

## Long Island Sound 2003 Agreement Commitments/Actions

### I. HYPOXIA

#### Eliminate the adverse impacts of hypoxia resulting from human activities.

2003 Agreement Action Item	2008 Status	LISS Indicator	2003-2008 Progress Highlights Summary
<p>1. By 2014, achieve a 58.5 percent reduction in the total enriched load of nitrogen to Long Island Sound from point and nonpoint sources within the New York and Connecticut portions of the watershed, as defined by the December 2000 document - <i>A Total Maximum Daily Load Analysis to Achieve Water Quality Standards for Dissolved Oxygen in Long Island Sound</i>.</p>	<p>Implemented &amp; ongoing</p>	<p>Annual lbs/day TE/lbs/day  Tributary Load</p>	<p>For the period of January 2003-December 2007, the states of New York and Connecticut have made significant progress in reducing point source nitrogen deposition to Long Island Sound, reducing discharges by 9,700 trade-equalized (TE) pounds per day (lbs/d). The TMDL baseline load is 59,146 TE lbs/d, with 39,700 TE lbs/d discharged by 106 treatment plants as of December 2007. The 2014 TMDL goal is 22,774 TE lbs/d. (see Attachment 1)</p> <p>The states have issued all State Pollution Discharge Elimination System permits with nitrogen limits consistent with the TMDL. Six New York City permits remain in Hearing as of August 2008.</p> <p>The states have made good progress in funding and implementing upgrades to treatment plants discharging to the Sound. From 2003-2007 Connecticut has funded nitrogen removal upgrades at 19 sewage treatment plants totaling more than \$56.5 million. Norwalk, Stamford and Westport, Connecticut plants are the most recent that have completed significant upgrades for nitrogen reduction. In addition, Connecticut's Nitrogen Credit Trading program has been highly successful in reducing nitrogen and saving the cost of upgrades for facilities that are eligible to buy credits from facilities that earn credits by removing more nitrogen than their permit requires.</p> <p>In New York, plant upgrades for nitrogen removal have been completed at Glen Cove, Oyster Bay, Huntington, Belgrave and Port Jefferson. Construction is underway at four New York City facilities, Bowery Bay, Hunts Point, Tallman Island and Wards Island with total New York State funding of \$800 million. Construction is also underway at Port Washington, Greenport, SUNY, and Kings Park. Construction will start soon at New Rochelle and Mamaroneck.</p> <p>The National Fish and Wildlife Foundation, a LISS partner organization, provided \$900,000 in funding on behalf of Dissolved Oxygen Fund Trustees CTDEP, NYSDEC, NYCDEP, Soundkeeper, and NY/NJ Baykeeper for eight studies and implementation projects focused on reduction of hypoxia in western Long Island Sound.</p>
<p>2. By 2003, establish Phase IV nitrogen reduction agreements to address atmospheric deposition and watershed management for portions of the Long Island Sound watershed outside of New York and Connecticut.</p>	<p>Implemented &amp; ongoing</p>	<p>None</p>	<p>The LISS has been working through its Connecticut River Work Group, chaired by the New England Interstate Water Pollution Control Commission (NEIWPCC), to refine nitrogen load and source estimates for the upper CT River basin and develop a nitrogen reduction plan for out of basin sources. The LISS has provided \$934,825 in funding since 2003 to support this work through 2008. In 2008 and 2009, the TMDL Writing Team will use this work to support revision of the TMDL, which will include the states of New Hampshire, Vermont and Massachusetts loads affecting the Sound. EPA New England Region will revise state pollution discharge permits to</p>

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			<p>include nitrogen loads consistent with the revised TMDL limits.</p> <p>The nitrogen allocations to the Connecticut River from tributary state contributions are currently being achieved. EPA is including requirements in Massachusetts and New Hampshire permits for monitoring and optimization to ensure that the current nitrogen load does not increase, while work on revising the TMDL is completed. Such language has been incorporated into the recent Easthampton, MA permit. EPA will also work with Vermont to include similar requirements.</p> <p>The probable reduction in atmospheric deposition across the LIS watershed was evaluated using results from atmospheric quality modeling performed by the Ozone Transport Commission to support the 2008 State Implementation Plans to demonstrate compliance with the National Ambient Air Quality Standards. These model runs projected an average 25% reduction in total nitrogen deposited on the LIS watershed by 2012, as compared with the 18 % reduction projected in the TMDL. These runs did, however, include the implementation of the Clean Air Interstate Rule (CAIR), which was vacated in July 2008 in Federal District Court.</p> <p>The State of Massachusetts requested membership, and was approved as a LISS Management Committee member in July 2007.</p> <p>In 2007 the area and duration of hypoxia was 58 days with a maximum area of 162 square miles. (see Attachment 2)</p>

## II. PATHOGENS

**Increase the area for shellfish harvesting and eliminate bathing beach closures while maintaining protection of human health.**

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3. A. By 2003, nominate vessel no-discharge areas (NDA) for the Pawcatuck and Mystic Rivers in Connecticut and	Complete	% embayments	Connecticut received EPA approval designating Long Island Sound waters from the Pawcatuck to Mystic Rivers as a No Discharge Area in 2004.
4. B. By 2003, nominate vessel no-discharge zones (NDZ) for all the Long Island Sound embayments in New York.	Implemented & ongoing	% embayments	In New York, three harbor complexes (14.3% of total number of embayments) were designated NDZ prior to 2003: Mamaroneck Harbor, Port Jefferson Harbor Complex, and Huntington Harbor complex. Two additional harbor complexes (9.5%), Hempstead Harbor and the Oyster Bay/Cold Spring Harbor Complex, on the north shore of Long Island submitted applications for NDZ designation to EPA, which approved them in August 2008. In 2008, New York has committed to apply for the remaining New York Long Island Sound waters as NDZs by 2009.
5. C. Nominate vessel no-discharge areas in two additional areas in Connecticut.	Complete	% embayments	In 2005 Connecticut nominated the area of Long Island Sound from Groton to Guilford as a No Discharge Area (NDA) and in 2006 nominated the area from Branford to Greenwich as an NDA. EPA granted the NDA for Groton to Guilford in 2006 and from Branford to Greenwich in 2007. The entire Connecticut portion of Long Island Sound is now a designated No Discharge Area. (see Attachment 3)
6. By 2010, decrease the acreage closed year-round to shellfishing due to pathogen indicators by 10 percent compared to 2000 levels.	Implemented & ongoing	Acreage Open	<p>The Connecticut Department of Agriculture (CTDOA), Bureau of Aquaculture continued to work with shoreline shellfish commissions and local/regional health departments in monitoring shellfish beds and designating approved and conditionally approved shellfish beds. CTDOA also oversees emergency closures of approved and conditionally approved beds, and coordinates the location and elimination of pollution sources.</p> <p>New York has seen no appreciable change in year-round shellfish acreage closures since 2000 (0.75% increase in uncertified beds). In addition, the onset of intense PSP-causing <i>Alexandrium</i> blooms on the north shore of Long Island has also closed beds. After an intense bloom in 2006 which closed down half of the Huntington-Northport Harbor Complex, NYSDEC implemented a public health program that samples regularly for this toxin. In 2008, PSP toxins shut this harbor complex down completely for 3 to 7 weeks, in early May to late June.</p> <p>NYSDEC does run programs to open shellfish beds that would not normally be open. At the request of a town, NYSDEC will evaluate conditional shellfish beds in the winter time under minimal rainfall conditions to see if they meet the criteria to be open. In 2007, four areas on the north shore of Long Island participated in this program. Additionally, NYSDEC works with towns and municipalities when they do storm water run-off remediation projects. Every year NYSDEC attempts to re-evaluate all growing areas to determine if areas must be upgraded or downgraded.</p>
7. By 2010, minimize chronic bathing beach closures in Long Island Sound due to pathogen indicators, with a goal of eliminating all chronic	Implemented & ongoing	Number of Annual Chronic	There are 203 monitored beaches along Long Island Sound in Connecticut and New York. The official swimming season runs from Memorial Day to Labor Day weekends, equivalent to 100 swimming days or 20,300 beach days. The New York

