
Water Resources



Old Saybrook is uniquely located where the Connecticut River reaches Long Island Sound after flowing south for a distance of four hundred ten (410) miles. The town's topography consists of hilly uplands in the north and western parts of town and a relatively flat coastal plain in the south and east. Rainfall collects into streams in the ravines of the northern hills, and the streams broaden into wider wetlands and streambelt systems as they move south and east. An extensive system of tidal marshes exists, in many places behind sandy barrier beaches, where the streams meet the Connecticut River and Long Island Sound.

ISSUES FOR THE NEXT DECADE

Old Saybrook consists of a number of diverse watershed areas. The town's largest drainage system is the Oyster River Watershed, which includes about six and one-half (6½) square miles – more than a third of the land area of the Town. Most of the surface runoff from the northern part of the watershed drains under the railroad just west of the Elm Street underpass. This low area is subject to flooding from both upstream runoff and from tidal flooding. Other drainage areas north of the railroad include a portion of the area along upper Schoolhouse Road, which drains to Trout Brook in Westbrook. An area along the northern boundary drains to the Mud River and South Cove in Essex. A smaller watershed drains through the Otter Cove area. The Obed Heights Reservoir drains to Ragged Rock Creek and into the Connecticut River. South of the railroad, several smaller creeks flow directly to the Sound.

Under the 1969 Connecticut Tidal Wetlands Act, the State regulates an extensive system of tidal wetlands – approximately 1,335 acres – along the shores of the town's rivers and the Sound. Tidal wetlands have many functions, most notably as the most biologically productive habitats in the world providing food and a home for a great diversity of marine plants and animals. The multination Ramsar Treaty designates the wetlands along the lower Connecticut River banks as *Wetlands of International Significance for Waterfowl Habitat*. Additionally, tidal wetlands serve as filters for silt and pollutants that would otherwise reach the waters of the rivers and the Sound. They absorb wave energy from coastal storms and help reduce flood damage. Lastly, Old Saybrook's tidal wetlands are an essential component of the scenic character of the town, defining neighborhoods and providing scenic views all along the coast.

Under authority created by the 1972 Inland Wetlands &

Watercourses Act, the town's Inland Wetlands & Watercourses Commission regulates inland wetlands and watercourses. These freshwater wetlands exist throughout town along the upland streams and at the landward edges of tidal wetlands. Inland wetlands perform many of the same functions as tidal wetlands, including provision of habitat, water purification, and control of flooding and soil erosion. Although less visible than the tidal wetlands, inland wetlands add to the diversity and rural character of the town.

The 1990 Plan of Development includes discussions of the town's abundant water resources, including coastal resources, and addresses topics such as protection of groundwater and the drinking water supply, storm drainage, and sewage disposal. The 1994 Conservation Plan, prepared and adopted by the Old Saybrook Conservation Commission, discusses the town's water resources and includes recommendations for their protection. During the past decade, Old Saybrook paid a significant amount of attention to water quality issues. This Plan of Conservation & Development incorporates many of the recommendations from the two earlier documents but also includes substantial modifications to reflect the most modern findings in this field of study.

Old Saybrook is a part of a recent pilot educational program and associated website called "*Focus on the Coast*" through its partnership with the University of Connecticut Cooperative Extension System's NEMO (Nonpoint Education for Municipal Officials) Project, the CT DEP's Office of Long Island Sound Programs, and The Nature Conservancy's Coastal Marine Program. This website provides an important statewide tool for coastal resource managers and local decision-makers. (See www.nemo.uconn.edu.) The Land Use Department hosts workshops and solicits liaisons from the

various commissions for on-going educational programs that result in initiatives to protect and improve the quality of Old Saybrook's water resources.

Coastal Management

Old Saybrook's shoreline is approximately sixteen (16.3) miles long, running along the Connecticut River, Long Island Sound, and their points and coves. Unlike the estuaries of many other large rivers, the area at the Connecticut River mouth never grew into a major city due to the constantly shifting shallow sandbar that characterizes the river entrance and limits the passage of large vessels. Although this natural feature limits development, the town's coastal location is the central factor in the town's land use patterns. Throughout the town's modern history, the Connecticut River mouth is both a strategic location for early waterborne transportation and shipping and a barrier to land-based travel. Until the State finally constructed permanent bridges for automobiles and trains from Old Saybrook to Old Lyme, major traffic along the eastern seaboard traveled inland, away from the coast. Access to the area for seasonal recreation now contributes to the seasonal swell in population of the densely settled beach communities and supports the local economy.

In 1978, the General Assembly adopted the Connecticut Coastal Management Act as part of a nationwide effort to protect and make wise use of coastal resources. Under the Act, the coastal boundary of Old Saybrook includes the portion of the Town within a continuous line delineated on the landward extent of the 100-year frequency coastal flood zone, or one thousand (1,000) feet inland from the landward edge of mean high water or tidal wetlands, whichever is farthest inland. Land within the coastal boundary covers about fifty-two percent (52%) of the area of the Town. Approximately, two-

thirds of Old Saybrook’s homes are within in the coastal area.

In 1983, pursuant to this Act, the Old Saybrook Planning Commission prepared and adopted its Municipal Coastal Program (Development Program 4.13) for its coastal area. Identifying, evaluating, and planning for coastal resources, as the Coastal Management Act defines them, addresses the coastal area in a comprehensive manner. The Municipal Coastal Program includes an extensive discussion of coastal resources, issues, and recommendations in twenty (20) designated coastal areas. While this Plan of Conservation & Development does not reference those specific coastal areas, it does incorporate and update parts of the Municipal Coastal Program. This Plan builds upon those recommendations and information and events since 1983, however the 1983 MCP still stands as the source inventory and analysis on the various coastal areas in Old Saybrook since the MCP contains more in-depth information on coastal management.

The Planning Commission prepared and adopted the 1983 Municipal Coastal Program as Development Program 4.13, which identifies a series of issues that face the town within the coastal boundary area. The following is a brief summary and status of these issues that require on-going attention.

PROTECTION OF THE UNDEVELOPED SHOREFRONT

Tidal Wetlands Ecology

There is a deeper understanding of tidal wetlands and their importance due to laws regarding tidal wetlands now in effect for well over a decade. The

resulting standards for protection of tidal wetlands strengthen and supplement restoration programs, overseen by the Connecticut Department of Environmental Protection. Understanding the function of tidal wetlands with respect to flood management, water quality, and wildlife habitat bolsters protection efforts. Questions that exist regarding the role that ground water contamination may play in degradation of tidal marsh habitat spurs further investigation of the impacts of: stormwater discharge, sea level rise, the spread of the non-native, invasive, marsh grass “phragmites”, wetland filling and “shoreline hardening”, polluted runoff, and ground water contamination.

Beach Erosion

As noted above, the Town minimizes and prevents the impacts of beach erosion in the area of the two Town beaches – Town Beach and Harvey’s Beach. Specifically, the CTDEP and the USCOAE permit the repair of beach groins that stabilize the beaches against severe erosion. The Town deposits sand to buffer landward areas from erosion and to provide recreational opportunities.

USE OF THE DEVELOPED SHOREFRONT

Public Access to the Water

This concept emphasizes the aesthetic qualities of the shore and the desire to make the waterfront available to as many people as possible as an amenity, often to mitigate non- water-dependent uses. Proposals include promotion of the wise use and development of Saybrook Point, improvement of pedestrian, bike,

vehicle, and fishing safety on the South Cove Causeway, and augmenting opportunities for use of Old Saybrook's coast and coastal waters. Recent reconstruction of the South Cove Causeway by the State DOT resolves many of the safety issues existing at the time of preparation of the Municipal Coastal Plan. Current efforts to increase public access include acquisition of access points through subdivision exaction and coastal site plan reviews. Other efforts include the inventory and reassertion of public access to town road endings and increasing public awareness of these locations.

