

ENVIRONMENT



City of New Haven
John DeStefano, Jr., Mayor

OVERVIEW

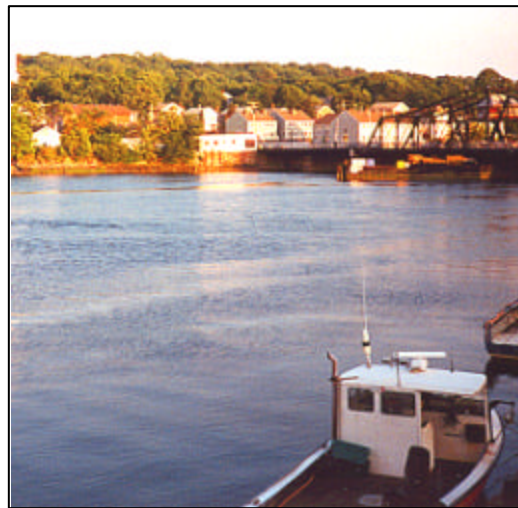


Figure 10.1: The Quinnipiac River

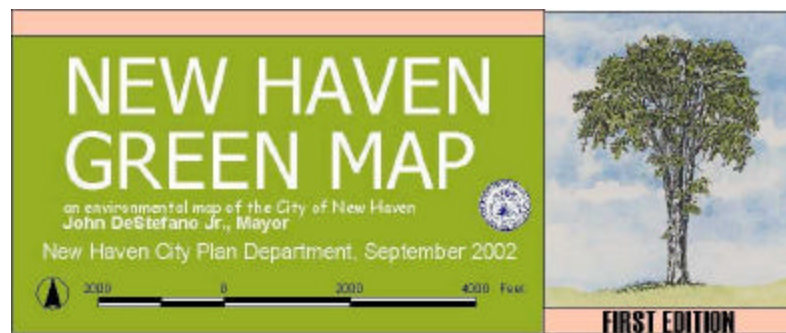
New Haven is set within a truly unique natural environment. The city is located at the confluence of the Mill and Quinnipiac Rivers as they drain into a long and protected harbor at Long Island Sound. The shoreline and tidal wetland areas gradually give way to uplands accented by dramatic traprock ridge formations at East Rock and West Rock. These natural features, celebrated in art and in the community, are central to the quality of life in New Haven.

Environmental protection and improvement efforts acknowledge the natural setting and seek to remedy the adverse effects of human activity. Although the super-regional nature of pollution complicates environmental planning efforts, the city should actively pursue pollution reductions in this broader geographic context.

The environmental health of New Haven is addressed relative to air quality, water quality and landscape conditions. While many, if not all, environmental decisions are balanced with community development, the recommendations that follow are anchored in ecological sustainability and environmental justice. The Commission seeks to avoid, minimize or mitigate adverse human health and environmental effects on minority and low-income populations and seeks to ensure the full and fair participation

of the city's residents. In doing so, the Commission foresees ancillary benefits to the region's quality of life and to the regional economy. Moreover, the recommendations provide guidance to urban development policies and regional planning initiatives.

NEW HAVEN GREEN MAP



As part of the new Comprehensive Plan, the City Plan Commission prepared a new “Green Map” of New Haven’s environmental and ecological assets. The map is intended to build an understanding and appreciation for the City’s unparalleled environmental resources. The Green Map is in keeping with the Comprehensive Plan’s substantial emphasis on creating a “livable city”, thereby providing a foundation for long-term sustainability.

The Green Map is modeled after a national system of environmental-based mapping projects, including recent projects in New York City and Milwaukee. The mission of the Green Map System is to strengthen the community’s awareness of and connection to the urban ecology through locally created visual representations of hometown environments. Green Maps illuminate the inter-connections between society, nature and the built environment, helping residents make lower impact lifestyle choices and discover great ways to get involved in the urban ecology.

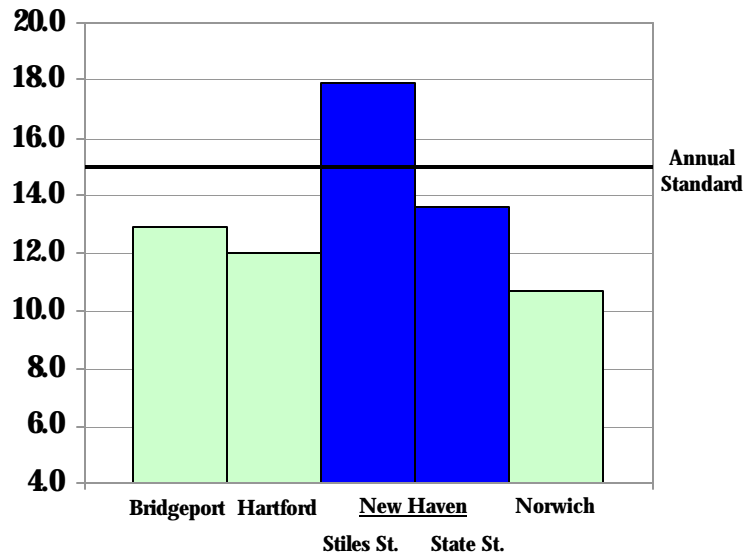
Poster size Green Maps are available at the offices of the City Plan Department, 165 Church Street, New Haven.

AIR QUALITY

According to the Connecticut Department of Environmental Protection, air quality in Connecticut has improved in recent years. Since 1975, ambient levels of criteria pollutants have decreased significantly. Lead is down 93%; sulfur dioxide and carbon monoxide are down 66%; ozone is down 60% and nitrogen oxide is down 45%. Since 1985, particulate matter is down 45%. A variety of DEP and EPA regulations have assisted in improving air quality. Of note, unleaded gasolines, tighter industry and emissions standards have contributed significantly to the change.

Of the criteria air pollutants, the state as a whole remains in non-attainment status for ozone. Ozone is a reactive form of oxygen and the principal component in urban smog. In general, smog and ozone levels in New Haven are lower than other areas of the state. In 1999, ozone levels exceeded the one-hour standard on just two days and exceeded the eight-hour standard on just five days.

Figure 10.2: Average Annual Particulate 2.5 Concentrations, 1999 (g/m³)



While the long-term trend is positive, deeper reductions in ozone levels are dependent on mitigation efforts in other regions. According to the DEP, a large portion of peak ozone concentrations (generally in the summer months) is caused by the transport of ozone and/or precursors from metropolitan New York City or the industrial Midwest.

Particulates, both PM 10 and PM 2.5, encompass a number of airborne substances which originate from mobile and stationary sources. Overall, New Haven County ranks among the worst 20% of all US counties for particulate levels. Of the 14 air quality monitoring stations in Connecticut, of which there are two in New Haven, only the Stiles Street station has recorded PM 2.5 at levels in excess of the annual standard (1999).

Particulate matter and ground level ozone have been linked to numerous health effects, primarily associated with the aggravation of asthma. With asthma rates of nearly 25% among school-age children and susceptible elderly populations living in areas of compromised air quality, the issue is one that must be addressed at the local level.

Energy Efficiency

The New Haven community uses approximately one billion kilowatt hours of electricity in a typical year. Approximately 27% of the load is used by residences, while 64% is used by commercial establishments and 9% is used by industrial establishments. By contrast, residences are responsible for approximately 48% of power consumption statewide. The state's mix of generating sources is heavily weighted toward fossil fuel and nuclear sources, with minimal reliance on clean, renewable power sources. The lack of emphasis on renewables and energy conservation efforts has near- and long-term implications.

Deregulation of the electric industry presents an environmental and economic challenge to the city and its residents. From an environmental perspective, the reliance on traditional power sources contributes to climate change and continues to compromise air quality. From an economic perspective, viable domestic and renewable sources are necessary to offset potential shortages and rising costs associated with a competitive marketplace and the nation's increasing dependence on imported oil.

The city and the community have taken several steps to improve energy efficiency – largely based on demand side management, fixture retrofits and peak shaving programs. The City of New Haven's energy management program, which includes all of the aforementioned elements, has realized

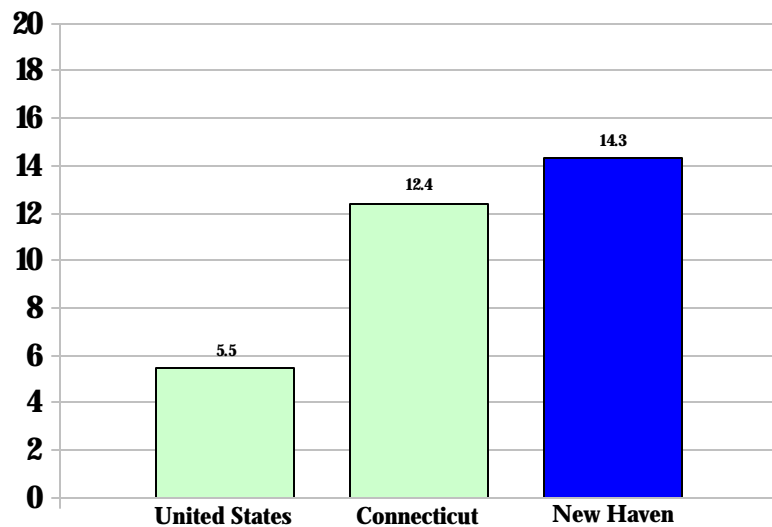
over \$13 million in cost savings. New initiatives broaden the effort to School Construction and LCI-funded housing programs.

