



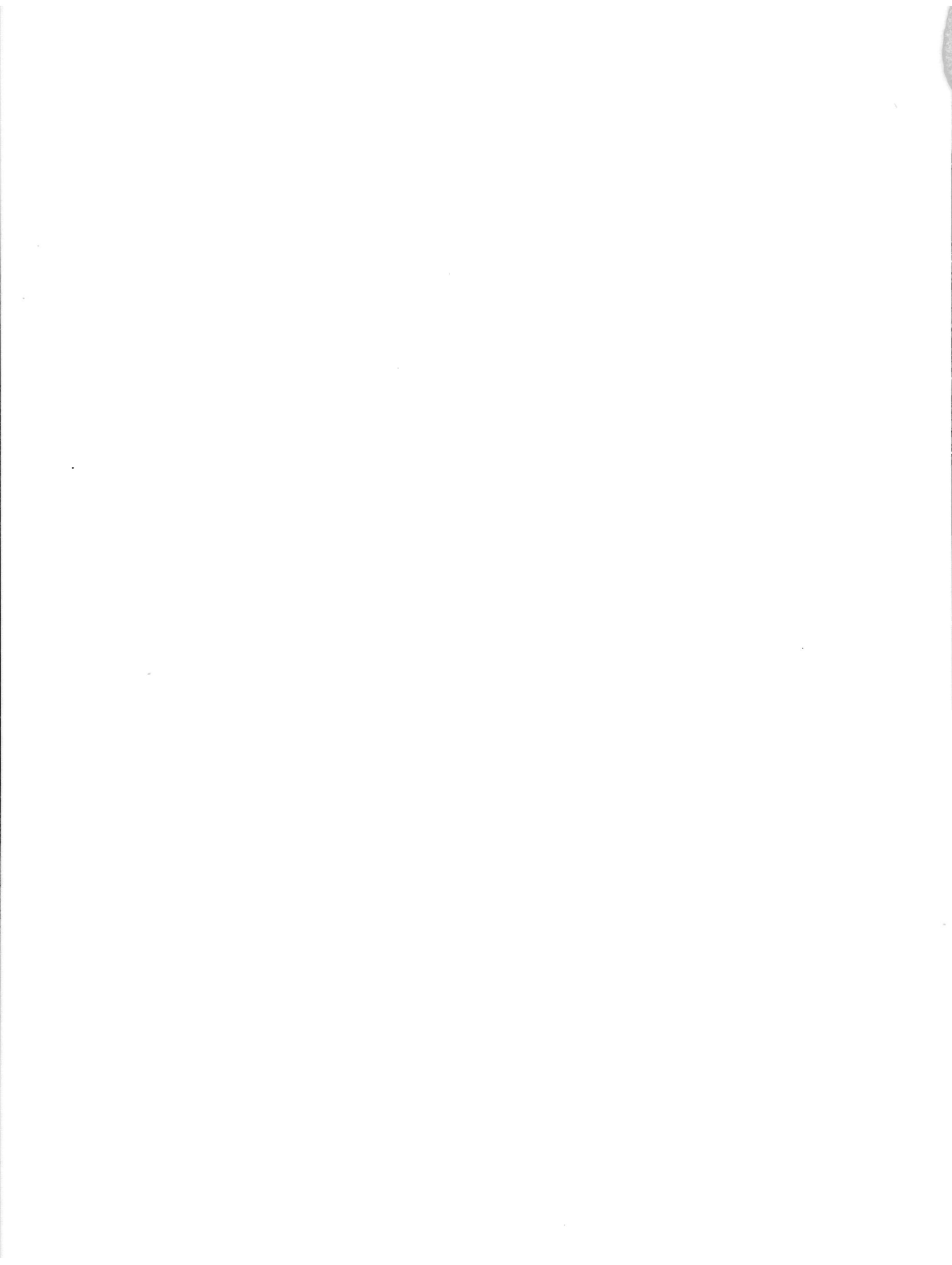
Office of the
COUNTY EXECUTIVE

PETER F. COHALAN

... COUNTY EXECUTIVE

ANNUAL ENVIRONMENTAL REPORT





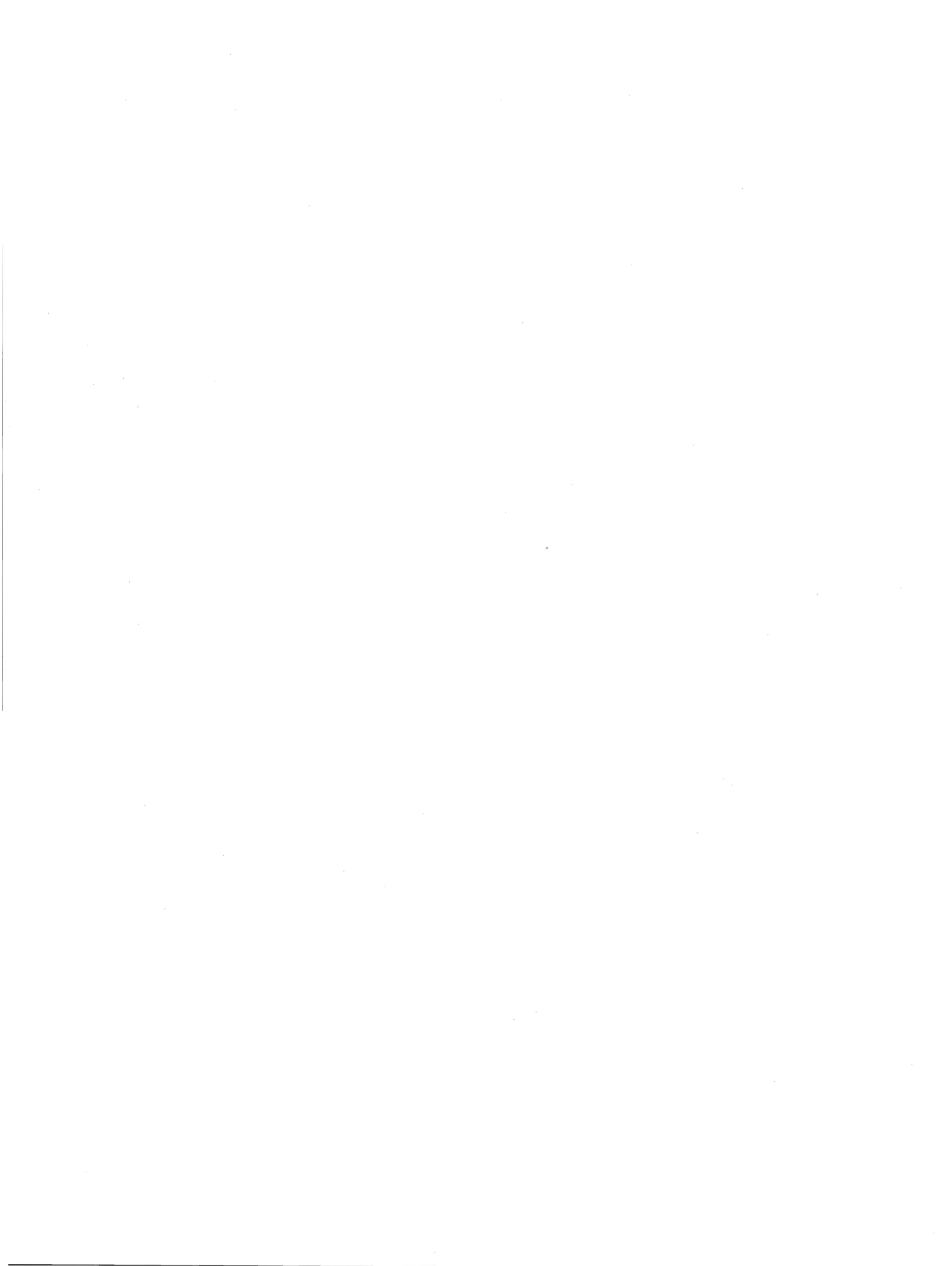
Report to the Suffolk County Legislature

by

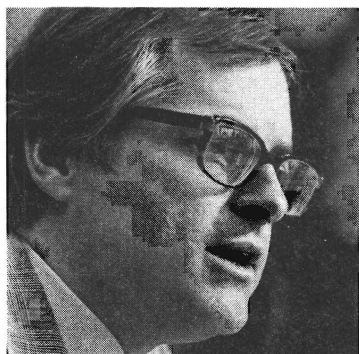
PETER F. COHALAN

County Executive

ANNUAL ENVIRONMENTAL REPORT



PREFACE



I am proud to submit my fifth Annual Environmental Report to the Suffolk County Legislature and the people of our County. As is evidenced by this report, as well as my subsequent environmental messages, Suffolk County has been and continues to be one of the foremost places to live and work, with clean water and air, extensive open space and natural resources available to the residents, as well as people throughout the New York Metropolitan area. In order to maintain Suffolk County's abundant natural amenities, I remain committed to the protection and enhancement of the environment.

The report is detailed in every aspect of Suffolk's environment, including Groundwater, Surface Waters and Freshwater Wetlands, Marine Environment and Coastal Zone Management, Atmospheric Conditions, Open Space, Solid Waste, Energy, and Environmental Review. The status of each area is given as well as the programs at the Federal, State, County and local levels, together with the specific achievements which have been accomplished throughout the year.

In the area of groundwater, the Suffolk County Department of Health Services continued its monitoring and protection efforts and has completed a number of studies of which the most notable dealt with the North Fork Water Supply Plan, Industrial Organics Plume in West Babylon, Groundwater Quantity in the Village of North Haven, Granular Activated Carbon Filters for Aldicarb, and Central Water Supply Distribution (Vending). During the year a County water agency was established which will enable the County to set up water supply districts to extend public water to areas with contaminated private wells. In relation to this, an ongoing mechanism to coordinate the Suffolk County Dept. of Health Services, Community Development and Suffolk County Water Authority activities was put in place to actively promote the extension of water mains and the takeover of existing water systems.

To augment work being done in the groundwater area, in April of 1984, the Suffolk County Legislature voted to create a Pine Barrens Zone and a Pine Barrens Review Commission. The commission is comprised of distinguished citizens and professionals who are charged with an advisory role to encourage the protection and preservation of the Pine Barrens and underlying water supply throughout the County. In March of 1984, Suffolk County also transferred 1,304 acres of tax default properties in the Pine Barrens to the County Nature Preserve.

In addition to the transfer of tax defaulted properties, the County also acquired an additional 50 acres of property to expand their extensive open space holdings and park properties. This furthers the County's open space policy which was presented in 1980.

It is my contention that Suffolk's extensive open space and park system should be available to all. In furtherance of this, Lakeland County Park was opened in June of 1983. The 80 acre park is designed for the handicapped and is the first of its kind in New York State. The park has guiderails for the blind, boardwalks for those in wheelchairs and pamphlets for the deaf.

During the course of the year the Suffolk County Department of Planning has worked in conjunction with several municipalities in preparing environmentally sensitive development plans. Among the major studies was a Plan for Mitigating the Environmental Impacts of Development in the Three Mile Harbor Watershed, the Askaroken Study, the Head-of-the-Harbor Study and a Generic Environmental Impact Statement Concerning Future Development at Northwest Harbor.

On the energy front, the County, in 1983, took the necessary steps to create a Suffolk County electric agency. The proposition was approved by the voters enabling the County to receive low cost hydropower when it becomes available, and pass on the savings to the rate payers.

Also during the past year the Environmental Crime Unit of the Suffolk County District Attorney's office continued to prosecute criminal offenses under various State and County environmental laws, obtaining favorable judgements against numerous violators. In this area the County has made every effort to uphold and prosecute violators of our environmental laws.

These are just a few of the highlights of this year's report. I trust the Legislature and the citizens of Suffolk County will continue to support my efforts and those of the various County departments to protect our environment, which is so important to us all.

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GROUNDWATER

INTRODUCTION

Groundwater contamination and watershed protection were major environmental issues during 1983. New threats to groundwater quality were continually in the news—*radionuclides, vinyl chloride, Vydate*. Private well owners expressed increased concern about pollution from organic chemicals, cesspool wastes, and pesticides; almost 8% requested water quality analyses from the Suffolk County Department of Health Services (SCDHS) during the year. Officials at all levels of government also expressed concern and actively sought solutions to groundwater problems. While Federal legislation to purchase sole-source aquifer recharge areas was tied up in committee, New York State, Suffolk County, and a number of towns proposed or implemented their own programs to preserve and protect Suffolk's critical watershed areas. Actions taken included large-scale upzonings of vacant land, and restrictions placed on activities involving potential groundwater pollutants. Increased efforts are expected in 1984.

The following sections focus in the issues and events which occurred during 1983 that have affected Suffolk's groundwater resource. Trends are discussed first; then contaminants of concern are described and evaluated. Background discussions on these topics are generally omitted, except where new information was developed during the year. Laws, regulations, studies, and programs are reviewed next, including those inacted or completed during 1983, and those proposed for 1984. Finally, the status of recommendations made in last year's report is described, and new recommendations for 1984 are presented.

TRENDS

1. 1983 Groundwater Levels

Groundwater levels (water table elevations) in Suffolk County move up and down fairly rapidly in response to precipitation, and 1983 was no exception. Total precipitation in 1983 was the highest it has been in the past nine years, and continues an upward trend that began in 1980 (Table 1). The 1983 average for three SCDHS stations located at Belmont Lake, Medford, and Riverhead was 56.2 inches, compared to the 9-year average of 43.9 inches, and the long-term, county-wide annual average of 44.5 inches.

As a result of the wet year, water table elevations in Suffolk County in 1983 were above the long-term average. Groundwater elevations had been at or near record high levels in 1979, but had declined to lower than average levels in 1982. The heavy spring rains of 1983, however, returned the water table to higher than average elevations. These were maintained by the greater than normal rainfall during the remainder of the year.

Groundwater levels are measured quarterly by the SCDHS at over 500 monitoring wells located throughout the County. The SCDHS also monitors additional wells within the area of the Southwest Sewer District in order to determine the need for stream flow augmentation. Thus far, yearly fluctuations in water table elevations have overshadowed any changes that may have occurred as a result of sewerage.

TABLE 1
Average Annual Precipitation for
Three Sites in Suffolk County

Year	Total
1975	51.1"
1976	37.8"
1977	49.3"
1978	46.0"
1979	46.4"
1980	31.8"
1981	36.4"
1982	40.0"
1983	56.2"
AVG	43.9

2. Groundwater Pumpage

Total groundwater pumpage in Suffolk County has increased by almost 70% during the period 1966 to 1980, from 128 million gallons per day (MGD) to over 216 MGD. Table 2 lists daily pumpage figures broken down by township and land use. The 1980 total pumpage figure of 216 MGD is equal to approximately one-third of the estimated 647 MGD recharged within the County's water budget area (as defined in the 1970 Comprehensive Public Water Supply Study). It should be noted, however, that most of the non-agricultural water pumped from the ground is returned to the aquifer via cesspools. For example, the consumptive use of water in residential areas without sewers is only on the order of 20%. Thus far, any impacts on this increased pumpage during the period 1966 to 1980 on water table elevations, or the position of the saltwater interface along the shoreline, have not been discernible from seasonal and yearly fluctuations that have resulted from variations in rainfall.

TABLE 2
1980 Daily Pumpage by Township*

Township	Res	C/I	Agr	Inst**	Other	Total
Babylon	16.6	8.3	—	—	0.4	25.3
Brookhaven	40.5	13.4	3.1	6.7	0.6	64.3
E. Hampton	2.4	0.2	1.2	—	—	3.8
Huntington	27.6	7.0	2.2	0.8	1.1	38.6
Islip	24.2	7.2	0.1	1.5	0.1	33.2
Riverhead	2.2	3.6	7.4	—	0.6	13.9
Shelter Is.	0.3	—	0.2	—	—	0.5
Smithtown	13.4	3.3	0.6	0.8	0.2	18.3
Southampton	5.6	0.8	6.5	—	0.2	13.1
Southold	2.2	0.4	2.6	—	0.1	5.2
Total	135.0	44.2	23.9	9.8	3.3	216.2

Res - residential; C/I - commercial/industrial; Agr - agricultural; Inst - institutional; Other - golf courses and cemeteries.

* Pumpages in MGD; (—) less than .05 MGD.

** Major institutions with separate wells.

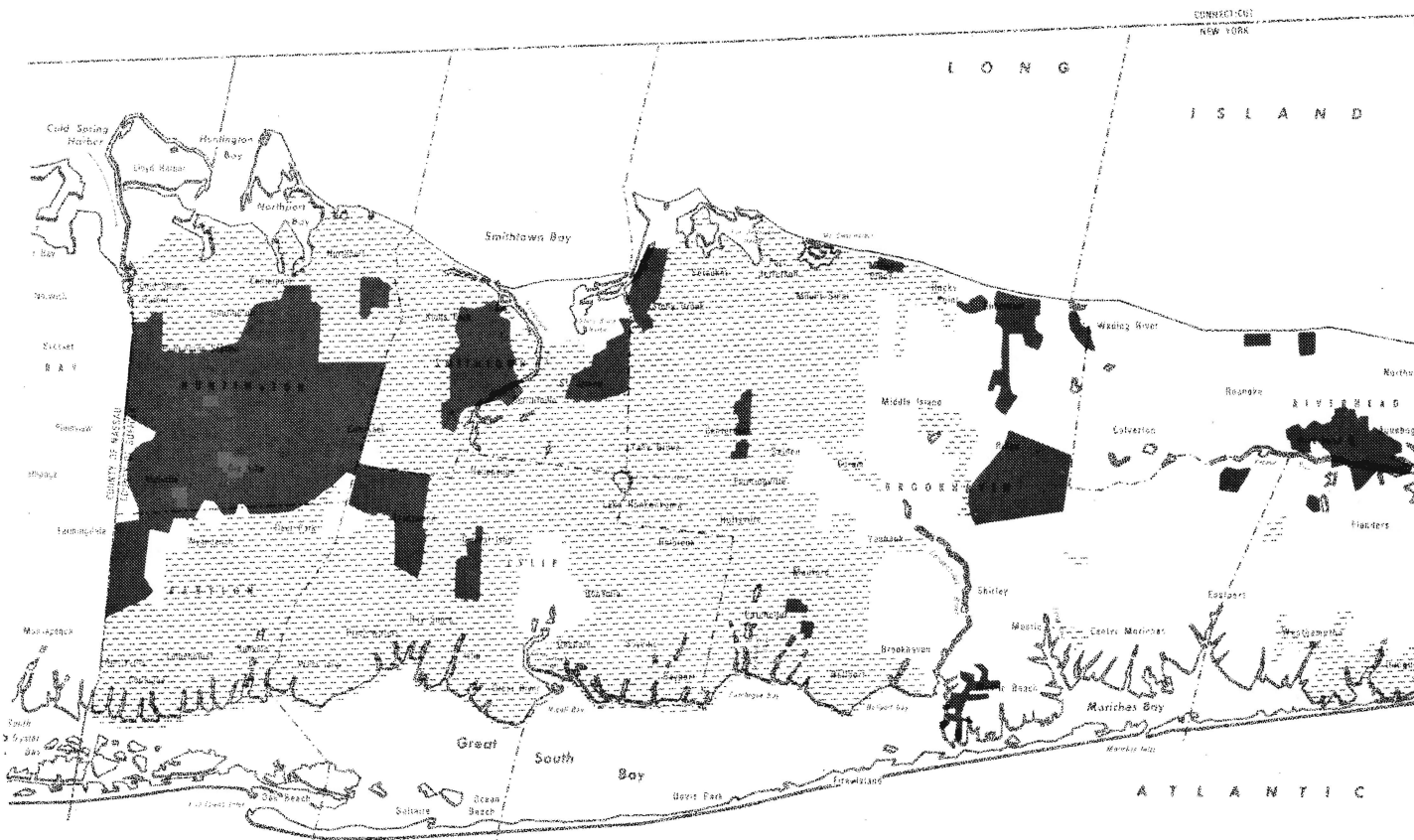
Census data for 1980 indicate that there are close to 78,000 private wells still in use in Suffolk County (Table 3). Almost 200,000 permanent residents are served by these wells. The remaining 84% of permanent residents (1,085,000 people) are served by public water systems (Figure 1). The largest system, in terms of service area and population served, is the Suffolk County Water Authority (SCWA), which has shown steady growth over the years (Table 4). The SCWA and the nine next largest systems—S. Huntington, Greenlawn, Dix Hills, Brentwood, E. Farmingdale, Riverhead, Shorewood, Hampton Bays, Greenport—supply about 90% of the County residents on public water.

TABLE 3
1980 Private Well Inventory*

Township	Residential Wells			Year-round Number	Pop. Served % Town Pop.
	Year-round	Seasonal	Total		
Babylon	2,600	—	2,600	8,500	(4.1)
Brookhaven	31,100	—	31,100	101,400	(26.9)
E. Hampton	3,500	2,900	6,400	8,400	(44.5)
Huntington	1,100	—	1,100	3,700	(1.9)
Islip	3,700	—	3,700	12,600	(4.2)
Riverhead	4,400	600	5,000	11,600	(53.7)
Shelter Is.	1,400	500	1,900	3,200	(90.4)
Smithtown	2,700	—	2,700	9,500	(8.3)
Southampton	9,900	5,100	15,000	24,800	(50.4)
Southold	6,000	2,300	8,300	15,400	(71.3)
Total	66,400	11,400	77,800	199,100	(16.4)

* From 1980 Census data.

— Not of major significance.



**TABLE 4
Public Water Supplies:
Services and Population**

Year	SCWA*		Other**		Total	
	Serv	Pop	Serv	Pop	Serv	Pop
1970	172,000	567,000	40,000	147,000	212,000	714,000
1975	212,000	700,000	48,000	171,000	260,000	871,000
1980	235,000	775,000	52,000	185,000	287,000	960,000
1983	248,000	820,000	55,000	192,000	303,000	1,012,000

* Does not include 40,000 additional people served by the Smithtown, St. James, and Stony Brook Water Districts, which purchase their water from the SCWA.

** Totals for the nine largest systems after SCWA (see text).

3. Well Sampling And Water Quality

The year 1983 was marked by an increased concern on the part of private well owners about organic chemical and pesticide contamination. During the year, the SCDHS received over 6,000 requests for well samples, which represents close to 8% of the private wells still in use in the County. About 3,000 additional private well samples were collected as part of on-going pesticide surveys. By year's end, this increased demand for sampling services had resulted in a 4-5 month backlog in sample collection.

Contamination of private and non-community (e.g., restaurant) wells continued to be a problem during 1983. Over 5,000 well samples were tested for organic chemicals during the year, with emphasis given to wells in western Suffolk communities; more than 100 were found to exceed drinking water guidelines, bringing the total to about 650 (or 4% of wells tested) since the SCDHS program began in 1977. An additional 3,900 wells in eastern Suffolk communities were tested for pesticides;

over 500 were found to exceed guidelines for aldicarb and/or carbofuran, bringing the total to almost 2,200 (or 14% of wells sampled since monitoring began in 1980 (Table 5)).

Contamination of public supply wells also continued to be a concern. Almost 1,000 samples were taken during routine monitoring by the SCDHS at approximately 550 community (public) water supply wells; additional samples were taken by the water companies. Two SCWA wells in Oakdale were closed during the year, bringing to 26 the total number of community wells found to exceed drinking water guidelines since the start of the organics testing program in 1977. Eighteen of these wells are still classified as **restricted**, and can be used only in case of emergency (Table 6); the other eight wells have been abandoned or have improved sufficiently to be put back in service. All but one well was closed due to organic solvent contamination (tetrachloroethylene, trichloroethylene, trichloroethane); the Brentwood well was closed due to benzene contamination, which was thought to have come from a gasoline spill.

**TABLE 5
SCDHS Private and Non-Community Well Sampling**

Year	Organics		Pesticides	
	Samples*	Wells Exceed	Wells	Wells Exceed
1977	18	—	—	—
1978	794	145	—	—
1979	1,925	—	—	—
1980	2,682	149	8,345**	1,151
1981	4,459	127	624†	200
1982	3,740	109	2,534	299
1983	5,045	122	3,891	536
Total	18,663	652	15,394	2,186

* Includes about 10% repeat samples.

** Samples analyzed by Union Carbide (UC) labs.

† Aldicarb analyzed by UC; carbofuran by Food Machinery Corp. (FMC).

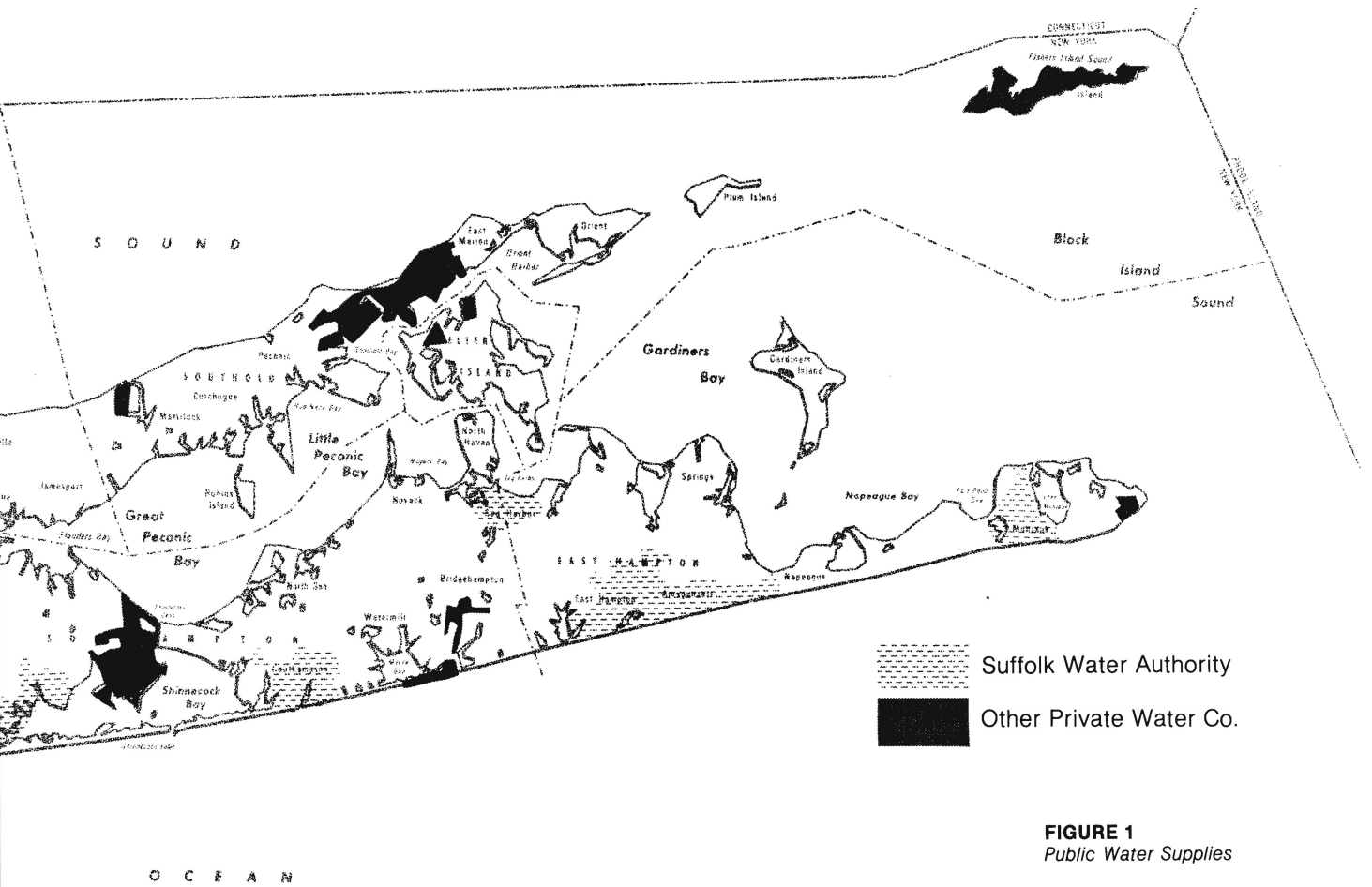


FIGURE 1
Public Water Supplies

The community and private well data provide some indication of the extent of groundwater contamination in Suffolk County. They cannot be used, however, to establish water quality trends or to characterize the overall resource. These questions will be addressed by the SCDHS during 1984 as part of its Comprehensive Water Resources Plan study, which will use data from SCDHS' monitoring well network.

TABLE 6
Restricted Community Supply Wells

Year	No.	Communities
1977	4	Centerport, Bohemia, E. Farmingdale, Central Islip
1978	4	Centerport, Bohemia, S. Huntington, Central Islip
1979	—	—
1980	6	S. Huntington, Brookhaven Lab, Brentwood, E. Northport, N. Bay Shore, Ronkonkoma
1981	—	—
1982	2	Bay Shore, S. Huntington
1983	2	Oakdale
	18	

4. Tank Testing and Hazardous Spills

Article 12 of the Suffolk County Health Code established construction standards for new underground storage tanks; petroleum tanks in existence in 1980 must meet these standards by 1995, while existing non-petroleum-(hazardous materials) storage tanks have only until 1987. Until they are brought up to standards, existing tanks must be tested periodically. The oldest tanks are required to be tested first and most frequently; all tanks must be tested at least once by the end of 1985. County-owned tanks are tested by the SCDHS. Gas stations are required to hire private testing firms to check their tanks and piping systems.

Thus far, about 2,300 of the estimated 6,000 gas station tanks in the County have been tested, with a failure rate of about 6.5 percent (Table 7). The percentage of tank failures declined in recent years as a greater number of newer tanks were tested, and as many older tanks were replaced. It should be noted the piping system failures have been detected much more often than tank failures; in 1983, 50 tank failures, and over 270 piping system failures, were found.

The number of spills and leaks of petroleum products and hazardous materials continued to rise during 1983 (Table 8). It is not certain whether this trend represents an actual increase in the incident rate, or just improvements in detection and reporting. At least part of the increase reflects the large number of tanks that were tested during the year because of Article 12 testing deadlines. Most surface spills (e.g., of PCB contaminated transformer oil) and many of the underground leaks are not believed to have affected groundwater.

5. Approvals and Permits

The Suffolk County Department of Health Services administers a number of approval and permit programs that are designed to protect groundwater resources. Sewage treatment requirements for residential subdivisions and developments (minor subdivisions of less than 5 lots) are reviewed under Article 6 of the Suffolk County Sanitary Code; these requirements are based on building density and hydrogeologic considerations. Approvals for multi-family housing and non-residential facilities, including office buildings, commercial buildings, and factories, are also required under Article 6. Sanitary sewage treatment requirements for these types of construction are based on the same considerations as the density/discharge limits for single-family residential development in similar hydrogeologic areas; large sanitary sewage discharges (above 15,000 gpd/acre) require a treatment plant, while smaller discharges (above 300-600 gpd/acre) require denitrification only (i.e., a super cesspool). Plans for individual well and sewage disposal systems are reviewed pursuant to Part 75 of the State Sanitary Code and Article 5.B of the Suffolk Sanitary Code; considerations include the separation between existing and proposed wells and disposal systems, and the demonstration of an adequate supply of potable groundwater.

TABLE 7
Underground Tank Testing Data

Year	Private Tanks		County Owned Tanks	
	# Tested	Failures	# Tested	# Failed
1980	350	39 (11%)	16	4
1981	313	44 (14%)	45	8
1982	361	15 (4%)	31	3
1983	1261	50 (4%)	12	5
Total	2285	148 (6.5%)	104	20

TABLE 8
Spills and Leaks of Petroleum Products and Hazardous Materials*

Year	Surface Spills	Underground Leaks	Total
1978	58	20	78
1979	101	45	146
1980	75	47	122
1981	134	49	183
1982	168	56	224
1983	314	121	435

* Data from NYSDEC files.

State Pollution Discharge Elimination System (SPDES) Permits for sanitary sewage discharges greater than 1,000 gpd are issued by the SCDHS; permits for sewage treatment plant discharges and commercial/industrial effluent discharges are processed by the SCDHS, but are issued by the New York State Department of Environmental Conservation. Permits for new underground storage tank construction are issued by the SCDHS pursuant to Article 12 of the Suffolk County Sanitary Code.

Table 9 presents a compilation of data on various SCDHS approval and permit programs during the last five years. Some interesting trends are apparent. The number of subdivision and development maps approved during 1983 was double that of the previous year; much of this increase reflects the efforts of East End developers to submit plans and obtain approvals before large-scale upzonings of vacant land were enacted. The emphasis on East End large-lot subdivisions during 1983 is reflected in the high percentages of proposed homes with private wells and individual septic systems (Table 9); it is also indicated by the increase in the average lot size for all new subdivisions and developments within the County—from 51,000 square feet in 1981 and 1982 to 59,000 square feet in 1983.

Residential and commercial/industrial construction were also on the increase during 1983. The number of single-family residential approvals in 1983 was almost 70% greater than in 1982. The percentage of new homes with public water increased in 1983 to 68%, compared to an average of 58% in previous years; this was due, in part, to efforts by the SCDHS to encourage public water hookups. This percentage will probably drop in the future, however, as large-lot subdivisions on the East End, which usually rely on private wells, are developed.

The number of new SPDES permits issued by the SCDHS (for sanitary sewage discharges) during 1983 was similar to those in 1981 and 1982, but is less than the number issued in previous years; the number of 5-year SPDES permit renewals processed during 1983 was also down. This trend reflects a shift in the allocation of limited regulatory resources, and not a drop in construction. The result has been an increasing backlog in the processing of SPDES permits for sanitary sewage as other programs (e.g., Article 12) are given priority.

The number of underground petroleum storage tanks approved for construction during 1983 decreased somewhat from previous years. The greatest number of new tank approvals occurred in 1981, one year after the tank testing program began. The greatest number of tank removals also occurred in 1981, a year in which oil profits were high, and many oil companies decided to replace older tanks rather than continually test them.

TABLE 9
Approvals and Permits

	1979	1980	1981	1982	1983
Subdivisions*					
# of maps proposed	67	62	104	119	237
total # of homes approved	1395	1142	1445	1384	2455
% with private wells	42%	37%	32%	34%	63%
% with septic systems	N.A.	N.A.	89%	82%	92%
Single-Family Res. Constr.					
total # of homes approved	1778	2103	2624	2282	3846
% with public water	52%	62%	62%	56%	68%
% with private wells	48%	38%	38%	44%	32%
% with septic systems	90%	86%	88%	84%	81%
Comm./Ind. and Multi-family Res. Constr. Plan Approvals	357	287	312	340	415
SPDES Permits**					
new	286	224	153	143	144
renewals	180	373	142	123	108
Article 12 Permits					
new tanks approved	—	325	466	374	329
old tanks removed	—	222	411	278	226

* Includes "developments" (subdivisions less than 5 lots).

** Permits issued by the SCDHS for sanitary sewage discharges.
N.A. - Not Available. — Predates Article 12.

CONTAMINANTS OF CONCERN

1. Hazardous Chemicals

Organic Solvents

About half of the 40 organic chemicals so far identified in Suffolk County groundwater are used as industrial/commercial solvents, or are breakdown products of these solvents. The most common solvents found in groundwater include *tetrachloroethylene* (which is also known as perchloroethylene, perc, or dry-cleaning fluid), *trichloroethylene*, and *trichloroethane* (which was also a major component of cesspool cleaners that were banned by the County in 1980). Other solvents found include *chloroform*, *freon 113*, *methylene chloride*, and *chlorinated benzene compounds* (which were used in many cesspool cleaners). Once these chemicals reach the water table, they tend to be very stable, and may persist for decades or longer.

Wide-spread contamination by organic solvents and their breakdown products were found downgradient of an industrial area in West Babylon during a recent SCDHS study. A plume 1,000-1,500 feet wide and 2-3 miles long was delineated in the upper glacial aquifer. It is believed that the discharges that created this plume occurred over a 15-22 year period. Similar evidence of widespread, chronic organic solvent contamination downgradient of industrial and commercial areas has consistently been collected by the SCDHS. These data point out the need for controls on the use and storage of hazardous chemicals beyond those presently provided by the SPDES permit system (for effluents) and the Article 12 permit system (for solvent and waste storage); they also highlight the need to include strict limitations on industrial/commercial activities as part of any watershed protection program.

Private well data for the solvent tetrachloroethylene (Table 10) confirm the wide-spread occurrence of industrial/commercial contamination, despite the efforts of existing regulatory programs, while data for trichloroethane (Table 11) indicate the wide-spread impact of past cesspool cleaner use, particularly in densely populated areas. It should be noted that both chemicals have affected areas other than those listed in Tables 10 and 11; many of these areas, however, are served extensively by public water, and do not have enough private well samples to be included in the tables.

TABLE 10
Communities with Tetrachloroethylene Contamination*

Community	# Samples	# Exceed	% Exceed
Amityville	52	7	13.5
Babylon	32	1	3.1
Commack	31	7	22.6
Deer Park	63	4	6.3
E. Patchogue	788	22	2.8
Hauppauge	325	8	2.5
Lindenhurst	60	3	5.0
N. Amityville	58	16	27.6
Sayville	59	2	3.4
W. Babylon	196	35	17.9
W. Islip	32	1	3.1

* Communities with more than 20 samples, with at least 2.5% exceeding the drinking water guideline of 50 ppb.

TABLE 11
Communities with Trichloroethane Contamination*

Community	# Samples	# Exceed	% Exceed
Amityville	54	8	14.8
Bay Shore	169	13	7.7
C. Islip	135	6	4.4
Deer Park	63	9	14.3
E. Islip	85	13	15.3
E. Patchogue	811	33	4.1
Islip	190	24	12.6
Kings Park	88	4	4.5
Lindenhurst	60	15	25.0
Mastic Beach	1206	49	4.1
N. Amityville	58	20	34.5
N. Babylon	93	5	5.4
Patchogue	276	13	4.7
Rensenburg	83	4	4.8
Sag Harbor	65	5	7.7
W. Babylon	197	51	25.9
Wyandanch	169	8	4.7

* Communities with more the 50 samples, with at least 4% exceeding the drinking water guideline of 50 ppb.

Vinyl Chloride

Vinyl chloride (chloroethylene), a known human carcinogen, is a chlorinated hydrocarbon used to form *polyvinyl chloride* plastics (PVC). Although normally found as a gas, vinyl chloride is slightly soluble in water, and can be created by the biodegradation of the organic solvents *tetrachloroethylene* (dry-cleaning fluid) and *trichloroethylene* (an industrial degreaser), with the formation of *cis-dichloroethylene* as an intermediate breakdown product. Such biodegradation has been shown to occur under anaerobic conditions, which can be found in landfills and septic systems.

Concerns about vinyl chloride in Suffolk County groundwater were first raised in 1980 after the chemical was detected in air samples taken from methane gas vents at municipal landfills. A special 1980-81 SCDHS survey of 244 private wells around landfills throughout the County found measurable quantities of vinyl chloride in about 6% of the wells, with 2% exceeding the drinking water guideline of 5 ppb; the highest concentration found was 77 ppb. The origin(s) of vinyl chloride within the landfills, however, could not be determined.

During 1983, the SCDHS discovered vinyl chloride concentrations as high as 2,800 ppb in a test well in North Bay Shore; even higher concentrations of tetrachloroethylene and *cis-dichloroethylene* were found in the well. This contamination was traced 2/3 mile upgradient to a commercial dry-cleaning operation. Vinyl chloride was subsequently found in samples of waste sludge and cesspool waters at the facility, indicating that it was being formed (from tetrachloroethylene) during the dry-cleaning process, and may also have been formed in the anaerobic con-

ditions within the cesspools. These findings raise the possibility that illegally dumped dry-cleaning waste sludges are a source of vinyl chloride found at landfills.

Gasoline (BTX)

When gasoline leaks from an underground tank, a large portion adheres to soil particles within the zone of aeration (above the water table), while the remainder **floats** on top of the water table. Where gasoline and ground water come in contact, the slightly soluble components of gasoline—most notably *benzene*, *toluene*, and *xylene* (BTX)—will dissolve into and contaminate the ground water. As the floating gasoline plume moves downgradient, additional gasoline gets adsorbed onto soil particles within the zone of aeration, especially as the water table fluctuates up and down. Recovery wells can only remove floating product, which often accounts for less than 1/3 of the original amount spilled. The soil-bound gasoline is subject to biological decomposition, and will degrade after a number of years. The dissolved components, however, will persist within the saturated zone.

In 1983, there were 18 gasoline recovery operations being conducted at service stations in Suffolk County under the supervision of the N.Y.S. Department of Transportation. The most notable spill occurred in Deer Park, where an estimated 100,000 gallons were leaked; so far, only 28,000 gallons have been recovered, and benzene fumes from the spill have affected more than half a dozen homes. On a more positive note, clean-up operations at the Yaphank County Center were completed after five years; a little over 1/3 of the estimated 100,000 gallons of gasoline were recovered.

Radionuclides

Two incidents involving radioactive materials took place in Suffolk County during 1983. The first occurred in March at the former site of the Long Island Nuclear Services Company (LINSOCO) in North Bellport. Traces of *Cesium-137* and *Cobalt-60* were found in surface soil samples; later, a metal drum and tank filled with rocks containing *Thorium-232* were unearthed. Groundwater samples were collected by the SCDHS at the site and downgradient, and were sent to Brookhaven National Laboratory for analysis. The samples indicated that the radionuclides found near the surface had not reached the water table. The monitoring wells did indicate elevated levels of *Tritium* near the site; these levels were well below the health limit. The SCDHS also conducted a pump test at the SCWA well field located 1000 feet upgradient of the LINSOCO site. Pump test results were used to model the well field's effect on regional groundwater flow. It was concluded that the well field could not have been, nor is likely to be, impacted by past activities at the LINSOCO site.

The second incident occurred in June after an aerial reconnaissance survey conducted by the U.S. Energy Department indicated a radiation **hot spot** in Moriches. A follow-up investigation by the SCDHS found Cobalt-60 contamination around the yard of a private residence, which may have been contained in cesspool wastes that were used as fertilizer. Samples of groundwater from five downgradient private wells were collected and were found to be free of contamination.