Swimming Facilities at the Town Beach

A major policy in Municipal Coastal Management is the preference for water-dependent uses along the shoreline, consistent with the Coastal Management Act. Since 1983, efforts to augment opportunities for access to coast and coastal waters have been unsuccessful. The Town recently built new facilities at the Town Beach. Maintenance efforts include the recent reconstruction of the groins at both Town and Harvey's Beach to stabilize the beaches. The Town also conducts beach nourishment (addition of sand to the beach) at Town Beach. It is a high priority to preserve the dynamic form and integrity of the natural beach system.

Shellfishing

Because of cutbacks in State funding, local shellfish commissions and enforcement personnel are often unable to properly monitor

shellfish beds and assure health department standards. These cutbacks result in the closure of local beds, not because of health problems, but because the town is unable to carry out mandated monitoring and testing programs. Despite this, the Town opened Old Saybrook's shellfish beds again in a "conditionally approved area" in late autumn of 2001. The Shellfish Commission and Health Department installed the required demarcation signs and carry out other requirements that the Department of Agriculture, Bureau of Aquaculture impose. The State of Connecticut gave the green light to start the program because the Shellfish Commission firmly commits to water sampling and enforcement of the required regulations. At this time, North Cove, Oyster River wetlands, and the beach off Indiantown and Chalker Beach remain closed to shellfishing. The waters from Fenwick to Cornfield Point to Town Beach are in the conditional area, which the Town monitors for impacts such as rainfall.

Density of Development in the Coastal Area

There is new focus on the density and crowding in the beach areas, primarily due to the DEP's concerns about groundwater quality. The Water Pollution Control Authority is addressing these concerns, and the Town is considering other associated impacts of high-density development. These impacts include demands for services, overburdening of a limited road network (especially in the summer), quality of life issues, neighborhood and area aesthetics, and various forms of pollution, such as polluted runoff, exhaust, litter, and yard chemicals. Despite zoning regulations regarding

lot coverage, there is a considerable amount of build-out to maximum bulk capacity, which exacerbates some of the already troublesome impacts of high-density development. Moreover, garages, additions, and new houses that use most of the property contribute to a loss of the beach-cottage character, which residents coin as "squarification" of the shoreline. In 1992, the Town responded to the increase in conversion of seasonal dwelling by updating *An Ordinance Concerning the Winterization of Seasonal Dwellings*. This ordinance requires continual review, as do other regulations since further opportunity exists to protect the coastal areas and their enhancement.

Saybrook Point

Saybrook Point and all of its riverside properties are a center for public activity from fishing to bird watching. Other activities, including concerts, mini-golf, dining, Connecticut River and Long Island Sound boat excursions add to the ambiance and attraction of the site. Municipal Coastal Plan policies and proposals concentrate on preserving and enhancing the public's ability to access and enjoy this unique property while recognizing its limited potential for access expansion except where environmental conditions are favorable.

In 1989, the Town purchased property at Saybrook Point for public use and enjoyment. The Town completed the majority of the renovations and improvements to Saybrook Point, including landscaping, upgraded parking

lot, and conversion of the old *Sand Bar* restaurant to the new Pasbeshauke Pavilion public meeting place. An additional purchase of the Connecticut River Museum property next to the *Dock & Dine* restaurant completes the plan for Saybrook Point. Additional concepts include a municipal pier for transient docking, a fishing pier, and the possible location of the Cornfield Point lightship at a pier at the foot of College Street.

See **Saybrook Point Program** (formerly Development Program 4.14) for further details and recommendations.

Ferry Point

Ferry Point has huge potential for re-development as a vibrant and exciting destination for boaters, tourists, and residents alike by balancing water-dependent uses and multi-uses that support those water activities. Besides boating facilities, the addition of shops, restaurants, housing, entertainment, and public transportation to the town center would greatly enhance the enjoyment and economic growth of the area.

North and South Coves

Both North and South Coves are unique and important natural resources in the town. Old Saybrook has more shoreline than any other town in the state, in part because of the extensive shoreline created by the coves delineating Saybrook Point. These coves provide refuge for a wide array of wildlife species – breeding ducks in the summer and wintering ducks, concentrations of finfish

(including nursery areas important to protect young fish from predators), aquatic insects, and crustaceans (such as the much sought after blue crab), and turtles. These coves are of international significance as a part of the lower Connecticut River wetlands.

In 1996, the State Department of Transportation improved the usability and safety of the South Cove Causeway for pedestrians, bicycles, fishing, and vehicles through reconstruction of the causeway (a Municipal Coastal Program goal). In 1997, the State completed the walkway between the entrance to the Borough of Fenwick and the southern terminus of the causeway. Now, there is a continuous access way from the Borough of Fenwick up to the Town's property at Saybrook Point. The new causeway raises some environmental concerns about the enlarging and raising of the three bridges. Although never studied, there is some concern that the restrictive nature of the causeway restricts tidal flow into and circulation of waters within South Cove. The accumulation of silt may require further research to determine the necessary type and amount of maintenance and refreshment of the cove.

The Coast Guard designates North Cove as a "harbor of refuge" for use by passing boaters. Transient boaters cruising the Connecticut River or Long Island Sound may use the vacant moorings for a maximum of seventy-two (72)

hours. Currently, silt deposits within the cove make it unsuitable for deep draft vessels to use the moorings, however plans are underway to secure permits from the U.S. Corps of Engineers to begin dredging. The Town estimates completion before 2005. Currently, the Harbor Management Commission is testing core samples to proceed with offshore dumping, if suitable. Within North Cove, there is an area of underutilized waterfront property of interest – the former Town landfill. The Municipal Coastal Program suggests that this site may provide an opportunity for waterfront access.

Additional Coastal Issues

Harbor Management

The Harbor Management Commission recently completed Old Saybrook's first Harbor Management Plan, which details how the Town wishes to use and protect its coastal and riverfront properties. In addition to describing the harbor, the Plan sets forth goals for its management and policies for public health and safety, environmental quality, harbor administration and coordination, water use and navigation, waterfront development, access and land use. The Plan emphasizes increasing coordination with the rest of the Town's boards and commissions, as well as promoting awareness and understanding of harbor management concerns.

See **Harbor Management Plan** for further details and recommendations.

Economic Development

Old Saybrook's water resources are central to its economy in terms of its tourism. The Town is progressively beginning to make better use of its proximity to such resources by property purchases and renovations at Saybrook Point, upgrades to the causeway, and plans for North Cove, and eventual redevelopment of Ferry Point. Revitalization and redevelopment needs to take place to attract tourists while maintaining a balance between a healthy economy, protection of water resources and wildlife habitat, and traffic flow. The Town should increase public access without degrading water quality, destroying views, and impinging on residents and property rights. A good focal point for improvement is the marinas and docking areas to attract more transient boaters. A zoning review might suggest expanding uses to allow cabanas or "boatels," as well as other support facilities.

See **Economic Development** section of the Plan of Conservation & Development for further details and recommendations.

