pike House, at 20 Pike Street.

Although West Warwick remains a factory town, the decline of the textile industry after World War I affected great physical and social changes, almost as great as the change from agriculture to manufacturing a century earlier. The resultant uneasy economic situation of the 1920's and 1930's had hindered residential building in West Warwick. Some one - and two - family houses filled the side streets of the villages, and a few two and three - decker houses were built. More typical of this period are the bungalows ; such as 44 Highland Street; cottages,

such as 20 Colvin Street; and the square, boxy, two-story houses, such as 40 Fairview Avenue.

In the last few decades, West Warwick has begun to recover from the decline of the textile industry, and recent building trends suggest that the town has become more thoroughly integrated into the Providence metropolitan area. Since the end of World War II, most residential building has followed a suburban pattern, and large tracts of single-family houses have been built, such as those in the Cowesett Farm area in the southern part of town, at the Knight Farm in Westcott, and in the area off Wakefield Street. In recent years, some multi-family buildings have also been constructed, including elderly housing projects, apartments and condominiums. The open spaces which once separated the mill villages are now filling up with such developments.

Increasing use of the automobile and highway and commercial improvements have diminished the dominance of the mill villages. Changes in the Town's highway system have been both a reflection of and an encouragement to the new growth. State Route 2 and Washington Street in Arctic are the sites of many businesses which serve the automobile-oriented public, and the construction of Interstate 95 in the 1960's has provided a convenient link from West Warwick to other parts of the metropolitan region. Industrial development also has been influenced by automobile-oriented patterns. While some manufacturer's have continued to use the nineteenth-century mills, others have located in a new 200-acre industrial park established in the early 1970's in the southern part of town, near Interstate-95.

Building for town services has proceeded at a moderate rate in the postwar years, reflecting the growth of the Town. A new town hall was constructed in Arctic in 1959. In 1965, a new high school was built, followed in 1970 by a new junior high school. The history of West Warwick is vividly illustrated by numerous sites and structures which remain today. The houses, mills, churches, public buildings, and commercial structures are cultural artifacts which represent the community's evolution from the seventeenth century to the present. Particularly notable are the factories, worker's housing, and stores of the town's mill villages. These resources, important to an understanding of local history, deserve special consideration in planning and future development.

Existing Historic Resources - The HPC Preliminary Survey completed in 1987 is the Town's principal list of properties considered important to the history of West Warwick. Other lists of historically significant properties are found in several additional sources, including the National and State Register of Historic Places, and Historical Society files.

The Preliminary Report inventory is intended to be used primarily for informational purposes. It contains a listing of sites including historic structures, municipal properties, parks, historic districts, houses of worship, and cemeteries. National Register and State Register sites are listed in the Inventory as are other properties that may be eligible for nomination to the National Register or which may be considered for local historic zoning.

Five sites in West Warwick are included on the National Register of Historic Places:

- St. Mary's Church and Cemetery, Church Street, Crompton;
- Silas Clapp House, East Greenwich Avenue;
- Crompton Free Library, Main Street, Crompton;
- Lippitt Mill, 825 Main Street; and,
- Valley Queen Mill, 200 Providence Street.

The National Register of Historic Places includes the State's most important historic places, and is the nation's official list of significant historic properties worthy of preservation.[17] The benefits of being on the National Register include official recognition of the property's importance; eligibility to apply for federal planning and restoration grants when funds are available; eligibility to apply for federal planning and restoration grants when funds are available; eligibility for federal investment tax credits for certified substantial rehabilitations of income-producing properties; and protection from the adverse effects of state or federally funded or licensed projects through a review and assessment program. Listing on the Register does not require the owner to preserve or maintain the property. Unless the owner applies for and receives special federal or state benefits, she/he can do anything with the property which is permitted by local ordinances.

The HPC has also prepared a list of properties which *may* be eligible for listing on the National Register or the State Register. These properties require additional research and documentation to determine whether they fall within the National Register guidelines. They are as follows:

1.	Arctic Mill Historic District; Border and Earl Streets, Arctic	a
2.	Fairview Avenue Historic District, Fairview Avenue, Phenix	a
3.	Phenix Historic District, Main Street, Phenix	b
4.	Arctic Mill Complex, 33 Factory Street, Arctic	a
5.	Arctic Mill Store, 12 Factory Street, Arctic	a
6.	United States Post Office, 1190 Main Street, Arctic	a
7.	Centreville National Bank, 1218 Main Street, Arctic	a
8.	J.J. Newberry Store, 37-43 Washington Street, Arctic	a
9.	Donant Archambault Building, 115-16 Washington Street, Arctic	a
10.	Centerville Mill Complex, Bridal Avenue, Centerville	a
11.	Waterhouse Mills/Kent Manufacturing Company Complex, 1454 Main Street, Centerville	a
12.	Centerville United Methodist Church, Main Street, Centerville	a
13.	Centerville Bridge, Centerville Road, Centerville	c
14.	Crompton Mills Complex, Manchester and Pulaski Streets, Crompton	a
15.	Crompton New Village, Hepburn Street, Crompton	a
16.	Crompton Company Houses, Hepburn and Manchester Streets, Crompton	a
17.	Carey Dyer House/Episcopal Rectory, 1565 Main Street, Crompton	a
18.	Superintendent's House, 696 Providence Street, Natick	a
19.	O.S. Baker's Building, 703 Providence Street, Natick	a
20.	Sacred Heart Roman Catholic Church, 840 Providence Street, Natick	a
21.	St. Joseph's Roman Catholic Church, 854 Providence Street, Natick	a
22.	Natick Bridge, Providence Street, West Warwick and Warwick	c
23.	Royal Mills Bridge, Providence Street	c
24.	Phenix Fire Station/Harris Fire Department, 701 Main Street Phenix	a
25.	Frank Block, 743 Main Street, Phenix	d
26.	Phenix Mill Complex, 771 Main Street, Phenix	a
27.	Pike Mansion, Pike Street	d
28.	Nathaniel Arnold House, 101 Quaker Lane	d
29.	Royal Mills Complex, 200 Providence Street, Riverpoint	a
30.	Riverpoint Mill Houses, East Main and Providence Streets, Riverpoint	a
31.	Riverpoint Congregational Church and Parsonage, 73 Providence Street, Riverpoint	a
32.	Westcott Mill Houses, Providence Street, Westcott	a

17 This paragraph is excerpted from the Historical and Architectural Resources of West Warwick, Rhode Island: A Preliminary Report, Rhode Island Historical Preservation Commission, 1987, page 28.

33. Westcott New Village, 476-578 Providence Street, Westcott a
34. Burlingame Farm, Wakefield Street a
35. West Winds (former Gov. Quinn House), 300 Wakefield Street d
36. Greene House, 22 Woodside Avenue a

Key:

a - Recommended for National Register consideration in the Historical Preservation Commission survey publication.

b - Eligibility agreed upon by Historical Preservation Commission and a Federal or State agency for environmental review purposes.

c - Formally determined eligible for National Register listing by the National Park Service.

d - Consideration requested or suggested for National Register by owner or other party (this category includes properties for which the State Review Board reviewed preliminary or final materials and found that it did not appear National Register eligible at the time).

The above list of recommended properties should not be considered final. As new research is conducted, and as the Town changes, other potential candidates for the National Register may be identified. Other sites which should be considered as potential candidates include:[18]

- Emmanuel Lutheran Church, 9 New London Avenue;
- Saints Peter and Paul Church;
- Carr-LeValley house, 42 Fairview Avenue; and,
- Spencer houses.