Metals

In response to the November 1983 explosion at the Grucci fireworks factory in Bellport, the SCDHS surveyed all private wells immediately downgradient of the factory site. The major compound of concern was *arsenic*, which is used in a number of fireworks compounds. The results for the private wells, and the three SCWA wells at Head of the Neck Road, indicated no contamination from past operations at the Grucci site. Periodic resampling of the wells is planned to determine if ground water was impacted by the explosion.

The problem of lead solder used in plumbing connections received considerable attention during 1983. Lead is not a naturally occurring element in Suffolk County ground water, but is leached from lead-containing solder by the corrosive action of low pH (acidic) water. The problem is most severe in newly installed systems, or recently modified systems, where fresh solder connections are first exposed to corrosion. A SCDHS study found that the drinking water standard of 50 ppb could be exceeded after prolonged periods of water non-use (e.g., overnight), and that concentrations could be significantly reduced by running the water for two minutes prior to sampling.

In December 1982, the Suffolk County Legislature passed a resolution encouraging the towns to amend their building codes to limit the lead content of solder to 0.2%. In March 1983, the Suffolk County Board of Health urged the State to amend the State Building Code to include this limit. The State Code was amended in April and allowed local municipalities to limit the lead content in solder *when it has been determined by the authority having jurisdiction that a higher lead content constitutes a health hazard*. The Suffolk County Board of Health took the necessary action in September, declaring the use of high lead solder a potential health hazard, and urging all towns and villages to amend their local building and/or plumbing codes to limit the lead content in solder to 0.2%. As of February 1984, five Suffolk County towns and one village have taken action—Smithtown, Riverhead, Islip, Babylon, Shelter Island, and Lindenhurst.

2. Pesticides

A number of pesticides have been detected in Suffolk County ground water, including *aldicarb* (Temik), *carbofuran* (Furadan), *dichloropropane* (Telone, Vorlex, DD), and *oxamyl* (Vydate). Of these, the carbamate pesticides aldicarb and carbofuran, which were used to combat golden nematodes and the Colorado potato beetle, have caused the most widespread problems. The manufacturers of these pesticides (Union Carbide Corp. and Food Machinery Corp. (FMC), respectively) have provided over 2,000 granular activated carbon (GAC) filters to owners of private wells that exceed State guidelines (7 ppb and 15 ppb, respectively). The SCDHS has tested these filters and has found them to be effective if properly operated and maintained. Union Carbide has also provided GAC filters for two public supply wells owned by the Greenport Water District. The first County agreement with Union Carbide Corp. expired June 1983; while negotiations on a new agreement are proceeding, Union Carbide has been providing new filters and recharging (replacing) old filters free of charge. There is no formal agreement between the County and FMC on the provision of filters.

In early 1983, the main supply well of the Reeves Beach Water Corp. in Riverhead was found to have a combined aldicarb/carbofuran concentration above the State guideline. The company's 275 customers were advised to seek alternate drinking water sources throughout much of the summer and fall. Similar problems were experienced at the supply well for the neighboring Baiting Hollow Cottages. Both systems are now under consideration for inclusion in future extensions of the Riverhead Water District.

Dichloropropane has been used for almost three decades to fumigate potato fields quarantined by the USDA because of golden nematode infestation. Previous studies by the SCDHS in North and South Fork farming areas have indicated wide-spread groundwater contamination near treated fields. During 1983, the SCDHS entered into a cooperative agreement with the USDA to collect additional samples for dichloropropane; preliminary results confirm earlier findings of wide-spread contamination near quarantined fields.

During 1983, the SCDHS found *oxamyl* (Vydate) in 59 private East End wells. An area within the Community of Laurel had the most severe problems—two-thirds of the wells tested contained oxamyl. In January 1984, the manufacturer of Vydate, Du Pont Co., withdrew the product from Suffolk County. Vydate had been in use since 1980, when it replaced aldicarb and carbofuran in potato farming. It is not clear what pesticide potato farmers will turn to now.

Another pesticide in the news in 1983 was *chlordane*, which is used to kill termites. In early, 1984, the NYSDEC issued new rules governing chlordane use, including prohibitions against applications at depths below the local water table and within 100 feet of a well. The SCDHS has begun a sampling program in cooperation with the NYSDOH; thus far, none of the wells sampled have contained detectable levels of chlordane.

3. Landfill Leachate

The monitoring of leachate plumes at municipal landfills is the responsibility of the towns (pursuant to NYSDEC's Part 360 permit program). The SCDHS, however, has an on-going program for mapping landfill plumes within the County, and during the last two years has been trying to identify landfills where hazardous materials may have been dumped.

Plumes downgradient of the Sonia Road and Hubbard Landfills in Brentwood (North Bay Shore) were given special attention because of a 1978 Hooker Chemical Company memo which indicated that scrapings of PVC waste lagoons had been trucked to a (*private?*) landfill in Brentwood during 1973 and 1974. The landfill plumes were defined using conductivity (dissolved solids) measurements, and samples were analyzed for organic contaminants (particularly vinyl chloride). Only one well, located far downgradient of the closed Sonia Road Landfill, had traces (9 ppb) of vinyl chloride. It is not clear whether this contamination is related to the landfill, and so follow-up monitoring will be conducted.

A plume was also delineated downgradient of the Hubbard Landfill, which is still being used for disposal of construction debris and brush. A number of private wells were found to be contaminated with organic solvents, which may have come from the landfill and/or industrial and commercial activities located adjacent to the landfill. No vinyl chloride was found, but some gasoline (BTX) was detected, thus allowing the NYS DOT to use its emergency funds to extend public water to the affected homes. The plume data have been turned over to the NYSDEC for possible enforcement actions under Part 360 and/or SPDES.

4. Nitrate and MBAS

A portion of the *nitrate* found in groundwater is derived from agricultural and lawn fertilizers. Although fertilizers most often contain nitrogen in the form of *urea*, the *urea* will usually break down into *ammonia*, which in turn is oxidized to *nitrite* and then *nitrate*. These reactions usually take place in the soil or in the unsaturated zone, so that only nitrate reaches the water table. Nitrate in groundwater is also derived (along with ammonia) from sanitary sewage, and is found in ground water at elevated concentrations that vary directly with the density of residential cesspools.

Since 1972, the SCDHS has tested almost 19,000 samples for nitrate contamination. Of these, about 7.7% have exceeded the drinking water standard of 10 ppm. Some of the communities with significant nitrate contamination of private wells are listed in Table 12. The data indicate that residential communities, as well as agricultural communities, have been affected, and that these residential communities are located in the center of the County, as well as on the South Shore. It should be noted that many of the densely developed communities in western Suffolk are served by public water, and may not have enough private well samples to be included in Table 12; nitrate contamination may still be significant in these areas, however.

**TABLE 12
Communities with Nitrate
Contamination***

Community	# Samples	# Exceed	% Exceed
Aquebogue	174	30	17.2
Bay Shore	189	32	16.9
Bellport	187	19	10.2
C. Islip	146	25	17.1
Calverton	144	17	11.8
Centereach	233	35	15.0
Cutchogue	344	50	14.5
E. Moriches	281	32	11.4
Holbrook	142	22	15.5
Holtsville	123	17	13.8
Jamesport	135	19	14.1
L. Ronkonkoma	189	20	10.6
Mattituck	429	90	21.0
N. Patchogue	115	13	11.3
Nesconset	143	18	12.6
Orient	165	40	24.2
Riverhead	296	52	17.6
Ronkonkoma	257	39	15.2
Selden	174	37	21.3
Southold	456	58	12.7
Wading River	360	37	10.3
Water Mill	141	23	16.3

* Communities with more than 100 samples, with at least 10% exceeding the drinking-water standard of 10 ppm.

MBAS is a measure of detergent contamination and is indicative of cesspool pollution. MBAS caused aesthetic (foaming) problems in the 1960s, and led to the banning of "hard" detergents by the County in 1972. The reintroduction of "soft" detergents in 1981 is not expected to cause similar problems.

During the period 1972-1983, a total of 17,500 samples were tested for MBAS' county-wide, concentrations above the 0.5 ppm drinking water guidelines were found in 1.3% of the samples, and detectable levels were present in 4.7%. Some of the communities with significant MBAS contamination are listed in Table 13; clearly, densely populated areas with a shallow depth to groundwater were most often impacted.

TABLE 13
Communities with MBAS
Contamination*

Community	# Samples	# Exceed	% Exceed
Amityville	64	2	3.1
Bayport	68	4	5.9
Brookhaven	247	5	2.0
C. Moriches	532	18	3.4
Copiapue	57	3	5.3
Deer Park	64	2	3.1
E. Islip	74	5	6.8
E. Patchogue	376	9	2.4
Hauppauge	252	6	2.4
Holbrook	138	4	2.9
Lindenhurst	67	6	9.0
Mastic Beach	1333	36	2.7
N. Babylon	108	5	4.6
N. Haven	52	2	3.8
S. Jamesport	55	4	7.3
Shirley	1065	24	2.3
Wyandanch	163	5	3.1

* Communities with more than 50 samples, with at least 2% exceeding the drinking water guideline of 0.5 ppm.

LAWS AND REGULATIONS

1. New York State

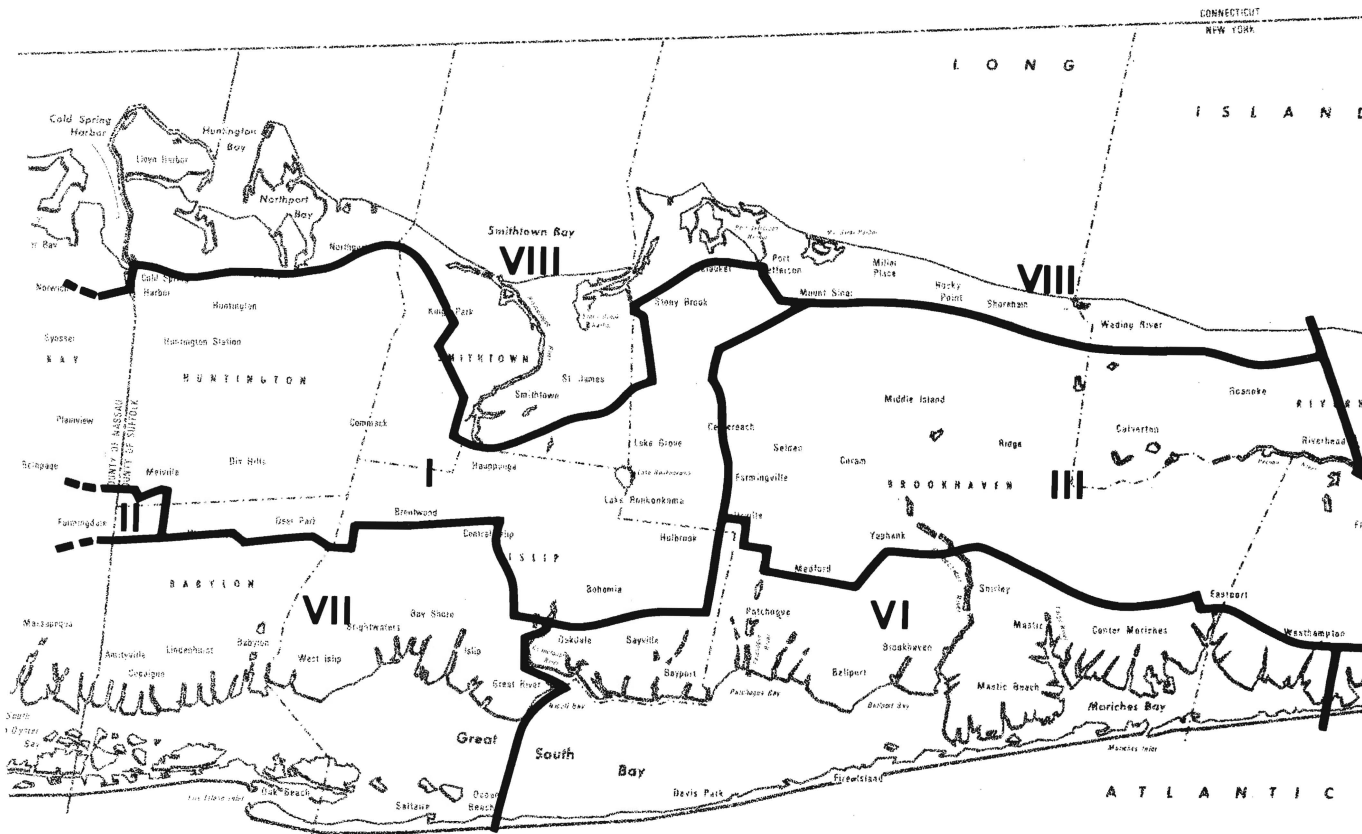
During 1983, eight laws that are relevant to groundwater protection in Suffolk County were enacted by the New York State Legislature, in part through the efforts of the Joint Legislative Commission on Water Resource Needs of Long Island:

- **PROHIBITION OF LANDFILLS IN DEEP FLOW RECHARGE AREAS:** New landfills or expansions in 208 hydrogeologic zones I, II, and III (Figure 2) were banned after January 1984; after January 1991, existing landfills in these zones must be closed, unless they have sufficient safeguards against groundwater contamination (e.g., liners) and accept only material from resource recovery, incineration, or composting operations. In other hydrogeologic zones, new landfills and expansions are to have liners (starting January 1984), and can accept municipal garbage only if the owner is making all reasonable efforts to implement a resource recovery system; in January 1991, those criteria will apply to all existing landfills. (Chap. 299, L. 1983)
- **REGULATION OF HAZARDOUS MATERIALS IN PRIMARY GROUNDWATER RECHARGE AREAS:** The Commissioner of NYSDEC is authorized to regulate or prohibit the manufacturing, packaging, processing, or storage of hazardous wastes or substances (including petroleum) within primary groundwater recharge areas; for Suffolk County, this includes 208 hydrogeologic zones I, II, III, IV, and V (Figure 2). (Chap. 951, L. 1983) Note: No time table for the promulgation of rules and regulations is specified in the law.

- **DISCHARGES AFFECTING GROUNDWATERS:** Any applicant for a SPDES permit in a sole source aquifer recharge area (Suffolk County) is required to include the name and address of the public water system service area in which the facility is located, and any other public water system within a three-mile radius. (Chap. 662, L. 1983)
- **NOTIFICATION OF DISCHARGES AFFECTING GROUNDWATERS:** Within sole-source aquifer recharge areas (Suffolk County), the NYSDEC is required to notify the applicable public water system(s) within fourteen days of a violation of a SPDES permit condition. (Chap. 663, L. 1983)
- **REGULATION OF THE BULK STORAGE OF PETROLEUM:** A State-wide program is created for the regulation of the bulk storage of petroleum in order to prevent spills and leaks from such facilities. (Chap. 613, L. 1983) Note: The law is still stringent than the existing Article 12 of the Suffolk County Sanitary Code.
- **REGULATION OF PESTICIDES:** The laws governing the application of pesticides are amended by requiring a biennial registration of pesticides, permitting the use of experimental permits, and tightening the requirements for pesticide applicators. The penalties for violations of pesticide regulations are stiffened. (Chap. 612, L. 1983)
- **UNLAWFUL DISPOSAL OF WASTE OIL:** The disposal of used oil by discharging or dumping it into sewers, drainage systems, surface or groundwaters or land is prohibited. The incineration of waste oil without a permit is also prohibited. (Chap. 901, L. 1983)
- **STATE JOB DEVELOPMENT AUTHORITY:** The use of JDA funds is prohibited for projects without, or in violation of, a valid permit for the treatment of hazardous wastes pursuant to applicable federal, state, and local law. (Chap. 807, L. 1983)

Important legislation to be submitted (or resubmitted) during the 1984 session includes:

- **WATER QUALITY TREATMENT DISTRICTS:** The County Law and General Municipal Law would be amended to authorize counties and towns to create water quality treatment districts in areas with private wells. These districts would use taxing authority to provide, install, maintain, and monitor home treatment units. (S. 4695A)
- **LAND BURIAL OF CERTAIN HAZARDOUS WASTES:** The Commissioner of NYSDEC would be empowered to ban the land burial of specified hazardous wastes, and ban all land burial of hazardous wastes in sole-source aquifer areas. (S. 5890)
- **SOLE-SOURCE AQUIFER PROTECTION:** The Environmental Conservation Law would be amended to provide a process and funding for the preparation and implementation of groundwater watershed protection plans in Federally designated sole-source aquifers. (S. 4700A)
- **LIMITATION ON LEAD IN SOLDER:** The lead content of lead in solder used on water supply plumbing would be limited State-wide to 0.2%. (S. 4614)
- **TAX CREDIT FOR PURE WATER SUPPLY:** The Tax Law would be amended in order to establish a pure water supply for homeowners whose wells have become contaminated. The tax credit would be applied to up to 55% of the cost incurred in purchasing water purification units, drilling new wells, redrilling existing wells, or obtaining public water.
- **AMENDMENT OF INDUSTRIAL DEVELOPMENT AGENCY RULES:** The General Municipal Law would be amended in order to forbid industrial development agencies from loaning funds to facilities without valid permits for hazardous waste generation, treatment, and storage.



- **CERTIFICATION OF ADEQUATE SUPPLY:** The Environmental Conservation Law would be amended to require a builder, prior to the issuance of any building permits, to obtain a certificate of adequate supply from the local water supplier.
- **EMERGENCY WATER PLANS:** The Public Health Law would be amended to require all water purveyors that sell water to five thousand persons on an annual basis to prepare a water emergency management plan.

2. Suffolk County

Two local laws concerning groundwater and water supply protection were passed by the Suffolk County Legislature during 1983:

- **SEIZURE OF VEHICLES USED IN ILLEGAL DUMPING:** The District Attorney is empowered to seize vehicles, vessels, and other conveyances used to illegally transport or dispose of hazardous waste. After a hearing before a civil judge, seized vehicles may be forfeited and sold at auction. (L.L. 8-1983)
- **APPROVAL FOR HYDRANT USE:** Hydrant users are required to register with the local water purveyor, display water I.D. emblems, and have adequate cross-connection (back-flow) control devices installed on their trucks. The purpose of the law is to prevent pesticides and other materials from being accidentally introduced into the water supply. (L.L. 1-1984)

During the year, County Executive Peter Cohalan created a *Water District Implementation Committee* to examine the technical problems of extending water mains, and to develop methods for alleviating the financial burden of water main extensions and hook-ups on low and moderate income homeowners.

A number of resolutions that are designed to protect the Pine Barrens are expected to be on the Suffolk County Legislature's agenda in 1984.

County Executive Peter Cohalan has proposed adding Article XXXVII and amending Article XIII of the Suffolk County Charter in order to create a *Pine Barrens Review Commission* and a *Pine Barrens Zone*. The nine-member review commission would review projects, zoning changes, regulations, and comprehensive plans that would affect the Pine Barrens Zone; recommendations would then be made to the Suffolk County Planning Commission, which could override any findings by a three-fourths vote; local governments could also override any findings with an extraordinary (majority plus one) vote. Alternatives to this bill will also be introduced, including County veto power over zoning changes and projects, and County purchase of pine barrens through the sale of bonds.

The Suffolk County Board of Health adopted a revised Article 4 of the Suffolk County Sanitary Code in April 1983. New provisions are included to comply with updated Federal and State drinking water regulations. Article 4 now allows the County to initiate independent action on water supply matters of local concern, including bottled water, cross-connections, and water conservation.

In January 1984, the Board of Health issued a proposed Article 7 of the Sanitary Code that is designed to safeguard the water resources of Suffolk County, especially in deep recharge areas and water supply sensitive areas, from discharges of sewage, industrial and other wastes, toxic or hazardous materials, and stormwater runoff. In addition to closing some loopholes in existing permit regulations, Article 7 would apply new restrictions and prohibitions on the use and storage of hazardous and toxic materials in deep recharge areas (e.g., 208 hydrogeologic zones I and III), and in water supply sensitive areas (e.g., insular areas on the East End, and areas upgradient of existing or proposed public water supply wells).

The Suffolk County Water Authority made a rule change during 1983 that will make it easier for developers to provide public water to new subdivisions, instead of relying on private wells or small community systems. In the past, the cost of extending water mains was shared by the developer and the Authority, with the developer receiving a credit for

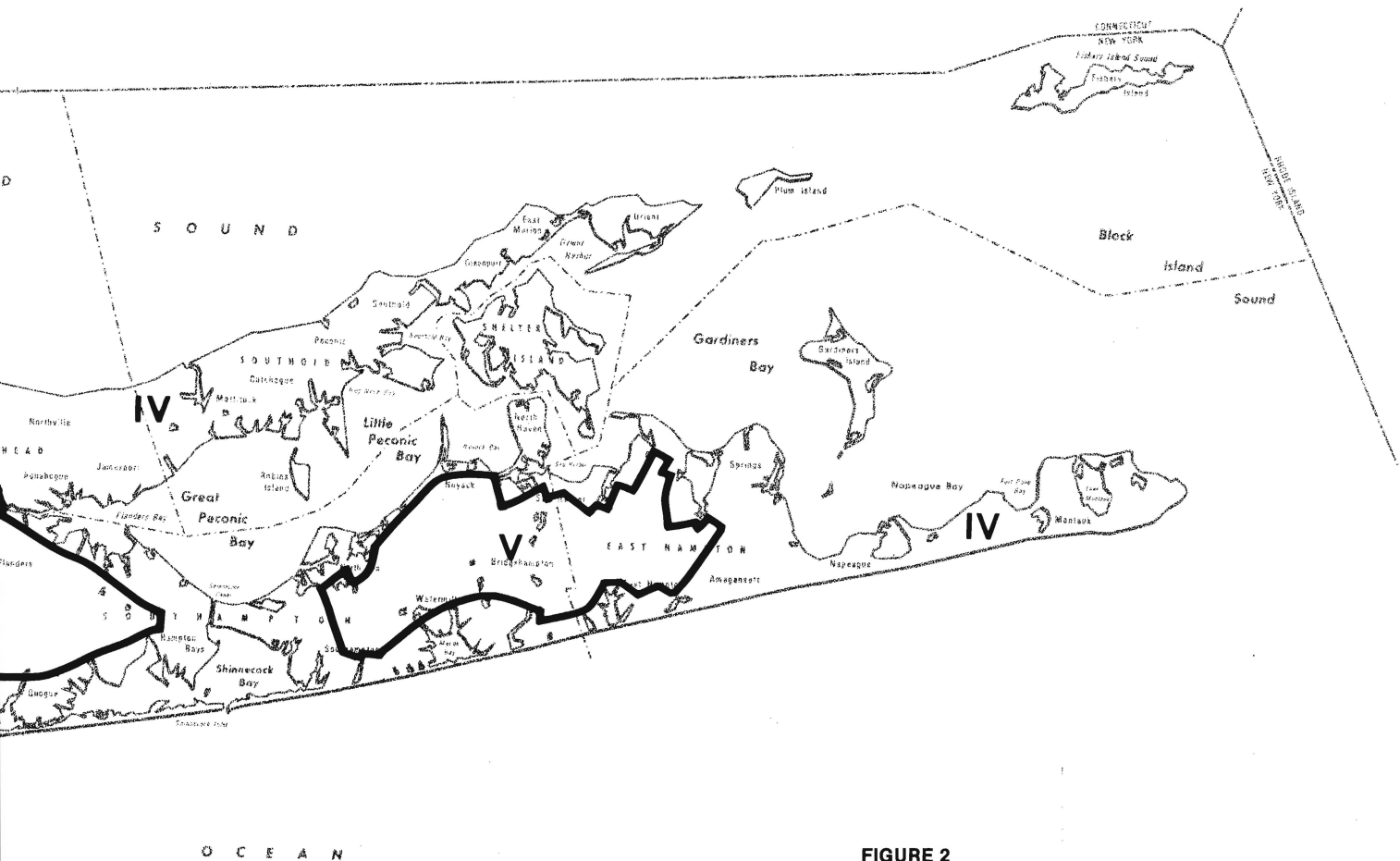


FIGURE 2
208 Hydrogeologic Zones I-V

each existing house that hooked up to the main. Now, if the development is more than 5,000 feet from a water main, the developer can receive additional credit for potential services that may eventually hook up to the main, thus providing an additional funding incentive for water main extensions.

3. Local

The Southampton Town Board voted in March 1983 to upzone (to 5-acre lots) 25,630 acres of undeveloped land within the Town's deep recharge areas (pine barrens). About 17,400 acres had been zoned for 2-acre residential development; 6,800 acres had been zoned for 2-acre industrial development; and the remainder (about 1,400 acres) had been zoned for 1 and 1.5 acre lots. The upzoning affected almost one-third of the Town's unincorporated area, and was designed to protect groundwater resources and preserve the Town's rural character. In October, the Town proposed upzoning more than 5,300 additional acres to the 5-acre category, and upzoning another 14,600 acres to the 3-acre category; 6,800 acres of publicly owned parkland, which had previously been upzoned to 5-acres in March, would be put into a new category of open space, which could not be developed. The Town also proposed the establishment of an aquifer protection area, in which restrictions would be placed on the size of new lawns and the percentage of natural vegetation that could be cleared. A vote is expected in March 1984.

The East Hampton Town Board held its first public hearing on a proposed upzoning of 5,300 acres of undeveloped land in October 1983. The intent of the rezoning is to protect open space and watershed areas, and to decrease the potential for overpopulation. The areas involved include large tracts on Barcelona Neck and in Hither Woods, near Montauk. No action has been taken by the Board, which is awaiting input from Town planners. A six-month moratorium on approvals of new subdivisions of 25 acres or more was enacted in January 1984.

The Town of Southold voted in May 1983 to upzone 16,000 acres of undeveloped farmland and woodlands from 1-acre to 2-acre in order to protect groundwater supplies and preserve the open character of the area. In December, the Town Board denied a zoning change required to build 150 condominium units on 46 acres at Orient Point; protection of groundwater resources was cited as a major factor in the decision.

The Brookhaven Town Board amended the Town zoning code (Chap. 85-359 and 367) for L-1 light industry in deep recharge areas of the Town (208 hydrogeologic zone III). Over 4,000 vacant acres were upzoned from 20,000 square feet to 3-acre. Total building areas are now limited to 30% of the total lot area, and natural vegetation must be retained to the extent possible; landscaped and turfed areas are limited to 15% of the lot. The regulations state that all proposed actions and changes in tenancy or occupancy shall be considered as having a potentially significant effect on the environment and are subject to notification and review under the *State Environmental Quality Review Act (SEQRA)*, including the possible preparation of an environmental impact statement. The regulations also require firms that store or handle toxic or hazardous waste, and/or have industrial discharges to submit adequate financial assurances guaranteeing the immediate cleanup of spills and illegal discharges. It should be noted that the Town has been turning down industrial development proposals that would involve sewage discharges to ground water. Several hundred acres of L-2 and L-3 heavy industry and industrial park land in zone III are not affected by the amendments, and are being handled with covenants that restrict building occupancy. The Town Board also passed a local law (22-1983) that requires a Town permit for the removal of, or the (industrial) discharge of, wastes into ground water within the Town; the law also allows for the charging of a fee for out-of-town transport of water; both aspects of the law may be challenged in court by New York State.

STUDIES AND PROGRAMS

1. New York State

During 1983, the New York State Department of Environmental Conservation (NYSDEC) completed its Long Island Groundwater Management Program, which was an outgrowth of the Nassau-Suffolk 208 Plan. The NYSDEC's study documented the various groundwater pollution problems facing Suffolk County, and evaluated the capabilities of existing programs to cope with these problems. Among the recommendations included in the Program were the following:

- Existing regulatory programs need to be expanded and redirected to more effectively address priority problem areas, specifically deep flow recharge zones, industrial/commercial areas, special groundwater protection districts, and quantity-stressed areas.
- Surveys of hazardous waste generators should be conducted.
- A priority list and schedule for landfill closures should be established.
- Manufacturers should pay for groundwater monitoring for new pesticides.
- Local zoning and land use controls should be used to locate industrial/commercial and high density residential development outside of deep recharge areas.
- Undeveloped watershed areas (e.g., the Pine Barrens) should be designated as environmentally sensitive areas under the State Environmental Quality Review Act (SEQRA), which will require the preparation of an environmental review for any proposed action.
- New York State should institute a groundwater quantity management program, utilizing existing well permit and water supply permit systems.
- A groundwater contamination response and remedial action program should be developed to clean up contamination and restore aquifer water quality.

The year-old State Toxic Waste Superfund is designated to provide the NYSDEC with the means for cleaning up dumps and contaminated aquifer segments. Funds are raised by placing fees of \$2-12/ton on industrial toxic waste produced in the State; thus far, only about \$3 million of an anticipated \$10 million has been collected. The SCDHS has submitted to the NYSDEC a list of 77 sites to be considered for clean-up, including 26 landfills, 35 industrial sites, and 11 public well field sites. Nine Suffolk sites appear on the State's initial list, which was issued in January 1984. At the same time, Governor Cuomo issued an executive order that requires companies to disclose to the NYSDEC the amounts and disposal sites of all toxic waste produced or used in the State since 1952.

In August 1983, the NYSDEC announced the continuation of an arrangement with Chemical Pollution Control Co. of Bay Shore to accept toxic household chemicals and pesticides; the intent is to provide residents with an alternative to dumping these materials down the drain or into the garbage.

The New York Environmental Protection and Spill Compensation Fund was set up in 1978 to provide the financial resources needed to clean up spills of petroleum products. The Fund receives its money from a penny-a-gallon tax on gasoline shipped interstate, and now contains approximately \$12 million. The fund is administered by the New York State Department of Transportation (NYSDOT), which supervises clean-up operations by private contractors; the NYSDEC provides environmental assessments and is responsible for determining when spill cleanup has been completed. In addition to gasoline spill cleanup, monies from the Fund have also been used to replace private wells contaminated with gasoline (BTX). In November 1983, the Fund reimbursed the Brentwood Water District over \$200,000 for replacement of a well contaminated by

benzene in 1980. The NYSDEC has recently developed a new, restrictive definition of petroleum contamination that would exclude cases like the Brentwood Water District, in which only benzene was found, but not other soluble components of gasoline such as toluene and xylene.

The NYSDEC is responsible for managing large tracts of pine barrens that are in State ownership. Over 600 acres of land at the site of the old Edgewood State Hospital were transferred from the State Office of General Services to the NYSDEC during the year. The NYSDEC has indicated that the land will be designated **forever wild** in order to protect the watershed and to preserve the natural habitat. The NYSDEC has also unveiled a management program that stresses ecosystem preservation and watershed protection for over 2,000 acres of pine barrens in Southampton Town; these lands were donated to the State in 1978 by RCA, along with over 5,000 acres in Rocky Point.

2. Suffolk County

Suffolk County Planning Department

During 1983, the Suffolk County Planning Department, through its participation in the work of the Long Island Regional Planning Board (LIRPB), completed a study of the impacts of stormwater runoff on groundwater quality. The study was conducted as part of the *Nationwide Urban Runoff Program* (NURP), and was an outgrowth of the Board's earlier *Areawide 208 Waste Treatment Management Plan*. The NURP study was designed to determine the sources, types, quantities, and fates of stormwater pollutants as they percolate through recharge basins. Five recharge basins, representing various types of land use, were monitored before and after storm events. The United States Geological Survey collected the stormwater and groundwater samples, and performed the chemical analyses. The study recommended the continued use of recharge basins for stormwater management based on the following findings:

- Bacteria that are normally found in high concentrations in stormwater, such as coliform and fecal streptococci, are filtered out by the soil and do not have a significant impact on groundwater quality.
- Chloride (from road salt) is the only inorganic component of stormwater that infiltrates through the soil to groundwater; lead, the other major inorganic component of runoff, is filtered out (adsorbed) by the soil.
- The few samples of runoff that were analyzed for organic chemicals indicated little or no contamination.

The Planning Department is presently in the process of developing a comprehensive land use plan for the Pine Barrens. Basic data on the Pine Barrens was collected during the last few years; input was provided by the Pine Barrens Planning Council. The plan will place major emphasis on groundwater protection and habitat conservation, but will also take economic factors into account. Completion of the plan is expected by mid-1984.

During 1984, the Planning Board (LIRPB) will conduct a study of *Special Groundwater Protection Areas* within Nassau and Suffolk Counties. This study will include the delineation (or confirmation) of area boundaries, and an assessment of water quality and land use conditions. Comprehensive management plans will be developed for selected areas; implementation, which is expected to emphasize County and local responsibilities, will be initiated. Funding (75%) will come from a USEPA Section 205(j) grant administered by the NYSDEC.

Suffolk County Department of Health Services

The Division of Environmental Health Services within the SCDHS completed a number of significant water supply and groundwater studies during 1983, including the following:

- **NORTH FORK WATER SUPPLY PLAN:** The study examined water supply conditions in the towns of Riverhead and Southold. Groundwater quantity was found to be sufficient to

meet projected needs in Riverhead and the western portions of Southold, but may not be sufficient in eastern portions of Southold (e.g., Orient), where only a thin lens of fresh groundwater exists. Contamination by agricultural chemicals (nitrate, pesticides) was found to be widespread. Because of the low density of development, the construction of central public water supply systems was not recommended; instead, the most cost-effective solution was found to be a combination of small community systems and individual home treatment units. The study recommended that the towns establish water supply districts in residential areas where groundwater becomes contaminated. In low density areas, the study recommended that the towns establish home treatment units; State legislation would be required before Home Treatment Unit Districts could be established. The study recommended that County involvement be limited to sampling and advising, unless the towns fail to act.

- **INDUSTRIAL ORGANICS PLUME, WEST BABYLON:** The study investigated the source(s) of industrial organic chemicals that had contaminated a dozen private wells on Commander and Gordon Avenues with concentrations of up to 100,000 ppb. Contamination was traced over 1/2 mile upgradient to an industrial area located just east of the Babylon Town landfill. The plume was found to be over 1000 feet wide, indicating multiple sources, and to extend for a total distance of 2 to 3 miles, reflecting discharges that occurred over a period of 15 to 22 years. In downgradient portions of the plume, contamination permeated the entire upper glacial aquifer, from the water table down to the Gardiners Clay unit. The two deep Magothy aquifer wells at the SCWA's Gordon Avenue well field, which is located about 1000 feet east of the plume, have not been impacted, nor have they had any apparent effect on the plume's direction of flow.
- **VINYL CHLORIDE, NORTH BAY SHORE:** During an investigation of the Hubbard Landfill, vinyl chloride contamination was discovered (in association with tetra-, tri-, and dichloroethylene). This pollution was found not to emanate from the landfill, but rather from a dry-cleaning establishment, which was located 1/2 mile upgradient of the well. A narrow plume in the upper glacial aquifer was found to extend a distance of 2/3 mile, and to terminate about 1/3 mile upgradient of the SCWA's Thomas Avenue well field. It is not certain whether the two deep Magothy wells at Thomas Avenue will be impacted by the plume, which is expected to reach the field in 2 to 3 years.
- **GROUNDWATER QUANTITY, NORTH HAVEN VILLAGE:** An analytical model was used to determine the potential impacts of development and drought on the size and shape of the freshwater lens below this island village. The effects of present development and future development (under existing zoning) on lens volume and thickness were found to be small (about 2%) in comparison to the potential effects of drought (20%). Although a significant volume of pumpable fresh groundwater was calculated to exist beneath the village (5.2 billion gallons), this finding does not assure that sufficient water of good quality will be available on every building lot, particularly those located near the shoreline in densely developed residential areas.
- **LINSCO, NORTH BELLPORT:** An investigation was conducted at a site in North Bellport previously used by the Long Island Nuclear Services Company (LINSCO) as a transfer station for radioactive materials. The radionuclides found in surface soil samples (Cesium-137, Cobalt-60, Thorium-232) were not found in groundwater samples, presumably because of adsorption onto soil particles. The mobile radionuclide Tritium was found at above background levels in a well located 150 feet downgradient; these levels, however, were well below the health standard. A pump test and modeling study were conducted for the SCWA well field located 1000 feet upgradient of the LINSCO site. The modeling results indicated that the well field could not have been

impacted, nor is likely to be impacted in the future, by past activities at the LINSCO site; this conclusion was based, in part, on the distance between LINSCO and the well field, the natural slope of the water table, and the past (and future) pumping rates and schedules at the well field.

- **GRANULAR ACTIVATED CARBON FILTERS FOR ALDICARB:** Representative GAC treatment units were evaluated for adsorption efficiency, competitive displacement of pesticides, equilibrium effects, and microbial activity on adsorbents. The larger (e.g., 1 cubic foot) GAC units were found to be effective in removing aldicarb; their lifespan (time to breakthrough) was found to vary inversely with influent aldicarb levels and water use rates. Although other pesticides were often present with aldicarb, they did not appear to displace (desorb) aldicarb from the GAC filters, but did compete with aldicarb for adsorption sites. Desorption of aldicarb due to reequilibration with lower influent concentrations was found to occur during lab tests, but is not considered a major problem in the field; backwashing, which reduces filter plugging and channeling, was not found to effect equilibrium processes. Nor was microbial activity (coliform, pseudomonas) within the filters found to be a problem. A failure (premature breakthrough) rate of 7% was found, in many cases due to improper installation and/or maintenance. The study recommended filter installation by qualified personnel, improved user instructions, and more frequent recharging (replacing) of filters, based on total carbamate concentrations.
- **CENTRAL WATER SUPPLY DISTRIBUTION (VENDING):** The objective of the study was to evaluate the concept of a central water supply distribution center to provide a source of water to individuals whose water has become contaminated; the operation of commercial water vending equipment was also to be evaluated. A water vending machine was placed in the Southold Community Center, which is located in a farming area. Acceptance by the public was found to be good. Almost 75% of individuals using the machine were repeat customers; more than half cited aesthetic problems—rust and taste—for their recourse to the vending machine. A surprising 46% of users had public water service. The vending machine produced water of high quality, but did experience occasional operational problems. The study concluded that central water distribution centers can play an important role in solving short- and long-term water quality problems.
- **HYDROGEOLOGIC INVESTIGATIONS:** The United States Geological Survey issued four hydrogeological reports during 1983 that were prepared in cooperation with the SCDHS—
 - “Effects of Sanitary Sewers on Ground-Water Levels and Streams” (82-4045);
 - “Geology of the 20-Foot Clay and Gardiners Clay” (82-4056);
 - “Geologic Reconnaissance of an Extensive Clay Unit in North-Central Suffolk County” (82-4075);
 - “Altitude of the Top of the Matawan Group-Magothy Formation” (83-137).

Among the studies to be conducted by the Division during 1984 are the following:

- **TOXIC SEPTAGE MANAGEMENT STUDY:** They study will investigate **low level** toxic materials in sanitary septage and storm drain sediments from commercial and industrial facilities; spill-contaminated soils will also be examined. The objective is to estimate the quantities of these materials produced within the County, and to determine whether existing regulations requiring disposal outside of the County are warranted. Handling and disposal of industrial waste sludges, however, will not be covered, but is the subject of an ongoing NYSDEC study.

- **COMPREHENSIVE WATER RESOURCES PLAN:** The project will develop groundwater and water supply management plans for planning areas that will cover the entire County. The objective is to maintain Suffolk's water self-sufficiency, while minimizing the need for large-scale transportation of water. A Technical Steering Committee, Town/Village Committee, and Citizens Advisory Committee have been established in order to receive input from governmental bodies and relevant non-governmental interests.
- **AGRICULTURAL CHEMICAL REMOVAL METHODS:** Water treatment systems that can remove multiple agricultural chemicals (nitrates, pesticides) as well as organics from groundwater will be evaluated under the USEPA assisted study. Cost-effectiveness and removal efficiencies of various treatment systems will be assessed under different flow situations. The results are expected to be relevant to home treatment programs and larger community water supply systems.
- **VIRAL CONTAMINATION FROM CESSPOOLS:** The study will examine the occurrence and movement of viruses in groundwater beneath a medium-density residential area served by cesspools. The objective is to verify that present SCDHS standards for new private well construction protect against viral contamination. Laboratory analyses will be provided by Brookhaven National Lab.
- **SOUTH FORK WATER RESOURCES STUDY:** A water resources plan will be developed for the Town of East Hampton and the portion of Southampton Town east of the Shinnecock Canal. This plan will detail the location and capacity of public water supply well fields required to serve future populations. The impacts of various plan alternatives will be evaluated using a finite-element groundwater model developed during the 208 Study; modeling results (water table elevations and saltwater interface depths) will be assessed for their ecological impacts. Project costs are being shared by Suffolk County, the Town of East Hampton, and the Suffolk County Water Authority.
- **CONSUMER PRODUCTS STUDY:** This study is designed to determine the impacts, if any, of consumer products containing organic chemicals (e.g., paint strippers, cleaning fluids) on groundwater quality. A medium-density residential area served by cesspools will be examined, along with a garden apartment complex. The objective is to assess whether controls on the sale of consumer products, similar to the 1980 Suffolk ban on cesspool cleaners, is warranted.
- **MONTAUK AREA STUDY:** The USGS, in cooperation with the SCDHS and SCWA, is preparing an assessment of the availability of fresh ground water in the Montauk area, which has a thin glacial aquifer overlying salt water. Numerical and analog models will be used to evaluate the impacts of present and future pumping rates on saltwater intrusion.
- **PUBLIC WATER SUPPLY SURVEILLANCE:** The SCDHS conducts surveillance of community and public water supplies; this monitoring is in addition to that done by water purveyors as required by N.Y.S. Public Health Law. The SCDHS usually collects two organics samples each year from each of the 550 community and public wells in the County. Additional inorganic and bacteriological samples at wells and within distribution systems are taken routinely and in response to customer complaints. The SCDHS also reviews plans and specifications for water facilities; in 1983, nineteen reviews were conducted, including a major water district extension in Riverhead, and the installation of a carbon filter at a second production well in Greenport.
- **GROUNDWATER MONITORING:** A number of monitoring networks are maintained by the SCDHS, including networks to monitor water table elevations and water quality in the upper glacial aquifer throughout the County; the location of the freshwater/saltwater interface at selected locations; the position of leachate plumes downgradient of landfills; and, water levels in the area of the Southwest Sewer District (FANS wells). Magothy aquifer monitoring wells are being installed in western Suffolk, and upper glacial aquifer wells are being monitored for impacts from various types of land use as part of the Comprehensive Water Resources Plan study. A new auger drilling rig was purchased in 1983 (with NYSDOH grant money) that will greatly increase the SCDHS's ability to investigate groundwater contamination plumes.
- **HAZARDOUS MATERIALS MANAGEMENT:** All underground storage tanks for gasoline and other hazardous materials are required to be tested pursuant to Article 12 of the Suffolk County Sanitary Code. Eleven private companies are licensed by the SCDHS to perform tests at gas stations. About 6,400 tanks have been registered with the SCDHS, which keeps a computerized data base that is used to notify tank owners of testing requirements. Designs for new tank construction and portable container storage facilities are reviewed by the SCDHS, which also conducts field inspections. Inspectors from the SCDHS are also present when old tanks are removed in order to make sure that no leaks have occurred. The SCDHS responds to emergencies involving hazardous materials, and conducts follow-up investigations; no contingency funds are presently available, however, to initiate immediate cleanup of non-petroleum materials.
- **SANITARY SEWAGE AND INDUSTRIAL EFFLUENT MANAGEMENT:** Compliance monitoring for SPDES permits is conducted by the permit holders and the SCDHS. Most cases involving permit violations or unpermitted discharges are handled by the SCDHS through the use of voluntary Orders of Consent; few are referred to the State for enforcement. The Suffolk County District Attorney can take criminal action in SPDES violation or unpermitted discharge cases, if necessary, under State Environmental Conservation Law, and under County Law (i.e., under Article 12, which prohibits discharges of toxic or hazardous materials not in accordance with SPDES or other permits). The SCDHS also enforces sewage treatment requirements, and has established standards for the construction of new individual wells and/or sewage disposal systems. Other areas of activity involving sewage and industrial effluent management include research on denitrification of sewage effluent; sludge and sewage management; the compilation of an industrial data base; and, the investigation of specific industrial categories (e.g., dry cleaners, metal shops, photographic labs).