Over the long-term, energy efficiency efforts must reduce New Haven's dependence on fossil fuels. Next generation efforts will require an environmental policy commitment, a systematic approach to energy efficiency and development of renewable energy resources.

Climate Change

As noted in Section II, climate change is impacting Connecticut and the rest of the world. The Environmental Protection Agency estimates that average temperatures in the state have increased 2.4 degrees in the last thirty years, with another 2 – 8 degree projected increase over this century. Precipitation has increased by 20% in much of the state. The impact of climate change has near- and long-term impacts. The recent drop off in lobster catches – which peaked in 1998 – initially has been attributed to rising temperatures in Long Island Sound. Over the long-term, increases in precipitation and rising sea levels are likely to leave significant impacts on ecology and economy in Connecticut.

**Figure 10.3: Greenhouse Gas Emissions
Per Capita**



In July 2001, New Haven joined Cities for Climate Protection, a campaign sponsored by the International Council for Local Environmental Initiatives. In doing so, the City recognized the need to address the problem of global warming swiftly and effectively. The City of New Haven is in a unique position to take action against global warming by establishing policies that encourage the responsible and efficient use of energy in residential, commercial, industrial and transportation sectors. Reducing greenhouse gas emissions not only helps curb global warming; it can lead to cost savings, improvements in local air quality and overall quality of life for residents.

As part of the program, the City Plan Department with assistance from the Yale University School of Forestry and Environmental Studies prepared a greenhouse gas emissions inventory. The inventory revealed that the community as a whole contributes 16.4 tons of CO₂ equivalent emissions per capita, well ahead of national and global averages.

The inventory shows that commercial / industrial energy use, (primarily electricity, natural gas, and heating oil), produced the greatest percentage of emissions (37.6%), followed by on-road transportation (32%) and residential energy use (27.2%). Since most of the city's current waste stream is incinerated, only non-organic materials such as plastics and polymers are considered to produce greenhouse gas emissions (attributed at a rate of 0.1 tons eCO₂ per ton municipal solid waste). This waste-stream contributes about 1.8% of community emissions. Though it was closed in 1994, the methane released from the old New Haven landfill continues to contribute the remaining 1.5% of emissions.

Without a thorough mitigation and reduction program, community emissions are projected to increase by nearly 15% by the year 2020. A reduction strategy must accelerate demand side management and the conversion to renewable energy sources.

Hazardous Air Pollutants

The City of New Haven also is undertaking an inventory and assessment of hazardous air pollutants, also known as air toxics. State and county-wide data suggest that New Haven County has the second greatest number of urban air toxic emissions in New England (NATA data). Air toxics, as defined as those chemical emissions that present a risk to human health, increase the incidence of cancer and other health effects.

The sources of these chemical emissions are a mixture of point, area and mobile sources, reflecting New Haven's industrial past and its physical

Environment

location at the intersection of two major highways. The pervasiveness of diesel exhaust related to truck traffic and the geographic concentration of toxic emission sites are significant concerns.

The Northeast States for Coordinated Air Use Management (NESCAUM) estimates that heavy duty diesel emissions comprise 80% of all particulate emissions in the Northeast. Diesel exhaust contains over 40 contaminants recognized as carcinogens, toxicants, reproductive and developmental hazards and endocrine disrupters.

The small particles in diesel exhaust pose a health risk because they pass through the nose and throat and lodge themselves in the lungs. These small particles can cause premature mortality and lung damage. They also can aggravate respiratory conditions such as asthma and bronchitis and have been linked to lung cancer. Children are more susceptible to this pollution than healthy adults because their respiratory systems are less developed and because children breathe more air/pound of body weight than adults.

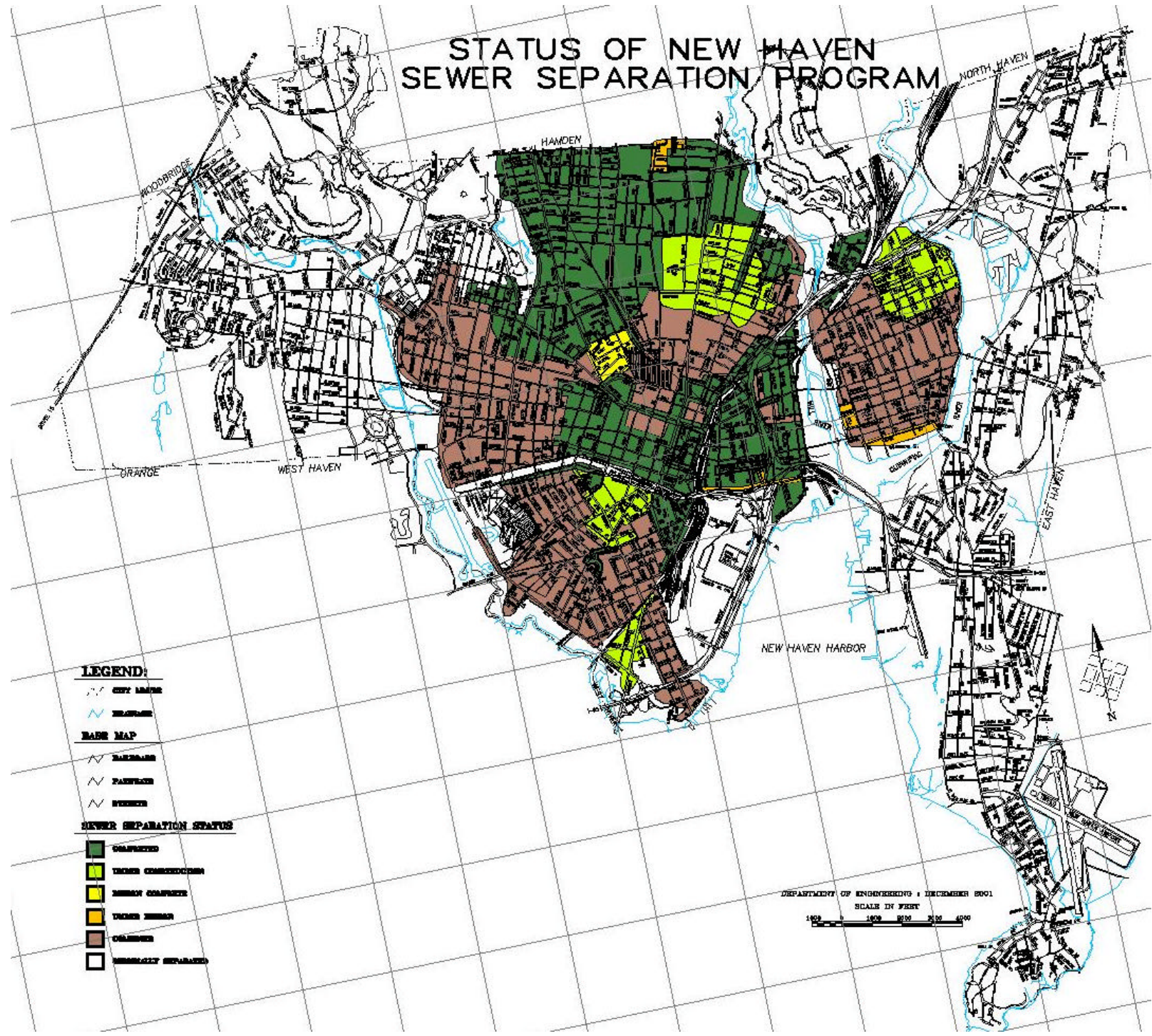
WATER QUALITY

Potable water is not derived from municipal sources and is instead provided by the South Central Connecticut Regional Water Authority (RWA). The RWA serves New Haven and 11 surrounding towns. The water system includes 15 reservoirs and five well facilities. The reservoirs have a combined total capacity of 19 billion gallons. Six of the reservoirs are inactive – thereby providing some drought coverage to the region. Average daily use in the system is 55 million gallons / day.

New Haven's rivers do not meet state water quality criteria or designated uses for their water quality classification and Connecticut DEP advisory postings limit fish consumption both in the city's fresh and salt waters. Aside from the statewide problem of mercury contamination, local issues include combined sewer overflows and non-point source pollution.

At their East Shore Facility, the Water Pollution Control Authority treats approximately 30.5 million gallons per day in dry weather and up to 100 million gallons per day in wet weather. However, in an average year, 270 million gallons of combined sewer overflows empty into the city's rivers or directly into the Sound. Currently, over half (54%) of all wastewater in a

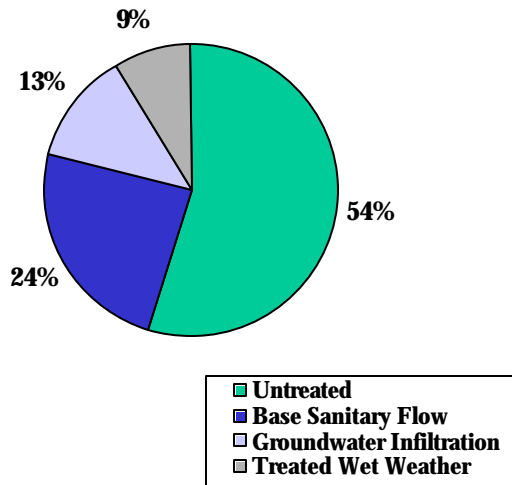
Figure 10.4



two-year storm event is untreated. The City's long-term Combined Sewer Overflow project seeks to eliminate all wet weather overflows up to and including a two-year event. The status of sewer separation is shown in Figure 10.4.