Future inventories of the Town's historic resources should be developed using criteria that objectively access West Warwick's historic resources, such as those developed by the National Park Service for the National Register guidelines. These criteria include building age, architectural style, building type, condition and thematic associations. No one criteria is paramount, that is, a structure not conforming to one criteria could still be listed if it was found to have significant merit under other criteria.

Criterion for the age of a structure as defined by the National Register of Historic Places, is fifty years. With certain exceptions, the Register will not list structures that are less than fifty years old.

Another criterion is architectural style. Structures that have been included in the Town's inventory in many cases are representative of a specific architectural style such as Queen Anne or Georgian Revival, or local/regional building tradition. The condition criteria comes into play when accessing a structure's architectural style. Alterations to a structure that substantially mask or destroy a structure's architectural integrity could preclude its listing in the Town's inventory (for example, aluminum siding).

Thematic associations can refer to a structure's historical associations or to its contribution to an historic district's overall theme. In the case of the former, a structure could be included in the inventory if it was owned, occupied or built by an individual or organization notable in national, state or local history. In the case of the latter, a structure could be included in the inventory if it contributes to the overall theme of an identified historic area. Examples include mills and associated mill housing and other buildings.

Historic Preservation Activities - The effectiveness of preservation activities may be gauged by the inclusiveness of the resource inventory, and the extent to which historic districts, buildings and sites are protected from deterioration, demolition and unsympathetic renovation. These measures indicate that West Warwick's preservation activities to date have

18 Identified in December, 1990 by the members of the Pawtuxet Valley Preservation and Historical Society.

been less than fully effective. The preliminary inventory provides a solid base which may be expanded and modified. However, those resources identified within the inventory are currently afforded no real protection from decay, demolition and indifferent renovation, and will continue to be lost as long as this protection is not available.

Preservation activities in West Warwick have primarily been directed by individuals, the State HPC and the Pawtuxet Valley Preservation and Historical Society (Historical Society). The Historical Society was established in 1976, and has grown from 10 members to 100+ members. Activities have included the following:

- Historical Society holds regular monthly meetings for the purposes of addressing historical preservation issues in West Warwick;
- An historical house marker program for certain properties judged to have historical significance by the Historical Society;
- Maintenance of archival materials and a library of historical materials at the Historical Society office in Arctic, and staffing of the office by volunteers;
- Development of a video tape promoting historical preservation, prepared through a State funded grant;
- Historical Society member lectures at local schools and other groups;
- Some cleaning and maintenance of historical cemeteries;
- Preparation of a monthly newsletter for Historical Society members outlining historical preservation activities;
- Provision of a scholarship for a West Warwick high school student for outstanding history students.
- Preparation of exhibits for display in local libraries, schools etc.;

The goal of Historical Society is the education of local residents about the importance of historical preservation. Members feel that their efforts to date have been successful, and point to the increase in membership as an indicator of their effectiveness. The Historical Society should strive to become active in other aspects of preservation planning, such as lobbying for the enaction of historic district zoning, and/or an environmental review article within the subdivision regulations.

There is no municipal body or regulation charged with overseeing the historical heritage of the community. Some interest has been expressed in historic district zoning, and the establishment of an historic district commission, but concerns over additional property regulation have kept this idea from being promoted.

This is perhaps the main weakness of preservation planning in West Warwick. Without a local ordinance designed specifically to preserve important historical resources in the Town, properties, even those on the National Register, can be demolished or significantly altered. If the community's goal is to preserve those structures and areas which were important contributors to its heritage, there is a need to consider historic district zoning as a form of protection. The Town should establish stronger preservation mechanisms through zoning and explore ways to protect historic properties, historic structures, historic landscapes, as well as potential archaeological sites, and cemeteries and graveyards which may be impacted by such development.

Evaluation of Known Threats to Historic Resources - Numerous reversals in regional and local economies transformed West Warwick from an 18th century farming community to one dominated by manufacturing during the 19th century. While West Warwick remains a factory town, changes in the national economy caused a geographic shift of manufacturing industries to sun-belt states, leaving many of the mills in West Warwick vacant, and many of the mill villages began to lose their identity.

In recent years, residential development has been prevalent, followed by commercial development. Land use patterns indicate little developable land remains (land without severe environmental constraints such as wetlands). Many of the Town's historic resources are directly or indirectly threatened by the combination of these forces and shifts in the economy and development patterns. A number of historic sites may be at risk either by neglect, development forces or other threats. At risk resources fall into the following general categories:

1. Large mill complexes and associated mill housing;
2. Individual or isolated structures;
3. Cemeteries and graveyards;
4. Town archives; and,
5. Archaeological sites.

Examples of threatened resources within each of these categories, how they are threatened, and how the threat may be removed are presented in the following.

Mill Complexes - Mill complexes in West Warwick, including associated housing and other buildings, are an important and highly visible element of the Town's historic resources. In some cases, such as the Clyde Print Works site, all that remains of these complexes are foundations, dams or water works. Other structures have been updated and changed over the years so that only remnants of the original buildings remain. Vacant mill structures are threatened unless they are put to a use or uses that will promote their survival. Marginal uses, such as patchwork job shops, do not yield the type of revenue needed to protect the integrity of the structures. At some point, the land which these mills occupy may be more valuable without the buildings thus encouraging present or future owners to raze all or portions of the site. The condition of structures left vacant may disintegrate to the point where only massive public support will save them.

In West Warwick, most of the remaining mill complexes are in some type of manufacturing or other commercial use. These include the following:

- Arctic Mill Complex, 21 and 33 Factory Street (1834-1965)
- Centerville Mill Complex, Bridal Avenue and Main Street (1807)
- Warwick Mill Complex, Brookside and West Warwick Avenues (1896/1907)
- Clyde Print Works Site, Main and Clyde Streets (1830's)
- Crompton Mills Complex, Pulaski and Manchester Streets (1807)
- Lippitt Mills Complex, Main Street (1810)
- Phenix Mill, 771 Main Street (1822)
- Riverpoint Mills (Riverpoint Mills, Greene Mills, Royal Mills, Valley Queen Mill) 125 and 200 Providence Street (1813)

Structures which are not adapted to some economically viable use may be subject to further deterioration. Many adaptive reuse options exist for mills in Town, including conversion to residential units, retail outlet stores, incubator business offices and others. Offering in-

centives to small scale manufacturing businesses and warehousing operations who are willing to occupy structurally sound mill structures is another viable method to reusing mill structures.

The historic mills of West Warwick are an historically important resource, as well as an economic asset. The Town should establish a working relationship with the mill owners, determine their plans for these structures and provide assistance in preserving the buildings for future use. The zoning ordinance should be reviewed to ensure that obstacles to innovative use of these buildings are minimized, and appropriate mixed uses should be encouraged.

Individual/Isolated Structures

Discussion with local preservation groups revealed a number of individual sites which were considered threatened for a number of reasons, including lack of maintenance and/or development pressures. The sites were not identified on the basis of a particular set of criteria, but rather as representative of at risk sites throughout the Town. Potentially threatened sites/areas include the Carr-LeValley house at 42 Fairview Avenue, mill houses in Arctic hill and on Sisson Street in Phenix, and the Fairview Avenue Historic District.

Cemeteries and Graveyards

All of West Warwick's historic cemeteries and graveyards are considered to be at risk. West Warwick developed as an agricultural community and many of its farmsteads incorporated family graveyards. While many farms have disappeared with the advance of suburban development, the graveyards remain and can be found throughout the Town. These "hidden" graveyards are claimed by no one, and exist as private property. While theoretically protected from development, they are threatened by the development of adjacent land, vandalism, and neglect.