The Division will also be issuing reports during 1984 on the following:

- water supply conditions in the Napeague area, where chloride and bacteriological problems were discovered during 1983 in commercial (non-community) wells
- organic solvent contamination at the SCWA Locust Avenue well field in Bohemia (closed 1977-78)
- organic solvent contamination found downgradient of the Sheridan waste oil facility in Medford.

Numerous ongoing programs for groundwater and water supply management are administered by the Division of Environmental Health Services, including the following:

- **PRIVATE WELL SAMPLING:** Upon request, analyses are provided free-of-charge to private well owners. This program, which is the largest in the Nation, handled a record number of requests during 1983 (over 11,000), representing over 10% of the wells still in use in the County, and resulting in a 4-5 month backlog in sample collection.

- **ENVIRONMENTAL DATA MANAGEMENT:** The SCDHS maintains 14 environmental data bases related to groundwater and water supply management that include information on groundwater quality (monitoring network wells); private well and public water supply quality; industrial point-source discharges (SPDES); and, hazardous materials storage (Article 12). The data management workload has increased dramatically in recent years, primarily as a result of informa-

tion requirements under Article 12 of the Suffolk County Sanitary Code. At the same time, the costs of storage and data processing at the S.U.N.Y. Stony Brook computing center, where the SCDHS's data bases reside, have been rising sharply; this has limited the creation of new data bases, and has prevented existing data bases from being kept on line, where they can be used most effectively (i.e., interactively).

- **LABORATORY SERVICES:** Analyses of most of the samples collected by the Environmental Division are performed by the County Public Health Laboratories which are part of the County Medical Examiner's Office of the SCDHS. The laboratory workload increased during 1983, especially for organics and pesticides; the number of organic samples increased 17% (to 6,566 samples), while carbamate pesticides (aldicarb and carbofuran) samples increased 80% (to 5,795). Grants for two new pieces of equipment were received during 1983, which will provide increased capability for analyzing purgable (volatile) hydrocarbons and aromatic organics, and new capability for non-volatile organics (EPA priority pollutants); additional laboratory staff will be needed to utilize this new equipment to its full potential. Construction of a new building to house all the Public Health Laboratories is expected to begin during the summer of 1984.

STATUS OF 1983 RECOMMENDATIONS

The amount of County activity concerning water supply and groundwater management was considerable during 1983. Many of the recommendations contained in last year's report were acted upon, including the funding of a Toxic Septage Management Study and a Comprehensive Water Resources Plan study; the creation of a Water District Implementation Committee; and, the successful testing of a central water supply distribution center (vending machine). The Water District Implementation Committee will develop the means for implementing a number of recommendations made in last year's report that are designed to provide increased access to public water. Approaches to be considered include:

- establishment of a County water agency, which would enable the County to set up water supply districts (taxing districts) to extend public water to areas with contaminated private wells (this would be done only if the towns fail to act)
- establishment of an on-going mechanism to coordinate SCDHS, Community Development, and SCWA activities, and to actively promote the extension of water mains and the take-over of existing (marginal) water systems
- development of a simplified procedure for residents who want public water to enter into a contract with the SCWA or have a town water district established, including active support and assistance from the SCWA.

Among the major items still on the environmental agenda for 1984 are the following:

- enacting State legislation to allow the creation of water quality treatment districts
- providing the SCWA with access to State and County parklands
- establishing a hazardous materials spill emergency cleanup fund
- identifying the location of hazardous dump sites
- developing a program for field testing pesticides before general use

All of these actions, and many others, are the subject of specific recommendations for 1984.

RECOMMENDATIONS FOR 1984

- **WATER QUALITY TREATMENT DISTRICTS:** Support State legislation authorizing the establishment of water quality treatment districts to purchase, install, and maintain home treatment units. Such districts were recommended in the SCDHS's North Fork Water Supply Plan. It is suggested that the County provide monitoring services to these districts, which existing water supply companies would manage. The County should only establish districts where the towns fail to act.
- **GROUNDWATER PROTECTION MEASURES:** Support efforts to protect deep groundwater recharge and other sensitive water supply areas, including Federal and State sole-source aquifer protection bills, the State's Long Island Groundwater Management Program, County Pine Barrens planning, County Sanitary Code Article 7 (as revised), and various town efforts.
- **SCWA ACCESS TO PARKLANDS:** Develop State and County legislation needed to allow the SCWA access to public parklands. The SCWA should also be given the right of first refusal on the purchase of surplus County lands offered for sale.
- **HAZARDOUS MATERIALS EMERGENCY RESPONSE:** Establish a Hazardous Materials Emergency Response (HAMER) program within the County. This should include a County contingency fund to allow the immediate hiring of contractors to clean up spills, and to remove and dispose of stored materials that pose a threat to groundwater or the public health.
- **TOXIC DUMP LOCATION STUDY:** Initiate a study to locate abandoned dump sites of toxic materials, utilizing comparisons of historical aerial photos of the County, and information solicited from local residents. The purchase of aerial photos would also facilitate the identification of illegal expansions of existing hazardous materials storage facilities.
- **PESTICIDE SCREENING PROGRAM:** Encourage the USEPA to field test new pesticides on County test plots before registration. A committee composed of all relevant parties—USEPA, USDA, NYSDEC, NYS Agriculture and Markets, Cornell University (Cooperative Extension), and the chemical industry—should be set up to oversee any program that may be established. The Cooperative Extension Service should also be urged to compile and maintain an inventory of past and present pesticide use.
- **COMMERCIAL/INDUSTRIAL PERMIT ENFORCEMENT:** Expand and expedite permit enforcement activities by augmenting laboratory, field collection, technical, and legal support capabilities. Laboratory equipment for analyzing **dirty samples** (i.e., high concentration industrial wastes), and the necessary lab personnel, should be added. Groundwater monitoring should be made a normal part of enforcement procedures, especially where violations are suspected. Additional field, technical, and legal support would be needed.
- **DEGRADED AQUIFER SEGMENT IDENTIFICATION:** Initiate a study to delineate degraded segments of deep aquifer recharge areas. Where such segments are found, develop management strategies, including aquifer restoration, extension or establishment of sewer districts, or reclassification (down-grading) of the segment.
- **ENVIRONMENTAL DATA BASE MANAGEMENT:** Restructure existing SCDHS data management capabilities to provide for increased storage capacity and on-line (real time) data retrieval. The level of funding now required to maintain data bases at Stony Brook should be used to lease in-house equipment that will provide the desired data management capabilities, and will also facilitate groundwater modeling efforts.

- **ORGANIC SOLVENT CONTAMINATION STUDIES:** *Initiate case studies for selected commercial and industrial activities to determine the origin and fate of organic groundwater contaminants. These studies should investigate activities such as dry-cleaning, metal finishing, and electronics manufacturing, and should examine the types of solvents used, chemical changes during use, chemical changes after discharge (i.e., within cesspools and in the aquifer), and migration rates through the aquifer.*
- **WATER TREATMENT UNIT LABELING:** *Develop a local law to require labeling of all home water treatment units to indicate the chemicals removed and the expected removal rates (percentages). The Department of Consumer Affairs, with assistance from the SCDHS, would be responsible for spot-checking claims made by manufacturers.*

SURFACE WATERS AND FRESHWATER WETLANDS

INTRODUCTION

1. Existing Conditions

Fresh surface waters include streams, rivers, natural lakes such as Lake Ronkonkoma, natural ponds, and artificially created ponds and lakes. Suffolk rivers and streams are normally shallow and represent groundwater level during dry periods. Long Island streams during baseflow conditions are fed by groundwater. Streamflow is influenced by precipitation, naturally occurring overland runoff, and development-induced stormwater runoff. Intermittent streams are created by overland flow of stormwater during storms. Streams are generally edged with a narrow band of wetlands and can include larger areas of freshwater and tidal wetlands.

Ponds, lakes, and freshwater marshes in Suffolk County result from depressions in glacial topography or are man-made. Hydrologic differences categorize three types of ponds:

- *groundwater ponds, where the water level is the groundwater level*
- *perched ponds, in which the source of water is from stormwater runoff and subsurface flow (natural and man-made systems)*
- *impoundment ponds which are fed by upland stream flow, stormwater runoff, subsurface flow, groundwater.*

2. Monitoring

According to the latest information prepared by the USGS, stream flow levels throughout Suffolk declined significantly in 1981 and continued to decline in 1982, as shown in the 1982 New York Water Resources Data report for Long Island. Generally, stream flow was below average for the 1982 water year. According to the USGS report, the maximum stream discharges of the 1982 water year varied by location on Long Island. Discharges for western Suffolk were highest in January, April and May, while in eastern Suffolk, discharges were highest during the storm of June 5, 1982.

Generally, the maximum monthly mean stream discharges occur in November and minimum monthly mean discharges occur during August. Table 14 summarizes water-discharge records for nine selected rivers and streams in Suffolk County from 1979 to 1982. Although water-discharge information is not available for 1983, it can be assumed that river and stream flows for that year have increased, since precipitation in 1983 was the highest in nine years.

Stream flow monitoring information with respect to water quality data is also contained in the *USGS New York Water Resources Data Report*. The report contains water quality parameters for selected surface waters which include: conductivity, pH, temperature, turbidity, dissolved oxygen, coliform, and total hardness, along with dissolved calcium, magnesium, sodium, sulfate, chloride, fluoride, silica, nitrogen, phosphorus, total residues, arsenic, barium, cadmium, chromium, cobalt, copper, iron, lead, mercury, nickel, silver, zinc, carbon and methylene blue. Basically, water quality within the streams varies from year to year depending upon the amount of precipitation, groundwater levels and associated pollution sources next to streams. According to the USGS report, the concentration of inorganic constituents in precipitation, surface water and groundwater show no significant change during the water year. Water quality data for the streams included in Table 9 of this report indicates that the constituent measurements are mainly within the New York State Water Quality Standards for freshwaters. However, there are occasional fluctuations in the data which exceed the standards for limited time periods during the year.

TABLE 14

**Summary Of Water-Discharge Records (Cubic Feet/Second) For
9 Selected Suffolk County Rivers And Streams**

Stream or River	Average Discharge for Time Period Given Below	1979 Cal. Year	1980 Cal. Year	1981 Cal. Year	1982 Water Year
Nissequoque River at Smithtown, NY	1943-1981 41.6	57.6	45.8	34.1	40.5
Peconic River at Riverhead, NY	1942-1981 36.6	68.9	36.3	20.7	32.3
Carmans River at Yaphank, NY	1943-1981 23.9	39.8	29.2	18.0	21.0
Swan River at East Patchogue, NY	1946-1981 12.6	17.6	12.8	9.0	12.4
Connetquot Brook at Central Islip, NY	1942-1981 23.9	40.5	7.67	2.56	3.86
Connetquot River near Oakdale, NY	1943-1981 38.6	53.7	44.6	29.1	35.9
Sampawams Creek Babylon, NY	1944-1981 9.63	14.3	9.94	7.11	9.78
Carlls River Babylon, NY	1944-1981 26.6	37.8	28.7	22.1	26.4
Massapequa Creek Massapequa, NY	11.4	19.3	11.7	5.99	7.90

SOURCE: United States Geological Survey-Water Resources Data Reports for Water Years 1979-1982, Syosset, N.Y.

PRIORITY PROBLEMS

Stormwater as runoff or as infiltration water is the mechanism by which pollutants move across land or into and from the soils to groundwater or to surface water. Various contaminants accumulate or are disposed of on natural and urban land surfaces. Sources of contaminants include:

- animal wastes
- highway deicing materials
- decay products of vegetation and animal matter
- fertilizers
- pesticides
- air borne contaminants deposited by gravity
- wind or rainfall
- general urban refuse
- by-products of industry and urban development
- improper storage and disposal of toxic and hazardous materials

The contaminants associated with and carried in stormwater runoff include the following major categories: metals; organic substances such as base neutral compounds, acid compounds, volatiles, and pesticides; inorganic chemicals such as phosphates, nitrates, and chlorides; bacteria & viruses; as well as oxygen demanding substances such as BOD₅, COD, and solids. Raindrops dislodge contaminants and soil particles from land surfaces. This material is carried in solution or suspension and travels with the runoff.

Since stormwater runoff is the transport mechanism for any contaminants deposited on impermeable or relatively impervious surfaces, it is often an important contributor to surface water degradation. Although stormwater runoff may contain high concentrations of one or more contaminants, treatment is rarely provided before discharge into Long Island surface water. In a few areas, a marsh pond or biofiltration pond is used to trap and filter out some of the pollutants. Such ponds reduce fecal coliform bacteria and allow for the filtering out or partial uptake by plants of heavy metals, inorganics, organics and nutrients. To compound the problem, many coastal and inland wetlands were filled and developed, further reducing stormwater storage areas and decreasing the natural filtering of contaminants that occurs in wetland areas. Streams have become dumping grounds for construction materials, excess fill and general household garbage.

Biological monitoring has been used to measure the impact of stormwater upon aquatic communities. Increased pollution in urban ponds and streams has resulted in marked changes in the type and number of species present. High concentrations of phosphorus from fertilizers applied to landscaped areas and phosphorus from other sources in the immediate watershed area can result in algal blooms and other eutrophic conditions.

A slug of pollutants can totally decimate aquatic life. High *Biological Oxygen Demand* (BOD) resulting from contamination can cause the depletion of oxygen in receiving waters which is one of the most important impacts on fresh water systems. When high BOD loadings are discharged to surface waters the resultant depressed oxygen levels eliminate those species that cannot survive at low oxygen levels. Aquatic life changes over time as high oxygen demanding species are replaced by those that can tolerate lower dissolved oxygen levels. This is especially an important problem in lakes and ponds. A pond that once had species indicative of good water quality such as *mayflies*, *stoneflies* and *cad-disflies*, may now have large numbers of worms such as *Tubifex tubifex* and *Limnodrilus udekamianus*. Other types of worms may be present that have special types of blood or breathing mechanisms that allow them to adapt to waters with low dissolved oxygen levels. Grease and oil products are sometimes disposed on the land, into storm sewers or directly into surface waters. If sufficient concentrations of these products are found in the water column or accumulate on aquatic plants, they can harm or kill aquatic biota. Salts from highway deicing practices also can kill or harm aquatic vegetation and impact aquatic ecosystems.

A high coliform bacterial count in runoff is considered an indication that pathogenic organisms may also be present. When confined to storm drainage systems, runoff containing pathogenic organisms generally poses little threat to public health since stormwater is not ingested, however, when stormwater enters fresh surface waters where swimming is permitted it can become a problem. The number of bacteria or viruses that can cause infection vary widely. Infection caused by bacteria require an effective dose of a large number of organisms at one time while it is believed that a single virus particle can cause an infection. Even though an infection occurs, it may not lead to disease, since the onset of disease is also dependent upon a person's age, general health and degree of immunity. The following pathogens have been observed in stormwater samples:

- *Pseudomonas aeruginosa*
- *Staphylococcus aureus*
- Animal virus
- Polio virus
- Coxsackie virus B
- Echovirus
- Enterovirus

Runoff-related bacterial and viral contamination of waters used for swimming may result in beach closings. Occasionally contact with or ingestion of bacteria and viruses may present a health hazard.

TRENDS

According to Table 14, mean stream discharges decreased in past years. Discharge records for 1983 have not been compiled as yet, however, increased rainfall in 1983 and the beginning of 1984, may indicate an increase in discharge for these years.

There has been a gradual decline in water quality in developed areas. Various pollutants such as fertilizers and insecticides discharged on land travel through groundwater or direct runoff to surface waters. Pollutants such as phosphorus discharged into septic systems may be a source of phosphorus to lakes and ponds. Once phosphorus levels become high and if nitrogen is also present, algal blooms may occur. Increased development that is currently occurring in the eastern portions of Suffolk, will sustain increased water quality impacts on streams and ponds that now have relatively pristine waters.

GOVERNMENTAL PROGRAMS AND ACTIVITIES

1. Federal And State Laws

A summary of existing federal and state legislation and programs concerning surface waters is included in Table 15, while those covering freshwater wetlands are listed in Table 16.

2. State Programs

Wild, Scenic and Recreational Rivers Act (W.S.R.R.A.)—

The New York State Wild, Scenic and Recreational Rivers Act (Title 27 of Article 15 of the Environmental Conservation Law) offers a means for protecting selected rivers and their immediate environs. Comprehensive management plans are required to protect surface water and to conserve other significant natural and cultural features within the river corridor. The four major river systems in Suffolk County are presently in various stages of developing W.S.R.R.A. management plans. The designations for these rivers are under the scenic and recreational categories. The following discussion presents an update on each of the rivers.

CARMANS RIVER: The preliminary plan for the river has been completed. Presently, the property lines within the boundary are being inventoried. Several characteristics are being identified which include: existing development, size and frontage, wetlands, etc. The recommendations for zoning changes are also currently being developed.

TABLE 15

Summary Of Selected Federal & State Programs Affecting Surface Waters

Government Level	Legislation or Program	Description	Programs Progress, Problems and Needs
Federal	Federal Water Pollution Control Act (FWPCA)–Clean Water Act	As a result of the FWPCA, a wide range of programs to improve water quality and to eliminate untreated discharge were established and are discussed below.	
	1. 208 Implementation	The 208 Water Quality Management Plan prepared by the Long Island Regional Planning Board addresses those items which are most significant and urgent on Long Island. The protection of surface waters by controlling nonpoint sources of pollution with legal, institutional and land use techniques is a major part of this program.	A Nonpoint Source Handbook is being prepared by the LIRPB and is in the final stages of publication. Its attention is focused on the implementation of areawide recommendations which deal with major nonpoint sources of pollution, among them on-lot waste disposal systems, fertilizer use, deicing practices, boat pollution and animal wastes. Two additional chapters were written this year. They are Stormwater Runoff and Site Plan Review.
	2. 314 Clean Lakes	Under the FWPCA the EPA has the authority to administer programs and assist local governments to restore the quality of publicly-owned lakes to states which identify and classify such lakes and submit procedures, processes and methods to control sources of pollution into such lakes.	See the Lake Ronkonkoma Project discussion under the Governmental Programs and Activities–Section 4 in this chapter.
	3. 402 National Pollutant Discharge Elimination System	NPDES establishes criteria and standards for the imposition of technology based treatment requirements through a permit program for point pollution discharges.	The NYS SPDES program carries out the requirements of NPDES (see State section below.)
	Resource Conservation and Recovery Act	This Act is to provide technical and financial assistance for the development of management plans and facilities for the recovery of energy and solid wastes, its safe disposal and regulation of the management of hazardous wastes.	See Chapter on Solid Wastes
	Wild & Scenic Rivers Act	This act declares than certain selected rivers, with their immediate environments, possess certain outstanding features that shall be protected by designating the initial components of the system and prescribing the methods to best maintain such features.	See State section following.
	Environmental Protection Agency (EPA)		
	1. National Urban Runoff Program (NURP)	To determine the source, type, quantity and fate of pollutants in stormwater and to evaluate changes in runoff quality in response to selected management practices.	See the NURP discussion under the <i>Governmental Programs and Activities</i> –Section 3 in this chapter.

TABLE 15 (Cont'd.)

Government Level	Legislation or Program	Description	Programs Progress, Problems and Needs
	2. Spill Response & Clean-up	Program aimed at defining the state-of-the-art in oil spill response and clean-up procedures. USEPA has designated Long Island as a study area.	See Chapter on Marine Environment and Coastal Zone Management.
	3. Flow Augmentation Needs Study (FANS)	EPA has mandated Suffolk County to prepare and execute a study to determine the primary and secondary environmental effects of sewerage in southwestern Suffolk. The major purpose of FANS is to determine whether it is necessary to moderate possible declines	The project is divided into three milestones: Milestone I evaluates the existing conditions; Milestone II will determine the effects of sewerage (no-action alternative); and Milestone III will present, if needed, a plan to alleviate the problems caused by the lowering of groundwater table. The results for Milestone II are discussed under <i>Governmental</i>
	3. Flow Augmentation Needs Study (FANS) cont	in streamflow and lake levels in the study area in order to counteract any effects of sewerage and to prevent adverse environmental consequences. As part of this study, the impacts of predicted and reduced streamflow from the Southwest Sewer District on the salinity of the Great South Bay are being studied.	<i>Programs and Activities</i> —Section 4 in this chapter.
	U.S. Geological Survey (USGS)	The USGS has had programs to monitor streamflow in Suffolk County for over 50 years. Approximately 19 continuous recording stations in Suffolk measure daily streamflow on the major rivers within the County. Forty stations measure partial recordings three or four times a year under baseflow conditions.	An annual report is prepared containing the actual gauge station results for streamflow for 19 continuous gauge stations and numerous minor stream gauge sites.
New York State	State Pollutant Discharge Elimination System (SPDES)	SPDES is a State delegated program partially administered by the SCDHS Environmental Services and NYSDEC. It is essentially a permit system for discharge to ground and surface waters. Permits are required for any discharge of sewage, industrial waste or other wastes to groundwater or surface waters. All buildings that discharge more than 1,000 gal/day are covered by the program. These permits are renewable every 5 years.	A major handicap has been the lack of capital and personnel which has curtailed monitoring and enforcement of each permittee's discharge loadings. All enforcement is handled on a complaint basis. There has been no major effort to determine if all those requiring permits have applied. Loopholes in the law, such as considering junkyards and other pollutant sources as nonpoint sources are not being covered by SPDES. Older buildings and their SPDES requirements are hard to detect unless they change ownership or renovate. In addition, illegal dumping is difficult to catch, because of inadequate enforcement resources.
	Wild, Scenic and Recreational	See discussion and update of the NYS WSRRA under Government Programs and Activities—Section 2 in this chapter.	See discussion and update of the NYS WSRRA under Government Programs and Activities—Section 2 in this chapter.

TABLE 15 (Cont'd.)

Government Level	Legislation or Program	Description	Programs Progress, Problems and Needs
	Stream Protection Act	Identifies local permit agencies and requires a permit for certain designated disturbance activities (such as filling, dredging, dumping, etc.) according to a classification system. The alphabetical designation to categorize surface waters indicates the best use for the surface water and the water quality standards which are to be maintained. These standards are based on best use and waterbody characteristics, including the ability of the water to receive pollutants and the suitability of the existing and future water uses.	At this time this law is not being adequately enforced and the fine levied against a violation is usually not sufficient as a deterrent. The classification of NYS surface waters does not always comply with the FWPCA and the present system needs extensive revision. The law exempts Class C and D streams from requiring a permit. Since many streams are improperly classified as Class C or D in Suffolk, this poses a serious problem to the County's efforts to protect its surface waters. Many other serious problems stem from the inadequacy of this antiquated law including minimal consideration of water quality, surrounding land uses and the value of these habitats to support local wildlife and diverse aquatic biota.
	State Environmental Quality Review Act (SEQRA)	Modeled after the Federal National Environmental Policy Act (NEPA), the State Environmental Quality Review Act (SEQRA) was enacted in New York. Under SEQRA, any substantial adverse change in water quality or substantial increase in potential for erosion, flooding or drainage problems is criteria for a Type I action.	Although the State has required local governments to implement SEQRA, there has not been a concerted education program for municipalities nor has the State issued funds to aid in the implementation of the law. As a result, many municipalities are not fully educated as to proper procedures and the SEQRA process is inefficiently administered. Agencies are not coordinated and lack of communication brings about a situation where one agency doesn't know what another agency is doing even though they are both involved in reviewing the same project. Lack of funds leaves local municipalities without the wherewithal to properly implement SEQRA review which can be a considerable cost in and of itself.

TABLE 16

Summary Of Selected Government Programs Affecting Freshwater Wetlands

Government Level	Program	Purpose	Description	Program Problems and Needs
Federal	Protection of Wetlands Executive Order (E.O. 11988)	Minimize destruction of wetlands	Requires federal agencies to avoid construction in wetlands unless there is no practical alternative.	
	Water Pollution Control Act (see section on Surface Water)			
State	Freshwater Wetlands Act (Art. 24 and Title 23 of Art. 71, E.C.L.)	Preserve, protect and conserve freshwater wetlands.	Requires most activities in or within 100 feet of wetlands larger than 12.4 acres to be compatible with the purpose of the Act. Municipalities have enacted ordinances to locally implement the Act.	Most of Suffolk's wetlands are less than 12.4 acres and are not adequately protected. Activities beyond 100 feet impacting wetlands are not regulated. The imposed Part 665 of the Act will transfer the administration of the freshwater wetlands program to the local government (see State-Freshwater Wetlands Act)

TABLE 16 (Cont'd.)

Government Level	Program	Purpose	Description	Program Problems and Needs
	State Environmental Quality Review Act (SEQRA-6 NYCRR 617)	Incorporate the consideration of environmental factors into planning and decision making processes at the earliest possible time.	Potential significant adverse impacts by proposed activities on wetlands (and other resources) are identified. Alternatives and corrective measures to reduce impacts are evaluated. Implemented at the State, County and local levels.	There is often a lack of communication between agencies and government levels. Consequently, many agencies cannot give input on projects which affect wetlands.
County	SEQRA Process Local Law 23-1977	Implement SEQRA at the county level.	The county initiates the process for county funded projects or projects on county lands. The county gives input where appropriate to the process at other levels. Process helps protect wetlands.	(See State-SEQRA)
	Environmental Bill of Rights, 1970	Conserve and protect natural resources including wetlands.	It established the Council on Environmental Quality and assigned it responsibilities which beneficially affect the environment including wetlands.	
	Management		Various county agencies manage 18,000 acres not including highway rights-of-way. Through inter-departmental cooperation wetlands on county lands are conserved and protected. The county also implements as far as possible the recommendations of federally funded projects such as 208, NURP, FANS and CZM. (See surface water and coastal zone management sections).	Management efforts are often uncoordinated, conflicting, and/or redundant. Management plans are needed for county land. Nature preserve sites should be designated to protect freshwater wetland amenities.
	Acquisition	Various public purposes including recreation.	Land is acquired via eminent domain, purchase and tax sales.	Frequently tax sales of wetlands are completed to the public, aggravating wetland protection programs. High land costs reduce the amount of wetlands that can be acquired through eminent domain and purchase.
Local	Wetlands ordinances	Preserve, protect and conserve freshwater wetlands.	Most municipalities in the county have adopted local laws pursuant to the State Freshwater Wetlands Act. Provisions in the laws are nearly identical to those in the State law.	Some municipalities do not regulate wetlands smaller than 12.4 acres, leaving a large proportion of the wetlands in the county unprotected. Most local agencies do not have adequate personnel to effectively enforce the laws.
	Environmental quality review ordinance	Implement SEQRA at the local level.	Most municipalities have adopted local laws pursuant to SEQRA which are generally administered through conservation advisory councils. Wetlands are often considered as critical areas, protecting them from most activities.	In most municipalities many activities subject to SEQRA are approved without going through the process due to a lack of communication between departments. Many municipalities lack professional staff to review activities.
	Site Plan Review	Improve quality of residential, institutional, commercial and industrial development.	All of Suffolk's municipalities have subdivision regulations allowing for the control of residential development. Most municipalities have provisions in zoning ordinances permitting review of non-residential site plans, regulating design, drainage and landscaping.	Protection of wetlands, is a secondary concern. The review is often conducted by agencies without appreciation of wetland benefits.

TABLE 16 (Cont'd.)

Government Level	Program	Purpose	Description	Program Problems and Needs
	Management Efforts		<p>Municipalities generally do not have articulated policies for the management of their own wetlands, however, they avoid activities which would impact wetlands.</p> <p>The Town of Huntington is noteworthy of reestablishing wetlands. Some towns have nature preserve ordinances which can help protect freshwater wetlands.</p>	<p>More municipalities lack nature preserve regulation. Municipalities need to develop official management policies regarding freshwater wetlands.</p>
	Acquisition	Various public purposes	<p>Most of Suffolk's municipalities acquire wetlands as dedicated land from subdivision approvals. The amount of wetland acquired can be greatly enhanced by clustering development. Some towns try to acquire wetlands through County tax sales. Some wetlands have also been acquired as portions of parkland and open space.</p>	<p>Acquisition by municipalities is less than that needed to protect wetlands.</p>

CONNETQUOT RIVER: There has been no change from last year.

NISSEQUOGUE RIVER: The scenic and recreational areas within the watershed have been determined. At the present time there is a bill before the State Legislature which must be passed for the approval of the scenic and recreational areas. A preliminary boundary has been developed. A package which discusses the definition and justification of the boundary was recently prepared.

PECONIC RIVER: The committee has developed a Draft Management Plan, however, it will not be submitted to the New York State Dept. of Environmental Conservation. Instead, the Plan will be presented as a zoning ordinance which should be adopted by the three towns within whose boundaries the river lies. The adoption of an identical ordinance by the three towns will both permit management of the river at the town level, and provide consistency of management.

At present, the zoning ordinance is 80% complete. The Town Supervisors have reviewed the ordinance and response has been favorable. A zoning ordinance lawyer will need to meet with the Town Attorneys in order to ensure compliance with existing town ordinances.

New York State Freshwater Wetlands Act —

The New York State Department of Environmental Conservation (NYSDEC) is currently in the process of implementing the proposed Part 665 entitled *Local Government Implementation of the Freshwater Wetlands Act and Statewide Minimum Land Use Regulations for Freshwater Wetlands*. The administration of the freshwater wetlands program will be transferred to local governments. At present, map hearings are scheduled to occur on April 5, 1984 for those wetlands in Nassau County, August, 1984 for those in Suffolk County located specifically in the five eastern towns, and in September, 1984 for the five western towns. The NYSDEC has mapped those wetland areas of 12.4 acres or more. However, at the map hearings, the towns may make requests for additions or deletions. At this time, wetlands of under 12.4 acres may be considered for designation where it can be proven that they are of unusual importance. The state can consider nominations of smaller freshwater wetlands having unusual local importance if they provide certain benefits as listed in Section 0105 of Article 24 of the ECL, such as: protection from flooding, erosion control, wildlife habitats, recreation and pollutant treatment. The NYSDEC will then include any corrections where needed. The finalized maps are then signed by the Commissioner of the NYSDEC. Subsequent to the signing, the maps are filed with the County and Town Clerks and the law is put into effect.

Every town in Nassau and Suffolk Counties, with the exception of one, have expressed the desire to assume the administration of the wetlands program. Although there is a time frame for the towns to assume administration, it is flexible. Prior to being granted administrative duties, the town must submit a report which includes facts to prove both its technical and administrative capability. The report should include: what the permit administration and review processes will be, designate the person to serve as the permit officer, who will provide technical review of permit applications, an evaluation of regulated activities and a description of the qualifications of those persons and their relationship to the local government. If the NYSDEC approves the report and the town certifies its present administrative and technical capabilities, the town may take over the program. If the NYSDEC finds the town incapable or if the town chooses not to administer the program, the administration is transferred to the county or back to NYSDEC.

The duties of the town after assuming the program include: review of applications, assessment of impacts and the processing of permits. The towns must conduct inspections, investigate reports of violations and, where necessary, suspend or revoke permits. They must regulate all regulated activities which are to be conducted on Class II-IV wetlands. In granting, denying or modifying a permit, the local government must apply the standards for permit issuance in conjunction with the wetland's classification (II-IV); Class II being the most sensitive and IV the least sensitive. The NYSDEC will regulate Class I wetlands as they are the most sensitive wetlands of all. A number of wetlands in the Class I category have been identified as a result of the mapping.

There are three tests for compatibility which must be performed. Part 665.7, Minimum Land Use Regulations provides the basis for compatibility. They are:

- *LP—Compatible, Letter of Permission*
- *C—Usually compatible, case by case determination*
- *N—Usually compatible, permit likely required*
- *X—Incompatible, permit required.*

The NYSDEC's involvement in the program is to map and classify wetlands, to file and maintain wetlands maps, to audit local municipalities, and to provide them with advice. The NYSDEC will also provide voluntary training sessions for local governments in order to train them in administering the wetlands program. In addition, the NYSDEC will monitor the program through audits; one in the first six months and annually thereafter.

The NYSDEC will have authority over the following actions:

- where an official map has not been promulgated
- where no local government has assumed jurisdiction
- where wetlands have been exempted from the local jurisdiction and have not been redelegated
- where the local government is the applicant

The NYSDEC will also act as the arbitrator where an action falls between two jurisdictions and where no satisfactory decision can be reached.

Currently, the towns of Riverhead and Huntington have already developed their own local laws and developed their own freshwater wetlands maps in order to administer their own programs. This will allow them to enforce regulations on all wetlands mapped, which may include wetlands much smaller than 12.4 acres.

On February 21, 1984, the amendment to Part 662 of Title 6 NYCRR went into effect. The amendment relates specifically to freshwater wetland interim permits. The purpose of the amendment is to reflect changes in the enabling law: Environmental Conservation Law, Article 24. It was also amended to provide conformity with the uniform procedures regulations. There were numerous changes in the wording and organization of the regulation to facilitate its reading and understanding through the use of plain language.

Long Island State Parks Commission —

Belmont Lake State Park Program: Belmont Lake has a problem similar to other freshwater lakes and ponds on Long Island. Due to the sediment and nutrient loadings carried to the lake in stormwater runoff, the lake has become eutrophic; muck, algae and weeds have taken over. The plant growth in the lake is so thick that it impairs boating activities. After storms, the plant material breaks up and decays, causing a noxious odor. Due to plant growth and decay, the sedimentation from upstream and the immediate watershed areas, over time, Belmont Lake has partially filled in. The accumulation of sediment in Belmont Lake has resulted in substantial impairment of recreational use. As a result, boating and fishing opportunities have been significantly reduced. The eutrophication represents a **taking** of significant environmental resources and of much needed recreational opportunities such as swimming, fishing and boating. Approximately one year ago the New York State Department of Environmental Conservation in conjunction with the Long Island State Parks and Recreation Commission, received monies to perform the Phase II portion of the study in order to restore the lake to its natural condition. The agencies received \$290,000 as a 50/50 matching grant. The actual work will begin in September of 1984. The sediment will be scraped from the lake bottom and the excessive sediment will be dried. It will then be hauled to the Babylon landfill and placed in a lined area. This substrate which will be removed, has been supporting the aquatic plants, causing the lake to become eutrophic. Underneath the substrate is a hard sand-gravel bottom which will not encourage the plants to reestablish. In addition to the scraping of the lake bottom, a sedimentation basin located north of the lake and downstream from August Road will be installed in the Carlls River. At this time, the drawings for the basin still need to be completed. The timing for the project, specifically the Autumn months, is ideal as the water table will be lower at that time and it will not affect the breeding season of the fish and other wildlife.

3. Bi-County Programs And Activities

208 Implementation: The 208 Nonpoint Source Handbook —

The 208 Nonpoint Source Handbook is now in the process of being published. The loose leaf handbook will be distributed to governmental agencies, public libraries, colleges, universities and other institutions. The first distribution will contain an introduction and nine chapters, including land use, stormwater runoff, on-site systems, highway deicing, fertilizers, animal wastes, well location, construction, use and abandonment, boat pollution and site plan review. Later, a section will be provided on existing and proposed ordinances. Each of the chapters have recommendations that affect surface waters management and protection, as well as groundwater protection. Land use recommendations to minimize impacts of nonpoint sources on surface waters are identified below by source or activity.

State Legislation, Regulations and Administration:

- New York State should enact enabling legislation authorizing municipalities, individually or in concert, to establish Special Surface Water Protection Districts.
- New York State should amend the preamble to the Town and Village Zoning Enabling Acts (Article 16-Zoning and Planning, Section 261 of Town Law and Article 6-A Building Zones, Section 175 of Village Law) to add language explicitly identifying the protection of surface water quality as a proper purpose of zoning.

State, Counties and the Long Island Regional Planning Board:

- The State, the Counties and the LIRPB should provide technical assistance to the municipalities for the revision of their comprehensive plans.
- The NYSDEC, LIRPB and the County Health Department should assist in securing designation of Special Protection Districts (see Municipalities). Once the Districts have been designated, the state and counties should revise any legislation, regulations or administrative actions as required to meet special district management needs.

Counties:

- The County of Suffolk should implement the County Executive 1980 Open Space Plan.
- The Counties should develop, enact and enforce appropriate controls to minimize pollutant loadings resulting from any land use activities in areas recommended for Special Surface Water Protection Districts.

Municipalities: The municipalities should protect fresh and marine surface waters through the selection of minimal impact land uses for undeveloped or partially developed shoreline areas as shown in Table 17 concerning appropriate residential, commercial and industrial uses for surface water protection.

- Municipalities should consider the establishment of Special Surface Water Management Districts which would comprise watershed areas requiring management to maintain selected high quality surface waters. The designation by the local municipalities of Special Surface Water Protection Districts immediately adjacent to surface waters could provide the rationale for the imposition of needed controls for areas subject to future development. Performance standards and development guidelines could be used to protect important aquatic or marine resources from future increases in pollutant loadings affecting the aquatic or marine species associated with these waters. Such areas should include but not be limited to the following: important, relatively undeveloped, watershed lands located within the primary coastal zone or lands that drain to marine waters as identified in the Long Island Nationwide Urban Runoff Program.

The municipalities should revise local zoning ordinances to reflect changes in the comprehensive plan. They should:

- Modify use designations and zoning boundaries to insure consistency with revised comprehensive plans.
- Encourage the establishment of special overlay districts encompassing Special Groundwater or Surface Water Protection Districts. Overlay district provisions should preclude intensive uses except where such uses can meet performance standards designed to minimize groundwater, surface water or other environmental impacts.
- Require SEQRA Type I assessment for any down-zoning of residential use or any change from residential to commercial, industrial or institutional use in areas adjacent to surface waters.
- Enact mandatory clustering and site plan review provisions as a part of zoning/subdivision regulations with appropriate applicability criteria, and standards to effectuate protection of surface water resources.

TABLE 17

**Appropriate Residential, Commercial And Industrial Uses
For Surface Water protection**

Surface Water Protection (1, 3)

**Upland Watershed Areas Adjacent to
Surface Waters (Shallow Discharge Zones)**

Land Use	Developed Areas		Undeveloped and Partially Developed Areas	
	Sewered	Unsewered	Sewered or Adjacent to a Sewered Area	Unsewered
RESIDENTIAL:				
Low Density ² (1 d.u./acre or less)	Yes	Yes	Yes	Yes
Medium Density ² (2-4 d.u./acre)	Yes	Yes	Yes	Yes(2)
High Density (more than 4 d.u./acre)	Yes	No	Yes	No
COMMERCIAL:				
Low Intensity – Bakeries, Deli's, Warehouses, etc.	Yes	Yes	Yes	Yes
Medium Intensity – Service establishments, offices, theatres, restaurants, medical labs	Yes	Yes	Yes	Yes
High Intensity – Hotels/ motels, automotive, laundromats, dry cleaning operations, racetracks	Yes	No	Yes	No
Marine Dependent Activities	Yes	Yes	Yes	Yes
INDUSTRIAL:				
Manufacturing: Industrial Processes	Yes	No	Yes	No
Storage and Handling a) Toxic and Hazardous Wastes	Yes	No	Yes	No
b) Non-Toxic and Non- Hazardous Wastes	Yes	Yes	Yes	No
Non-Manufacturing: Junkyards	Yes	Yes	Yes	No

LEGEND:

- Developed = The land pattern has been set, a small percentage of the area remains to be developed consistent with existing land uses.
- Undeveloped = Over 50% of the land is available for development.
- Yes = Allow the described land use development.
- No = Do *not* allow the described land use development.

GENERAL DEVELOPMENT GUIDELINES:

Allow development consistent with the existing land pattern.

Permit development in accordance with New York State Environmental Conservation Laws and Regulations, County Health Code, local municipality requirements and zoning and site development performance standards (structural or non-structural) to prevent or minimize environmental impacts.

