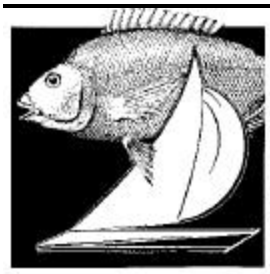

LONG ISLAND SOUND STUDY

A Partnership to Restore and Protect the Sound

THE LONG ISLAND SOUND STUDY

1998 TRACKING REPORT

January-December 1998

The Comprehensive Conservation and Management Plan

May 1999

INDEX

Overview

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This *1998 Tracking Report* **documents the fourth year of implementation of the** *Long Island Sound Study (LISS) Comprehensive Conservation and Management Plan (CCMP)* **for Long Island Sound (LIS). This Report summarizes the continuing work of the LISS** *Management Conference* **partners in carrying out the commitments and recommendations CCMP.**

The Management Conference is sponsored by the U.S. Environmental Protection Agency (EPA), the New York State Department of Environmental Conservation (NYSDEC), and the state of Connecticut Department of Environmental Protection (CTDEP). Additional partners include the:

- **Interstate Sanitation Commission (ISC);**
- **U.S. Army Corps of Engineers (ACOE);**
- **U.S. National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS);**
- **New York City Department of Environmental Protection (NYCDEP);**
- **U.S. Department of Agriculture Natural Resource Conservation Service (NRCS);**
- **New York Department of State;**
- **LISS Technical Advisory Committee (TAC); and, the**
- **LISS Citizens Advisory Committee (CAC).**

Many other federal, state, municipal academic, and local public and private organizations contribute to the CCMP. Among these are the: U.S. Department of the Interior's Fish and Wildlife Service (USFWS) and Geological Survey (USGS); U.S. Department of Agriculture's Cooperative Extension Service; the Connecticut Department of Agriculture Bureau of Aquaculture (CTDOA/BA); the New York State and State of Connecticut Departments of Health; the New York and Connecticut Sea Grant programs; the University of Connecticut (UConn); and State University of New York (SUNY).

Together, these Federal, state, local, academic and citizen partners combine their efforts to achieve the common CCMP vision for the long-term health, restoration, and economic well-being of Long Island Sound, its watersheds and tributaries.

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Executive Summary

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SUMMARY OF 1998 ACCOMPLISHMENTS

This year was most notable for the completion and signing of bi-state agreements on long-term nitrogen reduction targets and the establishment of habitat restoration goals. These agreements capped multi-year planning efforts, and significant progress in implementing the CCMP has been achieved by the Management Conference.

Nitrogen Loading Down

The states of New York and Connecticut have developed a draft Total Maximum Daily Load (TMDL) for human-caused nitrogen loading to the Sound. In the interim to the issuance of a final TMDL, both states have worked to reduce nitrogen loads from sewage treatment plants, and the trend is downward.

In 1998 the total point source nitrogen load to the Sound was 160,441 lbs/day; a decrease of 26,776 lbs/day from 1990 levels. The states and EPA are continuing their work to finalize and issue the TMDL in 1999, with the fifteen-year enforceable schedule slated to begin in August 1999.

Hypoxia Monitoring Continued

While nitrogen loading was reduced in 1998, the primary indicator of excessive nitrogen, low dissolved oxygen, (DO) (< 3mg/l) increased in the Sound in 1998. The maximum area of low DO in LIS was 477 square kilometers (km^2) (184 sq. mi.), with an overall duration of 73 days. This was up from 1997 levels of 57 km^2 (22 sq. mi.) and 48 days.

These conditions were thought to be caused by an unusually wet year due to El Ninõ, unusually warm water temperatures (+ 2° > avg.) in the Sound, and a persistent thermocline condition, which hindered mixing of waters, especially in the Western Sound.

Habitat Restoration Initiated

The States of Connecticut and New York made good progress in restoring critical habitat in 1998. Connecticut restored 45 acres of tidal wetland habitat, and treated over 100 acres of phragmites infested habitat; New York awarded over $1.2 million for four projects to restore tidal and freshwater wetlands. The LISS updated its Habitat Restoration Site map, selecting 373 sites for restoration – 228 in Connecticut and 145 in New York from the 450 nominated sites in both states. A total of 111 sites in both states have been designated as high-priority sites.

Addressing Toxic Contamination, Pathogens and Debris

The Management Conference is working to develop key background information needed to update the 1983 Interim Plan for Disposal of Dredged Materials in Long Island Sound. A report was issued in August 1998 on current approaches to dredged material management, which included options and recommendations for consideration by the Management Conference.

Connecticut is studying mercury in both sediments and fish in LIS. Both states continue their efforts to address vessel discharges, and increase support for pumpout stations and public access to pumpout boats in LIS embayments. The LISS continues its support for volunteer beach cleanups, recycling, and education and outreach programs for litter and debris, and the storm drain stenciling program.

Communities on and around the Sound are adopting watershed management-based approaches to controlling sources of pollution to the Sound, including point and nonpoint sources, CSOs, and land use practices. Many communities have formed watershed management committees or groups that cross local, municipal, or even state jurisdictions, to work together in addressing

environmental management problems that have no boundaries.

Reaching and Educating the Public

The LISS outreach and education programs conducted many meetings, conferences and workshops attended by hundreds of public officials and concerned citizens; produced and distributed thousands of copies of newsletters, publications, and brochures covering timely and critical LIS topics; arranged LIS displays at annual public events, such as the Norwalk Oyster Festival, Earth Day, and LIS Days in Connecticut and New York; addressed scores of teachers, educators, school children, groups and classes; and issued numerous press releases, made public service announcements, and gave radio and press interviews on issues of concern to LIS.

UNDERSTANDING THIS REPORT

The *1998 Tracking Report* **is organized into seven sections, each corresponding to the seven priority management areas identified in the CCMP:**

1) Hypoxia;
2) Pathogen Contamination;
3) Toxic Substances;
4) Floatable Debris;
5) Management and Conservation of Living Resources and Their Habitats;
6) Public Involvement and Education; and
7) Continuing the Management Conference.

Each section contains a brief narrative summary highlighting accomplishments of the Management Conference in that area in 1998.

The charts following each narrative section in this report correspond with the appropriate table in the CCMP for each priority area. For the purposes of tracking progress in this report, numbers have been assigned to each original CCMP action, e.g., H1-5 for Hypoxia, priority problem area number 1, action number 5, "Conduct feasibility studies and pilot demonstrations for nitrogen removal at 13 of 14 NYC STPs..."

The charts contain self-explanatory information on each of 232 action items identified in the CCMP, such as: ! *Responsible Parties*; **!** *Status*; **!** *Description*; **and !** *Upcoming Action* **for each of the seven identified priority management areas.**

The charts distinguish actions under each of the seven areas as either: *Ongoing Programs* **or** *CCMP Actions*. *Ongoing Programs* **support CCMP commitments through the continuing environmental programs of the Management Conference, such as state permitting, enforcement, or monitoring programs.**

*CCMP Action***s are specific activities described in the CCMP that directly implement the LISS, and are identified by** *Type* **as:** *NCommitment*; **or** *NRecommendation*. *Commitments* **are programs for which the CCMP identified existing funding sources;** *Recommendations* **are programs for which no existing funding streams had been identified.** *Estimated Cost* **is provided if the 1994 CCMP established projected funding for the proposed action item.**

CCMP Actions **with target dates are designated as: •Complete; •Ahead of Schedule; •On Schedule; •Behind Schedule; •Partially Addressed; •Not Initiated.** *Status* **for** *Ongoing Programs* **or continuing** *CCMP Actions* **is designated as: "Fully Met; "Substantive Progress; "Partial Progress; "Discontinued.**

Because of the inherent long-term nature of initiating and assessing the results of environmental restoration and improvement efforts, this report should be viewed as a one-year snapshot of accomplishments against the 232 actions identified in the CCMP. This report is not an expression of environmental results.

The LISS is endeavoring to expand upon a basic set of environmental indicators for Long Island Sound, with the goal of linking progress on the CCMP to actual environmental improvements. In this way, environmental results may be used to assess the effectiveness of CCMP actions, and the Management Conference will be in a better position to consider and adjust CCMP plans and actions according to the environmental results desired.

IMPLEMENTING THE PLAN – 1998

Of the 232 action items identified in the CCMP, 28 percent (65) are being carried out by the Management Conference partners as part of their ongoing federal, state or local environmental management programs. Substantive progress has been reported on the majority of *Ongoing Programs*. **The remaining 167** *CCMP Actions* **are identified as either specific** *Commitments* **(72) or** *Recommendations* **(95)**

Of the 72 *Commitments*, **approximately 65 percent are reported as** *Complete*, *Ahead of Schedule*, *Fully Met* **or** *Substantive Progress*; **approximately 32 percent are reported as** *Behind Schedule*, *Partially Addressed* **or** *Not Initiated*; **2 actions have been discontinued.**

Of the 95 *Recommendations*, **approximately 21 percent are reported as** *Complete*, *Ahead of Schedule* **or** *Fully Met*; **approximately 78 percent are reported as** *Behind Schedule*, *Partially Addressed* **or** *Not Initiated*; **one action has been discontinued.**

Continuing the Management Conference

Carrying out the CCMP is the combined responsibility of the Management Conference partners. Through their ongoing programs and operations, and through Federal, state, local, and private LIS funding initiatives and activities, CCMP priorities are assessed and implemented.

Strategy:

The essential element of the CCMP implementation strategy was to continue the Management Conference partnership in carrying out the CCMP. There are 13 actions to address this strategy, many of which have been accomplished, and which were key to the viability of the LISS partnership. Federal legislation in 1990 created the EPA Long Island Sound Office to bridge the bi-state, multi-agency and public/private stakeholder efforts to restore and protect the Sound. The 1994 Long Island Sound Agreement, signed by the Governors of New York and Connecticut and the EPA Administrator, formally committed the agency and the states to the Management Conference as a primary means of coordinating CCMP work to restore and protect LIS. The Clean Water Act was amended in 1996 to extend the Management Conference and authorize continued federal funding.

Highlights:

- **The Management Conference endorsed the Phase III Hypoxia agreement and recommended Policy Committee approval of the agreement. The Policy Committee signed the agreement in February 1998. The agreement establishes a framework to address the most significant environmental problem identified in Long Island Sound – low dissolved oxygen conditions.**

- **The Citizens Advisory Committee reviewed, commented on and made recommendations to the Management Committee concerning the draft nitrogen TMDL for LIS. The CAC comments were incorporated into the revised draft TMDL, which was then circulated to stakeholders for comment.**

- **The Management Committee agreed to a quarterly schedule of meetings beginning in January 1999. Future meetings will follow the quarterly CAC meetings, which will enable the Management Committee to more quickly consider and respond to issues identified by the CAC.**

- **The USDA Natural Resource Conservation Service was added as a member of the Management Committee in 1998. The New York and Connecticut Sea Grant programs will be added to the Management Committee in 1999. This will enhance the LISS ability to communicate and address issues of concern to LIS stakeholders.**

- **The Management Committee is exploring options to increase local and municipal participation in the work of the Conference in 1999. The Management Committee formed a membership subcommittee to address membership issues and to make recommendations to the full Committee on appropriate local/municipal participation.**

SUMMARY OF MANAGEMENT ACTIONS: CONTINUING THE MANAGEMENT CONFERENCE

1. SUPPORTING IMPLEMENTATION (CCMP TABLE 50, P. 141)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
M1-1.Formally extend the Management Conference for a minimum of five years to continue coordination and oversee implementation of the management plan. The Citizens Advisory Committee will remain part of the Management Conference structure.	C	EPA Administrator	Initiated upon approval of the plan. Completion date July 1, 1994.	Redirection of base program	Fully Met	The 1994 Long Island Sound Agreement committed the EPA and states to continue the Management Conference. Section 119 of the CWA was modified in 1996 to extend the Management Conference and authorize continued funding.	
M1-2.Continue and expand the role of the EPA Long Island Sound Office, consistent with the requirements of the LIS Improvement Act of 1990. Funding is available in FY 1994, but will be required in future years.	C	EPA Regions I and II	Ongoing. The office has facilities in Stamford, CT and Stony Brook, NY	Operational costs approximately $175,000 per year	Substantive Progress	EPA has continued to provide support for Long Island Sound Office under Sections 119 and 320 of the CWA Act. In 1997, the LISS prepared a progress report on CCMP implementation and submitted it to EPA to assist in FY 1998 funding decisions. Based on its review, EPA decided to continue funding the LISS in FY 1998.	The administration has proposed funding for the Long Island Sound Office as part of its FY99 budget. The budget has yet to be acted upon by Congress.
M1-3.Continue state program coordination and involvement in the Management Conference. Funding is available in FY 1994, but will be required in future years.	C	EPA-LIS Office	Ongoing, starting in FY 1994.	$150,000 per year	Fully Met	The Management Conference has continued to provide funding support for state coordination efforts through FY 1997.	
M1-4.Maintain public involvement and education efforts with an added focus on local government involvement. Funding is available in FY 1994, but will be required in future years.	C	EPA-LIS Office	Ongoing, starting in FY 1994	$150,000 per year	Fully Met	The LISS has continued support its public outreach and education program. See the Public Involvement and Education section for details.	
M1-5.Establish delegation of authority to allow the EPA Long Island Sound Office to support projects of studies as authorized by the Long Island Sound Improvement Act.	C	EPA-Headquarters	Upon approval of the plan	Redirection of base program	Complete	Delegation of authority was authorized by EPA.	
M1-6.Advocate modification to Clean Water Act Section 320(g)(2) to allow the EPA to provide base funding through cooperative agreements to National Estuary Programs that complete their management plans.	C	CTDEP NYSDEC	Ongoing	Redirection of base program	Complete	EPA has provided post-CCMP funds to the Management Conference under Section 320 of the CWA. Legislation was passed in 1996 to allow EPA to fund the Management Conference's implementation of the CCMP using FY 1997 funds.	

KEY

1)Type: (O)n Going, (C)ommitment, (R)ecommendation, (N)ew (A)ction

2) Status for dated actions: Complete, Ahead of Schedule, On Schedule, Behind Schedule, Partially Addressed, Not Initiated
Status for ongoing programs and actions: Fully Met, Substantive Progress, Partial Progress, Discontinued

1. SUPPORTING IMPLEMENTATION (CCMP TABLE 50, P. 141)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
M1-7. Develop a coordinated monitoring plan to assess the effectiveness of implementation, considering innovative approaches and building upon existing programs.	C	LISS	Completed in early 1994	$25,000	Complete	A LISS monitoring workshop was held in 1993. The workshop integrated findings of the LISS to develop a comprehensive, Soundwide monitoring plan. Portions of the Monitoring Plan are being implemented.	The continued effectiveness of monitoring programs should be evaluated with a consideration of new technologies and approaches, especially moored, continuous data stations.
M1-8.Coordinate data management efforts between Long Island Sound and New York-New Jersey Harbor Estuary Program (HEP), including support for a systemwide data manager.	C	LISS and HEP Management Conferences	Funded for 1994	$25,000 per year from each program	Partial Progress	Both the HEP and LISS funded efforts to identify and load priority datasets into ODES. Now the focus of efforts is to make data available over the Internet.	
M1-9.Modify the current structure of the LISS as needed to oversee implementation of the plan.	C	LISS Management Conference	Completed by the end of 1994	Redirection of base program	Complete	The Management Conference has been refocused. The Citizen Advisory Committee has been expanded, the Technical Advisory Committee reestablished, and implementation teams and work groups have continued.	
M1-10.Ensure that the LISS is consistent with existing state coastal zone management (CZM) policies.	C	EPA	Concurrent with the submittal of the plan to the Governors of New York state and Connecticut	Redirection of base program	Complete	The LISS CCMP was judged to be consistent with the state coastal zone management policies.	
M1-11.Incorporate relevant elements of the plan into the state CZM program for federal consistency review.	C	CTDEP NYSDOS	Complete by the end of 1994	Redirection of base program	Substantive Progress	NYSDOS prepared a LIS Coastal Management Plan that incorporated water and habitat quality concerns identified in the LISS CCMP. CTDEP considers the LISS CCMP in carrying out its CZM policies. The CCMP was also incorporated in the Coastal Nonpoint Pollution Control Program in CT.	
M1-12.Continue to support and enhance data management, analysis and reporting.	R	LISS Management Conference	Ongoing	$200,000 per year	Complete	Data analysis and reporting of hypoxia monitoring by CTDEP, ISC, and NYCDEP have been expanded. CTDEP continued its monitoring activities and has made available all data to other state & federal agencies and interested private groups. In addition, a monitoring work group that involves citizen monitoring groups is working on a synthesis report.	CTDEP is storing data in the "ACCESS" computer program. This stored data will be implemented into STORET.

KEY

1)Type: (O)n Going, (C)ommitment, (R)ecommendation, (N)ew (A)ction

2) Status for dated actions: Complete, Ahead of Schedule, On Schedule, Behind Schedule, Partially Addressed, Not Initiated
Status for ongoing programs and actions: Fully Met, Substantive Progress, Partial Progress, Discontinued

1. SUPPORTING IMPLEMENTATION (CCMP TABLE 50, P. 141)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
M1-13.Prepare an annual progress report on implementation including recommendations to redirect efforts.	R	LISS Management Conference	Annually, starting one year after the plan is approved	$35,000 per issue; included under operational costs of LIS Office.	Substantive Progress	An FY95-96implementation report was prepared. Based on CAC recommendations the tracking report has been modified to a table format with direct reference to the CCMP. An Executive Summary and nitrogen loading summaries have also been added to the report.	The use of a database management program is being investigated for the FY98 report.

KEY

1)Type: (O)n Going, (C)ommitment, (R)ecommendation, (N)ew (A)ction

2) Status for dated actions: Complete, Ahead of Schedule, On Schedule, Behind Schedule, Partially Addressed, Not Initiated
Status for ongoing programs and actions: Fully Met, Substantive Progress, Partial Progress, Discontinued

Eliminating Adverse Impacts of Low Dissolved Oxygen in the Sound

The Long Island Sound Study identified low dissolved oxygen (hypoxia) as the most significant water quality problem in LIS. Since 1990, EPA and the States of Connecticut and New York have implemented a phased program that first capped, and will subsequently reduce, human-caused nitrogen loads to LIS over a 15-year period.

Strategy:

The CCMP identified a five part strategy to address the elimination of adverse impacts of low dissolved oxygen in the Sound: 1) reducing nitrogen from sewage treatment plants (STPs) and other point sources; 2) reducing nitrogen loads from nonpoint sources; 3) continuing management of hypoxia; 4) funding implementation of hypoxia management plans; and 5) monitoring and assessing hypoxia. There are eight Ongoing Programs and 35 CCMP Actions to implement this strategy.

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Highlights:

- **In July 1998, the LISS released** *Phase III Actions for Hypoxia Management,* **a bi-state agreement calling for a 58.5 percent reduction in human-caused (anthropogenic) nitrogen loads to the Sound over a 15 year period beginning in 1999. The agreement includes interim targets to achieve 40 percent of the goal in 5 years, and 75 percent of the goal in 10 years. This level of reduction is expected to reduce the maximum area of the Sound that is unhealthy for fish and shellfish by 75 percent, and the duration of unhealthy conditions in the Sound by 85 percent.**

- **The estimated nitrogen load from human activity in the LIS drainage basin that entered the LIS in 1998 is approximately 31,000 tons per year -- 8,000 tons below 1992 peak loadings. The 1997 estimated load was 35,100 tons.**

- **New York's point source nitrogen loading was 110,595 lbs/day. Connecticut's point source nitrogen loading was 49,846 lbs/day. The 1998 increase in Connecticut point source nitrogen load to LIS was due, primarily, to two factors. First, a very wet Spring increased the total annual discharge of Connecticut sewage treatment plants (STPs) by 6.7 billion gallons from 1997. Second, several STPs underwent system upgrades that temporarily affected their ability to remove nitrogen, causing a drop in removal efficiency of nitrogen per gallon of wastewater. The charts on the following pages show sewage treatment plant nitrogen load reductions in New York and Connecticut from 1990 to 1998.**

- **In 1998, the maximum area and duration of dissolved oxygen (DO) levels less then 3 mg/l in LIS was 477 km² (184 sq. mi.)and 73 days. Low (less than 5 mg/l) DO conditions began in late June.**

- **By the second week of July, hypoxia encompassed small areas in the Narrows and Western Basin of LIS. This early start of low dissolved oxygen was similar to the years 1993 and 1994, and was probably caused by mild winter conditions and warmer than average temperatures in June. The chart that follows shows the extent and duration of hypoxic conditions from 1987-1998.**

- **By the first week of August, DO readings of less than 2.0 mg/l were observed at 4 stations in the Narrows and 3 stations in the Western Basin. Two stations in the Narrows and Western Basin had severe DO conditions of less than 1.0 mg/l.**

- **Hypoxic conditions of less than 3.0 mg/l persisted through the first week of September. By late September, DO recovered to above 4 mg/l in the Western Sound and by early October DO recovered above 5 mg/l everywhere in the Sound.**

- **Two conditions were observed which, it is believed, were contributing factors to the severity of DO conditions in 1998: 1) the average surface temperature of LIS waters was 2ºC above 1997 temperatures; and 2) the thermocline in LIS persisted for a greater period of time than in 1997, which hindered mixing of waters, especially in the western Sound.**

- **New York awarded approximately $12 million in 1998 from a 1996 $200 million Clean Water/Clean Air Bond Act LIS set-aside to six sewage treatment plants (STPs) for projects to be implemented in 1999 -- New Rochelle; Hunts Point; Glen Cove; Oyster Bay; Kings Park, and Northport.**

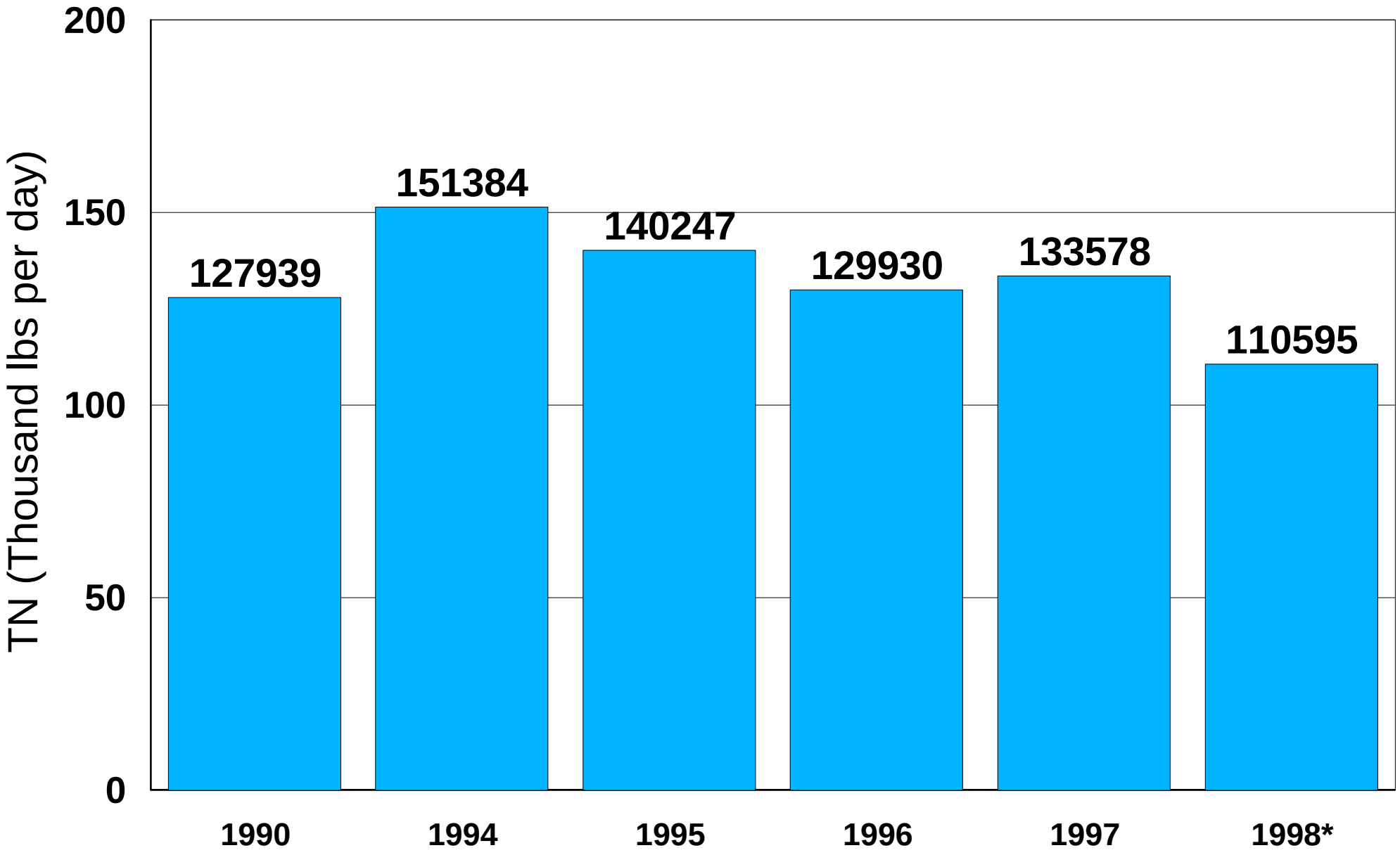
- **In 1998 Connecticut awarded $25 million for sewage treatment plant upgrades to benefit Long Island Sound, adding to the $250 million the state has awarded for such projects since 1996. Construction has begun on three full denitrification plants -- Norwalk, Waterbury, and New Canaan. Branford and Fairfield have completed planning for full-scale, long-term nitrogen removal. Connecticut has also initiated a *Quinnipiac River Nitrogen Control Project* to study nitrogen removal at the 5 plants discharging to that nitrogen-rich river.**