Water-Related Transportation

Presently, there are not sufficient transportation facilities to support or encourage an increase in water-borne tourism. Opportunities exist for a shuttle service to provide transportation to shops and restaurants, perhaps moped or bicycle rental shops, a ferry to Long Island, introduction of bikeways, bike racks, and

boardwalks, and a more reliable trolley schedule. The Amtrak railroad bridge is in need of renovation, as its occasional inconsistency affects river traffic and the success of cruises and charter boat operation. The NEMO guidelines should prevail upon the design of any new roadways or parking areas since typically sixty-five percent (65%) of impervious surfaces are transportation-related. The impact tends to occur in the sensitive areas along the banks and coasts.

See the **Transportation** section of the Plan of Conservation & Development for further details and recommendations.

Water Supply

The Connecticut Water Company (the "CWC") supplies drinking water in Old Saybrook by a central public water supply system. The CWC Guilford-Chester Division, a State-regulated public utility, provides service to the portion of town generally south of I-95 or the railroad, but also extends north to include Floral Park, Middlesex Turnpike to the area just south of Route 9, and the Spencer Plain Road area. Houses and buildings in the remainder of town, where most new residential development is occurring, rely on private, on-site wells.

The central water system in Old Saybrook is the eastern leg of an inverted "I" that takes water from a surface supply reservoir in Killingworth. Water feeds southerly to the Kelseytown distribution reservoir in Clinton and down to the Route 1 area, where transmission mains feed west to Guilford and east to Old Saybrook. Wells in several locations supplement the reservoir supply. Pumps raise water to the

Obed Heights storage tank (1.09 million gallons of useable storage volume) for reserve supply and water pressure at an approximate elevation of one hundred forty feet above mean sea level (140' AMSL). Apart from the transmission mains, which are ten to sixteen inches (10"-16") in diameter, the central water distribution lines consist of mains that are two to eight inches (2"-8") in diameter. An eight-inch (8") main is the standard for new installations today. Smaller lines occur primarily in the seasonal beach areas. The Bokum Road well pumps as needed between May and October. The CWC estimates a safe yield of 290,000 gallons per day. Presently, the CWC is seeking permits to expand the capacity of its Killingworth Reservoir by raising the dam height to increase the impoundment area. Expanding the reservoir will disturb existing inland wetlands created by the original construction of the present dam, and State and Federal permitting authorities have concerns about the adverse impact on those wetlands. If permits are not forthcoming, the governing entities will require the CWC to expand its water supply wells within the region.

In general, a central water supply system is a preferable means of potable water supply over individual wells in terms of reliable quantity and quality. The Town knows the source, and the CWC may treat as necessary to assure safe consumption. In addition, a public water supply system is more likely to meet fire protection requirements for sufficient supply and water pressure. Under state law, developers or property owners rather than the CWC pay for extension of water service to new areas. Town subdivision regulations now require the developer to connect to public water where water service is available. The 1990 Plan of Development recommends extension of

the public water system, wherever feasible. However, the availability of public water to previously undeveloped areas allows development at a higher density than that possible if separation distances of individual wells from individual septic systems are necessarily included in lot design. The presence of public water would also result in the importation of additional water into a particular area, with possible implications for groundwater levels. Like other manmade alterations to the natural systems of an area, the addition of public water has both benefits and consequences.

In 1985, with assistance from the CWC, the Old Saybrook Zoning Commission established an Aquifer Protection Zone to control land uses located above ground over identified large areas of subsurface water known as aquifers. In 1992, the State established the Aquifer Protection Area Program (C.G.S. 22a-354 et sec.) to identify critical water supply aquifers and protect them from pollution by managing land use. The State of Connecticut designates Aquifer Protection Areas around all wells in stratified drift used by water companies serving over one thousand (1,000) people. The Zoning Commission serves as the local aquifer protection commission, regulating activities within the protection areas that might contaminate groundwater. Water companies conduct detailed mapping of the zone of influence for their public water supply wells, and the State Department of Environmental Protection develops regulations to govern the program. The legislature extended the deadline for development of these state regulations several times amidst controversy over detailed management techniques. The program must necessarily address existing land uses as well as regulating new uses, and runs contrary to the Connecticut practice of "grandfathering" existing uses. The State will not require Towns to begin their program until state regulations are in place.

See *Planning for the Next Decade* in this **Water Resources** section for Goals, Policies, and Municipal Improvement, Programs & Standards pertaining to **Water Supply**.

Wastewater Management

Although water quality issues arise occasionally, groundwater quality improved slightly over the past five years of monitoring by the Water Pollution Control Authority (WPCA). Old Saybrook, however, is under pressure from a lawsuit initiated by the Department of Environmental Protection (DEP), to implement a solution to the alleged ground water contamination existing in areas determined by DEP. The DEP favors a tri-town sewer plant, while the Town's philosophy of sewer avoidance requires alternatives to a Town-wide wastewater treatment facility emptying into the Connecticut River. The Town and the WPCA are working to meet DEP deadlines and to provide an in-depth implementation plan, which is currently under review by the DEP. Efforts made to improve ground water quality include a mandatory septic pump-out program, monitoring groundwater throughout town, mandating system repairs, requiring upgrading of inadequate systems, researching new technology, and providing informational meetings and workshops for residents. Discussion includes purchasing properties to decrease density in beach areas, placing community systems in those areas, and revision of Ordinance 62 regarding winterization of seasonal homes. The DEP is evaluating the town's proposal to build a wastewater treatment facility to serve Chalker Beach, Indian Town, and Saybrook Manor, create a wastewater management district for five other areas, update commercial systems, and develop a

grease trap ordinance for proper disposal in commercial areas.

The key is to avoid a solution that trades non-point source pollution (inadequate in-ground septic systems partially cause these conditions) for a single point source discharge that could lead to a single pollution source (i.e., a treatment plant to abate potential ground water pollution with a single point discharge, like into the Connecticut River). This thinking reflects Old Saybrook's commitment to sewer avoidance as well as to its responsibilities and development of initiatives as a NEMO Pilot Town.

In 1998, the Planning Commission amended its Plan of Conservation & Development to address these issues, and the following incorporates the amendment into this Plan:

BACKGROUND

For more than two decades, Old Saybrook studied and debated the subject of suspected water pollution problems in heavily built areas. The Town currently relies entirely on on-site subsurface septic systems for sewage waste disposal. In the mid-1970s, under order from the Connecticut Department of Environmental Protection (DEP), Old Saybrook hired the engineering firm of Malcolm Pirnie Inc., in cooperation with other area towns, to examine alternative solutions. Subsequently, together with the Town of Westbrook, the Town hired the firm of Hayden/Wegman, Consulting Engineers, which completed the "Old Saybrook-Westbrook, Connecticut Joint Study of Wastewater Treatment - Alternatives" in August 1987. These studies concluded that there is no feasible localized solution to significant sewage problems in built-up areas of these two towns. A regional central sewer system was proposed to collect sewage from designated areas of the

towns of Clinton, Westbrook, and Old Saybrook for treatment at an Old Saybrook Plant and subsequent discharge into the Connecticut River. The State proposed a regional sewer authority to operate the system, and the three member towns would share the cost. The 1990 Plan of Development acknowledged the tri-town sewer system as a reality. Plan recommendations focused on limiting the scope of the system to avoid induced development because of sewerage, as well as taking sewer avoidance measures in those areas where not yet deemed necessary.