The CSO project is contributing to a general improvement in conditions in Long Island Sound and New Haven Harbor. Total nitrogen levels, which assess nutrient loading in receiving waters, have declined over the past ten years. WPCA uses advanced technology called biological nitrogen removal (BNR) as part of a secondary treatment of wastewater. Of the sewage treatment plants discharging to New Haven Harbor or its feeding rivers, West Haven and East Shore are the only plants to use BNR technology. Residential development north along the Quinnipiac River accelerates the need for BNR to be added to the treatment mix in the northern suburbs. Several upstream plants intend add BNR technology in the near future.

**Figure 10.5: Combined Sewer Overflows
Two Year Storm Event**



Levels of hypoxia, or oxygen depletion, remain tied to the seasons, peaking in the summer months. While the overall trend is lower in terms of area and duration, specific measurements at New Haven suggest generally mild hypoxia in the last decade.

FLOODPLAINS

According to the Flood Insurance Rate Maps (updated, 1997), approximately 11,547 acres of land in New Haven are located within the 100-year flood boundary. The total includes actual river and stream ways, as well as parts of the East Shore / Tweed Airport area that are located in East Haven. Figure 10.6 illustrates special flood zones in New Haven, particularly those around Union Station, Boulevard / Kimberly and the port district.

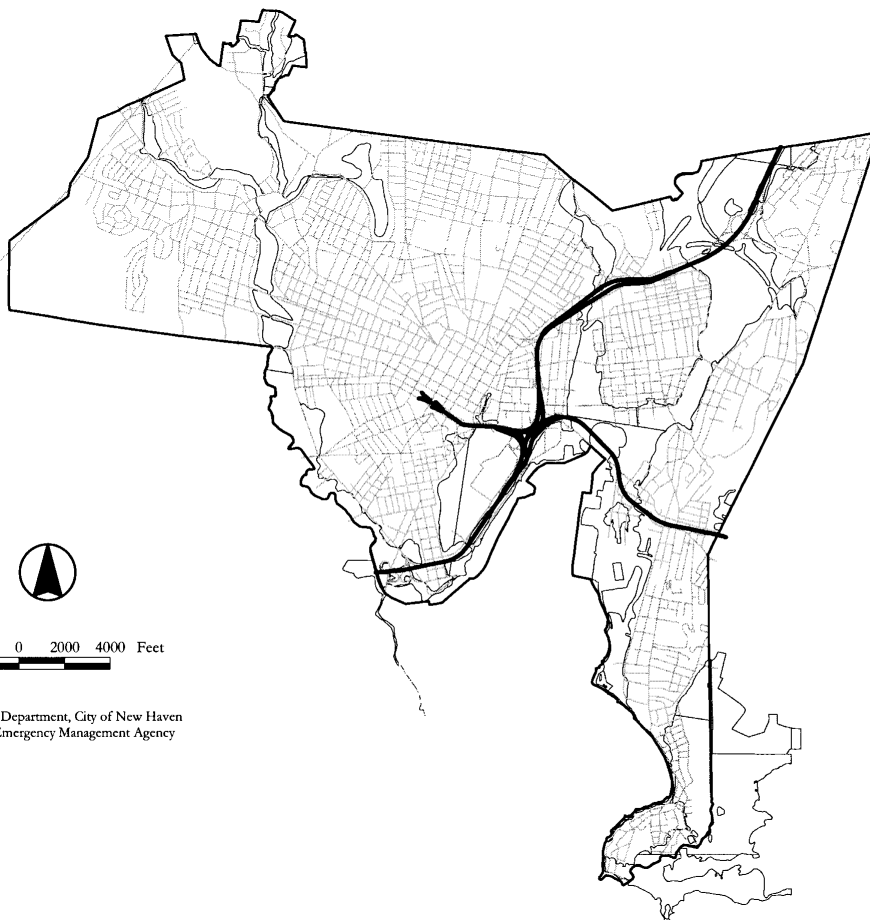
New buildings or uses within these zones are subject to the requirements of the Flood Damage Prevention District, Section 56 of the New Haven Zoning Ordinance. The Flood Damage Prevention District allows the same uses as that of the underlying zone with additional design / development restrictions to minimize damage in the event of flooding.

The Disaster Mitigation Act of 2000 authorizes a program for pre-disaster mitigation and requires local pre-disaster mitigation planning. Although the city does have appropriate zoning controls in place, a mitigation plan must be developed.



Figure 10.6: Canoeing along the West River

Figure 10.7 – FEMA Boundaries



Flood Damage Prevention District

According to the Flood Insurance Rate Maps (updated, 1983), approximately 11,547 acres of land in New Haven are located within the 100-year flood boundary.

Source: City Plan Department, City of New Haven
Federal Emergency Management Agency

LANDSCAPE FEATURES

The landscape of New Haven is one of the city's premier assets. In terms of its topography, coastal resources and protected open spaces, New Haven's landscape is as diverse as it is distinctive. This section looks both at existing physical assets and at certain opportunities to enhance the environment through landscape planning.

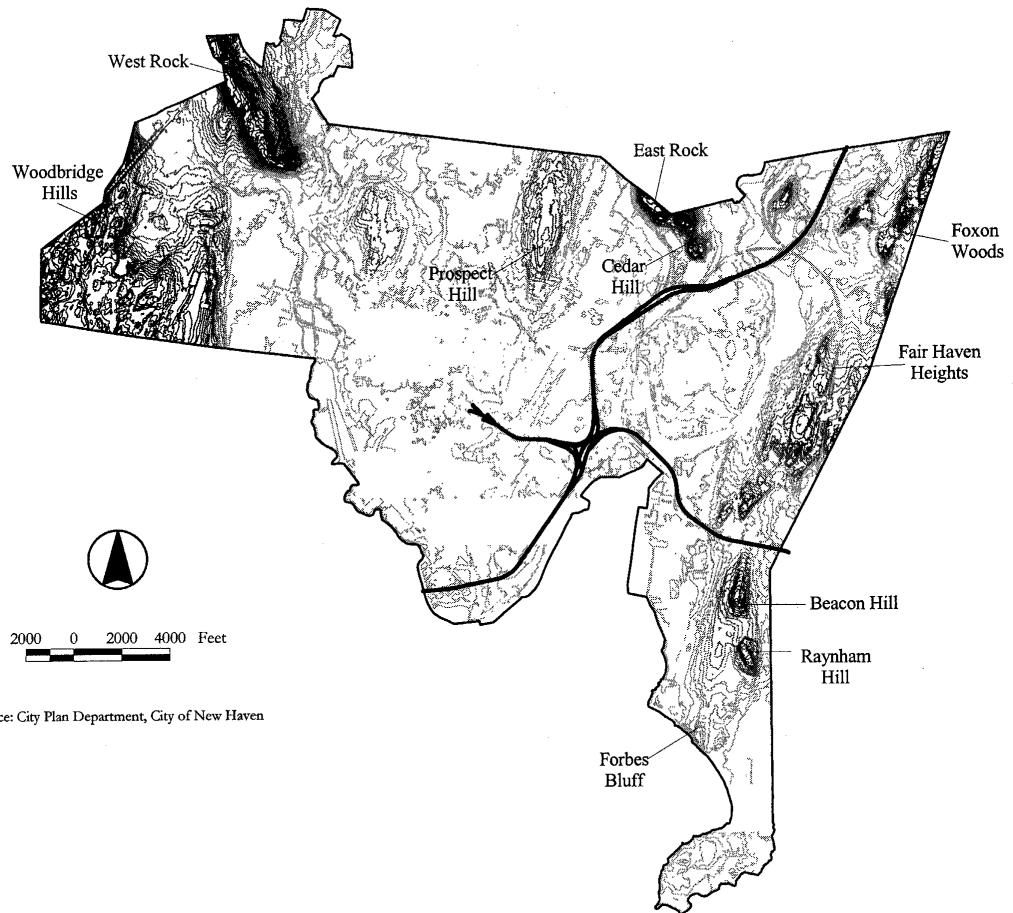


Figure 10.8: The New Haven Green: the city's signature public open space.

Traprock Ridges

The largest recreational parks in the City surround and celebrate major geological features. The largest of these two traprock promontories is East Rock Park, which comprises 442 acres. This city-owned park features many hiking/walking trails and picnic areas, and the view from the top of the park overlooks the city and harbor. The other traprock promontory is the state-owned and historically significant West Rock Ridge State Park with 355 acres of quiet woodland and hiking/biking trails. It was here in West Rock Park that the famous "regicides" of early New Haven hid out in caves to avoid capture by the forces of England's King Charles II after the restoration of the monarchy in the middle 17th century. Many of the traprock ridges are noted on the topography map (Figure 10.9).

Figure 10.9 – Topography



Source: City Plan Department, City of New Haven

Tidal Wetlands

Tidal wetlands and salt marshes are among the city's most significant environmental assets and integral components of the coastal ecology. Tidal wetlands provide nutrients and suitable habitats for shellfish and coastal organisms. They are popular nesting and feeding spots for shorebirds. Salt marshes and wetlands also improve water quality by absorbing or trapping sediments, metals and nutrients and by decreasing levels of biological oxygen demand.