The Historical Society provides occasional maintenance for historic cemeteries, but finds that it is difficult to perform the extensive work on a regular basis with volunteers. While volunteer efforts have been attempted to clear sites of rubbish and overgrowth, these efforts cannot deal with the problems posed by headstones, mausoleums, and walls damaged by vandals and the elements. The inventory indicates the sites of some known cemeteries and graveyards, but does not include so called "hidden" graveyards (i.e. sites for which records no longer exist). For the purposes of this discussion, these "hidden" sites should be treated like archaeological sites, needing protection but difficult to protect since they are in many cases not clearly defined as to location.

Town Archives

Historical Town archives are threatened to some extent in that while they are housed in the Historical Society offices, the area is not the optimal for storage of aging paper and other media. Loss of these valuable resources due to poor climate conditions is inevitable unless a suitable fire proof, climate controlled structure is found. The Historical Society is actively seeking a suitable site but budget constraints have limited their options.

Future options for a historical library/Historical Society/historical preservation commission headquarters include vacant mill space, the Phenix fire station or the Crompton Free Library. The library, while a National Register building, has limited parking area and difficult access. The Phenix fire station, housed in a structure which is over 100 years old, may be an ideal site, with available parking. This structure would require significant investment in terms of internal improvements to provide office and storage space. Should the Town relocate the Town Hall, consideration should be given to providing historical archive storage space within the Town Hall itself, as well as meeting space for the local historical organizations.

Archaeological Sites

The Historical Preservation Commission and the State Archaeologists' Office have identified ten archaeological sites of prehistoric or historic nature which are *potentially eligible for inclusion* in the National Register of Historic Places (see Figure V-2). No archaeological sites in West Warwick are currently listed on the Register. The sites exist throughout the community and have been identified through archaeological surveys for State or Federally-funded projects or through other historical evidence. There are likely many more archaeological sites which have not been identified or documented.

Currently, an archaeological site is documented only if required by law as part of a Federally-funded project, such as a new roadway or power line. The Town has no means for identifying potential sites, or notifying property owners whether their land may have archaeological sensitivity. Archaeological resources are at risk in the absence of local authority to protect them. The Town should develop a policy and mechanisms to identify and protect sites from destruction.

Extent of Preservation Planning with Overall Planning Context - Preservation planning in West Warwick has been limited, although public interest abounds. The Historical Society has made some inroads in educating local residents, but its preservation ability is limited by budget, lack of professional assistance and preservation regulations. Aside from the identification and delineation of National Register sites and districts, to date nothing has been done to make preservation planning part of the Town's overall plan for development.

To rectify this problem, the Town should examine the possibility of establishing an historic preservation commission and enacting historic district zoning. Site plan review for new development in historically sensitive areas is another viable mechanism which the Town should consider, as well an environmental review within the subdivision regulations. The Historical Society needs to become stronger advocates for historic resources of the Town. They need to educate the Town's other agencies, boards and commissions on the contribution of historic resources to the landscape and the effect development has on the integrity and cultural value of these resources.

The Town should consider its historical resources as an economic asset to the community. There an extensive network of mill buildings suitable for commercial, residential or other uses. The heritage of the community makes it an interesting place to visit. Combining the reuse of a mill complex with an interpretive program regarding the textile production era is one example of how the Town could use an historic resource to its economic advantage. The Pawtuxet River Valley and the river itself has played an integral role in the textile production history of the State and region, and should be recognized as such. Combining recreational opportunities with historical heritage information could be achieved along the Phenix-Harris Riverwalk, located in the northwest part of the Town. The Recreation and Open Space element of this Plan recommends that this walkway be extended to the Lippitt Mill area, behind which would be a neighborhood park. An interpretive program could be established along the riverwalk, with plaques telling the story of the evolution of the textile industry in West Warwick, and the role its citizens played in the production process. The are a multitude of ways in which the historical aspects of West Warwick can be combined with other planning elements. A central, municipal agency such as a historic district commission could work to explore these interrelationships and bring them to the attention of the appropriate boards and commissions.

V.3 Goals, Policies and Implementation Actions

The ultimate goal of this Plan is to preserve and protect the natural, historical, cultural and archaeological resources and heritage of the Town of West Warwick. The following goals, policies and implementation actions lead to the achievement of this vision.

V. Natural & Cultural Resource Goals	Policies	Implementation Actions
1. To ensure that current and future development does not adversely affect natural or cultural resources of West Warwick, and that environmentally sensitive areas are protected.	a. Encourage new development which is designed sympathetically to site topography, watercourses and waterbodies, and unique natural features of the site.	1. Amend the Zoning Ordinance and Subdivision Regulations to require that developments be designed to blend with the natural surroundings of a site, and harmonize with the natural features of the area.
		2. Use of a particular site should be compatible with adjacent land uses.
		3. Amend the Zoning Ordinance and Subdivision Regulations to require that building height, materials, setback from the street and landscaping harmonize with neighboring structures.
		4. Amend the Zoning Ordinance and Subdivision Regulations to require that buildings, signs and parking areas do not block vistas from roads and other public areas.
		5. Amend the Zoning Ordinance and Subdivision Regulations to require that roads follow the contours of the site, and the natural assets of the site are preserved.
		6. Amend the Zoning Ordinance and Subdivision Regulations to require that roads in subdivisions use curves and cul-de-sacs to improve the visual quality of the subdivision, increase privacy and reduce unnecessary noise and traffic.
		7. Amend the Zoning Ordinance and Subdivision Regulations to require that residential areas be separated from major roadways, commercial and manufacturing areas by vegetated buffer areas.

V. Natural & Cultural Resource Goals	Policies	Implementation Actions
		8. Encourage creative site design to preserve a site's natural assets while permitting reasonable development intensity.
		9. Formalize the site plan review process within the Zoning Ordinance, applicable to nonresidential and large residential projects as defined by the Planning Board. The Planning Board will establish a list of site plan requirements and guidelines, including, but not limited to parcel(s) bounds; existing zoning and use; existing and proposed location of principal and accessory buildings and structures on the site; neighboring properties within a 200 foot radius showing existing use, zoning and ownership; location of existing and proposed roads and sidewalks; location, dimensions and number of off-street parking and loading spaces; location, dimension and design of existing and proposed signs and exterior illumination of the site; location of existing and proposed recreation facilities, open space, easements and/or rights-of-way, and utilities, including water supply, sewage disposal, storm drainage and electrical or gas service, if applicable; soil types; if regrading is proposed, existing and proposed grade contours at 5 feet intervals; location and type of existing and proposed major tree and shrub areas; flood hazard areas; freshwater wetlands; location, dimensions and type of existing and proposed screening, fences or walls; proposed density, number of bedrooms per dwelling unit and percentage of lot coverage; and, general exterior architectural plans and elevations of all proposed structures indicating proposed style and materials. Graphics will be included to promote ease of use.
		10. Amend the Zoning Ordinance to require an environmental assessment process in addition to necessary State and Federal approvals for all nonresidential development, and residential development including clusters, multifamily developments, and standard subdivisions as determined necessary by the Planning Board.
		11. Underground utilities will be required in new developments.