As the concept of the tri-town sewer system went forward, townspeople in Clinton and Westbrook voted to participate in the project, but Old Saybrook residents voted against Old Saybrook's involvement, citing the high cost, fear of secondary induced development, and potentially negative environmental impacts on the Connecticut River. Some criticized that there was inadequate documentation that a water pollution problem actually existed. The DEP successfully sued the Town for its failure to follow DEP's orders to abate pollution. In a Stipulated Judgment, the parties agreed to allow the Old Saybrook WPCA to submit for DEP approval for alternative solutions to a town-wide water treatment plant.

With engineering consultant Fuss and O'Neill, the Old Saybrook Water Pollution Control Authority is presently conducting additional water testing and examining alternatives to a centralized collection and treatment system. The WPCA prepared a report summarizing the results of groundwater testing and site evaluations throughout Old Saybrook. The report

identifies fifteen areas that the Town is evaluating and ranking relative to groundwater pollution risk.

Groundwater monitoring identifies ammonia, nitrate, and bacteria levels in some areas. The Authority is evaluating both on-site and off-site structural solutions for areas of concern.

At present, most development requires an individual on-site septic system that meets the Connecticut Public Health Code, as administered by the Town Sanitarian. The exception is larger systems receiving over two thousand (2,000) gallons per day of sewage effluent, which must meet the requirements of the Connecticut Department of Health. The Connecticut Department of Environmental Protection is responsible for overseeing systems in excess of five thousand (5,000) gallons. Each site must have an adequately designed and appropriately sized septic system plus suitable reserve space for a one hundred percent (100%) replacement of the leaching area. The location and conditions for septic systems and wells must prevent contamination of groundwater. For successful operation, individual disposal systems are highly dependent upon soil characteristics, as well as proper system design, appropriate use, and maintenance. Generally, soils south of the Interstate 95 are highly permeable and rapidly accept sewage effluent. Some areas are excessively well drained or have ground water near the surface, and may not provide for adequate treatment before the effluent reaches groundwater, wetlands, marshes, and tidal inlets. Conditions north of the highway are highly variable – there are significant areas of rock outcrop, steep slopes, and other soil constraints that may limit development.

The DEP expresses concern about the long-term effects of

continued pollutant discharges in densely populated areas. The State defines an area as densely populated if it contains a group of more than twenty-five homes on lots less than one half-acre in size. The Department of Public Health (DPH) acknowledges that at these densities even a properly sited septic system constructed would likely degrade groundwater quality unless significant up-slope watershed areas contribute to the dilution factor. The DPH does not plan to revise the Public Health Code to consider this. Therefore, it is incumbent on the Town to adopt land use policies that incorporate a watershed approach to insure that development does not adversely affect groundwater supplies and coastal and inland water bodies. The Town should consider the use of newer technologies in environmentally sensitive areas that provide higher levels of effluent treatment than traditional leaching systems. The Town is responsible for oversight of advanced treatment systems.

The Water Pollution Control Authority is pursuing a two-pronged program to deal with sewage disposal. While the Authority is examining alternative solutions, it is also developing an aggressive sewer avoidance program. A sewer avoidance program requires that the Town carefully control densities, strongly enforce proper septic system design, and monitor installation, and teach individuals on how to properly maintain existing systems via active public education. By choosing to follow a sewer avoidance program, Old Saybrook can avoid the construction and operation costs of a large municipal sewer system. The sewer avoidance choice means that the Town cannot support intensive concentrations of development.

A major objection to the tri-town sewer plan is the proposal to discharge treated effluent to the Connecticut River. Since introduction of the tri-town plan, many organizations commended the lower Connecticut River for its beauty and significant natural resources – the Ramsar Treaty designated the Connecticut River Estuary as Wetlands of International Significance for Wildlife Habitat under the Ramsar Treaty; the Nature Conservancy named the Lower River as one of its Last Great Places; and the federal government established the Silvio O. Conte National Fish and Wildlife Refuge along the shores of the Connecticut River from its source to its entry into Long Island Sound.

Many people within the region feel concern that the pressure for large-scale development, as evidenced by the large, new, outlet shopping malls permitted by the neighboring towns of Westbrook and Clinton, will conflict with the small-town character of our towns. Old Saybrook fears that a centralized sewer system with potential for excess capacity enables such growth to occur in areas and at a scale that would not be possible otherwise. The construction of public sewers has had that result in many locations because, while zoning techniques can control the type and size of development, the task of maintaining the small-town character is more difficult if sewage disposal is not reliant on soils.

See *Planning for the Next Decade* in this **Water Resources** section for Goals, Policies, and Municipal Improvements, Programs & Standards pertaining to **Sewage Disposal**.

Surface and Storm Water Management

The wetlands and watercourses system is the core of Old Saybrook's open space system. Consequently, the regulatory roles of the Inland Wetlands, Planning, and Zoning Commissions are paramount in maintaining this "green infrastructure". Additionally, the Conservation Commission has a critical role through its index of open spaces, functional inventory of natural resources, on-going study and analysis of the Town's natural systems, incorporation of its findings in the open space section of this plan, and in spearheading implementation of its Municipal Improvements, Programs & Standards.

Before the 1974 adoption of the Old Saybrook *Inland Wetlands & Watercourses Regulations*, filling and harmful construction practices destroyed hundreds of acres of inland wetlands and habitat. The protection of existing natural wetlands systems and habitat is an increasingly important issue. In 2002, the Town adopted *An Ordinance to Fine Violators of the Inland Wetlands and Watercourses Regulations* as a disincentive to violations and as an effort to increase public awareness of inland wetlands, watercourses, and vernal pools. These efforts are successful, and efforts to update the *Official Wetlands & Watercourses Map* will further assist.

Rainfall not absorbed by vegetation or not absorbed into the ground runs downhill as stormwater runoff. The amount of water that runs off increases as land use changes from undeveloped woodlands to lawns, roofs, and pavement. Currently, the volume and velocity of stormwater runoff from development within the watersheds of Old Saybrook does not generate major problems downstream, although localized flooding may

occur due to undersized or unmaintained pipes or improperly located development. However, future development that brings increased impervious surfaces and associated drainage systems could affect not only flooding but also the overall quality of the natural landscape and water-dependent plant and animal species, especially in the Oyster River drainage basin.

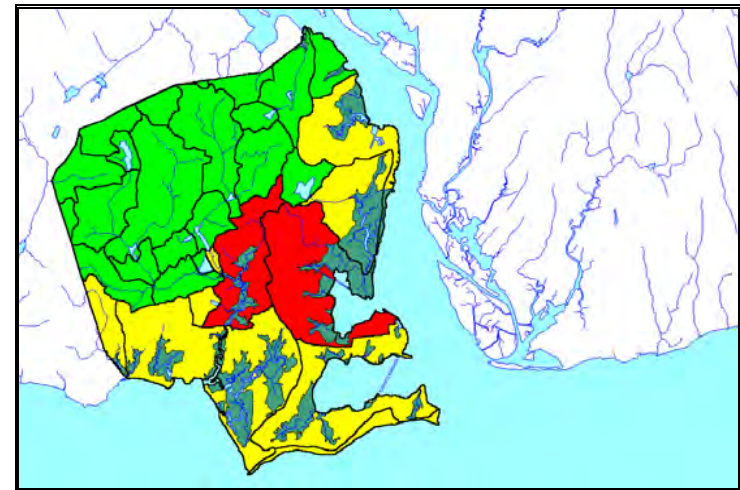
To understand the impacts of future development on Old Saybrook's water resources, the Town, in partnership with the NEMO project and the Connecticut River Estuary Regional Planning Agency (CRERPA), prepared an impervious surface buildout study. The 1997 zoning regulations and additional research conducted by the Center for Watershed Protection serve as the basis for the analysis. Figure 1 indicates that future growth will affect nearly all of the Town's watersheds. National research conducted over the last ten years indicates that a watershed that lies beneath more than ten percent (10%) impervious surfaces will soon realize negative impacts upon the water resources. These impacts can include flooding, sedimentation, erosion, and any of the typical pollutants found in nonpoint source (NPS) pollution. It is difficult to restore a watershed of twenty-five percent (25%) impervious coverage to predevelopment conditions due to the quantity of water moving through the system and the cost of restoration, which typically requires large structural designs.