Much of New Haven's tidal areas were filled in over the last century – correlating with the general waterward expansion of the city into New Haven Harbor (see Figure 10.10). In non-filled areas – eg. the West River north of Orange Avenue, tide gates have dried much of the remaining salt marsh. Natural tidal areas are still found at Vietnam Veteran's Long Wharf Park and along the East Shore. Along the east bank of the Quinnipiac River, a large salt marsh is located just south of the Middletown Avenue Bridge. Preserving these remaining marshes and seeking to rehabilitate those that are currently compromised would yield environmental and recreational benefits.

Endangered Species

Connecticut DEP maintains an inventory of areas of special concern and an endangered species map for sensitive locations in New Haven and across the state (see Figure 10.11). In New Haven, identified locations include large sections of Westville, West Rock, East Rock and East Shore / Morris Cove. Nearly all of Lighthouse Park is shaded, indicating the presence of state and federal listed species and natural communities. These relate in part to birding patterns and migration routes. The Audubon Society rates both Lighthouse Park and East Rock among the top four bird areas in the state.

Parks and Open Space

The New Haven park system is inspired by Frederick Law Olmsted's vision of urban areas bejeweled with green space. To that end, New Haven has, over the years, liberally sprinkled many diverse forms of passive and active recreational space throughout the city (see Figure 10.12). New Haven has a total of 121 parcels of open space which comprise just over 2,000 acres. Of these there are 33 major areas for recreational use totaling 1,860 acres.

New Haven has four important public squares. The first is the New Haven Green, the central public space of the original Nine Square layout of 1638. It is the oldest public square in the country and plays host to a number of summer festivals and concerts. Another important public square is Wooster Square. This beautiful urban square comes alive each spring when the dozens of Cherry trees lining the perimeter burst into full bloom providing a visual cascade of white and pink flowers and filling the air with a sweet fragrance.

The next is historic Trowbridge Square. This square was laid out as part of the egalitarian social vision of local ministers in the early 19th century. The Trowbridge area was designed to be a smaller copy of the original nine squares with the square itself centering the development. The fourth significant public square is Chatham Square, a formal neighborhood square anchoring the northeast section of Fair Haven.

Among the significant recreation-oriented parks are Edgewood Park, West River Memorial Park, Lighthouse Park (including a boat launch), East Shore Park, Fort Hale Park, East and West Rocks, and Long Wharf Park. These facilities, along with a variety of additional smaller sites provide for a broad mixture of passive and active recreation.

In general, the existing park system is well-maintained with special emphasis placed on recreation improvements. However, additional environmental enhancements would serve both ecological and social benefits. These efforts are highlighted by the following:

- *Salt marsh restoration at West River Memorial Park.* At West River, invasive phragmites and other species have gradually replaced the salt-loving marsh grasses, resulting in a less diverse, less productive flood plain. A new master plan addresses recreation and ecological needs, including areas for salt marsh restoration, a circuit path and areas for wildlife refuges. See Section VII for more details.

- *Dredging of Edgewood Pond at Edgewood Park.* The pond in Edgewood Park has silted in over the years so that the average depth is now less than two feet. This has resulted in algae blooms making it impossible to maintain a fish population and severely degrading the biological health of the pond. A dredging project, scheduled to be completed by June 2003, will establish an average depth of seven feet in order to restore the pond as an educational and recreational resource to the community.

- *Stabilization of the shoreline at Vietnam Veteran's Memorial Long Wharf Park, East Shore Park and Pardee Seawall.* At numerous shoreline locations, coastal erosion threatens the viability and functionality of public parks. The situation is particularly severe at the Pardee Seawall, a signature structure in the East Shore neighborhood.

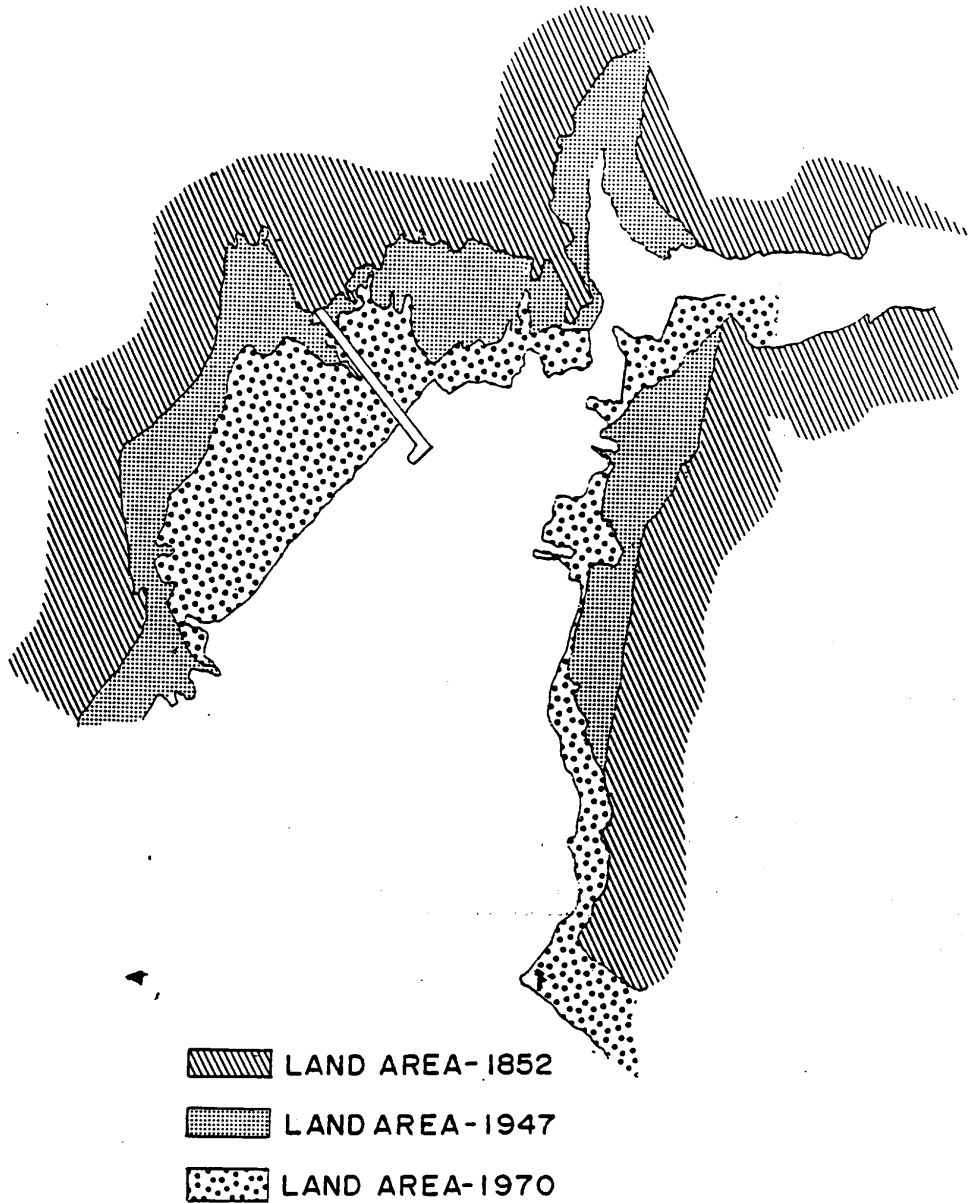
- *Expansion of Vietnam Veteran's Memorial Long Wharf Park and Dover Beach Park.* At these waterfront parks, public enjoyment is limited due to spatial constraints. Both are linear parks need additional depth to encourage active and passive enjoyment.

- *Expansion of services and activities, including hours of operation, at West Rock Ridge State Park.* West Rock Ridge State Park is among the most underused passive recreation spaces in the region. Recent budget cuts and/or redirection to suburban DEP facilities have resulted in shorter hours for vehicle access and fewer hours of on-site staff. To enhance use of the park, the DEP should be encouraged to focus more investment at the park, including longer hours, potential concession access and park promotion – particularly promotion of trail and hiking facilities.

- *Implementation of the proposed greenway and trail system.* The proposed greenway system is a natural extension of the existing park inventory. Greenways bring the park system closer to many homes, especially homes in inner city neighborhoods. Moreover, greenways complement efforts to improve air quality by inducing more non-motorized transportation in the city. The Farmington Canal Line, part of a regional trail along the historic line to Massachusetts, is now under construction. See Section VIII for more details.

- *Fort Nathan Hale Park.* Fort Nathan Hale Park is an historic but underused asset along the East Shore (particularly when compared to the high utilization of Lighthouse and East Shore Park). Together with Black Rock Fort, the total area is 54 acres. Its historic character, location and visibility all contribute to a significant landscape worthy of preservation and enhancement. The Parks Master Plan recommends capital improvements and interpretive facilities at the park.