WHERE DEVELOPMENT IS PERMITTED, THE FOLLOWING ITEMS MAY APPLY:

1. Minimize nitrate loadings to groundwater and surface waters by requiring natural vegetative controls to limit lawn areas, thereby decreasing fertilizer use.
2. In areas where use of on-site systems is permitted, nitrogen removal systems should be utilized.
3. Improve enforcement of existing controls to prevent any direct discharge of stormwater, commercial or residential wastes or products to surface water.

Stormwater Runoff: The following recommendations comprise preventive measures that can be used to minimize stormwater contamination of surface waters resulting from site development and future land use activities as well as suggestions for reducing or eliminating existing impacts. Included in the runoff chapter of the handbook are criteria for the selection and installation of appropriate stormwater control measures including both nonstructural and structural techniques. This chapter also provides a number of stormwater management practices, sedimentation and erosion control measures and the suitability of these measures for various types of site conditions. The major recommendations are:

- *Evaluate existing stormwater systems that currently discharge into surface waters to determine whether the systems can be modified to include additional control measures to minimize impacts upon surface waters and adjacent areas. An inventory of direct discharges and assignment of remediation priority ratings based upon environmental impacts should be done. Then determine if there is sufficient land area to develop cost feasible energy dissipation devices sediment basins, or retention areas to eliminate or reduce the direct discharge and accompanying sediment loadings into surface waters and wetlands, or to reduce peak runoff flows before discharge.*
- *Acquire and maintain those streambeds and the surrounding watershed areas that have dried up due to sewerage. The retention of these areas will facilitate the recharge of runoff, thus reducing the amount of streamflow following a storm and the subsequent associated high coliform loadings that would otherwise reach the bays.*
- *Acquisition of Lands for Preservation. Amend local zoning ordinances to include a requirement for the establishment of adequate setbacks, 100 feet from the shoreline for the areas adjacent to the edge of lakes, ponds, streams, rivers, bays, and in areas where the depth to seasonal high water table is less than three feet, and 100 feet from the upland edge of wetlands. Such areas should not be cleared of native vegetation except for cat briar, honeysuckle and other destructive vines. Any stormwater runoff generated from the site development upland and discharged into these areas should be discharged in a manner so that no erosion and loss of vegetation occurs.*

4. Suffolk County Programs And Activities

Lake Ronkonkoma Project —

Lake Ronkonkoma is a prime, centrally located freshwater recreational resource in Suffolk County. Increasing lake pollutant loadings and shoreline erosion are significant problems that require a comprehensive management strategy based upon sound scientific data. In recent years, the fecal coliform levels of the lake have periodically exceeded the state standards for public bathing activities. Also, in the late summer, blue-green algae blooms have been observed. Future development near the lake could significantly increase fecal coliform levels and algae blooms.

PAST MONITORING RESULTS: In November 1976, a comprehensive sampling program under Section 208 of the Clean Water Act was implemented for Lake Ronkonkoma by the Suffolk County Department of Health Services (SCDHS). The SCDHS determined that runoff from adjacent streets was the source of bacterial contamination that led to the periodic closings of the two public bathing beaches on Lake Ronkonkoma.

RECENT GOVERNMENTAL PROGRAMS: As a result of planning, Suffolk County in recent years, has undertaken a substantial land acquisition program adjacent to Lake Ronkonkoma in order to protect the immediate watershed area and provide lakeside recreation in this heavily populated area. Numerous properties have been acquired around the lake including underwater lands and several large upland sites. A resolution to acquire additional lands at the lake has recently been submitted to the legislature. These lands were originally in the Phase I proposal for acquisition but were never acquired. They will provide a contiguous belt around the lake when combined with existing county owned parcels as shown in Figure 3.

In addition, Suffolk County has obtained federal assistance from the USEPA under the authority of Section 314 of the Clean Water Act (33 USC 1251 et. seq.) for a second phase of the Clean Lakes Project for Lake Ronkonkoma. The project entitled the *Lake Ronkonkoma Restoration Demonstration Project* includes chemical and biological monitoring and comprehensive planning for water quality protection. Suffolk County Planning Department (SCPD), SCDHS and the New York State Department of Environmental Conservation (NYSDEC) in Albany, are responsible for the primary project tasks.

A major portion of the study effort has been assigned to estimating the relative impacts of various sources of pollution upon lake water quality. Pollutants enter the lake via several means including groundwater seepage, inflow from the Great Bog, storm drains, bathers and precipitation. Thorough investigations are being made to assess the chemical and bacterial inputs from fertilizer, pesticides, on-lot systems, stormwater runoff and animal waste. Wet weather and dry weather sampling has been continuous over the past year. Bacterial results obtained from wet weather sampling exhibited a somewhat expected variability due to time of year, storm characteristics and time during and after storm samples were taken. Also, the same station did not always exhibit the highest counts for each storm. As anticipated, compared to the dry weather samples taken by NYSDEC personnel, wet weather samples had generally much higher numbers of indicator bacteria. Review of other chemical data has begun with emphasis placed on nutrients to assist in determining the cause for the massive algal blooms that have been observed in recent years.

Dry weather sampling is being performed by NYSDEC. Results indicate that the lake is consistently eutrophic. Extensive turbidity has also been observed. The indicator of the lake turbidity is the secchi depth which has remained between one and two meters throughout the spring, summer and fall as shown in Table 18. August was the worst month in regard to the degree of lake turbidity. The relationship between the turbidity and the amount of chlorophyll a (blue black ester, a constituent of the green photosynthetic coloring matter of plants found in the chloroplasts) contained in the lake show a direct relationship; high chlorophyll a relates directly to high turbidity (low secchi depth) as illustrated in Figure 4. The total phosphorous has been high. The dissolved phosphorous has also been relatively high as given in Table 18. Dissolved phosphorous supports the algae which cause the lake to become both eutrophic and turbid. An elimination of approximately 2/3 of the algae would be needed to decrease the lake's turbidity. In order to control algal blooms, much of the phosphorous which is discharged to the lake would need to be eliminated.

There have been field surveys done to determine the size of the watersheds and efficiency of both the Brookhaven and Islip biofiltration ponds. The service area of the Brookhaven Biofilter is less than five acres which is much smaller than originally calculated by others. The effective drainage area is further reduced because of the lack of curbing along Lake Shore Road, and the erosion of a gully in the bank of the lake, causing runoff from what should be a portion of the biofilter's watershed to be diverted directly to the lake. The surface watershed served by the Islip Biofiltration Pond is approximately two acres which is again much smaller than investigators had previously estimated. The influent and effluent facilities are totally inundated due to the rise of the lake water level causing backflow into the pond and rendering flow measurement practically impossible.

As a result of sampling, a new watershed has been identified. It is comprised of a storm drain that discharges into the southeast portion of the lake, and receives flow from a contributing area of approximately 35 acres as delineated during field work by SCPD and SCDHS. This drain is of particular concern because of its proximity to the Brookhaven Town Beach. Protection of the lake water quality will require cooperation with the Towns of Islip, Smithtown and Brookhaven, who will also participate in some of the project tasks. Coordination of a water quality management plan with recommended acquisitions and development of county park properties is essential. This will be a two-year project which began in January 1983. The final report will be completed by December 31, 1984. Suffolk County will continue implementation of the management plan beyond the federal project termination date.

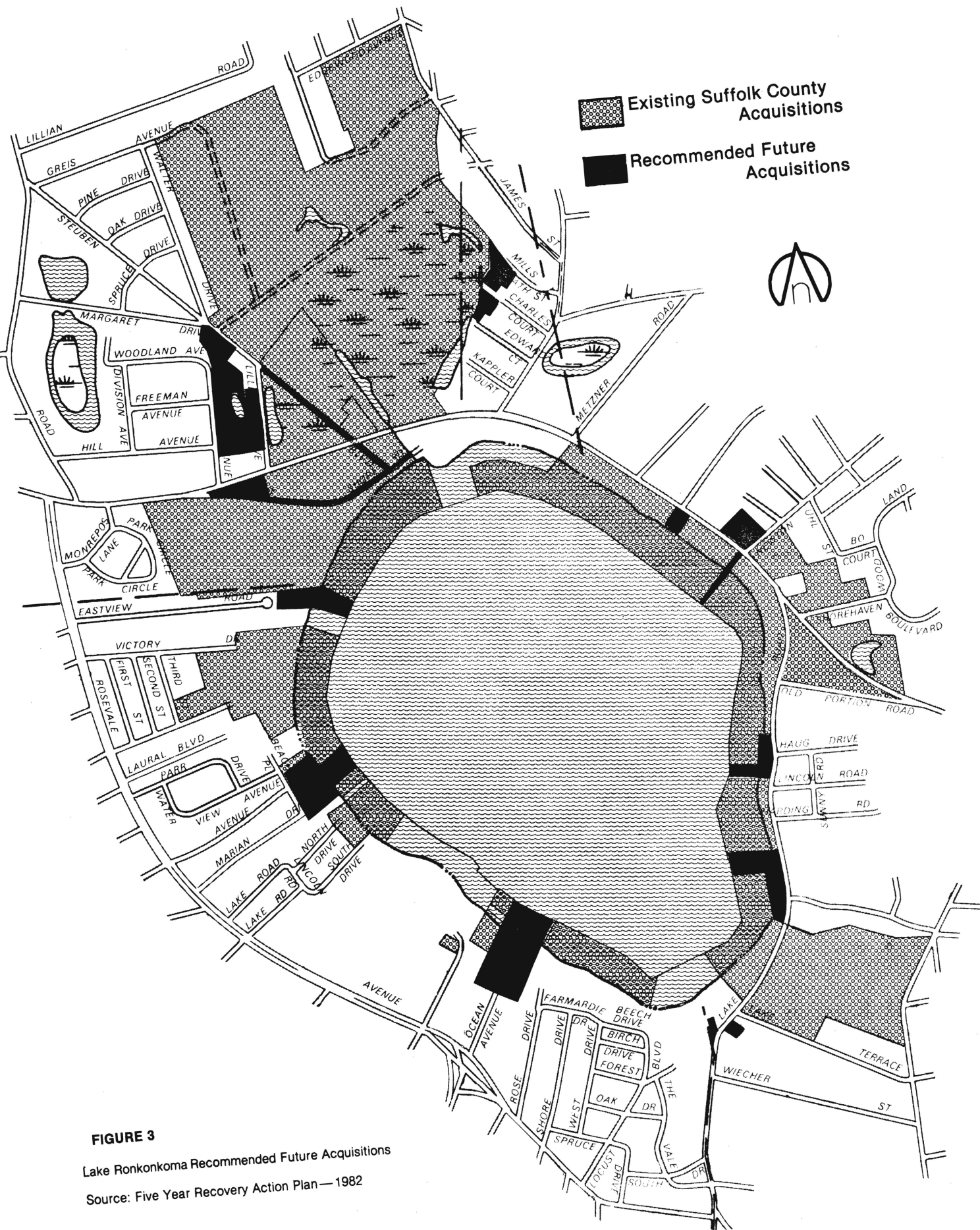


FIGURE 3

Lake Ronkonkoma Recommended Future Acquisitions
 Source: Five Year Recovery Action Plan — 1982

TABLE 18

Lake Ronkonkoma
Mean Seasonal Values

	Spring Lake	Summer Lake	Fall Lake
Chl a (µg/l)	11	43	20
Secchi Depth (M)	1.9	1.06	1.4
Tot. Phos. (µg/l)	27	24	33
Dis. Phos. (µg/l)	8	10	13
No ₃ -N (µg/l)	250	50	90
Ammonia-N (µg/l)	7	13	33
TK-N (µg/l)	500	730	800
Surface Area	9.05 x 10 ⁵ m ² (210-225 Acres)		
Mean Depth	4.42 meters*		
Max. Depth	20 m Z _m 23 m		
Total Volume	4 x 10 ⁶ m ³ (3,995,697 m ³)		
Volume 5 m	3.5 x 10 ⁶ m ³ = 88%		

*1 meter = 3.28 ft.

Source: New York State Dept. of Environmental Conservation, Lake Ronkonkoma Restoration/Demonstration Study (Preliminary Data).

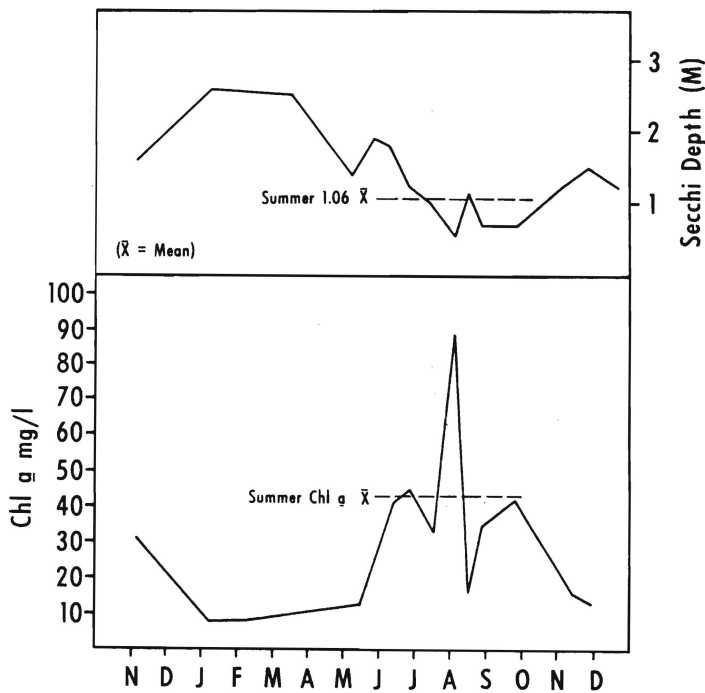


FIGURE 4
The Relationship Between the Secchi Depth and Chlorophyll a (1983)

The Suffolk County Department of Public Works completed a stormwater drainage study for the lake. At the present time plans are being implemented for the construction of a recharge basin on a triangular parcel of land located east of the lake where C.R. 16 is on the north, Lake Shore Road on the west and Old Portion Road on the south. It will receive all stormwater on C.R. 16 from a point 500 feet east of the intersection of C.R. 16 and Old Portion Road. Curbing will be installed along both sides of C.R. 16 to its intersection with Lake Shore Road and continuing along C.R. 16 to meet existing curbing. Construction is scheduled to begin in September 1984.

The Flow Augmentation Needs Study (FANS) Update —

The Phase II portion of the study has been completed. The consulting firm of Geraghty and Miller had prepared a report which provided recommendations for the monitoring of selected groundwater wells within the FANS study area. The report recommended the analysis of long term trends as a basis for identifying decreasing streamflow and groundwater levels. Suffolk County is currently in the process of monitoring streamflow and groundwater levels within the study area. Results of monitoring will identify any declines in streamflow and groundwater levels caused by the Southwest Sewer District. The USEPA is supposed to make recommendations to the county concerning needed mitigation measures for various streams. Based on these recommendations, the county is supposed to develop a mitigation plan and the EPA is to fund the mitigation measures.

EXTENT OF IMPLEMENTATION OF 1983 RECOMMENDATIONS

1. Conservation Easements

The general concept of conservation easements has been utilized by the towns in Suffolk County, but the methods for achieving these designations differ. The type of conservation easement and the degree of management are not always the same. This idea has not become a widely used tool for the conservation of sensitive areas included as part of subdivisions.

The Suffolk County Planning Commission recommends the use of conservation easements in clustered subdivisions, wherever feasible. The following three examples illustrate conservation easement dedications as part of subdivisions, which took place over the past year in Suffolk County:

- Town of Islip—A conservation easement was dedicated for an environmentally sensitive parcel located within a subdivision in Bay Shore. That parcel is now being transferred to the Nature Conservancy for management.
- Town of Southampton—The development rights to one portion of a lot were sold for a subdivision while the other section was dedicated to a conservation easement for agricultural use.
- Town of East Hampton—A portion of a subdivision was dedicated to a conservation easement, however, the owners of the subdivision retain ownership to the easement.

This type of dedication is still a very vague concept. The methods for dedication and management are not uniform among the towns. The recommendation has been implemented but not to a significant degree.

2. Management Guidelines For Privately Owned Ponds And Lakes

The Suffolk County Planning Department prepared an environmental analysis and recommendations for the proposed Sag Harbor Greenbelt, which has been under review since 1974. This area contains several lakes and ponds including Long Pond, Little Long Pond, Crooked Pond, Poxabogue Pond and Sagaponack Lake. These ponds and the lake are publically owned. Little county acquisition has taken place in this area since 1974 when the county acquired 25 acres adjacent to Poxabogue Pond. Recently there has been significant development in the area. The county found it necessary to develop recommendations for this area. The Suffolk County Planning Dept. staff prepared maps containing vital environmental information pertaining to direction of groundwater flow, depth to groundwater, saturated soils, freshwater wetlands, direction of stormwater flow, land use and preservation recommendations.

Recommendations for those lands adjacent to the ponds and lake included:

- Minimize pollutant sources on lands situated upgradient of ponds and lakes.
- Forbid development (i.e., installation of septic systems, basements) in areas with a minimum depth to groundwater.

- Prohibit development on saturated soils with a depth to seasonal high water table less than two feet.
- Preserve marsh areas and adjacent ponds, the combination of which serve as prime wildlife habitats for numerous species, and support systems for many botanical rarities.
- Acquire the greenbelt areas which are most environmentally sensitive. These lands may be acquired through a variety of means including: requests made to property owners within the area for donations of key parcels, utilization of mandatory clustering techniques by which the undeveloped lands would be added to the greenbelt and where necessary, use County Legislative action to acquire particularly sensitive parcels.

Although these lakes are publically owned, the same type of environmental analysis could form the basis for the formulation of guidelines for the management of privately owned lakes and ponds.

3. State Environmental Quality Review Act (SEQRA)

For all municipalities within Nassau and Suffolk Counties, the SEQRA review process can be implemented, and has been in many towns, on a local level as a means to incorporate environmental concerns into the planning and decision-making processes for development. To help protect sensitive or significant environmental sites, including important surface water areas and wetlands, from hazardous or harmful impacts, municipalities should classify them as *Critical Environmental Areas* (CEA) under SEQRA.

The Town of Southampton adopted a local ordinance under SEQRA in 1977 entitled *Local Environmental Quality Review Act*—Chapter 30 of Town Code, Local Law #2 of 1977. The town has designated critical environmental areas by which all activities taking place in these areas are controlled by SEQRA. The following districts have been designated as Critical Environmental Areas:

- CR-200-Country Residence
- LI-Industrial
- CRE residence districts

All proposed activities to be performed in these designated areas require environmental review under SEQRA.

RECOMMENDATIONS

1. Surface Water Protection Districts

Local municipalities should consider the establishment of *Special Surface Water Protection Districts*. These districts should comprise watershed areas requiring management to maintain selected high quality surface waters. The designation by the local municipalities of Special Surface Water Protection Districts immediately adjacent to surface waters could provide the rationale for the imposition of needed controls for areas subject to future development. Performance standards and development guidelines could be used to protect important aquatic resources from future increases in pollutant loadings affecting the aquatic species associated with these waters. Such areas should include but not be limited to the following: important, relatively undeveloped, watershed lands located within the primary coastal zone.

Local municipalities should be encouraged to establish special overlay districts encompassing Special Surface Water Protection Districts. Overlay district provisions should preclude intensive uses except where such uses can meet performance standards designed to minimize surface water impacts.

2. Conservation Easements

The municipalities should require the dedication of conservation easements as a part of their zoning ordinances for site plan review and as a part of their subdivision regulations for new development within the Special Surface Water Protection Districts. The taxes for the dedicated areas should be based on the open space value rather than the development value.

Conservation easements should include buffer zones (preservation areas) extending for a minimum distance of 50 feet from river, stream, lake, or pond banks in undeveloped or partially developed lands adjacent to surface waters and land required to protect additional resource areas (wetlands, woodlands, wildlife habitats).

MARINE ENVIRONMENT AND COASTAL ZONE MANAGEMENT

INTRODUCTION

The imprint of the New York Metropolitan Region is clearly evident in the gradation of water quality that exists along the shorelines of Long Island. Water quality generally improves as distance increases from areas where tidal flushing action is poor and incapable of rapidly diluting pollutants. Suffolk County is fortunate in that the most serious water quality problems in the region are located to the west (in the apex of the New York Bight and western end of Long Island Sound), and that hundreds of miles of its coastline are adjacent to marine waters of high quality. The public's perception of water quality problems is often the result of a specific event that causes economic dislocation, inconvenience, or lack of recreational opportunity. Events of this nature include oil spills or greasball/floatable strandings. Problems stemming from the discharge of stormwater runoff, containing bacteria and nutrients, to surface waters, are of greater significance because of their scope and the difficulty associated with their solution. These loadings can result in the closure of shellfish areas and potential phytoplankton blooms with subsequent depletion of dissolved oxygen and associated deleterious impacts.

PROBLEM AREAS AND TRENDS

1. Algal Blooms

Periodic increases in algal populations in marine waters, called *blooms*, may result from changes in light intensity, water temperature, nutrient regime, and stimulatory and/or inhibitory substance concentration; however, knowledge concerning precise interactions of the causative agents is incomplete. In 1983, numerous reports of discolored waters resulted in investigations by the Suffolk County Department of Health Services (SCDHS):

- *Foaming waters in the surf zone of the south shore during April were determined to be a result of the normal spring diatom bloom. Also, a bloom dominated by the dinoflagellate Glenodinium cf. danicans occurred in Mud Creek, West Babylon.*
- *In June numerous complaints were received concerning a material variously described as brown scum, sewage, debris, sludge, and oil in Suffolk County waters. Most of the complaints referred to the waters of Long Island Sound where microscopic examination of water samples revealed the cause to be a massive phytoplankton bloom. High numbers of dinoflagellate tests (empty shells), primarily belonging to the species *Prorocentrum minimum*, as well as numerous diatoms including *Rhizosolenia* (sp), *Cerataulina bergoni* and others fewer in number were found. While phytoplankton blooms are normal occurrences, this incident was unusual in that it was apparently quite widespread, extending throughout the Sound to the Connecticut shoreline.*
- *Turbid water collected from Port Jefferson Harbor was found to contain a bloom of the diatom *Rhizosolenia fragilissima*.*
- *Red waters in Meetinghouse Creek were caused by a bloom of the dinoflagellate *Exuviella apora*.*
- *Patches of red water reported to be in the ocean off Westhampton were found to be caused by extremely large concentrations of ctenophores (comb jellies) which are not algae, but zooplankton. Although they resemble jellyfish because of their gelatinous structure, they do not possess nematocysts (stinging cells) and are considered harmless.*

- *A material described as a brown, dirty foam was reported in August to be washing up on the ocean beaches along Fire Island. As expected from the description, the material was determined to be remnants of a coastal plankton bloom consisting primarily of diatoms. Coincident bacterial analysis of water samples revealed low bacterial counts.*
- *Discolored waters in the ocean in the area of Old Inlet were reported by personnel of the Fire Island National Seashore. Analysis revealed a mixed dinoflagellate—diatom bloom dominated by a gymnodinium (dinoflagellate) species.*
- *Vivid green waters in the ocean off Kismet were caused by a bloom of the dinoflagellate *Gyrodinium cf. aureolum*.*
- *Green waters in the central and eastern portion of Great South Bay were found to be due to high numbers of the small chlorophyte *Nannochloris atomus*.*
- *Brown water in the Rocky Point area of Long Island Sound was caused by a mixed diatom bloom dominated by *Cylindrotheca closterium*.*
- *Green water found in Lake Ronkonkoma during September and October was the result of a massive bloom of the blue green algae *Anabaena*. This has been a common occurrence over the last few years.*
- *Red water found in the Forge River in December was determined to be due to a bloom of the dinoflagellate *Heterocapsa triquetra*.*

Studies on the potentially toxic dinoflagellate *Gonyaulax tamarensis* that were initiated in 1982 by SCDHS and the Marine Sciences Research Center (MSRC) of SUNY, Stony Brook were completed during 1983. A final report entitled *Seasonal Abundance and Distribution of the Toxic Dinoflagellate, Gonyaulax tamarensis, in Long Island Estuaries* was submitted. Because *G. tamarensis*, the causative organism of paralytic shellfish poisoning (PSP), was found during this initial study, and because of the potential public health hazard posed by this finding, the County has provided funds and the SCDHS is coordinating further investigation by the MSRC on this topic. During this latter study, *G. tamarensis* was found in fairly high concentrations in a number of areas. Shellfish collected from some of these sites by the SCDHS were not, however, found to contain measurable amounts of toxin.

2. Salinity

The SCDHS received a final report—*Salinity Measurements in Moriches Bay*—prepared by the MSRC and funded by the County in response to a storm-induced breach in the barrier beach near Moriches Inlet. The data in this report is being used by MSRC in other projects funded in part by Suffolk County to develop hydrodynamic models of Moriches Inlet and Bay.

3. Floatable Strandings and Fish Kills

Two reports of floatable material strandings were received by the SCDHS in 1983. In April, clumps of material were reported to be washing up along the beach at Robert Moses State Park. Investigation revealed the material to be not floatable, but the fig sponge, *Suberites ficus*. It is not unusual to find this organism on ocean beaches after occurrence of storms.

The second incident occurred in late August when an investigation of the Fire Island beaches in response to complaints revealed the presence of greaseballs and assorted debris (primarily wood and plastics) along the beach. The stranding of floatables occurs during periods of southerly winds with the extent of the problem apparently dependent upon the persistence of those winds. The New York City metropolitan area is likely the origin of this material. As in past incidents of this type, the water exhibits low coliform bacteria values, while the greaseballs contained extremely high numbers of both total and fecal coliforms. As the problem was transient and since past experience has revealed no effects on public health, no beach closures were recommended. However, beach operators were instructed to clean the beaches and to prevent bathing if concentrations of floatables appeared in the water.

4. Marine Mammal And Sea Turtle Strandings

The Long Island marine environment provides habitat for whales, dolphins, porpoises, seals and sea turtles. Occasionally, dead or moribund individuals of these protected species are beached or discovered in shallow waters. The Okeanos Ocean Research Foundation, Hampton Bays, New York, in conjunction with the NYS Department of Environmental Conservation, coordinates the New York State Marine Mammal and Sea Turtle Stranding Program. The program is designed to investigate (and where possible, assist) all diseased, injured, distressed and dead marine mammals and sea turtles in New York waters and associated beaches.

In 1983, 10 whale, six dolphin, one porpoise, four seal and 17 sea turtle strandings were reported in Suffolk County. The causes of the strandings included disease and boat collision; however, in many cases, the cause is unknown.

Persons with information about stranded marine mammals or sea turtles, either alive or dead, should contact the New York State Marine Mammal and Sea Turtle Stranding Program at (516) 653-4511.

5. Toxic Spills In Surface Waters

Toxic discharges in the County during 1983, as in the previous three years, primarily impacted groundwater rather than surface waters. In 1983, 40 spills to surface waters were reported to the NYS Dept. of Transportation. Six of these spills involved volumes greater than 50 gallons. They included a combined total of at least 2,200 gallons of gasoline, diesel fuel and lubricating oil. Three of these spills were reported based on the siting of slicks, two of which were approximately 25 yards in width and four or five miles in length; however, it is impossible to determine precisely the volume of spilled oil by examining a slick.

The U.S. Coast Guard and the NYS Dept. of Transportation are the two agencies to contact should toxic spills, including oil, be encountered. Oil spills that have stranded along the shoreline can be reported to the Dept. of Transportation Oil Spill Bureau at the following phone numbers:

(516) 360-6139 (Weekdays from 8 a.m. to 4:30 p.m.)

(518) 457-7362 (24 hours a day)

The Coast Guard should be notified of spills impacting marine waters, including spills that are at sea prior to stranding. The number to call is (212) 668-7920.

6. Public Health Issues

The presence of coliform bacteria in water has long been used as an indicator of fecal pollution. While coliform themselves are generally harmless to man, their presence is used as a surrogate to indicate that pathogenic bacteria and viruses may also be present. In productive bay ecosystems, excessive contamination by pathogens can render shellfish unfit for consumption. Shellfish tend to concentrate particulate contaminants and associated coliforms when filter feeding in polluted waters. The total coliform standard for shellfishing areas is 70 MPN per 100 milliliters.

The acreage closed to shellfishing in the various marine areas of the Long Island region is listed in Table 19; 16.3 percent of NYS Marine District waters were closed to shellfishing in August 1983. An additional 2,755 acres were closed to shellfishing in Long Island coastal waters in 1983 as compared to 1982 conditions. A circular area one half mile in radius around the outfall of the Southwest Sewer District in the Atlantic Ocean was closed to shellfishing. This amounts to 2,500 acres of the additional acreage closed to shellfishing in 1983. This area was previously closed to shellfishing under emergency procedures. An additional 65 acres were closed in Suffolk County waters at the Gilgo Beach and Cedar Beach Marinas located in the Town of Babylon; approximately eight acres were closed in Great South Bay along the shoreline of Cherry Grove. These areas are closed during the May 15th to September 30th summer season.

Emergency closures have also been instituted by NYSDEC in Oyster Bay Harbor due to an oil spill; at the south end of Lake Montauk due to elevated bacteria levels in the Ditch Plain tributary; and in Port Jefferson Harbor where 300 acres were closed due perhaps to sewage treatment plant effluent. Other emergency closures occurred in the Atlantic Ocean. There were no shellfish grounds reopened in 1983 that were closed in 1982.

The disease outbreaks associated with the ingestion of shellfish have subsided. While investigations continue, it has never been clearly established that clams harvested in Suffolk County waters were the cause of the various disease outbreaks. Some officials suspect that the disease outbreaks should be attributed to hard clams imported from England. Past disease outbreaks associated with the consumption of raw shellfish, along with a report produced by the Food and Drug Administration recommending that the NYSDEC Bureau of Shellfisheries call upon local agencies for assistance in carrying out field work, has prompted closer cooperation between the Bureau and the SCDHS in the examination of shellfish producing waters.

Bathing beaches within the County are routinely monitored by the SCDHS prior to and during the bathing season. Closure of three beaches—Yaphank Lake Beach (freshwater), Islip Town Beach and Gold Star Battalion Park in Huntington (both marine)—was requested this year due to elevated bacterial counts. Yaphank beach was closed for the entire latter part of the bathing season, while the two marine beaches were closed for only a short period of time. The 1982 Bathing Beach Water Quality Report containing all data collected was made available.

As in past years, several cases of *swimmers itch* (cercarial dermatitis) were reported to the SCDHS.

MARINE RELATED ACTIVITIES

1. Marine Wetlands

Enforcement of Article 25 of the N.Y.S. Environmental Conservation Law, which regulates the use and activities in and adjacent to tidal wetlands, lies with the NYSDEC. The past few years have seen a decline in the wetlands enforcement staff. Currently, there is only one full time inspector for tidal wetlands projects on Long Island. It has been estimated that six inspectors are needed to do an adequate job in handling approximately 1,500 permit applications that are received annually. During 1983, NYSDEC documented the destruction of approximately one acre of tidal wetland; however, DEC personnel feel that the loss could total five acres due to illegal development activities.

NYSDEC is continuing its program of wetlands acquisition with funds provided under the Environmental Quality Bond Act of 1972. Three sites totalling 52 acres were acquired in Suffolk County during 1983; proposals to acquire an additional 150 acres were presented. To date, almost 1,800 acres of wetlands have been acquired in the County by the State under various programs.

2. Dredging

During 1983, the Suffolk County Dept. of Public Works (DPW) completed 32 dredging projects identified in Table 20. A total of 255,125 cubic yards of spoil were dredged. Ten projects were completed by DPW with County-owned dredging equipment. These projects accounted for over 25,000 cubic yards, or about 10% of the total cubic yards dredged. The remaining projects were completed by private contractors at a total cost to the County of approximately \$850,000.

The U.S. Army Corps of Engineers performed no maintenance dredging, new work dredging, or new construction in Suffolk County during calendar year 1983.

Litigation concerning the designation in March 1982 of a new site in Western Long Island Sound, referred to as WLIS III, for the disposal of dredged spoil is currently pending between Suffolk County, Nassau County, the Towns of Huntington, North Hempstead, Oyster Bay and Brookhaven (as plaintiffs), and certain Federal agencies, including the U.S. Army Corps of Engineers, New England Division (as defendants). The suit challenges the defendant's decision designating the disposal site as a violation of NEPA and other Federal statutes. The suit is currently pending in the U.S. District Court for the Eastern District.

TABLE 19

**N.Y.S. Marine District Waters Closed for Shellfishing
as of August 1983**

Body of Water	Total Acreage	Acreage Closed to Shellfishing	Body of Water	Total Acreage	Acreage Closed to Shellfishing
Hempstead Bay	11,850	10,350	Smithtown Bay	22,300	950
South Oyster Bay	6,190	2,810	Huntington Bay	2,420	0
Great South Bay	11,450	3,220	Northport Bay	1,825	0
Great South Bay	18,980	1,118	Northport Harbor	410	250
Great South Bay	16,325	635	Centerport Harbor	490	185
Great South Bay	11,525	550	Duck Is. Harbor	185	0
Bellport Bay	5,595	495	Lloyd Harbor	600	0
Moriches Bay	10,900	4,430	Huntington Harbor	340	340
Quantuck Bay & Canal	730	165	Oyster Bay Harbor	5,040	498
Shinnecock Bay	9,170	220	Cold Spring Pond	1,325	215
Mecox Bay	1,045	1,045	Desoris Pond	105	105
Nepeague Bay	9,135	0	Hempstead Harbor	3,465	3,465
Montauk Harbor	1,085	150	Fishers Is. Sound	7,990	910
Acabonack Harbor	310	0	Stirling Basin	135	52
Three Mile Harbor	1,025	0	Pipes Cove	370	0
Gardiners Bay	48,950	0	Napeague Harbor	885	0
Northwest Harbor	1,550	0	Westchester Shore	15,520	15,520
Shelter Is. Sound	9,450	180	Manhasset Bay	2,275	2,275
Sag Harbor & Cove	575	155	Raritan Bay	12,410	12,410
West Neck Harbor	625	0	Lower Bay	31,400	31,400
Noyack Bay	3,540	0	Upper Bay	6,740	6,740
Southold Bay	1,340	0	Jamaica Bay	12,235	12,235
Hashamomuck Pond	170	5	Cold Spring Pond	220	0
Orient Harbor	3,560	0	Sebonac Creeks	430	0
Coecles Harbor	1,205	0	North Sea Harbor	225	10
Little Peconic Bay	13,725	0	Wooley Pond	30	0
Cutchogue Harbor	585	2	Atlantic Ocean		
Great Peconic Bay	19,060	0	Brooklyn-Queens	23,000	21,623
Flanders Bay	3,090	780	Nassau County	28,700	2,510
Mattituck Bay	125	30	Suffolk County	231,500	2,500
Wading River	50	50	Block Is. Sound	125,700	0
Mt. Sinai Harbor	455	10	Goldsmith Inlet	20	0
Pt. Jeff. Complex	1,550	657	Georgica Pond	350	0
West L.I. Sound	88,300	26,650	Sagaponack Pond	160	0
Center L.I. Sound	188,000	0	Oyster Pond	117	0
East L.I. Sound	121,000	300	East River	8,860	8,860
Stony Brook Harbor	855	0	Hudson River	3,100	3,100
Nissequogue River	555	555	L.I. sound (NYC)	13,560	13,560
			Total Acres	1,188,517	194,325

Source: Mr. James Redman, NYSDEC, Region I, Stony Brook, N.Y.

Suffolk County has opposed the opening of WLIS III and opposes its projected use for the disposal of dredged material from dredging projects on Long Island Sound. To date, over 200,000 cu. yds. of spoil have already been dumped at the site.

There are several issues behind this policy position. The County is opposed to the proliferation of dump sites in Long Island Sound—a move that is contrary to actions taken in the early 1970's that resulted in closing several dump sites in this area. Long Island Sound—a semi-enclosed body of water—should not be considered an environmentally acceptable alternative to the ocean disposal of contaminated dredged spoil in the New York Bight. Other issues include the following:

- *The lack of adequate information concerning chronic, long-term effects of dredged spoil disposal on the marine biota.*
- *The impacts on commercial fisheries, e.g., potential damage inflicted on lobster and oyster eggs, larvae and juveniles.*
- *The adequacy of the bioassay tests for assessing long-termed food chain impacts. (Do these tests actually reflect processes occurring at the dump site?)*

An effort should be undertaken to make the criteria for spoil disposal in Long Island Sound as strict as those required for ocean disposal, i.e., at present, only those projects involving 25,000 or more cubic yards of spoil must meet ocean dumping criteria for disposal in Long Island Sound. This cubic yard threshold should be eliminated. The cumulative impacts of disposal from many small scale dredging projects must be considered, along with those of large projects in order to protect the Long Island Sound environment.

3. Marine Fisheries

Suffolk County has been and remains the center of New York's commercial fishing industry. In 1983, 31.6 million pounds of fish and shellfish with an ex-vessel value of \$33.5 million were landed here. This harvest amounts to 84% by weight and 87.9% by value of the total marine fishery products landed in the State in 1983 (landings of fishery products from Hudson River not included). In the aggregate, the County landings for 1983 were about 3 million pounds higher than in 1982; however, the landed value was over \$5 million lower. Species with Suffolk County landings valued at over \$1 million in 1983, include hard clam, American oyster, American lobster, tilefish, squid, sea scallop, scup, yellowtail flounder, swordfish, and fluke.

TABLE 20

Dredging Projects Conducted by Suffolk County
During 1983

Project Location	Town	Date	Cubic Yards	Cost
1. Shinnecock Inlet Comm. Dock	Southampton	3/31/83	42,480	\$125,766
2. Cedar Beach Harbor	Southold	4/14/83	1,680	4,230
3. New Suffolk Boat Ramp	Southold	4/25/83	1,000	—
4. Miamogue Lagoon	Riverhead	5/6/83	1,500	—
5. Timber Point Police Marina	Islip	5/13/83	1,440	4,800
6. Gull Pond	Southold	5/18/83	960	2,142
7. Brushes Creek	Southold	5/19/83	1,500	—
8. Shinnecock Shores	Southampton	5/16/83	26,631	—
9. Pine Neck Landing	Southampton	5/20/83	7,076	206,036
10. Wooley Pond	Southampton	5/20/83	11,280	33,902
11. Hard Estate (Marine Museum ent.)	Islip	5/25/83	512	4,320
12. Little Creek	Southold	5/25/83	2,400	4,962
13. The Moorings	Islip	5/31/83	1,408	8,100
14. James Creek	Southold	6/10/83	9,424	29,820
15. Trues Creek	Islip	6/10/83	2,176	11,340
16. Fresh Pond	Southampton	6/13/83	3,250	—
17. Crab Creek	Shelter Is.	6/14/83	4,320	8,948
18. East Bay Canal	Islip	7/7/83	5,120	23,846
19. East Creek	Riverhead	7/13/83	4,250	—
20. Wickham Creek	Southold	7/14/83	1,920	4,460
21. Tahlulah Lagoon	Islip	7/21/83	2,784	13,910
22. Hawks Creek	Riverhead	7/26/83	1,250	—
23. Little Creek	Southold	8/15/83	2,250	—
24. West Neck Harbor	Shelter Is.	8/11/83	17,360	52,540
25. Corey Creek	Southold	8/30/83	750	—
26. West Canal	Babylon	9/22/83	3,072	15,120
27. Red Creek Pond	Southampton	10/5/83	3,375	—
28. Halls Creek	Southold	11/4/83	8,328	6,824
				17,750
29. North Sea Harbor	Southampton	9/27/83	22,440	63,773
30. Deep Hole Creek	Southold	11/28/83	6,250	—
31. Greenport R.R. Dock	Southold	12/7/83	41,660	166,640
32. Richmond Creek	Southold	12/23/83	15,279	40,586
			County:	25,375
			Contr.:	229,750
			Total:	\$849,815
				255,125

Of principal concern is the continued decline in hard clam landings made in the County since the recent peak in production in 1976. In 1983 reported hard clam landings from Great South Bay totaled about 2.14 million pounds of meats; this was a 11% reduction from the landings made in 1982. Great South Bay now accounts for 64% of the total landings of hard clams made in New York State (3.34 million pounds) as compared to 71% in 1982.

The hard clam industry was also dealt a severe blow in the past year as a result of major shellfish-related disease outbreaks in New York State. The demand and hence dockside price for clams in the shell plummeted especially after the disease outbreak that occurred during the latter half of December 1982. The result was that the average price per pound of hard clam meats fell from about \$4.40 per pound in 1982 to \$3.25 per pound in 1983—a 26% reduction. The effect of this reduction resulted in a decline of over \$4 million in landed value of the hard clam harvests in 1983, even though the level of harvest was approximately the same as in 1982.

Long Island baymen responded to the crisis in the hard clam industry by establishing the L.I. Green Seal Hard Clam Committee, which investigated various options for marketing hard clams produced from local waters to assure quality control. The Committee decided to sell tamper-resistant seals to baymen who would be responsible for indicating the harvest location on the seal when clams are packaged. The seals are keyed by a serial number to individual baymen; they remain on the bags as the clams move through the marketing system. In this way, a particular bag of clams can be traced not only to the harvester, but also to the location where harvest occurred.

The Committee consists of baymen organization representatives and several government agency representatives that serve in an advisory capacity; it administers the Green Seal Program, as well as an education program. Approximately 170 baymen have joined the Green Seal Program and have purchased seals. As of January 1984, over 13,000 seals have been issued to the hard clam industry for use. At present, approximately 10% of the full-time baymen on Long Island participate in this voluntary program. Over the past year, not one illness attributed to consumption of tainted shellfish has been traced to clams harvested under the Green Seal Program. While the program is designed to be self-sustaining, Suffolk County has provided funds to the Committee for start-up purposes.