Old Saybrook uses the impervious surface buildout analysis to focus its protection efforts. Watersheds that are shown as currently impacted are being assessed to determine the nature and extent of the impacts. Restoration efforts will successfully take a 'red' basin to 'yellow' and a 'yellow' basin to 'green.' Efforts might include reduction of imperviousness, disconnection of the stormwater collection / concentration / conveyance system, and restoration of impacted wetlands.

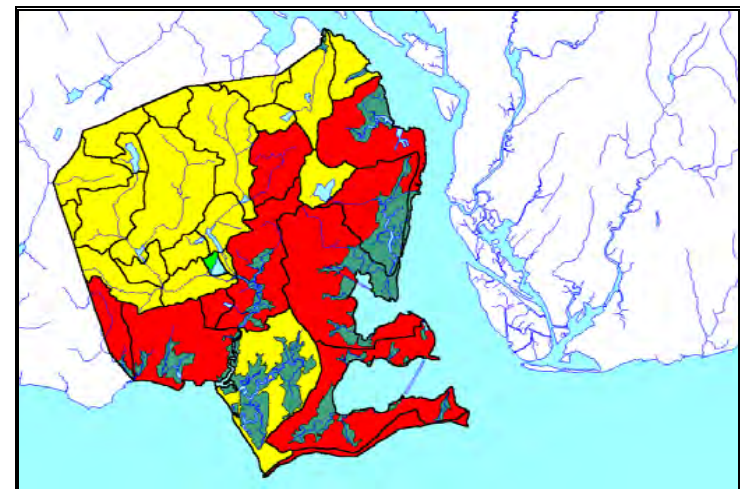
Planning and regulatory documents will incorporate various techniques, many of which are included in this Plan, to prevent future impacts as shown in Figure 1. In fact, Old Saybrook’s commitment to the NEMO Project’s Municipal Initiative will insure movement in this direction.

Recent federal clean water legislation places a new emphasis on controlling water pollution from nonpoint sources such as stormwater runoff. Stormwater can pick up and transport salt, oils, and other contaminants from impervious (solid, paved) surfaces such as roofs, driveways, and parking lots. The town’s regulations do not currently address the potential for nonpoint contamination from stormwater, but the Town is committed to achieving a limit of impervious surfaces to less than thirty percent (30%) at the recommendation of the NEMO program. Research indicates areas with more than thirty percent (30%) impervious surface are more likely to experience degraded water quality from stormwater runoff. Minimizing the amount of paved surface both reduces the amount of runoff and improves water quality. Controlling runoff is gaining priority as the consequences of inattention become more severe. Avoidance of future problems is far more efficient and less expensive than remediation.

See *Planning for the Next Decade* in this **Water Resources** section for Goals, Policies, and Municipal Improvements, Programs & Standards pertaining to **Stormwater**.



Estimated existing buildout levels of imperviousness. Green indicates 0 to 10% imperviousness, yellow indicates 10-25% imperviousness, and red indicates over 25% imperviousness.



Estimated future (based on 1997 zoning regulations) buildout levels of imperviousness.

Flood Management

Flooding issues remain largely the same as those the 1990 Plan of Development describes. Coastal storms continue to emphasize the vulnerability of the low-lying beach areas, especially to the west of Town, and the possibility of prohibiting the provision of emergency services during flood events.

Within the Town, flooding caused by upstream runoff is not generally a serious problem, with the exception of the Elm Street underpass and its immediate surrounding area. Some lands along the Connecticut River experience problems when that river is in flood due to heavy rainfall inland and to the north. Coastal flooding from high tides and storm surges pose a more widespread threat. The coastal flood hazard area includes much of the area south of the railroad, including Chalker Beach, areas along Great Hammock Road, much of Fenwick, and Saybrook Point. Storm events may flood roads and isolate dry areas.

There are many different kinds of flooding problems within the low-lying coastal areas and immediately along the Connecticut River. Flooding that cuts off access for emergency vehicles is potentially dangerous and possibly life-threatening, and could occur in locations such as Ingham Hill Road, the Elm Street underpass, Fenwick, much of Saybrook Point, Great Hammock Road and other beach areas. Less serious, but potentially costly, is flooding damage to structures within in the flood zone, including many of the beach areas, and the industrial area off Elm Street. Current regulations allow construction in a flood hazard area, if new construction meets Federal Emergency Management Agency standards. Over the past decade, people constructed new residential and commercial

structures in flood areas. Both the subdivision and the zoning regulations prohibit the creation of new lots in flood areas unless the lot includes some upland area that is not in the flood zone. The least serious form of flooding is yard flooding, which is primarily an inconvenience to property owners, unless such flooding also inundates septic systems or wells that could lead to health problems.

Although potential for serious flooding from stormwater runoff is limited, a significant increase in uncontrolled stormwater runoff, particularly in the Oyster River watershed, could worsen the present flooding problems in town. The 1971 and 1990 Plans of Development include a recommendation for a town drainage program, which the Town is implementing incrementally, to address the downstream impact of development. Another factor that could create additional flooding problems is the predicted rise in sea level because of global warming. A sea level rise of only a few feet is significant where much of the coastal plain, including part of the town center, an industrial area, and several of the beach associations exist, is less than ten feet (10') above sea level. An accompanying rise in groundwater could result in flooding of septic systems in several areas.

Land use agencies face several difficult issues with respect to adherence to the flood standards of the Federal Emergency Management Agency (FEMA) despite resolving problems with decisions consistent with FEMA standards. FEMA, through the CT DEP, maintains that strict adherence to flood policies is integral to preserving the federally subsidized flood insurance program essential to many shoreline residents and communities. Deviation from those policies in the form of variances and waivers of zoning and subdivision regulations could lead to suspension from the subsidy program that would

prove financially devastating to those needing to secure mortgages in flood hazard areas and protect their homes. There is no other flood insurance available.

See *Planning for the Next Decade* in this **Water Resources** section for Goals, Policies, and Municipal Improvements, Programs & Standards pertaining to **Flooding**.

DAMS AND RETENTION BASINS

The State Department of Environmental Protection requires the registration of all dams. The DEP lists eleven dams in Old Saybrook in its dam inventory; of those listed, only six are formally registered. The storage capacity of most of the dams is small, and failure of those dams does not represent a serious threat to either life or property. Only three dams are of sufficient size to require regular monitoring. Obed Heights Reservoir, which once supplied water to the nearby railroad yards for its steam trains, has high hazard potential. The DEP lists Cranberry (Turnpike) Pond, located between 154, Route 9, and Monk Road, as having significant hazard potential that requires maintenance. And, Chalker Millpond, off Ingham Hill Road, has significant hazard potential.

See the **Public Utilities** section of the Plan of Conservation & Development for further details and recommendations.