V. Natural & Cultural Resource Goals	Policies	Implementation Actions
	b. Flood zones will continue to be protected from intensive development for the safety and protection of residents and the environment.	1. 100-year flood zones will be reserved for open space, recreation or agricultural purposes where possible. Areas flooded only rarely may be considered for limited development with adequate precautions.
	c. Wetlands will be maintained in their current state to the extent possible as critical elements of groundwater recharge, wildlife habitat, flood storage and recreation.	1. Wetlands will not be filled or built upon where reasonable avoidance measures may be taken. A permit must be obtained from the Rhode Island Department of Environmental Management for any wetland alteration.
		2. Wetland areas will be excluded from zoning density calculations in standard subdivisions, cluster subdivisions, multifamily developments and nonresidential developments.
	d. Sloping land (15%+ slope) is regarded as prohibitive to most standard construction.	1. Site design for locations sloping more than 15 percent will be required to comprehensively address such slope conditions.
		2. Require drainage basin, subcatchment area and drainage system analysis and design for the two year and 100-year storm by a registered professional engineer, and require system designs to meter stormwater runoff at predevelopment rates.
		3. The Town's erosion and sedimentation control ordinance will be enforced on a consistent and timely basis.
	e. The existing quality of surface water bodies will be maintained and improved.	1. Mitigate water quality impacts of stormwater runoff and provide for drainage controls in all new development. Post-construction site runoff will not exceed pre-construction runoff.
		2. Acquire or otherwise protect land around Flat Top Pond and Matteson Pond toward achieving improved water quality and providing additional recreational opportunities.
	f. Continue to work toward reducing stream and river pollution to levels set in the State's stream classification plan, particularly in relation to the Pawtuxet River.	1. Work with the surrounding communities to eliminate pollution of the Pawtuxet River from stormwater drainage systems.

V. Natural & Cultural Resource Goals	Policies	Implementation Actions
		2. Lobby the Rhode Island General Assembly to establish enabling legislation allowing the formation of stormwater utility districts to fund the operation, maintenance and improvement of storm drainage systems.
		3. Establish a program of regular street sweeping toward reducing the toxic soil load running off into streams and rivers.
		4. Continue to administer the cooperative agreement on wastewater treatment with Cranston and Warwick.
		5. Identify parcels along the shore of the Pawtuxet for acquisition or other safeguard, to provide protection to the river as well as recreational opportunities to Town residents.
		6. Establish a tax abatement program or other incentives for innovative business and industry initiatives for water pollution prevention and hazardous waste reduction.
		7. Strictly enforce pretreatment standards for industrial sewerage entering the West Warwick wastewater treatment facility.
	g. Ensure that individual sewage disposal systems are properly installed and maintained.	1. Septic systems will be installed per the State Department of Environmental Management requirements.
		2. Existing individual sewage disposal systems will be regularly maintained.
		3. Septic systems will not be installed closer than 200 feet from tributaries to lakes, streams or standing surface water bodies.
		4. Establish a Townwide public education program regarding the importance of septic system pumping and maintenance.
	h. Maintenance and improvement of the quality of drinking water in the community is pre-eminent.	1. The Town will encourage the Kent County Water Authority, as public water supplier to West Warwick, to participate in the Rhode Island Department of Environmental Management Wellhead Management Program.

V. Natural & Cultural Resource Goals	Policies	Implementation Actions
		2. The Town will cooperate with the Rhode Island Department of Environmental Management in their efforts to identify and inventory underground hazardous waste storage facilities.
		3. All salt piles and sand/salt mixtures will be enclosed.
		4. The State and Town highway departments will minimize their use of road salt in winter road maintenance.
		5. Ensure that the Town's lakes, ponds, rivers and streams meet the water pollution levels set in the State's water quality classification plan.
		6. Land disturbance during construction will be minimized, and natural vegetation left intact to the greatest extent possible. If natural vegetation is removed, the area will be revegetated as soon as possible.
2. To preserve biological diversity by identifying, preserving and managing state and federally-listed rare, endangered and threatened plant and animal species and unique natural communities.	a. Wildlife and vegetation, inclusive of mature trees, are considered important natural and economic resources to be preserved.	1. Coordinate with the Rhode Island Natural Heritage Program on a regular basis to determine sensitive habitat locations.
		2. Develop a series of protection and management recommendations for each identified habitat location in coordination with the Rhode Island Natural Heritage Program.
		3. Include the Rhode Island Natural Heritage Program staff in consultation on development proposals which may potentially impact an identified site.

V. Natural & Cultural Resource Goals	Policies	Implementation Actions
3. To ensure that air quality in West Warwick meets national ambient air quality standards and maintain air quality levels in the Town higher than these standards.	a. Support measures which reduce vehicle air pollution levels.	1. Work with local business to encourage air pollution reduction measures including, but not limited to, commuter services, park and ride lots, bus transit, carpool/vanpool programs, bicycle programs, variable work hours etc.
		2. Require that all new commercial and industrial developments meet or exceed national clean air standards.
		3. Lobby adjacent communities to quickly address potential air quality problems within their boundaries.
4. To identify and preserve West Warwick's historic sites, structures, documents and artifacts as representations of the Town's cultural heritage.	a. Establish a municipal board/commission to develop the regulations necessary to preserve the Town's historic sites, structures and artifacts and to oversee historical preservation aspects of development.	1. Establish a West Warwick Historic District Commission (HDC) by Ordinance.
		2. Provide the HDC with meeting and storage space at the Town Hall or other appropriate Town-owned facility.
		3. Provide the HDC with a suitable operating budget to enable it to carry out its functions as expressed in the Town Charter.
		4. Through the HDC, gain Certified Local Government (CLG) status. CLG status, allows a Town to secure preservation grants and loans to carry out preservation activities needed to protect historical resources.

V. Natural & Cultural Resource Goals	Policies	Implementation Actions
	b. Establish the necessary land use regulations to provide protection to the Town's historic sites, structures and artifacts.	1. The Planning Board, working with the HDC, will review historic district zoning regulations of other communities, designate those areas of the community which will be targeted for such preservation efforts and after holding required public hearing(s), prepare legislation to permit historic district zoning.
		2. The Town Planner, Planning Board, Town Council, HDC and others as appropriate, will cooperatively prepare design guidelines for adoption as part of the historic district regulations to enforce the purposes of historic district zoning.
		3. Establish a site plan review process for large scale residential single family, multifamily developments, commercial and industrial developments.
		4. Establish an environmental review process within the subdivision regulations and site plan review process (once established) which will permit the Planning Board to request an on-site archaeological investigation if the State Archaeologist indicates there is potential for an archaeological site on the premises.
		5. Identify known archaeological sites on a Town base map in a generalized manner, i.e., twenty-acre radius around one or more sites so as not to pinpoint a particular site. Maintain this map as a resource in the Planning Department to let property owners know locations which may have archaeological sensitivity.
		6. The Town's Community Development Block Grant (CDBG) assisted housing rehabilitation program and other housing programs administered by the Town will give priority to historic structures, and require compliance with historic district guidelines, if appropriate.
	c. Ensure the physical preservation of existing historical archives.	1. Assist the Pawtuxet Valley Historical Preservation Society in providing suitable fireproof, climate-controlled space to archive historical Town records and materials.