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<p>closures (closed for at least three days per year for at least three of the last five years).</p>		<p>Closures</p>	<p>and Connecticut departments of health participate in the National Beach Monitoring program, and receive and administer EPA's Beach Act grant funds. Local health departments are responsible for water quality testing and closing beaches due to pathogen contamination.</p> <p>The Connecticut Department of Public Health (CTDPH) holds annual meetings of the Connecticut Coastal Health Officials for Bathing Water Monitoring that provides training resources to local beach monitoring staff and to local and regional health department. CTDPH collects and reports the annual beach closure reports from municipalities. The number of beach days lost due to closures in Connecticut Long Island Sound beaches is less than 2 percent.</p> <p>In New York, the number of beach closure days and the number of chronically closed beaches has increased since the 1990s, but this is in part due to increased rain events and the implementation of the new EPA <i>enterococcus</i> test standards for marine bacteria, rather than a documented decline in water quality. It is also a function of "precautionary closures" by local health departments which appear to have increased such closures. This is occurring because there are only a few U.S. studies of the <i>Enterococcus</i> standard and its relation to illness in beach-goers. Therefore, local health departments have to be protective until the necessary studies are completed. In 2007, the number of beach closure days among New York State Long Island Sound beaches was less than 4.5 percent.</p> <p>NYSDOH has begun implementation of the Beach Act, through which they are funding counties to do enhanced sanitary surveys and identifying sources of contamination. Information is passed along to NYSDEC for enforcement in the hopes of decreasing the number of chronically closed beaches.</p>

### III. TOXIC SUBSTANCES

**Eliminate toxicity or bioaccumulation impacts on living resources by reducing contaminant inputs and cleaning up contaminated sites, and manage risk to humans from seafood consumption.**

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8. A. By 2004, EPA, in conjunction with the Army Corps of Engineers, will complete the Environmental Impact Statement for the designation of dredged material disposal sites in central and western Long Island Sound and,	Complete	None	The US Army Corps of Engineers and EPA completed the Environmental Impact Statement in April 2004 and published the final rule to designate the Central and Western Long Island Sound dredged material disposal sites in a Federal Register notice in June 2005.
9. B. By 2008, will complete the EIS for designation of dredged material disposal sites in eastern Long Island Sound.	Implemented & ongoing	None	EPA and the Corps have agreed to complete this EIS, dependent upon Congressional appropriations, which have not been made as of August 2008. As part of the Dredged Material Management Plan development process, the Corps is updating the dredging needs assessment and upland placement alternatives, which will be needed for the EIS.
10 A. By 2003, update the Long Island Sound Contaminants of Concern list after considering National Coastal Assessment monitoring results and other sources of data.	Implemented & ongoing	None	In 2005, the Long Island Sound Fellows completed a characterization of contaminants of concern. Updating the list is pending LISS action.
11 B. By 2005, evaluate current contaminant monitoring and control programs and identify strategies to address priority issues.	Implemented & ongoing	None	<p>Two divisions within the New York State Department of Environmental Conservation (NYSDEC), the Division of Water and Division of Fish, Wildlife, and Marine Resources, are working together to develop a monitoring program for all of NY State's marine waters. In addition, the state already monitors all freshwaters within the state on a rotating basis. Under this program, the water quality of the freshwaters draining into LIS is assessed every five years.</p> <p>The LISS funded a study in 2006-2007 to look at PCB and mercury concentrations in LIS striped bass and bluefish. Although a final report has not yet been completed, preliminary study results show that PCB concentrations in bluefish have declined since a 1985 survey. The study also found a correlation between mercury concentrations and the length of striped bass and bluefish; however, PCB concentrations were not linked to striped bass length, but they are to bluefish length. The study is continuing with chemical analysis of fish collected in 2007 underway now with the intention that all data will be available by end of summer 2008.</p> <p>The LISS 2009 Needs Assessment has identified three areas for priority attention, with emphasis on understanding the potential impacts from emerging contaminants. 1) evaluate sources and inventories of conventional and emerging contaminants in Long Island Sound focusing on those that are (e.g., 303(d) listed impairments) or are likely to be present at concentrations where adverse effects on aquatic species or human consumers are likely; 2) examine potential impacts of these contaminants on ecosystem function or population dynamics of key resources species; 3) develop new management technologies and approaches to control sources of toxic</p>

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			substances and to remediate contaminated sediments.
12. By 2003, New York and Connecticut will meet to jointly review their approaches for Long Island Sound fish consumption advisories and to discuss a process to achieve the goal of consistent fish consumption advisories for Long Island Sound.	Implemented & ongoing	None	In 2005-2006, staff from the Connecticut Department of Public Health (CTDPH), Connecticut Department of Environmental Protection (CTDEP), New York State Department of Health (NYSDOH), New York State Department of Environmental Conservation (NYSDEC) and the U.S. Environmental Protection Agency (USEPA) worked together to develop fish sampling and analyses plans to provide data to evaluate contaminant levels and fish advisories for critical Long Island Sound fish species. In 2006 and 2007, NYSDEC, CTDEP and USEPA staff collected samples of bluefish, striped bass, American eel, weakfish, and American lobster from Long Island Sound for PCB and mercury analyses (including dioxin analyses for American lobster hepatopancreas). Because previous data on these species were dated (generally more than 10 years old) and/or lacking, these data are crucial to inform discussions of New York State and Connecticut staff regarding development of consistent fish advisories for Long Island Sound.

#### IV. LIVING RESOURCES AND THEIR HABITATS

**Assure a healthy ecosystem with balanced and diverse populations of indigenous plants and animals, maintain or increase the abundance and distribution of harvestable species, and restore the ecological functions of degraded and lost habitats.**

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<p><b>13 A.</b> By 2003, complete the mapping of eelgrass in the Long Island Sound area to determine trends.</p>	Completed	acres	<p>The LISS funded the US Fish &amp; Wildlife Service (USFWS) to conduct aerial surveys and ground truthing of eelgrass beds in 2002 as a means of creating a baseline for measuring future status. A subsequent LISS-funded study was conducted in 2006 to update the 2002 results. The LISS agreed to fund these surveys on a triennial basis, providing funding in 2008 for a Spring 2009 survey. The 2006 survey found a slight increase in eelgrass beds in the Sound, up to 1,902 acres from 1,559 acres in 2002.</p>
<p><b>14 B.</b> Continue to promote investigations and research into determining the impacts of nitrogen upon the degradation of aquatic habitats (i.e., loss of eelgrass, increases in macroalgae and benthic algae) in shallow embayments and bays in Long Island Sound.</p>	Implemented & ongoing	None	<p>The LISS provided funding in 2005 to Connecticut to develop water quality and other ambient criteria for eelgrass restoration in Long Island Sound. This work is ongoing and will provide a basis for determining restoration objectives and priority sites for restoration of eelgrass in the Sound.</p> <p>In 2008, New York State formed a Seagrass Task Force that funded two complementary projects between Cornell Cooperative Extension and Stony Brook University to look at the impacts of groundwater nutrient concentration and contaminant load on eelgrass growth, mortality, and spatial distribution. Additionally, NYSDEC is collaborating in a multidisciplinary wetland loss monitoring project, one section of which includes nitrogen and other nutrient sampling within pore water.</p> <p>CTDEP and NYSDEC are two of the Trustees of the Dissolved Oxygen Fund. The <i>Dissolved Oxygen Environmental Benefit Fund for the Western Long Island Sound and Jamaica Bay</i> is a \$6.0 million fund designed to support restoration and water quality projects that reduce pollution, particularly nitrogen, threatening the health and living resources of these estuaries. As Trustees, the states are committed to making certain that a portion of funds available are used to restore natural estuarine habitats and improve water quality. In 2007, \$1.6 million was issued for 12 water quality projects, leveraging another \$2.1 million in funds for total projects costs of \$3.6 million.</p> <p>The LISS provided three years of \$125,000 in funding to Cornell Cooperative Extension of Suffolk County through the Long Island Sound Futures Fund to restore historic eelgrass beds in Stony Brook Harbor and the Town of Southold, New York.</p>
<p><b>15.</b> By 2005, characterize the scope and rate of tidal wetland losses in the Sound and promote research that will determine to what degree accelerated sea level rise, sediment supply disruptions, or other factors are responsible for the loss of habitat that is critical to the Sound's birds,</p>	Implemented & ongoing	Acres of Wetlands	<p>The LISS partly funded a study and report, published in 2007, <i>Quantitative and Qualitative Trends of Vegetative Tidal Wetlands in New York's Marine District With a Focus on Long Island Sound and Peconic Bay</i>. This study compared 1974 infrared imagery to imagery taken up to 2005 and found that, in Long Island Sound, both intertidal marsh (IM) and high marsh (HM) is being lost. IM is being lost at a rate (5.8%) across the north shore of Long Island faster than HM (0.5%). Channels within the tidal wetlands were found to have widened by an average of 90%. The</p>