- **Connecticut proposed legislation to establish a statewide nitrogen trading program as a tool to achieve nitrogen reduction in the most cost effective manner.**

- **Both states continued to prioritize funding for nonpoint source pollution control projects benefitting the Sound. Funding for LIS related nonpoint control projects in Connecticut totaled $455,000 in 1998.**

- **The Norwalk River Watershed Initiative (NRWI) established in1997, developed and signed the Norwalk River Watershed Action Plan in October 1998. The Plan establishes goals and a Watershed Advisory Committee to guide Plan implementation.**

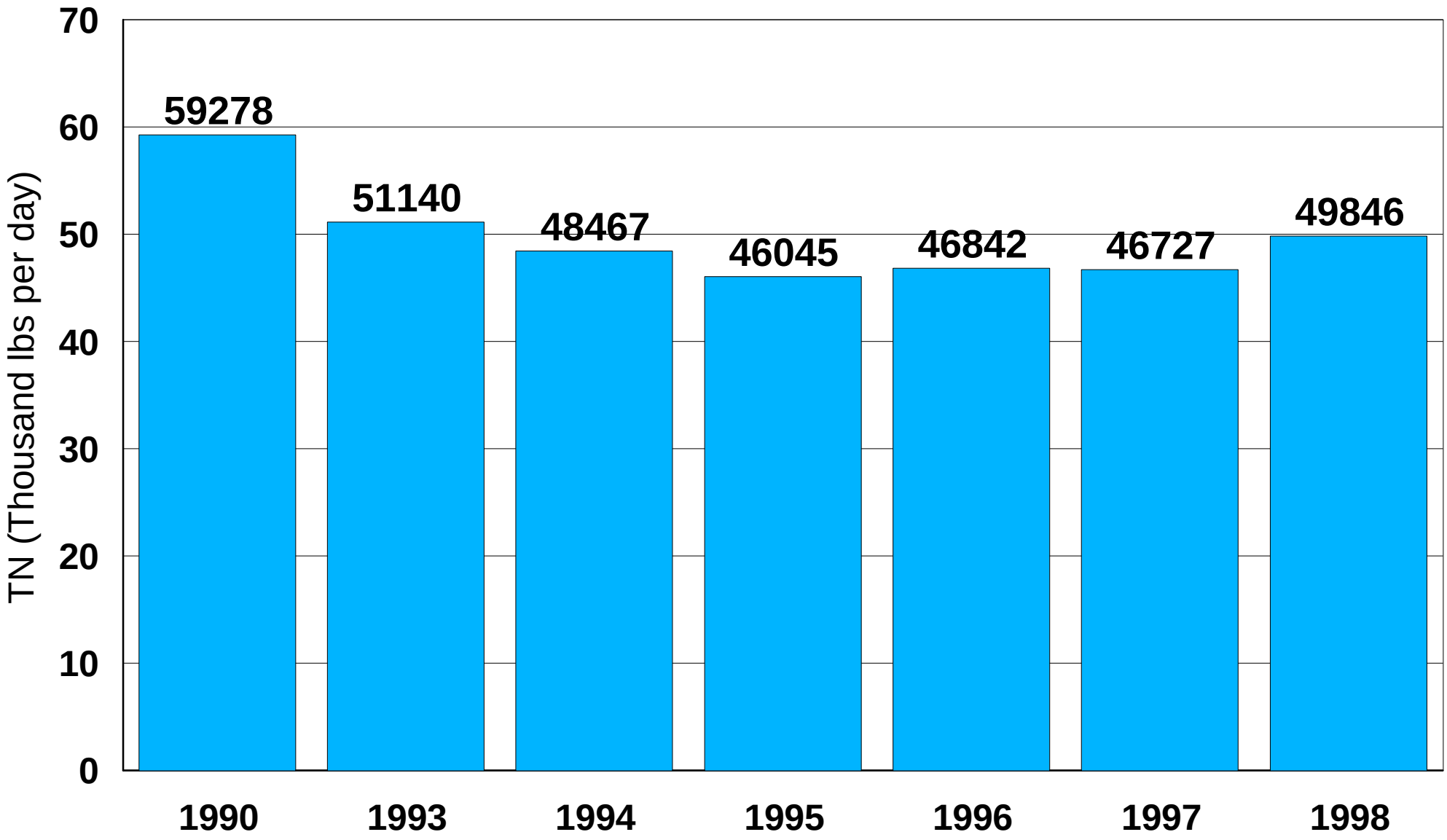
NY Point Source Nitrogen Load to Long Island Sound



These estimates include 20 municipal discharges

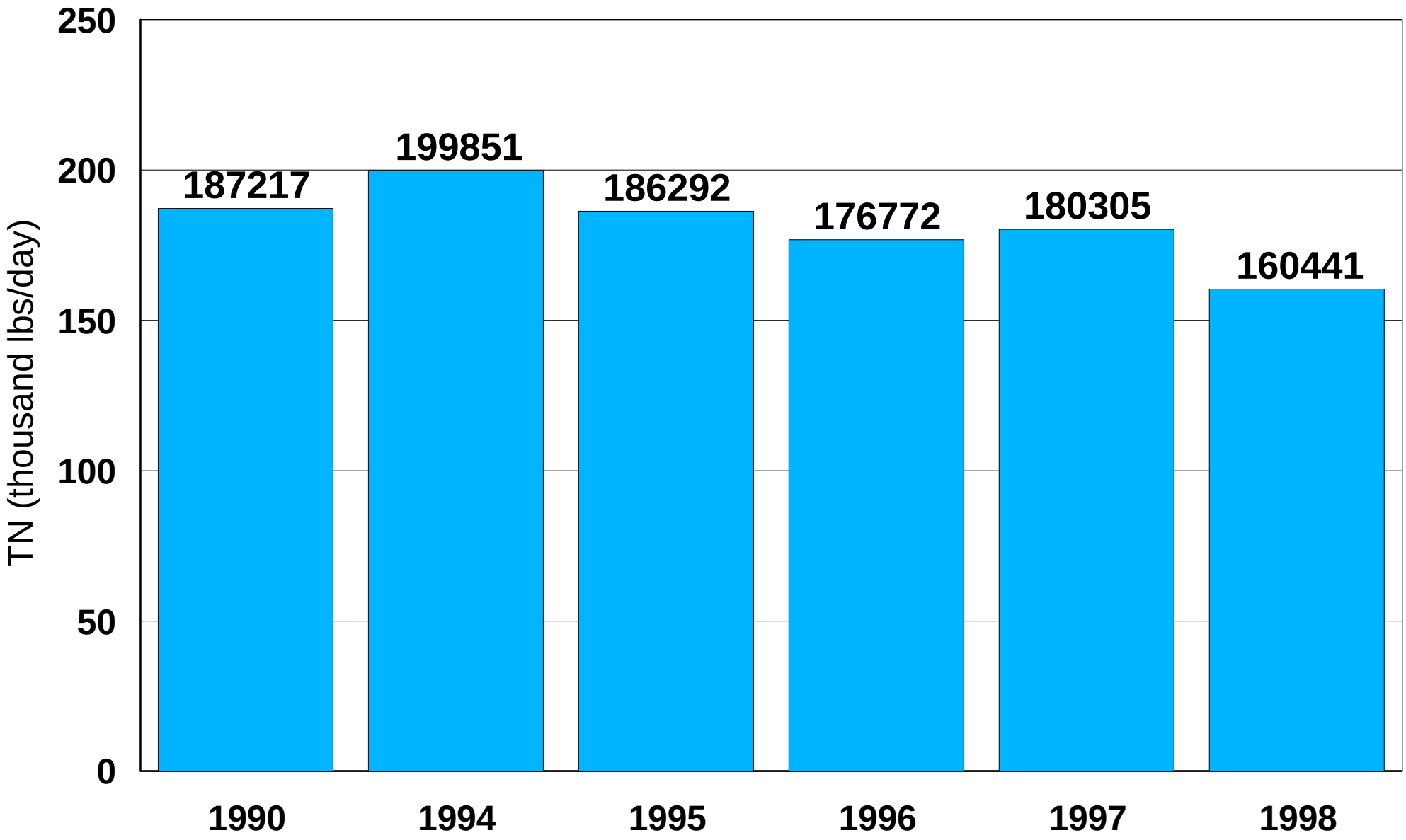
*12 month ave. to 6/30/98 for zone 9

CT Point Source Nitrogen Load to Long Island Sound



These estimates include 78 municipal, 4 state, 3 private, and 4 industrial discharges = 89

Total Point Source Nitrogen Load to Long Island Sound

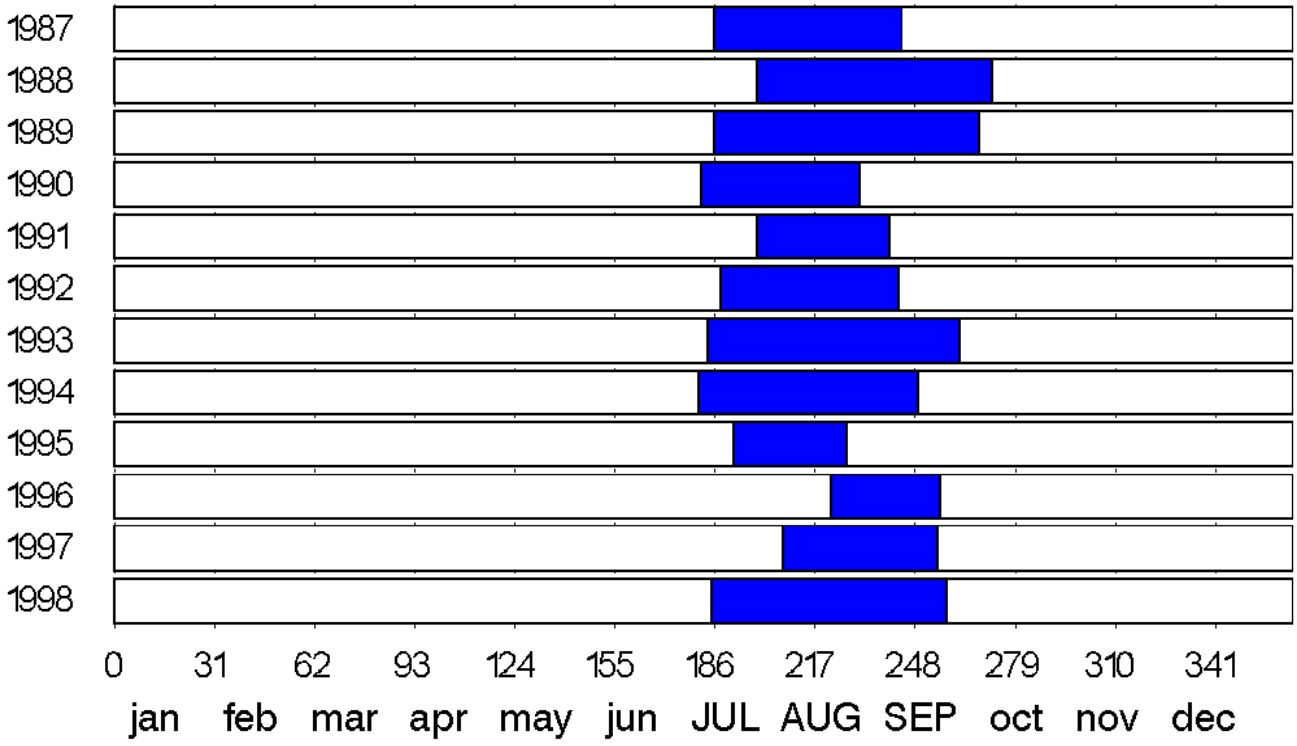


These estimates include 98 municipal, 4 state, 3 private, and 4 industrial discharges = 109

Timing and Duration of Hypoxia in Long Island Sound

1987-1990 University of Connecticut

1991-1998 Connecticut Department of Environmental Protection



SUMMARY OF MANAGEMENT ACTIONS: HYPOXIA

1. REDUCING NITROGEN FROM SEWAGE TREATMENT PLANTS AND OTHER POINT SOURCES (CCMP TABLE 4, P. 32)

Ongoing Programs	Responsible Parties	Status[2]	Description	Upcoming Action
H1-1. The states of New York and Connecticut will continue their point and non-point source permitting and enforcement programs as a primary mechanism of pollutant load reduction. Fundamental to the direction of these programs are the states' water quality standards and classifications that provide the basis for management policies and decisions.	CTDEP NYSDEC	Substantive Progress	In Connecticut, CTDEP has used this authority to implement nitrogen retrofits at sewage treatment plants, encourage full upgrades for nitrogen removal in Norwalk and Waterbury and reduce nitrogen loads at major industries. In New York, NYSDEC issued permits with nitrogen limits requiring compliance with 1990 "no-net-increase" load limits. Limits for the NYC STPs went into full effect on January 1, 1997. NYSDEC filed suit against NYCDEP in March 1998 for not meeting these limits.	New denitrifying facilities are planned for Branford (2001), Fairfield (2001), and New Canaan (1999)
H1-2. The state of New York will ensure compliance with the consent order to upgrade the Newtown Creek plant to provide secondary treatment with biological nutrient removal retrofit modifications.	NYSDEC NYCDEP	Substantive Progress	A two track facility plan for upgrading Newtown has been approved by NYSDEC. The plan is to provide 50% influent nitrogen removal either through step denitrification or through the use of biofilters. Estimated project cost is $2 B, with construction to be completed by 2010. A $12 million biofilter evaluation (4 mgd capacity) began operation in December 1996. In 1997, the biofilter was evaluated and final design for Phase I common elements was completed. The NYCDEP nitrogen control action plan identifying measures needed to ensure that "no-net-increase" and Phase II reductions are met for the Upper East River was approved by NYDEC in March 1999. Nitrogen effluent limits went into effect on January 1, 1997. The biofilter evaluation was completed and the results were submitted (October 1998).	NYCDEP has submitted a track III facility plan (cost $1.3 B) which would achieve secondary treatment at Newtown Creek and the NYCDEP would remove additional nitrogen at the four Upper East River plants to meet the original intent of the Newtown Creek consent order. The NYDEC is currently reviewing the track III proposal.
H1-3. The state of Connecticut will freeze nitrogen discharges and, if appropriate, explore opportunities to reduce nitrogen discharges at three industrial facilities with significant nitrogen discharges.	CTDEP	Fully Met	Upjohn is phasing out its operation. Pfizer has a new treatment facility with nitrogen loads less than half its baseline. Cytec is in permit revision.	

1. REDUCING NITROGEN FROM SEWAGE TREATMENT PLANTS AND OTHER POINT SOURCES (CCMP TABLE 4, P. 32)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
H1-4. The municipalities in the states of Connecticut and New York will implement biological nutrient removal retrofits to reduce the load of nitrogen to the Sound on an interim basis.	C	CTDEP	By 1995	$18.1 M	Complete	CT State Clean Water Fund awarded $15 M to retrofit 11 southwestern Connecticut sewage treatment plants. All the projects have been completed and have resulted in achievement of the Phase II reduction goal of 850 tons per year.	Keep running the facilities as designed under the Phase II retrofit program.

KEY: 1) Type: Commitment; Recommendation

2) Status for dated actions: Complete, Ahead of Schedule, On Schedule, Behind Schedule, Partially Addressed, Not Initiated
Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

1. REDUCING NITROGEN FROM SEWAGE TREATMENT PLANTS AND OTHER POINT SOURCES (CCMP TABLE 4, P. 32)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
		NYSDEC	1995 for 5 plants 1996 for 4 plants 2000 for centrate	$103.1 M	Substantive Progress	NYCDEP presented a comprehensive progress report on its efforts at a December 1998 session. Biological Nutrient Reduction (BNR) retrofits at upper East River facilities resulted in attainment of permit limits by July 1998. The total point source nitrogen load to LIS in 1998 was 160,441 lbs/day, well-below the 1990 target of 187,217 lbs/day. In CT, the point source load to LIS was 49,846 lbs/day; in NY the point source load was 110,595 lbs/day. Eight projects in six municipalities in NYS were awarded funding of $9 M from the Bond Act funds in early 1999.	Bond Act funds will continue to be awarded and more projects will be initiated.
H1-5. Conduct feasibility studies and pilot demonstrations for nitrogen removal at 13 of its [NYC] 14 sewage treatment plants, with actual design for Newtown Creek.	C	NYCDEP	1994-1998	$5 M	Complete	NYCDEP completed a Nitrogen Control Feasibility Plan in December 1998 to identify the feasibility of removing nitrogen from each of its 14 STPs.	NYCDEP will continue conducting pilot work to test new processes and technologies.
H1-6. Westchester County will investigate sludge rehandling at their four facilities to determine if opportunities exist for nitrogen load reduction.	C	Westchester County	1993-1994	$500,000	Complete	No opportunities exist for nitrogen reduction through sludge rehandling.	None
H1-7. The state of New York will continue to seek to reach agreement with Belgrave, Great Neck East Shore, Huntington, Oyster Bay, Port Washington, and Kings Park on permit modifications for implementing the *no net increase* in nitrogen policy.	C	NYSDEC	1994	Redirection of base program	Complete	Agreement was reached in August 1994 on an aggregate limit to freeze the loads at 1990 levels.	None

KEY: 1) Type: Commitment; Recommendation

2) Status for dated actions: Complete, Ahead of Schedule, On Schedule, Behind Schedule, Partially Addressed, Not Initiated
Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

2. REDUCING NITROGEN LOADS FROM NON-POINT SOURCES (CCMP TABLE 5, P.34)

Ongoing Program	Responsible Parties	Status[2]	Description	Upcoming Action
H2-1. The states of Connecticut and New York will continue to use their existing authority to manage non-point source pollution and appropriate federal grants such as CWA§ 319, 604(b), and 104(b) to carry out projects that will help prevent increases and, to the extent practicable, achieve reductions in the non-point source loads from high priority drainage identified in the CT and NY portions of the watershed.	CTDEP NYSDEC EPA	Partial Progress	CTDEP is working to implement broad non-point source controls that include nitrogen benefits. Currently, 82 active §319 projects are being implemented from FY94-99 grants, a watershed model is being developed, and a watershed program has been implemented with early emphasis on the Quinnipiac River. Watershed initiatives are being conducted for the Norwalk and Quinnipiac rivers and Sasco Creek. Twenty-three projects funded under §319 were completed in 1998. NYSDEC has completed §319 funded projects in Conscience Bay (Town of Brookhaven) and Goose Creek (Town of Southhold), and is implementing projects in Centerport Harbor (Town of Huntington) and Dyke Road (Town of Brookhaven). In addition, a §604(b) funded project is being implemented in Oyster Bay.	CTDEP will expand its watershed program and complete the watershed model. NYSDEC is awaiting response from Town of Oyster Bay on project design. A call for additional §319 projects is anticipated during 1999.
H2-2. The states of CT and NY are developing their coastal non-point source control programs, as required by § 6217 of the Coastal Zone Management Act.	EPA NOAA CTDEP NYSDOS	Substantive Progress	CTDEP has received conditional approval for its Coastal Non-point Source Control Plan (CNSCP). NYSDOS has completed its LIS Coastal Management program report. A LIS Coastal Advisory Commission has been created in NYSDOS.	CTDEP will be addressing conditions of the CNSCP. The NY plan is awaiting approval by the Governor. The LIS Advisory Commission will meet in Spring 1999 (see M1-1).
H2-3. The states of CT and NY will continue to implement general storm water permit programs to control the discharge of storm water from industrial, construction, and municipal activities, in accordance with EPA's national program regulations. These permits will regulate discharges from construction activity greater than five acres and from eleven industrial categories.	CTDEP NYSDEC	Substantive Progress	CTDEP has three general storm water permits (industrial, construction, and commercial) for which approximately 2000 registrants have been recorded. Presently, Stamford is the only community in CT that is required to have an individual storm water permit under the national program. NYSDEC has three general storm water permits (industrial, construction, and commercial).	EPA's Phase II storm water regulations will likely broaden storm water management in both states.
H2-4. The states of CT and NY will continue to implement their existing permitting programs, such as the inland and tidal wetland programs, to address non-point nutrient control with respect to LIS management needs, as appropriate.	CTDEP NYSDEC	Substantive Progress	Connecticut has virtually eliminated losses of existing tidal wetlands and has restored hundreds of acres in the past few years. Inland wetlands are strictly regulated based on restrictive soil categories with no minimum threshold size. The net area of vegetated tidal wetlands has increased in New York, partly due to the tidal wetlands permitting program.	
H2-5. The states of CT and NY will implement the requirements of the reauthorized Clean Air Act to achieve additional nitrogen emission controls. Major actions include reduction of nitrous oxide emissions through adoption of statewide enhanced vehicle inspection and maintenance programs and stricter emission controls for stationary sources such as power plants.	CTDEP NYSDEC	Partial Progress	CTDEP Air and Water Bureaus have been evaluating mutual ozone/nitrogen deposition needs. Nitrogen monitoring and research has been funded through UConn to detail sources and sinks of nitrogen and mercury. States, including CT and NY, have completed "NOx SIP Call" plans, which will result in significant nitrogen reductions from atmospheric sources to LIS and other East Coast estuaries.. NYS has adopted stricter standards for its automobile inspection program.	

KEY: 1) Type: Commitment; Recommendation

2) Status for dated actions: Complete, Ahead of Schedule, On Schedule, Behind Schedule, Partially Addressed, Not Initiated
Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

2. REDUCING NITROGEN LOADS FROM NON-POINT SOURCES (CCMP TABLE 5, P.34)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
H2-6. The EPA will make non-point source management of nitrogen and other pollutants identified by the LISS, through wetlands and riparian zone protection as well as best management practices implementation, high priorities for funding under §319, 104(b), and 604(b) of the Clean Water Act.	C	EPA	Annually starting in 1994		Substantive Progress	NYSDOS is soliciting applications for $4.5M in statewide 50/50 matching Environmental Protection Fund (EPF) grants for Local Waterfront Revitalization Projects. NYSDOS is focusing on EPF funds for planning and design projects. In addition to non-point source pollution control projects, activities may include restoration of former natural coastal areas or enhancement of existing natural coastal areas, stream corridor restoration plans, and designing public access improvements. EPA and CTDEP have awarded §319 funds for LIS non-point control projects in the following amounts: FY98: $455,000; FY97: $477,070	EPA and the states will continue to make NPS management of nitrogen and other LISS-priority pollutants a priority for funding under §319, §104(b)(3), and §604(b) of the Clean Water Act, taking into consideration the increased discretion the states have in directing grant funds under EPA's Performance Partnership Grant system. CTDEP expects to award over $1.0 M in FY 1999 §319 funds for NPS control projects.
H2-7. Investigate expansion of storm water permitting programs to regulate communities with populations fewer than 100,000 that border Long Island Sound within high priority management zones.	C	CTDEP NYSDEC	1994	Redirection of base program	Behind Schedule	The states are awaiting promulgation of Phase II Storm water Regulations for USEPA.	EPA is expected to publish final Phase II storm water regulations for smaller cities and construction sites in October 1999.
H2-8. In cooperation with the state of New York, Westchester County is developing a non-point source management plan that will include implementing best management practices for non-point source nitrogen control, monitoring their effectiveness and establishing a Westchester County management zone (or bubble) for assessing compliance with the nitrogen load freeze. The LISS will explore extending the bubble concept to other management zones throughout Connecticut and New York state portions of the Long Island Sound drainage.	C	NYSDEC Westchester County EPA	1993 - 1996	$500,000 one time cost	Behind Schedule	The second year of a 3-year effort of sampling has been completed in 1998 in the $370,000 project by Manhattan College to analyze nutrient and pathogen loads from the Mamaroneck River and Blind Brook. The work will better identify baseline and storm water non-point source loads that can be managed under the Westchester County management zone "bubble". Watershed planning is being initiated in Nassau and Suffolk counties to address local water quality concerns as well as nitrogen loads from these zones. In Nassau county, inter-municipal confederations of watershed communities around Hempstead Harbor and Manhasset Bay have been formed to control and abate non-point pollution in their respective water bodies. Hempstead Harbor Protection Committee released its Water Quality Improvement Plan in May 1998. The Manhasset Bay Protection Committee completed a draft report and released it during 1998.	Sampling will continue for one more year. NYSDEC may provide funding to Suffolk County to coordinate watershed planning effort. The Manhasset Bay Protection Committee expects to release its final report in the Spring of 1999.