V. Natural & Cultural Resource Goals	Policies	Implementation Actions
	d. Expand the Town's knowledge and documentation of historical and archaeological sites and structures.	1. Encourage the HDC, Historical Society and other groups to establish and expand the existing historic site inventory. A comprehensive listing of existing historic and archaeological resources will be a priority. The HDC will develop a standard list of criteria by which "significant" resources are recommended for further study.
		2. Encourage professional and/or academically-oriented archaeological investigations of known or potential pre-colonial and colonial sites, including projects by local colleges and universities.
		3. Advise and coordinate with the HPC on potential archaeological sites.
		4. The Town will encourage the historical society and others to work with the HPC to review and document those sites considered potentially eligible for listing on the National Register of Historic Places.
	e. Promote the Town's rich historical heritage to attract tourism and other viable economic development activities.	1. Work with the Pawtuxet River Valley Authority to expand its riverwalk network in the Phenix area, and include an interpretive program on the textile production industry in West Warwick, or other programs as appropriate.
		2. Develop an adaptive reuse program for historical mill structures. Suggested reuses include mixed residential/office/retail use, industrial/commercial incubator, elderly housing and retail outlets.
		3. Support the development of a network of historic homes and sites which are open to the public for walking and interpretive tours.
		4. Actively promote the Town as an area rich in historic resources of the 18th, 19th and 20th centuries. Focus on the distinct mill villages, the textile industry and Pawtuxet River.

V. Natural & Cultural Resource Goals	Policies	Implementation Actions
		5. Use the area's historical resources in promoting the revitalization of the Arctic business district. Provide the area with an appropriate historical streetscape with lighting, sign and awning guidelines and other amenities.
		6. Review land use regulations to encourage preservation and reuse of historic mill structures. Modify such regulations to achieve this objective, if necessary.
		7. Continue to encourage the appreciation of the distinct mill villages through a signing program.
	f. Ensure the appropriate maintenance of historic cemeteries in the Town.	1. Establish a cemetery commission as a subcommittee of the HDC which would oversee maintenance of historic cemeteries, assess the cemeteries' general conditions, and provide information for people seeking genealogical information.
		2. Fund an historic cemetery maintenance program. A budget item for historic cemetery maintenance will be set through the HDC.
	g. Promote inter-office and inter-agency coordination and and cooperation in historical preservation activities.	1. Once established, the HDC will receive agenda material from the Planning Board and Zoning Board of Review. Members of the HDC are encouraged to attend Planning and Zoning Board meetings and to testify on matters affecting historical and archaeological resources.
	h. Ensure that historically significant sites and structures are identified and recognized.	1. Work with the HPC to determine the potential of the Emmanuel Lutheran Church, Saints Peter and Paul Church, the Carr-LeValley house, and the Spencer house on Maple Street for inclusion in the National Register.
		2. Provide technical assistance to HPC to secure the National Register listing of the Fairview Avenue Historic District.

V. Natural & Cultural Resource Goals	Policies	Implementation Actions
5. To promote an appreciation for and understanding of West Warwick's historic resources.	a. Educate the public about the importance of preserving historic resources.	1. Provide support through the HDC and Historical Society for public education on historic and cultural resources, including, but not limited to, activities such as workshops, forums, historic house tours etc., and information packets.
		2. Expand educational efforts and resources committed to teaching about local history in the Town's schools.
		3. Form a coalition of local preservation interests, with the HDC as the core, to promote a public/private partnership in preservation. Should include groups such as the Historical Society and other interested parties who wish to be represented.

Priorities For Addressing Historical and Cultural Issues - West Warwick is a heavily urbanized community with little vacant land for future development. The unavailability of vacant land will create pressure upon the marginal developed areas of the community, i.e., the large older homes which are no longer practical as single family homes, or those which have deteriorated from lack of maintenance, mill buildings which have served as home to job shops and have experienced the same poor maintenance. The Preliminary Report inventory lists most of the historically important properties in the community, many of which may fall into the development pressure-jeopardized category.

In recognition of the above, the Town should have two initial priorities: making the public aware of the importance of preservation, and providing the means by which these structures/areas can be afforded protection. The Town needs to develop an organized implementation strategy to accomplish the goals of preserving historical and archaeological resources. Many activities can be undertaken concurrently, some with volunteers, existing Town staff, and others with outside consultants. As guiding principles, the following ought to be considered the order of priority:

1. **Establish a municipal board/commission to develop the regulations necessary to preserve the Town's historic sites, structures and artifacts.**

2. **Establish historic district zoning regulations with distinct guidelines for the purposes of preserving the Town's historic sites, structures and artifacts.**

3. **Promote the Town's rich historical heritage to attract tourism and other viable economic development activities.**

   West Warwick's heavily developed nature limits the extent of land intensive economic development. The Town should take advantage of an existing resource, in conjunction with promoting its recreational resources for economic development purposes.

4. **Coordinate recreational opportunities along the Pawtuxet River with interpretive programs on the Town's heritage.**

   Expansion of the Phenix-Harris Riverwalk is a good opportunity to initiate this type of program.

5. **Expand the Town's knowledge and documentation of historical and archaeological sites and structures.**

   Expansion of the existing inventory of sites and structures should be encouraged as an activity of the HDC and its coalition of preservation interest groups.

6. **Ensure the physical preservation of existing historical archives.**

   Assembling the Town's historic archives into a central location, fire-proof and climate controlled for long-term storage is critical. A complete inventory of archival material should be made and maintained in Town Hall.

SUPPLEMENT E

Town of West Warwick Comprehensive Plan
Updates and Amendments

Legal: Chapter 42-11 of the General Laws established the Statewide Planning Program, Rhode Island Department of Administration.
Purpose: To prepare strategic and systems plans for the state, coordinate activities of the private and public sectors within this framework of policies and programs and advise the Governor and others concerned on physical, social and economic topics.

Agricultural Lands

Pursuant to Element 152 of the "Ocean State Outdoors: Rhode Island's Comprehensive Outdoor Recreation Plan", adopted June, 1992 as developed by the Department of Environmental Management and Division of Planning, certain goals and policies have been established with the purpose of protecting open space and critical resources. "Rhode Island will continue to preserve its best farmland for active agricultural purposes" is included as policy under Element 152.

Analysis

The Town of West Warwick has conducted an analysis of "best farmland" within its jurisdiction for purposes of identifying and enacting policies toward preservation. The *Soil Survey of Rhode Island* Table 15 tabulates crop and pasture yields per acre for soil names and associations.[1] Yields are expressed in tonnage for sweet corn, corn silage, Irish potatoes, alfalfa hay, grass-legume hay, grass hay and pasture.

Table 1 was constructed for all yields with the exception of Irish potatoes, which, due to potato potential in the hundreds of tons for most soil groups would have inordinately skewed the results.

Figure 1 illustrates the total tonnages for the five (5) highest productive agricultural soils listed by crop as an indicator of those soils that should be preserved for agriculture if feasible.

Figure 2 provides a generalized map indicating those area where the five most productive soils occur.

Figure 3 gives a geo-spatial distribution of permeability associated with soils as an indicator of urban development potential.

Finally, Figure 4 is the Future Land Use map adopted by the Town of West Warwick to guide land use regulation and policy.

[1] United States Department of Agriculture. *Soil Survey of Rhode Island.* National Cooperative Soil Survey, 1977.