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finfish, and overall productivity.			<p>report also recommended further research and actions to be taken for habitat restoration and tidal wetland preservation. This project was part of a four-part study into tidal wetlands loss. The other aspects included installation of Surface Elevation Tables (SETs; to be completed by fall 2008), sediment pore water chemistry and accretion rate analyses, and USGS continuous monitoring stations (recording water elevation, temperature, salinity, and, at Flax Pond, pH, dissolved oxygen, and turbidity) at four tidal wetlands in the NY portion of the LIS watershed.</p> <p>With Coastal Zone Management Act funding, CTDEP is placing up to 60 SET arrays in Connecticut marshes to detect elevation changes. The LISS funded two research projects to study the ability of remote sensing technologies to detect changes to marsh flora, and the role nutrient loading may play in marsh loss. NYSDEC sponsored a regional workshop in June 2003 to bring together experts to assess common marsh impacts; a LISS-funded follow-up workshop in 2009 will build on data collected to formulate management options. From 2003-2007, the CT LIS Fund awarded grants for eight tidal wetland and coastal bird and finfish habitat research projects totaling \$164,787.</p> <p>In 2005, CTDEP provided funds to the U.S. Fish and Wildlife Service to conduct a trends analysis of selected salt marshes along the southwestern coast of the state to document habitat changes. Six study areas were located along the western shore of Long Island Sound in southwestern Connecticut: 1) Cos Cob Harbor (Greenwich), 2) Grays Creek (Westport), 3) Scotts Cove (Darien), 4) Five Mile River (Darien/Norwalk), 5) Greenwich Cove, and 6) Cainfield Island Cove (Norwalk). All study areas experienced a decline in low marsh from 1974 to 2004 and a gain in tidal flats, while all areas, except Cos Cob Harbor, also experienced a loss in high marsh. Canfield Island Cove was unique in that it had a small gain in open water (0.22 acres) and a gain in palustrine tidal wetland (0.31 acres).</p>
<p><b>16. A.</b> By 2004, complete research and monitoring studies into the causes of the lobster mortality event in Long Island Sound and</p>	Completed	None	<p>The Long Island Sound Lobster Steering Committee coordinated research on the causes of the lobster mortality events in 1997-1998. The studies culminated in a public research meeting in October 2004 that concluded the mortality event was the result of warmer water temperatures upon a stressed lobster population. Information is posted on the Long Island Sound Foundation website at: <a href="http://www.lisfoundation.org/lisf_pubs.php">http://www.lisfoundation.org/lisf_pubs.php</a> and on the New York Sea Grant website: <a href="http://www.seagrantsunysb.edu/lobster/article.asp?ArticleID=202">http://www.seagrantsunysb.edu/lobster/article.asp?ArticleID=202</a>.</p> <p>The DEC initiated in 2003 (and has been every year since then except 2005) a lobster monitoring survey that runs from June to November of each year and has put out a report titled, <i>Distribution, Movement, and Health of American Lobster in NY Waters With Emphasis on the Western Long Island Sound</i>. The Lobster Research Steering Committee produced a 5-year report <i>Responding To A Resource Disaster, 199-2004</i>, Steering Committee for Lobster Disease Research,</p>



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			2005.
<b>17. B.</b> identify any management measures that could be implemented to prevent future mortality.	Implemented & ongoing	None	<p>Connecticut instituted a lobster V-notch program that paid for lobsterman to mark and release female lobsters for future reproduction stock.</p> <p>Seasonal limitations proposed by NYSDEC have been met with very strong and negative reactions from the lobstermen, so no management measures specifically for preventing natural mortality have occurred. However, NYSDEC has increased the size-limits and successfully implemented a trap/tag buy-back program which limits the fishing effort in LIS. They also have initiated a voluntary V-notch program, as developed by CT, with the intent of making it stricter in the near future.</p>
<b>18.</b> By 2003, identify critical issues (in addition to those in actions IV. 1-3) related to the management and conservation of living resources (such as fish and birds) and their habitats, and develop strategies to improve conditions, as appropriate.	Completed	None	<p>CT DEP developed and adopted a Wildlife Management Plan encompassing the entire state and its portion of Long Island Sound.</p> <p>NYSDEC completed development of a Comprehensive State Wildlife Conservation Strategy (CWCS) in 2005 which identified 536 species of greatest conservation need (SGCN) statewide, and outlines recommendations needed for protection. NYSDEC developed the State Wildlife Grant (SWG) program to manage the federal money allocated to the implementation of the CWCS. This program provides funds for projects aimed at protecting these 536 SGCN through habitat restoration, research and monitoring, and adaptive strategies for ecosystem-based management of the state's natural resources. A list has yet to be compiled of LIS-specific projects funded from this program.</p>
<b>19.</b> By 2003, produce a list of the invasive species of concern in Long Island Sound.	Completed	None	The USFWS developed a draft list of invasives for the LISS in 2005. See <a href="http://www.seagrant.uconn.edu/INVLIST.PDF">http://www.seagrant.uconn.edu/INVLIST.PDF</a>
<p><b>20.</b> Restore at least 2000 acres of habitat and 100 river miles for fish passage during the ten-year period from 1998 to 2008 and monitor these sites to confirm restoration progress over time. In 2006 the goals were revised to:</p> <p>A. restore or protect an additional 300 acres of habitat and</p> <p>B. reopen an additional 50 river miles by 2011, with a long term goal of</p> <p>C. restoring 2,000 acres by 2020.</p>	Completed	# acres restored # miles opened	<p>As of June 2008, a total of 639 acres of coastal habitat has been restored and 142 miles of riverine migratory corridor has been opened to anadromous fish passage. In September 2006 the Policy Committee set new priorities, with a long-term goal of restoring 2,000 acres of coastal habitat by 2020 and restoring or protecting an additional 300 acres and 50 river miles by 2011. As of September 2008, the program has restored or protected 321 acres and reopened 45 river miles to fish passage.</p> <p>In 2007, NYSDEC held a Dam Safety Workshop for conservationists working on fish passage projects in an effort to make the environmental permitting process more understandable. This would avoid delays due to incomplete or incorrect permits.</p> <p>The projects in the first four years (2004-2008) of the Long Island Sound Futures Fund will, upon completion, open up 33 river miles for fish passage, and restore 242</p>

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			acres of critical fish and wildlife habitat including lakes, underwater grasses, woodlands, meadows, tidal wetlands, and park frontage.
<p><b>21.</b> By 2004, identify sites of outstanding and exemplary scientific, educational, or biological value.</p>	Completed	None	<p>Through the Long Island Sound Study's Stewardship Initiative, a team of federal, state and local government managers and environmental organizations identified 33 sites of exemplary scientific, education, biological or recreational value and these sites were adopted by the Policy Committee in September 2006 as the initial Stewardship Sites for Long Island Sound. Congress subsequently passed and the President signed the Long Island Sound Stewardship Act of 2006, P.L. 109-359, creating a new federal stewardship system and management process.</p>

**V. OPEN SPACE AND PUBLIC ACCESS**

**Assure continued public access to Long Island Sound for aesthetic, recreational, cultural, and historical purposes and continue to identify and acquire open spaces that are essential for the ecological health and balance of the Sound.**