PLANNING FOR THE NEXT DECADE – Coastal Management

Goals

- Preservation, conservation, and development of the Coast within Old Saybrook’s coastal boundary consistent with the Connecticut Coastal Management Act.
- Public awareness of Old Saybrook’s coast as its identity and defining character.
- Protection of water resources and groundwater quality.
- Prevention of destruction of valuable wetland systems and protection of native wetlands species and habitat.
- Public access to the shore.
- Increased opportunities for recreational boating at marinas and docking areas.
- Conservation, restoration, and wise use of the shorefront to minimize erosion.
- Avoidance of flood problems.
- Preservation of coastal views of the land and the water from public, semi-public, and private places.
- A revival of commercial shellfishing.
- Additional goals are set forth in the Municipal Coastal Program (Development Program 4.13) adopted by the Old Saybrook Planning Commission on January 24, 1983. That report is hereby made a part of this Plan of Conservation & Development.
- Consideration in the planning process of the potential impact of coastal flooding and erosion patterns on coastal development to minimize damage to and destruction of life and property and reduce the necessity of public expenditure to protect future development from such hazards.
- Coordination of the activities of municipal agencies to ensure that capital expenditures enhance development while affording maximum protection to natural coastal resources and processes in a manner consistent with the Plan of Conservation & Development.

- Maintenance and improvement of tidal and freshwater wetlands for their natural functions and social benefits.
- Preservation and enhancement of coastal resources in accordance with the State policies concerning environmental protection, inland wetlands & watercourses, water resources, water pollution control, parks and forests, and pollution, and flood control & beach erosion.

Policies

- To insure that the development, preservation, or use of the land and water resources of the coastal area proceeds in a manner consistent with the capability of the land and water resources to support the development, preservation or use, without significantly disrupting either the natural environment or sound economic growth.
- To give high priority and preference to uses and facilities that are dependent upon proximity to the water or the shorelands immediately adjacent to marine and tidal waters.
- To resolve conflicts between competing uses on the shorelands adjacent to tidal and marine waters by giving preference to uses that minimize adverse impacts on natural coastal resources while providing long term and stable economic benefits.
- To encourage access to the waters of Long Island Sound by expansion, development and effective utilization of state-owned recreational facilities within the coastal area that are consistent with sound resource conservation procedures and constitutionally protected rights of private property owners.
- To insure maximum protection of coastal resources while minimizing conflicts and disruption of economic development.
- To ensure that any restrictions or exclusions of “facilities and resources that are in the national interest” are made upon reasonable grounds, such as the facility of use may be sited outside the coastal boundary;
- To promote wise use, development, and conservation of coastal resources and the coastal area for the benefit of present and future generations.
- To provide suitable and sufficient beach and land support.
- To use developed shorefront for water-dependent uses.
- To promote “sensitive” public access; to include careful consideration of dock permitting and public access placement to protect

aquatic vegetation, shellfish, and wildlife areas from disturbance and high human traffic.

- To promote public health and safety and to minimize public and private losses due to flooding, in coastal flood hazard areas.
- To encourage developers to use new materials and techniques that protect rivers, wetlands, and Long Island Sound from nonpoint source pollution.
- To discourage homeowners and businesses from using herbicides and pesticides that may contaminate stormwater runoff.
- To encourage the removal of invasive wetland species such as phragmites and purple multi-flora through practices that protect native wetlands species,
- To encourage developers to landscape with native non-invasive plant species.
- To discourage the filling of tidal wetlands and watercourses.
- To celebrate the aesthetics of the coast and its contribution to the character of Old Saybrook.

Municipal Improvements, Programs, and Standards

The Plan recommends implementation of the following actions with priorities, resources and responsibilities coordinated among the appropriate Town agencies, including the Architectural Review Board (ARB), Board of Selectmen (BOS), Conservation Commission (CC), Economic Development Commission (EDC), Harbor Management Commission (HMC), Inland Wetlands & Watercourses Commission (IWWC), North Cove Historic District Commission (NCHDC), Planning Commission (PC), Parks & Recreation Commission (PRC), Water Pollution Control Authority (WPCA), Zoning Board of Appeals (ZBA), and Zoning Commission (ZC).

- SAYBROOK POINT PROGRAM.** Complete the plan for all projects at Saybrook Point.
- MUNICIPAL COASTAL PROGRAM.** Update the 1983 Municipal Coastal Program.
- HARBOR MANAGEMENT PLAN.** Incorporate the Harbor Management Plan into the Plan.

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Municipal Improvements, Programs, and Standards, continued

- NORTH COVE PLAN.** Implement dredging the harbor and increase opportunities for appropriate waterfront access.
- SOUTH COVE PLAN.** Develop and initiate a plan for South Cove.
- FERRY POINT PLAN.** Develop and implement a plan to redevelop and revitalize Ferry Point.
- STORMWATER MANAGEMENT PLAN.** Develop and implement initiatives to protect and improve water quality using NEMO project principles.
- PARKING ALLOCATION STUDY.** Reduce the number of parking spaces and impervious surfaces that produce polluted runoff required by the Town regulations and ordinances.
- WETLANDS RESTORATION.** Inventory, analyze, and plan for restoration of tidal and freshwater wetlands.
- FISH AND SHELLFISH PROTECTION AND RESTORATION.** Study and implement plan for the protection, development, and restoration of fish, fishways, shellfish beds, and critical nursery areas, including continued water sampling and enforcement of regulations.
- BEACH ACCESS.** Identify and acquire properties to expand public beach and waterfront areas.
- BOATING AND PUBLIC ACCESS.** Identify, and encourage plans for more boat ramps, piers, public access areas, and other water-dependent uses.
- ALTERNATE TRANSPORTATION.** Inventory, analyze, and plan for additional bikeways, bike racks, and boardwalks, especially from the waterfronts to the town center.

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Municipal Improvements, Programs, and Standards, continued

- SHORELINE TOURISM.** Attract ferry service to and from Long Island to generate tourism.
- TRANSIENT BOAT PATRONAGE PROGRAM.** Support the enhancement of marinas, docking areas, and support facilities to draw transient boaters and tourists to town.
- SEASONAL DWELLINGS.** Review/revise Ord. #62 Winterization of Seasonal Dwellings.
- ROAD ENDINGS PROGRAM.** Continue the comprehensive, multi-year approach to the research, study, planning, and improvement of the town’s road endings following consistent policies in its design to promote fair and equitable implementation.
- COVERAGE STANDARDS.** Revise zoning regulations to reduce density and lot coverage.
- COASTAL SETBACKS.** Develop setbacks from beaches, dunes, bluffs, escarpments, etc.
- COASTAL RESOURCE DATABASE.** Research coastal matters to improve the data upon which the Town makes decisions regarding coastal land and water use.
- FACILITIES AND RESOURCES OF NATIONAL INTEREST.** Provide adequate planning for “facilities and resources that are in the national interest”, including adequate protection of tidal wetlands and related estuarine resources; restoration and enhancement of Connecticut’s shellfish industry; restoration, preservation, and enhancement of the state’s recreational and commercial fisheries, including anadromous species; water pollution control measures and facilities; air pollution control measures and facilities; continued operation of existing federally-funded dredged and maintained navigation channels and basins; energy facilities ; improvements to the existing interstate rail, highway, and water-borne transportation system; provision of adequate state or federally-owned marine-related recreational facilities, including natural areas and wildlife sanctuaries; and essential maintenance and improvement of existing water-dependent military, navigational, resource management, and research facilities.

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PLANNING FOR THE NEXT DECADE – Water Supply

Goals

- Potable water for everyone.
- Maintenance of present and future clean water sources.
- Extension of community water to all areas south of Interstate 95.