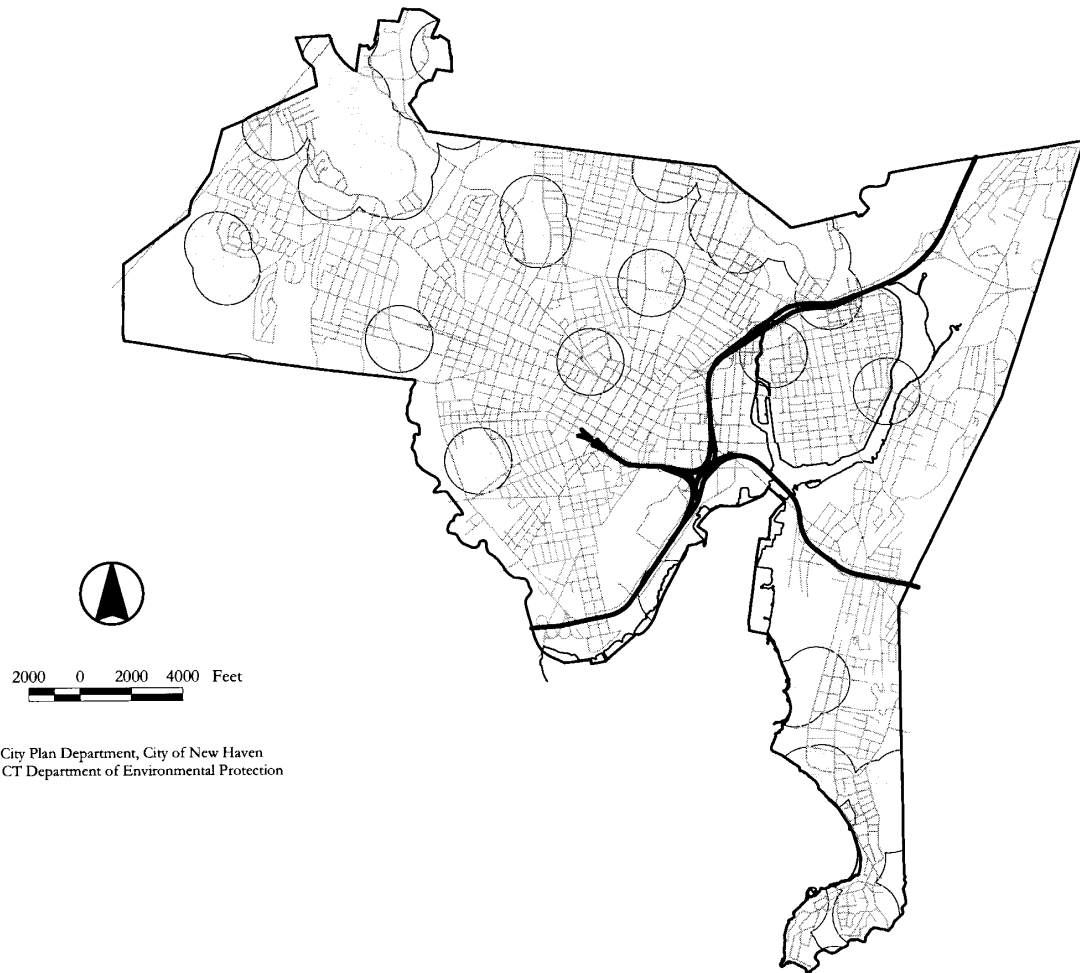
Figure 10.11: Map illustrating the progression of fill at New Haven Harbor.



Adapted from "A History of New Haven Harbor from Settlement to the Twentieth Century" by Penni Sharp. Bulletin of the Archeological Society of Connecticut. Number 42, 1980.

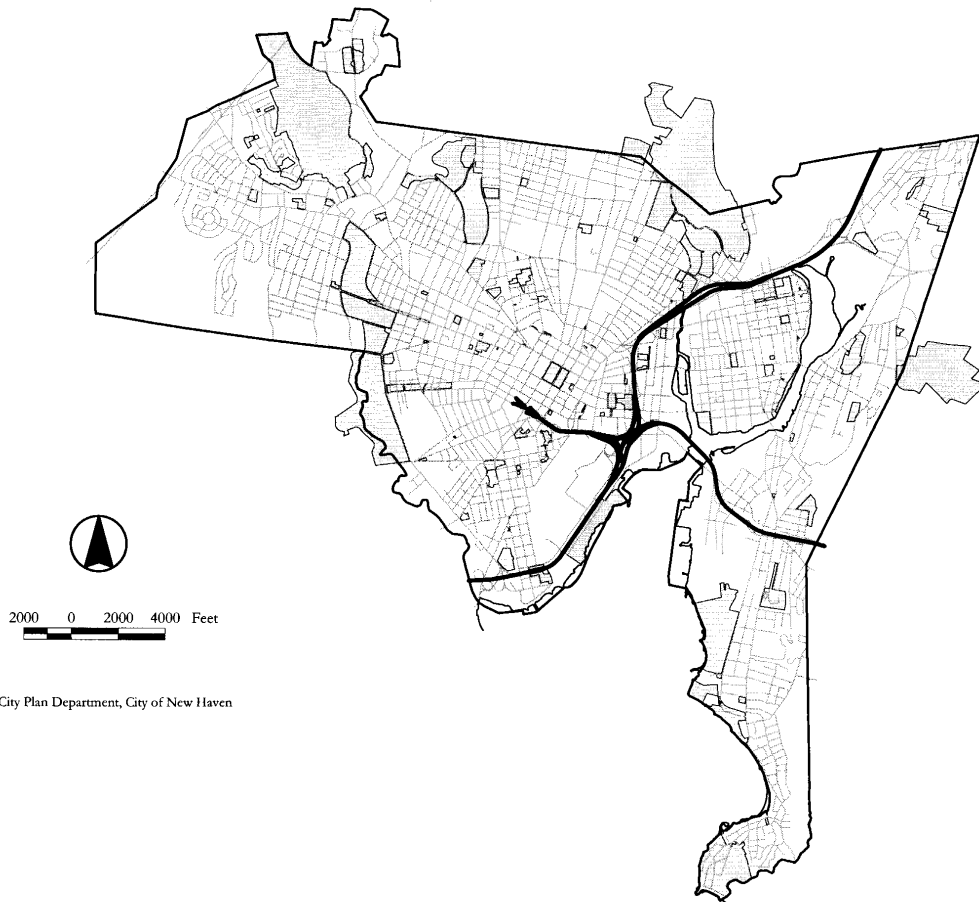
PROGRESSIVE FILLING OF NEW HAVEN HARBOR

Figure 10.12 – Areas of Special Concern



Source: City Plan Department, City of New Haven
CT Department of Environmental Protection

Figure 10.13 – Parks and Open Space



Source: City Plan Department, City of New Haven



Figure 10.10: Coastal erosion threatens Vietnam Veterans Memorial Long Wharf Park

Protection of Open Space

Even in the fully developed context of New Haven, a number of environmentally-sensitive sites remain open to full development. In some cases a limited development, balanced with designated on-site open space, is appropriate. In other cases, the value of the site for environmental purposes outweighs an economic and/or transportation benefit resulting from full development.

There is a substantial economic basis to preserving open space. A number of studies highlight the value of open space to property values and to economic development. In New Haven, a good example is East Rock and the healthy property values in the immediate neighborhood. Similarly, the property values in and around Chatham Square are higher than values for Fair Haven as a whole.

The Connecticut General Assembly, through various public acts, including PA 98-157, acknowledged the value of open space preservation. State policy is based in part on the work of the 1998 Blue Ribbon Task Force,

which noted the environmental and economic benefits to open space preservation, particularly the competitive advantages derived from the state's landscape. The task force further noted that per capita spending on open space acquisition was lower in Connecticut than in any of the surrounding states.

The resulting Open Space and Watershed Land Acquisition Grant Program has increased dramatically the state's investment in open space acquisition. However, an analysis of data from 2000 and 2002 noted that less than 10% of program funds have been allocated to distressed municipalities. The low percentage raises serious concerns about environmental justice and access to open space within the state's urban centers. Similarly, New Haven's investment in open space preservation is limited. A Connecticut Conference of Municipalities survey revealed 36 municipalities with dedicated funds for open space acquisition, including six towns just outside the city within the south central region.

The significance of open space preservation in New Haven is further highlighted by the nature of fully-developed communities. Undeveloped urban lands are often left undisturbed due to environmental sensitivities – eg. topography, salt marshes, inland wetlands, floodplains and soft soils. New Haven Land Trust research in 1982 revealed a number of significant undeveloped landscapes suitable for acquisition and protection. Remarkably, many of these properties remain undeveloped to this day. A good example is the 6.5-acre hillside property behind 59 Quinnipiac Avenue, known also as “the reservoir”. Although a small condominium complex was constructed at the base of the site, the remaining 6.5 acres was reclaimed by the city through tax foreclosure. While the topography and the presence of overhead utility lines complicate any future development scenario, the property has tremendous scenic and landscape value to the Parks inventory.

Similar examples are found in and around the East Shore, Fair Haven Heights and Quinnipiac Meadows, as they are among the more recently developed city neighborhoods. Also, significant open land exists around the brook system north and west of West Rock. Aside from the reservoir property, other lands well suited for preservation are noted below:

- *Quinnipiac River Marsh.* The Quinnipiac River Marsh lies along the east bank of the Quinnipiac River just south of the Middletown Avenue Bridge and west of the northeast corridor railroad line. The area is distinctive for its visual appeal and for its marsh area vegetation. Shellfish habitats are located in the area as well. Of the approximately 75 acres in the marsh, a

quarter is in public or Land Trust ownership and three-quarters are privately-owned.