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<p><b>22.</b> Continue state land protection initiatives to acquire ecologically and recreationally significant properties along the coast and increase public access opportunities to shoreline locations.</p>	<p>Implemented &amp; ongoing</p>	<p># acres under management</p>	<p>Connecticut continued its Open Space Grant program, awarding grants totaling more than \$35.1 million to preserve more than 5,494 acres from 2003-2007. Through the Recreation and Natural Heritage Trust Program the CTDEP, over the last 5 years, has purchased 9,819 acres of land valued at more than \$22.5 million to add to its State Park system.</p> <p>In 2007 Connecticut developed a draft <i>Connecticut Coastal &amp; Estuarine Land Conservation Plan</i> (CELCP). The <i>CELCP</i> is intended to serve as the state's blueprint for conserving coastal lands with significant ecological value that are threatened by conversion to uses that would degrade sensitive coastal resources. This plan will enable the state to nominate up to three coastal land acquisition project proposals to NOAA to compete for federal funding assistance through a NOAA-administered national CECLP grant program. See the website: <a href="http://www.ct.gov/dep/lib/dep/long_island_sound/coastal_management/celcp_plan.pdf">http://www.ct.gov/dep/lib/dep/long_island_sound/coastal_management/celcp_plan.pdf</a> for a copy of the draft plan.</p> <p>Since 2003, NYSDEC has acquired two separate parcels of land totaling five acres with a combined value of \$3.5 million in Mattituck Creek, which drains into LIS. The land was for recreational and wetland restoration purposes and was purchased using state EPF (Environmental Protection Fund) monies. An additional 0.5 acre was donated to NYSDEC. Currently NYSDEC is seeking to purchase 30 acres in the Conscience Bay Watershed (~\$6M) and about one acre on Flax Pond (~\$1.5M). Recently, another potential project has arisen involving 1.2 acres fronting Conscience Bay with a cost of about \$800,000.</p> <p>With LISS funding, a contractor developed and implemented a GIS-based coastal land assessment to identify unprotected and undeveloped parcels greater than 5 acres in size within NY's portion of the LIS watershed. This information will be incorporated into the state Open Space Management Plan and will help direct future land acquisitions.</p>
<p><b>23.</b> By 2003, identify a coordinated strategy for developing a Long Island Sound Stewardship System that: promotes conservation of open space, landscapes, and ecosystems; improves access to the Sound; establishes a listing of existing open space properties and prioritizes property types for natural resource conservation and natural resource-based outdoor recreation; incorporates the sites of outstanding and exemplary scientific, educational, or biological</p>	<p>Completed</p>	<p>None</p>	<p>The Policy Committee approved thirty-three inaugural Long Island Sound Stewardship Sites in September 2006. The Long Island Sound Stewardship Act of 2006 (P.L. 109-359) was enacted in October 2006, creating a federal/state/local partnership in managing key sites of exemplary scientific, ecological or recreational value. In 2008, EPA allocated \$900,000 of LISS funding for the acquisition of stewardship sites. The states of Connecticut and New York will administer the funds in coordination with the Long Island Sound Stewardship working group. In addition, EPA allocated nearly \$250,000 to develop a site prioritization and selection methodology to ensure that any considered for management meet appropriate selection criteria.</p> <p>Under the auspices of the LISS, the Long Island Sound Futures Fund has</p>

**V. OPEN SPACE AND PUBLIC ACCESS**

**Assure continued public access to Long Island Sound for aesthetic, recreational, cultural, and historical purposes and continue to identify and acquire open spaces that are essential for the ecological health and balance of the Sound.**

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value identified by Action IV. 7; and promotes federal, state, local, and private funding for open space projects.			<p>supported four projects to create in-depth profiles of stewardship initiative development within individual watersheds to inform the strategy for developing the LIS Stewardship system.</p> <p>CTDEP participated in prioritizing properties for natural resource conservation and resource-based recreation through CTDEP's Coastal Land Assessment Methodology (CLAM).</p>

## VI. WATERSHED MANAGEMENT

**Assure a viable Long Island Sound watershed that supports vibrant and healthy aquatic life, and minimizes the negative effects of erosion, sedimentation, and flooding on the Sound and its tributaries and embayments.**

2003 Agreement Action Item	2008 Status	LISS Indicator	2003-2008 Progress Highlights Summary
<p><b>24.</b> By 2010, Connecticut and New York will work toward a goal of having 50 percent of their respective areas in the watershed developing or implementing watershed restoration strategies.</p>	<p>Implemented &amp; ongoing</p>	<p>% watershed area</p>	<p>As of summer 2007, approximately 30% of the Long Island Sound watershed in Connecticut and New York were in the process of implementing a watershed restoration plan or strategy, with an even higher percentage of municipalities working to develop a strategy while implementing watershed projects. In New York, approximately 24% of the respective watershed is implementing a management plan while another 8% are in the development stages. In Connecticut, approximately 20% of the watershed is implementing a plan, while 10% are in the development stages. (see Attachment 4)</p> <p>CTDEP has committed its state watershed coordinators to work with watershed organizations, private non-profit groups and municipalities in the major watersheds of Connecticut to develop and implement watershed restoration strategies and plans. From 2003-2007, two watershed based plans have been funded and completed (Cognichaug &amp; Niantic River watersheds), three watersheds have initiated full watershed-based plans (Broad Brook, Park River North Branch, and Steel Brook), and one watershed has begun developing a watershed based planning effort (Little River).</p> <p>The Long Island Sound Futures Fund grant program has funded 14 watershed planning exercises in New York and Connecticut that will result in teeing up multiple restoration projects within individual watersheds and will inform strategic watershed initiatives.</p>
<p><b>25. A.</b> By 2003, Connecticut and New York will identify the amount of impervious surface in their respective portions of the watershed, based on available land use/land cover data.</p>	<p>Completed</p>	<p>% impervious surface</p>	<p>In 2003, the LISS funded a project by the University of Connecticut's Center for Land Use and Education Research (CLEAR) to investigate the percentage of area covered by impervious surfaces in the Long Island Sound watershed. Between 1985 and 2002, New York saw a 2.69% increase in development and a 9.53% increase in impervious surfaces in the New York portion of the watershed. In Connecticut during the same period, impervious surfaces had increased by 22%. In 2003, Connecticut had more than 540 square miles of impervious surfaces, nearly 11% of the state's land area.</p> <p>UConn's Nonpoint Education for Municipal Officials program, together with the National Oceanic and Atmospheric Administration (NOAA) Coastal Services Center, developed the Impervious Surface Analysis Tool to assist states and municipalities in determining the amount of impervious surfaces in their respective watersheds. (See <a href="http://www.csc.noaa.gov/crs/cwq/isat.html">http://www.csc.noaa.gov/crs/cwq/isat.html</a> )</p>
<p><b>26. B.</b> Through watershed planning efforts the states will encourage municipalities to adopt limitations on impervious surfaces, with an overall goal of minimizing increases in impervious cover to a rate consistent with population change</p>	<p>Implemented &amp; ongoing</p>	<p>% change in impervious surfaces by state</p>	<p>The LISS-funded impervious surface mapping project provides a standardized basis by which to compare changes in impervious surface into the future, as well as an opportunity to study how these changes relate to population growth, water quality, and other factors of interest to LIS managers. The states are continuing to work with the watershed planning organizations in promoting the benefits of limiting impervious surfaces in their jurisdictions.</p> <p>In 2006, Connecticut's Governor formed the <i>Office of Responsible Growth</i> that will</p>

## VI. WATERSHED MANAGEMENT

**Assure a viable Long Island Sound watershed that supports vibrant and healthy aquatic life, and minimizes the negative effects of erosion, sedimentation, and flooding on the Sound and its tributaries and embayments.**