KEY: 1) Type: Commitment; Recommendation

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Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

2. REDUCING NITROGEN LOADS FROM NON-POINT SOURCES (CCMP TABLE 5, P.34)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
H2-9. Westchester County will implement the recommendations of the County Executive's Citizens Committee on Non-point Source Pollution in Long Island Sound.	C	Westchester County, Local Government	1993 initiation and continuing	$200K/year for the first 3 years $600K for implementation	Substantive Progress	The Westchester County Department of Environmental Planning is coordinating establishment of six Watershed Advisory Committees (WACs) for subwatersheds within its LIS management area. WACs #3 and #5 have completed plans. $300,000 from NRCS is being used to support stream bank stabilization and storm water detention projects. Copies of reports for completed WACs are currently available. Work has begun on WAC #4.	A report on WAC #4 to be completed. Work on the remaining three WACs to begin.
H2-10. Point and non-point nitrogen load estimates will be made in the City of Stamford to assess feasibility of a point/non-point source *trading* program. A cost-effective mix of management options will be proposed that may be used to help decide how nitrogen reduction targets can be met once they are established.	C	CTDEP City of Stamford	1992-1994	$97,000 in EPA funds, 239,182 in match from Stamford and CH2MHill	Complete	Report completed by CH2M-Hill, the City of Stamford, and New England Interstate Water Pollution Control Commission. The information is being used to develop cost estimates for point source controls and to assess feasibility of non-point source management	None
H2-11. New York state will pursue the expansion of the State Building Code to include provisions for erosion and sediment control and storm water practices for all construction activities in order to prevent increases in non-point nitrogen runoff.	C	NYSDEC NYSDOS	1993-1994	Redirection of base program	Behind Schedule	A legislative proposal to change the Building Code has been developed by NYSDOS.	The proposal will not be heard during the 1999 legislature. NYSDEC will try to address this through its storm water provisions.
H2-12. Provide technical assistance to coastal municipalities to address impacts of hypoxia in their municipal regulations and plans of development, as required by law.	C	CTDEP	1993 and continuing	Redirection of base program	Substantive Progress	Public Act 91-170 mandated that coastal municipal zoning regulations and plans of development be established with regard to non-point source and potential pollution of coastal waters with specific reference to hypoxia, toxic contamination, pathogens, and floatable debris.	In CT, municipal outreach will be enhanced through updated workshop material s in support of the municipal best management practices manual. Intended audiences will be expanded to include municipal engineering and public works departments in addition to planning and zoning commissions to focus on implementation as well as planning, to reduce hypoxia conditions in the Sound.

KEY: 1) Type: Commitment; Recommendation

2) Status for dated actions: Complete, Ahead of Schedule, On Schedule, Behind Schedule, Partially Addressed, Not Initiated
Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

2. REDUCING NITROGEN LOADS FROM NON-POINT SOURCES (CCMP TABLE 5, P.34)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
H2-13. Advocate the use of the June nitrate test on agricultural lands to ensure that fertilizer applications to crops do not exceed crop needs.	C	CTDEP NYSDEC	1993 and continuing	Redirection of base program	Partial Progress	The June nitrate and fall stalk tests have been found to effectively reduce the amount of nitrogenous fertilizers used on agricultural lands without affecting crop yield. The Housatonic Hydrologic Project, and projects for the Scantic, Quinnipiac, and Yantic Rivers involve June nitrate and fall stalk testing.	CTDEP, NRCS, CT Cooperative Extension, and Soil and Water Conservation Districts will continue to advocate its use.
H2-14. In addition to continuing general storm water permitting programs, the state of New York should determine if the general permit adequately regulates nitrogen from activities subject to national storm water regulations.	R	NYSDEC		$50,000	Not Initiated	Funding and staffing limitations.	
H2-15. Explore the expansion of current requirements for federally licensed or permitted projects to obtain a water quality certification in New York to protect water quality from sources of pollution to include all projects adjacent to wetlands and other sensitive areas (e.g., adjacent to wetlands) or those that exceed a minimum size (e.g., greater than one acre).	R	NYSDEC	1994-1995	$50,000	Not Initiated	Funding and staffing limitations.	
H2-16. The states of Connecticut and New York should develop a habitat restoration plan that includes a list of potential project sites and priorities. Wetland projects that are in close proximity to priority nitrogen management areas should be highlighted.	R	CTDEP NYSDEC NYSDOS	1996-1998	$300,000 to develop plan	Complete	See Living Resources and Habitat section (Action L1-13.)	
H2-17. Evaluate Maryland's *Critical Areas* regulations and the reported nutrient reduction benefits and make recommendations of the potential value of a similar program for Long Island Sound.	R	LISS	1993-1995	$50,000.	Not Initiated	Funding and staffing limitations.	

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Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

3. CONTINUING MANAGEMENT OF HYPOXIA (CCMP TABLE 6, P. 39)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
H3-1. The LISS will complete work on the LIS 3.0 model and the necessary management scenario projection runs.	C	LISS	Complete by June 1994	LISS Funded	Complete	Management scenarios were run in summer of 1996. Model reports are available. Model results were summarized for the September 1997 public meetings on the nitrogen reduction targets.	
H3-2. Develop LIS 3.0-based dissolved oxygen targets and nitrogen load reduction targets for each management zone.	C	LISS	Propose by December 1994	Redirection of base program	Complete	The LISS proposed the nitrogen reduction targets in February 1997 and approved them after soliciting public comment in February 1998.	
H3-3. Establish a firm timetable for achieving, within 15 years, the load reduction targets by zone, with progress measured in five year increments.	C	CTDEP NYSDEC	Propose by December 1994	Redirection of base program	Complete	The nitrogen reduction targets include a 15-year reduction schedule for both point and non-point sources, after providing for time to develop management zone plans and make permit modifications.	A TMDL is to be released for public comment by Spring 1999.
H3-4. Develop zone-by-zone plans to achieve the nitrogen load reduction targets.	R	CTDEP NYSDEC Local and County Governments	1995-1997* *modified to 8/99 in the Phase III Hypoxia Agreement	$1 M committed for three New York zones; $700,000 per year for three years needed	On Schedule	EPA, CTDEP and NYSDEC developed a draft TMDL for nitrogen in 1998. The draft TMDL includes a WLA/LA by zone. NYSDEC and CTDEP will prepare more detailed zone-by-zone plans by August 1999.	
H3-5. Encourage and support development of innovative, cost-effective technologies to reduce point and non-point sources of nitrogen.	R	LISS	Ongoing	LISO Base Program	Partial Progress	CTDEP sponsored workshops BNR technologies.	
H3-6. Periodically recalibrate LIS 3.0 to reflect the changing conditions of the Sound and use it to explain these changing conditions and to evaluate proposals to modify the management plan, as necessary.	R	LISS	As Needed	$300,000 per recalibration	Partial Progress	The LISS is participating in a system wide nutrient workgroup that will evaluate the system wide eutrophication model (SWEM) developed by NYCDEP. A Model Evaluation Group (MEG) has been formed to provide independent peer review.	The workgroup and MEG met in January 1999 and will review SWEM for LISS management purposes.

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Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

4. FUNDING TO IMPLEMENT HYPOXIA MANAGEMENT PLANS (CCMP TABLE 7, P. 41)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
H4-1. Increase funding of the Connecticut and New York State Revolving Fund Programs to meet statewide wastewater control needs, including Long Island Sound nitrogen control needs.	R	Congress Connecticut New York	Over 20 years	Federal cost of $700 M per year. Cost to states of $175 M per year.	Partial Progress	In 1996-97, CT committed $250 M for sewage treatment plant reconstruction projects that will benefit LIS and estimates that Clean Water Funding, if maintained at current levels, will be adequate to finance Phase III upgrade requirements. The 1998 commitment was $25 M . In New York, SRF amounts were: FFY 98 $178.3 M ; FFY 97 $ 82.5 M ; FFY 96 $ 92.6 M	NYS state revolving funs for FFY 99 are projected to be $142 M
H4-2. Appropriate $50 M to fund a *Long Island Sound Challenge Grant Program*, a significant portion of which would be used to ensure that the Phase III nitrogen control efforts get off to a fast start with full local government cooperation.	R	Congress	Over five years	$50 M	Partial Progress	Legislative proposals have been introduced into Congress that would fund implementation of the LISS. The Long Island Sound Restoration Act was reintroduced in FY1997 and 1998.	
H4-3. Fully fund the non-point source control programs under §319 of the Clean Water Act and §6217 of the Coastal Zone Act Reauthorization Amendments to support additional non-point source management activities.	R	Congress	Ongoing	§ 319 - $130 M nationwide § 6217 - $12 M nationwide	Partial Progress	§319 was funded at $200 M for FY 1999. As part of the Clean Water Action Plan, the administration has proposed FY 2000 funding of $200 M .	The LISS, through its citizen participants, will advocate for increased funding under §319.

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Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

5. MONITORING AND ASSESSMENT OF HYPOXIA (CCMP TABLE 8, P. 42)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
H5-1. The states of Connecticut and New York, New York City, and the Interstate Sanitation Commission will monitor dissolved oxygen and nutrients in Long Island Sound, its major tributaries, and key sewage treatment plants.	C	CTDEP NYSDEC NYCDEP ISC	1994	$340,000	Complete	Monitoring was performed as planned and the results summarized by each agency.	
H5-2. Develop a coordinated monitoring plan to assess the effectiveness of implementation, considering innovative approaches and building upon existing programs.	C	LISS	Completed in early 1994	$25,000	Complete	A LISS monitoring workshop was held in 1993. The workshop integrated findings of the LISS to develop a comprehensive, Sound wide monitoring plan. Portions of the plan are being implemented.	
H5-3. As part of a combined National Estuary Program Action Plan Demonstration Project and a CTDEP Long Island Sound Research Fund project, the EPA and the state of Connecticut will complete a demonstration project designed to evaluate and quantify the benefits of a riparian zone in the denitrification process.	C	CTDEP	1992-1994	$100,000 for Phase I	Complete	This project will help quantify the benefits of vegetated riparian zones in nitrogen removal. Monitoring at the site was completed in June 1997. A final report is available. Interested parties should contact CT-DEP's Office of Long Island Sound Programs at (860) 424-3034.	
H5-4. The state of Connecticut, through its Long Island Sound Research Program, has solicited proposals to identify the role of riverine transport in attenuating the load of nitrogen delivered to the Sound in the Housatonic or Naugatuck Rivers. If an acceptable proposal is identified, it will be a priority for funding in 1994.	C	CTDEP	1993-1995	$150,000	Partially addressed	CTDEP was not successful in funding a comprehensive project to study a watershed in detail through the Long Island Sound Research Fund. Some projects are looking at portions of the problem. CTDEP hired a consultant using federal 104(b) funds to develop a comprehensive watershed model for the state. The project began in early 1997.	The Research Fund project is on hiatus. The attenuation project is a research priority for the LIS License Plate Fund. Continue development of the watershed model.
H5-5. The state of Connecticut, through its Long Island Sound Research Program, will continue to fund atmospheric deposition monitoring of nitrogen a two coastal locations through May, 1994.	C	CTDEP	1991-1994	$50,000 per year	Complete	Report for two years of atmospheric wet and dry deposition monitoring has been accepted by CTDEP. The original action has been completed but CT has continued the project and enhanced monitoring at 8 locations since 1997 with the University of Connecticut.	Monitoring is continuing through 1999 using SEP funds.
H5-6. The EPA Office of Research and Development will continue to develop regional dissolved oxygen criteria for marine and estuarine waters.	C	EPA	Complete 1994	Redirection of base program	Behind Schedule	EPA's Office of Water has completed peer review of the work.	Proposed regional criteria is expected to be released for public comment in 1999.
H5-7. The NYSDEC will complete its initial study on the effects of hypoxia and disease on Long Island Sound lobsters.	C	NYSDEC	1994	LISS Funded	Complete	A report is available from the EPA LIS Office or from the NYSDEC Division of Marine Resources.	

KEY: 1) Type: Commitment; Recommendation

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Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

5. MONITORING AND ASSESSMENT OF HYPOXIA (CCMP TABLE 8, P. 42)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
H5-8. Continue long-term dissolved oxygen and nutrient monitoring of the Sound, its major tributaries, and key sewage treatment plants.	R	CTDEP NYSDEC ISC EPA NYCDEP	Continuing	$300,000 per year	Substantive Progress	Ambient monitoring was continued in 1998. CTDEP funds the USGS to monitor tributaries and both NYSDEC and CTDEP have expanded monitoring requirements for point source discharges. The ISC and NYCDEP also perform ambient monitoring of LIS.	Monitoring has been funded for 1999. EPA's EMPACT project will supplement monitoring efforts.
H5-9. Continue to monitor finfish and crustaceans of the Sound with emphasis on determining population response to low dissolved oxygen.	R	CTDEP	Continuing		Substantive Progress	Special studies to identify hypoxic impacts on fish distribution are completed and reports are available from CTDEP Marine Fisheries. See Living Marine Resources and Habitat (Action L9-1.)	CTDEP continues to monitor finfish and lobster resources, but the studies are analyzed now to manage the state of fish and lobster resource stocks in light of DO's role.
H5-10. Continue to monitor the effects of hypoxia on disease of lobsters.	R	NYSDEC	Continuing	$65,000	Discontinued	See Living Marine Resources and Habitat (Action L9-8.)	

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Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

Controlling Major Sources of Pathogens

Pathogens can cause illness in people exposed through bathing in, or consuming fish or shellfish from, contaminated waters. Pathogen contamination results in closed beaches, fisheries, or shellfish areas, hurting local economies and damaging public perception of the ecological health of the Sound.

Strategy:

The CCMP identifies a seven part strategy to control pathogen contamination to LIS from various sources: 1) combined sewer overflows (CSOs); 2) non-point sources (NPS); 3) sewage treatment plants (STPs); 4) vessel discharges; and 5) individual on-site systems/discharges. The final two elements of the strategy are to control pathogen contamination through: 6) public education; and 7) monitoring and assessment of pathogens.

Highlights:

- **Phased combined sewer overflow (CSO) abatement projects are underway in both states to alleviate pathogen problems.**
- **In Connecticut, projects have been funded in Bridgeport, New Haven, Norwich/Jewett City, Middletown and Hartford, and expenditures of $560 million are expected over the next 15 years to complete these projects.**
- **In New York, 1) NYC continues its $1.5 billion program to abate CSO's; 2) has increased capture of CSOs from 18 percent to 40 percent, and 3) is in almost complete compliance with EPA's minimum standards for CSO controls. NYC's comprehensive sewer abatement program is scheduled for completion between 2001and 2006.**
- **Both states are working on programs to control discharges from vessels. A "no discharge zone" status has been designated for Huntington/Lloyd Harbors, Port Jefferson, Mamaroneck, and the Village of Port Washington Harbor.**
- **Fifteen marinas in New York have received Federal Clean Vessel Act funds for construction of boat pump out facilities.**
- **Connecticut now has 54 facilities and 6 pumpout boats; 20 facilities have been constructed and boats purchased since 1993 under the Clean Vessel Act.**
- **Four municipalities in New York and one in Connecticut are actively working to address pathogen problems through sanitary surveys or storm water improvements.**
- **Broader efforts underway in both states to address nonpoint sources of pollution, and storm water management will also contribute to the control of pathogens to the Sound.**

SUMMARY OF MANAGEMENT ACTIONS: PATHOGEN CONTAMINATION

1. CONTROLLING PATHOGEN CONTAMINATION FROM COMBINED SEWER OVERFLOWS (CCMP TABLE 31, P. 83)

Ongoing Programs	Responsible Parties	Status[2]	Description	Upcoming Action
P1-1. Continue CSO implementation and update overall management plans to assure implementation addresses bathing beach and shellfish closures and is consistent with water quality standards.	CTDEP NYSDEC	Substantive Progress	CTDEP is working to abate CSOs with a focus on coastal cities of New Haven, Bridgeport, and Norwalk. Over the next 15 years, $560 M will be expended on statewide CSO abatement. New York City, as per a 1992 consent order with NYSDEC, has begun implementation of a comprehensive CSO abatement program, scheduled for completion between 2001 and 2006 and an estimated cost of $1.5 billion. NYC continues to meet the nine minimum control measures established in EPA CSO policy.	

2. CONTROLLING PATHOGEN CONTAMINATION FROM NONPOINT SOURCES (CCMP TABLE 32, P. 84)

Ongoing Programs	Responsible Parties	Status[2]	Description	Upcoming Action
P2-1. Implement the state nonpoint source management initiatives supported from Section 319 funding	CTDEP NYSDEC EPA	Partial Progress	See Section 319 Nonpoint Source control efforts in items H2-1, H2-6 under the Hypoxia section.	
P2-2. Develop state coastal nonpoint source control programs, as per Section 6217 of the Coastal Zone Management Act to address the nonpoint source pathogen load from the LIS coastal zone.	CTDEP NYSDOS NOAA EPA	Fully Met	See Coastal Nonpoint Source control description in item H2-2, under the Hypoxia section.	
P2-3. Implement general storm water permit programs to control the discharge of storm water from industrial, construction, and municipal activities, as per EPA regulations.	CTDEP NYSDEC EPA	Substantive Progress	See general storm water permit program description in item H2-3, under the Hypoxia section.	
P2-4. Provide technical assistance to coastal municipalities to address impacts of pathogens in their municipal regulations and plans of development, as required by state law.	CTDEP NYSDEC	Partial Progress	CTDEP has met with coastal communities regarding PA 91-170 requiring municipalities to consider pathogens in their plans of development and zoning regulations. See also item H2-12, under the Hypoxia section. NYSDEC staff serve in an ex-officio, advisory capacity for the Hempstead Harbor and Manhasset Bay Protection Committees. NYSDEC staff participated in streamwalk surveys and draft review for the Westchester County Department of Planning/Watershed Advisory Committee 3.	CTDEP and NYSDEC staff are available for continuing consultation with municipalities.

KEY
1) Type: Commitment; Recommendation
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Status for ongoing programs and ongoing CCMP actions: Fully Met, Substantive Progress, Partial Progress, Discontinued

2. CONTROLLING PATHOGEN CONTAMINATION FROM NONPOINT SOURCES (CCMP TABLE 32, P. 84)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
P2-5. Pursue changes of the State Building Code to include provisions for storm water management.	C	NYSDEC NYSDOS	1994/1995	Redirection of base program	Behind Schedule	A legislative proposal has been developed by NYSDEC. (See H2-11)	The proposal has been tabled for the 1999 legislative session.
P2-6. Initiate a pilot program to control storm water discharges using enforceable instruments (i.e., permits or consent agreements). Connecticut and New York will evaluate the effectiveness of the pilot program for more widespread implementation.	C	NYSDEC	Ongoing/ Continuous	$100,000	Not Initiated	CTDEP and NYSDEC are awaiting EPA's promulgation of Phase II Storm water Rule.	EPA will publish Phase II storm water regulations for smaller cities and construction sites in 1999.
P2-7. Expand current requirements for federally licensed or permitted projects to obtain a water quality certification to include all projects in sensitive areas or where a contaminant or parameter is found to exist at or exceeding a threshold value.	R	NYSDEC	1994/1995	See Hypoxia	Not Initiated	See Hypoxia action H2-15.	

3. CONTROLLING PATHOGEN CONTAMINATION FROM SEWAGE TREATMENT PLANTS (CCMP TABLE 33, P. 85)

Ongoing Programs	Responsible Parties	Status[2]	Description	Upcoming Action
P3-1. Minimize malfunctions of treatment systems and eliminate dry weather overflows and illegal hookups to storm sewers through aggressive management programs. Ensure prompt notification and response and take quick enforcement action.	CTDEP NYSDEC	Substantive Progress	New York City has greatly reduced dry weather overflows (from 1-2% to 0.02% of flow) by reducing illegal connections and replacing obsolete regulators. Nassau County Department of Public Works received a NYS Clean Water/Clean Air Bond Act ("Bond Act") grant to install a package sanitary sewage treatment system for twenty-six households within the Oyster Bay Harbor drainage. In Westchester County, Bond Act funding has been awarded to construct overflow retention basins to control wastewater during storm events at the New Rochelle STP.	
P3-2. Identify and take priority enforcement actions to control wet weather overflows from sewers caused by excessive infiltration and inflow.	CTDEP NYSDEC	Partial Progress	In response to an order from New York State, Westchester County announced that it will take the lead in repairing faulty municipal sewer lines, and that local governments will have to end illegal drainage hookups in their communities.	

KEY
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Status for ongoing programs and ongoing CCMP actions: Fully Met, Substantive Progress, Partial Progress, Discontinued

3. CONTROLLING PATHOGEN CONTAMINATION FROM SEWAGE TREATMENT PLANTS (CCMP TABLE 33, P. 85)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
P3-3. Implement a beach and shellfish closure action plan to take immediate corrective and priority enforcement actions addressing improperly treated municipal discharges. Preventable incidents involving beaches and shellfish areas will be emphasized.	C	CTDEP NYSDEC EPA	Ongoing/ Continuous	Redirection of base program	Partial Progress	CTDEP continues to work cooperatively with the CT Dept. Of Agriculture's Aquaculture Division and municipalities to address pathogen problems that result in beach or shellfish bed closures as they occur. A predictive model of the impact of sewage spills on pathogens has been developed by HydroQual, Inc. to assess risks and guide the closure of beaches and shellfish beds. It is being used as part of a multi-state sewage spill notification protocol by NYSDEC, NYCDEP, and CTDEP.	

4. CONTROLLING PATHOGEN CONTAMINATION FROM VESSEL DISCHARGES (CCMP TABLE 34, P. 86)

Ongoing Programs	Responsible Parties	Status[2]	Description	Upcoming Action
P4-1. During the permitting process, minimize the impacts of boat dockage facilities and temporary live-aboard anchorages by considering their proximity to productive and certified shellfish waters, existing boat channels, wetlands, and critical habitat areas, and tidal flushing.	CTDEP NYSDEC NYSDOS	Substantive Progress	Marine sanitation in general and pumpout/dump station installation specifically are considered during review of each coastal structures and dredging permit application for new boat berthing facilities and for substantial modification of existing boat berthing facilities. Permits are conditioned to require pumpout and/or dump station installation where necessary. The CT Department of Agriculture/Bureau of Aquaculture comments to CTDEP on potential impacts of proposed development on water quality as it relates to the status of shellfish growing water classification. The closure of shellfish beds to direct consumption harvesting or other lowering of the existing shellfish growing water quality classification resulting from an increase in boat berthing, constitutes an adverse impact on water quality and would be a violation of the anti-degradation policy in the CT Water Quality Standards. Permits are not issued for projects that violate the state's Water Quality Standards. NYS has recognized several embayments on Long Island Sound (Huntington, Lloyd, Mamaroneck, and Port Jefferson harbors) as No-Discharge Zones. In addition, local communities have the option to develop legislation to reduce pathogen loadings in their waterways (e.g., prohibitions against overnight moorings, limiting numbers of boats in raft-ups, etc.). In its Tidal Wetlands Permitting Program, NYSDEC generally includes installation of a marine pumpout station as a condition for marina expansion or as a term of an order of consent for a violation.	

KEY
1) Type: Commitment; Recommendation
2) Status for dated actions: Complete, Ahead of Schedule, On Schedule, Behind Schedule, Partially Addressed, Not Initiated
Status for ongoing programs and ongoing CCMP actions: Fully Met, Substantive Progress, Partial Progress, Discontinued

4. CONTROLLING PATHOGEN CONTAMINATION FROM VESSEL DISCHARGES (CCMP TABLE 34, P. 86)

Ongoing Programs	Responsible Parties	Status[2]	Description	Upcoming Action
P4-2. Consider the impacts of vessel discharges through appropriate resource management and recovery programs and limit or condition the siting or operation of boating facilities as necessary to minimize such impacts.	CTDEP NYSDEC	Fully Met	These factors are considered for each marina's expansion and new marinas as part of the Tidal Wetlands Permitting Program. The Clean Vessel Act (CVA) Grant Program has been ongoing in Connecticut since initiation of the program by the U.S. Fish And Wildlife Service in 1993. Four grant agreements between the U.S. Fish and Wildlife Service and CTDEP have been executed during this time frame. The CTDEP has successfully implemented the program through the issuance of grants to fund the installation of new pumpouts and dump stations at public and private boating facilities, issuance of grants to fund the purchase, operation and maintenance of pumpout boats by CTDEP, the City of Bridgeport and The Long Island Sound Keeper Fund, Inc. and through the implementation of an education and outreach program to boaters, boating facility operators and the general public. Pumpout facilities, including the CTDEP operated facility on the Connecticut River at Old Lyme, have lowered the cost to boaters of pumpout service and have improved the reliability of service through operation and maintenance (O&M) grants to new and previously existing facilities. Fifty-four land based pumpouts are functional along the Connecticut coast and six pumpout boats are operational. Three dump stations exist at sites without pumpouts (including one floating restroom). Many of the pumpouts also have a wand attachment to allow disposal of waste from portable toilet holding tanks and approximately 10 sites have both a pumpout and a dump station.	A five year proposal for additional funding was submitted to the U.S. Fish and Wildlife Service. A decision on federal FY 1999 funding is anticipated by April 3, 1999.

KEY
1) Type: Commitment; Recommendation
2) Status for dated actions: Complete, Ahead of Schedule, On Schedule, Behind Schedule, Partially Addressed, Not Initiated
Status for ongoing programs and ongoing CCMP actions: Fully Met, Substantive Progress, Partial Progress, Discontinued

4. CONTROLLING PATHOGEN CONTAMINATION FROM VESSEL DISCHARGES (CCMP TABLE 34, P. 86)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
P4-3. New York and Connecticut will apply to the EPA to create vessel *No Discharge* areas in specific embayments and harbors after ensuring the sufficient availability of pump-out stations and treatment facilities.	C	CTDEP NYSDEC EPA Municipalities	Ongoing/ Continuous	Redirection of base program	Substantive Progress	CTDEP is continuing efforts to install and operate pump-out facilities using Clean Vessel Act (CVA) funds. Currently, there are 20 more pumpout facilities in existence than in 1993 when the federally approved "Plan for Constructing Pumpout Stations..." was prepared. CTDEP is encouraging municipalities and non-profits to operate pumpout boats. It should be noted that all of Long Island Sound is currently a no-discharge area for untreated vessel sewage. That is, the discharge of waste from vessel sewage holding tanks is currently prohibited. The establishment of no-discharge areas extends the current prohibition to the discharge from Coast Guard certified Type I and Type II marine Sanitation Devices. The disabling of these devices is required when the vessel is within a no-discharge area. The designation of no-discharge areas will encourage the conversion of installed heads aboard vessels using these areas to holding tank systems. During 1998, EPA approved the NYSDEC application to designate the waters of Port Jefferson Harbor as a No-Discharge Zone.	CTDEP will continue to evaluate the success of the CVA program and will make and/or assist municipalities to make application to EPA for no-discharge area status for selected embayments and harbors when the criteria are met and as staff resources allow.
P4-4. New York state has identified Huntington and Lloyd Harbors as areas requiring additional protection and the EPA has Public Noticed its tentative determination that there are adequate pump-out facilities in these areas.	C	NYSDEC EPA	1993/1994	Redirection of base program	Complete	Huntington and Lloyd Harbors have been designated as vessel no-discharge areas.	
P4-5. Connecticut, through a 319 grant, will ensure completion of a marina and mooring area water quality assessment guidance document. Connecticut has also completed a marinas *best management practices* project report for nonpoint sources of pollution, which may be used to develop requirements for use of certain best management practices at marinas. New York state will review these documents for potential incorporation into state management programs.	C	CTDEP NYSDEC	Ongoing/ Continuous	Redirection of base program	Complete	Both documents have been completed, the Best Management Practices manual in 1992 and the Marina Water Quality Assessments document in 1993. NYSDEC developed and distributed a marina best management practices guide in March 1996.	Use guidance for technical outreach to marinas and coastal municipalities and to establish some permit conditions.