As a result of the crisis in Long Island's hard clam industry, the Regional Marine Resources Council prepared the report, *Long Island Hard Clam Resource Management: Research Needs*. The Council found that improved management of the hard clam resource was constrained by the lack of needed information. Recommendations for the conduct of both scientific research and administrative research were included in the report. The research recommendations are based on an assessment of current knowledge concerning the biology of the hard clam and experience over the last decade involving management techniques and approaches.

The Island's hard clam industry contributes significant economic returns. Public stewardship of this resource implies the need to commit funds in an amount commensurate with the economic value of the resource for the conduct of required research. In response to an initiative outlined in the 1983 *Annual Environmental Report*, Suffolk County funded

the study entitled *A Critical Assessment of Management Strategies to Rehabilitate and Sustain Suffolk County's Hard Clam Fishery*, which will be conducted by the Marine Sciences Research Center at Stony Brook. This study addresses several of the research guidelines identified in the Council's report. The principal task in this study will be an assessment of available management alternatives applicable to the hard clam resource. Spawner transplants, seeding programs, spawner sanctuaries, rotation of harvest areas, alteration of the salinity regime, law enforcement, depuration, mariculture, limited entry, minimum and maximum size limits for harvesting, and culling regulations are among those alternatives that will be evaluated individually and in different combinations. It is expected that this report will be completed early next year. The results of the marine science evaluations will be used by the Long Island Regional Planning Board to formulate a comprehensive hard clam management program on a waterbody-wide basis.

Long Island commercial fishermen again participated in squidfishing joint ventures with Italian, Japanese and Spanish vessels. Approximately five million pounds of squid were caught by U.S. fishermen engaged in the joint ventures in 1983. The Eastern Long Island Trawlers Corp., consisting of approximately 35 fishing vessels based at Montauk, has been contracted by Italian and Japanese joint venture partners to harvest over two million pounds of squid in 1984 and process the catch at shoreside facilities in Montauk.

The Port Authority of New York/New Jersey has initiated a program for revitalization of the fishing industry in the Port district. The focal point of the program is the Port Authority Fishport—the fish selling, processing and distribution center to be built at the Erie Basin terminal in Brooklyn at a total project cost of \$27 million. Construction is slated to begin in March of 1984, with a completion date of all construction in 1985. Leases will be executed by the Port Authority with fish processors and distributors, and other businesses necessary for operation. It is expected that the facility will improve fishery product quality, and this should result in expanded domestic and international markets for area fishermen. Efforts will be undertaken to improve fishing technology by the use of modern facilities and equipment. The Port Authority is focusing resources on the development of underutilized species of fish, such as squid, hake, and mackerel, which are found on the mid-Atlantic outer continental shelf.

4. Mariculture

Suffolk County has proceeded with the preparation of a survey map of underwater lands in Gardiners and Peconic Bays to secure rights pertaining to shellfish management activity in these areas ceded by the State pursuant to L 1969, ch 990. The Real Property Tax Service Agency prepared a map entitled *Oyster Lands, Flanders, Gardiners and Peconic Bays*, dated February 28, 1983, which shows township boundaries, school district boundaries, a 500 ft. buffer strip along the shoreline, and the location of 549 underwater parcels in the area bounded on the west by the mouth of the Peconic River and on the east by a line drawn from the eastern end of Plum Island to Goff Point at Napeague. These parcels total 109,454.3 acres. Each parcel is keyed by number to a table on the map showing tax map information, oyster deed information, acreage, school district, recording date and rights to the parcel. This map shows much of the information needed to meet the requirement of L 1969, ch 990. Work remaining involves establishment of a system for tying parcel boundaries into the Suffolk County monument system and identification of areas where bay scallops are harvested commercially on a regular basis.

Suffolk County should meet the mapping requirements of L 1969, ch 990, and develop the specifics of a shellfish management program for Gardiner's and Peconic Bays that would provide the basis for discussion of this subject.

Significant action was taken by the New York State Legislature in amending the Environmental Conservation Law (ECL) pertaining to the regulation of mariculture activities. Section 13-0316 of the ECL was amended by L 1983, ch 467, which became effective January 1, 1984. The amendments:

- enable NYSDEC to issue on-bottom, as well as off-bottom culture permits

- allow marine hatchery and off-bottom/on-bottom culture permit holders to breed and raise marine plant and animal life; (prior to this amendment only shellfish as defined by the ECL was covered.)
- permit the sale of marine hatchery products of less than legal size to other marine hatcheries or to holders of culture permits
- enable the holder of off-bottom/on-bottom culture permits to sell marine plant and animal life of less than legal size.

Thus, commercial activity involving the sale of shellfish seed and small finfish is accounted for under the amendments.

Other sections of the ECL involving mariculture remain to be amended. Section 13-0301 of the ECL enables NYSDEC to lease underwater lands for shellfish cultivation only; this authority should be expanded to allow leasing such lands for the culture of finfish and marine plants as well as by both on-bottom and off-bottom techniques

Under L 1969, ch 990, Suffolk County has the authority to lease lands in Gardiners and Peconic Bays for the purpose of shellfish cultivation. This law should be amended to extend to Suffolk County the authority to lease underwater lands not only for shellfish cultivation as now provided, but also for the purposes of finfish and marine plant cultivation. Such an amendment would complement that proposed above for Section 13-0301 of the ECL.

Work continued in 1983 on a project sponsored by the New York State Energy Research and Development Agency, the Gas Research Institute, and the New York State Gas Group to develop a system for producing substitute natural gas from seaweed. An oriental-style seaweed farm was designed, constructed, and deployed near Crane's Neck in Long Island Sound. This prototype farm will be capable of producing two tons of seaweed annually. A system has been developed for seeding the farm with young plants. During 1984, attention will be focused on operating the test farm and performing laboratory experiments aimed at increasing seaweed yield.

In May 1983 the Aquaculture Planning Act (L 1963, ch 104) became law in New York State. The State Legislature found that

...there is significant potential for growth in the aquacultural industry in New York, but that the lack of secure access to underwater lands, water columns and coastal wetlands and other factors inhibit investment in aquaculture ventures.

This law is significant in that it provides a focus on aquaculture development at the state level; it authorizes the New York Sea Grant Institute and the College of Agriculture and Life Sciences at Cornell University to prepare a statewide aquaculture plan.

The Institute prepared a draft developmental plan for aquaculture in New York State during the past year. The plan describes the aquaculture industry in New York and its potential for substantial expansion. Legal, institutional, social, and technological hinderances to fuller development of aquaculture are identified and, where appropriate, recommendations are made for specific state actions to remove these constraints. A final draft of the plan is expected in June 1984.

In concert with the preparation of the State Aquaculture Development Plan, the Sea Grant Institute substantially expanded its research program in aquaculture in 1983. Studies were conducted primarily on the culture of shellfish, including an assessment of the bioeconomic feasibility of various hatchery/nursery/growout systems; improving the productivity of cultured oysters through refined genetic selection techniques; the evaluation of deepwater areas of Long Island Sound as sites for shellfish culture; and the social, regulatory, and economic impacts of expanded shellfish aquaculture on Long Island.

With the exception of the zoning code of the Town of East Hampton, all of the town zoning codes in Suffolk County are silent as to whether or not aquaculture/mariculture is considered a permitted use. A particular use is not allowed if it is not specifically listed as a permitted use in the zoning code. Two small, waterfront sites in the Town of East Hampton comprise the Marine Science Research and Development District, which specifically lists aquaculture as a permitted use. None of the town codes equate mariculture/aquaculture with agriculture.

5. Sewage Sludge Dumping

It is the policy of Suffolk County that sewage sludge dumping at the 12-Mile Site in the New York Bight Apex be terminated. Suffolk County endorses the use of the 106-Mile Site for the disposal of sewage sludge as an interim measure until land-based alternatives for the disposal of this waste material can be implemented; disposal at the 12-Mile Site should then be terminated, with the exception of its use for emergency situations. Testimony to this effect was submitted by the County Executive at the U.S. Environmental Protection Agency (EPA) hearing on the proposed designation of the 106-Mile Site as an approved ocean dumping site. The local Congressional delegation has also been informed of this position.

In 1983, EPA established a task team to review data on the 106-Mile Site and the petitions for continued use of the 12-Mile Site for sewage sludge dumping. In a preliminary finding, EPA stated that the 106-Mile Site was environmentally acceptable for the receipt of sewage sludges. It is anticipated that a final decision by EPA approving the use of the 106-Mile Site for the receipt of sewage sludge and other wastes, will be made in early 1984. At the same time, a tentative decision to deny or grant the petitions (by New York City and others) for continued use of the 12-Mile Site for sewage sludge will be made. It is expected that a public hearing on this matter will be held on Long Island in 1984.

COASTAL ZONE MANAGEMENT

1. Commercial Fishery Facility At Shinnecock Inlet

The final engineering plans for the Shinnecock facility were completed by the engineering consultant in March 1983. The project was let for construction in April 1983. Award of the construction contract took place in June 1983 and a fully executed copy of the contract was forwarded to the contractor in August 1983. Construction of the facility commenced the following month. Estimated completion date for the construction of the facility is 25 August 1984. The U.S. Dept. of Commerce, Economic Development Administration has approved the lease agreement between the Town of Southampton and the County of Suffolk regarding the maintenance and operation of the facility at Shinnecock.

2. Greenport Commercial Fishing Pier

Suffolk County DPW completed the final engineering and design plans for the commercial fishing pier at Greenport and let the project for construction in February 1983. The construction contract was awarded in April 1983 and construction of the pier commenced the following month. The estimated completion date for construction of the facility is 5 May 1984.

3. Shirley Marina

Suffolk County DPW received two proposals in response to an RFP that was issued to attract a private concern to construct and operate a marina facility on the vacant County-owned property to the west of the Smith Point bridge at Shirley. DPW is currently reviewing the proposals and is involved in discussions with the respondents in order to select the development plan that will pose the best advantage to the County in the provision of this facility.

4. Three Mile Harbor Watershed Plan

By resolution dated December 1, 1980 the East Hampton Town Board requested the assistance of the Suffolk County Dept. of Planning in the completion of shoreline development studies for the Lake Montauk, Fort Pond Bay and Three Mile Harbor areas, as part of a broader effort to complete an update of the Town comprehensive plan. The Suffolk County Dept. of Planning completed the report entitled, *Future Development Alternatives at Lake Montauk and Fort Pond Bay* in December 1981. In March 1982, the Town Board reaffirmed its desire for the Dept. of Planning to complete a similar study for the Three Mile Harbor area. In response to this request, the Suffolk County Dept. of Planning initiated study of Three Mile Harbor during the summer of 1982; the final report—*A Plan for Mitigating the Environmental Impacts of Development in the Three Mile Harbor Watershed*—was released in June 1983.

The report contains an inventory and analysis of the 5,300 acre Three Mile Harbor watershed in terms of its environmental characteristics and resources, existing land use, current and projected population, and land available for development. The major issues of concern to the residents of the study area are the pollution associated with additional development in the watershed, the alteration of the harbor shoreline due to development of various types, and the consequences of the motel provision in the Waterfront Marina and Waterfront Business zoning categories.

The planning recommendations in the report are designed to maintain marine water quality and commercial/recreational shellfishing and fin-fishing opportunities in Three Mile Harbor; and to establish local resident recreation oriented activities as the priority use of Three Mile Harbor resources. Topics addressed by the recommendations include land use, wetlands and marine water quality protection, development controls and public access. Highlights of the recommendations are outlined as follows:

- *Land Use*—The Town should not allow additional motels to be constructed along the Three Mile Harbor shoreline, and should limit the expansion of marinas to those sites now used for this purpose.
- *Wetlands Protection*—The Town should preserve the remaining wetlands found at Hands Creek, Sammys Beach, Folkstone Creek, Sedge Island; and the extreme southern portion of the harbor, including both the fresh and tidal wetlands of Tanbark Creek. The Town should acquire the following areas for preservation purposes:
 - Tanbark Creek headwaters - 25 parcels totaling 49.6 acres
 - Addition to Sammys Beach - 15 parcels totaling 7.0 acres
 - Dayton Island - 1 parcel of 6.4 acres
 - Sedge Island - 2 parcels totaling 5.6 acres
- *Marine Water Quality Protection*—Five potential vacant sites have been identified for the implementation of stormwater control measures in order to reduce the direct discharge of runoff into surface waters. The Town should take appropriate steps with State and Federal officials to declare Three Mile Harbor a No-Discharge zone for sanitary boat wastes.
- *Development Controls*—The Town Board should impose clustering on lots of suitable size. Seven sites in the study area are listed in the report where cluster development should occur. In addition a list of site development controls including methods to reduce runoff, control sedimentation, recharge groundwater, protect marine wetlands, and minimize shoreline disturbance, is included within the report to assist the Town in its review of development proposals.
- *Public Access*—A 17.6 acre Town owned parcel on the east shore of Three Mile Harbor should be developed for shoreline access, including the provision of suitable parking and boat ramp facilities as required.

5. Asharoken Study

In 1982, Village of Asharoken officials requested Suffolk County Planning Dept. assistance in formulating planning priorities for key parcels and various Village owned parcels in order to create a comprehensive plan. The major goals of this plan are to improve road access, maintain the rural character of the area, minimize environmental degradation and minimize beach erosion.

The plan recommends the use of cluster development especially on the larger undeveloped parcels, such as the former Morgan Estate. The use of cluster development as a viable alternative to conventional subdivision layout enables the preservation of environmentally sensitive areas such as wetlands, aquifer recharge areas, swales and woodlands.

The plan also recommends that improvements be made to Bevin Rd. and Asharoken Ave. to improve both general access and access by emergency vehicles. It also recommends that wherever possible, the country lane appearance of Bevin Rd. be maintained.

Another plan recommendation is to limit development adjacent to bluffs and beaches. The free movement of sand along the Asharoken Ave. shoreline should not be interrupted. The practice of obtaining sand from the inter-tidal zone and the immediate areas offshore for the purposes of beach and dune fill on the adjacent upland should not be encouraged by the Village.

6. Head Of The Harbor Study

At the request of the Village of Head of the Harbor, the Suffolk County Planning Dept. reviewed and analyzed village development controls, environmental issues and land use patterns; and offered specific planning recommendations for consideration by village officials and advisory board members. The report prepared by the Dept. in October 1983 reviews past development in the Village, current trends and future opportunities within a framework of sound environmental controls.

A list of site development controls including methods to reduce runoff; control sedimentation; maintain major swales, steep slopes and bluffs in their natural state; conserve prime farm soils; protect prime wildlife areas and tidal wetlands; recharge groundwater; and minimize shoreline disturbance, is included within the report to assist the Village in its review of development proposals. Additional recommendations were made concerning acquisitions for flood control; improvements in paving, drainage, and sight distances at road intersections and other access points; farmland preservation; and development of town houses.

7. Coastal Erosion

Moriches Inlet —

In December 1983, the North-Atlantic Division Engineer, U.S. Army Corps of Engineers, issued his decision approving the construction of the Moriches Inlet Navigation Project according to the general design memorandum and findings of the final Environmental Impact Statement prepared by the N.Y. District, Corps of Engineers. The details of this construction project were reviewed in the 1983 issue of this report. All report requirements have now been completed for this project. The N.Y. District, Corps of Engineers is now in the phase of preparing plans and specifications which will be used for the purpose of contract bidding. Pending conclusion of this project in the fiscal year '84 budget of the Federal government, construction could begin in February 1985. Suffolk County will take the steps necessary to cooperate with the State of New York in the provision of local assurances for completion of this project. It is important to remember that since the project will be constructed for navigational purposes only, the Federal government will assume 100% of the annual maintenance cost for dredging.

Shinnecock Inlet —

The New York District, Corps of Engineers has initiated work on a navigation study of Shinnecock Inlet. Meetings have been held with local fishermen, the public, and government officials to identify issues of concern with this waterway. Issues raised include the need to protect facilities at the west side of the inlet from washovers, the creation of a set channel from the inlet seaward, and preserving water quality within Shinnecock Bay. During 1984, the Corps will begin preliminary data collection for this project; detailed topographic and hydrographic surveys of the inlet and adjacent areas will be conducted. Coordination with the U.S. Fish and Wildlife Service concerning impacts of the navigation project on birds and marine resources will also begin. An Environmental Impact Statement on the project will also be prepared. All of this work will result in preparation of a general design memorandum which is anticipated by late 1987.

Suffolk County has indicated its commitment to the implementation of navigation improvements at Shinnecock Inlet, and has indicated to the Corps its concerns involving this area and the need to complete the studies as soon as possible so that the project can be implemented.

8. Montauk Air Force Station

The 278 acre Montauk Air Force Station, formerly known as Camp Hero, is no longer needed by the Air Force as a radar installation and consequently was declared surplus property by the Federal government in 1981. General Services Administration (GSA), which disposes of surplus federal property, indicated its intention to sell the property in 1982.

Executive Order 12348, issued by President Reagan in February 1982, calls for more aggressive identification and rapid sale of surplus federal property at fair market value. The Reagan policy is a complete reversal of the long standing practice of previous administrations which transferred surplus federal properties at little or no cost through public benefit discount conveyances to local municipalities for public use.

Both the State of New York and Town of East Hampton applied to GSA for public benefit discount conveyances for portions of the subject property. The public benefit discount conveyances were denied by GSA. The highest and best use of the property, according to GSA, is for residential development. An environmental assessment on the property, prepared by GSA in May 1983, found no significant environmental impact as a result of a negotiated sale to a municipality or an auction open to the general public. A full EIS was deemed as unnecessary by GSA.

The Town of East Hampton, after its request for a public benefit discount conveyance was denied by GSA, expressed interest in a possible negotiated sale with GSA. However, GSA's asking price of \$3.25 million was considered excessive by the Town.

New York State Dept. of State (NYS DOS) requested that GSA prepare a determination of consistency of the proposed sale of the Air Force Station with that of the federally approved NYS Coastal Management Program (NYSCMP). NYSDOS disagreed with the findings contained in the consistency determination prepared by GSA and found the proposed sale to the general public for private residential development to be inconsistent with the NYSCMP.

Despite the apparent inconsistency of GSA's proposed action with that of the NYSCMP, GSA scheduled the public auction of the property for February 1984. At the direction of the Governor, the NYS Attorney General filed suit with the Town of East Hampton in federal court to block the planned auction. One month prior to the scheduled auction, the Town rezoned the property from residential to parks and conservation in an attempt to discourage developers from bidding on the property. A court ruling allowed the auction to proceed as scheduled but no bids will be awarded until the lawsuits are resolved.

As an alternative to public auction, NYS has proposed a mutual conveyance of 125 acres of State owned land on Fire Island for addition to the Fire Island National Seashore, and the federally owned 278 acre Montauk property for addition to the Montauk State Park. In addition, Senator Moynihan and Congressman Carney have introduced legislation that would require GSA to give the property to the Town and State for preservation purposes.

In March 1983, GSA yielded to appeals from officials at the local, state and federal level to prepare an EIS. Final disposition of the property will now await the completion of the EIS, which is expected to take nine months to one year to prepare.

9. Hurricane Damage Mitigation Plan

During 1983 the Long Island Regional Planning Board continued work on the Hurricane Damage Mitigation Plan for the south shore, which will be completed in 1984. Board staff documented historical tropical cyclones and extratropical storm events that have impacted the south shore. The nature of the flooding hazards associated with these storm events were also identified. Maps have been prepared depicting the 100-year flood hazard zone.

Board staff have quantified the number of structures vulnerable to tidal-induced flooding. It has been determined that there are 2,229 single or two-family residential structures and 107 units of multi-family housing located within the Suffolk County south shore coastal high hazard area, or **V** zone, based on interpretation of 1980 aerial photographs. In addition, there are 15,427 single or two-family residential structures and 474 units of multi-family housing located within the south shore **A** zone. Commercial floor space totals 72,000 square feet in the **V** zone and over 1.3 million square feet in the **A** zone.

The value of structures and population at risk along the south shore **A** and **V** flood hazard zones of Long Island was determined. The 100-year floodplain represents the area most vulnerable to tidal-induced flooding from hurricanes and northeast storm events. These values do not represent projections of actual flood damages, but instead are indicative of the potential value at risk in the event of a major storm.

The results indicate a total single and two-family residential structural value in the Suffolk County south shore floodplain of approximately \$1.5 billion. More than \$300 million of this total is located in the high hazard V zone.

An analysis of both the year-round and seasonal populations at risk was conducted, using the structure counts and census block statistics. In Suffolk County, there are 34,818 year-round floodplain residents, and an additional 34,344 seasonal residents.

GOVERNMENT PROGRAMS AND ACTIVITIES

1. Federal Programs

208 Plan Implementation —

In 1983, the Long Island Regional Planning Board continued its 208 Implementation efforts. Board staff in conjunction with personnel from the NYSDEC, Suffolk County Dept. of Health Services and Nassau County Health Dept. participated in a study to determine the impacts of certain consumer products on groundwater quality and regulatory mechanisms available and/or necessary to control their sale and distribution.

On the basis of information obtained in this and other studies, it appears that, on Long Island, cesspool and septic system cleaners containing organic chemicals have been a significant non-point source of contamination. Although the distribution and sale of such products is now prohibited by New York State and Suffolk County laws, the water quality effects of prior use may be evident for many years.

There is circumstantial evidence suggesting that two other classes of consumer products—solvents and degreasers, including paint and varnish removers, and waste motor oil—may cause sufficient aquifer degradation to warrant public concern. These products are generally used at full strength and then discarded. It can be expected that careless handling or, more likely, the improper disposal of used solvents and oils will permit at least a fraction of their constituents to reach and pollute the groundwater. It should be noted that pesticides were not considered in this study.

At this time it is difficult, if not impossible to justify governmental imposition of controls on the formulation, sale, or use of most household products containing organic chemicals or other constituents likely to pollute Long Island's groundwater. Except in the case of cesspool or septic system cleaners, adequate evidence of a clear relationship between the use of household products and groundwater degradation is lacking.

In the absence of hard data documenting the fate of consumer product constituents, it would seem more appropriate to rely on strategies that would encourage voluntary changes in consumer habits.

The non-regulatory alternatives, which should receive serious consideration, consist of a variety of programs designed to encourage changes in the selection, use, and disposal of consumer products. They comprise public information-public education efforts as well as the provision of assistance and/or incentives leading to the adoption of best management practices. The program alternatives, which may be employed individually or in combination, include but are not necessarily limited to the following:

- *Development and implementation of a public information-public education program describing the environmental effects of the use and disposal of different types of household products.*
- *Identification and promotion of best management practices relating to the use and disposal of household products, especially those considered most likely to contaminate groundwater.*
- *Identification and promotion of substitute products or formulations containing environmentally acceptable constituents.*

- *Establishment of a program to facilitate the proper disposal of used consumer products. Such a program might provide for the free distribution of suitable containers and disposal instructions at the point of purchase of paint and varnish removers, motor oil, and other products of concern. It might also provide for the municipal or municipally subsidized collection of used materials on a regular basis and for drop off points at gasoline service stations, firehouses or town highway department facilities.*

In 1983, the 208 Technical Advisory Committee continued to meet and exchange information on the possible modification of hydrogeologic zone boundaries, pine barrens protection and waste treatment management techniques.

201 WASTE TREATMENT FACILITY PLANS—The following 201 Waste Treatment Construction Grant Program projects were in progress in 1983:

GREENPORT-SOUTHOLD/SHELTER ISLAND: *The scavenger waste plant has been designed. This plant will pre-treat scavenger wastes prior to their introduction into the treatment plant. Bids for plant construction have been received and are under review.*

HUNTINGTON-NORTHPORT: *Facility planning has been completed. It includes construction of a scavenger waste pre-treatment plant, expansion and upgrading of the treatment plant, expansion of the collection system to Halesite and Meadowlawn and extension of the outfall pipe. New York State Dept. of Environmental Conservation personnel anticipate that a construction grant will be awarded to the town in 1984.*

RIVERHEAD-WEST SOUTHAMPTON: *The scavenger waste plant is under construction. This plant will treat the wastes, chlorinate and dispose of the effluent through the existing outfall.*

EAST HAMPTON-EASTERN SOUTHAMPTON: *The two towns are currently involved in the design of a scavenger waste facility for the eastern south fork area.*

VILLAGE OF PATCHOGUE: *The Village has retained an engineer to draft preliminary designs to upgrade the existing treatment plant so that the effluent will meet secondary treatment standards.*

PORT JEFFERSON: *The Port Jefferson study area 201 facilities plan has been taken off the funding portion of the priority list and placed on the planning portion of the list. There is disagreement over which alternatives should be implemented. A force main and pump station located in Port Jefferson will be replaced under an emergency designation.*

FISHERS ISLAND: *The Fishers Island facility plan calls for the construction of a community septic tank system. It is anticipated that the Town of Southold will receive a small community assistance grant advance for design of the system.*

Flow Augmentation Needs Study —

The 1983 *Annual Environmental Report* noted that Suffolk County was awaiting U.S. Environmental Protection Agency recommendations on whether mitigation is needed for streams and/or the western portion of Great South Bay. Suffolk County is still awaiting these recommendations. Thus, the County has not begun preparation of a mitigation plan.

Atlantic Outer Continental Shelf Oil/Gas Leasing Activities —

Both the NYSDEC and Suffolk County have called for the elimination of lease sales in areas close to Long Island shores. Both the State and the County have taken the position that no leasing of tracts should occur north of 40° 15'N latitude. In addition, Suffolk County supports the elimination of lease sales west of 69° 15'W longitude. Suffolk County has urged DEC to endorse the specification of the eastern boundary of the protection zone along the south shore of Long Island and also convey this recommendation to the U.S. Dept. of Interior.

In its review of U.S. Dept. of the Interior, Minerals Management Service leasing activities, the County has continued to press for implementation of these policies. The next lease sale scheduled to occur in the region is Lease Sale #82 involving the North Atlantic area; the expected date of the lease offering is June 1984.

No commercial oil or gas discoveries have been made as a result of exploration activity in the Mid-Atlantic or North Atlantic regions. Recent exploratory drilling has been focused in the deep water area off southern New Jersey and Delaware.

In April 1983, NYS sued the Dept. of the Interior to halt Lease Sale #76. The suit called for the deletion of 135 tracts that were located north of 40° 15'N latitude; some of these tracts were within 35 miles of Long Island's coast. Grounds for the suit included the following:

- *that the proposed sale was inconsistent with the NYS Coastal Management Program*
- *that the Secretary of the Interior failed to respond to the state under Section 19 of the OCS Lands Act, which requires the Secretary to respond in writing, if he chooses to proceed against state recommendations in a lease sale*
- *the failure to balance all factors given that the sale included low interest areas.*

A stipulation was signed by both parties in the Eastern District of the Federal Court that prevented the Dept. of the Interior from executing any leases on the 135 tracts located north of 40° 15'N latitude. This restriction also held for 22 other tracts having potential geohazards. However, the lease sale was held as scheduled, but no bids were received on the 135 tracts north of 40° 15'N; four bids were received on tracts with potential geohazards. An out-of-court settlement/agreement was executed by NYS and the Dept. of the Interior calling for the imposition of environmental safeguards in the stipulations covering these tracts.

A recent U.S. Supreme Court decision involving a lease sale off the California coast determined that a contested lease sale action, in and of itself should not be subject to a determination of consistency with the California coastal management program. This decision will ultimately affect the consistency process in New York as well.

Coastal Barrier Resources Act—Section 10 of the CBRA requires the Secretary of the Interior to prepare a report for Congress by 18 October 1985 that will contain recommendations for:

- *the conservation of fish, wildlife and other natural resources of the System*
- *management alternatives*
- *additions to or deletions from the System as well as modifications to the boundaries of System units.*

In an August 1982 report to Congress prepared by the Dept. of the Interior, it is recommended that the provision in the CBRA providing for the exclusion of undeveloped coastal barriers that are *otherwise protected* be eliminated and that protected areas in governmental and private ownership be included within the scope of CBRA. The term *otherwise protected* is a protected status referring to coastal barriers which are included within the boundaries of an area established under Federal, State or local law or held by qualified not-for-profit organizations. In both instances, the area must be held primarily for wildlife refuge, sanctuary, recreational, or natural resource conservation purposes.

As part of its report to Congress under Section 10 of CBRA, the Dept. of the Interior is compiling a list of all coastal barriers in public or private ownership that are treated as *otherwise protected* for consideration by Congress for inclusion within CBRA. Inclusion of *otherwise protected* areas within CBRA will require an amendment by Congress to the CBRA and would eliminate Federal expenditures on and financial assistance for development of privately-owned properties within the authorized boundaries of a protection unit administered by one or more agencies of Federal, State or local government.

2. State Programs

NYS Coastal Management Program —

Approximately \$1 million was awarded by NYS Department of State (DOS) in March 1983 to 64 waterfront communities throughout the state for the development of Local Waterfront Revitalization Programs (LWRP). The grant amounts awarded to Long Island municipalities were listed in the 1983 *Annual Environmental Report*. A second round of grant awards for the development of LWRP's will be announced by DOS in April 1984. Once a municipality obtains DOS approval of its LWRP, it is then eligible for a program implementation grant. Currently, NYC is the only municipality in NYS with an approved LWRP.

Future funding of the State's Coastal Management and LWRP's depends heavily on passage of the Outer Continental Shelf Revenue Sharing legislation still under consideration in the U.S. Senate. The House bill, passed in the autumn of 1983, would provide between \$12 to \$15 million for NYS and local government coastal activities. The companion bill under consideration in the Senate is philosophically similar to the House bill.

Coastal Erosion Hazard Areas Act —

The NYS Coastal Erosion Hazard Areas Act, codified as Article 34 of the Environmental Conservation Law, was enacted in 1981 as part of a comprehensive coastal management legislative package. Article 34 directs the NYSDEC to identify and map coastal erosion hazard areas and to adopt regulations that establish procedures and standards for regulation of certain activities and development in these areas. Erosion hazard areas, as defined by Article 34, are coastal shorelines that: 1) contain natural landforms, such as beaches, bluffs, dunes, and near-shore areas, that protect coastal lands and development from the adverse impacts of erosion and high water, or 2) are receding at an average annual rate of one foot or more. The regulations, 6 NYCRR Part 505, specify how and where new development may be undertaken in identified erosion hazard areas. They were adopted in March of 1983 subsequent to statewide public hearings.

NYSDEC has draft maps of the entire south shore and much of the north shore of Long Island depicting the landward limits of the coastal erosion hazard area. Several public informational meetings were held this autumn in Southampton regarding the draft maps for the Town of Southampton and the villages within the Town of Southampton. It was subsequently decided by NYSDEC to postpone further public informational meetings and hearings until the summer of 1984 in order to involve a larger segment of the seasonal population residing in many of the coastal communities on Long Island. Final maps for each community will be issued by NYSDEC no sooner than 60 days following the public hearing held in each coastal community.

A feature of Article 34, continuing New York's tradition of vesting land use controls with local governments, gives cities, towns, and villages the first opportunity to regulate erosion hazard areas within their jurisdiction by enacting a local erosion management law or ordinance. These local laws must be approved by NYSDEC as meeting minimum standards established in the Part 505 regulations to ensure consistent implementation of the provisions of Article 34. If a city, town or village chooses to not retain local jurisdiction, the opportunity for local regulation is passed on to the county. If the county similarly relinquishes jurisdiction, NYSDEC will regulate erosion hazard areas by implementing Part 505.

New York Sea Grant Institute —

In the fall of 1983, the Institute provided funding to scientists at the Marine Sciences Research Center to conduct the first large scale field and modelling study of the circulation and exchange of water in the Peconic Bays system. The goal of the project is to identify the major forces influencing water movement in the Peconics and to develop a mathematical model to accurately simulate this movement. Such a model would allow managers to forecast probable changes in water movement due to man-made or natural changes in the system. As the chemical and biological processes responsible for the high quality marine environment of the Peconic system are closely coupled to water movement and exchange, this study will expand ability to evaluate the probable impacts of natural or man-made changes on the quality of the marine environment in the Peconics.

3. County Programs

Suffolk County Dept. of Health Services —

Due to an increase in the responsibilities of the Marine and Bathing Water Monitoring Unit, primarily the monitoring of swimming pool facilities, many of the Unit's functions (as identified in the 1983 edition of this report), including the regular monitoring of marine waters, have been severely limited. The Unit monitored the two dye tests of the Southwest Sewer District outfall pipe in Great South Bay and is expected to monitor future tests. All dye testing to date has been negative, i.e., no dye was found in the Bay.

EXTENT OF IMPLEMENTATION OF 1983 RECOMMENDATIONS

1. The Town of Southampton and Suffolk County have signed a long term lease agreement regarding the operation and maintenance of the County owned commercial fishery dock and pier facility at Shinnecock.

In an effort to encourage the expansion of existing fish processing facilities, the Suffolk County Industrial Development Agency issued bonds to maintain the operation of an existing fish processing facility in the Village of Greenport.

2. The Real Property Tax Service Agency prepared a map of the Gardiners/Peconic Bays region showing township boundaries, school district boundaries, the location of underwater parcels and other data. This map shows much of the information needed to meet the requirements of L 1969, ch. 990. Future work will involve establishing a system for tying plot boundaries into the Suffolk County monument system and the identification of areas where bay scallops are harvested on a regular basis.

3. The Long Island Regional Planning Board has applied for funding from the Federal Emergency Management Agency to develop a storm damage mitigation plan for the north shore and the Gardiners/Peconic Bays shoreline.

4. The Suffolk County Dept. of Planning has been directed to prepare a comprehensive dredging plan. Plan elements will include: a dredging project schedule, an identification of sites for spoil disposal and plans for reclamation of existing County owned dredged spoil disposal sites no longer needed for spoil disposal.

5. Design work on construction of the Moriches Inlet Navigation project by the Corps of Engineers has been completed. The COE is currently preparing contract specifications for bidding and the project can commence construction in February 1985 pending its inclusion in the federal budget. The COE has initiated study of the Shinnecock Inlet Navigation Project and beach erosion situation. The preparation of a general design memorandum pending and cost benefit analysis will not be completed for several years. Hence, problems associated with navigation and erosion at the Inlet will not be remedied in the near term by the Federal government.

6. The cost sharing formula for the beach erosion control project at Westhampton Beach remains unchanged.

7. The NYS Environmental Conservation Law was amended to enable the NYSDEC to issue on-bottom as well as off-bottom culture permits, and allow permit holders to breed and raise marine plants and finfish. Previously, only shellfish was covered in the law.

8. The National Flood Insurance Program remains unchanged and homes in coastal high hazard areas are still eligible for flood insurance coverage. The very limited funds appropriated under section 1362 are obligated through fiscal year 1985.

9. The SCDHS upon receipt of a request to sample and test water from private wells now asks the homeowner or apartment dweller to complete a form on which they are to provide the section, lot and block number of the residence from the Suffolk County Real Property Tax Service Map. Unfortunately, this method is only partially successful because the homeowner or apartment dweller may not know or have access to this information.

10. No action was taken to provide the SCDHS with adequate staff to conduct a regular water quality monitoring program in County waters. Studies of dissolved hydrocarbons in bays and increased monitoring of the Southwest Sewer District outfall pipe in Great South Bay also were not implemented.

11. Suffolk County has executed a contract with the Research Foundation of SUNY, Albany, N.Y. funding the study entitled *A Critical Assessment of Management Strategies to Rehabilitate and Sustain Suffolk County's Hard Clam Fishery*, which will be conducted by personnel at the Marine Sciences Research Center, Stony Brook. This study will critically assess various hard clam resource management options as to their efficacy in maintaining a viable shellfish industry in the Great South Bay and other County waters. Study results will include an array of strategies developed for waterbodies without regard to jurisdictions and socio/political considerations. The Long Island Regional Planning Board will utilize the strategies to prepare a hard clam management plan for Suffolk County, which will factor in socio/political, and economic considerations in the selection of preferred courses of action.

12. Suffolk County has assisted local communities in projects likely to affect marine environment conditions in Gardiners/Peconic Bays. Studies were prepared for the Town of East Hampton involving the Three Mile Harbor watershed and Northwest Harbor. The New York Sea Grant Institute has provided funding for the Marine Sciences Research Center to conduct a large scale field and modeling study of the circulation and exchange of water in the Peconics.

RECOMMENDATIONS

- *The Long Island Regional Planning Board should prepare a storm damage mitigation plan for the north shore and the Gardiners/Peconic Bays shoreline.*
- *Secure a more equitable cost-sharing formula for local interests in connection with the federal beach erosion control project at Westhampton Beach.*
- *The National Flood Insurance Program should be modified by the Congress and the Federal Emergency Management Agency so as to also eliminate the availability of flood insurance on new development located in high hazard coastal erosion areas not designated as undeveloped coastal barriers. The redevelopment of high hazard coastal erosion areas that have been subject to substantial property losses should be discouraged. To prevent the future development of vacant coastal land in high hazard coastal erosion areas through public purchase, Congress should appropriate sufficient funds to enable the Federal Flood Insurance Administrator to implement section 1362 of the Flood Insurance Act of 1968.*
- *The Suffolk County Dept. of Health Services should identify and classify all well data obtained in its groundwater monitoring program according to section, block and lot of the Suffolk County Real Property Tax Service Map. Classification of well data by tax map parcel will enable users of the data to accurately and rapidly locate water quality problems on a parcel specific basis.*
- *The State, Suffolk County and local governments should continue to work toward the goal of establishing effective management programs for the hard clam resources in Great South Bay and other local waters. The goals of such management programs should be to reverse the recent decline in hard clam production in the County, and sustain production at a higher level.*

- *The SCDHS should be provided with adequate staff and equipment in order to achieve the following:*
 - *conduct a regular water quality monitoring program in all areas of the County*
 - *increase monitoring activities in the area of the Southwest Sewer District outfall pipe in Great South Bay*
 - *develop a monitoring program on the distribution and physiology of *G. tamarensis* in local waters and the potential for paralytic shellfish poisoning associated with shellfish harvest.*
- *Suffolk County should cooperate with the State and Federal governments on implementation of authorized navigation projects, including inlet stabilization and sand by-passing, at both Moriches and Shinnecock Inlets.*
- *Amend the NYS Environmental Conservation Law to enable the NYSDEC to lease underwater lands for the culture of finfish and marine plants by both on-bottom and off-bottom techniques.*
- *Suffolk County should secure the shellfish rights granted to it under L 1969, ch. 990. The implementation of the shellfish program for the Gardiners/Peconic Bays must await completion of survey requirements and the planning study on this subject. When such a program is prepared, amendments should be made to L 1969, ch. 990 regarding extension of authority for finfish and marine plant cultivation in this area.*
- *Mariculture activities should be given the same benefits under the law as currently attributed to agriculture activities occurring on land. To foster mariculture development, State laws defining agriculture and agricultural production, for example, Section 301, Article 25-AA, New York State Agriculture and Markets Law, should be amended to include marine crops—finfish, mollusks, crustaceans, and marine plants—produced as a result of mariculture operations.*

ATMOSPHERIC CONDITIONS

INTRODUCTION

Suffolk County's climate is moderate due to its coastal location. During the summer months temperatures are mild, ranging from the 60's to 70's, and onshore breezes originating from tropical air masses dominate. Continental arctic air masses dominate for about one and a half months during the winter bringing with them colder temperatures, generally ranging in the 20° to 30°F range. The spring and the fall on Long Island are times of climatic transition between winter and summer. In the spring the sharp frontal boundary between the arctic and tropical air masses lessens. As tropical air masses begin to dominate in the spring and early summer, they bring with them thunder storms to the Long Island region. During the fall, increased cooling lessens the circulation between the land and the ocean allowing for the reemergence of cold arctic air currents during the winter months.

PRECIPITATION

The annual average precipitation for Suffolk County is approximately 45" per year, which is more than most sites at comparable latitudes elsewhere in the United States. This is probably due in part to Long Island's close proximity to the ocean. Table 21 shows the average monthly long term precipitation rates in Suffolk County for January through December, as given in the National Oceanographic and Atmospheric Administration's (NOAA) New York Climatological Data Reports for a 50 year period. Table 22 shows the average monthly total precipitation in inches for eight sites in Suffolk County during 1980, 81, 82 and 83. As is evidenced from the table, precipitation rates can vary significantly throughout the county depending on the sites location (north, south, east or west) and the time of year. Such variations are indicative of the various microclimatic regions present in Suffolk.

Table 23 shows the annual precipitation totals at the eight sites from 1975 through 1983. Generally the yearly average annual precipitation

TABLE 21

Average Monthly Precipitation in Suffolk County

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Long Term	4.20	3.59	4.61	3.62	3.49	2.89	2.92	4.46	3.66	3.55	4.61	4.10 in.