- *Essex Street Marsh.* The Essex Street Marsh is a less visible marsh area formed mainly by Hemmingway Creek. The marsh is found to the north of Hemmingway Street and to the east of Essex Street. The largest remaining undeveloped parcels are 71 Essex Street and 1081 Quinnipiac Avenue. Both are approximately three acres.

- *Russell Street.* The City of New Haven's Russell Street Park (18+ acres) is one of a number of undeveloped, elevated woodland parcels located on the west side of Russell Street between East Grand Avenue and Lexington Avenue. Undeveloped residential land – with significant topographic constraints – comprise approximately 25 acres to the south and west of the park. While not suitable for large-scale residential development, these parcels would make for an ideal extension to Russell Street Park.

- *Crow Hill.* The area known as Crow Hill is found north of Kenny Drive. The woodland area is elevated, but much of the Traprock Ridge was removed as part of quarrying activity or altered through new residential construction. Still, two undeveloped parcels remain and are suitable for preservation. These total just over three acres, complementing the 3.6 acre city-owned open space off Palmieri Avenue. In addition, approximately five acres of steeply sloped, undeveloped space is located at the edge of the Sunset Ridge apartment complex on the same parcel. A conservation easement protecting this land is likewise appropriate.

- *Marion Street.* Much of Marion Street in the lower section of East Shore is an undeveloped paper street and unbuilt subdivision extending to East Haven town line. The area is a well-defined salt marsh connecting to Morris Creek at its eastern end. The marsh area comprises approximately 15 acres, however, assembly of a large open space will be difficult due the large number of private property owners (over 20) and parcels (over 50). Public and land trust property now account for 30% of all land holdings.

- *Quinnipiac Meadows.* The Quinnipiac Meadows are found on the east side of Interstate 91 north of the city's landfill to the North Haven town line. The 63-acre area is generally under private ownership and is not developed, save for sporadic highway billboards. The area is a combination of Westbrook mucky peat soils common near the Quinnipiac River and filled areas likely associated with highway and railroad construction. Its scenic and natural characteristics make this an appropriate site for open space acquisition.

Environment

- *Roosevelt Street Extension.* To the rear of low-density residential homes in the Foxon area is a 7.2 acre site known as 15 & 95 Roosevelt Street Extension. This limited access and elevated parcel is zoned RS-2. The size of the parcel allows for a maximum buildout of approximately 40 units. Given its steep slopes, elevations in excess of 200 feet, general location and proximity to the Bishop Woods, the site is better served as protected open space.

- *Wintergreen, Wilmot Farm and Belden Brooks.* The West River tributary system in and around the upper reaches of West Rock remains largely in its natural state, with undisturbed riverbanks. Redevelopment of the West Rock public housing developments should take care to preserve and protect these valuable environmental assets so that a substantial amount of open space is protected under conservation easement or as protected open space.

The Commission notes two additional waterfront locations where a combination of marine-related uses (including residential) and substantial open space are appropriate:

- *Quinnipiac Avenue.* There is a series of vacant, overgrown parcels on the east side of Quinnipiac Avenue, just south of the oyster piles and opposite Oxford Street. The land, which includes the so-called Rowe's Landing site, consists of approximately 1.85 acres. There is substantial frontage along the Quinnipiac River and a deteriorated pier on the site. The property is located within the Quinnipiac River Local Historic District.

- *Sea Street Terminus.* At the westerly terminus of Sea Street, south of Interstate 95, there is an undeveloped flat and tidal land comprising of approximately 19 acres. There are outstanding views of West Haven and New Haven Harbor from the site, which could be connected visually and physically to the proposed Harborside Trail and the Harbour Close condominiums.

LAND USE PLANNING

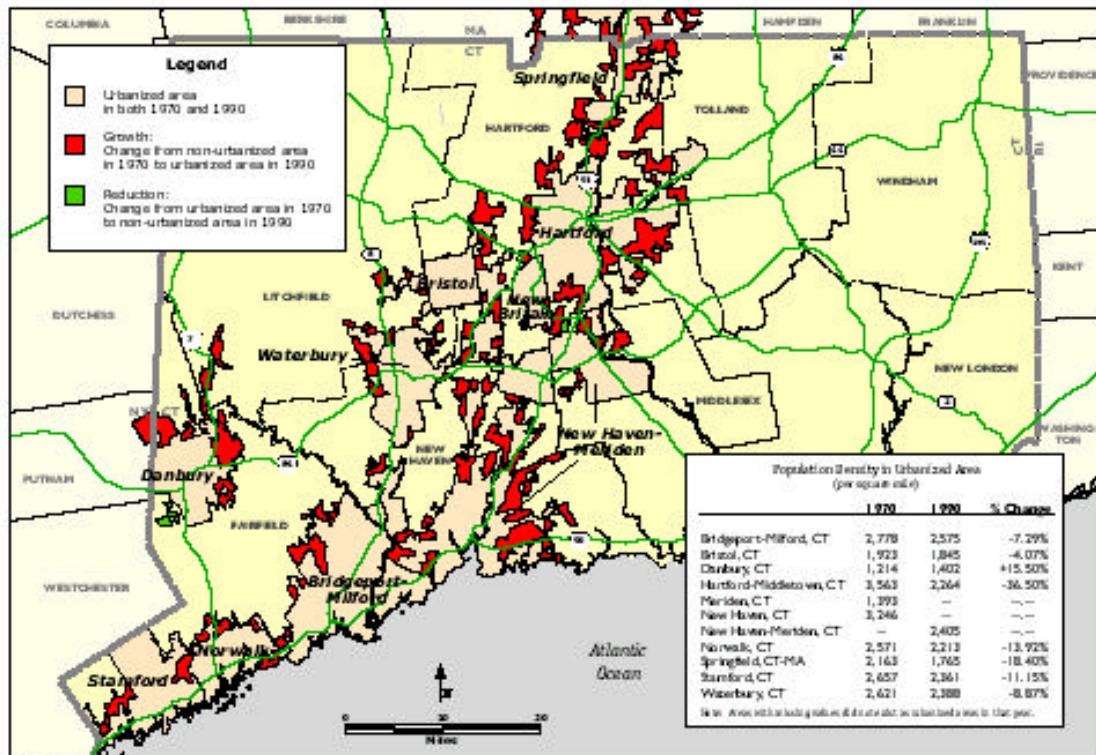
The land use pattern in New Haven is determined both by local policies and neighborhood conditions and also by broader trends affecting the state as a whole. Although Connecticut's population has increased only a modest 12% between 1970 and 2000, consumption of land at urban densities as increased over 100%. See Figure 10.14 to see the change in urbanized areas across the state.

This radical decentralization of the population – largely away from the state's central cities – has had a profound affect on socio-economic conditions, transportation, municipal finance, open space / farmland preservation and the quality of the state's air and water resources. In the state's central cities, home to a large concentration of poor and minority residents, these impacts raise troubling environmental justice issues.

It is significant from a socio-economic perspective that New Haven remains home to major power plants and older industrial businesses. While the state's more affluent residents have moved to larger lots in suburban and exurban locations, central city residents continue to bear the pollution burdens of power plants (eg. Harbor Station and English Station) and transportation systems. From 1986-1995, the state approached 30 billion vehicle miles traveled – mandating far reaching congestion mitigation strategies, including the new Pearl Harbor Memorial Bridge and associated improvements along Interstate 95.

The associated pollution from congestion and construction is layered upon long-term impacts to land use as well as municipal finance. Takings associated with I-95 will impact over 350 central city jobs and cost the city approximately a quarter million in annual tax revenue. This direct subsidy to suburban commuters affects an already tight municipal budget.

According to the Connecticut Conference of Municipalities, the property tax is a regressive tax that places additional burdens on central cities. The effective property tax rate in 1993-1994 was 2.83% in New Haven – well above the statewide municipal average of 1.6%. As urban development spreads unchecked through our farmlands and rural areas, these burdens will be felt across the state, increasing demands for regional land use planning and more coordination at the state level.



Data Source: U.S. Census.

Figure 10.14: Change in urbanized areas in Connecticut, 1970-1990
 Prepared by the Metropolitan Area Research Corporation and Centeredge project.

PLANNING CONSIDERATIONS

- Steady progress in certain air and water quality indicators, but profound deficiencies in most areas, characterize the environmental health of New Haven.
- Vehicle miles traveled in New Haven are expected to increase by 20% over the next twenty years. State investment continues for improved / expanded highways, but public bus service is threatened.
- In particular, the impact of fossil fuel emissions and vehicle miles traveled corresponds to high levels of particulates (PM 10 and PM 2.5) in the city. These emissions are particularly harmful to children and the elderly.
- Likewise, air toxics, which are found in disproportionately high levels in New Haven County, increase the incidence of cancer and reproductive developmental effects. Large concentrations of diesel use, power plants and oil terminals all contribute to the air toxics burden.
- Climate change is a global issue with serious implications for coastal communities. Rising sea levels suggest more aggressive coastal storms and flooding in low-lying areas. Moreover, rising temperatures will impact habitats in Long Island Sound, in tidal marshes and in forest ecosystems.
- There currently is little to no movement toward renewable electricity either by the city or by the community.
- Combined sewer overflows continue to adversely impact water quality in Long Island Sound. The local sewer separation project is contributing to deep reductions in overflow volume. At the same time, however, urban development in the northern suburbs is increasing the pollutant load in the Quinnipiac River and in New Haven Harbor.
- The New Haven park system is in good condition with a steady capital improvement program to address a variety of active and passive recreation uses. Improvements are truly capital programs which add long-term value to the system. The priority investments should be focused on open space acquisitions and greenway system development.