KEY
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2) Status for dated actions: Complete, Ahead of Schedule, On Schedule, Behind Schedule, Partially Addressed, Not Initiated
Status for ongoing programs and ongoing CCMP actions: Fully Met, Substantive Progress, Partial Progress, Discontinued

4. CONTROLLING PATHOGEN CONTAMINATION FROM VESSEL DISCHARGES (CCMP TABLE 34, P. 86)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
P4-6. Complete regulations to require pump-out facilities as required by, and in accordance with, state law.	C	CTDEP	Ongoing/ Continuous	Redirection of base program	Discontinued	A determination has been made that existing permit condition authority allows for requirement of installation of necessary sanitary waste handling facilities at marinas and other boating facilities. Regulations are not required at this time. Decision will be periodically reevaluated.	
P4-7. The states of Connecticut and New York have received funding from the Federal Clean Vessel Act to conduct a pump-out needs survey, determine the effectiveness of existing facilities, develop and implement plans for construction of additional pump-out stations by marinas and prepare education/information plans.	C	CTDEP NYSDEC Marina Operators Municipalities Non-profit entities	Initiated 1993/ Completion 1999	$ 3,468,000 for NY Projected Total Project Cost in Connecticut over 10 years is $6,260,000.00. Anticipated federal funding of project over 10 years is $4,695,000.00. $1,697,000 in federal funding received to date.	Substantive Progress	NYSDEC has produced a report evaluating the impacts of marine sanitation device (MSD) chemicals on the marine environment and sewage treatment systems in September 1995. No Discharge Zone status has been declared for: Loyd/ Huntington, Mamaroneck, and Port Jefferson Harbors. There are 35 Marine Pumpout stations in NY waters on LIS and its tributaries. In CT, seven additional pumpouts are under development. One additional pumpout boat will be purchased using existing funds. Twenty-five additional pumpouts/dump stations and four additional pumpout boats are proposed utilizing new funds over the next five years. The total number of pumpouts anticipated to be available following completion of the next five years of the CVA project in Connecticut is eighty-six. The total number of pumpout boats anticipated to be available following completion of the next five years of the CVA project in Connecticut is eleven. CTDEP will also continue to offer operation and maintenance grants to pumpout/dump station facility operators as federal funding allows.	Install 10-20 new pumpout facilities including up to 5 boats, provide O&M funding for up to 40 facilities and provide education and outreach to boaters and marina operators. A decision on federal FY 1999 funding is anticipated by April 3, 1999. The actual number of projects that can be funded will depend on the level of federal funding received.
P4-8. Collect information on sewage discharge controls in Long Island Sound, disinfection chemicals used, boater education and sewage treatment plant acceptance of pump-out wastes. Evaluate availability of treatment capacity for pump-out wastes and secure commitments from municipalities to accept these wastes.	C	NYSDEC Municipalities	Initiated 1994/ completion 1994	$42,000.	Complete	A survey was conducted on marine sanitation device (MSD) holding tanks to help implement vessel discharge controls in Long Island Sound. The report documented that acceptance of waste from MSDs by STPs poses no threat to their operation and should therefore be encouraged.	

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Status for ongoing programs and ongoing CCMP actions: Fully Met, Substantive Progress, Partial Progress, Discontinued

5. CONTROLLING PATHOGEN CONTAMINATION FROM INDIVIDUAL ON-SITE SYSTEMS/DISCHARGES (CCMP TABLE 35, P. 87)

Ongoing Program	Responsible Parties	Status[2]	Description	Upcoming Action
P5-1. Connecticut and New York are coordinating management actions with local governments when on-site septic systems are found to be failing and impacting shellfish growing areas and bathing beaches.	CTDEP NYSDEC local municipalities health agencies.	Fully Met	In Connecticut, the combined efforts of Department of Agriculture/Bureau of Aquaculture, local officials, and Department of Health address these problems as they are uncovered. NYSDEC reports any discoveries of failing septic systems to the appropriate county health department.	

5. CONTROLLING PATHOGEN CONTAMINATION FROM INDIVIDUAL ON-SITE SYSTEMS/DISCHARGES (CCMP TABLE 35, P. 87)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
P5-2. Continue and enhance management actions with local governments when on-site septic systems are found to be failing and impacting shellfish growing areas and bathing beaches.	R	CTDEP NYSDEC Local municipalities and health agencies to administer the program. Repairing or upgrading the systems will be at property owner expense.	Ongoing/ Continuous	Redirection of base program. Enhancement costs: $100,000 to increase staff; $60,000 for administrative costs per year per state.	Substantive Progress	As described in an earlier action, CTDEP works with the Dept. Of Agriculture's Bureau of Aquaculture and municipalities to address shellfish and beach closure problems as they occur. Solutions are varied and may warrant septic system corrections or sewering of areas. NYSDEC has worked with the Town of Huntington and Cooperative Extension Marine Program to identify specific nonpoint source problems in Centerport Harbor. Presently, a total of 90 acres of shellfish bed in Centerport Harbor are seasonally certified.	Continue cooperative efforts.
P5-3. Evaluate existing septic system controls (including system monitoring, required maintenance and repair and replacement of failing systems) to determine if they are sufficient to protect coastal ecosystems and recommend changes to local governments.	R	NYSDEC	Continuous based upon availability of funding	$120,000 to increase staff; $200,000 for field and laboratory expenses; $30,000 for administrative costs.	Not Initiated	Funding and staffing limitations.	

KEY
1) Type: Commitment; Recommendation
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Status for ongoing programs and ongoing CCMP actions: Fully Met, Substantive Progress, Partial Progress, Discontinued

6. CONTROLLING PATHOGEN CONTAMINATION THROUGH PUBLIC EDUCATION (CCMP TABLE 36, P. 88)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
P6-1. Develop and implement a public education plan, targeting specific audiences, in cooperation with federal, state and local public outreach experts and environmental education.	R	LISS Management Conference	Upon available funding	$20,000; See Public Involvement and Education	Partial Progress	Actions include development and distribution of Boat Pumpout brochures, the LISS Fact Sheet # 13 entitled "The Impact of Septic Systems on the Environment", and the Oyster Bay program for 4th graders entitled, "Don't feed the quackers crackers."	

7. MONITORING AND ASSESSMENT OF PATHOGENS (CCMP TABLE 37, P. 89)

Ongoing Programs	Responsible Parties	Status[2]	Description	Upcoming Action
P7-1. Review existing data and reports and the recommendations of the Monitoring Workshop to identify shell fishing or bathing area in need of further assessment.	CTDEP CTDA/BA NYSDEC municipalities	Partial Progress	CTDEP works closely with the CTDA/BA, the CTDOH, and local health authorities for monitoring and abatement. NYSDEC works closely with NYSDOH and local health authorities for monitoring and abatement, and performs in-house analyses for pathogens at shellfish beds.	
P7-2. Perform bacterial surveys of harbors and embayments to identify contaminated shellfish areas and potential sources of pathogens as required by the National Shellfish Sanitation Program.	CTDA/BA NYSDEC	Fully Met	Surveys are regularly conducted by the CTDA/BA and regulatory actions are taken based on the data. NYSDEC conducts routine water quality studies to evaluate the sanitary conditions of shellfish growing areas and determine compliance with NY state and national Shellfish Sanitation Program criteria.	
P7-3. Use seasonal or conditional certification of shellfish harvest areas, as may be warranted by water quality variations, under guidelines provided by the National Shellfish Sanitation Program.	CTDA/BA NYSDEC	Partial Progress	In CT and NY, some coastal areas use seasonal restrictions or conditional closures based on rainfall. NYSDEC conducts water quality studies of seasonally and conditionally certified harvest areas. Currently, the National Shellfish Sanitation Program requirement to sample all such areas once/month when open are not being met.	
P7-4. Meet annually with health directors of coastal municipalities to refine monitoring and bathing beach closure protocols and share information	CTDEP NYSDOH Local Health Departments	Fully Met	CTDEP continues to meet annually with CTDOH and municipalities	

KEY
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2) Status for dated actions: Complete, Ahead of Schedule, On Schedule, Behind Schedule, Partially Addressed, Not Initiated
Status for ongoing programs and ongoing CCMP actions: Fully Met, Substantive Progress, Partial Progress, Discontinued

7. MONITORING AND ASSESSMENT OF PATHOGENS (CCMP TABLE 37, P. 89)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
P7-5. Evaluate existing monitoring programs and, as necessary, make recommendations for enhancements.	C	LISS CTDEP NYSDEC	Initiated 1993/ Completion 1994	Base program redirection	Partial Progress	CTDEP meets annually with the CTDOHS and the coastal municipalities to review the latest information on beach monitoring methods and closure criteria. NYSDEC is currently not meeting some of the minimum requirements of the National Shellfish Sanitation Program, especially for seasonally and conditionally certified waters, due to inadequate sampling frequency.	Continue to meet annually and address problems as they arise
P7-6.Conduct a workshop to determine appropriate and consistent methods for bathing beach monitoring and laboratory analysis and work to adopt, if feasible, common methods.	R	LISS Management Conference	Upon availability of funding	$5,000	Not Initiated		
P7-7. Implement the recommendations of the LISS Monitoring Plan to enhance pathogen monitoring.	R	CTDEP NYSDEC	Upon availability of funding	$10,000	Partial Progress	CTDEP and the CT Dept. Of Agriculture's Bureau of Aquaculture, as well as municipal health departments are meeting recommendations for the minimalist program. NYSDEC is not meeting the minimum requirements of guidelines set by the National Shellfish Sanitation Program.	Continue monitoring efforts.
P7-8. Develop and conduct a dry and wet weather sampling program for specific drainage basins. Both states will evaluate this pilot program for possible expansion.	R	CTDEP NYSDEC	Upon availability of funding.	$250,000	Not Initiated	CTDEP is involved in funding two projects that meet some of these needs. The USGS has completed wet and dry weather sampling on Sasco Brook. The USGS is conducting wet and dry weather sampling on the Quinnipiac and West Rivers and UCONN researchers are conducting sampling as part of a National Monitoring Project in Waterford. UConn is also assisting CTDEP in evaluating removal efficiencies of four storm water devices in the Fenger Brook, Scantic, Hockanum, and Jordan Cove watersheds.	Similar monitoring efforts in new watershed projects such as the Norwalk River should enhance understanding.

KEY
1) Type: Commitment; Recommendation 2) Status for dated actions: Complete, Ahead of Schedule, On Schedule, Behind Schedule, Partially Addressed, Not Initiated
Status for ongoing programs and ongoing CCMP actions: Fully Met, Substantive Progress, Partial Progress, Discontinued

7. MONITORING AND ASSESSMENT OF PATHOGENS (CCMP TABLE 37, P. 89)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
P7-9. Assess the impacts of identified point and nonpoint sources and assign priorities to areas where management actions are most likely to be beneficial. Priority criteria will include viability of the resource, feasibility and cost-effectiveness of management. Enhance state bacterial surveys of harbors and embayments to identify contaminated shellfish areas and potential sources of pathogens.	R	CTDEP CT Dept. Of Agriculture/ Aquaculture Division NYSDEC	Upon availability of funding	$150,000 per year for each state	Partially Addressed	Enhanced surveys through §303(d) of the CWA, CTDEP is developing TMDLs for bacteria problems in coastal streams and estuaries where criteria are violated	Completion of Sasco Brook TMDL to address NPS of bacteria.
P7-10. Support the efforts to develop a better understanding of the relationship between pathogen indicators and the risk to public health such as the National Indicator Study.	R	LISS Management Conference		Not estimated	Not Initiated	The National Indicator Study is no longer funded by the Federal Department of Agriculture or the Interstate Shellfish Sanitation Commission.	
P7-11. Along with supporting the National Indicator Study, investigate funding for a regional epidemiological survey to determine the relationship between waters of varying indicator quality and public health.	R	CTDEP NYSDEC EPA State and local health departments	Upon availability of funding	$500,000	Not Initiated	Funding and staffing limitations	

KEY
1) Type: Commitment; Recommendation
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Status for ongoing programs and ongoing CCMP actions: Fully Met, Substantive Progress, Partial Progress, Discontinued

Protecting the Sound from the Adverse Effects of Toxic Substances

Toxic substances can cause adverse human and ecosystem health risks, and can result in significant negative economic impacts on the value of the natural resources of the Sound.

Strategy **:**

The CCMP strategy to address toxic contamination in LIS has five principal elements: 1) toxic contaminant source controls and prevention; 2) addressing sediment contamination; 3) improving human health risk management; 4) monitoring and assessment of toxic contaminants; and 5) research to investigate toxic contamination. There are a total of 31 *Ongoing Programs* **(5) and** *CCMP Actions* **(26) for these areas, including 11** *Commitments* **and 15** *Recommendations***. Seven of the 11** *Commitments* **are** *Substantially Addressed***,** *Completed* **or** *Ahead* **or** *On Schedule***; 14 of the 15** *Recommendations* **are either** *Partially Addressed***,** *Behind Schedule***, or** *Not Initiated***.**

Highlights:

- **Work has been completed on a study to provide background information necessary to update the interim** *Plan for Disposal of Dredged Materials in Long Island Sound***. The report includes information on current regulatory requirements, reviews alternatives to open water disposal and identifies future research needs. The final report,** *Long Island Sound Dredged Material Management Approach,* **was completed in August 1998. The report has been distributed to the two state agencies and members of the LISS CAC, TAC, and Management Committee.**

- **EPA and ACOE signed a Letter of Agreement in April 1998 to designate open water disposal sites under the Marine Protection, Research and Sanctuaries Act (MPRSA). The designation is expected to be completed by March 2002.**

- **NYSDEC and CTDEP have updated their lists of impaired waters under Section 303(d) of the Clean Water Act. NYSDEC's draft list calls for completion of 59 Total Maximum Daily Load (TMDL) analyses over the next two years, while CTDEP's draft list calls for completion of at least 12 TMDL analyses over the same time. Both state's lists are pending EPA approval. Included on CTDEP's list is the LIS nutrient/hypoxia TMDL.**

- **The LISS is planning workshops for 1999 in both Connecticut and New York to increase the opportunity for public discussion, input and feedback to the regulatory agencies on dredged material management in LIS**.

SUMMARY OF MANAGEMENT ACTIONS: TOXIC SUBSTANCES

1. TOXIC CONTAMINANT SOURCE CONTROLS AND POLLUTION PREVENTION (CCMP TABLE 21, P. 65)

Ongoing Program	Responsible Parties	Status[2]	Description	Upcoming Action
T1-1. The states of Connecticut and New York and the Army Corps of Engineers will continue to regulate dredging and the disposal of dredged sediments through the existing permit programs.	CTDEP NYSDEC NYSDOS NYSDOH ACOE EPA	Fully Met	The states of Connecticut and New York continue to regulate and enforce dredging activities. Public concern over disposal of dredged material and interpretation of data on possible effects prompted CTDEP, with LISS funding, to obtain background information necessary to update the *LIS Dredged Sediment Management Plan*. A citizen sediment focus group was formed to assist in the development of draft reports. The final report, *Long Island Sound Dredged Material Management Approach,* was completed for CTDEP and released in August 1998 . Permits were issued to dredge the federal navigation channel and surrounding inland areas in Mamaroneck Harbor. All dredged material will be disposed of at the Central Long Island Site. EPA and ACOE have signed a Letter of Agreement on site designation under MPRSA in LIS. The schedule calls for completion of the process by March 2002.	LISS is planning workshops in 1999 to allow public discussion and input to disposal of dredged materials. LISS will develop recommendations on whether to update the interim Plan for Disposal of Dredged Material in LIS.
T1-2. The states of Connecticut and New York and the EPA will continue their pretreatment programs to ensure that toxic discharges to sewage treatment plants are controlled. The states of Connecticut and New York, through their Pollution Discharge Elimination System Programs, will continue to ensure that facilities comply with their permit limits.	CTDEP NYSDEC EPA	Substantive Progress	CTDEP's municipal facilities program continues to oversee municipal reports of monitoring discharges to ensure toxic contaminants are within individual permit limits. The NYC pretreatment of influent is being implemented.	
T1-3. The states of Connecticut and New York and the EPA will apply pollution-prevention techniques, as appropriate, to both direct and indirect discharges of toxic substances by emphasizing wastewater minimization, recycling of wastewater, and alternative processes and chemicals to reduce toxicity and toxics loads and to minimize effects on all environmental media.	CTDEP NYSDEC EPA	Partial Progress	Connecticut's policy is embodied in state legislation (P.A. 91-376). CTDEP published its Pollution Prevention Plan in October 1996, targeting consumers, industry, and government to control targeted substances. A special section on nonpoint source runoff to LIS highlights these needs.	
T1-4. The states of Connecticut and New York will review municipal and industrial discharge permits to surface waters to reduce the allowable concentrations of toxic pollutants from the previous permitted values.	CTDEP NYSDEC EPA	Partial Progress	NYSDEC analyses municipal and industrial discharge permits in response to applications and renewal applications on a regular schedule. CTDEP, through permitting and enforcement programs, regularly reviews and monitors permit compliance. An aggressive tracking and testing (bioassay) program is in place for municipal, industrial and storm water permittees to ensure point source discharges are adequately treated and protective of aquatic resources. TMDL analyses will further reduce toxic contaminant loads, where needed.	

KEY

1) Type: Commitment; Recommendation

2) Status for dated actions: Complete, Ahead of Schedule, On Schedule, Behind Schedule, Partially Addressed, Not Initiated

Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

1. TOXIC CONTAMINANT SOURCE CONTROLS AND POLLUTION PREVENTION (CCMP TABLE 21, P. 65)CCMP

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
T1-5. The LISS will encourage adequate funding to continue and expand pollution prevention site visit programs targeting industrial dischargers to the Sound and its tributaries.	C	LISS	Initiated 1993/ Continuing	Minimal staff time	Complete	EPA awarded $105,000 in FY94 to the Connecticut Hazardous Waste Management Service's Technical Assistance Program (ConnTAP) to target its existing pollution prevention site visit program at industries with direct and indirect wastewater discharges to Long Island Sound and its tributaries. The grant funds were supplemented with several other funding sources for a total of $253,500. ConTAP completed the project in June 1997 and submitted a final report in January 1998. ConTAP was eliminated from State budget effective July 1, 1997.	
T1-6. As part of the NY-NJ Harbor Estuary Program, total maximum daily loads, wasteload allocations for point sources, and load allocations for nonpoint sources will be developed to ensure that water quality standards for mercury are met in the Harbor, the East River, and Long Island Sound.	C	HEP NJDEP NYSDEC EPA	1994	Redirection of base program	Complete	Phase I TMDL for mercury has been completed. EPA, NYSDEC, and NJDEP convened a workgroup in 1998 to develop Phase II mercury TMDL and TMDLs as necessary for toxic organics.	
T1-7. As part of the New York - New Jersey Harbor Estuary Program, the states of New York and New Jersey will establish water quality-based effluent limits for copper, mercury, and six other toxic metals, as necessary. Permits will be subsequently modified.	C	NJDEP NYSDEC	Complete by 12/94	Redirection of base program	Complete	NYSDEC has modified NYC sewage treatment plant permit limits for metals. Additional WLAs will be developed through the TMDLs described in T1-6.	
T1-8. Support education on the environmental impact of using home, garden, and commercial hazardous chemicals and pesticides and continue to provide guidance on how to minimize use of these chemicals and properly dispose of them through household hazardous waste collection.	R	LISS	Initiated 1993/ Continuing	$20,000. See Public Involvement and Education	Partial Progress	A Sound Gardening Demonstration Project in Oyster Bay was funded using NYSDEC §319 funds. NY Sea Grant prepared a clean water shopping guide to identify alternatives to hazardous household chemicals. The LISS has also prepared a Stewardship poster identifying environmentally friendly household practices. NYS Sea Grant revised the LISS Fact Sheet *Supporting the Sound*, which includes information on how to prevent pollutants from reaching the Sound. FY 97-99 §319 grant funds to CT are supporting an integrated pest/crop management (IPM/ICM) initiative in the Quinnipiac River basin.	

KEY
1) Type: Commitment; Recommendation

2) Status for dated actions: Complete, Ahead of Schedule, On Schedule, Behind Schedule, Partially Addressed, Not Initiated
Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

1. TOXIC CONTAMINANT SOURCE CONTROLS AND POLLUTION PREVENTION (CCMP TABLE 21, P. 65)CCMP

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
T1-9. Evaluate mass loadings of toxic contaminants and determine their relationship to ambient water and sediment quality.	R	LISS CTDEP NYSDEC		$200,000 per year	Not Initiated	Funding and staffing limitations.	
T1-10. Identify and assign priorities to toxic substances which should be banned from use and for which *virtual elimination of discharge* should be the goal.	R	LISS CTDEP NYSDEC		$200,000 per year	Not Initiated	Funding and staffing limitations.	

2. ADDRESSING SEDIMENT CONTAMINATION (CCMP TABLE 22, P. 67)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
T2-1. The LISS will review the National Oceanic and Atmospheric Administration (NOAA) 1991 sediment chemistry and toxicity survey results of harbors and embayments, when available in the Spring 1994.	C	LISS NOAA	Upon report completion	Existing staff to be used	Not Initiated	Funding and staffing limitations.	
T2-2. The LISS will provide a preliminary review of the data on sediment contamination on a site-by-site basis. State and federal experts will evaluate the problem at each site and recommend additional assessments needed to fully characterize the problem, ascertain the need for and feasibility of remediation and prepare a remediation plan.	C	LISS	Ongoing	Existing staff to be used	Not Initiated	Funding and staffing limitations.	
T2-3. The City of Glen Cove plus their Review Committee will evaluate the contamination of Glen Cove Creek.	C	NYSDEC City of Glen Cove	1994/1995	$250,000.	On Schedule	Dredging has started in the mouth and downstream portions of Glen Cove Creek. The City was awarded $1.4 million as part of a Federal initiative to restore polluted industrial sites for subsequent development for human use. Glen Cove and Stamford, CT are two of 16 communities in the U.S. chosen as Brownfields Showcase Communities.	Bulkheading portions of Glen Cove Creek to permit further dredging. Stamford plans to reclaim the harbor area as an economic and recreational resource.

KEY

1) Type: Commitment; Recommendation

2) Status for dated actions: Complete, Ahead of Schedule, On Schedule, Behind Schedule, Partially Addressed, Not Initiated

Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

2. ADDRESSING SEDIMENT CONTAMINATION (CCMP TABLE 22, P. 67)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
T2-4. The LISS will review and evaluate sediment remediation approaches developed in the Great Lakes ARCS Program and HEP.	C	LISS	1994/1995	Existing staff to be used	Not Initiated	Funding and staffing limitations.	
T2-5. Conduct further assessments and develop site plans addressing the feasibility, technical approach, cost and value of conducting remediation activities for Black Rock Harbor and Glen Cove Creek, where data may be sufficient to conduct case study analyses. Recommend other harbors for characterization and feasibility studies to be conducted at a rate of two harbors per year.	R	LISS	Ongoing	$250,000 per harbor or $500,000 per year.	Not Initiated	Funding and staffing limitations.	NYSDEC is considering the feasibility of digging up and hauling away of the landfill at the Captain's Cove facility in Glen Cove. The City of Glen Cove will begin demolition of the site on April 22, 1999.

3. IMPROVING HUMAN HEALTH RISK MANAGEMENT (CCMP TABLE 23, P. 68)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
T3-1. The LISS will advocate the coordination between the states of Connecticut and New York to review health risk and advisory recommendations and formulate plans to ensure consistency.	C	LISS CTDEP CTDOHS NYSDEC NYSDOH	Initiated 1994/ Continuing	No Cost	Not Initiated	Funding and staffing limitations.	
T3-2. Develop strategies for controlling loadings of contaminants for which seafood consumption advisories have been issued.	R	LISS CTDEP NYSDEC		$150,000 per year.	Partially Addressed	CTDEP is using SEP and Long Island Sound Research Funds to support: 1) a study of Hg abundances in LIS sediments(Complete); 2) an evaluation of seafood consumption rates in CT since national estimates of consumption may be too low and consumption advisories are based on these rates (Complete); and 3) an evaluation of Hg sources and cycling in LIS (On schedule). Also funded was a study of Hg levels in fish from LIS and the CT River.	Complete the third study.