Strategies

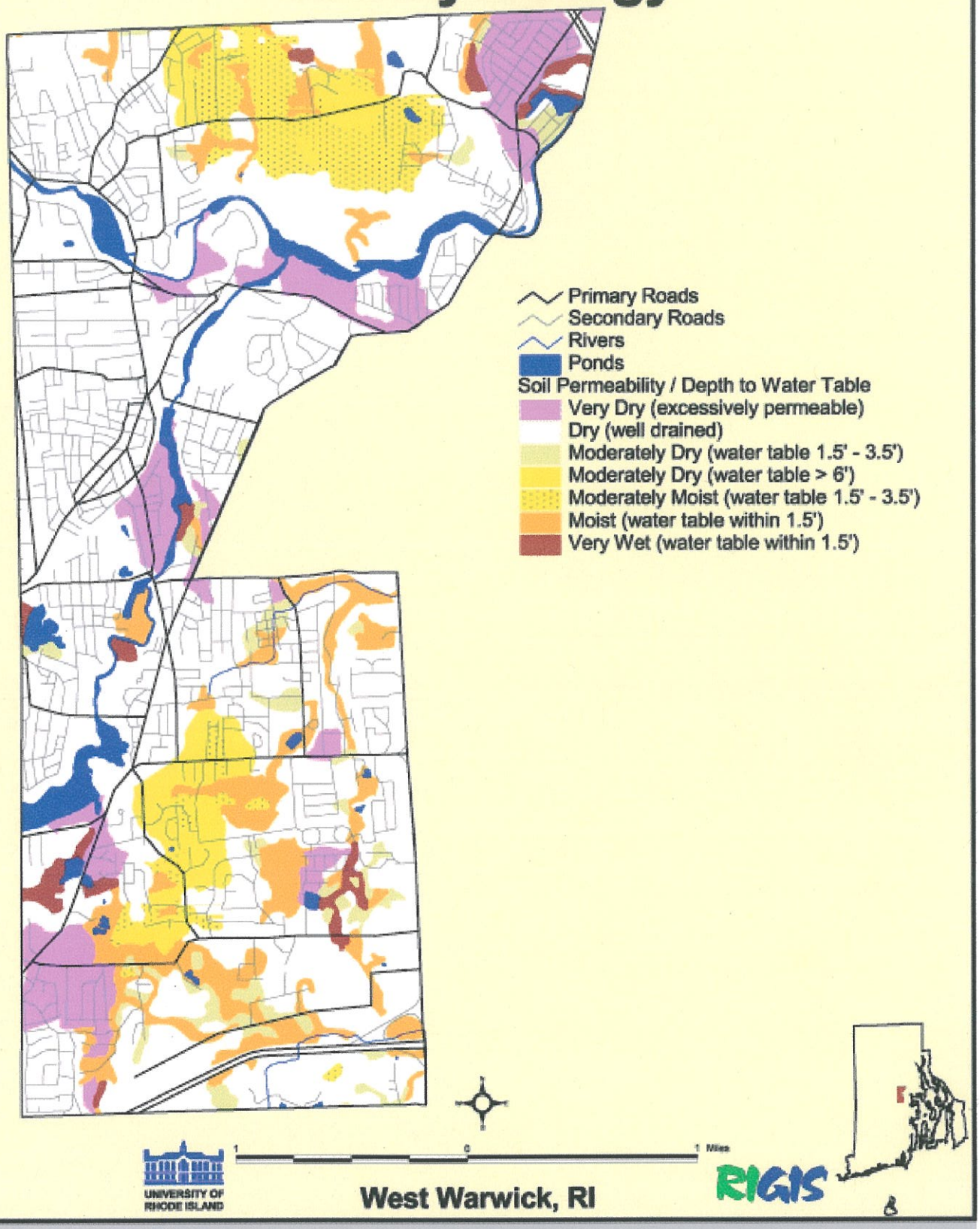
Develop site design guideline provision for those undeveloped areas identified as having valuable agricultural soils. The site design guidelines would encourage development proposals which cluster building and infrastructure placement on parcels in order to preserve the maximum feasible natural surface. As a result, rural open space preservation would be encouraged on privately owned, developed parcels.

Work toward amending the Subdivision and Land Development regulations to include a site review requirement whereby developers of agriculturally sensitive lands address ways in which they propose preserving such lands as part of the overall development scheme.

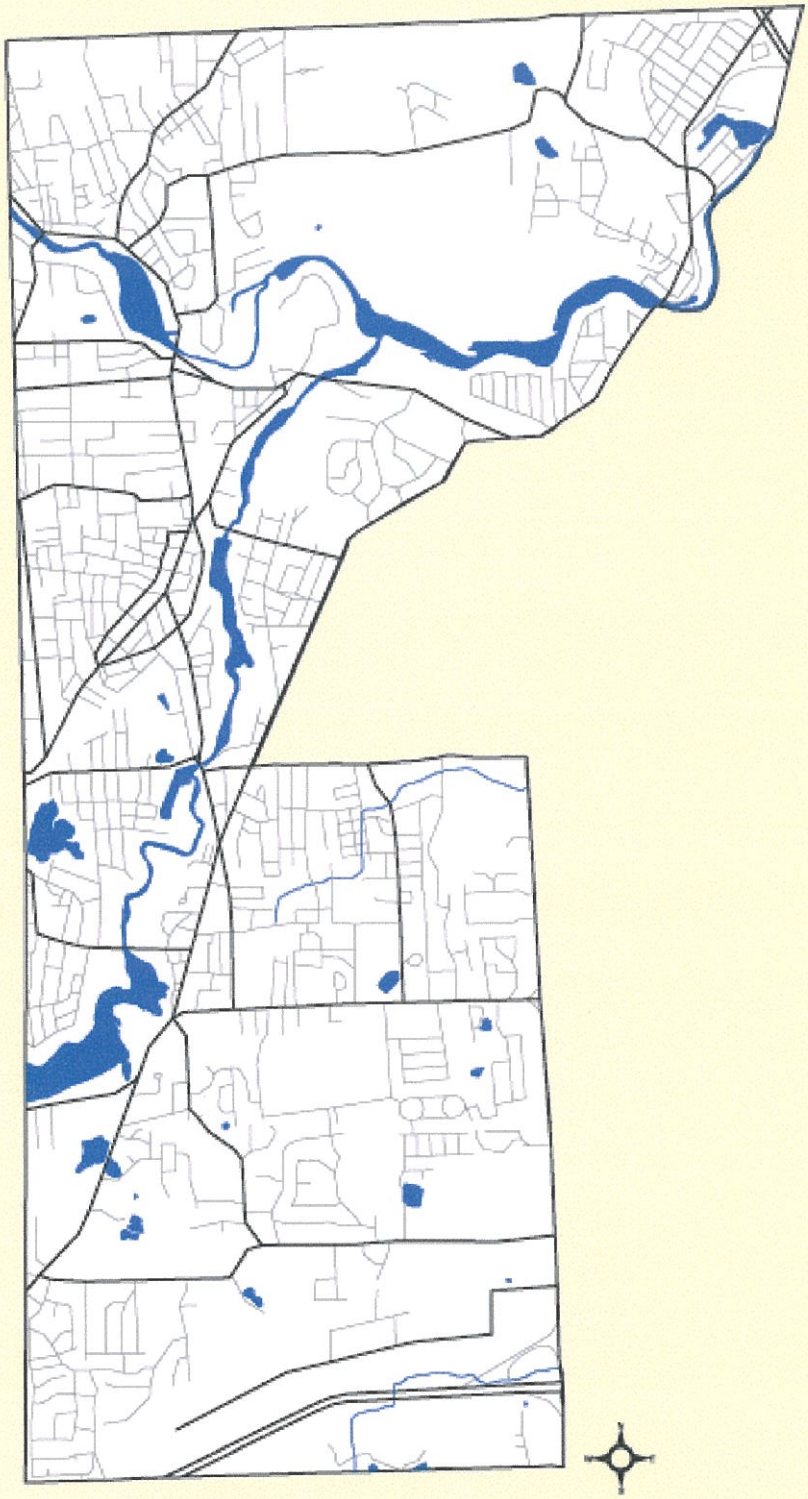
For areas specified as valuable agricultural soils, promote through the site plan review process the establishment of conservation easements in the recording of plats.