2003 Agreement Action Item	2008 Status	LISS Indicator	2003-2008 Progress Highlights Summary
			<p>create and chair an <i>Interagency Steering Council</i> charged with developing support and incentives for communities to engage in regional planning, to update zoning maps and ordinances, and build the capacity of municipal staff, boards and agencies to make complex land-use decisions. The Council will update the "Green Plan" for Connecticut to better identify sensitive ecological areas and unique features, guide acquisition and preservation efforts, and support local build-out maps and assessments.</p> <p>Connecticut developed and is implementing the first Impervious Cover Total Maximum Daily Load for the Eagleville Brook watershed in Storrs, with the potential for transferability to other watersheds.</p> <p>Protection and restoration of riparian areas and limitations on impervious surfaces in New York State are addressed at the municipal level through comprehensive watershed planning efforts supported by NY Department of State (NYS DOS). NYSDOS and NYSDEC worked together to develop a watershed planning guidebook and accompanying video to provide guidance to communities developing watershed management plans.</p>
<p><b>27. A.</b> By 2004, Connecticut and New York will assess the amount of riparian forest buffer in their portions of the watershed using available land use/land cover data.</p>	<p>Implemented &amp; ongoing</p>	<p># of riparian buffers</p>	<p>The LISS funded a project in 2005 with the University of Connecticut's CLEAR program to assess the riparian buffer areas in the Long Island Sound coastal watershed area in Connecticut and New York. The project was completed in 2007 and provides data necessary for management purposes.</p> <p>The LISS funded a project in 2005 with Columbia University to develop an on-line toolbox of riparian buffer resources for municipal officials. The website provides municipal officials and the public with easy access to educational brochures and scientific information regarding riparian buffers, which are essential to reducing nonpoint source pollution to Long Island Sound. The website address is: <a href="http://www.hydroqual.com/projects/riparian">http://www.hydroqual.com/projects/riparian</a>.</p>
<p><b>28. B.</b> Through watershed planning efforts, the states will encourage the establishment of targets to expand the percentage of riverine miles with forested buffers.</p>	<p>Implemented &amp; ongoing</p>	<p>None</p>	<p>The LISS funded the Connecticut Rivers Estuary Regional Planning Association in 2004 to develop a GIS-based map of riparian buffers along the main stem and major tributaries of the lower Connecticut River, including the creation of a linked parcel and ownership database for all properties adjacent to the river, as well as existing protected, developed, and undeveloped land. GIS maps identifying protection and restoration opportunities were developed and are available to all lower Connecticut River communities for management purposes.</p> <p>The LISS funded the Tidewater Institute in 2007 to create and facilitate, using the data and toolbox resources developed by UConn and Columbia, the adoption of effective riparian regulations that will protect and restore riparian buffers within the eight-town Gateway Conservation Zone located in the CT River estuary.</p> <p>These projects may assist the states in encouraging localities to establish targets to</p>

**VI. WATERSHED MANAGEMENT**

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			expand riverine corridors throughout the Long Island Sound watershed. For example, in Connecticut, six watersheds have included targets for forested riparian buffers in their watershed-based plans.

**VII. PUBLIC EDUCATION AND COMMUNITY INVOLVEMENT**

**Promote an informed and educated constituency involved in community decisions affecting the ecological health of Long Island Sound and its living resources.**

2003 Agreement Action Item	2008 Status	LISS Indicator	2003-2008 Progress Highlights Summary
<p><b>29.</b> Continue to report every two years on the health of Long Island Sound through ecological indicators, including measures of living resources, water quality, landscape changes, and community involvement.</p>	Complete	None	<p>The Long Island Sound Study produces <i>Sound Health</i>, a report on the status and trends of environmental indicators of the health of the flora and fauna of the Sound, every two years. <i>Sound Health</i> 2008, 2006 and 2003 were produced during this period. More than 450,000 copies of the publication are distributed around the Sound, informing the public and providing valuable information on the health of Long Island Sound. The Study also produces every other year from <i>Sound Health</i>, a report entitled <i>Protection and Progress</i>, which details management actions taken to address critical ecosystem problems identified in the CCMP or by the Management Conference. Both reports are available on the Study website, <a href="http://www.longislandsoundstudy.net">http://www.longislandsoundstudy.net</a>.</p> <p>CTDEP reports on LIS indicator metrics through its annual "Results-based Accountability" report to the Connecticut General Assembly and through the Annual Report of the Council on Environmental Quality.</p>
<p><b>30.</b> Continue to support efforts to develop and establish Long Island Sound curricula for primary and secondary schools through grant programs such as the LISS Small Grants Program.</p>	Implemented & ongoing	None	<p>The Long Island Sound Futures Fund Small Grant program has supported five projects that focus, in part, on curriculum for primary and secondary schools in Connecticut and New York.</p> <p>Among other education grant projects, the CTDEP LIS Fund, in 2006-2007, funded the Housatonic Valley Association to produce a 'Sound Science' curriculum to be used in the towns in their watershed. This curriculum is also able to be used by other Connecticut schools in their respective watersheds. CT Education standards include Long Island Sound curricula requirements for all sixth graders.</p> <p>CTSG produced LIS Educational Resources CD in 2006 for formal and informal middle and high school teachers; 1500 copies distributed to date. The booklet, <i>Living Treasures</i>, was translated into Spanish in 2007; distribution is underway; Since 2002, the LIS Mentor Teacher Program has reached 166 Connecticut educators in 47 towns, who in turn work with nearly 12,000 K-12 students. A multi-media resource for teachers containing "tried and true" activities for K-12 on LIS is in development by CTSG. CTSG is collaborating on a national project to develop web-based activities for students and teachers on aquatic invasives (Nab the Aquatic Invader).</p>
<p><b>31.</b> Through the use of initiatives such as Project WET, Project SEARCH, the Long Island Sound License Plate Program, and the LISS Small Grants Program, offer Long Island Sound field and learning experiences to as many school children as possible, with a goal of reaching 50 percent of the school children within the Connecticut and New York portions of the</p>	Implemented & ongoing	None	<p>The Long Island Sound Futures Fund Small Grants program has funded several field learning experiences for grades K-8 students annually from 2003-2008, including field trips, marsh walks, river science, ship-to-shore, as well as National Estuary Day events and annual beach cleanups for Coast Weeks.</p> <p>In 2007 Project WET (Water Education for Teachers) co-sponsored a Native Waters exhibit at the Mashentucket Pequot Museum teaching thousands of children and adults about Connecticut's watershed and its relationship to Long Island Sound.</p>



**VII. PUBLIC EDUCATION AND COMMUNITY INVOLVEMENT**

**Promote an informed and educated constituency involved in community decisions affecting the ecological health of Long Island Sound and its living resources.**

2003 Agreement Action Item	2008 Status	LISS Indicator	2003-2008 Progress Highlights Summary
watershed by 2010.			<p>Connecticut's project SEARCH program includes Long Island Sound curricula. During the period 1994-2007 SEARCH was successfully established in 150 Connecticut high schools. More than 400 teachers have been trained in SEARCH with more than 30,000 students participating over the past ten years. The SEARCH program also offers a summer research camp that has involved more than 200 high school students in projects related to the watershed and LIS. In 2007 summer research included a survey of a declining population of Alewife and Blueback Herring and an inventory and mapping of invasive plants and animals throughout Rocky Neck State Park located in East Lyme. Summer SEARCH students will complete a number of population counts and will monitor stream flow during the month of July. In addition they will also construct a permanent stream flow gauge at Rocky Neck State Park. (See <a href="http://www.projectsearch.org">http://www.projectsearch.org</a>)</p> <p>Connecticut's LIS Fund license plate program continued to fund education grants from 2003-2007 totaling more than \$365,000 for 25 projects.</p> <p>Every summer since 2004, The Friends of Flax Pond, Stony Brook University, and the NYS Department of Environmental Conservation have co-sponsored a week long intensive field-research initiative, known as the Flax Pond Summer Institute, for 20 people made up mostly of high school students and the general public. The LISS provided funding towards this program through the Long Island Sound Futures Fund.</p> <p>Brookhaven National Laboratory's Open Space Stewardship Program involves teachers and students (K-12) in various research projects, encouraging these students to become "environmental stewards" of their research area. In 2008, this program teamed up with LISS to involve students in research projects within LISS's stewardship sites along the north shore of Long Island, NY.</p> <p>NYSDEC has an ongoing outreach program, started in 2002, called I FISH NY, to introduce urban residents to aquatic resources around the State and within LIS watershed. I FISH NY offers classroom programs for grades 3 through 12, public events, and teacher trainings. Lessons cover topics such as fish identification, anatomy and adaptations, food web interactions, aquatic ecology, fishing techniques, rules and regulations, stewardship practices, invasive species, and more. DEC has partnered with New York Sea Grant in order to reach Long Island and New York City residents.</p>
<p><b>32.</b> By 2004, develop a public awareness campaign to help control the introduction, spread, and impact of invasive species.</p>	<p>Implemented &amp; ongoing</p>	<p>None</p>	<p>CTDEP has partnered with other agencies and organizations to develop a Non-Native Invasive Plant Species Program. (see <a href="http://www.ct.gov/dep/cwp/view.asp?a=2702&amp;q=323492&amp;depNav_1641">http://www.ct.gov/dep/cwp/view.asp?a=2702&amp;q=323492&amp;depNav_1641</a> )</p> <p>The CT Sea Grant developed an invasives website, which is currently under revision and expansion (<a href="http://www.seagrants.uconn.edu/lisinv.htm">www.seagrants.uconn.edu/lisinv.htm</a>). The CT Sea Grant program also developed an Interstate Aquatic Invasive Species Management Plan that was</p>