TABLE 22

**Monthly Total Precipitation (in Inches)
For Eight Sites in Suffolk County, New York
1980-1983**

Site	Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Belmont Lake	1980	1.88	1.22	7.23	6.39	2.59	3.79	2.26	1.35	1.14	2.81	4.37	0.66
	1981	0.77	4.93	1.03	3.48	1.77	3.70	4.50	1.51	8.09	4.16	1.72	4.63
	1982	5.16	2.63	2.36	5.53	2.20	8.35	2.20	1.75	1.36	0.95	3.41	2.24
	1983	2.80	2.12	6.62	10.14	3.89	2.04	2.63	3.90	2.66	5.43	4.69	5.91
Vanderbilt Museum	1980	1.51	1.25	9.28	9.84	2.71	4.32	4.52	1.21	1.11	3.31	4.97	0.95
	1981	0.66	5.82	1.12	3.75	2.70	2.56	4.61	1.08	5.94	4.23	1.78	4.70
	1982	5.72	2.58	2.39	4.88	1.98	7.55	2.24	3.01	1.12	1.20	3.63	1.92
	1983	4.12	3.25	7.53	11.77	4.64	2.24	2.66	2.44	2.14	6.01	6.46	6.40
Patchogue	1980	2.25	1.15	6.87	7.65	2.17	4.46	2.18	1.67	0.97	3.54	4.66	1.11
	1981	1.30	4.84	2.20	4.45	1.93	5.48	2.62	0.60	5.07	4.69	2.83	5.60
	1982	6.48	3.29	3.32	5.75	2.22	11.34	2.32	3.20	1.29	1.72	3.72	2.61
	1983	3.84	4.11	8.24	12.48	5.16	3.13	3.42	4.98	1.74	4.87	8.39	5.82
Medford	1980	1.63	0.86	5.13	4.91	1.28	2.93	1.23	1.23	0.90	2.83	2.31	2.58
	1981	0.50	3.85	1.15	3.80	1.25	3.80	2.05	0.50	3.75	3.70	2.43	3.90
	1982	5.15	2.65	2.28	3.92	1.40	8.25	1.80	2.90	0.65	1.80	3.10	1.90
	1983	3.15	3.15	6.63	9.98	3.85	2.40	2.92	4.00	1.35	3.85	7.25	4.30
Setauket	1980	1.07	0.89	8.94	6.93	2.27	4.76	6.49	0.89	1.73	3.75	4.84	1.05
	1981	1.62	5.17	1.03	3.95	1.92	2.80	2.71	1.27	6.18	4.49	2.17	4.61
	1982	6.33	2.72	3.00	4.80	2.07	10.37	2.63	2.77	1.53	1.32	3.95	2.31
	1983	3.85	3.09	8.09	12.55	4.42	1.94	2.37	3.62	—	—	6.63	5.93
Riverhead	1980	1.63	0.83	6.21	5.11	1.82	3.76	1.67	1.33	1.40	3.69	3.62	0.91
	1981	0.80	5.73	0.90	4.52	3.12	4.44	2.12	0.66	4.71	4.09	2.80	4.33
	1982	5.91	3.01	2.71	5.48	2.95	11.63	1.74	2.83	1.94	2.11	3.82	2.06
	1983	4.86	4.22	7.92	10.51	4.40	2.13	2.14	5.37	1.34	4.59	4.26	6.08
Bridgehampton	1980	1.83	1.06	6.96	5.91	1.82	2.44	2.46	2.19	0.38	4.10	3.18	1.50
	1981	0.85	6.18	1.47	4.54	3.49	5.49	2.48	1.88	3.16	3.53	2.79	3.83
	1982	5.25	2.47	3.02	3.77	3.36	14.58	2.13	1.54	2.12	1.81	4.01	2.63
	1983	4.80	5.60	7.30	9.69	4.40	3.60	2.04	1.92	2.13	6.14	11.24	5.19
Greenport	1980	1.68	0.81	6.63	5.52	1.77	3.10	3.45	1.74	1.86	3.80	3.34	1.61
	1981	0.80	6.42	1.07	4.88	3.34	4.05	2.74	1.52	3.40	4.46	2.84	5.47
	1982	5.02	3.94	2.96	4.50	2.67	15.98	1.54	2.05	2.98	2.12	3.16	1.80
	1983	5.26	4.76	6.93	10.19	4.09	2.88	2.04	5.30	1.07	7.12	10.02	5.26

— = Data Not Recorded

TABLE 23

**Annual Precipitation Totals (In Inches)
For Eight Sites in Suffolk County, New York
1975-1983**

Site	1983	1982	1981	1980	1979	1978	1977	1976	1975
Belmont Lake	52.83	38.14	40.29	35.69	52.37	—	50.85	52.1	52.90
Vanderbilt Museum	59.66	38.22	38.95	42.98	—	—	—	—	—
Patchogue	66.18	47.26	41.61	38.68	—	—	—	—	—
Medford	52.83	35.80	30.68	27.84	50.59	42.64	46.34	49.3	47.60
Setauket	52.49*	43.80	37.92	41.93	53.71	47.16	53.96	52.5	56.50
Riverhead	62.82	46.19	38.17	31.98	51.67	50.36	50.62	51.7	52.91
Bridgehampton	64.05	46.69	39.69	33.83	51.42	47.54	51.82	42.43	56.53
Greenport	64.92	48.72	40.99	35.31	50.22	53.20	48.77	51.5	49.50
Average	59.47	43.10	38.54	36.03	51.66	48.18	50.39	49.92	52.66

NOTE: Suffolk County annual average approximately 44.5 inches.

— = Data Not Recorded.

* = Monthly Data Missing

rates from 1975 to 1979 and 1983 were considerably higher than the Suffolk County long term average of 44.5". 1980 was a drought year for Long Island, as well as the northeastern seaboard region as a whole, and was evidenced by significantly lower precipitation rates. During 1981 and 82 precipitation rates rose, however they were below the long term average.

In 1983 the average total precipitation throughout the county amounted to 59.47 inches which is a significant increase from the previous three years. This increase, to well above the long term average of 44.5" per year, has resulted in a rise of groundwater levels from one to four feet in various areas throughout Suffolk, as noted in the *Ground-water* section of this report.

Snowfall within Suffolk County generally occurs between the months of November through April, with the largest accumulations in January, February and March. The annual average snowfall for the county is 29.7 inches. Table 24 shows the long term average monthly snowfall in inches, while Table 25 shows the actual monthly snowfall during the seasons of 1979-1980, 1980-1981, 1981-1982 and 1982-1983 for six sites in Suffolk County. As can be seen from the table the county as a whole, except for the Patchogue area, had significantly less snowfall in 1982-1983 than the long term average. The amount of snowfall in various regions of the county can vary significantly depending upon location. The majority of the snowfall for the 1982-83 season fell during the month of February when the blizzard of 1983 was experienced in the northeast.

TABLE 24

Average Snowfall in Suffolk

	Jan.	Feb.	Mar.	Apr.	Nov.	Dec.	Annual
Long Term	8.1	7.7	7.5	0.3	0.4	5.7	29.7 in.

TEMPERATURE

Suffolk County is characterized as having mild winters and cool summers. This is a direct result of the moderating influence of large water bodies on the coastal climate. The warmest month of the year is July with an average temperature of 71° F and the coldest month is January with an average temperature of 31° F. Table 26 shows the average monthly temperatures in the area over a 50 year period as stated in NOAA's Climatological Data Reports. Table 27 shows the average monthly temperatures at six sites within Suffolk County in 1980, 81, 82 and 83.

Temperature plays an important role in many aspects of land suitability. In Suffolk County there is a long growing season of 200 to 210 frost free days. This aspect, together with adequate precipitation and good soils allowed for the development of a large agricultural industry throughout Suffolk.

Temperature is also important in terms of heating and cooling requirements for homes and industry. Temperature data can be analyzed in terms of heating degree days. In a qualitative way, heating degree days reflect fuel consumption. Based on the fact that most buildings require no heat to maintain an inside temperature of at least 70° F when daily average outside temperatures are 65° F or higher, no heating degree days are recorded if the daily average temperature is equal to or above 65° F. If the daily outside temperature average is less than 65° F, then the degree day total is figured as the difference between the base temperature (65°) and the actual average temperature for the day. The higher the number of degree days, the more fuel is required to heat a building during the winter season. Table 28 shows the monthly heating degree days at six specific site locations throughout Suffolk County for the heating seasons of 1979-1980, 1980-1981, 1981-1982 and 1982-1983. Compared to the norms for each site, it can be seen that the 1979-1980 winter season was warmer than usual, while the 1980-1981 and 1981-1982 seasons were colder than normal. Data for the 1982-1983 heating season shows that it was again significantly warmer than normal, thus indicating lower fuel usage for heating purposes throughout the county as a whole.

In likewise fashion, cooling degree days indicate the need for air conditioning in order to bring building temperatures down to comfortable levels during the warmer months. The higher the number of cooling degree days, the more electricity that is required to cool buildings during the season. Table 29 shows the monthly cooling degree days at six specific site locations throughout Suffolk County for the years 1980, 1981, 1982 and 1983. The summers of 1980 and 1981 were significantly warmer than usual which coincides with the drought of that period. 1982, however, appears to have been mixed, with three sites cooler than normal and three sites warmer than normal. 1983 again was significantly warmer than usual.

WINDS

The average yearly wind velocity in Suffolk is 7 to 9 MPH. Table 30 shows the annual mean wind speed (MPH) for various directions at the Suffolk County Airport for the years 1943 to 1945 and 1951 to 1967.

TABLE 25

**Monthly Total Snowfall (in Inches)
For Six Sites in Suffolk County, New York
1979-80, 1980-81, 1981-82, and 1982-83**

Site	Season	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
Vanderbilt Museum	1979-80						2.5	2.0	T	2.0				6.5
	1980-81						2.0	7.0	—	5.0				14.0
	1981-82						8.7	—	—	6.0				14.7*
	1982-83						9.0	3.0	19.0		—			26.0*
Patchogue	1979-80						2.0	5.0	2.0	4.0				13.0
	1980-81						1.0	13.5	—	8.5				23.0
	1981-82					3.0	19.5	0.4	0.5	10.5				33.9
	1982-83						7.2	1.5	22.0	T	1.5			32.2
Setauket	1979-80						1.5	1.0	2.5	2.0				7.0
	1980-81						1.3	7.4	—	4.5				13.2
	1981-82					—	15.7	0.5	0.7	6.0				22.9*
	1982-83						3.0	1.0	14.5					18.5
Riverhead	1979-80						—	—	0.8	T				0.8
	1980-81					0.5	1.5	18.3	—	6.0				26.3
	1981-82					1.5	16.3	1.5	0.8	6.2				26.3
	1982-83						6.0	—	20.0					26.0*
Bridgehampton	1979-80						0.5	5.0	3.3	2.5				11.3
	1980-81					T	1.5	10.1	—	8.5				20.1
	1981-82					0.6	12.0	1.5	0.8	6.5				21.4
	1982-83						6.0	—	—	—	—			6.0*
Greenport	1979-80						T	—	1.5	—				1.5
	1980-81						—	9.0	—	—				9.0
	1981-82						23.1	—	—	7.5				30.6*
	1982-83						—	—	—	T				

T = Trace Amount
 — = Data not Recorded
 * = Based on Partial Data

TABLE 26

Average Monthly Temperature F° In Suffolk County

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Long Term	30.9	31.2	37.2	46.8	55.5	65.1	71.1	70.4	64.2	55.1	44.2	34.1

UNUSUAL WEATHER PHENOMENA

According to the 1983 *Storm Data Reports* published by NOAA and the Federal Emergency Management Agency, the following unusual weather phenomena were recorded for coastal New York and Suffolk County.

- February 11 and 12—A snow storm began on the 11th and continued overnight until the morning of the 12th, dumping up to 17.6" of snow upon the area. Blizzard conditions prevailed, accompanied by a thunder storm during the snowfall. Winds gusted to over 40 MPH causing high drifts with temperatures below freezing and a wind-chill factor of 20° below zero. Vehicles were stranded on local highways, ramps and side roads and all airports were closed.
- March 18 and 19—Wind driven torrential rain occurred on the two days making it the wettest March on record.
- March 21—There were heavy rains and strong gusts of wind which triggered floods and caused scattered property damage.
- March 27—1.67" of precipitation fell in 12 hours, with the 24 hour peak wind gust averaging over 40 MPH. The storm, coupled with the already soggy earth conditions, caused widespread flooding and numerous traffic mishaps.
- April was a record month for rainfall at almost every rain gauge in the state. An average total of 10.9" of precipitation fell in Suffolk County during the month. In addition, there was a mid-April snow storm on the 19th which helped to make one of the wettest springs on record.
- August 6—Severe thunder and lightning storms were experienced throughout the Nassau and Suffolk area.
- August 11—A line of severe thunder storms passing through the metropolitan area left Long Island families without power for a time, flooded scores of roadways and disrupted LIRR service. Airports also reported delays up to three hours on arrivals and departures.
- September 30—The northern edge of tropical storm Dean moved erratically toward the eastern seaboard with torrential rain and flooding. Heavy downpours of rain flooded area highways with over two inches of precipitation in some areas in less than 24 hours. Motorists and commuters were faced with flooded roadways and delayed trains.

TABLE 27

**Average Monthly Temperatures °F
At Six Sites In Suffolk County, New York
1980-1983**

Site	Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Vanderbilt Museum	1980	32.4	29.8	39.2	51.2	62.4	67.6	76.0	76.2	69.2	54.8	43.3	32.7
	1981	25.0	37.4	39.7	52.8	62.0	70.9	76.3	73.6	65.3	54.1	46.1	34.7
	1982	25.1	33.5	32.3	49.2	62.3	66.1	75.2	71.6	66.7	56.9	48.3	41.4
	1983	34.3	33.5	41.6	50.0	58.0	71.0	76.6	75.1	70.2	56.6	47.2	34.8
Patchogue	1980	31.2	28.8	37.6	48.9	60.7	66.1	74.2	75.1	67.7	52.8	42.8	31.5
	1981	22.8	35.7	38.6	50.1	58.9	68.9	75.4	71.2	64.1	51.7	45.1	33.7
	1982	24.3	33.7	28.4	46.5	59.9	64.6	73.3	71.0	64.9	54.9	48.0	40.4
	1983	33.3	34.0	41.5	49.0	56.1	69.1	75.0	73.8	68.4	55.3	46.5	34.2
Setauket	1980	32.3	29.7	38.6	50.5	62.2	66.2	74.5	74.8	68.5	54.7	44.2	31.6
	1981	24.4	36.4	39.6	52.3	60.3	69.6	75.2	73.0	64.7	52.7	45.8	34.2
	1982	24.3	33.1	29.1	47.9	60.4	64.6	73.5	70.9	65.1	56.3	48.7	41.6
	1983	33.8	33.8	41.0	49.7	56.9	68.7	74.7	73.6	—	—	46.5	35.2
Riverhead	1980	32.8	29.3	38.6	50.5	62.0	66.5	74.8	75.4	68.0	54.4	42.9	31.4
	1981	23.7	36.5	38.5	50.6	60.1	70.3	75.9	71.7	64.6	52.9	45.7	34.1
	1982	24.8	32.9	30.3	47.0	61.0	64.7	73.5	69.9	64.6	55.5	49.2	41.9
	1983	39.2	34.7	42.0	49.7	58.0	70.2	75.1	73.8	69.6	56.2	46.8	34.6
Bridgehampton	1980	31.7	28.4	37.5	47.8	58.9	64.0	72.8	73.1	65.5	52.2	42.1	30.7
	1981	22.8	35.6	36.9	48.4	57.5	66.7	72.9	69.5	63.0	51.3	43.9	33.7
	1982	23.8	32.4	37.3	44.0	57.6	61.8	71.2	67.3	62.3	53.0	47.0	39.3
	1983	32.9	34.2	40.2	—	54.2	66.2	72.3	71.0	67.3	53.9	45.5	33.3
Greenport	1980	32.5	27.4	38.6	48.8	60.0	64.7	74.0	75.3	67.9	54.4	44.4	30.8
	1981	24.7	35.3	36.9	49.9	59.0	67.8	74.2	71.4	64.5	54.3	46.0	35.6
	1982	23.6	32.2	37.3	44.5	58.2	62.7	73.1	70.6	61.2	55.1	49.9	40.8
	1983	33.0	32.8	41.5	47.9	56.3	68.0	73.6	72.6	70.0	56.1	48.1	35.2

— = Data Not Recorded

TABLE 28

**Monthly Total Heating Degree Days
For Six Sites In Suffolk County, New York
1979-80, 1980-81, 1981-82, and 1982-83**

Site	Season	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total	Norms July-June
Vanderbilt Museum	1979-80	8	3	47	332	450	822	1002	1019	795	405	115	40	5038	5174
	1980-81	0	0	33	317	644	994	1234	766	777	357	137	8	5267	
	1981-82	0	0	58	332	558	930	1230	875	777	466	108	55	5389	
	1982-83	0	10	32	263	496	728	943	875	717	452	214	8	4738	
Patchogue	1979-80	12	7	63	338	479	814	1041	1041	838	477	152	65	5336	5664
	1980-81	0	0	59	373	658	1032	1393	814	811	439	207	15	5711	
	1981-82	0	6	77	406	590	964	1254	870	813	545	164	73	5762	
	1982-83	5	12	60	314	489	756	973	863	723	473	269	20	4957	
Setauket	1979-80	4	5	61	302	438	779	1008	1019	813	430	114	62	5035	5208
	1980-81	0	0	33	316	619	1029	1255	793	780	376	181	12	5394	
	1981-82	0	0	69	374	572	948	1252	888	821	506	152	70	5652	
	1982-83	3	7	54	274	485	717	961	866	737	455	244	22	4825	
Riverhead	1979-80	4	8	52	312	442	772	990	1031	814	429	119	48	5021	5324
	1980-81	0	0	42	325	659	1036	1273	1053	814	425	188	9	5561	
	1981-82	0	4	64	368	572	954	1238	892	801	534	139	66	5632	
	1982-83	0	10	61	294	471	710	949	843	707	454	211	9	4719	
Bridgehampton	1979-80	7	12	79	333	484	801	1024	1953	849	511	195	93	5441	5627
	1980-81	0	1	71	391	683	1058	1306	817	863	493	240	27	5947	
	1981-82	0	10	94	417	612	961	1271	906	850	620	229	112	6097	
	1982-83	6	29	100	366	532	789	987	856	762		325	39	4791*	
Greenport	1979-80	7	7	55	291	489	799	1000	1085	811	483	164	78	5189	5628
	1980-81	0	0	54	325	597	1055	1243	823	863	445	202	17	5624	
	1981-82	0	5	69	327	561	924	1275	914	853	610	207	97	5842	
	1982-83	4	11	41	301	445	742	984	896	720	507	264	29	4944	

* = Based on partial data.

TABLE 29

**Monthly Total Cooling Degree Days
For Six Sites In Suffolk County, New York
1978, 1981, 1982, and 1983**

Site	Season	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total	Norms
															Jan.-Dec.
Vanderbilt Museum	1980	0	0	0	0	41	126	347	349	166	6	0	0	1035	734
	1981	0	0	0	0	52	192	355	274	75	0	0	0	948	
	1982	0	0	0	0	31	93	321	223	92	19	3	0	782	
	1983	0	0	0	6	4	193	369	323	209	21	0	0	1125	
Patchogue	1980	0	0	0	0	26	108	292	312	146	2	0	0	895	597
	1981	0	0	0	0	26	142	329	203	56	0	0	0	756	
	1982	0	0	0	0	15	72	268	207	64	10	2	0	638	
	1983	0	0	0	0	0	149	315	285	180	22	0	0	951	
Setauket	1980	0	0	0	0	34	106	299	311	145	4	0	0	899	734
	1981	0	0	0	0	40	155	322	255	68	0	0	0	840	
	1982	0	0	0	0	18	67	274	198	65	14	3	0	639	
	1983	0	0	0	2	0	138	310	281	—	—	0	0	731*	
Riverhead	1980	0	0	0	0	36	101	312	332	140	3	0	0	924	717
	1981	0	0	0	0	45	175	347	219	61	0	0	0	847	
	1982	0	0	0	0	24	64	270	167	54	6	0	0	585	
	1983	0	0	0	1	2	172	321	285	196	19	0	0	996	
Bridgehampton	1980	0	0	0	0	12	67	249	258	92	0	0	0	678	478
	1981	0	0	0	0	14	86	251	156	42	0	0	0	549	
	1982	0	0	0	0	6	24	207	109	28	0	0	0	374	
	1983	0	0	0	—	0	82	239	201	158	12	0	0	692*	
Greenport	1980	0	0	0	0	15	76	286	328	147	2	0	0	854	478
	1981	0	0	0	0	26	110	290	212	59	0	0	0	697	
	1982	0	0	0	0	2	35	261	193	64	0	1	0	556	
	1983	0	0	0	1	1	127	274	254	207	16	0	0	880	

— = Data Not Recorded

* = Based on Partial Data

TABLE 30

**Annual Mean Wind Speed
(MPH For Various Directions)**

N	7.3
NNE	7.7
NE	8.4
ENE	8.6
E	8.3
ESE	8.1
SE	7.0
SSE	6.8
S	6.9
SSW	7.7
SW	8.2
WSW	7.7
W	6.7
WNW	8.2
NW	8.7
NNW	8.2

Source: Frizzola, 1975

AIR QUALITY

Basically, Suffolk's air quality remains satisfactory with no major pollution problems except for ozone affecting large areas throughout the county. Table 31 is a summary of federal and state ambient air standards for sulfur dioxide, carbon monoxide, ozone, hydrocarbons, suspended particulates and lead. In addition, New York State also has standards for Beryllium, Fluorides, Hydrogen Sulfide and Settleable Particulates (dust-fall). All of the pollutants, other than ozone, are considered to be within standards throughout the county.

The New York State Department of Environmental Conservation (NYSDEC) publishes an annual *New York State Air Quality Report*, the latest one being for 1982. Suffolk County lies within the *Metropolitan Air Quality Control Region (AQCR)*. Mobile and stationary air pollution sources in Suffolk County now come under the same strict emission limits as New York City and Western Nassau County. As such, automobile failure levels have been made tighter, additional emission controls will be placed on gasoline service stations and gasoline transport vehicles, and consumer products will be limited as to volatile organic compound (VOC) content. The industrial sector will also feel the effect of restrictive regulations that limit solvent emissions from paint spraying operations and coating lines as well as printing and packaging firms. The cost of operation for some of the facilities affected may rise dramatically. In Suffolk County, there is only one continuous monitoring site—in Babylon. The closest continuing monitoring site outside of Suffolk is at Eisenhower Park in Nassau. Analyses of the various primary air contaminants as stated in the 1982 DEC report (last report issued) is as follows:

TABLE 31

Summary Of Ambient Air Standards - Federal And State
June, 1979

Contaminant ¹	Averaging Period	New York Standards				Corresponding Federal Standards					
		Level	Conc.	Units	Statistic ²	Conc.	Primary Units ⁵	Stat.	Conc.	Secondary Units	Stat.
Sulfur Dioxide SO ₂	12 consecutive Months	ALL	0.03	PPM	A.M. (Arith. Mean of 24 hr. avg. concen.) MAX. ² MAX.	80	μg/m ³	A.M.			
	24-HR	ALL	0.14 ³	PPM		365	μg/m ³	MAX ²			
	3-HR	ALL	0.50 ⁴	PPM					1300	μg/m ³	MAX.
Carbon Monoxide-CO	8-HR	ALL	9	PPM	MAX.	10	mg/m ³	MAX.	10	mg/m ³	MAX
	1-HR	ALL	35	PPM	MAX.	40	mg/m ³	MAX.	40	mg/m ³	MAX.
Ozone (Photochemical Oxidants)	1-HR	ALL ⁸	0.12	PPM	MAX.	235	μg/m ³	MAX.	235	μg/m ³	MAX.
Hydrocarbons (Non-Methane)	3-HR (6-9 A.M.)	ALL	0.24	PPM	MAX	160	μg/m ³	MAX.	160	μg/m ³	MAX.
Nitrogen Dioxide	12 Consecutive Months	ALL	0.05	PPM	A.M.	100	μg/m ³	A.M.	100	μg/m ³	A.M.
Particulates (Suspended) TSP	12 Consecutive Months	IV	75	μg/m ³	G.M. (Geometric mean of 24 hr. average concentrations) Maximum	75	μg/m ³	G.M.	60 ⁶	μg/m ³	G.M.
		III	65	μg/m ³							
		II	55	μg/m ³							
	24 HR 30 Days ⁷	I	45	μg/m ³							
		ALL	250	μg/m ³							
		IV	135	μg/m ³							
		III	115	μg/m ³							
		II	100	μg/m ³							
		I	80	μg/m ³							
	60 Days ⁷	IV	115	μg/m ³							
		III	95	μg/m ³							
		II	85	μg/m ³							
		I	70	μg/m ³							
90 Days ⁷	IV	105	μg/m ³								
	III	90	μg/m ³								
	II	80	μg/m ³								
	I	65	μg/m ³								
Lead	3 Consecutive Months	9			1.5	μg/m ³	MAX.				

¹ N.Y.S. also has standards for Beryllium, Flourides, Hydrogen Sulfide and Settleable Particulates (Dustfall).

² All maximum values are values not to be exceeded more than once a year (Ozone std. not to be exceeded during more than one day per year).

³ Also during any 12 consecutive months, 99% of the values shall not exceed 0.10 ppm (not necessary to address this standard when *predicting* future concentrations).

⁴ Also during any 12 consecutive months 99% of the values shall not exceed 0.25 ppm (see above).

⁵ Gaseous concentrations are corrected to a reference temperature of 25 °C and to a reference pressure of 760 millimeters of Mercury.

⁶ As a guide to be used in assessing implementation plans to achieve 24-hour standard.

⁷ For enforcement only, monitoring to be done only when required by N.Y.S., (not necessary to address this standard when *predicting* future concentrations).

⁸ Existing N.Y.S. standard for Photochemical Oxidants (Ozone) of 0.08 ppm not yet officially revised via regulatory process to coincide with new Federal standard of 0.12 ppm which is currently being applied to determine compliance status.

⁹ New Federal standard for lead not yet officially adopted by N.Y.S. but is currently being applied to determine compliance status.

1. Sulfur Dioxide

Sulfur Dioxide levels in the Nassau-Suffolk region continue to be well below the primary standard of which the 12-month average is not to exceed 0.03 ppm (by volume).

The annual mean during 1982 ranged from 0.003 to 0.011 ppm throughout the region. The SO₂ concentrations at the Babylon monitoring site were relatively constant during the last four years. Table 32 shows the annual averages for sulfur dioxide concentrations measured at the Babylon site for 1975 through 1982.

In addition, Table 33 contains information obtained from five sites of the Long Island Lighting Company's continuous air monitoring system within Suffolk which shows SO₂ ambient levels well below air quality standards for the past eight years.

The Port Jefferson monitor and the Babylon monitor have been higher than the other sites on a long term basis, but the annual sulfur dioxide levels at these locations still remain relatively low.

TABLE 32

**Sulfur Dioxide — Annual Averages in PPM
1975 through 1982**

STATION	1975	1976	1977	1978	1979	1980	1981	1982
Babylon	.011	.014	—	.020	.010	.008	.009	.011

TABLE 33

**Sulfur Dioxide Annual Averages in PPM
From The Long Island Lighting
Continuous Air Monitoring System**

STATION	Site No.	1975	1976	1977	1978	1979	1980	1981	1982
Huntington	5136-01	.009	.009	.010	.008	.007	.006	.008	.009
Port Jefferson	5149-01	.011	.011	.012	.010	.009	.010	.010	.011
Terryville	5151-07	.009	.008	.009	.008	.006	.006	.009	.007
Setauket	5151-08	.009	.010	.010	.009	.007	.008	.007	.006
Mt. Sinai*	5151-09	—	—	—	—	—	—	—	.003

*New Station

2. Carbon Monoxide

The long term trend in eight-hour carbon monoxide concentrations, as well as the number of contraventions of the eight-hour air quality standard, have generally declined at all sites in the Metropolitan AQCR during the past few years, reflecting, at least in part, the increasing proportion of motor vehicles with exhaust emission controls. Eisenhower Park, located near an area of fairly high traffic density, has always experienced CO levels higher than other non-urban sites and recorded a total of 94 running eight-hour values exceeding 9 ppm in 1975. In succeeding years, however, this total has generally declined and reached an all-time low of only 7 during 1980. Although this value increased to 14 in 1981, due mainly to exceedances occurring in November and December during periods of poor dispersion conditions, it is still the second lowest total measured at this site. The number of days during which eight-hour exceedances were measured has likewise decreased from 20 in 1975 to only a single day in 1980 and 3 days in 1981. The overall 7-year trend in eight-hour concentrations at Eisenhower Park shows a maximum eight-hour value of 16.0 ppm in 1975 which has steadily declined to levels of 10.5 and 12.6 ppm the past two years.

No carbon monoxide monitoring site in the Nassau-Suffolk region contravened the one-hour standard of 35 ppm during 1982.

3. Ozone

During 1982 the only ozone monitoring site in the Nassau-Suffolk region to contravene the New York State/Federal air quality standard and have recorded one-hour ozone values in excess of 0.12 (0.125 ppm or greater) was the Babylon station. The Babylon and Eisenhower Park stations, which had been in operation continuously since 1975, had exceeded the standard at least one day per year since start-up with the largest number of exceedances, as well as peak hourly averages consistently near or over 0.200 ppm, being recorded at Babylon prior to 1982. The ozone levels as shown in Table 34 have decreased significantly. This change from recent years seems to represent a downward trend.

4. Oxides Of Nitrogen

Since 1980, the Eisenhower Park site (the closest station where oxides of nitrogen are measured) has been monitoring via EPA equivalent instrumentation. For the past seven years, the nitric oxide (NO) levels and nitrogen dioxide (NO₂) have been holding relatively constant at levels of between 0.049 and 0.041 ppm and 0.027 and 0.031 ppm respectively. Whether or not this represents a **leveling off** of these contaminants at a concentration just below standard (NO_x only) or reflects the effect of a methodology change over remains unclear at this time.

TABLE 34

**Ozone — Continuous Chemiluminescence
Annual Averages 1977 Through 1982
And
Comparison Between New York State Ambient Air Quality And
Ambient Air Quality Standards For Calendar Year 1981**

Station (Encon Region)	Site No.	Annual Arithmetic Mean (ppm)						One-Hour Average — 1982				Number of Days With One-Hour Avg. Greater Than 0.12 ppm Not to Exceed An Expected Avg. of One per Calendar Year During the Last Three Years*									
		1977	1978	1979	1980	1981	1982	Total	No. of Observations	% 0.12	Highest Values (Daily)				1980		1981		1982		Exp.
										1st	2nd	3rd	4th	M	E	M	E	M	E	Avg.	
Babylon (1)N	5150-02	.022	.023	.022	.023	.019	.019	7110	81	3	.148	.126	.115	.099	11	11.9	7	7.1	2	2.4	7.1+
Eisenhower Park (1)	2950-10	.011	.015	.013	.015	.013	.006	6998	80	0	.073	.072	.054	.054	2	2.0	0	0.0	0	0.0	0.7

5. Total Suspended Particulates

Total suspended particulate levels in Suffolk have decreased markedly during the ten year period 1971 to 1982. From initiation of sampling in the mid-1960's through 1971, most sites were in contravention of New York State and Federal standards with annual geometric means above 75 micrograms per cubic meter. Since 1971, nearly all sites have been brought into compliance with both short term (24-hour) and long (annual) standards. Table 35 shows the annual average suspended particulate levels for eight sites throughout Suffolk County.

6. Lead

The annual geometric mean at the lead sampling site in the region, the Eisenhower Park continuous monitor, shows a general downtrend between 1976 and 1982. The annual mean at Eisenhower Park has declined from 0.07 $\mu\text{g}/\text{m}^3$ in 1975 to 0.50 $\mu\text{g}/\text{m}^3$ in 1982. The New York State/Federal Air Quality standard for lead (maximum quarterly average

home inspections to determine if residents were being exposed to health hazards. Working as a team, the New York State Department of Environmental Conservation (NYSDEC) and the County Executive's Office set up a hot line to screen telephone calls as to possible misapplications of the pesticide. The potential misapplication site was then visited by NYSDEC personnel who interviewed the homeowner and obtained wipe samples of the home for pesticide analysis. If the wipe samples indicated more than trace levels of pesticide, the Suffolk County Dept. of Health Services (SCDHS) took air samples. Analysis of the samples was performed by the New York State Department of Health (NYS DH). Information concerning health effects of pesticide exposure was provided by SCDHS. Though in 1983, 271 homes were sampled, hundreds more were assisted by the Divisions of Public and Environmental Health. Suffolk's sampling program amounted to more than 60% of all pesticide sampling done statewide.

TABLE 35

**Total Suspended Particulates — High Volume Air Samplers
Annual Geometric Means 1971 Through 1982
And
Comparison Between New York State Ambient Air Quality And
Ambient Air Quality Standards For Calendar Year 1981**

Station (Encon. Region) Site No.	AAQS G.M. $\mu\text{g}/\text{m}^3$ *	Annual Geometric Mean (G.M.) Not to exceed AAQS (G.M.) $\mu\text{g}/\text{m}^3$													24-Hour Average — 1982 Maximum-Not to exceed 250 $\mu\text{g}/\text{m}^3$ more than once per calendar year*					
		71	72	73	74	75	76	77	78	79	80	81	82	No. of Observations			Highest Values			
		150**	250*	260**	1st	2nd	3rd													
Pt. Jefferson 5149-03	55	—	—	—	41	36	40	37	37	30	37	35	29	61	0	0	0	73	66	52
Pt. Jefferson 5149-04	55	—	—	—	49	44	51	47	42	37	—	35	38	59	0	0	0	77	68	65
Babylon 5150-01	65	63	52	55	59	54	53	56	42	46	59	54	40	62	0	0	0	86	79	76
Brookhaven 5151-01	55	74 + 57 +	53	48	39	40	39	—	30	40	37	30	61	0	0	0	78	54	53	
Brookhaven 5151-03	55	72 +	47	41	40	38	42	39	32	30	40	39	31	61	0	0	0	59	57	55
Islip 5154-02	55	54	47	52	46	40	41	47	40	38	50	44	34	59	0	0	0	84	77	73
Smithtown 5157-04	55	43	47	48	48	44	48	52	36	36	—	37	35	59	0	0	0	90	67	67
Southampton 5158-01	45	35	34	43	35	27	30	31	29	24	34	34	26	61	0	0	0	60	53	49

* New York State Ambient Air Quality Standard (AAQS)

** Federal Ambient Air Quality Standards—Primary (260 $\mu\text{g}/\text{m}^3$) and Secondary (150 $\mu\text{g}/\text{m}^3$)

+ Denotes a Contravention of N.Y. State Ambient Air Quality Standard

+ + Denotes a Contravention of Federal Ambient Air Quality Standards

of 1.5 micrograms per cubic meter) was contravened during 1973 at Eisenhower Park when quarterly averages of 1.51 and 1.83 $\mu\text{g}/\text{m}^3$ were attained. Since then, however, maximum quarterly averages at this site have remained well below 1.5 $\mu\text{g}/\text{m}^3$. As was noted in the discussion on carbon monoxide, this site is located near a major road and is also close to Roosevelt Raceway. Thus, it is often subject to vehicular emissions, including lead. Because the Eisenhower Park site is influenced by automotive emissions, the increasing use of low lead gasoline during the past few years has undoubtedly contributed to the drop in atmospheric lead concentrations at that site.

PROBLEM AREAS

As mentioned in previous Annual Environmental Reports, oxidant exposures within Suffolk, as measured at Babylon, continued to exceed federal and state standards and it is still contended that the sources of these levels appear to originate from areas to the west, such as New York City and Northeastern New Jersey. An overview of the health effects resulting from high oxidant levels can be found in the 1982 Annual Environmental Report.

In the Spring of 1983, a Suffolk home was demolished as an over concern with the possible health effects of contamination of a misapplication of *aldrin*, a pesticide used to control subterranean termites. As a result, state and county agencies were inundated with requests for

TRENDS

The concentrations of primary air contaminants appear to be declining over the last ten years. These declines, according to the New York State Department of Environmental Conservation (NYSDEC), seem to be attributed in part to implementation of pollution control devices on vehicles, as well as the use of unleaded fuels and implementation of controls on stationary sources.

With the onset of the oil surplus and the apparent stabilization of home heating oil prices, at least for the time, it appears that the number of homes converting from oil heating to the use of wood and coal stoves is decreasing, thus holding down air pollution resulting from the use of such equipment. Wood stoves however, do generate a good number of nuisance complaints.

As discussed in past Annual Environmental Reports, the major indoor air pollutants, formaldehyde, nitric oxide, carbon monoxide, soot, benzopyrene, asbestos, and radioactive radon may be ever-increasing problems due to the new breed of energy efficient homes. Pesticides will now have to be added to this list.

GOVERNMENTAL PROGRAMS AND ACTIVITIES

Table 36 is a summary of the major federal, state and county laws dealing with air quality.

TABLE 36

Federal, State And County Laws
Dealing With Air Quality

Name (Citation)	Administering Agency	Primary Purpose	Major Provisions
FEDERAL			
Clean Air Act of 1963 and Amendments (42U.S.C. 7401 et. seq.)	Environmental Protection Agency	To achieve and maintain national air quality to protect public health and welfare. The Congressional philosophy being that "the prevention and control of air pollution at its source is the primary responsibility of the State and local governments."	<ol style="list-style-type: none"> 1. Authorizes federal emission standards for new vehicles and required auto standards to be effective in 1975 and 1976. 2. Establish National Ambient Air Quality Standards. "Primary" standards to protect public health and "secondary" standards to protect public welfare (see Table 24.) 3. Each state is required under Section 110 to submit for EPA approval an implementation plan (SIP) outlining the state's strategy for attaining and maintaining the nation ambient air quality standards within deadlines. 4. Section 111 requires EPA to establish performance standards for new and modified sources and keep new pollution to a minimum. 5. Section 112 allows EPA to establish standards on any hazardous emissions causing serious illness or mortality. 6. Requires states to designate areas failing to attain the national ambient standards (nonattainment areas) and areas which meet the standards as well as new requirements governing such designated areas.
STATE.			
Energy Supply and Environmental Coordination Act of 1974 (PL 93-319)	Federal Energy Administration	To provide for a means to assist in meeting the essential needs of the United States for fuels.	1. Amends the Clean Air Act by authorizing EPA to issue orders permitting sources converting to coal to delay compliance with applicable SIP emission limits until 1985.
National Climate Program Act (PL 95-367)	National Climate Program Office	To establish a national climate program that will assist the Nation and the world to understand and respond to natural and man-induced climate processes and their implications.	<ol style="list-style-type: none"> 1. To provide for a national climate program. 2. To develop a "Climate Plan." 3. To provide climate information and data. 4. To develop an understanding of climatological processes. 5. To respond to impacts and policy implications as they relate to climate. 6. To coordinate all federal climate related programs within various agencies. 7. To provide for implementation of the National Climate Plan.
Environmental Conservation Law Article 19-Air Pollution Control (L.1972,c.664,§2)	Department of Environmental Conservation	It is the purpose of this article to safeguard the air resources of the state from pollution by: (1) controlling or abating air pollution which shall exist when this article shall be enacted and (2) preventing new air pollution, under a program which shall be consistent with the declaration of policy above stated and in accordance with the provisions of this article.	<ol style="list-style-type: none"> 1. Formulate, adopt and promulgate, amend and repeal codes and rules and regulations for preventing, controlling or prohibiting air pollution in the state. 2. Promulgate standards for composition of fuels in attainment and nonattainment areas. 3. Promulgate standards for crankcase ventilating systems and air contaminant emission control systems, in accordance with the Vehicle and Traffic Law. 4. Hold public hearings, conduct investigations, compel the attendance of witnesses, receive such pertinent and relevant proof and do such other things as it may deem to be necessary, proper or desirable in order that it may effectively discharge its code, rule and regulation making duties and responsibilities under this article. 5. It shall be the duty and responsibility of the DEC to prepare and develop a general comprehensive plan for the control or abatement of existing air pollution and for the control or prevention of any new air pollution recognizing varying requirements for different areas of the state. 6. Promulgate standards for the use of fuel or fuel additives for use in motor vehicles or motor vehicle engines, taking due recognition of federal standards and requirements.

TABLE 36 (Cont'd.)

Name (Citation)	Administering Agency	Primary Purpose	Major Provisions
STATE			
Air Pollution Control Rules 6 NYSRR Chapter III Subchapter 6	Department of Environmental Conservation or local Dept. of Health	Implementation of N.Y. Air Pollution Control Law Part 215—Open burning prohibition. Part 217—Defines and sets limits for motor vehicle emissions (gasoline engines). Part 218—Defines and sets limits for Diesel engine visible emissions. Part 220—Standard and procedures for reducing emissions from Portland Cement Plants. Part 221—Prohibits the spraying of asbestos or asbestos containing materials. Part 222—Sets standards for incenerator usage in the New York metropolitan area. Part 225—Standards for fuel composition and use in the New York metropolitan area.	Part 201—Requires issuance of permits for construction or alteration of a source of air contamination. Part 202—Stack sampling may be required when it is believed a source of air pollution may be violating law. Part 204—Limits hydrocarbon emissions from storage and loading facilities in New York metropolitan area. Part 205—Limits the emission of organic solvents into the atmosphere of the New York metropolitan area. Part 207—Requires the establishing of Episode Action Plans. Part 211—Restricts the opacity or density of a visible emission—also puts restrictions on odors (Pending final approval.) Part 212—Outlines requirement for industrial exhaust and ventilation systems.
COUNTY			
Suffolk County Sanitary Code, Article X-Air Pollution Control	Department of Health Services	To safeguard the air resources of the County of Suffolk from pollution by controlling and abating existing air pollution and preventing new pollution.	Allows the control of air pollution from fuel burning equipment, incinerators, open burning, vehicle idling, nuisance odors and sand blasting through a permit process.

1. Federal Government Programs

At the federal level, the Clean Air Act and its 1977 amendments are still under review by Congress. Recent efforts by the Reagan administration to lessen federal governmental regulations on business are currently expected to result in a weakening of the law. In addition, federal budget cutbacks in the environmental area are directly impacting air quality programs at the state and local levels. Acid rain continues to be the center of controversy.

2. New York State Programs

According to Section 110 of the Clean Air Act, each state, after public hearings, is to submit an implementation plan to EPA for approval within nine months of the promulgation of ambient air quality standards. The plan, among other things, must describe existing air quality in each area of the state (for those pollutants covered by an AAQS), identify the sources of that pollutant and their emission levels, and set forth whatever measures, principally emission limitations, which when met by these sources, would achieve the national AAQS. Under the timetable in the 1970 Act, state implementation plans (SIP's) were due on January 30, 1972. The law then permitted that Administrator of EPA four months to approve or disapprove all SIP's. If a state failed to submit a plan, or submitted a plan which the Administrator deemed to be inadequate, the Administrator was to promulgate a federal plan as a substitute for or supplement to whatever portion of the state's plan was disapproved. Once implementation plans were in effect either by EPA approval of state submissions or by EPA promulgation they were enforceable by the federal government if the states failed to enforce them.