Pursue purchase of development rights and open space acquisition in perpetuity for prime agricultural parcels. Participate in the Rhode Island Heritage Commission's Open Space Bonding program.

Soil Hydrology



Biodiversity Resources



Primary Roads
Secondary Roads
Rivers
Ponds
Protected Areas
Critical Habitats

1 0 1 Miles

UNIVERSITY OF RHODE ISLAND

West Warwick, RI

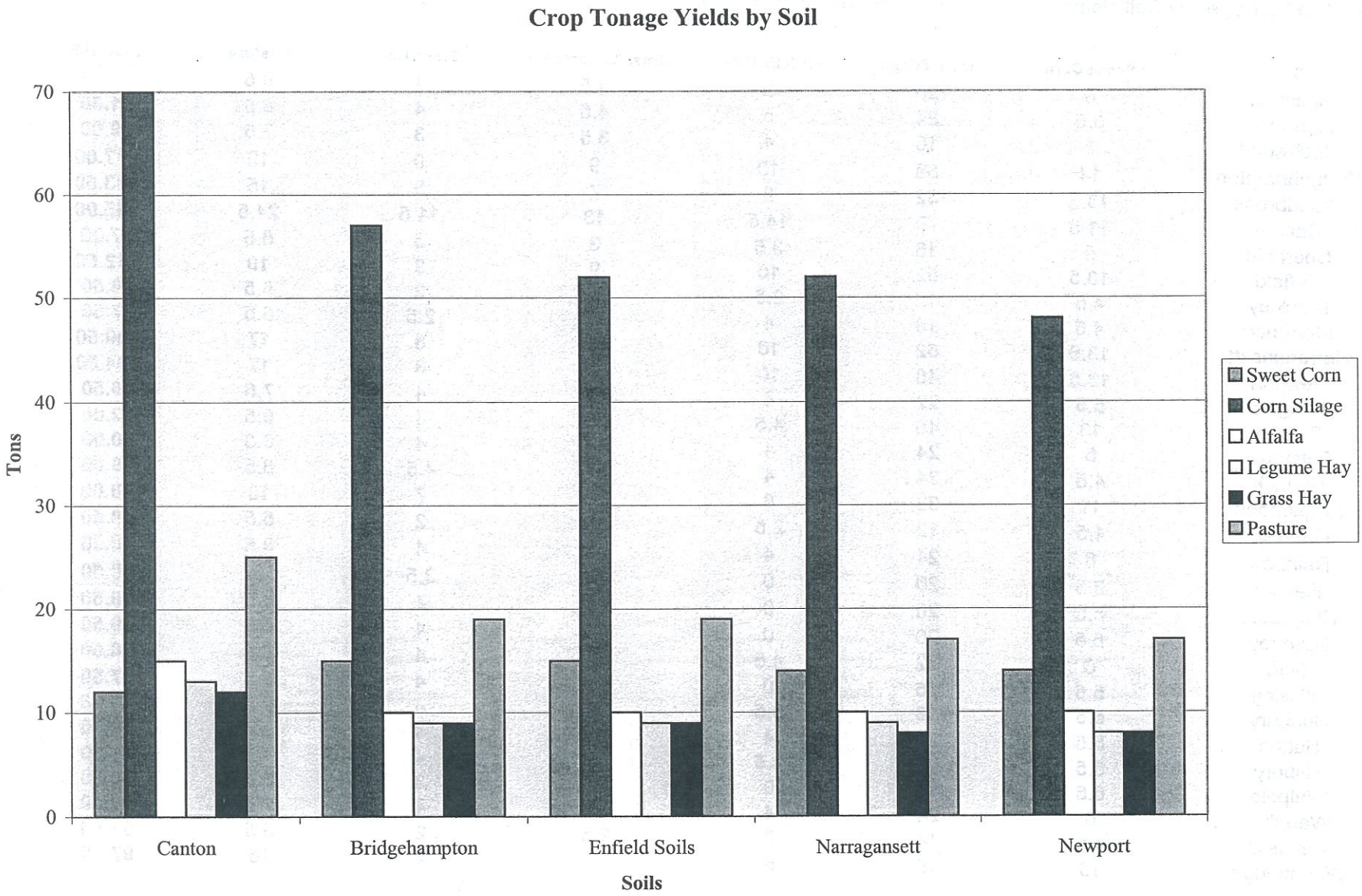
RIGIS

Table 1

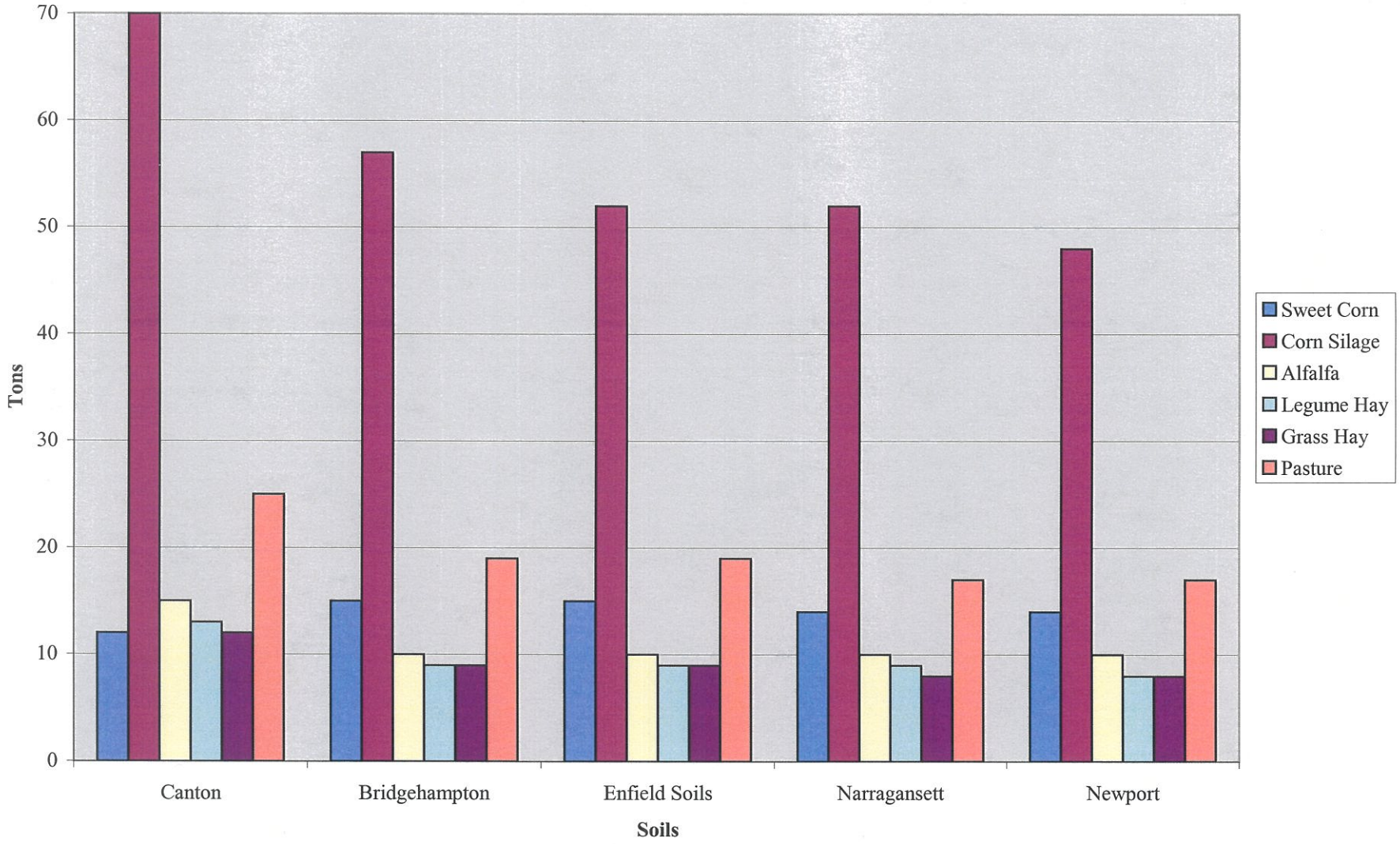
Soils for Crop and Pasture

Crop Yield Tonnages by Soil Name (Potatoes Excluded)