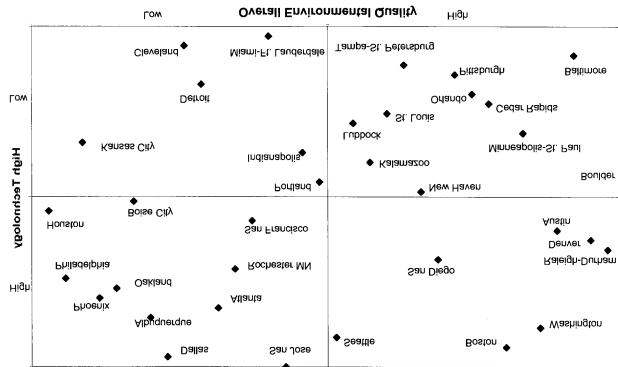


Figure 10.15: Elements of the Harborside Trail Greenway system development is a central contribution to the city's environmental landscape.

- A surprising number of environmentally-sensitive open lands remain privately owned. These include extensive salt marshes and undeveloped woodlands. Protection of these resources will not only add value to the park system, but also promote a more ecologically sound land use pattern.
- Statewide patterns of urban development suggest a number of long-term impacts upon New Haven, including a diffusion of resources to meet the emerging needs of exurban and rural areas. The long-term impacts of sprawling development are extensive – raising serious environmental justice issues.

ENVIRONMENT AND THE ECONOMY

In his 2000 report, “Competing in the Age of Talent: Quality of Place and the New Economy,” Richard Florida examined the relationship between quality of place and a city’s ability to attract knowledge workers and talent. While an array of employment positions found in a ‘thick labor market’ is essential in attracting talent to a city, it cannot sustain a workforce in high technology fields on its own. In order to gain a competitive advantage in the new economy, a city’s quality of place must supplement a wide range of job opportunities. Florida cites a clear relationship between a region’s amenities, its high technology industry, and its appeal to knowledge workers.



Florida examined the relationship of environmental quality to high technology business development. According to surveys of high technology firms, Florida concluded that environmental quality was the highest priority for choosing a location, ahead of cost of housing, cost of living, and good schools. Florida found a strong relationship between environmental quality (an indicator based on composite statistics regarding air quality, water quality and urban sprawl), high technology industry, and the attraction of knowledge workers. New Haven has a high environmental quality, ranking 13th out of 35 cities.

RECOMMENDATIONS

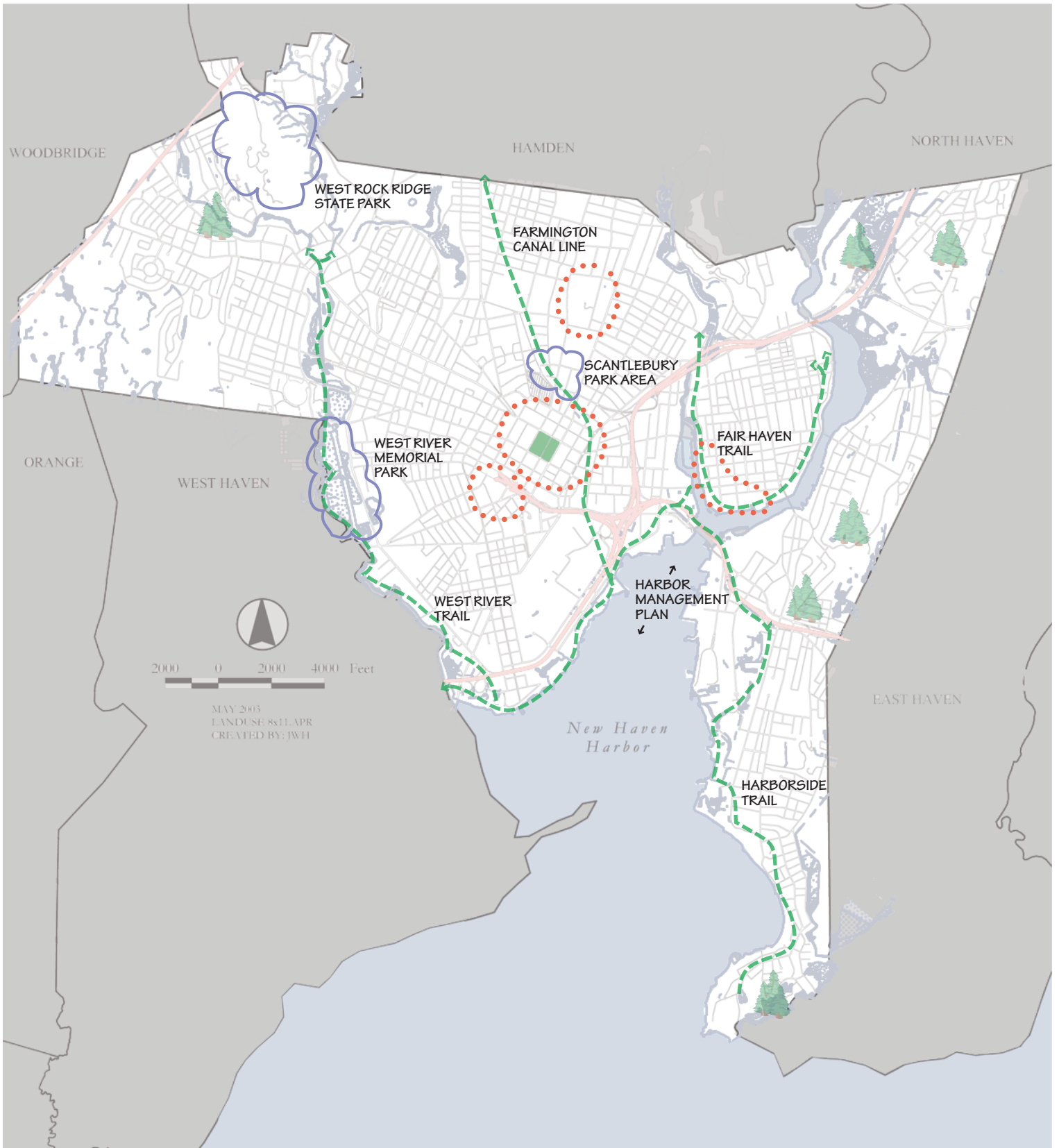
The Environmental Plan for New Haven responds to the parallel desires to improve public health and the quality of life in the city. As such, the plan benefits the city's residents, its business community and the region at large. Recommendations also are highlighted in Figure 10.16.

Air Quality. Issues related to air quality are centered on two criteria pollutants, ozone and particulate matter, as well as air toxics. The following mitigation strategies are recommended:




- Seek improvements to the traffic control system and street pattern which will mitigate congestion and minimize idling times.
- Pursue broad reductions in particulate and air toxic emissions, from point, area and mobile sources, according to priorities identified by the air toxics inventory. Diesel-powered on and off-road vehicles are among the mobile sources targeted for reduction. This strategy should include consideration of locally-based environmental law should DEP not adequately address local conditions.
- Implement a vehicle miles traveled reduction strategy which is designed around walk-to-work, bicycle and transit-based initiatives. Promote residential densities and land use patterns which reduce local vmt movements. Aggressively recruit a car-sharing company to open a location in New Haven.
- Implement a far-reaching energy program focused on the use of renewable power sources for municipal and community purposes. The program must include a parallel effort of energy conservation and green-building designs – including appropriate green building standards, use of green technologies and careful site planning.

Water Quality. The combined sewer overflow project is central to the long-term health of Long Island Sound. To that end, the city must aggressively pursue adequate funding to complete the project.

- As a parallel effort, the city must seek improvements to upstream wastewater treatment facilities and for statewide regulation of non-point sources of pollution.



ENVIRONMENTAL OPPORTUNITIES

- - - Greenways & Trails
-  Landscape Preservation
-  Park Initiatives
-  "Walk to Work" Destinations



Environment

- Promote a land use development pattern which protects salt marshes, tidal wetlands, inland wetlands and other riparian assets from inappropriate development.
- Prepare a new Flood Hazard Mitigation Plan, consistent with the Disaster Mitigation Act of 2000.
- Update the New Haven Coastal Program and update city land use policies with new coastal area management efforts.
- Establish a Harbor Management Commission and prepare a new Harbor Management Plan to guide in-water activities in Long Island Sound.