Policies

- To extend central water system in appropriate locations.
- To protect drinking water quality of the high yield aquifer on Bokum and other locations where higher yield wells are possible.
- To protect ground water quality in areas where individual wells will continue to be the primary water source.
- To discourage community water where density is low.

Municipal Improvements, Programs, and Standards

- PUBLIC WATER EXPANSION.** Require through subdivision and zoning regulations installation of public water in designated water service areas.
- WATER QUALITY EDUCATION.** Improve public awareness of nonpoint pollution including sewage, household hazardous waste, pervious surfaces, water-safe gardening, and landscaping practices.
- AQUIFER PROTECTION REGULATIONS.** Develop aquifer protection requirements in accordance with state requirements.

	ARB	BOS	CC	EDC	HMC	IWVC	NCHDC	PC	PRC	WPCA	ZBA	ZC
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Municipal Improvements, Programs, and Standards, continued

- NONPOINT SOURCE POLLUTION MANAGEMENT.** Develop and implement initiatives with the NEMO project to minimize nonpoint pollution and protect and improve water quality.

ARB	BOS	CC	EDC	HMC	IWWC	NCHDC	PC	PRC	WPCA	ZBA	ZC
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PLANNING FOR THE NEXT DECADE – Wastewater Management

Goals

- Resolution of perceived water pollution problems in a manner that has the least adverse impact on unique natural resources, especially the Connecticut River and Long Island Sound.
- Assurance that any solutions to water pollution problems address existing development and will not encourage future development that is inappropriate and inconsistent with Old Saybrook’s small town character.

Policies

- To continue implementation and strengthen an aggressive sewer avoidance program, as the principal method of meeting sewage disposal requirements of the Town, to assure those areas not currently experiencing pollution from inadequate sewage disposal will not become future problem areas.
- To avoid installation of systems with excess capacity that might encourage secondary development that could not take place without off-site sewage disposal. Avoid intensification of existing development in those areas where community system solutions are unavoidable.

Municipal Improvements, Programs, and Standards

- WATER QUALITY CONTROL DISTRICT.** Identify areas that cannot be corrected with on-site solutions and develop an overlay zone that regulates activities that increase problems.

ARB	BOS	CC	EDC	HMC	IWWC	NCHDC	PC	PRC	WPCA	ZBA	ZC
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Municipal Improvements, Programs, and Standards

- PUBLIC WATER EXPANSION.** Extend public water service to those remaining portions of high-density areas that still rely on individual wells.
- WATER POLLUTION CONTROL.** To avoid sewage disposal problems in the future, adequately fund and staff an aggressive sewer avoidance program that combines public education with enforceable regulations and oversight of public and individual septic system maintenance.
- DEMOLITION PROGRAM.** When no other neighborhood solution is available, consider a program for purchasing homes and seasonal cottages and demolishing the structures to reduce overall density and create locations for installation of community sewage disposal.
- WINTERIZATION PROGRAM.** Strictly limit or prohibit seasonal conversions in high-density areas where water pollution problems may exist.
- BEACH BULK STANDARDS.** Revise and enforce zoning regulations to reduce allowable density and limit expansion of uses in built up areas, to prevent the worsening of nutrient and other water pollution problems. Adopt lot coverages, floor area ratios, and other bulk standards that prohibit intensification of present uses.
- CONSUMPTIVE USE PROHIBITION.** Through zoning, identify and prohibit new high water consumptive uses in densely developed areas.
- WATER CONSERVATION SITE PLAN.** Encourage all development to include water conservation measures as part of overall site design.
- LIMITED INFRASTRUCTURE.** Do not extend or provide sewage disposal service to undeveloped lots that are subject to coastal flood hazards or include tidal and inland wetlands.

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Municipal Improvements, Programs, and Standards, continued

- COMMUNITY SEWAGE DISPOSAL.** Consider the use of on-site community sewage disposal systems when designing alternative forms of housing.

- WATER QUALITY LIBRARY.** Recognize that nitrogen reduction is an important goal of water pollution control. Develop a basic library of technical information and provide technical support on denitrification for Old Saybrook property owners.

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PLANNING FOR THE NEXT DECADE – Surface & Storm Water Management

Goals

- Management of stormwater runoff to maintain water quality.

- Protection and utilization of natural drainage systems, including wetlands and streambelts, to avoid the need for expensive manmade drainage controls and water quality renovation.

- Limitation of impervious surfaces to less than 30% thus reducing polluted runoff and improving water quality.

Policies

- To promote inland wetlands restoration and creation of man-made wetlands as mitigation for loss of existing or formerly-filled wetlands.

- To support wetland and vernal pool education programs.

- To require developers to use new techniques and natural systems that will reduce or eliminate existing flooding conditions and polluted runoff.

- To reduce present and minimize new impervious surfaces on municipal properties whenever the opportunity arises. Consider the use of porous alternatives and landscaped parking areas with green areas for infiltration.

- To require developers to incorporate landscaping and natural drainage design techniques that minimize impervious surfaces, enhance infiltration, and direct runoff to open areas such as: clustering, sunken islands, pocket parks, vegetative swales, and wet ponds.
- To require site plans for storm water management that use the best management practices to minimize nonpoint water pollution and expensive, long-term maintenance costs.

Municipal Improvements, Programs, and Standards

- DRAINAGE STRUCTURES.** Revise Town drainage standards to provide more guidance to developers on acceptable design approaches and long-term maintenance responsibilities for drainage structures.
- DRAINAGE STANDARDS.** Amend Subdivision, Zoning, and Inland Wetlands and Watercourses Commission Regulations to reference a common set of town standards in a consistent approach.
- SITE-SPECIFIC STORMWATER MANAGEMENT PLANS.** Develop and require a Stormwater Management Plan as part of the Subdivision Site Plan, submitted with each application. The applicant must show the Planning Commission that the proposed subdivision will have no adverse impact on drainage facilities and will protect or enhance the community's water resources from non-point source pollution.
- STORM DRAIN INVENTORY.** Create an inventory of existing storm drain outfalls to identify opportunities to retrofit roads and other municipal facilities for stormwater pollution reduction.
- STORMWATER MANAGEMENT FUND.** Through developer contributions, establish a town fund for long-term maintenance of town-owned drainage control structures.

	ARB	BOS	CC	EDC	HMC	IWWC	NCHDC	PC	PRC	WPCA	ZBA	ZC
<input type="checkbox"/> DRAINAGE STRUCTURES. Revise Town drainage standards to provide more guidance to developers on acceptable design approaches and long-term maintenance responsibilities for drainage structures.		●	●			●		●				●
<input type="checkbox"/> DRAINAGE STANDARDS. Amend Subdivision, Zoning, and Inland Wetlands and Watercourses Commission Regulations to reference a common set of town standards in a consistent approach.		●				●		●			●	●
<input type="checkbox"/> SITE-SPECIFIC STORMWATER MANAGEMENT PLANS. Develop and require a Stormwater Management Plan as part of the Subdivision Site Plan, submitted with each application. The applicant must show the Planning Commission that the proposed subdivision will have no adverse impact on drainage facilities and will protect or enhance the community's water resources from non-point source pollution.						●		●				●
<input type="checkbox"/> STORM DRAIN INVENTORY. Create an inventory of existing storm drain outfalls to identify opportunities to retrofit roads and other municipal facilities for stormwater pollution reduction.		●								●		
<input type="checkbox"/> STORMWATER MANAGEMENT FUND. Through developer contributions, establish a town fund for long-term maintenance of town-owned drainage control structures.		●							●	●	●	●