Soil	Sweet Corn	Corn Silage	Alfalfa Hay	Grass/Legume Hay	Grass Hay	Pasture	Totals
Agawam	6	25	5	4.5	4	8.5	
Agawam	5.5	24	5	4.5	4	8.5	51.50
Birchwood	5	16	4	3.5	3	7.5	39.00
Bridgehampton	14	56	10	9	9	19	117.00
Broadbrook	13.5	52	8	7	8	15	103.50
Canton	11.5	70	14.5	13	11.5	24.5	145.00
Deerfield	5	16	3.5	3	3	6.5	37.00
Enfield	13.5	52	10	9	9	19	112.50
Hinckley	4.5	12	2.5	2	2	5.5	28.50
Merrimac	4.5	18	4	3	2.5	5.5	37.50
Narragansett	13.5	52	10	9	8	17	109.50
Newport	13.5	48	10	8	8	17	104.50
Ninigret	5.5	22	4	3.5	4	7.5	46.50
Paxton	13	48	4.5	4	4	8.5	82.00
Pittstown	6	24	4	3.5	4	8.5	50.00
Podunk	4.5	24	4	3.5	4.5	8.5	49.00
Poquonook	11	32	8	7	7	13	78.00
Quonset	4.5	12	2.5	2	2	5.5	28.50
Rainbow	6	24	4	4	4	8.5	50.50
Raypol	5.5	20	0	3.5	3.5	6	38.50
Ridgebury	5.5	20	0	3.5	4	6.5	39.50
Rumney	5.5	20	0	3.5	4	6.5	39.50
Scio	6	22	4.5	3.5	4	8.5	48.50
Stissing	5.5	18	0	3.5	4	6.5	37.50
Sudbury	5.5	18	3.5	4	4	6.5	41.50
Sutton	5.5	22	4	4	4	7.5	47.00
Tisbury	5.5	22	3.5	4	4	7.5	46.50
Walpole	5.5	18	0	3	3	5.5	35.00
Wapping	6	24	4	4	4	7.5	49.50
Windsor	4.5	14	3	2.5	2	5.5	31.50
Woodbridge	13	48	8	8	4	16	97.00


Crop Tonage Yields by Soil
70
60
50
40
30
20
10
0
Tons
Canton
Bridgehampton
Enfield Soils
Narragansett
Newport
Soils
Sweet Corn
Corn Silage
Alfalfa
Legume Hay
Grass Hay
Pasture

Crop Tonage Yields by Soil



Soil Attribute Descriptions

ATTRIBUTE	DESCRIPTION
A-tex	Texture of the A horizon, usually the most common texture from an a
B-tex	Texture of the soul at 20 - 24" depth, usually in the B horizon. On texture is listed
Slope	Slope of the land. Number given is the slope group. To get range of the definition of the slope groups below
SHWT	Seasonal high water table. Number given is the water table group. T see definition of water table groups below
Hydric	Hydric soil. Yes or NO as to whether the soil qualify as hydric soi
Erosion	Soil erosion potential of the soil. Number listed is the "k" value at depth of 24 - 30 ". This depth may not be appropriate for some u
Hydro-Group	Hydrologic group of the soil map unit.
Farmland	Prime farmland. Does the soil map unit meet the soil criteria for p (P - Prime, I - Important, N - Not Important)
Corros	Corrosion potential of the soil on buried uncoated steel (Low, Mode
Septic	Suitability for on-site septic absorption fields (Slight, Moderate, Multitaxa soil map units often have dual ratings
Restrict	Restrictions of soil to support traditional septic systems.
B-perm	B horizon permeability group. Typically permeability range for B ho See below to get range
C-perm	C horizon permeability group. See below to get range.
Bedrock	Bedrock group. Indicates % of surface area covered by bedrock and/o bedrock soil.
Drainage	Drainage class for a soil mapping unit.
Stone	Stoniness group. Indicates % of surface covered by stones and bould See below to get range.
Devgroup	Restrictions or constraints to residential or commercial developmen
Descrbe	A textual description of the soil characteristic(s) as per RIDOA/US definitions for the municipal comprehensive plan map series project
Soil-num	Unique id value for a given soil mapping unit. Used to join tables.
Soil-name	Abbreviation for common name given to the soil mapping unit. See RI

ATTRIBUTE VALUES

FARMLAND

Values	Description
0	Not Applic. A non-agricultural soil defined by usda-scs
1	Prime Agricultural Soils
2	Soils of statewide importance

DEVGROUP

Val	Description
1	Development Group A-Few restrictions to development with on site se
2	Development Group B-Seasonal high water table from 3.5 to 1.5 feet
3	Development Group C-Steep slopes in excess or 15 percent
4	Development Group D-Water at or near the surface - hydric soils
5	Development Group E-Significant constraints to development

SOIL SLOPE GROUPS

Slope Group No.	Percent Slope Range
1	0-1
2	0-2
3	0-3
4	0-8
5	0-15
6	0-25
7	0-35
8	0-50
9	3-8
10	3-15
11	8-15
12	15-25
13	15-35
14	25-65

WATER TABLE DEPTHS

Group No.	Depth To Water Table (ft.)
1	+ 1.0 - 0.0
2	+ 1.0 - 0.5
3	+ 1.0 - 1.0
4	+ 0.5 - 1.0
5	0.0 - 1.0
6	0.0 - 1.5
7	1.5 - 3.5
8	> 6.0
9	> 6.0
9.9	Too variable to rate

SOIL PERMEABILITY GROUPINGS

Group No.	Permeability Range (in./hr.)
1	< 0.2
2	0.2 - 6.0
3	0.6 - 2.0
4	0.6 - 0.6
5	0.6 - 20
6	2.0 - 6.0
7	2.0 - 20
8	> 2.0
9	6 -20
10	> 6
11	> 20
9.9	Too variable to rate
12	< 0.2 or 0.6 -20
13	< 0.2 or Too variable to rate
14	0.6 - 2.0 or 0.6 - 6.0
15	0.6 - 2.0 or Too variable to rate
16	0.6 - 6.0 or Too variable to rate
17	0.6 - 6.0 or 2.0 - 6
18	2.0 - 6.0 or Too variable to rate
19	0.6 - 6.0 or > 2.0
20	0.6 - 2.0 or 6 - 20
21	0.6 - 6 or 6 - 20
22	6 - 20 or >6
23	6 - 20 or >20
24	6 - 20 or Too variable to rate
25	>6 or >20

10 E

STONINESS

Code	% Surface Covered	Descriptive Name
1	0 - 2	nonstony, stony
2	2 - 10	very stony
3	10 - 35	extremely stony

BEDROCK VALUES

Code	% Surface Covered by Outcrops
1	0 -1
2	1 - 10
3	5 - 10
4	10 - 3
5	30 - 80
6	80 - 100