**VII. PUBLIC EDUCATION AND COMMUNITY INVOLVEMENT**

**Promote an informed and educated constituency involved in community decisions affecting the ecological health of Long Island Sound and its living resources.**

2003 Agreement Action Item	2008 Status	LISS Indicator	2003-2008 Progress Highlights Summary
			completed in December 2007. The Plan includes identified priorities and actions for a public awareness campaign on the extent, impact and actions the public can take to address invasives in the watershed.
<p><b>33.</b> Expand the Citizen Advisory Committee to involve more constituencies and continue its role in evaluating CCMP implementation and supporting public awareness of Long Island Sound.</p>	Implemented & ongoing	None	Under its By Laws, the Citizens Advisory Committee (CAC) may seat up to sixty members of organizations with an interest in Long Island Sound. From 2003-2008 the CAC seated 10 new members, with a total membership average of thirty-seven, approximately equal between New York and Connecticut representation. The CAC is composed of a broad cross-section of environmental and educational organizations and institutions as well as representatives from local governments, industry and the user community such as boaters and fishermen, and other organizations with a significant interest in the health and protection of the Sound. LISS state and federal staff support the CAC and provide technical assistance and information as required by the members.

### VIII. PARTNERSHIPS

**Support the LISS Management Conference partnership in communicating and coordinating action to restore and protect the Sound among federal, state, interstate, and local governments, educational institutions, private nonprofit organizations, the regulated community, and the public.**

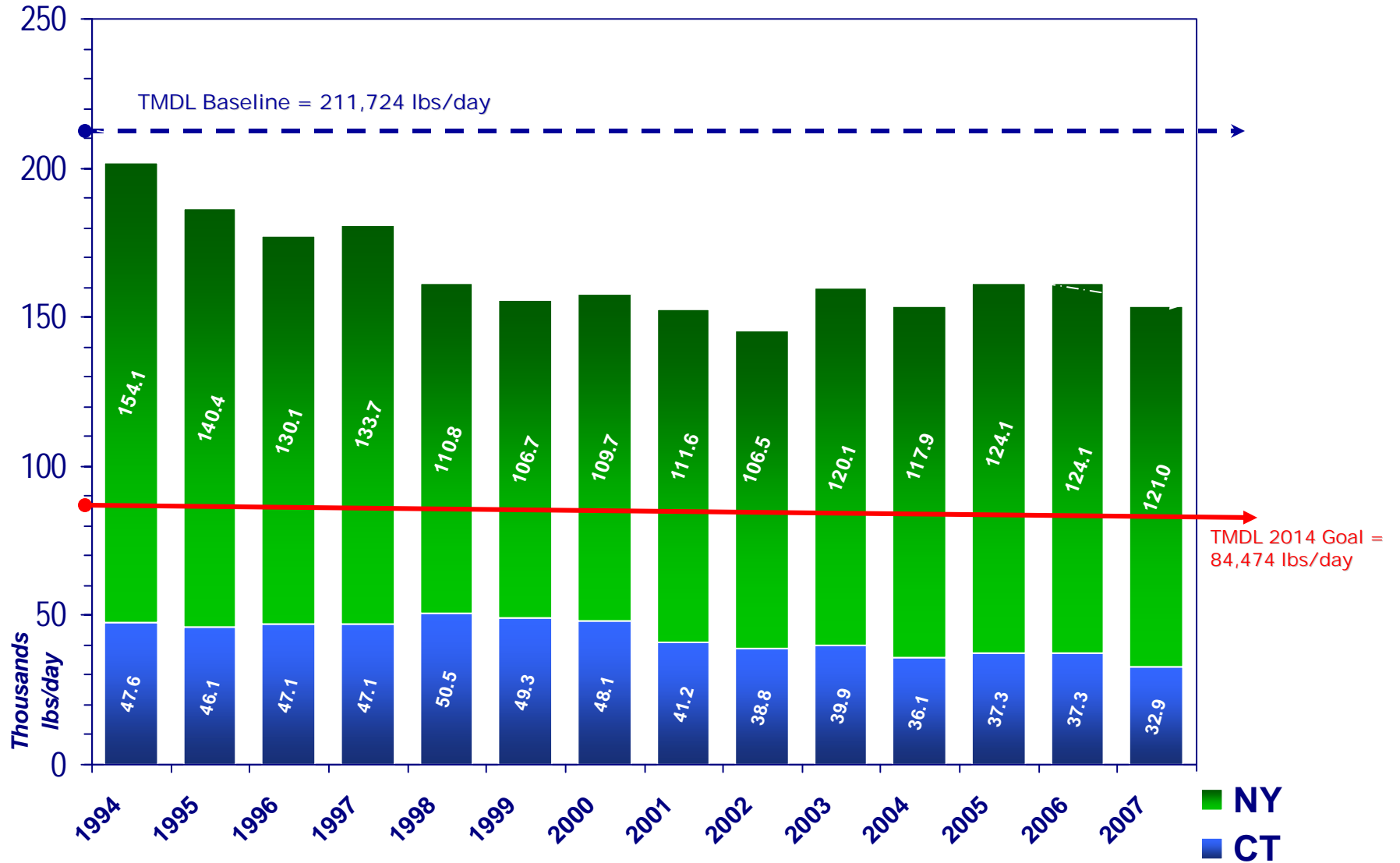
2003 Agreement Action Item	2008 Status	LISS Indicator	2003-2008 Progress Highlights Summary
<p>34. Continue federal and state support and continue to build partnerships at all levels to implement the CCMP for Long Island Sound and to effect the specific elements in this Agreement.</p>	<p>Implemented &amp; ongoing</p>	<p>None</p>	<p>The federal and state governments continued to meet as the Management Conference of the Long Island Sound Study and to provide resources and support to implement the CCMP. Both New York and Connecticut provide state funding through various state and federally-delegated programs, and additional personnel to support implementation of the CCMP and the restoration and protection of Long Island Sound. State personnel attend regular inter- and intra-state meetings and provide significant support to watershed groups and municipalities for developing watershed plans, nitrogen management plans, and regional management plans at the local municipal or county level.</p> <p>In 2008 Connecticut initiated Clean Water Fund increases for FY08-FY09 of \$600 million in project funding. The Long Island Sound Futures Fund Large Grants program pooled and leveraged funding totaling \$917,650 towards 24 projects focused on meeting the priorities of the CCMP. Federal funding partners under the LIS Futures Fund included: EPA, USFWS and NOAA. CTDEP, NYSDEC, NYCDEP, NY and CT Sea Grant, NEIWPC and IEC partner as technical advisors and reviewers for the grant program.</p>
<p>35. In 2002, provide support to the Scientific and Technical Advisory Committee and Citizen Advisory Committee to enhance their role in building and expanding partnerships.</p>	<p>Complete</p>	<p>None</p>	<p>The LISS has funded the Science and Technical Advisory Committee (STAC) and Long Island Sound Fellows program and has supported the Citizens Advisory Committee (CAC) meetings and other public forums such as the Long Island Sound Watershed Alliance public meetings. The STAC and CAC have met jointly several times to review progress and agree on mutual public and scientific priorities for the restoration and protection of Long Island Sound. Both organizations have continued to expand their membership base, seating new members of the scientific, management or public communities as appropriate.</p> <p>Both CTDEP and NYSDEC staff have provided technical support to the CAC and STAC from 2003-2007, and both states' technical staff and managers serve on the STAC, providing expertise and advice and assistance to the scientific and academic communities on the restoration and protection of the Sound.</p>
<p>36. Continue support for the EPA Long Island Sound Office at a level necessary to coordinate and achieve the goals in this Agreement.</p>	<p>Implemented &amp; ongoing</p>	<p>None</p>	<p>EPA has included the Long Island Sound program in its Strategic Plan for 2006-2011 under Goal 4: <i>Healthy Communities and Ecosystems</i>, Objective 4.3: <i>Restore and Protect Critical Ecosystems</i>, Subobjective 4.3.6: <i>Restore and Protect Long Island Sound</i>. EPA appropriations support the Long Island Sound Office, and the President's Budget includes resources for management of the program. The LISS Management Conference's federal, state and local partners provide invaluable support to the EPA Long Island Sound Office and to the program as appropriate.</p>
<p>37. By 2005, reconvene to assess progress</p>	<p>Implemented &amp; ongoing</p>	<p>None</p>	<p>The LIS Policy Committee, both state environmental commissioners and EPA's regional administrators met in New York in September 2006 to review progress in</p>