The EPA disapproved the New York State plan opening up the state to loss of federal highway funds, sewage treatment plant monies, its air pollution control grant, as well as subjecting the region to severe growth restrictions. In response, the state amended and resubmitted its plan. It is felt the additional restrictions on pollutant emissions will gain EPA acceptance.

In 1981 the automobile inspection maintenance program was started by the state. In its initial phase, owners were only informed as to whether their vehicles met the state standards or not. In 1982 and 1983, vehicles failing to meet standards had to have repairs made before receiving their yearly inspection stickers. In 1984, the stringency as to what constitutes allowable automobile emissions has been increased significantly. More vehicles are expected to fail, prompting car owners to keep their vehicles in proper running order. Because of Suffolk's acceptable air

quality, it is felt that this program should not have been implemented within the county. It would have been better to initiate the program in New York City first to gauge its impact as to air quality improvement.

3. Suffolk County Programs

The air quality program conducted by the Suffolk County Department of Health Services' Air Pollution/Solid Waste Control Section, an agent for the NYSDEC, resulted in the following:

1983

- Reviews of Permits to Construct or Certificates to Operate Sources of Air Contamination 904
- Complaints received 258
- Air samples collected 533
- Number of cases in which formal legal action was initiated 165

In addition, the Department of Health Services' Water Resources Bureau operates precipitation, temperature and wind speed monitoring equipment at Belmont Lake, Medford and Riverhead, and raw data is collected weekly. Precipitation quality is also taken at the Medford site. The precipitation data is the only information analyzed on a regular basis.

EXTENT OF IMPLEMENTATION OF 1983 RECOMMENDATIONS

During 1983, the Suffolk County Legislature and Executive passed a resolution authorizing the purchase of a mobil air quality sampling unit capable of rendering on site measurements of air contaminants. An existing technician within the Department of Health Services is expected to be assigned to the staff of the Air Pollution/Solid Waste section when the mobil unit is available.

RECOMMENDATIONS

The Air Pollution/Solid Waste section of the Health Dept. should continue to upgrade its air quality monitoring and permit program.

OPEN SPACE

INTRODUCTION

Open space lands provide valuable scenic, recreational and environmental assets to the County and serve to protect the high quality groundwater recharge areas that supply the County's underlying aquifer system. Protection of the aquifers will assure high quality drinking water for future generations. Open space lands also serve to protect surface water quality, prime wildlife habitats and unique, rare and endangered species habitats.

Open space in Suffolk County is acquired through donation, tax delinquency, exercise of eminent domain, purchase of development rights, outright purchase, zoning and subdivision regulations, and dedication of conservation easements. It includes vacant or undeveloped land, public, private and quasi-publicly owned open space (parkland, preserves, golf courses, school and municipal recreation sites), farmland and conservation easement areas. Low density development also provides some of the benefits of open space.

Suffolk County as well as all of the eastern towns are using all available means to ensure future water quality and the attractive rural character of certain areas. The four westernmost towns are also concerned with water quality but since most of their land is already developed their options are limited.

STATE OF OPEN SPACE ACQUISITIONS

1. 1983 Open Space Acreage

In 1983, Suffolk County had 5,536 acres of federal parkland, 27,667 acres of New York State parks and preserves, 1,658 acres of wetlands owned by New York State Department of Conservation and 19,424 acres of County-owned open space. The town open space and park acreage totaled 11,140 acres. In addition to the publicly-owned open space, private groups, including the Nature Conservancy, owned 4,443 acres. The total amount of open space in Suffolk is 69,868 acres or about 12% of the County's land area.

2. Recently Acquired Open Space

New York State Acquisitions —

In 1984 the New York State Parks Commission added 1.2 acres of land to the Smithtown Greenbelt. New York State Department of Environmental Conservation acquired 50 Acres of wetlands during 1983 as shown in Table 37.

Suffolk County Acquisitions —

In the past year Suffolk County has been active in acquiring environmentally sensitive land, including wetlands. The County has recently transferred 1,304 acres of tax default properties, in the Pine Barrens, to the County Nature Preserve. An additional 100 acres in the Southamp-

TABLE 37

Wetlands Acquired by N.Y.S.D.E.C. During 1983

Acreage	Location
22	Oregon Marsh Mattituck Creek Town of Southold
22	Napeague Harbor Town of East Hampton
8	Baiting Hollow Town of Riverhead
Total 50	

Source: Personal Communication with D. Zacchea, NYSDEC, 3/28/84

ton portion of the dwarf pine barrens was donated by Extebank. Other County acquisitions are included in Table 38.

Town Acquisitions —

All Suffolk County towns have been using Section 281 of the New York State General Municipal Law to cluster developments and preserve open space. Because of the various ways this preserved land is deeded, i.e. developer, homeowner associations, town, easements, it is difficult to keep an accurate record of lands preserved in this manner. Other town acquisitions are listed in Table 39.

Private Acquisitions —

Nature Conservancy is continually in the process of acquiring additional prime sites in Suffolk County. Table 40 lists those sites acquired by Nature Conservancy during 1983.

GOVERNMENTAL ACTIVITIES

1. New York State

Montauk Air Force Station —

The former Montauk Air Force Station, 278 acres located just west of Montauk lighthouse, was proposed for sale by the General Services Administration as surplus property in 1983. The New York State Department of State led the fight to preserve the site with support from town and county officials as well as the general public. The state filed a lawsuit in federal court in January 1984 to block the land sale. In February 1984, the auction took place as scheduled but Judge Wexler ordered that transfer of title could not take place until he decided on the lawsuit. The highest bid was \$1.9 million. GSA had previously offered the property to the town and New York State for \$3.25 million.

TABLE 38

1983 Suffolk County Land Acquisitions

Acreage	Location	Name
48	Town of Riverhead	Oestreicher Property
1.9	Town of Southold	adjacent to Inlet Point County Park

TABLE 39

Town Land Acquisitions

Acreage	Location	Name
	Town of East Hampton	
17.4	Montauk Point	Radio Ship Position Station
1	Three Mile Harbor	
1	Napeague	
1	Acabonac	
	Town of Riverhead	
1.5	Kings Drive Riverhead	Kingswood
175	Baiting Hollow	The Bluffs (easement)
	Town of Southampton	
40	Noyack	Trout Pond Preserve
50-100	Aquifer Recharge Areas	Development rights for old filed maps

TABLE 40

Nature Conservancy: Lands Preserved During 1983

Acreeage	Location	Name
34	Nissequogue Town of Smithtown	Gilmartin Project
21	Westhampton Town of Southampton	
.25	Westhampton Town of Southampton	
16	Orient Town of Southold	Long Beach Bay
3	Village of Quogue Town of Southampton	Added to the Deropp Preserve
2	Village of Quogue	Added to the Griffith Preserve
.6	Acabonack Harbor	
.6	Town of East Hampton	
1.8		
6.9		
5.6		
2.2	Amagansett-East Hampton Town of East Hampton	Atlantic Double Dunes
5.0	Mecox Bay Town of Southampton	
Total	98.5	

The Nature Conservancy is in the process of acquiring approximately 30 parcels in the dwarf pine barrens and is actively pursuing several other acquisitions.

Source: Personal Communication with S. Sutcliffe and R. Hoeflich, 3/28/84

In an effort to save the property from development New York State has offered to swap a 125 acre parcel the state owns on Fire Island for the Air Force Station property. The U.S. Secretary of the Interior and Governor Cuomo favors the exchange and efforts to arrange it are currently underway.

As a result of the court action and other pressure, the GSA has agreed to do an *Environmental Impact Statement* (EIS). This could delay further action on the sale of the former Air Force Station until 1985.

2. Suffolk County

Transfer of Tax-Lien Properties Forever Wild Program —

During 1984, Suffolk County will expand upon another innovative policy to safeguard the drinking water under the Pine Barrens. Each year the county acquires property as the result of tax defaults. In 1983 the County took title, by tax deed, to 3,063 properties which brings the total number of tax default properties owned by the County to approximately 10,000. Many of these parcels are sold at the County auction held twice a year. The sale of these properties returns them to private ownership and places them, once again, back on the tax rolls. The new owners pay property taxes, thus generating income for the County and the municipality or municipalities in which the parcel is located.

In general, the sale of tax default properties makes good economic sense, except in cases where the parcels are located in the environmentally sensitive Pine Barrens. The sale and subsequent development of tax default properties in the Pine Barrens will generate income today, but the future environmental costs will be too high for the next generation to bear. Suffolk County is implementing a program whereby county acquired tax default properties located in the Pine Barrens are dedicated to the County Nature Preserve. Dedication to the Nature Preserve will ensure that these properties will remain in a **forever wild** state. No future development with the potential of contaminating our groundwater will be allowed.

In 1982 almost 800 parcels in the *Flower City* area of the Town of Brookhaven were dedicated to the County Nature Preserve. Based upon the positive reaction to this first effort, the County Executive directed the Planning Department and the Department of Real Estate to implement an on-going program to dedicate Pine Barrens tax default properties to the County Nature Preserve. At the present time these Departments, along with County Executive staff and representatives from the Towns of Brookhaven, Southampton and Riverhead, are carefully reviewing the vast number of tax default properties located in the Pine Barrens. Preliminary results of this review indicate that up to 1,500 Pine Barrens tax default parcels in these three towns are suitable for dedication to the County Nature Preserve. These parcels range in size from 50' x 100' lots on old filed sub-division maps to large 25 to 30 acre parcels. Many of these parcels are substandard according to present zoning requirements and therefore unsuitable for development. Others could be developed, but building on these parcels could lead to the severe degradation of our drinking water.

In March 1984 Suffolk County transferred 1,304 acres of tax default properties, in the Pine Barrens, to the County Nature Preserve. The breakdown by towns is as follows: Brookhaven 468 acres; Riverhead 66 acres, and Southampton 770 acres.

Planning for 208 Zone III Central Suffolk Pine Barrens —

The *Pine Barrens Area* is approximately 98,000 acres and is the largest contiguous tract of relatively undeveloped land on Long Island. Most of this area is in eastern Brookhaven Town with the remainder in western Southampton and Riverhead Towns. This land is also located within the Zone III deep aquifer recharge area as identified in the 208 Waste Treatment Management Plan.

In order to ensure that the Pine Barrens continues to shelter and protect the groundwater supply for Suffolk County, the Long Island Regional Planning Board was requested to develop a plan for the preservation of the Pine Barrens. The majority of the work for that plan is now complete, and it will be ready for release by summer 1984.

The Pine Barrens will continue to be of paramount importance to the people of Long Island for centuries to come. Therefore, in April 1984, the Suffolk County Legislature voted to create a nine member Pine Barrens Review Commission, comprised of distinguished citizens and professionals, which will be charged with the responsibility for encouraging the preservation of this area. The Pine Barrens Review Commission will include representatives chosen by the Towns of Brookhaven, Riverhead and Southampton. The Commission will have the responsibility for reviewing land use applications within the region designated as the *Pine Barrens Zone* and for working with local governments to ensure the appropriate use of zoning and environmental control measures. The Commission will also be charged with the responsibility for heightening public awareness of the need for such control measures and their acceptance. The Commission will not seek to usurp any local zoning powers. However, it will have a *Special Project Review Authority*, which will allow it to review any project within the geographic boundaries of the *Pine Barrens Zone* and make recommendations to the Suffolk County Planning Commission.

If an application is disapproved or changes are recommended by the Pine Barrens Review Commission, the Suffolk County Planning Commission will give full consideration to the Review Commission's actions. Approval of three-fourths of the entire membership of the Suffolk County Planning Commission is required to override the recommendations of the Review Commission. Localities will still retain the power to override such determination by an extraordinary vote of the pertinent local regulatory body, as presently provided by Article XIII of the Suffolk County Charter. Under this *Special Project Review Authority*, the Commission will have 45 days to conduct its review. If necessary, an additional 60 day period of review can be ordered. Public hearings will be held by the Commission and the reports and recommendations will be widely disseminated to the public at large.

The Planning Department has also been successful in securing a 100 acre tract in the dwarf pine area in Southampton through donation by Extebank. A number of inquiries about donating smaller parcels have also been received due to the publicity on the Pine Barrens Preservation Program. One other note that has to be pointed out is that the Town of Southampton has followed the Planning Department's zoning recommendations and has placed virtually all of the Pine Barrens within the Town of Southampton in a five acre zone category. This single action has assured the preservation of approximately one third of all the Pine Barrens in Suffolk County.

Lake Ronkonkoma —

Lake Ronkonkoma is the largest freshwater lake on Long Island. In recent years the County has purchased over 200 acres of land surrounding the lake at a cost of over three million dollars. Approximately 75% of the shoreline has been acquired by the county, 20% of the property is owned by other municipalities and the remaining parcels are privately owned. County holdings include extensive wetland acreage and a stream which drains into the lake.

County lands were acquired for the purpose of protecting the lake's water quality, preserving the surrounding area and providing water dependent and water enhanced recreation activities for Suffolk residents. It is essential that the County protect its investment in these lands through the implementation of preservation strategies.

On February 8, 1983 County Executive Peter F. Cohalan signed a resolution authorizing the expenditure of 2.4 million dollars for the rehabilitation of a portion of the 200 acres. Plans for rehabilitation include revegetation and cleanup of the shoreline.

Grassed play areas and sanitary facilities are planned for a 25-acre parcel on the northwest corner of the lake. Bikeways and walkways are proposed which would encircle the entire lake. Inconsistent uses impacting the stream and wetlands north of the lake will be cleaned up and an existing Town road removed, permitting the natural flow of water through the marsh area.

A consultant has recently been hired to develop plans for the future use of several county-owned lands at Lake Ronkonkoma. The plans will be in agreement with a consensus of the citizens group, the Planning Commission, the Legislators, and the Suffolk County Parks Commission.

Lakeland County Park —

Lakeland County Park was opened in June, 1983. The 80 acre park, designed for the handicapped, is the first of its kind in New York State. The park has guard rails for the blind, boardwalks for those in wheelchairs and pamphlets for the deaf.

Farmlands —

Suffolk County is still the leading agricultural county in New York State in terms of the market value of agricultural products sold.

Agricultural sales totaled \$93,025,000 in 1982 according to the 1982 Census of Agriculture. Nursery and greenhouse products accounted for almost \$42 million in sales and poultry and poultry products accounted for \$15 million. Over 23,000 acres of Suffolk County farmland is irrigated which represents 45 percent of all the irrigated farmland in New York State. The largest crop, occupying 18,998 acres, is still Irish Potatoes. Acres planted in potatoes has been decreasing sharply since 1974 when 27,219 acres were planted in potatoes. While the number of farms has been increasing the total area in farms has been declining by about 900 acres per year (see Table 41).

TABLE 41

Suffolk County Farmland

Year	No. of Farms	Acres in Farms	% of Total Land Area	Sales (\$1,000)
1982	797	49,898	8.6	93,025
1978	777	51,853	8.7	77,169
1974	737	55,397	9.3	68,190
1969	743	61,520	10.3	NA

Phase II of the Farmland Preservation Program has essentially been completed in 1983. All of the appraisals and offers have been made to the various owners and at the present time the majority of the money is already slated for contract. As soon as the last group of owners respond, Phase II, for all intents and purposes, will be finished. It is anticipated that we will acquire between 2,500 to 3,000 acres for the monies that were available in Phase II.

Recently Jamesport Vineyards, Inc. donated the development rights to 35 acres to the Suffolk County Farmlands program. This type of donation is mutually beneficial since the acquisition of the development rights does not cost the County anything and the farmer receives a decrease in the amount of property taxes to be paid.

The Towns of East Hampton and Southampton voted by referendum to allocate \$3 million and \$6 million for their own town funded preservation programs. As a result, the Farm Select Committee concentrated County funds in these two towns so as to augment the town efforts. The Town of Southold placed on the ballot a similar referendum in November 1983 for \$1.75 million which also passed. A number of towns have also upzoned their agricultural lands to help preservation efforts.

In a related effort, the county will continue its policy to preserve Suffolk County Farmland from encroaching development. It will establish an equitable compromise between development and preservation in order to retain its unique charm. Therefore, in December of 1983 County Executive Peter F. Cohalan announced his intentions to support a third phase of the Suffolk Farmland Preservation Program. His resolution, expected in 1984, will authorize the spending of an additional \$10 million for this program. The program funds are already contained in the Capital Budget. With these additional funds, it is estimated that the county can purchase development rights to another 3,000 acres of farmland. Under Phases I and II the development rights to 5,020 acres have already been received. This program has proved highly successful. Through this effort the county has managed to retain farmland both in the east, and in the already developed western end of the County, for future generations to enjoy.

The creation of Suffolk County Agricultural District #4 was proposed in 1983. The proposal is for 3,600 acres in the Bridgehampton area in the Town of Southampton. Agricultural districts provide tax reductions to landowners in return for promises not to develop the land. When a farm is marginally profitable, this may be the incentive to continue to farm it.

Suffolk County Agricultural District #5 was proposed in early 1984. The proposed district covers 9,000 acres of farmland in the Towns of East Hampton and Southampton.

Historic Trust —

In the early part of 1983, a new Division of Cultural Affairs and Historic Services was established by Suffolk County. This new Division of the Parks Department combines the Office of Cultural Affairs, Office of Historic Affairs, and the Suffolk Marine Museum. Through this Division concept Suffolk County is now better able to provide truly comprehensive services related to our cultural heritage.

The Office of Cultural Affairs, a Division of the Parks Department, processed 76 applications for arts funding in two funding cycles in 1983. Fifty-five organizations were funded utilizing the entire grant appropriation of \$212,000. These County grants helped support over \$3 million of arts programming. Noteworthy is the fact that these programs served a total audience of 986,000, which represents an audience increase for the second consecutive year.

The Office of Cultural Affairs was successful in receiving a *Local Incentive Funding Test* (LIFT) grant from the New York State Council on the Arts for 1984. The LIFT program was designed to encourage greater financial support for the arts at the county level. Although the LIFT program was not conceived to serve counties where both financial and service support are in place, Suffolk staff persuaded the state that it would be counterproductive to exclude those counties which had been providing support and reward only those who had failed in this responsibility. LIFT funds for 1984 are minimal (\$2,500), but it is hoped that the state appropriation will grow in future years.

In accordance with the LIFT grant requirements, Suffolk County held hearings to determine what local arts organizations felt would be the best use for the funds. As a direct result of the hearings, Suffolk's local program was designed to create an outreach program. There was concern expressed in the arts community at the hearings that the County should not compete for the limited corporate funds available for the arts; therefore, the County provided the entire match for the state grant.

A directory of local cultural institutions is in the process of being compiled in an expanded form. The directory will list all not-for-profit arts and historic organizations, historic societies and town and village historians.

The official responsibilities of the Office of Historic Affairs include: administering the County Historic Trust Program, which preserves County owned historic properties (see Table 42); and recording the history of the County for posterity. Historic Affairs has been heavily involved in supervising the restoration and maintenance of all historic structures owned by the County of Suffolk, as well as performing research leading to a better understanding of our heritage. The Office also acts as an outreach agency to disseminate historical information in Suffolk. Resource material on history, historic research, grants and funding sources, and the legal and technical aspects of historic preservation are now available for public use at one location in the County.

The Office of Historic Affairs is the sponsor of The Suffolk Historian newsletter which is issued quarterly to those interested in the County's heritage. During this year's Tercentenary Celebration, the Office also assisted with numerous publications on Suffolk County history.

On November 5, 1983, Historic Affairs coordinated the Suffolk County History Conference. The general public was invited to attend 30 historical lectures on a wide variety of subjects related to Suffolk's past. This annual conference, which grows more popular each year, seeks not only to generate an awareness of Suffolk's past, but also attempts to stimulate additional research on Long Island history.

The Office of Historic Affairs has continued its efforts to enlist the support of private historical organizations in the preservation of properties owned by the County of Suffolk. *The Friends for Long Island's Heritage* have agreed to act as the overall support group for Suffolk's historic properties, with supplemental assistance from the smaller historical societies located in communities where County facilities are located. Contracts with the Friends have already been drawn up and will be signed when their charter is revised to allow the educational organization to participate within Suffolk County.

TABLE 42
Historic Suffolk County Owned Properties
Status Update - 1984
Dedication to
County Historic

Building	Trust	National Register	Listed on National Register
All bldgs, on north side of Blydenburgh Park - New Mill Main House, Millers House Farm College, Barns	Dedicated	—	—
Roosevelt Estate - Mansion, Cocahrans House & Barns at Sans Souci	Dedicated	Nominated	—
Black Duck Lodge - (Hubbard-Hutton House & outbuildings) Flanders County Park	Dedicated	—	—
Coindre Hall (Eagle Hill School) Huntington	Future	Nominated	Pending
Vanderbilt Museum - Centerport Huntington	Future	Pending	—
Marine Museum, West Sayville	Future	—	—
Barn Complex & Dayton House, Cathedral Pines	Dedicated	—	—
County Courthouse, Riverhead	Future	Nominated	—
Cedar Point Lighthouse	Dedicated	—	—
Old Barn, County Farm, Yaphank	Pending	Pending	—
Hawkins-Jacobsen House, Yaphank	Dedicated	Pending	—
Jacob Smith Cottage, camp Kaufman, Huntington	Dedicated	Nominated	—
Long Wharf, Sag Harbor	Future	—	—
Blockhouse & Third House, Montauk County Park	Pending	—	—
Anson B. Hard House, Barns & Carriage House, Southaven Park	Dedicated	—	—
Yellow House, Barns, Millsite & Cemetery, Southaven Park	Dedicated	—	—
Timber Point Clubhouse, Great River	Future	—	—
ROADS			
Long Island Motor Parkway	Pending	Pending	—

At Blydenburgh Park the *Smithtown Landmarks Society* (SLS) has attracted a significant local membership base to assist with the restoration that park's historic buildings. This year the SLS provided funds to complete a historic structure report on the 1798 New Mill, which is in desperate need of restoration. The Society has also provided volunteer manpower to assist in the interpretation of the Blydenburgh Historic Trust Area.

In Yaphank, the *Yaphank Historical Society* (YHS) has made great progress, under County direction, restoring the interior of the County owned Hawkins-Jacobsen House. The first floor of this early Victorian structure is now almost completed, with newly plastered walls that have been painted and stenciled to the highest standards of restoration. The Brookhaven Town Board approved the use of community development funds for the Hawkins-Jacobsen restoration. This will allow for the installation of heating, plumbing and electrical systems. Additional outside funding is being sought to extend the restoration to the second floor. The participation of YHS and the Town of Brookhaven in the restoration has lifted a substantial monetary burden off the shoulders of County taxpayers and will help us open the Hawkins-Jacobsen House as an historic museum.

Negotiations have also been started with two organizations in Islip Town to assist with the restoration of the John E. Roosevelt Estate in Sayville. The *Bayport Heritage Association* and the *Sayville Historical Society* have both expressed an interest in assisting Suffolk County with the restoration and administration of the deteriorated Roosevelt mansion and outbuildings located at the Sans Souci Nature Preserve. The Roosevelt property, now closed to the public, contains virtually all of its original features and invites creative public use.

3. County And Town Programs

Tax Benefits for Private Donors of Open Space —

Under Section 247 of the New York State General Municipal Law, any municipality may acquire, by purchase, gift, grant, bequest, devise, lease or otherwise, the development rights, conservation easements, restrictive covenants, fees or other contractual rights to lands within such municipality. Under the law, individual property owners can donate an easement on their lands to their local municipality for which a reduction in property taxes would be awarded. The Federal Income Tax law places certain requirements on the donation of these rights. They must be donated permanently and preservation of the land must serve a public purpose, such as protecting wildlife or its scenic value. This donation can provide significant tax advantages to individual landowners and can be an important instrument for land preservation for a municipality.

Local conservation programs have recently been expanded within the towns of Islip and East Hampton and other Suffolk towns to encourage the acquisition of easements. In addition, the Nature Conservancy, a non-profit land conservation group, has made such agreements particularly with landowners whose property is adjacent to the organizations' preserves on Long Island.

Local municipalities through Suffolk are strongly encouraged to make use of these specific types of agreements especially now, at a time when public funds for buying open space and sensitive environmental areas are at a minimum. Special attention should be directed toward sites where existing development and/or private interests are held within or near environmentally critical areas of fresh surface waters (inland lakes, ponds, and streams) and freshwater wetlands where protection is currently inadequate at the Federal, State and County levels.

Conservation Easements —

As previously pointed out, Article 247 of the General Municipal Law of the State of New York enables local governments to preserve open space and agricultural lands through designation as easements. The use of conservation easements by the towns can provide permanent protection of lands which are of scenic or ecological value, including areas adjacent to fresh surface waters.

In January 1982, the Suffolk County Planning Commission's staff completed a paper entitled *Management of Perpetual Conservation Easements*. The paper may be used as a guide for municipalities in the development of management criteria for conservation easements. Although areas have been designated as open space or conservation easements, they may still experience a variety of impacts. Proper management will minimize or mitigate the amount and type of impacts permitted to occur in these areas. Management guidelines suggest the development of a detailed management plan for the site which should include the following:

- *Identification of activities which can result in an impact.*
- *Identification of measures to prevent impacts.*
- *Identification of an existing group within a municipality to be responsible for the management of the conservation easement. The group should then select a person to be responsible for implementing the plan.*

The following activities should be prohibited within conservation easements in order to provide proper management of the site:

- *Directing stormwater to the area*
- *Illegal tree cutting*
- *Site clearing and grading*
- *Removal of vegetation except for diseased plants*
- *Other activities which are inconsistent with the normal or usual maintenance of the site*

4. Town Programs

Recent development pressures have caused all eastern Suffolk towns to become active in open space preservation. Western Suffolk towns have much less land still to be developed and have already made most of their major acquisitions. All Suffolk towns have been making use of Section 281 of the New York State General Municipal Law to preserve open space through clustering or as a condition to subdivision approval. Five towns have made significant rezonings or are considering doing so and three towns are working on updating their master plans.

Town of Brookhaven —

Brookhaven has made more use of Section 281 than any other town. Currently, Brookhaven is studying rezoning 933 acres east of William Floyd Parkway, most of which is pine barrens. Presently, about half of the land is zoned industrial and half high density residential. The proposal would rezone the entire area to low density residential. Brookhaven will be finishing an open space inventory by mid 1984.

Town of East Hampton —

The Town of East Hampton is currently working on a new master plan. At the request of the Town, the Suffolk County Planning Commission has done development studies in 1983 on Northwest Harbor and Three Mile Harbor.

East Hampton had upzoned large areas north and east of East Hampton airport, to two acre minimums, a couple of years ago. Further rezonings have been considered. Development rights have been purchased, by the Town, for an 18 acre farmland parcel in Montauk and two farmland parcels, 21 and 29 acres, in East Hampton.

East Hampton officials and residents are actively involved in the fight to preserve the former Montauk Air Force Station. The Town has also rezoned the Air Force Station to Parks and Conservation designation, making it more difficult to develop.

East Hampton currently has a bill before the State Legislature which would create a *Land Bank* by putting a 2% tax on real estate sales. The funds this would generate could be used to buy development rights, wetlands, recharge areas, shorefront and parkland. The first house a family purchases would be exempt up to \$150,000.

Town of Islip —

The Town of Islip is perhaps the most active town in regards to obtaining easements. Of paramount importance to Islip is obtaining scenic easements along shoreline areas. They have also acquired easements in wetland areas.

Islip is presently planning to develop their last major park, to be located in Holbrook. The park would include a swimming pool, tennis courts, playing fields and a large preserved area. The park would serve the northeast corner of the town, an area unserved by a major park.

Town of Riverhead —

The Town of Riverhead is updating segments of their master plan and is considering some zoning changes along Route 58.

Town of Shelter Island —

The Town of Shelter Island requires that 10% of the proposed land for subdivision be dedicated for open space.

Town of Southampton —

Southampton Town has instituted the most sweeping rezonings of any Suffolk town. From March 1983 to March 1984 about three-fourths of the town's land area was rezoned. In the earlier rezoning, 26,000 acres, 6,826 of which were zoned for industry, were rezoned five-acre and then changed to Open Space Conservation. This is approximately 9% of the town's overall acreage. The remaining 31,500 acres were rezoned as follows:

Acres	New Zoning
6,200	5 acre
8,900	3 acre
10,600	2 acre
5,100	1 1/2 acre
700	1 acre

These two actions effectively reduce the ultimate population potential for the town from 150,000 to 91,500 persons.

The town requires the dedication of five acres for every 100 dwellings built. The Parks Advisory Board reviews and recommends dedications. Additionally, within the Aquifer Protection District, clearance is limited to 25% of the parcel.

Southampton Town also has a *Land Bank* bill before the State Legislature similar to that of East Hampton Town. It would put a 2% tax on real estate sales, excluding a family's first home up to 100,000 dollars. The money raised would go toward preservation of wetlands, farmlands, recharge areas, shorefront and parkland.

Augmenting the Suffolk County Farmland Preservation program, Southampton Town has instituted its own farmland program. To date the town has spent six million dollars to purchase development rights to over 800 acres.

Town of Southold —

The Town of Southold recently passed a farmland preservation bond, making Southold the third town to vote to acquire farmland development rights.

Southold Town is currently updating the town's master plan. They have also taken steps to hire two part-time planners.

EXTENT OF IMPLEMENTATION OF 1983 RECOMMENDATIONS

1. Clustering

All Suffolk towns have been using clustering to preserve open space and environmentally sensitive areas.

2. Conservation Easements

This has been used in the past year in conjunction with clustering to preserve open space. Easements have been donated and can result in lower property taxes.

3. County-Owned Properties Recommended For Forever Wild Designation

The transfer of tax lien properties to *Forever Wild* designation is an on-going program. Recently 1,304 acres were transferred, including *Wading River Estates* properties in Riverhead and lands adjacent to Hedges Creek in the Town of Brookhaven. The 108 acres of Dwarf Pines owned by the County are in the process of being transferred.

4. Lake Ronkonkoma

A resolution authorizing the expenditure of 2.4 million dollars for rehabilitation and revegetation was signed by County Executive Peter F. Cohalan in 1983. Also in 1983 a new county facility, Lakeland Park, especially designed to accommodate handicapped persons, opened. Currently a consultant is developing plans for several county owned parcels. Several parcels are in the process of being acquired.

5. Robins Island

No action has been taken.

6. Edgewood Hospital Property

The property has been transferred to the New York State Department of Environmental Conservation for preservation. No action by the County is needed to preserve it.

RECOMMENDATIONS

Cost-benefits to society of open space acquisition are difficult to estimate. When open space lands are developed, the need for public services increases (such as police and fire protection, road and drainage, sewage treatment, etc.). Polluted groundwater resulting from developed areas may have to be treated or water may have to be imported from other areas. The acquisition of open space lands can also result in the appreciation of adjacent and nearby properties and thus add to tax revenues.

1. Clustering

A very important means of open space acquisition by the towns has been through the use of clustering. Clustered development, combined with the dedication of conservation easements, can protect the environment while increasing the tax base. In recent years, the Towns of Islip, Smithtown and Huntington have obtained over 1,000 acres of public parklands through clustering or density modification. Brookhaven and the eastern towns have acquired even more. In addition, other cluster developments have preserved land for homeowner associations and other private groups. Since there are limits to public acquisition funds, this method of preserving open space will be even more important in the future. New York State legislation enables municipalities to enact mandatory clustering. Several towns have mandatory clustering ordinances; these should be required wherever environmentally sensitive lands are involved.

2. Conservation Easements

Local Municipalities should require the dedication or outright transfer of conservation easements for conventional or clustered subdivisions in an effort to protect environmentally sensitive areas including: freshwater wetlands, land adjacent to surface water, deep recharge areas and sites containing unique plant and animal species.

Various preliminary steps should be taken prior to the actual dedication or transfer of the conservation easement, as outlined below:

- delineate conservation easements or subdivision maps and other site plans
- develop management controls
- select the municipality or group in charge of management of the easement
- submit plans for municipality review
- determine the dedication or transfer process

The dedication or transfer process should be detailed enough to avoid any margins for error within the system and also simplified enough to be attractive to prospective donors. The following process may be used as a guide for towns and municipalities:

- *require proof of transfer of title to Suffolk County, Nature Conservancy or other organization prior to or in conjunction with the filing of a subdivision map or site plan*
- *file duplicate maps along with a declaration of covenants and restrictions to the County Clerk and the Building Inspector so that in the future, if the property is contested, the information will be readily accessible*
- *a performance bond should be required of all developers to insure that a legal deed is submitted to the municipality. The developer should not be released from the bond until the land has been properly transferred and evidence is submitted that all taxes have been paid and are up-to-date*
- *deeds should identify future owners and future site restrictions*
- *the Town assessor's office should be notified so that the proper adjustments in taxes can be made. If the property is deeded to a municipality it should be taken off the tax rolls. In a case where a homeowner's association has received the easement, each lot owner should be individually assessed for his or her share of the conservation area*
- *taxes for easement areas should be based on the open space value rather than the development value*
- *if the easement is deeded to a homeowner's group, the Nature Conservancy or other private group, the municipality should require that the deed be perpetual*
- *if the homeowner's group should disband, the deed should be transferred automatically to the municipality*

3. County-Owned Properties Recommended For Forever Wild Designation

In an effort to acquire environmentally sensitive lands, wetlands and watercourses, areas of important groundwater recharge and significant natural vegetation and wildlife habitats, the County is actively reviewing tax lien properties for acquisition. If these properties lie within certain designated areas which are considered environmentally significant or

sensitive, the Planning Department is recommending that they be retained by Suffolk County in their natural state and designated as forever wild pursuant to Article I, Section 110 of the Suffolk County Charter. Identification and review of these properties are presently being initiated through the coordinated efforts of the Planning Department and the Department of Real Estate.

Sensitive or significant areas include:

- *tidal wetlands*
- *lands adjacent to wetlands and surface waters*
- *lands contiguous to County-owned tidal wetlands*
- *underwater lands*
- *oyster lots*

Freshwater wetlands should also be transferred to the *Forever Wild* category subject to Article I of the Suffolk County Charter.

4. Lake Ronkonkoma

There are 19 parcels totaling 12.9 acres presently proposed for acquisition. They should be acquired as soon as possible.

5. Additional Proposed Acquisitions

- *Robins Island*—Suffolk County supports the preservation of the 433 acre island between Little and Great Peconic Bays.
- *Nissequogue River*—Four parcels are proposed for acquisition totaling 18.7 acres.
- *Sag Harbor Greenbelt*—A total of 34.5 acres are proposed for acquisition in the area around Poxabogue Pond.
- *Peconic River*—The Nature Conservancy is in the process of acquiring a 9.5 acre parcel on the north side of the Peconic River in Riverhead. The Conservancy may be willing to donate the land to Suffolk County to be added to the County's large Peconic River holdings. This should be supported.

SOLID WASTE

INTRODUCTION

The solid waste situation in Suffolk County is little changed from that described in last year's update. In general, the heightened awareness of a formidable solid waste problem has not yet generated tangible progress according to a coherent and integrated plan toward a solid waste problem solution. Regulations exist, however, and should be seen not only as a legislative tool but as a tactical concept, providing a framework for planning action and operational guidelines for solid waste managers.

UPDATE OF EXISTING SOLID WASTE SITUATION IN SUFFOLK COUNTY

1. Town Of Babylon

The town is currently operating its West Babylon landfill under a state order of consent to bring their solid waste facilities into compliance with federal and state regulations. Plans are to be submitted to NYSDEC for a new lined area (north central area) of this landfill facility. The town's landfill site is located in 208 Hydrogeologic Zone VII. A request-for-proposal (RFP) has been released for a 250,000 tons per year shred/burn facility to be located at the West Babylon landfill or on a site at Edgewood. If this new facility progresses satisfactorily, the existing town landfill could be used for residue disposal purposes only.

Approximately 90 percent of Babylon town has been designated as being in 208 Hydrogeologic Zone VII, with the remainder designated as being in a deep flow recharge area.

2. Town Of Brookhaven

The town is currently operating its Horseblock Road landfill under a consent order to submit a complete Part 360 application to NYSDEC. A groundwater plume at this site may preclude a permit being issued. The landfill contains both single and double lined sections; and the entire site is located in 208 Hydrogeologic Zone V. The current landfill can be redesigned for additional landfilling and for residue disposal. The site has approximately five (5) years of capacity left. The currently lined areas of the landfill will be considered **existing** under the new landfill law.

Brookhaven town is interviewing financial, legal, and technical consultants about a possible resource recovery project. The town is located 80 percent in 208 Hydrogeologic Zones I and III, 15 percent in 208 Hydrogeologic Zone VI, and 5 percent in 208 Hydrogeologic Zone VIII.

3. Town Of East Hampton

The town's Accabonac landfill has an operating permit for a lined area. NYSDEC has scheduled a compliance conference with the town regarding the Montauk landfill. Currently, this site is operating without a permit or a state consent order. A consent order for the Montauk landfill will require that either the site be closed or be upgraded to meet the conditions of state law.

East Hampton town has not as yet considered resource recovery to deal with their solid waste. Residue bypass disposal for such a facility would not present a problem. The entire township is designated as being located in 208 Hydrogeologic Zone V.

4. Town Of Huntington

The town's East Northport landfill is considered by the NYSDEC to be a non-permitted site because the town has not signed a consent order concerning its operation. Prior town administrations had indicated that they did not want to line a 2-4 acre northern expansion of the landfill site. Other problems associated with the East Northport landfill include a groundwater leachate contamination plume, odors, and off-site methane gas migration. The northern area of the landfill will be considered for limited expansion.

Huntington town has a memorandum of understanding with Oyster Bay town (in Nassau County) for the sharing of a proposed resource recovery facility. Under the Oyster Bay agreement, Huntington would be required to accept proportional residue bypass disposal. However, Huntington continues to have discussions with Smithtown about possible resource recovery collaboration with that town.

Ninety-five percent of Huntington town is designated as being in a deep flow area. The remaining portion, located in the northern section of the town is located in 208 Hydrogeologic Zone VIII.

5. Town Of Islip

The town's Blydenburgh Road landfill is a doubled lined, 16 acre area which is being operated under a consent judgement. The landfill site has a life expectancy of approximately three years and it is located in 208 Hydrogeologic Zone I.

Islip town is completing negotiations for a 450 tons per day mass burn resource recovery facility. The town has submitted an application/plans to NYSDEC for a new landfill site called Pioneer project for residue, bypass, and peak flows in conjunction with the proposed resource recovery facility. However, NYSDEC has not accepted this application because the proposed new landfill site is located in an area designated as 208 Hydrogeologic Zone I. Islip town claims this proposed site is the only one available which meets their land use criteria. A second resource recovery facility is planned at this proposed new landfill by the town. The Town of Islip has been requested by NYSDEC to submit an alternate site report regarding construction of a new landfill.

Sixty percent of the land area of Islip town is designated in 208 Hydrogeologic Zone VI with the other forty percent of the town designated in 208 Hydrogeologic Zone I.

6. Town Of Riverhead

The Riverhead landfill is currently unlined, and is located in 208 Hydrogeologic Zone III. The town has submitted to NYSDEC a permit renewal and an expansion report (for a single-lined landfill addition). However, Riverhead town will be receiving a letter from NYSDEC denying a permit renewal for the current landfill since it cannot meet regulatory standards; the letter will further state that any expansion of the current landfill must meet standards required by law for a limited expansion. The existing town landfill will be placed under a state consent order for closing.

The NYSDEC feels that it is imperative for Riverhead town to implement a resource recovery plan now. But, the only discussion on resource recovery has been with Southampton town (in conjunction with a proposed county jail expansion).

Sixty percent of Riverhead town has been designated as being in 208 Hydrogeologic Zone III, with the remaining forty percent of its land area designated in 208 Hydrogeologic Zone IV.

7. Town Of Shelter Island

NYSDEC held a compliance conference with the town regarding the unpermitted Shelter Island landfill. The town agreed, as a result of the conference, to retain a solid waste consultant to study the implications of state law and regulations, disposal alternatives, and costs related to their landfill operation.

In terms of new approaches, residue and bypass disposal would not present a problem to the town; however, facility design and cost are matters that require much consideration.

The Town of Shelter Island is designated as located entirely in 208 Hydrogeologic Zone IV.

8. Town Of Smithtown

Smithtown has submitted a permit renewal application for its bale fill/landfill to NYSDEC. The town's balefill is located in 208 Hydrogeologic Zone I. NYSDEC has requested additional data from the town concerning this site. Landfill cell 1 (in the double-lined site) is complete, cell 2 is almost filled, cell 3 has been lined and prepared, and cell 4 has been excavated. Under the Landfill Law, cell 3 will be considered existing, and cell 4 will be considered a limited expansion.

Smithtown has not made a direct move towards resource recovery. However, Smithtown continues to have discussions with both Huntington and Babylon concerning resource recovery.

Approximately 50 percent of Smithtown's land area is in 208 Hydrogeologic Zone VIII and the other half is in 208 Hydrogeologic Zone I.

9. Town Of Southampton

The town operates a clay lined landfill for raw refuse, and an unlined landfill for brush at its North Sea solid waste facility. The town has made permit renewal application for the site. In response to the application, the NYSDEC will request verification of liner permeability and thickness, leachate data, and other elements.

Southampton town has no current plan for resource recovery other than discussions it has had with Riverhead concerning the tie-in with the jail expansion proposal.

Southampton town lies mainly in 208 Hydrogeologic Zone V (85 percent), with 208 Hydrogeologic Zone III (10 percent) and 208 Hydrogeologic Zone VI (5 percent) making up the rest. The town's North Sea landfill facility is located in an area which may be reclassified to the deep flow category. If this occurs, the town would be required to relocate this landfill.

10. Town Of Southold

Southold has had a compliance conference with NYSDEC concerning the Cutchogue landfill. A report was to be prepared and a variance on firm liner requirements were to be submitted for approval. However, this concept was rejected by NYSDEC central office. Therefore, the town will have to obtain a consent order for its current landfill which indicates its closing date, and will have to submit plans for a landfill that complies with the Landfill Law.

Southold did have a permit for a resource recovery facility, but the project was never implemented. Residue and bypass disposal would not be a problem for the contemplated resource recovery project.