Municipal Improvements, Programs, and Standards

- COVERAGE STANDARDS.** Amend regulations to reduce impervious surface coverage to maintain water quality and avoid expensive corrective measures to mitigate flooding problems. Restrict overall impervious coverage to less than thirty percent (30%) town-wide.
- LIMIT FILLING OF LAND.** Prevent reduction of flood-carrying capacity of wetlands.
- NET BUILDABLE AREA.** Require subdivision applicants to perform an analysis of "net buildable area" to address site characteristics limiting suitability of on-site utilities.
- UPLAND REVIEW AREA.** Increase buffer; report findings to Planning/Zoning commissions.
- CONSERVATION BUFFERS.** Through zoning and subdivision regulations, require establishment and maintenance of natural buffer strips at least twenty-five feet (25') in width or greater along all salt marshes, streams and ponds within the town, with conservation easements in favor of the Town.
- WATERSHED PLANNING.** Conduct a Town-wide drainage study by watershed, beginning with the Oyster River watershed, to determine a coordinated drainage strategy, acknowledging the cumulative effect of development. Each watershed study should inventory the existing drainage network and determine potential maximum build-out of the watershed as a basis for future drainage improvements.
- CAPITAL IMPROVEMENTS BUDGETING.** Include major drainage studies and improvements as part of the Town's capital improvements budget.
- ROAD REGULATIONS.** Complete the revision of road standards based on the function they will serve. As one of the major sources of impervious coverage, how roads are designed and where they are placed can greatly influence the quality of the Town's water resources.

	ARB	BOS	CC	EDC	HMC	IWVC	NCHDC	PC	PRC	WPCA	ZBA	ZC
<input type="checkbox"/> COVERAGE STANDARDS. Amend regulations to reduce impervious surface coverage to maintain water quality and avoid expensive corrective measures to mitigate flooding problems. Restrict overall impervious coverage to less than thirty percent (30%) town-wide.			●					●		●	●	●
<input type="checkbox"/> LIMIT FILLING OF LAND. Prevent reduction of flood-carrying capacity of wetlands.			●			●		●			●	●
<input type="checkbox"/> NET BUILDABLE AREA. Require subdivision applicants to perform an analysis of "net buildable area" to address site characteristics limiting suitability of on-site utilities.						●		●				●
<input type="checkbox"/> UPLAND REVIEW AREA. Increase buffer; report findings to Planning/Zoning commissions.						●		●				●
<input type="checkbox"/> CONSERVATION BUFFERS. Through zoning and subdivision regulations, require establishment and maintenance of natural buffer strips at least twenty-five feet (25') in width or greater along all salt marshes, streams and ponds within the town, with conservation easements in favor of the Town.			●					●		●	●	●
<input type="checkbox"/> WATERSHED PLANNING. Conduct a Town-wide drainage study by watershed, beginning with the Oyster River watershed, to determine a coordinated drainage strategy, acknowledging the cumulative effect of development. Each watershed study should inventory the existing drainage network and determine potential maximum build-out of the watershed as a basis for future drainage improvements.			●			●		●		●		
<input type="checkbox"/> CAPITAL IMPROVEMENTS BUDGETING. Include major drainage studies and improvements as part of the Town's capital improvements budget.		●	●					●		●		
<input type="checkbox"/> ROAD REGULATIONS. Complete the revision of road standards based on the function they will serve. As one of the major sources of impervious coverage, how roads are designed and where they are placed can greatly influence the quality of the Town's water resources.		●						●				

PLANNING FOR THE NEXT DECADE – Flood Management

Goals

- Design stormwater drainage to allow for reasonable development while protecting development from the danger of increased flooding.
- Reduction or elimination of existing flooding problems wherever possible.

Policies

- To review all development to insure that water quality is maintained and that no flooding is created or increased, either within the development site itself, or downstream of the development.
- To identify and correct existing flooding problems, with priority to potential life threatening situations and inaccessibility by emergency vehicles. Drainage improvements should be included as part of the Town’s capital improvements budget.
- To minimize variances and waivers of zoning and subdivision regulations that could lead to suspension from the flood subsidy program that would prove financially devastating to those needing to secure mortgages in flood hazard areas and protect their homes.

Municipal Improvements, Programs, and Standards

- ELEVATION CERTIFICATES.** Maintain FEMA elevation certificates for all construction.
- MAP INFORMATION.** Publicize service for inquiries about properties’ FIRM zone.
- OUTREACH PROJECTS.** Send information about the flood hazard, flood insurance, and flood protection measures to flood prone residents or all residents of the community.
- HAZARD DISCLOSURE.** Encourage real estate agents to advise potential purchasers of flood prone property; or amend regulations to require a notice of flood hazard.

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Municipal Improvements, Programs, and Standards

- FLOOD PROTECTION LIBRARY.** Maintain library references on insurance/protection.
- FLOOD PROTECTION ASSISTANCE.** Give inquiring property owners technical advice on protecting their buildings from flooding, and publicize this service.
- ADDITIONAL FLOOD DATA.** Develop new flood elevations, floodway delineation, wave heights, or other regulatory flood hazard data for areas not mapped in detail by the flood insurance study; or base flood insurance on higher state or local standards.
- OPEN SPACE PRESERVATION.** Guarantee vacant floodplain as free from development.
- HIGHER REGULATORY STANDARDS.** Require freeboard; soil test or engineered foundations; compensatory storage; zone the floodplain for minimum lot sizes of one acre; regulate to protect sand dunes; or tailor to protect critical areas subject to flood hazards.
- FLOOD DATA MAINTENANCE.** Keep flood and property data on computer records; use better base maps; or maintain elevation reference marks.
- STORMWATER MANAGEMENT.** Regulate development throughout the watershed to ensure that post-development runoff is no worse than pre-development runoff.
- FLOOD PLAIN MANAGEMENT PLANNING.** Prepare, adopt, implement, and update a comprehensive plan using a standard planning process.
- ACQUISITION AND RELOCATION.** Acquire/relocate flood-prone buildings.
- RETROFITTING.** Document flood-proofed or elevated pre-FIRM buildings.

	ARB	BOS	CC	EDC	HMC	IWVC	NCHDC	PC	PRC	WPCA	ZBA	ZC
<input type="checkbox"/> FLOOD PROTECTION LIBRARY.		●										●
<input type="checkbox"/> FLOOD PROTECTION ASSISTANCE.												●
<input type="checkbox"/> ADDITIONAL FLOOD DATA.		●										●
<input type="checkbox"/> OPEN SPACE PRESERVATION.		●	●					●				
<input type="checkbox"/> HIGHER REGULATORY STANDARDS.			●								●	●
<input type="checkbox"/> FLOOD DATA MAINTENANCE.												●
<input type="checkbox"/> STORMWATER MANAGEMENT.	●	●	●			●		●	●	●	●	●
<input type="checkbox"/> FLOOD PLAIN MANAGEMENT PLANNING.		●				●		●				
<input type="checkbox"/> ACQUISITION AND RELOCATION.		●	●									
<input type="checkbox"/> RETROFITTING.		●									●	●

Municipal Improvements, Programs, and Standards, continued

- DRAINAGE SYSTEM MAINTENANCE.** Inspect and maintain all channels/retention basins.

- FLOOD WARNING PROGRAM.** Provide early warnings to the public and have a detailed flood response plan keyed to flood crest prediction

ARB	BOS	CC	EDC	HMC	IW/C	NCHDC	PC	PRC	WPCA	ZBA	ZC
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