**VIII. PARTNERSHIPS**

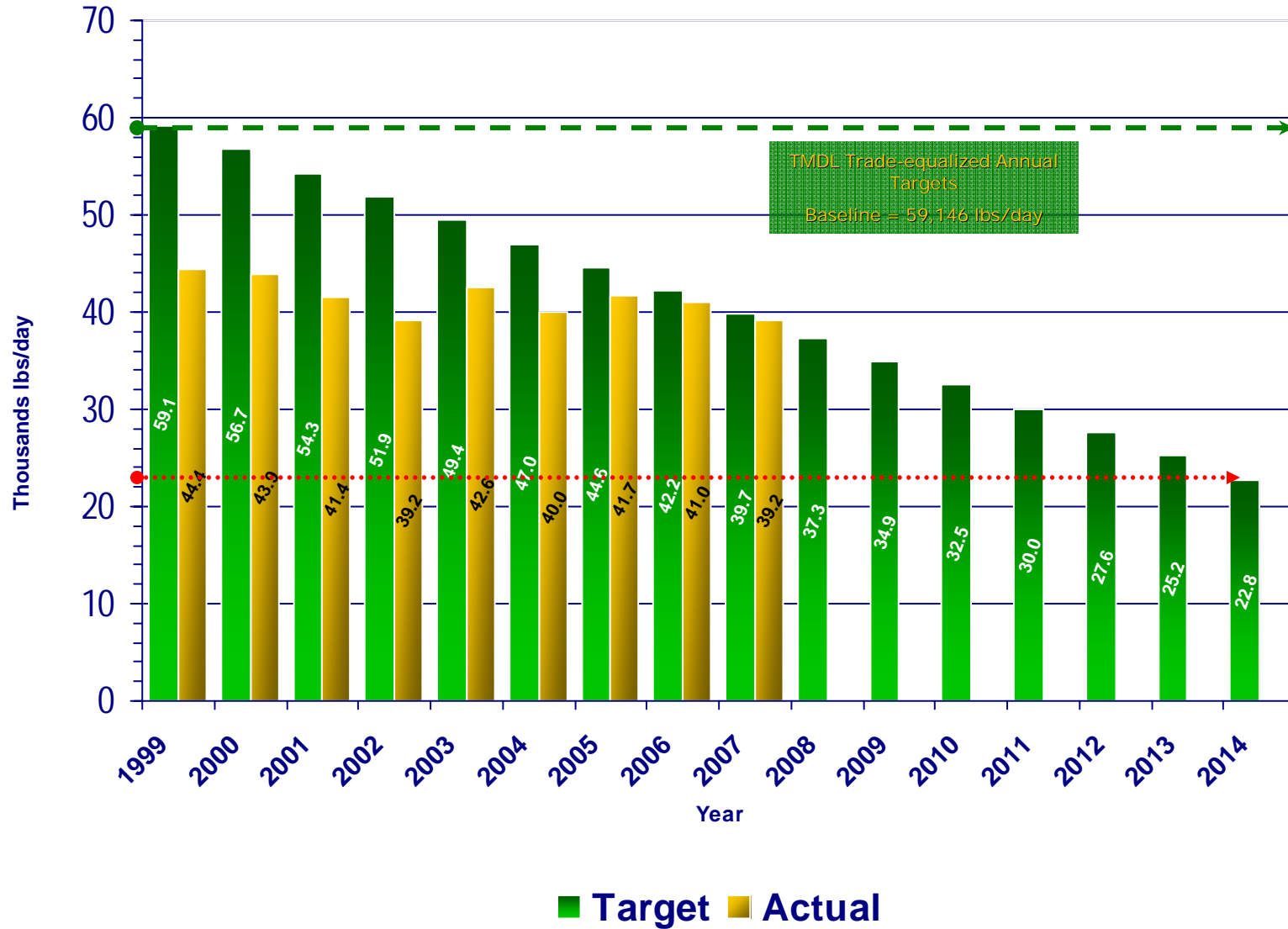
**Support the LISS Management Conference partnership in communicating and coordinating action to restore and protect the Sound among federal, state, interstate, and local governments, educational institutions, private nonprofit organizations, the regulated community, and the public.**

<b>2003 Agreement Action Item</b>	<b>2008 Status</b>	<b>LISS Indicator</b>	<b>2003-2008 Progress Highlights Summary</b>
toward meeting the CCMP goals and the targets in this Agreement and consider any additional actions necessary.			implementing the 2003 Agreement actions. The Policy Committee signed a Memorandum of Understanding for Habitat Restoration, as well as a directive calling for an evaluation of the management plan for hypoxia to assure that the states and federal government are on target to meet water quality standards for sufficient levels of dissolved oxygen in the Sound. The Committee also adopted the Long Island Sound Stewardship initiative inaugural sites, and authorized the dissolved oxygen benefit fund that will disburse \$6.0 million for research and restoration.