KEY

1) Type: Commitment; Recommendation

2) Status for dated actions: Complete, Ahead of Schedule, On Schedule, Behind Schedule, Partially Addressed, Not Initiated

Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

3. IMPROVING HUMAN HEALTH RISK MANAGEMENT (CCMP TABLE 23, P. 68)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
T3-3. Develop a strategy for identifying toxic substances of human health risk concern in Long Island Sound seafood species and tolerance levels for those substances.	R	LISS		$150,000 per year.	Not Initiated	Funding and staffing limitations.	

4. MONITORING AND ASSESSMENT OF TOXIC CONTAMINANTS (CCMP TABLE 24, P. 71)

Ongoing Programs	Responsible Parties	Status[2]	Description	Upcoming Action
T4-1. The mussel watch and benthic surveillance components of NOAA'a Status and Trends Program and the EPA's Environmental Monitoring and Assessment Program provide regular and systematic sampling of contaminant levels in the Sound.	NOAA EPA	Partial Progress	NOAA's Status and Trends Program has continued. However, new sampling under EPA's EMAP program has been scaled back. The program is now focusing on data analysis and environmental indicator development.	

4. MONITORING AND ASSESSMENT OF TOXIC CONTAMINANTS (CCMP TABLE 24, P. 71)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
T4-2. A monitoring workshop was held to integrate findings of the LISS and develop a comprehensive, Soundwide monitoring plan for toxic substances.	C	LISS	Initiated 1993/ Completed 1994	$25,000	Complete	See Action **M1-7**.	

KEY

1) Type: Commitment; Recommendation

2) Status for dated actions: Complete, Ahead of Schedule, On Schedule, Behind Schedule, Partially Addressed, Not Initiated

Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

4. MONITORING AND ASSESSMENT OF TOXIC CONTAMINANTS (CCMP TABLE 24, P. 71)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
T4-3. Under the auspices of the New York-New Jersey Harbor Estuary Program (HEP), the U.S. Army Corps of Engineers has agreed to develop a work plan and budget to develop systemwide models for PCBs, mercury, and other toxic pollutants that will provide the technical foundation for comprehensive efforts to eliminate these contamination problems in the Sound-Harbor-Bight system. The Corps of Engineers and other participants have agreed to seek the funding necessary to complete these models. Special attention will be directed to fully account for nonpoint sources of mercury.	C	HEP USACOE	1994	Existing staff to be used		A systemwide model has been developed (Farley-Thomann Model).	Additional modules or sub-models are to be developed. Also, improvements in the model's detail are planned.
T4-4. Monitoring initiatives will be coordinated with the EPA Regional - Environmental Monitoring and Assessment Program (R-EMAP) to further the understanding of sediment toxicity and benthic community structure gradients in western Long Island Sound.	C	CTDEP NYSDEC EPA	Field Work Initiated 1993/ Completed 1994	$200,000	Complete	A final *report Sediment Quality of the NY/NJ Harbor System* was issued in March 1998. The study area extended into western LIS.	
T4-5. Conduct site-specific characterization surveys of water, sediment and biota in harbors where active sources of toxic substances are believed to persist at a rate of two harbors per year.	R	CTDEP NYSDEC		$200,000 per harbor; or $400,000 per year.	Not Initiated	Funding not identified.	
T4-6. Identify sources and sites of PCB loadings to the Sound ecosystem from in-Sound and NY-NJ Harbor Estuary sources. Focus on reducing and eliminating PCB loadings on a priority basis, concentrating on areas of known contamination such as Black Rock Harbor.	R	CTDEP NYSDEC EPA		$200,000 per year	Not Initiated	Funding not identified.	
T4-7. Monitor contaminant levels in selected estuarine organisms to ascertain their effects on the biology of the species and their effects on the edibility of the species.	R	LISS CTDEP NYSDEC EPA NMFS USFWS		$300,000 per year	Not Initiated	CTDEP periodically assesses tissue contaminant levels for key seafood species.	Mercury study listed in T3-2 complete.

KEY

1) Type: Commitment; Recommendation

2) Status for dated actions: Complete, Ahead of Schedule, On Schedule, Behind Schedule, Partially Addressed, Not Initiated

Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

4. MONITORING AND ASSESSMENT OF TOXIC CONTAMINANTS (CCMP TABLE 24, P. 71)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
T4-8. Implement the recommendations from the LISS Monitoring Plan to improve contaminant monitoring.	R	LISS		$15,000.	Not Initiated	Funding not identified.	

5. RESEARCH TO INVESTIGATE TOXIC CONTAMINATION (CCMP TABLE 25, P. 73)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
T5-1. The relationship between organism body burdens and their toxic response needs to be investigated as an important mechanism of toxic impact.	R	University Research		$250,000 per year	Not Initiated	Funding not identified.	
T5-2. Trophic level transfer and bioaccumulation effects of contaminants up the food chain need to be quantified to better manage both the aquatic community and human health risk.	R	University Research - State Health Risk Agencies		$500,000 per year	Not Initiated	Funding not identified.	
T5-3. While toxicity testing of sediments and waters is an efficient means of identifying toxicity problems, the relationship between toxicity and specific causative agents needs to be determined.	R	University Research/ Research Lab		$500,000 per year	Not Initiated	Funding not identified.	
T5-4. Evaluate the use of an ecological risk assessment approach, demonstrated in the LISS Black Rock Harbor Action Plan Demonstration Project, for more widespread application to identify toxicity and its sources in embayments and harbors of the Sound.	R	LISS CTDEP NYSDEC EPA		$100,000	Not Initiated	Funding not identified.	
T5-5. Continue to monitor finfish and crustaceans of the Sound with emphasis on determining population response to low dissolved oxygen.	R	CTDEP	Continuing	See Living Marine Resources and Habitat		(See Action L9-1)	

KEY

1) Type: Commitment; Recommendation

2) Status for dated actions: Complete, Ahead of Schedule, On Schedule, Behind Schedule, Partially Addressed, Not Initiated

Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

Reducing Floatable Debris in the Sound

Litter, debris, and trash floating in LIS coastal waters and washing up on LIS shorelines can be a nuisance to, or hazard for boaters, beach-goers, bathers, fishermen, and other recreational or commercial LIS users, and can harm wildlife and reduce aesthetic enjoyment of the Sound.

Strategy:

This CCMP priority area has two principal management actions: 1) controlling floatable debris from combined sewer overflows (CSOs) and storm water sewers; and 2) increasing floatable debris cleanup efforts. There are a total of 14 action items in this category: five *Ongoing Programs***, and nine** *CCMP Actions***. Three of the five** *Ongoing Programs* **are reported as** *Fully Met***. Of the nine** *CCMP Actions***, six are reported as** *Completed***,** *Substantive Progress***, or** *Fully Met***; three are** *Not Initiated***.**

Highlights:

- **Efforts to control combined sewer overflows and improve stormwater management, described under** *Pathogens***, are also helping to reduce the amount of litter reaching the Sound. Communities around the Sound are adopting a watershed management-based approach to controlling sources of pollution to the Sound, including point and nonpoint sources, CSOs, and land use practices. Many communities have formed watershed management committees or groups to work together in addressing environmental management problems that have no jurisdictional boundaries.**

- **During 1998, 2,685 New York volunteers collected over 35,846 pounds of trash from the shoreline along the Sound. In Connecticut, over 750 volunteers removed over 7,000 pounds of trash from 20 miles of shoreline.**

- **Since 1991, over 18,650 storm drains have been stenciled with the message: "Don't Dump -- Drains to Long Island Sound." Over 250 drains were stenciled in 1998.**

- **In New York, over 3,330 drains have been stenciled with a bi-lingual (Spanish/English)** *"Clean Streets = Clean Beaches"* **slogan.**

- **The City of New Rochelle installed a permanent floatable debris collection boom at the junction of Stephenson Brook and Echo Bay. The City of Larchmont installed and operates a boom at the mouth of Pine Brook.**

SUMMARY OF MANAGEMENT ACTIONS: FLOATABLE DEBRIS

1. CONTROLLING FLOATABLE DEBRIS FROM CSOs AND STORMWATER SEWERS (CCMP TABLE 38, P. 96)

Ongoing Programs	Responsible Parties	Status[2]	Description	Upcoming Action
F1-1. Continue implementation of long-term CSO abatement programs to manage or eliminate all CSO areas remaining in the Long Island Sound region.	CTDEP NYSDEC NYCDEP and local municipalities	Substantive Progress	See CSO program description in item P1-1, under the Pathogens section.	
F1-2. Control discharge of stormwater from industrial, construction, and municipal activities in accordance with EPA's national program regulations.	EPA NYSDEC CTDEP local municipalities	Partial Progress	CTDEP's three general stormwater permits for industrial, construction, and commercial activities address floatable debris and now have more than 2,000 registrants.	See actions under item H2-6 for upcoming stormwater control activities.

2. INCREASING FLOATABLE DEBRIS CLEANUP EFFORTS (CCMP TABLE 39, P. 99)

Ongoing Programs	Responsible Parties	Status[2]	Description	Upcoming Action
F2-1. Continue to implement the *Pack It In/Pack It Out* anti-litter campaign.	CTDEP and the public	Fully Met	CTDEP's Parks Division sponsors the "Pack it in-Pack it out" anti-litter campaign, which has led to the elimination of all trash barrels at state parks, including state beaches, except at campground areas. A single trash collection site is provided, which includes a dumpster and marked recycling bins, for people who don't want to transport their trash home. The program has been very successful with no noticeable increase in litter at the parks and beaches.	
F2-2. The New York-New Jersey Harbor Estuary Program has developed detailed short- and long-term floatable debris action plans for the New York-New Jersey Harbor.	USACOE NYSDEC NYCDEP NJDEP	Fully Met	The floatable debris action plan continues to be implemented. A Floatables Action Plan Assessment Report for the 1995-97 period was finalized by EPA Region II in March 1998.	
F2-3. National Beach Cleanup Program. As part of this program, annual cleanups of Long Island Sound shorelines have taken place since 1988. This program costs $10,000 per year per state to coordinate and support volunteer efforts.	NYSDEC CT Sea Grant Program American Littoral Society Volunteers	Fully Met	In Connecticut, the cleanups are coordinated by CT Sea Grant. In New York, data on debris is compiled and stored by the American Littoral Society and NYSDEC. The beach cleanup includes land and underwater cleanups. In addition, various non-profit LIS groups have clean-ups on a regular basis with CTDEP assistance. During 1998 the NY LIS component received funding from LISS small grants program. In 1998, 2,685 volunteers from NYS removed 35,846 lbs of debris from the shoreline along the Sound.	The next event is scheduled for September 1999.

KEY

1) **Type**: Commitment, Recommendation

2) Status for dated actions: Complete; Ahead of Schedule, On Schedule, Behind Schedule, Partially Addressed, Not Initiated
Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued.

2. INCREASING FLOATABLE DEBRIS CLEANUP EFFORTS (CCMP TABLE 39, P. 99)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
F2-4. Continue to implement *Clean Streets/Clean Beaches* anti-litter campaign.	C	Coalition of public and private groups in New York and New Jersey	This action was initiated in 1992 and is ongoing.	$100,000 grant from the EPA	Substantive Progress	NY Sea Grant developed stencils in English and Spanish with support from an EPA grant, and continues to distribute stencils in NY.	
F2-5. Conduct a demonstration project to encourage proper solid waste handling and recycling at five marinas.	C	NYSDEC	1991	$71,000 grant from the EPA	Completed	Actions include recycling of materials and disposal of used fishing gear.	
F2-6. Expand involvement in *Coastweeks* program to include a second beach cleanup in the spring, prior to the beach season.	R	LISS Management Conference		$20,000 per year	Not Initiated		
F2-7. Continue to coordinate volunteers to paint stenciled messages on storm drains, such as *Don't Dump - Drains to Long Island Sound.*	R	NY Sea Grant LISS Volunteers	Ongoing	$5,000. See Public Involvement and Education	Fully Met	CTDEP has funded storm drain stenciling through §319 funding and the CT License Plate Fund. More than 6,250 storm drains have been stenciled. Westchester County completed a storm drain stenciling program in 1998. NY Sea Grant distributed 250 stencils to 10 groups in 1998. Save the Sound, Inc. distributes stencils in Connecticut.	NY Sea Grant and Save the Sound, Inc. will continue the storm drain stenciling program.
F2-8. Maintain clean beaches and minimize resuspension of debris back into Long Island Sound waters by: -Cleaning beaches in the evening to prevent resuspension overnight. -Using solid waste receptacles with lids instead of the open mesh type. -Providing recycling containers in convenient locations. -Using environmentally responsible containers for food and beverages at concession stands.	R	State and local governments	Ongoing	Varies with facility.	Substantive Progress	Many of the actions listed are being undertaken at local beaches throughout Long Island. The City of New Rochelle placed a floatable debris collection boom at the mouth of Stevenson Brook; the City of Larchmont is operating its floatable debris boom at the mouth of Pine Brook..	Continue program
F2-9. Distribute a directory of volunteer groups in the Long Island Sound watershed that work on projects and activities to reduce marine debris.	R	LISS		See Public Involvement and Education	Not Initiated		

KEY

1) **Type**: Commitment, Recommendation

2) Status for dated actions: Complete; Ahead of Schedule, On Schedule, Behind Schedule, Partially Addressed, Not Initiated
Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued.

2. INCREASING FLOATABLE DEBRIS CLEANUP EFFORTS (CCMP TABLE 39, P. 99)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
F2-10. Encourage the public and manufacturers to promote recycling, use less packaging, and substitute products made from degradable material whenever possible.	R		Ongoing		Substantive Progress	The CTDEP Solid Waste Management Plan and Pollution Prevention Plan both support these objectives.	
F2-11. Encourage marina operators to accept responsibility for litter control and recycling.	R	NYSDEC CTDEP	Ongoing		Substantive Progress	NYSDEC has developed a Marina Management Guide that addresses a number of issues, including floatable debris CTDEP, through a §319 project, has developed a Marina BMP manual to control many potential pollution problems including litter.	NYSDEC will use the Marina Management Guide in its Tidal Wetlands and Protection of Waters permitting operations.
F2-12. Require floatation materials that are resistant to decomposition and fragmentation.	R	NYSDEC Local Municipals			Not Initiated		

KEY

1) **Type**: Commitment, Recommendation

2) Status for dated actions: Complete; Ahead of Schedule, On Schedule, Behind Schedule, Partially Addressed, Not Initiated
Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued.

Managing and Conserving Living Resources and Their Habitats

Restoring and protecting the overall abundance and diversity of habitats and living marine resources in the Sound ultimately improves both its ecological balance and economic well-being. Years of neglect, mismanagement, and damaging actions have diminished the abundance and diversity of habitats and marine resources, causing water quality problems, adversely affecting land use, and contributing to damaging economic impacts from flooding, erosion and runoff pollution.

Strategy:

The LIS Habitat Restoration Strategy was adopted by the LISS in February 1998. Its goals are to: 1) continue the active partnership among Federal agencies, states, local municipalities, and the public through the New York Sea Grant, the CAC, and environmental groups; 2) restore the ecological functions of degraded and lost habitat; 3) restore at least 2,000 acres and 100 river miles of habitat within the first ten years of the initiative; and 4) complete a habitat restoration manual by Spring 1998.

Highlights:

- **A bi-state habitat restoration planning process initiated during 1995 identified more than 450 degraded sites that had potential to be restored. In 1998 an interagency team ranked high priority sites and removed non-restoration sites from the list. There are 373 sites on the list, 223 in Connecticut and 145 in New York. High priority sites number 111.**

- **The LISS updated its Habitat Restoration Sites poster and distributed posters on request to schools, civic groups and other interested LIS community organizations.**

- **Fourteen restoration projects were completed under Connecticut's Tidal Wetlands Restoration and Coves and Embayments programs and several others were initiated. Nearly $1 million was awarded for 12 projects under a new River Restoration Fund, and habitat-related projects were supported under Connecticut's LIS Research Fund.**

- **The NYSDEC has two tidal wetland restoration projects in progress and two in the planning process. DEC has also completed a draft Habitat Management Strategy Action Plan for Oyster Bay/Cold Spring Harbor.**

- **EPA selected and awarded funds for 6 habitat restoration projects (4 in Connecticut and 2 in New York). The projects include tidal wetland and coastal grassland restoration and anadromous fish passage.**

- **NYSDEC is funding 4 projects from the Bond Act in SFY 98-99, totaling over $1.2 million. These are Baxter Stage Pond, Centre Island Beach, Oyster Bay Western Waterfront and the Betty Allen Nature Preserve.**

- **In July 1998, the President proclaimed the Connecticut River as one of 14 rivers of national significance under the American Heritage Rivers Initiative.**

- **Connecticut's new land acquisition/bond program provided $5 million in 1998 for land purchases in cooperation with municipalities and land trusts. The state's goal is to reserve not less that 21 percent of open/preserved space in Connecticut, with not less than 10 percent under state ownership.**

- **Connecticut is completing computerized mapping of colonial waterbird habitat, while the U.S. Fish and Wildlife Service has compiled related data for the Sound in New York.**

Connecticut has completed computer mapping of tidal wetlands using aerial photography.

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SUMMARY OF MANAGEMENT ACTIONS: MANAGEMENT AND CONSERVATION OF LIVING RESOURCES AND THEIR HABITATS

1. RESTORATION AND ENHANCEMENT OF AQUATIC AND TERRESTRIAL HABITATS (CCMP TABLE 40, P.107)

Ongoing Programs	Responsible Parties	Status[2]	Description	Upcoming Action
L1-1. Connecticut, New York, and federal agencies will continue to pursue restoration of degraded habitat.	NYSDEC NYSDOS CTDEP CTDOT USFWS USACE USEPA	Substantive progress	In Connecticut, nine tidal wetland restoration projects (147.5 acres) have been completed and 25 projects are in various stages of implementation (e.g. preliminary engineering, final design, and contractor design for implementation). Five of the projects were identified in the Habitat Restoration Strategy. Final design was completed and a contractor selected for restoration of Mill Meadows Marsh in Old Saybrook using Intermodal Surface Transportation Efficiency Act (ISTEA) funding. Silver Sand State Park dune restoration and beach grass planting was completed. Three fishway projects were completed, and several others are undergoing construction or are in final design phase. In 1997 EPA awarded NYSDEC $31,000 to support 2 habitat restoration projects identified in the Habitat Restoration Strategy. One was begun in 1998 and is ongoing. The other is still in the planning stages. USACE completed a reconnaissance study of four tidal wetland sites and 13 fish passage sites. The Long Island Sound License Plate fund was used to support the acquisition of Quinnipiac Meadows by the New Haven Land Trust, and a grant was awarded to the Branford Land Trust to conduct a baseline study of Sybil Creek prior to restoration. NYSDEC awarded funding for four habitat restoration proposals using SFY 1998-99 Bond Act funds. These four projects are: 1) $225,000 to Nassau County DPW for rehabilitation of Baxter Pond; 2) $12,500 to Village of Centre Island to restore a 25-acre marsh area; 3) $850,000 to Town of Oyster Bay to expand an existing freshwater wetland and create a tidal wetland; and, 4) $100,000 to Town of Huntington to rehabilitate a three-acre pond in the Betty Allen Nature Preserve. NOAA/NMFS issued a community based restoration grant of $28,000 for a one-acre pilot wetland restoration project at Long Beach, Smithtown.	USACE is completing its Reconnaissance Study and Federal Cost Sharing Agreement for LIS Habitat Restoration in FY99. $60,000 in EPA CWA §319 funds will be used to support habitat restoration at Hammonasset State Park beginning in March, 1999. ACOE will pursue a feasibility investigation with the Town of Huntington on a 19 acre fill removal project to restore intertidal marsh in Centerport Harbor, a high-priority project. Second phase of Orient Point County (NY) Park grassland restoration project scheduled to begin Spring 1999.
L1-2. Through Connecticut's coastal permit programs and consistency with the CT Coastal Management Act, applicants may be required to protect, restore or enhance aquatic resources.	CTDEP	Substantive progress	Through the requirements of the Coastal Zone Management Act and permitting programs, tidal wetlands, intertidal flats, submerged aquatic plants, and beaches and dunes are preserved. Activities are permitted in other resource types so long as adverse impacts are found to be minimal. Several permitted activities in a net positive impact of 0.5 acres of tidal wetlands.	
L1-3. Connecticut preparing a tidal wetland management plan that includes an identification of potential wetland restoration sites.	CTDEP	Complete	A wetland restoration plan has been developed that identifies restoration goals, strategies, and includes an inventory of potentially restorable sites. This inventory has been upgraded to include the delineation of the identified sites in GIS as part of the LISS habitat restoration initiative.	

KEY: 1) Type: Commitment, Recommendation 2) Status for dated actions: Complete, Ahead of Schedule, On Schedule, Behind Schedule, Partially Addressed, Not Initiated
Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

1. RESTORATION AND ENHANCEMENT OF AQUATIC AND TERRESTRIAL HABITATS (CCMP TABLE 40, P.107)

Ongoing Programs	Responsible Parties	Status[2]	Description	Upcoming Action
L1-4. Connecticut will continue the Coves and Embayments Restoration program to restore degraded tidal and coastal embayments and coves.	CTDEP	Substantive progress	CTDEP, through its Coves and Embayments program has made significant advances in habitat restoration, as described in section L1-1. Coves and Embayments funds were used to support habitat restoration at five sites in FY98, and are being used to leverage support for habitat restoration at several other sites. A new database was developed to track the restoration and funding through Coves and Embayments for all of CT's habitat restoration projects.	See L1-1.
L1-5. Connecticut, New York, and federal agencies currently administer programs for the restoration of habitats other than tidal wetlands such as dunes, submerged aquatic vegetation, and coastal woodlands.	CTDEP NYSDEC USFWS	Substantive Progress	See Ongoing Program L1-1.	
L1-6. New York is phasing out, and Connecticut prohibits, maintenance ditching of mosquito ditches in favor of selective use of open marsh water management techniques to control mosquitos and restore pools and ponds on tidal wetlands.	CTDEP NYSDEC federal agencies	Substantive Progress	Grid ditching was discontinued in Connecticut in 1985 and replaced with open marsh management. Ditches are gradually filling and restoring marsh habitat. In some cases, ditches are plugged with soil. On NYS property, remnant mosquito ditches are being used to control mosquito reproduction and minimize Phragmites colonization through salt water retention.	

1. RESTORATION AND ENHANCEMENT OF AQUATIC AND TERRESTRIAL HABITATS (CCMP TABLE 40, P.107)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
L1-7. Coastal America, a cooperative effort of several federal agencies, is conducting a study in Connecticut to evaluate the impacts of transportation facilities upon ten tidal wetland sites. This study is sponsored by the CTDEP and undertaken by the USACE. When the study is completed, restoration plans will be developed for those sites where a transportation facility is shown to be the cause of degradation. Restoration is expected to be implemented through a combination of ISTEA, Water Resources Development Act, Long Island Sound Cleanup Account funds, New York's Environmental Protection Fund, and, where appropriate, natural resources damages recovered under CERCLA or OPA90.	C	CTDEP CTDOT Coastal America Partners	Study was completed in 1994; restoration projects will proceed as funding is approved.	$100,000 for the initial study; restoration costs will vary for each project site.	Study complete	The study identified 5 tidal wetlands that were degraded as a result of transportation facilities. CTDEP has developed a justification for restoring these sites using ISTEA funds. Coastal America and CTDOT successfully used this justification to receive funding. Two of the study sites and several others identified by CTDEP have received funding through ISTEA. The restoration of Little River Marsh is being funded by New Haven, EPA, and DEP. The COE and DEP are developing a scope of work for Sluice Creek. The last site is on hold pending property owner permission.	Continue to implement the 5 projects and present new ones to Coastal America for consideration.

KEY: 1) Type: Commitment, Recommendation

2) Status for dated actions: Complete, Ahead of Schedule, On Schedule, Behind Schedule, Partially Addressed, Not Initiated
Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

1. RESTORATION AND ENHANCEMENT OF AQUATIC AND TERRESTRIAL HABITATS (CCMP TABLE 40, P.107)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
L1-8. Connecticut's Coves & Embayments Program will complete nine restoration projects in progress and commitments to begin three new projects.	C	CTDEP in cooperation with the municipal sponsor	Varies depending on project	$263,625 for projects in progress and $123,475 for projects to commence	Complete	Nine original and two additional projects have been completed. Three more projects are in implementation phase with 11 more in various planning stages. Recently completed and active projects include Davis Pond in East Lyme to restore wetlands and fish habitats ($210,000); Middle Beach wetland restoration in Westbrook ($60,000); Old Field Creek and Cove River in West Haven planning report ($115,000 with ISTEA); Holly Pond sand removal permit issued ($250,000 available for construction); Mill Pond restoration project in Norwalk permit issued ($350,000 available for construction); Lighthouse Point, New Haven, final plan completed ($27,000).	Coves & Embayments program is beginning to automate project database and considering a web site in the future for sharing information on restoration projects.
L1-9. Connecticut and New York should continue to pursue the use of funds from the following programs, and explore additional funding sources, to support restoration and enhancement activities described in the previous recommendation: The Land and Water Conservation Fund, the Intermodal Surface Transportation Efficiency Act (ISTEA) Enhancement Program, the Partners in Wildlife Program,§ 319 of the Clean Water Act, Army Corps of Engineers Section 22 Planning Funds, the Water Resources Development Act, National Coastal Wetlands Conservation Grants, the North American Waterfowl Management Plan, Connecticut's Long Island Sound Cleanup Funds, and the Coastal Zone Management Act.	R	CTDEP CTDOT NYDOT NYSDEC NYSDOS EPA USACE USFWS	Ongoing	Existing staff will be used; project costs vary from site to site	Substantive progress	CTDEP has a number of tidal wetland projects in progress using cited funds. With a §319 NPS grants CTDEP funded projects totaling $177,750 at: Hammonasset Beach State Park (completed in 1994); White Sands Beach in Lyme (completed in 1997); Hammonasset Beach State Park (proposed for Spring 1999); and Higganum Cove, a tidal wetland in the Connecticut River estuary. EPA CWA Oil Spill funds were used in the restoration of Little River in New Haven and additional CT state oil spill funds are being directed toward restoration of Davis Pond, East Lyme. NYSDEC and USFWS are pursuing grants cooperatively through local governments for various habitat restoration projects to be funded by the USFWS.	CT is continuing to complete projects and is discussing other potential wetland restoration sites. Additional funding is being sought through the EPA Five Star Restoration Challenge Grant Program to conduct restoration of Lord's Cove on the lower CT River in Lyme. The LISS will continue to work to identify and secure funding for habitat restoration and enhancement activities on Long Island Sound.