Parks and Recreation. Pursue specific value-added improvements to the city's park system in a manner consistent with the Parks Master Plan. Scantlebury Park, in particular, provides a unique opportunity to better bridge supporting facilities at Yale University with new housing in the Dixwell neighborhood. Also, pursue full implementation of the West River Memorial Park Master Plan and Edgewood Park improvements. Protect and enhance coastal parks to curtail shoreline erosion and to provide maximum land area for public enjoyment. In addition:

- Enhance the image of all parks to make them accessible, inviting, exciting and well maintained. This can be accomplished through landscape improvements, turf renovations, fence renovations, new signage and new site furniture.
- Repair deteriorated infrastructure such as bulkheads, restroom buildings, parking lots, roadways, irrigation systems and other support amenities.
- Demonstrate the value of urban spaces through the revitalization of public plazas in and around the central city. Seek to expand the park system in underserved neighborhoods by capitalizing on site and resource opportunities when available.
- Although not part of the city's park system, the Commission encourages increased maintenance and capital improvements (to support a larger user base) at West Rock Ridge State Park.

Community-Maintained Green Spaces and Gardens. As shown on the Green Map, New Haven is home to many community built and maintained green spaces and community gardens. These spaces foster community across generational and other social lines, provide opportunities for locally-grown produce and are a source of civic pride. With that in mind, the city should continue to support community garden programs, plan short-and long-term locations with defined leases; and provide resources when possible.

Urban Forestry. Emphasize the value of urban forestry and tree programs to the city's quality of life through intensive community education and implementation programs. Undertake efforts to monitor, maintain and enhance the city's Elm trees. Integrate citywide urban tree improvement programs as part of the city's maintenance and capital planning, through site plan review and other means.

Greenways and Trails. The proposed greenway system and supporting bicycle friendly programs represent the "next generation" of environmental systems in New Haven. To that end, aggressive support and resource allocation should be dedicated first to the Farmington Canal and Harborside Trail and then to supporting neighborhood systems.

Landscape Preservation. A number of undeveloped parcels are suitable for open space preservation. These include city-owned property (which is not part of the protected parks inventory) and privately-held property.

Pursue amendments to state grant programs, which would allow for acquisition and remediation of brownfield sites and allow for the use of condemnation in order to facilitate a public-purpose taking. Figure 10.17 lists the recommended open space acquisitions.

For properties not acquired, landscape considerations should be further incorporated into the site plan review process, particularly through additional regulations concerning soil removal, blasting and/or significant proposed grade changes.

Figure 10.17: Proposed Open Space Acquisitions

Crow Hill			
MBP	No.	Address	Area (acres)
142 1057 01600		SMITH AV	1.6
142 1057 01800	341	SMITH AV	1.7
Total			3.3

Marion Street			
MBP	No.	Address	Area (acres)
034 0848 00900		MARION ST *	0.1
034 0848 00700		MARION ST *	0.1
034 0848 00800		MARION ST *	0.1
034 0851 00900	99	ROAD DAM & CREEK	0.1
037 0848 00100		MARION ST *	0.3
037 0849 00200		MARION ST *	0.3
034 0850 00100		CART RD *	0.6
034 0848 00400	202	MARION ST	0.3
034 0851 00700		ROAD DAM & CREEK	0.3
034 0851 00600	150	ROAD DAM & CREEK	1.0
034 0850 00700	68	ROAD DAM & CREEK	0.2
034 0850 00200	190	CART RD	0.3
034 0849 00100	179	MARION ST	0.2
037 0848 00700		MORRIS CREEK & DY	0.6
037 0849 00700	93	MORRIS CREEK & DY	0.1
037 0849 00500	81	MORRIS CREEK & DY	0.3
037 0849 00100	175	MARION ST	0.3
037 0849 00600	89	MORRIS CREEK & DY	0.1
034 0849 00200		MARION ST	0.2
034 0848 00300	196	MARION ST	0.2
037 0848 00300	160	MARION ST	0.2
037 0848 00400	156	MARION ST	0.2
037 0849 00800	99	MORRIS CREEK & DY	0.3
037 0849 01000	155	MARION ST	0.1
034 0851 00500	40	LIGHTHOUSE POINT TER	0.8
034 0849 00900	136	ROAD DAM & CREEK	0.8
037 0849 00300	165	MARION ST	0.2
037 0849 00400	159	MARION ST	0.1
037 0848 00500	152	MARION ST	0.3
034 0848 00600	5	MARION ST	0.2
034 0849 00800	215	MARION ST	0.3
034 0849 00600	203	MARION ST	0.3
034 0849 00500	197	MARION ST	0.2
034 0849 00400	40	MARION ST	0.2
034 0849 00300	187	MARION ST	0.1
037 0849 00900	101	MORRIS CREEK & DY	0.1
034 0848 00500	206	MARION ST	1.0
034 0848 00100	180	MARION ST	0.2
034 0851 00301		LIGHTHOUSE POINT TER	0.1
037 0849 01001	149	MARION ST	0.1
034 0850 00600		CART RD	0.1
034 0850 00500	68	CART RD	0.1
034 0850 00800	64	ROAD DAM & CREEK	0.1
034 0849 01200	146	ROAD DAM & CREEK	0.1
034 0849 00700		MARION ST	0.3
037 0848 00600	115	MORRIS CREEK & DY	0.0
037 0848 00200		MARION ST	0.3
Total			12.4

Quinnipiac River Marsh			
MBP	No.	Address	Area (acres)
128 1012 00102		MIDDLETOWN AV	1.1
128 1012 00101		MIDDLETOWN AV	1.0
120 1012 01203		QUINNIPIAC AV	4.5
129 1012 00103		MIDDLETOWN AV	5.9
120 1012 00104		MIDDLETOWN AV	2.4
120 1012 01300		QUINNIPIAC AV	2.0
120 1012 01201		QUINNIPIAC AV	3.2
120 1012 01200		QUINNIPIAC AV	7.6
120 1012 01202		QUINNIPIAC AV	0.2
120 1012 01100		QUINNIPIAC AV	3.0
119 1012 00300		QUINNIPIAC AV	6.9
115 1012 00800		QUINNIPIAC AV	2.7
115 1012 01801		QUINNIPIAC AV	8.8
115 1012 00700		QUINNIPIAC AV	6.4
114 1012 01700		QUINNIPIAC AV	0.7
Total			56.4

Essex Street Marsh			
MBP	No.	Address	Area (acres)
118 1033 01100	420	EASTERN ST	4.7
118 1033 00900	109	ESSEX ST	0.2
118 1033 00801	101	ESSEX ST	0.4
118 1033 00701	97	ESSEX ST	0.3
118 1033 00702		ESSEX ST	0.4
118 1033 00601		ESSEX ST	1.3
118 1033 01103	394	EASTERN ST	0.2
118 1033 01200	400	EASTERN ST	0.2
118 1033 00600	71	ESSEX ST *	3.1
118 1033 01300	390	EASTERN ST	3.6
118 1033 01301	385	EASTERN ST	0.9
118 1033 00100		ESSEX ST	0.4
118 1033 01000	1081	QUINNIPIAC AV	3.1
116 1033 01900	82	HEMINGWAY ST	2.4
116 1033 01800	100	HEMINGWAY ST	3.6
116 1033 01501	120	HEMINGWAY ST	2.4
116 1033 01200	136	HEMINGWAY ST	2.0
116 1033 01101	300	EASTERN ST	4.5
116 1033 02100	70	HEMINGWAY ST	1.6
116 1033 02102	70	HEMINGWAY ST	0.2
Total			35.2

The Reservoir			
MBP	No.	Address	Area (acres)
075 0985 04700		QUINNIPIAC AV *	6.5
Total			6.5

Russell Street			
MBP	No.	Address	Area (acres)
089 0999 00100		RUSSELL ST	9.2
090 0998 00202	121	LEXINGTON AV	2.6
090 0998 00100	15	LEXINGTON AV	14.2
089 0999 00600		RUSSELL ST	12.8
089 0998 00700	200	RUSSELL ST	0.8
089 0998 00600	220	RUSSELL ST	0.6
090 0998 01101	84	RUSSELL ST	2.1
094 0999 00900		SUMMIT ST	0.8
089 0999 00700	153	SUMMIT ST	1.7
Total			44.8

Figure 10.17: Proposed Open Space Acquisitions (con't)

Quinnipiac Meadows			
MBP	No.	Address	Area (acres)
146 1048 08201		MIDDLETOWN AV	1.68
146 1048 00101		MIDDLETOWN AV	0.59
148 1048 00301		MIDDLETOWN AV	4.59
146 1048 00601		NEWPORT ST	1.89
146 1048 00300		MIDDLETOWN AV	1.63
148 1048 00200		MIDDLETOWN AV	1.47
146 1048 00400		MIDDLETOWN AV	1.49
148 1048 00100		MIDDLETOWN AV	0.07
146 1048 00500		MIDDLETOWN AV	2.56
148 1048 01100		MIDDLETOWN AV	1.29
147 1048 01200		MIDDLETOWN AV	7.62
148 1048 01000		MIDDLETOWN AV	1.90
146 1048 00600		MIDDLETOWN AV	4.88
148 1048 00900		MIDDLETOWN AV	1.62
146 1048 00700		MIDDLETOWN AV	11.99
148 1048 00800		MIDDLETOWN AV	2.27
147 1048 01300		MIDDLETOWN AV	1.96
147 1048 01500		MIDDLETOWN AV	8.83
147 1048 01400		MIDDLETOWN AV	2.81
132 1048 00200	300	MIDDLETOWN AV	1.53
Total			62.7

Roosevelt Street Extension			
MBP	No.	Address	Area (acres)
135 1041 01000		15 ROOSEVELT ST EXT	0.01
135 1041 02000		95 ROOSEVELT ST EXT	7.10