# Long Island Sound Point Source Nitrogen Loads 1994-2007 106 NY/CT STPs



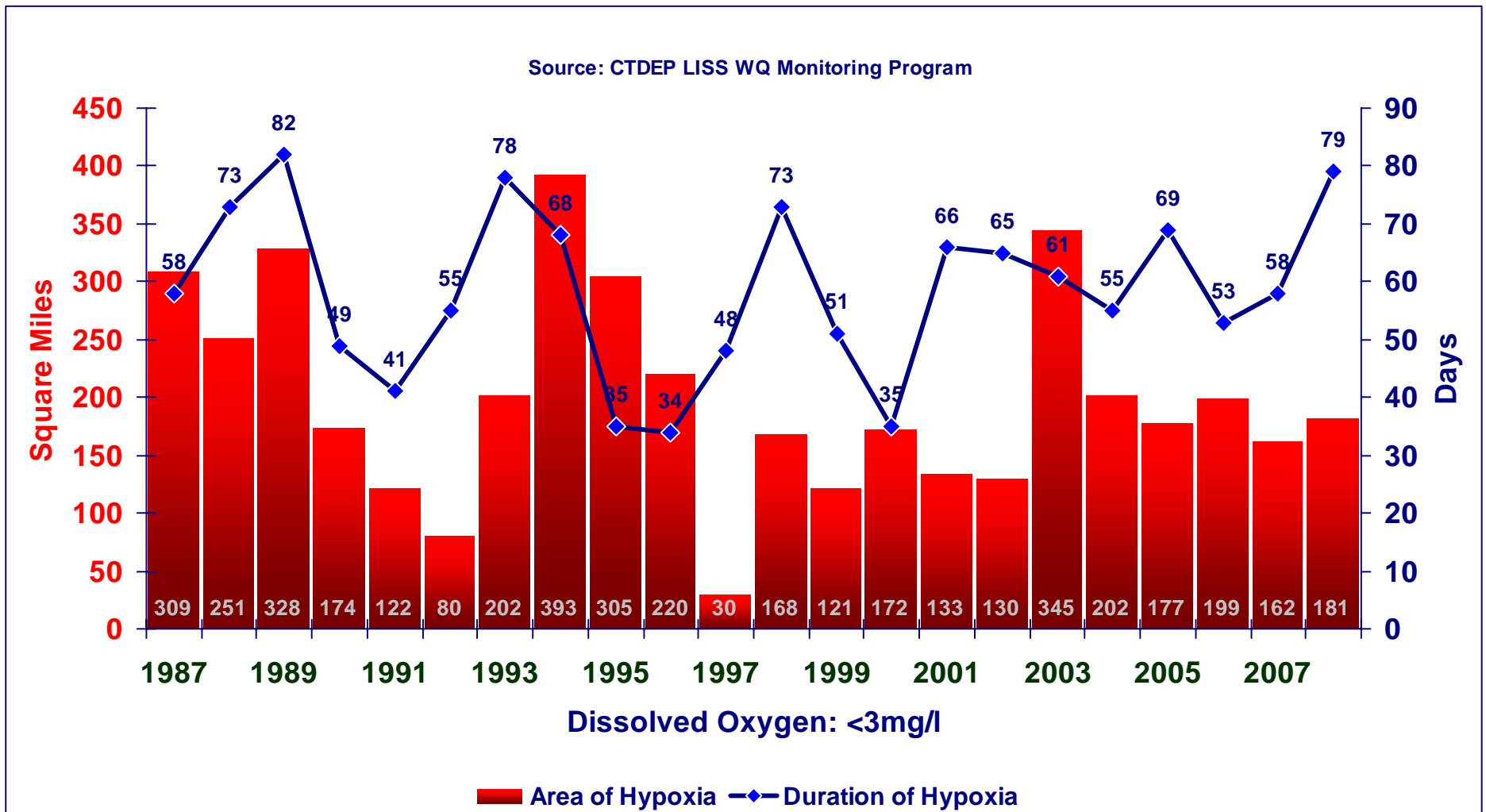
# Long Island Sound Trade-Equalized Point Source Nitrogen Loads 1999-2007 Actuals vs Targets 106 NY/CT STPs

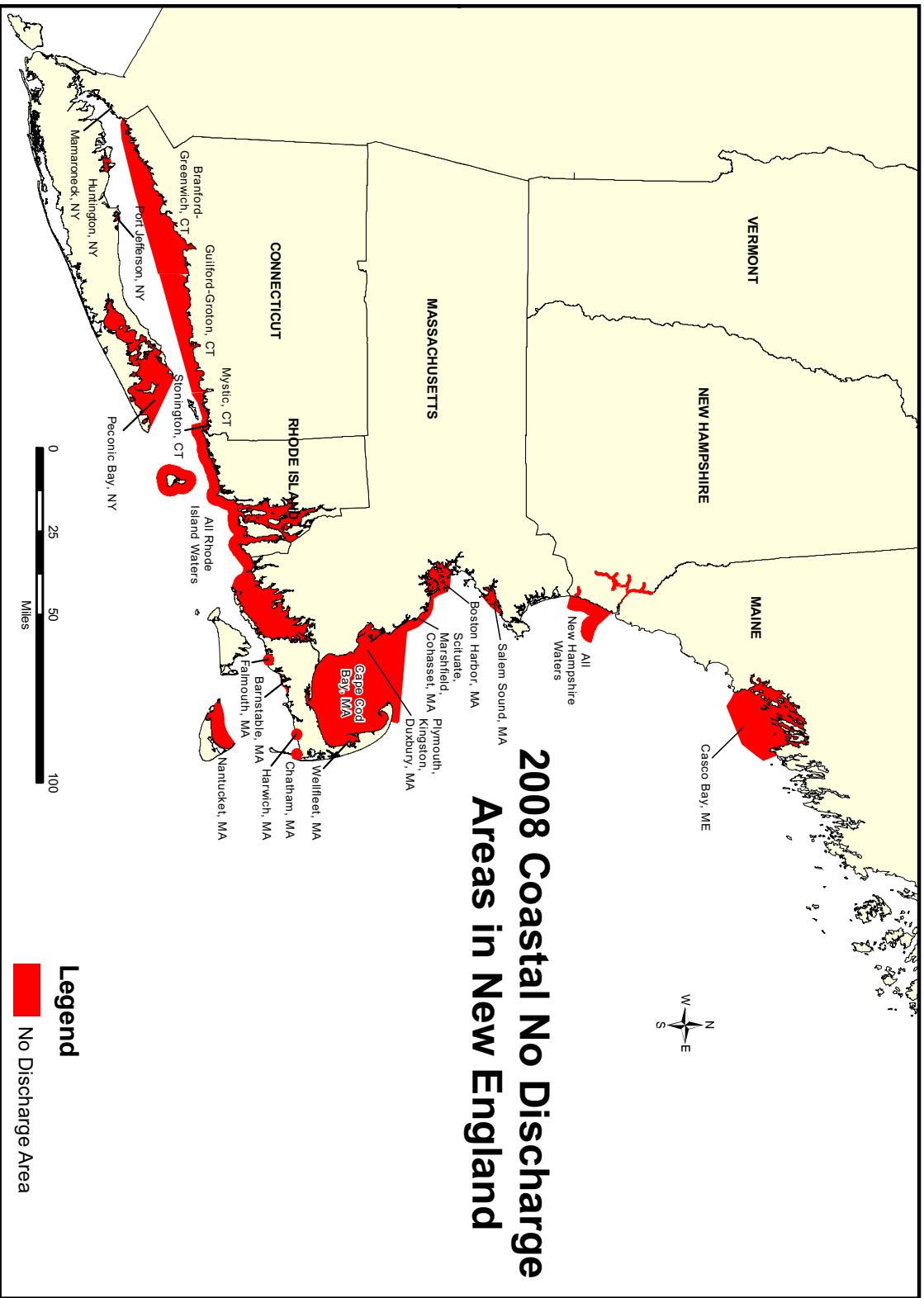


# Long Island Sound Study

## Maximum Area/Duration of Hypoxia

1987-2008 (June-September)







# Watershed Management in NY and CT



US EPA, Region 2, LISO  
Map Created 8/16/2007  
Gregory Mariano

This map reflects the management status of watersheds in NY and CT within the greater Long Island Sound Watershed.

Miles  
10



The 1st excel sheet has the CT watersheds while the 2nd sheet has the NY watersheds. The 3rd sheet is the heading key which describes what the headings mean and also, what each number and associated color on the map represents.

**Status:**

- 5: Actively implementing plan + strategy.
- 4: Actively working to develop plan + strategy and also implementing individual projects.
- 3: Complete plan but not actively implementing plan + strategy.
- 2: Actively working to develop plan + strategy.
- 1: Organization with goal of developing plan + strategy.
- 0: Fragmented projects

**Square Miles:**

Total Watershed Area in CT & NY: 5620.64735

CT = 4968.442362

NY = 652.204988

**Status Percentage of Overall study areas:**

5: 1066.970403 = 19%

4: 534.29034 = 9.5%

3: 210.665534 = 3.7%

2: 71.808401 = 1.3%

1: 77.210212 = 1.4%

0: 1517.90686 = 27%

Unknown: 431.784421 = 7.7%

Not Managed: 1677.755 = 30%