KEY: 1) Type: Commitment, Recommendation

2) Status for dated actions: Complete, Ahead of Schedule, On Schedule, Behind Schedule, Partially Addressed, Not Initiated
Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

1. RESTORATION AND ENHANCEMENT OF AQUATIC AND TERRESTRIAL HABITATS (CCMP TABLE 40, P.107)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
L1-10. The rapid displacement of native brackish and fresh tidal plant communities on the Connecticut River has been identified as the single most significant habitat problem in this estuary. A specific restoration program for the control of common reed in these tidal wetlands needs to be implemented to check and reverse the spread of common reed and develop the most efficient means of effecting this restoration. Control techniques need to be evaluated for the full range of wetland habitat types on the river. Baseline surveys will be established and post-control monitoring over multiple years will be conducted.	R	CTDEP USFWS	3 years	$130,000 for amphibious mulching machine and $100,000 for staff, supplies, and monitoring.	Substantive Progress	The restoration of degraded brackish marshes has begun on the lower Connecticut River. Restoration has begun on Nott Island WMA in Lyme. A $224,000 matching grant through North American Waterfowl and Wetlands, and North American Wetlands Conservation Grant will be used to restore 350 acres of phragmites-dominated habitat on Great Island and Upper Island, Lyme. Research funds from the LIS License Plate Program were awarded to Yale University to study the genetic structuring of common reed on the tidelands of the CT River. A phragmites working group consisting of managers, scientists, and other interested parties has been established to develop a strategy for dealing with phragmites invasion, particularly on the lower CT River. $116,000 in CT Mosquito Management Funds were used to purchase a low ground-pressure excavator.	CT has applied for funding through the EPA Five-Star Restoration Challenge Grant Program to conduct tidal wetland restoration/phragmites control in Lord's Cove, Lyme. Other partners include the Nature Conservancy, Lyme Land Trust, Potopaug Gun Club, and CT Waterfowl Association. $15,000 from CT Mosquito Management Funds will be used to purchase an amphibious, low ground-pressure Argo personnel transport that will be used for phragmites control projects.
L1-11. New York should continue to phase out maintenance ditching for mosquito control. These programs should receive additional support for selective use of open marsh water management techniques to control mosquitos and restore pools and ponds on tidal wetlands.	R	NYSDEC in cooperation with mosquito control agencies		$1,000 per acre for open marsh water management	Partial Progress	This activity has begun in Suffolk County with cooperative efforts between Suffolk County Vector Control, NYSDEC, and USFWS.	Program is continuing. (See L1-6)
L1-12. Obtain long-term funding for Connecticut wetland restoration staff.	R	CTDEP	Upon approval of funding	$250,000 per year for staff	Not Initiated	The Wetland Restoration staff remains funded from year to year, often supported by grants for specific projects.	Continue efforts to secure permanent, continuing funding.

KEY: 1) Type: Commitment, Recommendation

2) Status for dated actions: Complete, Ahead of Schedule, On Schedule, Behind Schedule, Partially Addressed, Not Initiated
Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

1. RESTORATION AND ENHANCEMENT OF AQUATIC AND TERRESTRIAL HABITATS (CCMP TABLE 40, P.107)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
L1-13. Connecticut and New York should develop a restoration plan for the full range of coastal terrestrial and estuarine aquatic habitats adjacent to and in Long Island Sound. The restoration plan will include a list of potential restoration projects and a priority listing of projects to be implemented. Preliminary sites identified for future restoration in New York include: City Island ($300,000); Pelham Bay Park ($400,000); Wading River ($50,000); Sunken Meadow Creek ($50,000); Crab Meadow ($50,000); and Mattituck Creek ($100,000). Other sites in New York where costs have not been estimated include Pugsley Creek, Udall's Cove, Oak Neck Creek, Frost Creek, and East Creek. Connecticut has estimated that ten priority sites could be restored for $750,000, or approximately $75,000 per site.	R	CTDEP NYSDEC NYSDOS EPA NOAA USACE USFWS	3 years - (1996-1998)	$50,000 per year for each state for three years; restoration costs will vary depending upon project type.	Complete	The initiative is being implemented through an interagency team focusing on 12 terrestrial and aquatic habitat types. The goal of Habitat Restoration Strategy approved in February 1998 is the restoration of 2,000 acres of habitat and 100 river miles in 10 years. CT has established a working group to evaluate and refine information and prioritize restoration of tidal wetland projects identified in the Habitat Restoration Strategy. The City of New Rochelle, Westchester County Dept. of Planning and the U.S. Soil and Water Conservation District are cooperating in restoring up to 1.5 acres of tidal wetland and adjoining upland at Five Islands Park in Echo Bay. This project is part of a $600,000 partnership to reduce pollution in LIS. Other partnership projects are stream bank stabilization at Rich Manor Park in Rye Brook, and restoration of East Creek at Flint Park in Larchmont and Mamaroneck.	A technical document that provides restoration guidance for each habitat type is expected to be completed in 1999. The interagency team will continue work with a focus on implementation and on refining information on additional sites.
L1-14. New York should strengthen their capabilities for implementing programs that restore degraded habitats. This should be undertaken in cooperation with the implementation of the Long Island Sound Regional Coastal Management Plan.	R	NYSDEC NYSDOS		$250,000 per year	Partial Progress	The NY State Clean Water/Clean Air Bond Act will fund some aquatic restoration projects. See L1-1 for more information. Environmental Protection Fund (EPF) funding was awarded to the Town of North Hempstead to conduct a feasibility study for the restoration of three ponds within Roslyn Pond Park.	Monies are to be awarded in early 1999. A LIS Coastal Advisory Commission meeting is planned for May 1999 to coordinate NYSDOS and NYSDEC activities related to LIS.

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Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

2. HABITAT PROTECTION AND ACQUISITION (CCMP TABLE 41, P.110)

Ongoing Programs	Responsible Parties	Status[2]	Description	Upcoming Action
L2-1. The states of Connecticut and New York and the USACE will continue to implement their permit programs and coastal consistency provisions of states' Coastal Management Programs to regulate use and development of aquatic resources and critical habitats such as tidal and freshwater wetlands, intertidal flats, submerged aquatic vegetation beds, beaches, and dunes. These programs also regulate dredging and the disposal of dredged sediments at designated sites in Long Island Sound. Open water disposal is only permitted at the designated open water sites and may only occur if the disposal will not cause adverse impacts to estuarine organisms.	CTDEP NYSDEC NYSDOS USACE EPA	Substantive Progress	DEP continues to implement its coastal permitting and Federal consistency review programs. During this calendar year, there were 287 permit and 18 Federal consistency actions. In addition, several new enhancements have occurred during this period. NYSDEC regulates dredging activities through its Tidal Wetlands and Protection of Waters Regulations.	The SAV maps will be distributed to town and federal agencies in 1999.
L2-2. Connecticut will continue to reduce habitat degradation caused by storm water runoff projects (e.g. chronic dilution effects and sedimentation) through the goal of retaining the first one-inch of runoff.	CTDEP	Substantive Progress	This issue is addressed by the CTDEP in the review of any municipal project along the coast requiring mandatory coastal site plan review. The coastal permit program addresses this issue only when the discharge is directly into tidal wetlands and coastal waters. This provision has also been incorporated into the storm water general permits for industrial and construction activity.	
L2-3. Connecticut and New York have programs to acquire by easement, fee simple acquisition, or other means habitats important for populations of plants and animals. These programs include the development of priority listings for acquisition and protection. Connecticut and New York have land acquisition and management programs that use state funds and federal fund programs such as the Land and Water Conservation Fund, the National Coastal Wetland Conservation Program, and the North American Waterfowl Management Plan to protect and acquire coastal lands and wetlands.	CTDEP	Partial Progress	Land acquisition of open space in CT continues under the Recreation and Natural Heritage Trust Program (RNHT) using state bond funds. During 1998 $10 M was available and $8 M was spent purchasing 2000 acres. Of the $10 M Grant program, $5 M was allocated, 19 awards were given to purchase an additional 2800 acres. CTDEP manages real property interests for over 211,000 acres of forest, park, wildlife, fishery, water access and natural areas. The state's goal is to reserve not less than 10percent of open/preserved space in Connecticut under DEP ownership and 21percent open/preserved space combined (federal, municipal, and nonprofit) ownership by the year 2023.	An additional $9.5 M under RNHT will be allocated for 1999 and an additional $5 M is planned in grants for 1999.

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Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

2. HABITAT PROTECTION AND ACQUISITION (CCMP TABLE 41, P.110)

Ongoing Programs	Responsible Parties	Status[2]	Description	Upcoming Action
L2-4. The USFWS maintains a national system of refuges, which includes the Stewart B, McKinney National Wildlife Refuge in Connecticut (i.e., Salt Meadow, Chimon Island, Sheffield Island, Goose Island, Milford Point and Falkner Island Units) and Long Island National wildlife Refuge Complex in New York (i.e., Oyster Bay and Target Rock units).	USFWS	Substantive Progress	USFWS continues to maintain its refuges in CT and NY.	
L2-5. Congress has authorized the creation of the Silvio Conte Connecticut River National Fish and Wildlife Refuge within the Connecticut River Watershed for the purpose of conserving, protecting and enhancing the Connecticut River Valley populations of plants, fish, and wildlife; preserving natural diversity and water quality; fulfilling international treaty obligations relating to fish and wildlife; and providing opportunities for scientific research and education.	USFWS	Substantive Progress	A draft EIS for the refuge was released for comment in 1996, recommending that the FWS work with public and private interests for meeting the refuge purposes, with education and partnerships priorities. The refuge is unique in the extent to which residents of the watershed are actively involved in shaping the refuge plan. Eighteen outreach/environmental education grants and 21 habitat research and management grants were awarded in 1996.	
L2-6. Connecticut has established a Migratory Bird Conservation Stamp Program, the proceeds of which can be used for acquisition and management. The newly created state income tax form check off for endangered species, natural areas preserves, and watchable wildlife creates a fund that can be used for the identification, protection, conservation, management, and education activities related to the above listed wildlife and habitats.	CTDEP	Substantive Progress	The Conservation Stamp program has made a major contribution to the restoration of degraded tidal wetlands by enabling the purchase of an amphibious mulching mower to remove tall vegetation, especially common reed, in preparing of a site for restoration activities and for mechanical control of the common reed. Funds from this program were also used for tidal wetland restoration activities in the Quinnipiac river and South Cove in Old Saybrook. Funds from the state income tax "wildlife" checkoff have been used to fund Osprey research, wetland callback surveys to locate rare nesting wildlife, Least Tern recover project, and short-nosed Sturgeon habitat studies.	

2. HABITAT PROTECTION AND ACQUISITION (CCMP TABLE 41, P.110)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
L2-7. Create a Long Island Sound Reserve System consisting of areas of land and water of outstanding or exemplary scientific, educational, or biological value to reflect regional differentiation and variety of ecosystems and to include representatives of all of the significant natural habitats found in the Sound. Where appropriate, sites will be selected from existing lands and wetlands held for conservation purposes so that acquisition funds will be directed towards those lands in private ownership that are needed to complete the reserve system. The primary activities in the recommendation include site identification (2 years) and site protection through the development of management plans, acquisition where necessary, and site management.	R	CTDEP NYSDEC NYSOPRHP USFWS Long Island Sound Bi-state Committee		$50,000 per year for each state for staff to identify sites, develop acquisition strategies and manage the reserve complex. Acquisition costs will depend upon areas identified for protection through purchase.	Not Initiated		
L2-8. Connecticut and New York should continue to acquire or protect through less than fee simple means, significant coastal habitats through funding sources such as the Land and Water Conservation Fund, the National Coastal Wetland Conservation Program, the North American Waterfowl Management Plan, Connecticut's Recreation and Natural Heritage Trust Program, Connecticut's Migratory Bird Conservation Stamp Program, New York's Environmental Protection Fund, and, where appropriate, natural resource damages recovered under CERCLA or OPA90.	R	CTDEP NYSDEC Assistance of local governments, environmental groups and federal granting agencies.		$50,000 per year for each state for staff.	Partial Progress	As an example of habitat protection through less than fee-simple, more than 70 acres of high quality tidal marsh on the CT River in the Cromwell Meadows was donated to the CT Audubon as part of an supplemental environmental penalty.	
L2-9. Acquire and protect those sites that are considered for acquisition in the New York State Open Space Conservation Plan. Sites include Oyster Bay Harbor ($5 million); Porpoise Channel ($2 million); Plum Point ($1 million); Udall's Cove ($8 million). Other sites on Long Island Sound that are among the state's highest priority acquisition sites include: Bronx River Trailway, Udall's Ravine, Alley Creek ($750,000); Long Creek and Mattituck Creek ($340,000); Premium River ($750,000); and Cedar Beach Creek ($186,000).	R	NYSDEC NYSOPRHP		Priority sites for acquisition total $16 million	Partial Progress	New York has made allocations for land acquisitions through the Clean Air/Clean Water Bond Act. The Bronx River Trailway Project received an ISTEA award for some of its implementation.	

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Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

2. HABITAT PROTECTION AND ACQUISITION (CCMP TABLE 41, P.110)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
L2-10. Acquire and protect those sites that are considered priorities for acquisition in Connecticut. The Great Meadows site is the highest priority. (See also Ongoing Programs portion of this table in the CCMP.)	R	CTDEP USFWS		$14 million	Partial progress	The lower CT River, designated as a Wetland of International Importance, is a priority. See action L2-8.	
L2-11. Encourage activities of existing Long Island Sound-specific land trusts and encourage formation of new trusts, to seek donations and easements of localized habitat areas for the plants and animals of Long Island Sound.	R	NYSDEC EPA-LIS Office		Redirect base program	Not Initiated		

3. INVENTORIES AND MANAGEMENT STRATEGIES FOR AQUATIC AND TERRESTRIAL HABITATS (CCMP TABLE 42, P.112)

Ongoing Programs	Responsible Parties	Status[2]	Description	Upcoming Action
L3-1. Connecticut, New York and The Nature Conservancy will continue the Natural Diversity Database in Connecticut and the Natural Heritage Program in New York. These programs collect, maintain, and update information pertaining to significant terrestrial and aquatic habitats.	CTDEP NYSDEC NYSOPRHP	Fully Met	CTDEP's natural diversity database maintains information about locations of state listed species (plants, vertebrates, invertebrates), populations and status, including population size, threats, and dates observed. NYSDEC maintain a database concerning significant fish, wildlife, and plant resources and significant ecological areas. The NY State Office of Parks, Recreation and Historic Preservation (NYSOPRHP) established its own natural resources inventory unit which will be closely coordinated with the National Heritage Database.	

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Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

3. INVENTORIES AND MANAGEMENT STRATEGIES FOR AQUATIC AND TERRESTRIAL HABITATS (CCMP TABLE 42, P.112)				
Ongoing Programs	Responsible Parties	Status[2]	Description	Upcoming Action
L3-2. The USFWS will continue the Southern New England-New York Bight Coastal and Estuary Project. The project focuses on assessing and monitoring the regional geographic distribution and population status of a large number of key species called *Species of Special Emphasis* and their habitats including evaluating the threats to physical integrity of these habitats and the viability of species populations. Primary objectives are to determine and delineate those regionally important habitats and species populations requiring both immediate and long term protection, conservation, enhancement, and restoration.	USFWS			

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Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

3. INVENTORIES AND MANAGEMENT STRATEGIES FOR AQUATIC AND TERRESTRIAL HABITATS (CCMP TABLE 42, P.112)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
L3-3. The NYSDEC will, on a pilot basis, develop a site-specific habitat management strategy for the Oyster Bay/Cold Spring Harbor complex. Phase II will entail implementation of the identified strategy.	C	LISS NYSDEC	Initiated in fall 1992, strategy to be completed in winter 1994	$50,000 of LISS funds for the development of the strategy. Implementation costs to be determined	Behind Schedule	A final draft has been submitted to EPA-LISO for final review. Work has begun on development of a habitat management strategy for Milton Harbor in Rye, NY. Work has been completed on a habitat management strategy for Mt. Sinai Harbor, NY.	
L3-4. Connecticut is identifying wetland complexes of statewide significance and general wetland protection strategies for areas located in Long Island Sound and the Connecticut River. This project has been funded by the EPA under §104(b) of the Clean Water Act.	C	CTDEP	Fall 1994	$62,500.	Ongoing	CTDEP has completed the identification of wetland complexes of statewide significance and general wetland protection strategies. Staff are in the process of completing a draft final report.	Complete report
L3-5. Develop a nomination document to recommend the designation of the Connecticut River estuary as a *Wetland of International Importance* for the purpose of establishing a formal designation of this area to recognize the ecological significance of this ecosystem and to foster increased protection of its significant habitat complex and living resources.	C	CTDEP	Fall 1994	$25,000	Complete	The nomination document was completed in summer 1994 and submitted to the Ramsar Convention Bureau in Switzerland. The nomination was approved and the portions of the tidal wetlands and all of the tidal waters on the lower river were designated as a Wetland of International Importance in October 1994. Subsequently, several new parcels owned by three new partners were added to the designation. To celebrate the 25th anniversary of the Ramsar Convention, a series of public outreach efforts were sponsored in 1996 by CTDEP and USFWS.	Continue to encourage the designation of wetlands held for conservation purposes.
L3-6. Develop a strategic plan for the estuarine portion of the Connecticut River that will identify habitat and species issues/problems, monitoring, and research needs and recommendations to foster increased protection of this nationally significant ecosystem.	C	CTDEP	2 years	$50,000 per year for two years	Substantive Progress	CTDEP continues to make progress in the development of a Special Area Management Plan for the lower Connecticut River. The emphasis of this effort is to develop a management plan that promotes the conservation and restoration of living resources and their habitats. A task force has been assembled to provide advice and recommendations to CTDEP. Meetings were held to solicit ideas.	Continue evaluations

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Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

3. INVENTORIES AND MANAGEMENT STRATEGIES FOR AQUATIC AND TERRESTRIAL HABITATS (CCMP TABLE 42, P.112)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
L3-7. Develop and periodically update a list of significant habitats, habitat complexes, and sensitive areas for protection and management. When completed, habitat management plans will be developed for these areas. In New York this should be undertaken in cooperation with the implementation of the NYSDOS Long Island Sound Regional Coastal Management Plan.	R	CTDEP NYSDEC NYSDOS	Started in 1995.	$50,000 per year for each state	Substantive Progress	See Action L1-13. NYSDOS is updating its Significant Fish and Wildlife Habitat descriptions. A draft narrative document is currently under agency review with NYSDOS.	NYSDOS will circulate the narrative document to outside local, state, and federal agencies in May 1999.
L3-8. Expand the Southern New England-New York Bight Coastal and Estuary Project to: 1) include the watersheds of Long Island Sound; and 2) reexamine the habitat complexes previously identified in Long Island Sound based upon the most current listing of Species of Special Emphasis. Examine the complexes more carefully to fine tune the management recommendations and implement these recommendations through state, county and municipal agencies.	R	USFWS	Ongoing		Partial Progress	USFWS has been an active participant in the LISS Habitat Restoration Initiative providing data on some key habitats.	
L3-9. Federal habitat programs should develop a watershed approach to protection of living resources of Long Island Sound and their habitats, such as development of a Connecticut River/Long Island Sound Management Unit by the USFWS.	R	USFWS	Ongoing		Partial Progress	USFWS has formed a CT River team, bringing different service units together with a watershed focus.	
L3-10. Designate portions of the Connecticut River estuary as a National Estuarine Research Reserve. A reserve designation will result in promoting research that is directed towards resource management issues and provide facilities and programs for public education and interpretation.	R	CTDEP NOAA	3 years for selection of sites and the development/ approval of the management plan	$150,000	Partial Progress	In July 1998, the President proclaimed the Connecticut River a river of significance under the Administration's American Heritage Rivers Initiative.	

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Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

4. MANAGING ENDANGERED AND THREATENED SPECIES (CCMP TABLE 43, P.116)

Ongoing Programs	Responsible Parties	Status[2]	Description	Upcoming Action
L4-1. Connecticut, New York, and federal agencies will continue to implement their Endangered Species Programs in order to protect endangered and threatened species that live in and adjacent to Long Island Sound.	CTDEP NYSDEC	Substantive Progress	CTDEP's National Diversity Database (NDD) reviews all coastal permits for impacts to state and federal listed endangered, threatened and special concern species. A LIS License Plate Fund project provided the NDD with funding to prepare 25 endangered, threatened, and special concern plant fact sheets for coastal areas. The NDD has provided all coastal towns with generalized maps of locations of state listed species to be used for municipal plans of conservation and development, land protection activities and environmental planning, including local inland wetland permits. In New York, impacts to state and federal endangered, threatened, and special concern species are considered during the permitting process. As described in L3-1, NYSDEC maintains a database containing information about significant fish, wildlife, and plant resources and significant ecological areas.	

4. MANAGING ENDANGERED AND THREATENED SPECIES (CCMP TABLE 43, P.116)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
L4-2. Develop a list of endangered and threatened invertebrates. Maintain and update the diversity database. Periodically revise the list of threatened and endangered species. Expand the monitoring program, identify essential habitats, and develop recovery plans.	R	CTDEP		$150,000 per year for staff; $200,000 per year for least tern and piping plover nest site restoration	Partially Addressed	Some progress in this area is being made within the CTDEP fisheries division through existing resources and programs. CTDEP's Natural Resources Center also maintains a natural diversity database.	
L4-3. Develop legislation or regulations in New York state that will minimize disturbance to the essential habitats of rare plants and animals.	R	NYSDEC		Redirect Base Program	Not Initiated		
L4-4. Revise and publish a list of rare and sensitive species associated with the coastal lands and waters of Long Island Sound.	R	NYSDEC	Every 5 years	$50,000	Partial Progress	NYSDEC staff are compiling a list of rare plants associated with wetlands in Long Island Sound as part of the LISS Habitat Restoration Initiative.	This list is intended to be included in an appendix to the freshwater wetlands technical document to be produced by the LISS Habitat Restoration Initiative.

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Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

5. MANAGING HARVESTED SPECIES (CCMP TABLE 44, P.117)

Ongoing Programs	Responsible Parties	Status[2]	Description	Upcoming Action
L5-1. Development and implementation of fishery management plans, including research, monitoring, and conservation law enforcement activities.	NYSDEC	Ongoing	NYSDEC, as mandated by the Atlantic States Marine Fisheries Commission, has amended marine fishing regulations affecting recreational and commercial harvest of summer flounder (fluke), tautog (blackfish), and black sea bass. This was done in order to restore healthy populations of these species. NYSDEC accepted written comments on changes to the regulations for summer flounder, tautog, and black sea bass until June19, 1998.	NYSDEC will increase the summer flounder limit to 16 inches in April 1999.
L5-2. Management of shellfish aquiculture activities including resource monitoring.	CTDOA, Bureau of Aquiculture.	Ongoing	CT DA/BA regularly monitors, manages and enhances shell fisheries in the state. A small scale stock and habitat assessment will be conducted in Hay Harbor, Fishers Island using $14,000 in funding from Natural Resource Damage funds. NYSDEC has created a staff position to conduct shellfish stock assessments and initiate a shellfish land leasing program.	
L5-3. Improvement of anadromous fish passage opportunities including associated research and monitoring activities.	CTDEP	Substantive Progress	The Habitat Restoration Initiative targets river migratory corridors for anadromous fish passage as one of the targeted habitat types. CTDEP used §319 funds to restore fish passage in Connecticut streams. Approximately $170K has been spent or committed in the past year to build a fishway on a tributary to the CT River in Old Lyme; plan a fish ladder on the Quinnipiac River; breach a dam on the Naugatuck River; and restore fish passage on a tributary to the Farmington River. The Mianus fish passage project was completed with funding from CTDEP's Coves and Embayments program.	As part of a NY Clean Air/Clean Water Bond Act award, the Town of Huntington, in cooperation with USFWS will be installing a fish ladder at Betty Allen Nature Preserve.
L5-4. Wildlife management, including research and monitoring activities in support of management programs.	USFWS CTDEP NYSDEC	Ongoing	Agencies continue their wildlife management, research and monitoring programs.	
L5-5. Activities that minimize mortality due to entrainment and impingement of eggs, larvae, and juvenile and adult aquatic organisms at industrial facilities.	CTDEP	Substantive Progress	Working through permit process to see that location/operation of intakes minimize entrainment and impingement where practicable.	

5. MANAGING HARVESTED SPECIES (CCMP TABLE 44, P.117)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
L5-6. Define, revise, and coordinate the establishment of seasonal restrictions for dredging that minimize adverse effects on aquatic organisms, especially finfish and shellfish and their habitats.	C	LISS CTDEP NYSDEC NYSDOS EPA NOAA USACE USFWS MSRC/SUNY	1994	Redirection of base program	Partially addressed	CTDEP already incorporates seasonal restrictions on dredging and disposal activities into permit authorizations for a number of sensitive living resources including anadromous finfish, winter flounder, and shellfish. CTDEP's Long Island Sound Research Fund supported research on the effects of suspended sediments on survival of winter flounder eggs and larvae. The Fisheries Division has surveyed five rivers and harbors for occurrence of winter flounder larvae and the Department of Transportation has funded studies of noise associated with bridge work. These activities improve our ability to assess the need for and timing of seasonal restrictions on dredging and other construction activities to protect living resources. NYSDEC hosted a Regional Dredging Window Strategy Workshop on October 18, 1995. NYSDEC currently incorporates seasonal restrictions on dredging and disposal activities into permit conditions to protect a number of sensitive living resources, including finfish and shellfish, and for restrictions on shore disposal activities to protect sensitive species of shorebirds.	
L5-7. Enhance implementation of interstate fishery management plans for Long Island Sound fishery resources.	R	CTDEP NYSDEC NMFS USFWS	To be initiated upon approval of funding	$250,000 per year per state will be used to fund fishery management staff and, in Connecticut, law enforcement officers.	Partial Progress	New York passed legislation in 1998 to further restrict commercial purse seine vessel activity in NY waters of LIS.	The LIS menhaden moratorium expires July 1999.

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Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

5. MANAGING HARVESTED SPECIES (CCMP TABLE 44, P.117)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
L5-8. Expand efforts to bypass obstructions to anadromous finfish migrations on Connecticut tributaries to Long Island Sound and the Connecticut River by constructing or installing fishways or fishlifts.	R	CTDEP Municipal governments and environmental organizations USFWS NMFS	To be initiated with enhanced funding	$100,000 per year for CTDEP staff to administer activities and construct small tributary fishways. Costs to be determined as project opportunities arise.	Partially addressed	Anadromous fish passage is being enhanced through cooperative efforts of CTDEP, municipalities and dam owners. Also see L5-3.	
L5-9. Enhance municipal shellfish restoration programs.	R	Municipal governments	Upon funding	$100,000 per state per year for a number of small grants to municipalities to enhance oyster, clam and bay scallop restoration efforts.	Partially Addressed	Several municipal governments in Connecticut are carrying out small programs using existing resources at the local level.	
L5-10. Enhance the Connecticut Oyster Restoration Program on public beds in state waters by stocking settling habitat (cultch) and conducting related activities (e.g., resource sampling).	R	CTDOA, Bureau of Aquiculture	To be initiated with enhanced funding. On-going.	$100,000 per year for staff and $400,000 per year for purchase of cultch for maintenance of restored beds.	Partially Addressed	In 1995 and 1996 $0.5 million in state bond funds were awarded each year in Connecticut to purchase and plant cultch to restore oyster beds.	CT Department of Agriculture, Shellfish Industry and UICO joint venture established to manage cultures on public beds. $100,000 FY 99.
L5-11. Develop a marine biotoxin assessment program for shellfish.	R	CTDOA, Bureau of Aquiculture NYSDEC	To be initiated upon approval of funding. On-going.	$300,000 per year in Connecticut and $150,000 per year in New York for staff and laboratory costs.	Partially Addressed	CT Dept. Of Agriculture initiated monitoring using existing agency resources. Fixed stations are monitored in susceptible areas and laboratory analyses are conducted.	CT Department of Agriculture training volunteers to monitor phytoplankton in LIS.

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Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

5. MANAGING HARVESTED SPECIES (CCMP TABLE 44, P.117)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
L5-12. Develop artificial reefs in appropriate areas of New York waters to increase fishing opportunities, consistent with the New York State Artificial Reef Development Plan. Plans have been developed to construct reefs in New York waters of Long Island Sound off Matinecock Point, Eatons Neck, Miller Place/ Mt. Sinai, and Mattituck Inlet.	R	NYSDEC and Cooperators	To be initiated upon approval of funding	Approximately $100,000 for each of four reefs planned for Long Island Sound.	Not Initiated	In the absence of funding and staff necessary to develop additional artificial reefs, NYSDEC's Artificial Reef Program has been focused on existing artificial reefs.	
L5-13. Develop methods to reduce the incidental take of nontarget species and undersized individuals in fishing activities.	R	CTDEP NYSDEC NMFS USFWS Atlantic States Marine Fisheries Council New England and Mid-Atlantic Fishery Management Councils Commercial and recreational fishing organizations.	To be initiated upon approval of funding	$50,000 per year per state for staff and $10,000 - $20,000 per year for test materials and equipment.	Partially addressed	State agencies, the Atlantic States Marine Fisheries Commission, and fishery management councils have reduced the incidental take of juveniles and some non-target species through increased cod end mesh size restrictions in otter trawls and escape vents in certain pot and trap fisheries for lobsters and finfish.	

KEY: 1) Type: Commitment, Recommendation

2) Status for dated actions: Complete, Ahead of Schedule, On Schedule, Behind Schedule, Partially Addressed, Not Initiated
Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

6. MANAGING EXOTIC AND NUISANCE SPECIES (CCMP TABLE 45, P.120)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
L6-1. Develop measures to prohibit or prevent the induction or release to Long Island Sound and its watershed of known or potentially undesirable species.	R	CTDEP NYSDEC USFWS U.S. Coast Guard Shipping Companies	To be initiated as soon as possible	$50,000 per year per state for staff to develop and manage program	Partial Progress	Through its coastal permit programs, CTDEP prohibits the introduction of non-indigenous plant stock for aquatic restoration projects such as tidal wetlands and eelgrass. Only plant stock collected in LIS is allowed. DEP discourages the use of beach grass in dunegrass restoration that is not derived from the shores of the Sound. PA 97-32 established the authority for the Department of Agriculture to control the importation, cultivation, or raising of aquatic plants or animals that are not native to the state that might have adverse impacts upon living resources or aquatic habitats. CT also has a review procedure for the introduction of non-native insects to be used as biological control agents. DEP has developed a policy for invasive plants and established a DEP Technical Committee. OLISP notified the USFWS that a population of the highly invasive water chestnut was present in Holyoke, Massachusetts, which poses a threat to the Connecticut River. USFWS attempted a late spring harvest, but efforts were thwarted by a late spring flood. USFWS is planning a control for 1999, and DEP will assist. DEP has undertaken control of another invasive aquatic known as *Hydrilla* in southeastern Connecticut. NYSDEC, in its Tidal Wetlands Permitting Program, expressly discourages introduction of exotic species to the coastal environment.	
L6-2. Implement a management program to reduce abundance of mute swans that are causing losses of certain aquatic habitat types such as submerged aquatic vegetation and certain types of emergent tidal wetland vegetation.	R	CTDEP	To be initiated as soon as possible	To be included within costs of above item.	Not Initiated		

KEY: 1) Type: Commitment, Recommendation 2) Status for dated actions: Complete, Ahead of Schedule, On Schedule, Behind Schedule, Partially Addressed, Not Initiated
Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

7. EDUCATING THE PUBLIC ABOUT THE PLANTS AND ANIMALS OF LONG ISLAND SOUND (CCMP TABLE 46, P.120)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
L7-1. Develop an outreach program to inform and educate the public about the plants and animals in Long Island Sound.	R	Federal, state, and local governments, educational systems, organizations, and environmental organizations		See Public Involvement and Education Section	Substantive Progress	CTDEP continues to promote public involvement and education through many of its programs, especially use of LIS License Plate Funds. Examples include: Tidal Marshes of LIS; A Guide to the Housatonic River; Tidelands of the Connecticut River; the placement of interpretive signs or observation platforms at 12 coastal locations; displays and equipment at the Meigs Pont Nature Center; LIS Video for elementary through high school students; A Living Harvest: Oystering in LIS; Celebrating the Sea classroom programs; a mobile environmental library for the Old Saybrook schools; Birds of the CT Coast on display at the CT Museum of Natural History; Marine Animals of Southern New England and New York: an identification key; Long Island Sound Alive: a laser disc production showing the resources of LIS; the salt marsh laboratory at CT Audubon Coastal Center; fact sheets about endangered species; and development of an interpretive trail at Cove Island State park. NY Sea Grant/CT Sea Grant produced a slide show, script, and booklet on the plants and animals of LIS that are available to groups.	
L7-2. Develop a citizens monitoring program specific to the plants and animals of Long Island Sound sufficient to aid managers in identifying problems and assessing the effects of management efforts.	R	Federal, state and local governments, educational and environmental organizations and private citizens.		See Public Involvement and Education Section	Partially Addressed	CTDEP works with citizens monitoring groups to promote reliable and accurate field and laboratory efforts. In 1995, CTDEP began a volunteer Secchi disk monitoring program to determine long term changes in water clarity resulting from nitrogen enrichment and management and benefits for eelgrass beds. CTDEP also promotes citizens monitoring through use of CWA§ 319 funds. In 1998 CTDEP hired an environmental analyst to work with citizens monitoring groups EPA sponsored a workshop on Quality Assurance for volunteer monitoring organizations in March 1998.	Complete analysis of 1998 Secchi disk data and compare to previous years to assess changes in water clarity over time.

KEY: 1) Type: Commitment, Recommendation

2) Status for dated actions: Complete, Ahead of Schedule, On Schedule, Behind Schedule, Partially Addressed, Not Initiated
Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

8. DEVELOPING AN INFORMATIONAL DATABASE ABOUT LIVING RESOURCES AND THEIR HABITATS (CCMP TABLE 47, P.122)

Ongoing Programs	Responsible Parties	Status[2]	Description	Upcoming Action
L8-1. Connecticut will continue its statewide Geographic Information System (GIS) Program to digitize spatial information and data for resource management purposes.	CTDEP	Fully Met	CTDEP's Natural Resources Center continues its efforts to develop data layers on the State's GIS, useful for resource management purposes.	
L8-2. Connecticut has created a Long Island Sound Resources Center for the purpose of : 1) developing the full potential of estuarine related GIS applications; 2) computerizing pertinent literature and data for rapid access through standard word search and spatial basis; and 3) completion of the estuarine geology of Long Island Sound. Additionally, this Center is taking a leadership role in the development of side scan sonar mapping of Long Island Sound that is now being overlaid with benthic community information. This will become the foundation of future living species and habitat management programs.	CTDEP	Fully Met	The collection is now on-line and searchable via the world-wide-web. A new survey of LIS sedimentary habitats is nearing publication. The center is working with OLISP on a public access database. In November 1998, USGS Woods Hole, MA, published a compact disc (CD) of LIS environmental studies -- sidescan sonar, seismic reflection, bathymetric, sediment and bibliographic data and interpretations (Open file Report 98-502)	

8. DEVELOPING AN INFORMATIONAL DATABASE ABOUT LIVING RESOURCES AND THEIR HABITATS (CCMP TABLE 47, P.122)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
L8-3. Identify spatial data for living resources and habitat on a Sound wide basis and digitize priority data sets for incorporating into a Sound wide Geographical Information System.	C	LISS	Initiated in winter of 1993-1994; completion date is winter 1994-1995	$97,000 LISS Funds	Substantive Progress	Through funding provided by the LISS, an electronic base map for all of LIS that incorporates the most current bathymetry has been created. CTDEP has developed or funded the development of a number of digital habitat and living resources coverages including eelgrass in eastern LIS, SAV in the CT river, colonial water birds in CT (NY portion under development), and tidal wetlands. CTDEP is developing a Coastal Resources Library to include the previously listed data and existing resources such as intertidal flats. The effort is funded by the EPA Wetland Protection Program as is the development of a detailed living resources/habitat GIS at the mouth of the CT River for oil spill planning. Work has also been directed towards the development of an anadromous finfish GIS, but this is still under development. OLISP has completed the development of a user friendly Coastal Resources GIS. The construction of an Oil Spill GIS prototype has been completed. An in-progress coast wide Oil Spill GIS is under development.	
L8-4. Expand the data layers for living resources and their habitats on a Sound wide basis.	R	EPA-LIS Office	5 years	$75,000 per year	Not Initiated		
L8-5. Develop and maintain state databases and an integrated Long Island Sound database describing the living resources of Long Island Sound and their habitats.	R	CTDEP NYSDEC		$50,000 per year for each state for staff and $100,000 one-time only for data processing hardware/ software	Partially Addressed	CTDEP fisheries division maintains statistical databases on Long Island Sound marine resource surveys, inshore seine surveys, and lobster studies. NYSDEC Bureau of Marine Resources maintains statistical databases on lobster, seine surveys, anadromous fish, and party/charter boat surveys in Long Island Sound.	

KEY: 1) Type: Commitment, Recommendation

2) Status for dated actions: Complete, Ahead of Schedule, On Schedule, Behind Schedule, Partially Addressed, Not Initiated
Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

8. DEVELOPING AN INFORMATIONAL DATABASE ABOUT LIVING RESOURCES AND THEIR HABITATS (CCMP TABLE 47, P.122)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
L8-6. Expand the side scan sonar/benthic habitat mapping program in order to create baseline information for management and conservation purposes.	R	CTDEP USGS		$100,000 per year for 5 years	Partially Addressed	Considerable progress has been made in benthic mapping through collaborative efforts of CTDEP's Marine Geology Program, the USGS, and the University of New Haven (through the LIS Research Fund). The USGS released its CD-ROM entitled "Long Island Sound Environmental Studies" which provides electronic maps of most of LIS sedimentary conditions and physical habitats. (See L8-2)	
L8-7. Maintain and enhance the Long Island Sound literature, indexing and GIS capabilities of the Marine Sciences Research Center at SUNY, Stony Brook.	R	MSRC/SUNY		$75,000 per year	Not Initiated		

9. SOUND WIDE AND SITE-SPECIFIC RESEARCH AND MONITORING (CCMP TABLE 48, P.123)

Ongoing Programs	Responsible Parties	Status[2]	Description	Upcoming Action
L9-1. Connecticut conducts a Sound wide open water fishery survey that has become an integral component of the LISS monitoring and Management programs. In addition, Connecticut conducts a nearshore finfish survey, and surveys of lobster, shad, anadromous herrings, Atlantic sturgeon, and shortnose sturgeon (the latter is listed by the federal government as an endangered species). Other marine surveys include a survey of oyster recruitment (Connecticut Department of Agriculture, Aquiculture Division) and recreational and commercial fishery statistics activities.	CTDEP	Substantive Progress	Enhancements to recreational and commercial fishing statistics are being developed through Atlantic States Marine Fisheries Commission (ASMFC), Atlantic Coast Cooperative Statistics Program (ACCSP), NMFS and coastal states taking part.	

9. SOUND WIDE AND SITE-SPECIFIC RESEARCH AND MONITORING (CCMP TABLE 48, P.123)

Ongoing Programs	Responsible Parties	Status[2]	Description	Upcoming Action
L9-2. Connecticut conducts nesting surveys of colonial water birds, Least Tern and Piping Plover, Osprey, waterfowl, a mid-winter eagle survey, and surveys of diamond-backed terrapin, threatened and endangered terrestrial species, and other species of special concern.	CTDEP	Substantive Progress	CTDEP's Natural Diversity Database maintains "Heritage" information and develops GIS coverages resulting from Wildlife Division surveys of avifauna.	
L9-3. New York conducts an American lobster mortality project funded by the LISS. In addition, New York conducts the NMFS's Recreational Fishery Statistics Survey, surveys of commercial fishery landings, seabird surveys, (e.g., ospreys, piping plovers, least terns), surveys of threatened and endangered species and species of special concern, and other surveys as needed.	NYSDEC USNMFS	Substantial Progress	NYSDEC and CTDEP are working together to address concerns over the NMFS's proposed regulations on lobster size. NYSDEC is funding an effort to determine genetic differences of western LIS lobsters to enhance management capabilities. If it can be demonstrated that LIS lobsters migration and reproductive cycles differ from that of east coast populations, better fisheries management policies may be developed and implemented for LIS populations.	

9. SOUND WIDE AND SITE-SPECIFIC RESEARCH AND MONITORING (CCMP TABLE 48, P.123)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
L9-4. Connecticut should pursue the construction and staffing of a marine science technology center at Avery Point with a research focus on Long Island Sound.	R	CTDED CTDEP CTDOA University of Connecticut		$33 million in capital costs; $4 million per year in operating costs	Partially Addressed	Through the UCONN 2000 bonding program, the marine sciences technology program at Avery Point is expanding, including addition of new professional staff and facility renovation and expansion.	
L9-5. Enhance wildlife monitoring activities (e.g., seabirds, waterfowl, and marine turtles).	R	CTDEP		$50,000 per year for staff, interns and contract work	Not Initiated	The Norwalk Maritime Center is conducting periodic surveys of seal populations in western LIS.	
L9-6. Monitor the status and trends of eelgrass in the Sound and all species of submerged aquatic vegetation in the Connecticut River using remote sensing and ground surveys.	R	CTDEP EPA	To be initiated upon funding	$100,000 per year for photography, field surveys, and boundary delineations	Partially Addressed	Baseline mapping for eelgrass in the Sound and submerged aquatic vegetation in the Connecticut River have been completed. No new remote sensing has been conducted to determine trends. A volunteer Secchi disk monitoring program has been implemented to evaluate trends in water clarity to guide eelgrass restoration efforts.	

9. SOUND WIDE AND SITE-SPECIFIC RESEARCH AND MONITORING (CCMP TABLE 48, P.123)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
L9-7. New York should initiate a nearshore fishery independent survey of Long Island Sound.	R	NYSDEC	To be initiated upon funding	$150,000 per year	Not Initiated		
L9-8. Continue the lobster mortality and disease monitoring project in Long Island Sound.	R	NYSDEC	Annually	$65,000 per year	Not Initiated		

10. LIVING RESOURCES AND HABITAT RESEARCH (CCMP TABLE 49, P.124)

Ongoing Programs	Responsible Parties	Status[2]	Description	Upcoming Action
L10-1. Connecticut will continue the Long Island Sound Research fund. This fund is used to foster research that addresses priority management issues in Long Island Sound including living species and their habitats.	CTDEP	Discontinued	No funds were available for the past three years (1996-1998). However, a list of living resource research priorities were included with the License Plate Program RFP for the first time.	Efforts continue to procure more funding for this research program.

KEY: 1) Type: Commitment, Recommendation

2) Status for dated actions: Complete, Ahead of Schedule, On Schedule, Behind Schedule, Partially Addressed, Not Initiated
Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

10. LIVING RESOURCES AND HABITAT RESEARCH (CCMP TABLE 49, P.124)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
L10-2. Connecticut has funded the following living resources and habitat research: evaluation of the causes of declines of eelgrass; assessment of contaminant levels in the greater scaup; changes in the phytoplankton community resulting from nitrogen enrichment; effects of hypoxia on bottom feeding fish; vegetation changes in a restoring tidal wetland; and mapping of benthic communities.	C	CTDEP and various Connecticut researchers	Each research topic has a different completion date from 1994 to 1998.	$1,500,000	Some are Completed, some are Behind Schedule. See Description.	Projects funded that are complete include: a study of water quality impacts of degraded marshes; statewide land cover mapping; benthic community mapping and characterization; dredging impacts on winter flounder; impacts of phragmites on the lower CT River; sediment accumulation in coastal coves; changes in phytoplankton community resulting from nitrogen enrichment; mapping of submerged aquatic vegetation in lower CT River; and a study of fish and seafood consumption in CT. Projects that are behind schedule are: an evaluation of causes of eelgrass decline and methods of restoration; and effects of hypoxia on bottom-feeding fish.	Complete remaining projects.
L10-3. Identify priorities for management-oriented research about the living resources of Long Island Sound and their habitats.	R	CTDEP NYSDEC EPA EPA-LIS Office NMFS USFWS Academic Institutions		$5,000 workshop	Not Initiated		

KEY: 1) Type: Commitment, Recommendation

2) Status for dated actions: Complete, Ahead of Schedule, On Schedule, Behind Schedule, Partially Addressed, Not Initiated
Status for *Ongoing Programs* and ongoing *CCMP Actions*: Fully Met, Substantive Progress, Partial Progress, Discontinued

Raising Public Awareness and Participation through Education and Outreach

A significant factor toward long-term CCMP effectiveness is the ability to increase the public's awareness of and participation in activities designed to protect the LIS. Educating LIS watershed residents and increasing the number of people that take an active interest in protecting and restoring the Sound helps to nurture long-term stewardship ideals in the local communities. As the LIS is restored to a more healthy ecosystem these ideals will help ensure its maintenance well into the future.

Strategy:

The CCMP public awareness and outreach strategy has six major elements: 1) increasing community awareness and stewardship; 2) promoting understanding; 3) facilitating public participation; 4) increasing communication and cooperation; 5) ehhancing education at all levels; and 6) securing funding. The CCMP identifies 7 ongoing programs and 16 management actions to address these goals. Of the 16 management actions, 7 are reported as *Fully Met* **or** *Significant Progress***; 6 are reported as** *Partial Progress***; and 3 are reported as** *Not Initiated***.**

Highlights:

- **An interagency team revised the** *LISS Habitat Restoration Strategy* **in June 1998.**
- **The LISS public education and outreach program revised and distributed the key document,** *LISS Phase lll Actions for Hypoxia Management***, July 1998. This document describes the LISS Policy Committee agreement to reduce nitrogen loads to LIS over a 15 year implementation schedule.**
- **LISS developed a new LIS Fact Sheet entitled** *Putting the Plan in Motion 1997-1998***, and revised the LIS Fact Sheet,** *Supporting the Sound***, both of which were distributed to thousands of LIS community residents, public educators, environmental organizations and LIS user groups.**
- **The public education and outreach program developed and distributed 3 quarterly LISS Newsletters covering timely LIS topics to over 4,000 addressees in 1998: 1)** *Monitoring;* **2)** *Total Maximum Daily Loads***; and 3)** *Nitrogen Trading programs***.**
- **The LISS outreach program responded to 502 information requests, developed and staffed displays at 17 public events that reached 4,115 people; and provided 4 presentations to combined audiences of 145.**
- **LISS promotional and educational materials were displayed and handed out at the 1998 Earth Day celebrations in Connecticut and New York, the 1998 New Haven County Conservation Fair, the 1998 Norwalk Oyster Festival in Connecticut, and the John F. Kennedy Library and Museum in Dorchester, Massachusetts.**
- **The CTDEP License Plate Fund supports four categories of activities for outreach efforts, including public access, public education, habitat restoration, and research. In 1998 19 projects received funds totaling over $333,000. Since 1993 the Fund has provided over $2.1 million for 117 projects.**
- **The LISS enhanced its World Wide Web site,**

which is a popular site on the EPA Region I host server. The LISS site includes LIS fact sheets, slide shows, newsletters, LIS links and key federal and state LIS personnel and contact information. The LISS is coordinating a data depot with the Hudson River Estuary Program. The web address is: www.epa.gov/region01/eco/lis.

- **NYSDEC, CTDEP, and EPA provided outreach on LIS programs to local governments and local officials through workshops, seminars, symposiums and conferences held in various locations throughout the LIS area during 1998.**

- **Since the inception of the LIS Small Grants Program, the New York Sea Grant office of the LISS has provided grant funds for 31 projects totaling $89,387. These projects assisted 184 teachers and 2,500 school children, and produced over15,000 pieces of LIS literature. In 1998, the LISS provided grant funds totaling $25,000 for 10 local community environmental projects in Connecticut and New York.**

- **The LISS-supported, UCONN Cooperative Extension Service-sponsored Nonpoint Education for Municipal Officials (NEMO) project developed a series of 4 presentations on nonpoint source reduction methodologies and conducted 32 workshops in Westchester and Fairfield counties. Over 850 participants, including elected and appointed officials from 14 communities in the LIS watershed attended sessions on the effects of impervious surfaces; innovative land development techniques; conserving open space; and geographic information systems. These workshops resulted in increased awareness by local officials of the effects of their local planning and development actions on both the local watershed and Long Island Sound. For example, after hosting the NEMO workshops, the Town of Weston changed the designation of its town plan from** *Town Plan of Development* **to** *Town Plan of Conservation and Development*.

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SUMMARY OF MANAGEMENT ACTIONS: PUBLIC INVOLVEMENT AND EDUCATION

1. COMMUNITY AWARENESS AND STEWARDSHIP (CCMP TABLE 51, P.146)

Ongoing Programs	Responsible Parties	Status[2]	Description	Upcoming Action
E1-1. The LISS and state public involvement and education programs are: developing printed and other educational materials for specific audiences; exhibiting LIS materials at regional and local fairs and events; encouraging education and information on the Sound for urban populations; promoting the importance of the Sound's resources to children in the region; and, using public educational material of non-profit organizations.	CTDEP NYSDEC NY Sea Grant EPA	Substantive Progress	The LISS Outreach Program responded to 502 information requests, developed and staffed displays at 17 public events that reached 4,115 people; and provided 4 presentations to combined audiences of 145. CTDEP produced two videos: the *Living Sound* with LIS license plate funds, targeting elementary school kids, and *Long Island Sound: Everybody's Sound*, which was distributed to high schools, municipalities, and nonprofits, and explains the hypoxia problem in LIS and management plans to address it. CTDEP continued to participate and display LIS materials in local events, Earth Day, Coast Guard Day, and Oyster Festivals. CTDEP has also targeted urban education on LIS using the LIS License plate fund. CTDEP staff participate in a DEP wide program to educate Hartford middle school children on science issues including LIS. CTDEP has improved and expanded its World Wide Web site, which includes a LIS License Plate web page and an upcoming Office of Long Island Sound web page. The Connecticut LIS License Plate Fund supports four categories of activities: public access, public education, habitat restoration, and research. Since 1993, the Fund has provided over $2.1 million for 117 projects. In Spring 1998, 19 projects received funds totaling $333,817. Recently completed LIS License Plate funded projects include: 1) Estuary Watch Program and newsletter; 2) Darien Environmental Group water conservation flyer; 3) Project-O booklet on how to set up a saltwater aquarium; 4) CRERPA- Old Lyme canoe & kayak trail guide; and 5) *The River Book* and *What's Up Outside* book for teachers.	CTDEP will complete a public access map in late spring 1999 The Sea Grant Program will continue outreach programs and the Small Grants awards. CTDEP will conduct a series of events in honor of LIS Day, Coastal Management, and the LIS License Plate Program
E1-2. Support research conferences such as: the CTDEP conference to highlight its LIS Research Grant Program; the LIS Watershed Alliance *Citizens' Summit* annual conference on the Sound; and the bi-state LIS research conference sponsored by local universities, Sea Grant programs, and the states.	CTDEP NYSDEC LISWA EPA CAC Sea Grant Universities	Fully Met	The ongoing research conferences were successfully held including the Biennial bistate LIS Research Conference, and the annual LISWA Conference. The LIS Research Grant Conference was held January 1999 at Connecticut College and focused on tidal wetland restoration. Over 150 people attended this highly successful conference. A conference held by CT DEP in honor of Earth Day entitled "Connecticut's Coast: Renewed Resources for the next Century" was organized in 1998. A successful conference with over 200 people attending.	LIS Research Conference planned for October or November 2000. LIS Watershed Association conference planned for April 1999.
E1-3. *Coastweeks*, an annual three week celebration of marine and coastal environments is supported by both states.	CTDEP NYSDEC	Partial Progress	The current focus of this program is the National Beach Cleanup Day, which is coordinated by CT Sea Grant in CT and the American Littoral Society in NY. The American Litoral Society was supported in 1998 through the LISS Small Grants program.	Next Beach Clean-Up Day is planned for September 1999. CT Sea Grant is seeking assistance from other environmental groups to be possible Beach Cleanup Coordinators.

KEY
1)Type: (C)ommitment, (R)ecommendation, (N)ew (A)ction

2)Status for ongoing programs and actions: Fully Met, Substantive Progress, Partial Progress, Discontinued
Status for dated actions: Complete, Ahead of Schedule, On Schedule, Behind Schedule, Partially Addressed, Not Initiated

1. COMMUNITY AWARENESS AND STEWARDSHIP (CCMP TABLE 51, P.146)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
E1-4. Enhance the LISS and state public involvement and education programs to provide additional funding to build upon the current outreach and education activities with a new focus on interpretation and implementation of the management plan.	R	CTDEP NYSDEC EPA	Ongoing	$200,000/yr	Substantive Progress	See E1-1. A LISS Fact Sheet *Putting the Plan into Motion 1997-1998* described CCMP implementation progress up to 1998. This tracking report was updated in September 1998 and has been used to update the CAC on implementation status. In 1998, the LISS enhanced its WWW site (ww.epa.gov/region01/eco/lis), which has been among the most visited of EPA Region I web server pages. The web site includes fact sheets, slide shows, newsletters, LIS links and contact information. CTDEP hired a public outreach coordinator with LISS funding in October 1998.	Plan to update LISS fact sheets and to include data and other information on the LIS web site. Plans for promotional activities and updated fact sheets in celebration of the 15th anniversary of the LISS will be part of the outreach activities in 1999-2000.

KEY
1)Type: (C)ommitment, (R)ecommendation, (N)ew (A)ction

2)Status for ongoing programs and actions: Fully Met, Substantive Progress, Partial Progress, Discontinued
Status for dated actions: Complete, Ahead of Schedule, On Schedule, Behind Schedule, Partially Addressed, Not Initiated

2. PROMOTING UNDERSTANDING (CCMP TABLE 52, P.147)

Ongoing Program	Responsible Parties	Status[2]	Description	Upcoming Action
E2-1. Incorporate LIS information into all related programs conducted by state staff wherever possible.	CTDEP NYSDEC	Substantive Progress	Both states have expanded efforts to incorporate LIS information and priorities into existing programs and to seek new opportunities for communicating information. For example, CTDEP is adding LIS information to the Project Wet curriculum and coordinating teacher workshops and materials as part of the program. CTDEP also includes LIS information on its web site.	Continue to add LIS information in the CTDEP web site. CTDEP is preparing a OLISP web site that will include an LISS link, and hypoxia and other related updates. CT DEP will be putting together a series of events for LIS Day, May 28,1999 to help educate the public on LIS & Coastal Management.

KEY
1)Type: (C)ommitment, (R)ecommendation, (N)ew (A)ction

2)Status for ongoing programs and actions: Fully Met, Substantive Progress, Partial Progress, Discontinued
Status for dated actions: Complete, Ahead of Schedule, On Schedule, Behind Schedule, Partially Addressed, Not Initiated

2. PROMOTING UNDERSTANDING (CCMP TABLE 52, P.147)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
E2-2. Provide information to all municipalities on the LISS and the importance of protecting and restoring the Sound. Special attention will be given to coastal municipalities in the form of briefings by state officials to explain exactly how implementation of the plan will affect that particular city or town and how to work cooperatively together to implement the management plan. Briefings will also be held for specific user groups, local officials, and elected representatives.	C	CTDEP NYSDEC	Initiated upon signature of the plan by the state Governors and the EPA Admin-istrator	Redirection of base program	Partial Progress	NYSDEC, CTDEP, and EPA staff continue to provide outreach to community governments on an opportunistic basis, through watershed programs and other meetings. CTDEP circulated a draft TMDL for nitrogen to municipal officials and treatment plant chiefs for review and comment. As the TMDL is finalized, additional public and municipal comment opportunity will be provided. NYSDEC conducted meetings to brief local officials on the nitrogen reduction effort. Staff have also met with officials from the towns of Rye and Glen Cove. The LISS-supported UCONN Cooperative Extension-sponsored Nonpoint Education for Municipal Officials (NEMO) project developed and conducted a series of 4 presentations on nonpoint source reduction methodologies to local officials in Westchester and Fairfield counties. Elected and appointed officials from the towns of Westport, Fairfield, Weston, Wilton, Norwalk, and Westchester attended sessions on the effects of impervious surfaces; innovative land development techniques; conserving open space; and geographic information systems.	Meetings with coastal communities to provide technical outreach on PA 91-170. In CT, municipal outreach will be enhanced through updated workshop material s in support of the municipal best management practices manual. Intended audiences will be expanded to include municipal engineering and public works departments in addition to planning and zoning commissions to focus on implementation as well as planning, to reduce hypoxia conditions in the Sound. LISS is continuing support for the NEMO program in 1999.
E2-3. Assess opportunities for training and educating the environmental decision-making community and provide technical information and assistance on implementation of the plan to the regulated community.	C	CTDEP NYSDEC	Ongoing	Redirection of base program	Partial Progress	CTDEP works regularly with the municipalities regarding nutrient removal at sewage treatment plants. CTDEP also provides technical outreach for a large range of nonpoint source matters through technical guidance and workshops. See also E2-2 for municipal wordshops on Phase III. CT DEP assisted in providing Sewage Treatment Plant (STP) Operator Training. New York has held meetings with individual towns.	
E2-4. Utilize the Bi-state Marine Resources Committee to ensure Long Island Sound related legislation moves on a parallel track in both Connecticut and New York and to help educate local governments and the public about the importance of the Sound and the successful implementation of the LISS recommendations.	C	CTDEP NYSDEC NYSDOS	Ongoing	Redirection of base program	Partial Progress	The Committee met in January 1997 after a long hiatus. Legislation relating to the Menhaden fishery in LIS was passed in 1997. As a result of this meeting, both states passed legislation restricting commercial Menhaden harvesting in LIS for a two-year period. The Committee did not meet in 1998.	The menhaden moratorium expires July 1999.

KEY

1)Type: (C)ommitment, (R)ecommendation, (N)ew (A)ction

2)Status for ongoing programs and actions: Fully Met, Substantive Progress, Partial Progress, Discontinued

Status for dated actions: Complete, Ahead of Schedule, On Schedule, Behind Schedule, Partially Addressed, Not Initiated

2. PROMOTING UNDERSTANDING (CCMP TABLE 52, P.147)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
E2-5. Pursue reestablishment of funding for the Long Island Sound Resource Center at Avery Point and further development of a similar resource center in New York to serve as clearinghouses and depositories for information about the Sound and investigate ways to improve funding for these centers.	R	CTDEP NYSDEC EPA	Ongoing	$150,000 per year for Connecticut Long Island Sound Resource Center; $60,000/ year for a New York facility	Not Initiated	No new funding has been secured.	

3. FACILITATING PUBLIC PARTICIPATION (CCMP TABLE 53, P.148)

Ongoing Program	Responsible Parties	Status[2]	Description	Upcoming Action
E3-1. Encourage public participation in activities relating to the cleanup and protection of the Sound and provide support for activities including storm drain stenciling, beach grass planting, and beach cleanups.	CTDEP NYSDEC EPA Sea Grant	Substantive Progress	This action is being met primarily through the Connecticut LIS License Plate Fund and the LISS Small Grants program (31 projects have been funded to date under the Small Grants Program). Also, state §319 funds are put into these activities. In Connecticut, §319 watershed projects in the Hockanum, Mattabasett, Norwalk, Quinnebaug, Quinnipiac, and West Rivers provide the following public participation activities: 1) volunteer monitoring, 2) streambank restoration/riparian plantings, 3) river clean up days, and 4) stream walk assessments. Staff give numerous presentations to the general public each year. For example, New York Sea Grant continues to provide information on storm drain stenciling. Eight different stencils are available depending on the water body being stenciled. Also, Sea Grant has created a Sound Gardening Demonstration Garden in Oyster Bay funded through §319 funds. The CT LIS License Plate Fund is funding water quality sampling projects to volunteers in three CT harbors.	1999 LISS Small Grants funded 12 projects. The Norwalk Maritime Aquarium is completing a video for students to increase environmental awareness of LIS. Public participation will also be sought in the development of a total maximum daily load (TMDL) for Sasco Creek watershed.

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3. FACILITATING PUBLIC PARTICIPATION (CCMP TABLE 53, P.148)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
E3-2. The LISS Citizens Advisory Committee will continue to provide guidance to the Management and Policy Committee and serve as a link between the public and LISS management agencies. The CAC has been instrumental in providing guidance to the Study and serving as a conduit between the Management Conference and the public.	C	CAC	Immediately	Costs are $4,000 per year for expenses and travel and would be covered under the basic cost of maintaining the Management Conference	Fully Met	The CAC has expanded its membership to 60; has formed subcommittees to provide focused input on specific areas, and has been very active in providing counsel to the Management Conference. The CAC provided comments to the Management Committee on the July 1998 draft nitrogen TMDL for LIS.	The CAC will meet quarterly in 1999 in March, June, September and December. The CAC plans to brief the new Congress on LIS issues and accomplishments in 1999.
E3-3. Enhance funding for hands-on activities such as storm drain stenciling, beach grass planting and beach cleanups to allow the public to actively participate in the cleanup and restoration of the Sound and learn more about its ecosystem.	R	CTDEP NYSDEC EPA Sea Grant	When funding becomes available	$25,000 per year	Fully Met	CTDEP has funded storm drain stenciling activities with grants from the Long Island Sound License Plate Fund and through watershed projects funded by §319 funds from the EPA. The LISS has funded the Small Grants program to support local implementation and education efforts. The Small Grants program funding was increased to $50,000 in 1998. Twelve projects were funded. CT DEP has arranged for a LIS VISA card that contributes funds to the LIS License Plate Fund. CT DEP continues a successful partnership with the LIS VISA card.	Continue efforts to promote public awareness. LISS Small Grants funding will continue at $50,000 in 1999.

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3. FACILITATING PUBLIC PARTICIPATION (CCMP TABLE 53, P.148)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
E3-4. Promote citizen involvement in educational and monitoring activities in and around the Sound and consider: -Providing technical assistance to citizen monitoring groups; -Developing a reward system for citizens participating in Long Island Sound protection and restoration programs; -Developing environmental habitat kits and guide maps; -Production and distribution of videos of Long Island Sound research cruises.	R	CTDEP NYSDEC EPA	When funding becomes available	$75,000 per year	Substantive Progress	CTDEP assists to the extent possible supporting citizens monitoring groups with technical staff for planning programs, grants to support efforts, and review of reports and data. CTDEP LIS License Plate funded projects in 1998 included a Save the Sound, Inc. project to expand volunteer water quality monitoring in LIS harbors, the production of a video 'Dr. Livingsound' by the Norwalk Maritime Aquarium, and one grant recipient received a Green Circle Award for publishing the book 'What's up Outside' for use by teachers. CTDEP assisted in funding and producing a Habitat Restoration Sites map and informational guide in 1998. CTDEP has hired an environmental analyst to work with citizens monitoring groups and has hired a public outreach staffer to work on LISS outreach activities. CTDEP also supports education programs, including Project WET and SEARCH. CTDEP supports public involvement in the recently implemented Quinnipiac and Norwalk River Watershed programs. EPA and Sound Watch sponsored a Quality Assurance workshop for citizen volunteers in March 1998. A water monitoring workgroup was created in 1998 to assist in coordinating citizen monitoring and standardize water quality monitoring equipment and data collection around LIS.	The CTDEP web site will provide information on LIS License Plate fund projects which may be used by other school groups for water quality monitoring, curricula, and other related projects.

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4. INCREASE COMMUNICATION AND COOPERATION (CCMP TABLE 54, P.150)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
E4-1. Increase efforts to coordinate ongoing governmental and nongovernmental public outreach efforts as the plan becomes implemented and encourage private and nonprofit groups to continue to develop and implement Long Island Sound educational and outreach programs.	C	CTDEP NYSDEC EPA	Ongoing	Redirection of base program	Substantive Progress	Outreach staff participate in LIS Educators Meetings organized by Save the Sound and held quarterly at various locations around the Sound. Briefings and meetings with local government officials have been held as part of the habitat restoration initiative and the Phase 3 nitrogen reduction targets. Other activities listed elsewhere in this section to support outreach and education are funded with grants from the LIS License Plate Program.	The Request For Proposal (RFP) for LIS License Plate Fund went out Jan. 1999 and expect new round of funding to be given out May 1999. CTDEP will participate w/LIS educators in providing information to elementary school teachers on activities their classes may do in honor of LIS Day. CTDEP will participate in the Connecticut Marine Trades Association Boat Show, the Norwalk Oyster Festival, and the Big - E to promote Coastal Management and the LIS Fund.
E4-2. Establish a public outreach work group to guide the implementation of the public involvement and education commitments and recommendations. The work group will work closely with and serve to complement the ongoing public outreach and education efforts of the Citizens Advisory Committee. The group will also be charged with determining funding resources for implementation of public involvement and education recommendations, consulting with staff on tactics, working to provide coordination of public outreach efforts from both an internal and external basis, and assessing program effectiveness.	R	CAC CTDEP NYSDEC EPA	Upon signature of the plan by the state Governors and the EPA Administra-tor	Redirection of base program	Fully Met	The first meeting of the Public Outreach Work Group (POWG) was held in October 1994. The POWG has reviewed outreach materials, provided ideas for new material, and reviewed the proposals received in response to the LISS Small Grants program. POWG was merged with the CAC communications subcommittee in 1998.	

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5. ENHANCE EDUCATION AT ALL LEVELS (CCMP TABLE 55, P.151)

Ongoing Programs	Responsible Parties	Status[2]	Description	Upcoming Action
E5-1. Support ongoing actions that assist teachers in their efforts to integrate LIS issues into existing curricula.	CTDEP NYSDEC EPA Sea Grant	Substantive Progress	CTDEP is currently working on a listing of all LIS related curricula and programs for teachers. Also see action **E1-1** on videos that were distributed to teachers, and **E3-4** for a Habitat Restoration Sites map which was published in 1998. NY Sea Grant is a member of the Executive board for NYS Marine Educators and helps to distribute LIS materials and information to teachers. The Sea Grant hosted two grant writing workshops, one each in Connecticut and New York, for potential Small Grants applicants. The Norwalk Maritime Center and Aquarium and the CT Sea Grant program held a LIS Educators Conference in May 1998 that was attended by teachers and educators at all levels interested in LIS.	

5. ENHANCE EDUCATION AT ALL LEVELS (CCMP TABLE 55, P.151)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
E5-2. Continue Connecticut's Long Island Sound High School Research Grant Program, initiated in 1990. This program provides funding for students to conduct research on the Sound and its watershed.	C	CTDEP	Ongoing	$30,000 per year	Discontinued	CTDEP provides License Plate Fund grant money to these efforts. In 1998 the 'Estuary Watch Program' was launched under the direction of the University of Connecticut. The program involved over 20 teachers and 200 students from 10 high schools to collect field samples at one of seven salt marsh sites for evaluating estuarine health in LIS.	The Estuary Watch Program will continue into 1999 with more data collection sites, including Hammonassett State Park, to be added. The CTDEP will participate in the Estuary Watch Program annual conference to be held May 21, 1999 at the Dodd Center, UConn, Storrs.
E5-3. Encourage natural history museums and nature centers to promote Long Island Sound issues within their programs.	C	CTDEP NYSDEC EPA	Ongoing	Redirection of base program	Partial Progress	CTDEP works with museums and at public affairs such as local fairs and festivals to promote sound environmental management. CTDEP funded a Long Island Sound traveling display through the CT Museum of Natural History.	CTDEP is developing a nonpoint source exhibit with the CT Museum of Natural History NY is working with the LI museum & MSRC to develop a LIS display.

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5. ENHANCE EDUCATION AT ALL LEVELS (CCMP TABLE 55, P.151)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
E5-4. Work with school districts and, where appropriate, the Department of Education, in Connecticut and New York to develop Long Island Sound educational materials and outreach programs for primary and secondary schools. Help teachers integrate Long Island Sound information into their curricula and provide materials wherever possible. This should include hiring a Long Island Sound education coordinator.	R	CTDEP NYSDEC	When funding becomes available	$75,000 per year	Partial Progress	CTDEP's Project SEARCH and other Information and Education Section activities are aimed at educating educators and students about a broad range of environmental matters, including Long Island Sound.	
E5-5. Enhance ongoing actions to assist teachers in their efforts to integrate Long Island Sound issues into their existing curricula including the development and support of teacher workshops.	R	CTDEP NYSDEC EPA	When funding becomes available	$75,000 per year	Partial Progress	CTDEP's Project SEARCH and other Information and Education Section activities are aimed at educating educators and students about a broad range of environmental matters, including Long Island Sound.	
E5-6. Consider a Long Island Sound High School Research Grant Program to provide resources to allow a variety of high schools to conduct research on the Sound and its watershed.	R	NYSDEC	When funding becomes available	$30,000 per year	Not Initiated		

6. SECURE FUNDING (CCMP TABLE 56, P.152)

Ongoing Program	Responsible Parties	Status[2]	Description	Upcoming Action
E6-1. The LISS will continue to encourage all organizations involved in the public involvement and education effort, both governmental and nongovernmental, to take advantage of the various grant programs, for which they are eligible, that provide funding for educational activities. These include CT's LIS Fund, LIS High School Research Grant Program, and EPA's Education Grants. Private sector funding should also be sought when and where possible and other private grant programs identified.	CTDEP NYSDEC EPA Sea Grant Other Management Conference Participants	Partial Progress	Announcements for funding are widely circulated within the LIS community. Since its inception, the CTDEP LIS License Plate fund has allocated more than $2.3 million to fund more than 140 projects. In 1998 the LIS fund RFP included a research focus with suggestions of specific projects that would provide valuable information about LIS and its habitats. Since the inception of the LIS Small Grants Program, the New York Sea Grant office of the LISS has provided grant funds for 31 projects totaling $89,387. These projects assisted 184 teachers and 2,500 school children, and produced over15,000 pieces of LIS literature. In 1998, the LISS provided grant funds totaling $25,000 for 10 local community environmental projects in Connecticut and New York.	CTDEP mailed the RFP for the next round of License Plate projects in early 1999. The information will also be available on the CTDEP web site. Awards will be announced in May 1999. Sea Grant will produce a table of all funding opportunities.

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6. SECURE FUNDING (CCMP TABLE 56, P.152)

CCMP Action	Type[1]	Responsible Parties	When	Estimated Cost	Status[2]	Description	Upcoming Action
E6-2. Seek to create a public involvement and education (PIE) fund that could be supported by a variety of funding sources, including federal appropriations through the Long Island Sound Improvement Act. The PIE fund would be administered by the LISS Management Conference. A PIE fund and interest generated from its endowment would provide support for projects fulfilling plan involvement and education actions and recommendations as proposed by both nongovernmental and governmental organizations. Current state and private Long Island Sound public education programs are under funded. State and private funding sources must be directed toward meeting the needs of existing programs before being sought for a PIE fund.	R	CTDEP NYSDEC EPA	Upon signature of the plan by the state Governors and the EPA Administrator	Seed money should be made available for the establishment of a PIE Fund.	Not Initiated	A PIE funds has not been established. However, funding for existing outreach and education programs, such as the CTDEP License Plate Fund and the LISS Small Grants Program have continued.	

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GLOSSARY OF ACRONYMS

A	
ACOE	Army Corps of Engineers
B	
B	Billion
BAT	Best Available Technology
BMP(s)	Best Management Practice(s)
BNR	Biological Nutrient Reduction
BOD	Biological Oxygen Demand
C	
CAC	Citizens Advisory Committee
CCMP	Comprehensive Conservation and Management Plan
CD	Compact Disc
CD-ROM	Compact Disc - Read-Only Memory
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act (Superfund)
CES	Cooperative Extension Service
CSO(s)	Combined Sewer Overflow(s)
CT	Connecticut
CTDEP	Connecticut Department of Environmental Protection
CTDOA	Connecticut Department of Agriculture
CTDOA/BA	Connecticut Department of Agriculture Bureau of Aquaculture
CTDOHS	Connecticut Department of Health Services
CTDOT	Connecticut Department of Transportation
CVA	Clean Vessel Act
CWA	Clean Water Act
CZM	Coastal Zone Management
CZMA	Coastal Zone Management Act
D	
DO	Dissolved Oxygen (expressed in milligrams per liter mg/l)
E	
EIS	Environmental Impact Statement
EMPACT	Environmental Monitoring for Public Access and Community Tracking
EPF	Environmental Protection Fund (New York State)
F	
FY	Fiscal Year
FFY	Federal Fiscal Year
G	
GIS	Geographic Information System
H	
HEP	Harbor Estuary Program (New York/New Jersey)
Hg	Mercury

I

ICM	**Integrated Crop Management**
IPM	**Integrated Pest Management**
ISC	**Interstate Sanitation Commission**
ISTEA	**Intermodal Surface Transportation Efficiency Act**

K

K	**thousand**
k	**kilogram**
km	**Kilometer**
Km^2	**Square kilometer**

L

l	**liter**
LA	**Load Allocation**
lbs	**pounds**
LIS	**Long Island Sound**
LISO	**Long Island Sound Office (EPA)**
LISS	**Long Island Sound Study**
LISWA	**Long Island Sound Watershed Alliance**

M

M	**Million**
MC	**Management Committee**
MEG	**Model Evaluation Group**
mg	**milligrams**
mgd	**million gallons per day**
mg/l	**milligrams per liter**
MPRSA	**Marine Protection, Research and Sanctuaries Act**
MSD(s)	**Marine Sanitation Device(s)**
MSRC	**Marine Science Research Center (SUNY)**

N

N	**Nitrogen**
NDD	**National Diversity Database**
NDZ	**No Discharge Zone**
NEIWPCC	**New England Interstate Water Pollution Control Commission**
NEMO	**Nonpoint Education for Municipal Officials**
NJDEP	**New Jersey Department of Environmental Protection**
NMFS	**National Marine Fisheries Service**
NOAA	**National Oceanic and Atmospheric Administration**
NO_x	**Nitrous Oxide**
NPDES	**National Pollutant Discharge Elimination System**
NPS	**Nonpoint Source(s)**
NRCS	**Natural Resource Conservation Service**
NRWI	**Norwalk River Watershed Initiative**
NY	**New York**
NYC	**New York City**
NYCDEP	**New York City Department of Environmental Protection**

N (Cont'd)

NYDOT	New York Department of Transportation
NY/NJHEP	New York/New Jersey Harbor Estuary Program
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSDOS	New York State Department of State
NYSOPRHP	New York State Office of Parks, Recreation and Historic Preservation

O

ODA	Ocean Dumping Act
O&M	Operations and Maintenance
OLISP	Office of Long Island Sound Programs (State of Connecticut)

P

P.A.	Public Act
PCB(s)	Polychlorinated Biphenyl(s)
PIE	Public Information and Education
PS	Point Source

R

RFP(s)	Request for Proposal(s)
RNHT	Recreation and Natural Heritage Trust (State of Connecticut)

S

SAV	Submerged Aquatic Vegetation
SEP	State Environmental Protection (fund, CT)
SFY	State Fiscal Year
SIP	State Implementation Plan
SUNY	State University of New York
SPDES	State Pollution Discharge Elimination System
SRF	State Revolving Fund
STORET	STORage and RETrieval System (EPA)
STP(s)	Sewage Treatment Plant(s)
SWEM	System-Wide Eutrophication Model

T

TAC	Technical Advisory Committee
TMDL	Total Maximum Daily Load

U

UCONN	University of Connecticut
USACOE	Unites States Army Corps of Engineers
USCG	United States Coast Guard
USDA	United States Department of Agriculture
USDOI	United States Department of the Interior
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

W

WAC(s)	**Watershed Advisory Committee(s)**
WLA(s)	**Waste Load Allocation(s)**
WMA	**Wildlife Management Area**
WWW	**World Wide Web**