The town of Southold lies entirely in 208 Hydrogeologic Zone IV.

11. Miscellaneous Sites

BROOKHAVEN NATIONAL LABORATORY—This disposal site (in 208 Hydrogeologic Zone III) cannot be expanded unless the laboratory claims exemption from the state landfill law because of their federal status. Without an exemption the laboratory would probably make arrangements to transport their refuse to Brookhaven town's landfill where the lab is currently transporting its putrescible materials.

KINGS PARK STATE HOSPITAL—This coal ash site is located in 208 Hydrogeologic Zone VIII and will have to be upgraded to meet the requirements of the state landfill law.

FISHERS ISLAND—This disposal site has been designated in 208 Hydrogeologic Zone IV but this is questioned. NYSDEC feels that perhaps Fishers Island should be exempted from the landfill law possibly because of the island's unique situation and the minimal impact of its disposal needs.

PROBLEM AREAS

1. Elimination Of Land Burial Of Solid Waste

Under a new state law which went into effect in January 1984 (Chapter 299, Laws of 1983) new landfills or expansions are banned in the deep aquifer recharge hydrogeologic zones I, II and III in Nassau and Suffolk Counties. Also, by January 1991, all existing landfills (with some excepted uses) are to be closed. The purpose of the new law is the elimination of landfills in the region by fixed dates in order to protect the area's groundwater resource. Therefore, the problem now facing all solid waste officials and managers in the region is how to accomplish this herculean transition from the old solid waste technology to that of the new.

2. Residue Bypass Disposal

As indicated in the Update, several resource recovery projects will be impeded if residue bypass disposal areas are not selected. Resource recovery projects in Islip and Huntington are the most affected by this problem.

The towns contend that land within their boundaries and outside the deep flow area is unavailable for residue bypass disposal landfills. The towns maintain that their shoreline areas are now zoned for residential and commercial land uses and are in many cases densely populated.

The residue bypass disposal problem is further aggravated by the unlikely prospect that intertown agreements would be made. This is because the recipient town wouldn't want to receive another town's solid waste if long periods of bypass disposal are necessary.

Some suggestions for solving the problem of residue bypass disposal are:

- *development of a state-supported, privately-run residue bypass landfill operation located outside of the deep flow area*
- *development of a state (EFC) owned and operated residue bypass disposal site to be made available for use by all of the towns in the region*
- *some kind of variance procedure in the Landfill Law to better accommodate the problem of residue bypass disposal*

TRENDS

1. Prohibition Of Landfills In Deep Recharge Areas

As previously pointed out, new landfills or expansions were banned under a new state law (Chapter 299, Laws of 1983) after January 1984 in certain hydrogeologic zones of Nassau and Suffolk Counties. Further, by January 1991, all existing landfills (with a few excepted uses) must be closed. This new amendment to the environmental conservation law is a major trend.

2. Bottle Law

The implementation of New York State's bottle-and-can deposit law (September, 1983) was a major achievement of the past year in solid waste management. The purpose of the law is to prevent the littering of the landscape with innumerable beverage containers. A bonus-benefit of the law is the reduction in the amount of beer and soda containers reaching the landfills of this region and in the rest of the state.

3. Multi-Town Project

Although the Multi-town project has been cancelled, the concept of a regionally-run *garbage-to-energy* facility lives on. The lessons learned from the attempt to realize the project may be its major contribution to solving the pending solid waste problems of this county. This is especially true now that resource recovery is considered the principal solid waste management option available to this region.

4. Resource Recovery Plants

Resource recovery plants that process garbage are now considered to be the main option open to the solid waste managers of the L.I. region. The basic concept of the resource recovery is the clean burning of solid waste to liberate its energy potential for use in the generation of steam and electricity. This steam and electricity can be sold, thereby creating income which can be used to pay for the facility. Of course, the first purpose of resource recovery plants is to eliminate the need for solid waste landfills which might endanger the environment. Resource recovery plants generally come into play when an area's groundwater is threatened, or when landfill space becomes scarce due to population pressures, or both. Conversion from landfill sites to resource recovery facilities is complicated by a somewhat unknown technology, by the cost factor, and by past problems associated with the use of existing resource recovery plants.

5. Source Separation

Islip Town has again shown this year that an active recycling program can relieve demand for landfill space and generate income. The town continues to recover about 300 tons of recyclable material weekly. Through its WRAP program saleable items are retrieved from a pre-separated garbage stream. The sale of the recovered materials pays for the cost of running the program and manages to show a profit to the town. Islip's Recycling Program was featured in the May/June, 1983 issue of *Resource Recycling* (Journal of Recycling, Reuse, and Waste Reduction).

GOVERNMENTAL ACTIVITIES

1. Federal And State Governments

The federal government continues to play a minor role in the solving of the solid waste problem in Suffolk County. However, the state government has taken an active role in the solving of this area's solid waste problem. The NYSDEC continues to enforce its regulations, arranges some funding for new facilities, and engages in continual negotiations with local officials to help bring about an eventual solution to the solid waste crisis on Long Island. The NYSDEC continues to actively enforce 6 NYCRR Part 360 Liner Criteria concerning local landfills. The state government successfully implemented the Returnable Container Law in September, 1983. Compliance with this new anti-litter law has been excellent. Perhaps the most significant state government activity during 1983 was the passage and signing into law by the Governor, of the Chapter 299 (Nassau and Suffolk Counties — Elimination of Land Burial of Solid Waste) amendment to the state Environmental Conservation Law. The new law requires the closing of landfills in deep recharge areas in the two counties of Long Island while encouraging their eventual replacement by the use of resource recovery methods. The rationale behind the law is that landfills now threaten the area's groundwater while resource recovery's impact on it would be minimal.

2. County Government

The county labor department kept their Keep Suffolk Clean campaign intact and in operation during all of 1983. Conservation program work crews responded to requests for litter cleanups along public thoroughfares and on publicly-owned land. Many youths were recruited to work on summer conservation crews throughout the county for the purpose of litter removal and land beautification projects.

As part of the Tercentenary celebration, the County Executive launched a massive cleanup program for the county. Participation by all members and age groups of the county's communities was encouraged. Five hundred seasonal county employees joined the effort as well as thousands of other regular county employees who were asked to clean areas surrounding their work location and hometown. Residents were informed of the availability of free plastic bags at all county buildings through the media. **Cleanup Suffolk County Day** proved to be a great success.

3. Town Governments

The town governments, the main operators of the region's landfills, have the primary responsibility for solid waste management. However, the state and county governments have important roles to play in assisting the town governments in dealing with the solid waste problem.

In 1983 the town governments continued to explore better ways of operating their solid waste landfills within the regulatory environment

outlined by the state government. The most pressed towns are studying the use of resource recovery plants and other related options to deal with their solid waste. The new state law regarding the closing of landfills in deep recharge areas is a matter of immediate concern to the towns most affected.

EXTENT OF IMPLEMENTATION OF 1983 RECOMMENDATIONS

1. The Multi-town project was cancelled in 1983. The Towns of Babylon and Huntington are, therefore, now faced with finding appropriate solid waste alternatives to it. Final developments and decisions are expected to be made by these towns during the coming year regarding resource recovery arrangements.

2. The exercise of continual vigilance is still required by both state and town solid waste officials in the areas of landfill reconstruction, methane gas monitoring and control, and leachate plume monitoring and control.

3. NYSDEC continues to enforce 6 NYCRR Part 360 Liner Criteria regarding local landfills. As the *Update of the Existing Solid Waste Situation* section demonstrates, the complexity of accomplishing full compliance with this area of the environmental law remains a solid waste reality.

RECOMMENDATIONS

- *A solid waste office should be established within an appropriate agency of the county government to act as a clearinghouse for information, and to help coordinate the intergovernmental aspects of the solid waste problem.*
- *The complete elimination of landfills in deep aquifer recharge areas of the county is required. Cooperative compliance with the provisions of the new state law concerning the fate of landfills on Long Island should be encouraged.*
- *All landfills should be modified to comply with the provisions of 6 NYCRR Part 360 Liner Criteria concerning construction and capping procedures.*
- *Landfills with a history of methane migration should be continuously monitored and where necessary appropriate measures taken to effectively control this by-product of landfill operations.*
- *All landfills in the county should be periodically tested regarding the quality of the underlying and nearby groundwater to safeguard the health of adjacent residents as well as to learn the exact extent of the effects of landfills on groundwater conditions.*
- *Public water should be provided to areas near landfills where the quality of the groundwater has been adversely affected by contaminants originating at solid waste facilities.*
- *The replacement of landfills with appropriate technology, resource recovery facilities should be encouraged by all governmental officials and solid waste managers, with priority of scheduling solely determined by environmental and regulatory necessity.*

ENERGY

INTRODUCTION

It is only a little over 10 years ago, October 1973, that the Arab oil embargo brought about oil shortages and escalating energy costs. Since that time we have learned to tighten our belts on energy consumption and to become more aware of energy issues. In Suffolk County, just as in most suburban communities across the U.S., cars have gotten smaller and lighter, reducing overall gasoline consumption. Many have taken advantage of federal and state tax credits to build sunspace additions and add solar domestic hot water panel systems to decrease fuel costs. Others have taken advantage of the free home energy audit program, advice on how to make energy saving improvements and low cost financing under the *Home Insulation and Energy Conservation Program* (HIECA). Grant money has been made available through the N.Y.S. ERDA Program for energy research, development and demonstration, and also to hospitals and schools under the Hospital and Schools Grant Program. Under Article 16 of the New York State Energy Law, all appliances sold in New York State must be energy efficient. In addition, the New York Energy Code has mandated the construction of structures which are more energy efficient.

THE PRESENT ENERGY SITUATION

Table 43 provides a comparison for the average price of the various fuels used in Suffolk County during 1981, 1982, 1983, and 1984.

TABLE 43

Average Fuel Prices Within Suffolk County

	1984	1983	1982	1981
Regular Gasoline	\$1.13/gal.	\$1.167/gal.	\$1.273/gal.	\$1.36/gal.
No Lead Gasoline	\$1.21/gal.	\$1.245/gal.	\$1.348/gal.	\$1.423/gal.
Premium Unleaded	\$1.35/gal.	\$1.356/gal.	\$1.441/gal.	\$1.508/gal.
#2 Oil Home	\$1.23/gal.	\$1.201/gal.	\$1.266/gal.	\$1.276/gal.
Kerosene	\$1.34/gal.	\$1.36/gal.	\$1.42/gal.	\$1.48/gal.
Wood	\$150/cord	\$145/cord	\$146.5/cord	\$152/cord
Coal-Nut Coal	\$133/ton	\$130/ton	\$134/ton	\$130/ton
Natural Gas	\$N.A./therm*	\$.67/therm	\$.619/therm	\$.522/therm

Amount of #2 heating oil used 750-800- million gallons bi-county area (Long Island Heat Institute)

* 1 therm = 100 cu. ft.
N.A. = Not Available

Source: Suffolk County Dept. of Consumer Products.

In the bi-county area heating and domestic hot water is primarily accomplished using oil (80% oil, 14% gas, 6% electric). The average home in the bi-county area utilizes 1200 gallons of oil/year for hot water and heating. According to the L.I. Oil Heat Institute, the bi-county area will utilize 750-800 million gallons of oil in 1984 for all uses of heating and domestic hot water excluding LILCO. This doesn't include the fact that there are 1,862,450 total vehicles in the bi-county area using petroleum products for fuel and lubrication. An interesting side light is the fact that between 10 to 20,000 solar panel systems have been installed in the bi-county area. This figure is directly effected by the price of energy.

Sources: NYS Dept. of Motor Vehicles
Long Island Solar Energy Association
Suffolk County Dept. of Consumer Products

GOVERNMENTAL PROGRAMS AND ACTIVITIES

1. Federal Programs

Table 44 represents the Federal Administration Budget requests concerning energy over the past five years. Highlights from the U.S. Department of Energy's 1985 budget reveal that for the fourth year in a row nuclear fusion and fission programs would be funded at 1981 levels, while energy conservation and solar energy will be funded at 25 to 50% of 1981 levels. Nuclear fission and fusion are allotted 2/3 of the energy

budget for 1985 as compared with 1/3 in 1981. Energy conservation accounts for 17% of the energy budget, fossil energy for 12% and solar energy only 8%. Under the 1985 budget atomic defense activities would receive 62% of the DOE budget or \$1 billion over last year and civilian energy activities would get 32%.

TABLE 44

% of Various Programs Making Up The Total Federal Requests for Energy Related Expenditures

	1981	1982	1983	1984	1985
Nuclear Fission & Waste Disposal	28%	38%	43%	60%	41%
Conservation	19%	14%	15%	4%	17%
Fossil Energy	22%	20%	13%	7%	12%
Solar & Renewable	20%	12%	10%	5%	8%
Magnetic Fusion	11%	16%	19%	24%	21%

Total Requests \$4.0 billion 2.8 billion 2.4 billion 1.9 billion 2.9 billion

Civilian energy activities include research and development, conservation grants, nuclear waste disposal, the naval petroleum reserve, emergency preparedness, information and regulation activities, uranium enrichment and power marketing. Even some of the civilian activities are oriented toward the nuclear industry.

The federal government is seeking to budget the Low Income Weatherization Program, the Schools and Hospitals Weatherization Program and the Low-Income Home Energy Assistance Program using oil overcharge funds. These funds are being held in trust by the federal government for restitution to the victims of oil overpricing. The federal government in prior years has always funded these programs from general revenues. The federal government is proposing to eliminate the State Energy Conservation Program, which is utilized by the states to offer energy conservation services. Energy conservation research and development is to be held to 1984 levels which represents 50% of 1981 levels. Solar energy and other renewable appropriations will be reduced 11% from 1984 levels and 75% from 1981 levels (1981 Approp. \$771 million; 1985 Approp. \$191 million). These costs will be focused on solar energy research and development which includes solar building energy systems, photovoltaic energy systems, solar thermal energy systems, biofuels, wind energy and ocean energy.

In the fossil energy appropriations the budget will be reduced from 330 million in 1984 to 273 million in 1985. 1981 appropriation was \$1,135 million. Nuclear fission and waste disposal is \$946 million for 1985 which is basically the same number for the past four years. Nuclear fusion programs have increased 3% to \$483 million in 1985. The low-income energy assistance which has remained the same for the past four years is \$1,875 million for 1985.

2. New York State Programs

The New York State Energy Program is controlled through the New York State Energy Office. Under Section 3-101 of the Energy Law, the office is charged with encouraging improvements in energy efficiency, energy conservation, fuel saving transportation, performance of appliances, commercial and industrial process, and the prudent use of energy sources such as oil, gas, hydro, wood, solar, from waste and cogeneration. Implementation of the Energy Law begins with the development of the N.Y. State Energy Master Plan. Implementation of the plan is handled by the Division of Policy Analysis and Planning, Division of Conservation, the Office of Communications and the Office of Counsel. The major state programs include:

- *The Energy Conservation Bank which provides financial assistance*
- *the HEAP program, which provides grants for fuel*
- *the Home Insulation and Energy Conservation Program, which provides low cost financing for energy improvements*
- *15% solar and wind tax credits.*

Small Business Energy Audit Program —

The New York State Energy Office funds the Small Business Energy Audit Program. These funds, which are channeled to Cooperative Extension through Cornell University, cover the salary of an auditor plus equipment, supplies, transportation, and training costs. Cooperative Extension provides several in-kind services including office space and secretarial support.

The Small Business Energy Audit Program has a dual objective—to conserve energy and to save money. By helping small businesses discover cost-effective ways to reduce energy consumption, the program also helps businesses reduce energy costs. Thus, energy resources are conserved and businesses benefit economically. Any small, local, owner-operated business is eligible to participate in the program. This usually includes retail shops, food stores, offices, and similar types of small service and manufacturing operations. Large businesses and industries, major shopping malls/centers, and those small businesses which are part of national companies are not included as these usually have other energy audit programs available to them.

In September 1983, Cooperative Extension of Suffolk County began conducting free energy audits for small businesses throughout the county. Audits are usually completed in about two to three hours and include evaluation of lighting, heating, ventilation, air conditioning, insulation, electrical equipment (such as motors) and refrigeration units. Electrical bills are also examined to determine if the loads can be adjusted to reduce rates. An eight-page audit report is completed by the auditor. The findings and recommendations are discussed with the operator and referrals are made if highly technical problems are discovered.

In 1983, five communities were selected for the initial phase of the program. These included:

- *Riverhead/Riverside/Flanders in the Towns of Riverhead and Southampton*
- *Port Jefferson/Port Jefferson Station in the Town of Brookhaven*
- *Patchogue/Medford in the Town of Brookhaven*
- *Brentwood, Central Islip/Bay Shore in the Town of Islip*
- *Huntington/Huntington Station in the Town of Huntington*

A few audits were also conducted in Mastic and Coram.

For the fiscal year 1984-85, the program will be expanded to several other communities in Suffolk. Highest priority will be given to businesses throughout the towns of Babylon, Huntington, and Islip, plus such communities as Centereach/Selden, Lake Ronkonkoma, Farmingville, Coram, Hampton Bays, Moriches, Shirley/Mastic and Greenport. A second part-time auditor will be hired to make many of the initial contacts and to assist the full-time auditor. Additional seminars/workshops on specific energy conservation topics and for specific types of businesses are also being planned.

Power Authority of the State of New York (PASNY) —

PASNY is a nonprofit authority whose main function is to sell power on a wholesale basis and to build transmission lines. PASNY was created in 1931 to develop hydropower and has since helped develop nuclear power as well. PASNY's power is allocated by New York State and Federal law. At present PASNY buys some power from Quebec Hydro. If the Marcy connection and an additional transmission line across Long Island Sound were constructed, electricity from Quebec Hydro could reach Long Island.

State University at Stony Brook —

Using grants from N.Y.S. ERDA and gas companies, the Marine Sciences Research Center at Stony Brook has constructed a test raft off Old Field where seaweed will grow. The raft is 40' x 120' and is located in 65' of water. The concept is to harvest the seaweed to be used in the production of methane gas. This process has been used successfully in China and Japan.

3. County Programs

Suffolk County Solar Energy Commission (SCSEC) —

The Suffolk County Solar Energy Commission (SCSEC) was organized in 1979 by the Suffolk County Legislature. Its goal is to bring solar awareness to the public and the Legislature. The SCSEC prints an informative monthly newsletter, organizes solar energy seminars, and maintains outreach programs to groups such as town planning departments, building departments, libraries and various public schools in Suffolk County. In addition, the commission maintains an energy information phone number for the homeowner, builder and architect.

Suffolk County Energy Conservation and Development Board —

The Suffolk County Energy Conservation and Development Board formed in 1981 by the County Legislature seeks to determine what actions of County Government hold the most promise for increasing the well-being of Suffolk residents. During the first twenty months of its existence, the Board concentrated on those policies affecting energy use by County Government itself. In January 1983 the Board issued the report, *Energy Management and the County of Suffolk*, which contained the following findings and recommendations primarily concerning the internal decision-making of the Suffolk County Government.

County Management and Operations:

- *Energy Management*—The County lacks a central, coordinated approach for energy management of its facilities and vehicle fleet. As a result, information concerning energy use and the return on energy-related investments is fragmented. This precludes comparing alternative energy conservation or supply strategies and weakens the budget process. The Board recommends that the County assign an individual to the task of *energy manager* and give that person the authority, responsibility and staff to: (a) gather all needed energy-related data and (b) identify and promote the best County Government investments in energy conservation or new energy sources.
- *Energy Decision Rules*—The County has yet to adopt analytical tools used increasingly by the private sector to determine the value of energy-related investments. It is recommended that the analysis of such investments and the budget process be modified to reflect and to capture wherever it is economic to do so the present worth of investments in energy conservation, fuel switching and new energy supplies.
- *Energy Priority*—The County uses a very high cost mix of energy all of which is imported from other regions or nations. Its oil supply is unusually vulnerable to foreign disruption. The cost of electricity will soon increase to a level equal to that of New York City. Yet Suffolk County's Government, like regional and local governments nearly everywhere, has yet to reduce these costs and risks to an acceptable level. Recognizing that government, like business, acts from the top down, it is recommended that the County Executive and the County Legislature make economic energy management a matter of the highest priority. It is also recommended that the County Legislature and County Executive consolidate the several committees, boards and task forces currently advising them on energy matters.

The County's Educational and Informational Role:

- *Local Government*—Suffolk's Towns, Villages and School Districts often lack the expertise, scale of operations or budget flexibility to manage their energy use effectively. It is recommended that the County Government, by its own example and by transfer of useful information, assist smaller government energy users in the County.
- *County Employees*—The County Government's efforts to reduce its energy costs will succeed only with the enthusiastic involvement of its employees. To this end, the County must take steps to involve them at every level and to welcome and, where deserved, reward their suggestions and actions. It is recommended that the County undertake an employee educational effort to speed the reduction of its energy costs.

- **Suffolk County Community College**—The Administration, Faculty and Facilities Management Staff of the College have a good track record on energy management; in fact, they have done a better job of this than most other such institutions, particularly in New York State. No little credit is due the County itself for giving the College the freedom and the budget to achieve this. It is recommended that the County continue to encourage and fund these efforts with the specific objective of transferring the most promising programs to other County facilities.

County Authority Over Energy Use in the Private Sector:

- **Tax Policies**—The County (along with the State) has reduced sales taxes on energy. Unfortunately, this has had the effect of increasing the relative costs of energy conservation and some new energy sources. Yet the latter alternatives tend to use local labor and materials more intensively than does the continued, unchecked consumption of oil and natural gas. It is recommended that the County either reverse its tax reduction policy or equalize the sales tax treatment of substitutes for oil and natural gas. The County should consider using its property tax policy to encourage the economic energy performance of buildings, especially where leasing predominates.
- **Solid Waste Management**—The County's solid waste management is really the piecemeal practices of the Towns and Villages. Yet there exists a number of technologies for reducing the costs of waste disposal while turning waste materials into useful goods or energy. Only County-wide strategies can yield the necessary cooperation, economies of scale and management practices to turn a nuisance into a resource. It is recommended that the County Government use all its authority towards achieving economic recycling and resource recovery and note that one formula for success is to assure that those who reside or conduct business near such facilities share their benefits.

Suffolk County Transportation —

Using the comprehensive transportation plan as a basis for planning bus routes the Transportation Department established 24 feeder routes serving areas never served before. Under the Urban Mass Transit Administration Funding 93 buses were purchased and put in service between 1980-82. Grants for 40 more buses are pending by 1985. Most of the bus acquisition costs are paid by the federal and state governments. Suffolk pays the up front costs and is then reimbursed by federal and state sources. The Transportation Department has also been involved in a carpool study.

Social Services —

The Suffolk County Social Services Department administers the Home Energy Assistance Program (HEAP). New York State has allocated \$7.9 million for this program which gives assistance to low income senior citizens, low income families, families with emergencies and public assistance families. HEAP is a one time grant for most families. Additional grant money is available based on annual income and fuel costs. The county doesn't check the efficiency of boiler systems in rented homes, nor does it check the existing insulation.

4. Towns

Most towns of Suffolk County are involved in the weatherization programs. Various towns, such as Brookhaven, Huntington, Smithtown, Islip and Babylon are extracting methane from landfill sites. The Town of Islip is the only town with an energy coordinator. His role is to monitor energy consumption for town buildings and make recommendations for reducing energy loads per building. All towns and incorporated villages process building plans using the New York State Energy Code. No towns have adopted more stringent standards than the N.Y. State Energy standards. No town in Suffolk County utilizes the N.Y. State standards for solar access, in subdivision review or site plan review, even though the the N.Y. State Solar Access Code was passed in 1979. The Towns of East Hampton and Southampton remain the only towns in Suffolk County with wind ordinances for wind turbines. The main problem with the implementation of a wind ordinance appears to be the 35' height limitation. Most wind turbines are prepared to be at least 65' above grade or more to obtain adequate wind.

Board of Cooperative Educational Services (BOCES)—

The BOCES program doesn't include any courses on energy conservation or solar energy. There are school districts such as Smithtown, Kings Park, Sayville and Dix Hills that have incorporated solar energy into course material. Sayville and Kings Park have included solar energy into their architectural drafting courses.

EXTENT OF IMPLEMENTATION OF 1983 RECOMMENDATIONS

Of the recommendations made in 1983, the county has explored the advantages of obtaining power from P.A.S.N.Y. In addition, when the roof of a county building needs to be replaced, additional insulation is added. Unfortunately most of the 1983 recommendations have not been implemented. This is exceedingly unfortunate, since the stability of our major electrical energy supplier, LILCO is tenuous at best.

RECOMMENDATIONS

1. List Of Projects Which The County Should Promote For Energy Conservation:

- **Building Lighting**—Reduce night lighting, by delamping, add switching capability, using high efficiency fluorescent lights, phantom tubes, and shut ventilation systems off at night (this can be installed in conjunction with computer energy management). The greatest single cost in an office building is electricity for lighting. Increased lighting directly increases the expensive cost of air conditioning. The county must explore separate switching systems with automatic switching controls, instead of one switch per floor.
- **Computers in Energy Management**—Reduce energy costs by using an Energy Management System (EMTS) to elevate energy management to a par with other management techniques. Use the computer to amass energy costs of individual buildings by fuel type, electric consumption by activity, wastewater and water pumping energy consumption and cost, vehicular and equipment fuel cost and consumption, procurement practices, fiscal year summary of government energy use and cost, heating and cooling demands based on climatological impacts, experimental cost reductions due to energy management and conservation practices.
- **District Heating**—Promote garbage burning steam plants, cogeneration, for district heating.
- **Educational Programs**—Instituting senior citizen training, energy conscious awards, cost cutting clinics, energy information center, consumer guides for energy conservation, energy conservation awareness campaign.
- **Energy Planning**—Adopt a comprehensive community energy management plan based on data collected under computer energy management. Develop energy conservation ordinances.
- **Environmental Projects**—Methane recovery, municipal recycling centers, reuse of treated wastewater.
- **Land Use Planning**—Energy impact analysis.
- **Loan Programs**—Energy bank project, heating plan efficiency loan program.
- **Low Income Energy Needs**—Outreach programs for energy conservation activities, energy resources center.
- **Solar Energy**—Solar air panels and solar greenhouses using community development block grant fund.
- **Street Lighting**—Study energy efficient illumination levels per fixture type. Study advantages of buying street lighting facilities from a utility.

- *Vehicle Energy Management*—Energy consumption through fleet management must be approached by function. The police need more powerful cars, but those in administrative positions, including the police, can use smaller more energy efficient vehicles. Many of the trucks and four wheel drive vehicles of the county fleet, are more powerful and bigger than function requires. Driver energy conservation awareness training, and a methanol-fuel vehicle program might also be considered.
- *County Energy Office*—The county needs a centrally defined department in government, where energy data is monitored, collected and where recommendations can be promoted. At the present time, data for county owned buildings are collected by D.P.W., by fuel utilization. But a total energy cost per square foot for each building is not calculated. Space management rents 668,000 sq. ft. from private landlords for county use. Energy input in terms of energy consumption per square foot is not a negotiated matter. The county must demand rental of energy efficient buildings **only**. Where fuel is included in the rental, again the buildings must be energy efficient. *All buildings must be rated at a maximum allowable Btu per square foot energy consumption.* This must be included in the building specifications. *If the building use exceeds this number, retrofitting should be mandatory or rental termination an option.*

This energy department should also function to receive energy conservation proposals from government and the private sector, including legislation, and serve to advise government regarding these proposals. Historically, we have had three (3) energy boards:

- *Solar Energy Commission*
- *Energy Conservation and Development Board*
- *Energy Task Force*

All of these commissions have made valuable recommendations but no one body has given these recommendations due consideration because there is no focus point for energy in county government. An Energy Subcommittee is required with at least three (3) legislators to give guidance to the voluntary membership and to insure that valuable energy recommendations reach the proper channels. The functions of the committee would be to promote the following: conservation in government buildings, alternate energy systems and review legislation that enhance alternative energy systems.

Energy consumption criteria via purchasing, must be included in the capital and operating segment of the budget process. At the present time, purchasing of appliances and material is provided at Public Works, General Services, Police Department and the Community College. No consideration is given to energy efficiency and its relationship to associated costs, such as air conditioning machines that use more energy.

SEQRA AND OTHER ENVIRONMENTAL REVIEW AND ENFORCEMENT

INTRODUCTION

The other sections of this report cover all major aspects of Suffolk's environment together with the numerous federal, state, county and local laws that are relevant. However, large projects in many instances can affect one or more environmental areas and, therefore, need a broad environmental review. Overall environmental review of any given project is mandated by the *National Environmental Policy Act (NEPA)* at the federal level, and by the *New York State Environmental Quality Review Act (SEQRA)* at the state, county and local levels (see Figure 5). The details of these two acts have been discussed at length in past environmental reports.

In addition to the federal and state EIS laws, New York State, under Article 47 of the Environmental Conservation Law and Article 12F of the General Municipal Law, allows for the creation of Environmental Management Councils at the county level and the Conservation Advisory Councils at the local level. These councils advise their respective governing bodies on environmental matters within their jurisdiction.

The county District Attorney's Offices also have been given the right by New York State to initiate and conduct prosecution of violations of the various state and local environmental laws described in this report.

PROBLEM AREAS AND TRENDS

Although, in the first years of the Reagan administration, environmental priorities appear to have taken a back seat to economic ones, it is evident that environmental concerns still are important to the public. During 1983, due to public pressure, a new head of the federal Environmental Protection Agency was appointed by Washington in order to strengthen that agency's position. In addition, as demonstrated in this report, the County of Suffolk takes a very active role in environmental preservation. At the local level too, it appears that environmental review is increasingly becoming an integral part of the planning process. Town Planning Boards have been finding that environmental impact statements are a useful tool in evaluating new subdivision proposals and the SEQRA process is being used more and more in subdivision review in order to insure that new development will not adversely impact the environment at the expense of the local community. Most towns also have their own environmental laws to protect important resources.

GOVERNMENTAL PROGRAMS AND ACTIVITIES

Table 45 summarizes the various federal, state, county and local laws dealing with general environmental review and enforcement.

1. Suffolk County

SEQRA Review—

At the Suffolk County level, the *Council on Environmental Quality (CEQ)* reviewed the 1984 through 1986 County Capital Program to identify which of the items required some sort of environmental review. A total of 101 new items were commented on as to what their environmental review requirements will be. During the course of 1983 the county completed environmental review of 41 projects. Of the total, 32 negative declarations were issued, of which 25 had conditions attached in order to minimize environmental impact. Although many of the projects were modified to minimize environmental impact as part of the negative declaration none of the projects were disapproved on the basis of SEQRA. One of the projects was classified as a Type II Action requiring no further environmental review. In addition two Final Environmental Impact Statements (FEIS's) were completed on the Southaven Park Redevelopment and the Boylan Lane Canal Jetty. SEQRA lead agency on the proposed Old Fort Pond Dredging and the Sweezy Street Bridge was given by the County to the N.Y.S.D.E.C. and the Brookhaven Town Department of Environmental Protection respectively. Two projects, the Ecological Recharge Basin along C.R. 16, Town of Smithtown and Maintenance Dredging at Dreamer's Cove, Town of Riverhead were tabled pending further information. One project, Bulkheading at Shinnecock Canal, Town of Southampton was withdrawn.

Generic Environmental Impact Statement (GEIS) Concerning Future Development At Northwest Harbor—

The Suffolk County Planning Department at the request of the East Hampton Town Planning Board prepared a SEQRA generic environmental impact statement regarding the Northwest Harbor Area. The document was submitted to the Town of East Hampton Planning Board on November 23, 1983.

The major objective of the GEIS was to analyze the cumulative impact of existing and future development on Northwest Harbor and its associated natural resource base. To accomplish this, existing and future land use information was presented. In addition, the natural resources of the area were inventoried and their sensitivity to development analyzed. Areas of severe, moderate and slight environmental impact were identified, as well as specific measures and alternatives to mitigate adverse impacts in some cases. This information provided a basis for sound environmental planning and decision making concerning the Northwest Harbor area.

Since activities in the watershed have a direct bearing on the harbor's resources, the study was not limited to the investigation of the shoreline area proper, but included an analysis of the entire watershed of the harbor, which is approximately 4,585.8 acres in size. Where portions of an undeveloped parcel of land lie within the watershed area, the entire parcel was included. This more comprehensive approach allows for consideration of the aggregate impacts of future growth in the entire harbor watershed when evaluating specific development proposals.

The content of the GEIS was prepared and organized in accordance with Title 6 Part 617.14 and 617.15 of the NYCRR Implementing SEQRA and a Scoping Checklist as prepared by the East Hampton Planning Board. It basically included eight major divisions:

- A description of the proposed action
- A description of the environmental setting of the study area
- Environmental impact analysis
- Growth inducement aspects
- Steps to minimize adverse environmental effects
- A discussion of alternatives
- Adverse impacts that cannot be avoided
- Conclusions and recommendations

In general the GEIS concluded that the major issues in the Northwest Harbor study area involve the environmental impacts of residential population growth and development. Although it is difficult to quantify the environmental effects of future development, it is clear that the quality of the Northwest Harbor environment, as well as the area's groundwater supply can be adversely impacted depending upon the rate, density and type of development permitted. To maintain the pristine quality of the harbor and its surroundings, development must be strictly regulated, especially in environmentally sensitive areas.

The report's *Environmental Impact Summary* shows those areas which are subject to severe environmental impact, those subject to moderate to severe impact, and those subject to slight or no impact. Areas within the **severe impact** zone include:

- All surface waters inclusive of a 100 foot natural buffer area.
- Fresh and salt water wetlands inclusive of a 100 foot natural buffer area.
- Bluff areas inclusive of a 150 foot natural buffer area.

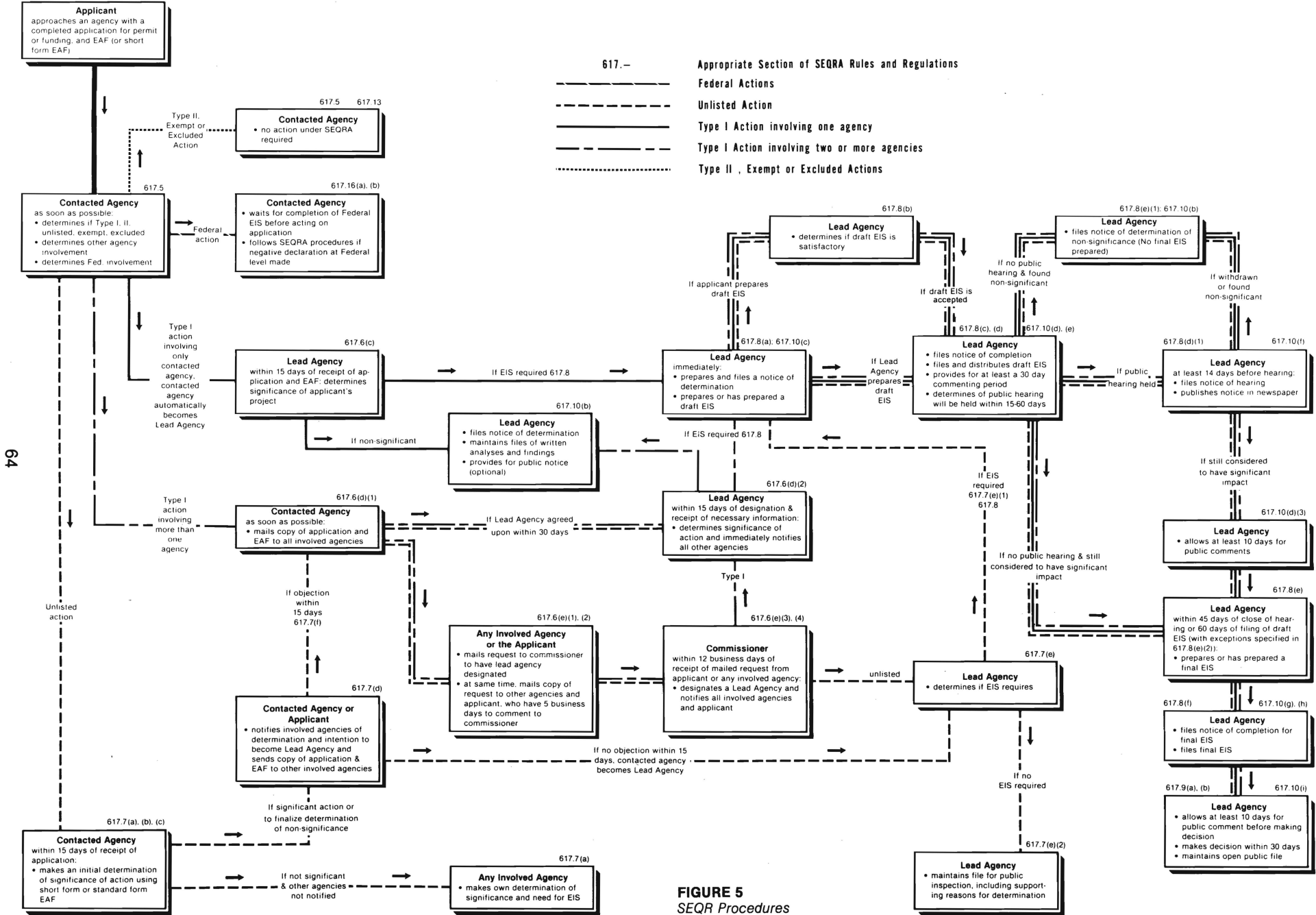


FIGURE 5
SEQRA Procedures

TABLE 45

**Major Federal, State And County Laws Dealing With
General Environmental Review And Enforcement**

Name (Citation)	Administering Agency	Primary Purpose	Major Provisions
FEDERAL			
National Environmental Policy Act (42USC §4321 et seq).	Council on Environmental Quality and all Federal Departments and agencies	Reduce the degradation of the human environment and achieve a balance between development and resource use.	Requires federal agencies and licenses to analyze impacts of actions on land and water resources and to choose the environmentally preferable alternatives or to explain why that alternative was not chosen.
STATE			
State Environmental Quality Review Act—Art. 8 of the Environmental Conservation Law	Department of Environmental Conservation and all state and local agencies	To declare a state policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and enhance human and community resources; and to enrich the understanding of the ecological systems, natural, human and community resources important to the people of the state.	Requires all state and local agencies and licenses to analyze impacts of actions on the environment and to minimize any impacts that can not be avoided.
Title 6 NYCRR Part 617	Department of Environmental Conservation and all state and local agencies	Rules and Regulations implementing SEQRA	<ol style="list-style-type: none"> 1. Sets guidelines for environmental impact assessments and statements and when they are required. 2. Establishment of lead agency. 3. Review time schedules.
Article 71 of the Environmental Conservation Law	Department of Environmental Conservation and County D.A. Offices	Enforcement of N.Y. Environmental Conservation Law	<ol style="list-style-type: none"> 1. Governs DEC and Attorney General's enforcement of the E.C.L. 2. Gives delegation of criminal enforcement authority to the District Attorney of the County in which the violation occurs.
COUNTY			
Environmental Bill of Rights—Article 1 of the Suffolk County Charter	Council on Environmental Quality and all County Departments	The policy of Suffolk County shall be to conserve and protect its natural resources, including its wetlands and shorelines, and the quality of its environment and natural scenic beauty, and to encourage the conservation of its agricultural lands. In implementing this policy, the County Legislature shall make adequate provision for the abatement of air, water and soil pollution and of excessive and unnecessary noise, the protection of wetlands and shorelines, and the conservation and regulation of water resources.	<p>Establishes the Suffolk County Council on Environmental Quality (CEQ) and assigns them the following responsibilities:</p> <ol style="list-style-type: none"> 1. Prepare guidelines on what activities are likely to have a significant impact on the environment; 2. Recommend properties for dedication to the County Nature Preserve and Historic Trust; 3. Assist the County Executive in the preparation of his Annual Environmental Reports; 4. Advise the County Legislature and County Executive on developments in the County with environmental significance; 5. Review the environmental impact of any project at the request of the County Legislature or County Executive;

TABLE 45 (cont'd.)

Name (Citation)	Administering Agency	Primary Purpose	Major Provisions
Local Law No. 23, 1977, A Law Implementing SEQRA	Local Council on Environmental Quality and all Departments initiating county projects and actions	Implementation of the State Environmental Quality Review Act at the County level.	<p>6. Review and report on environmental impact statements that are required to be prepared by County agencies. In addition, all projects and activities undertaken by the County that may significantly affect the environment were required to undergo environmental review.</p> <p>1. Sets County rules and provisions for environmental review of county actions. 2. CEQ is in charge of administering the environmental review process. 3. Departments are in charge of preparing environmental impact assessments and statements.</p>
<ul style="list-style-type: none"> • Areas containing endangered and threatened flora and fauna inclusive of a minimum 100 foot natural buffer. • Areas where the depth to seasonal high groundwater is less than 4 feet from the surface. • Beach and dune areas inclusive of a 100 foot natural buffer area. • Major swale areas. • Steep slope areas 10% adjacent to surface waters. • Cemeteries. 		<p>Willful and intentional violations of the environmental laws, however, were treated as criminal and vigorously prosecuted by the Suffolk County District Attorney's Office.</p> <p>The most significant prosecution in terms of its potential deterrent impact on other polluters in Suffolk County was <i>People v. EMR Circuits, Inc. and Stuart Wood</i>. Indicted in October 1983 for unlawfully discharging hazardous industrial wastes, each defendant pled guilty to a single count. In March, 1984 Supreme Court Justice McInerney handed out the first jail sentence ever in New York for a violation of the laws governing industrial wastes, sentencing Wood to three months in the Suffolk County jail. In addition, EMR was fined \$10,000.</p>	
<p>The GEIS recommended that development should not be allowed within the severe impact zone; the area should be preserved in its natural state. It also pointed out that uncontrolled development within the moderate to severe impact zone which includes:</p>		<p>Examples of other cases during the past year include:</p> <p><i>People v. Yankee Antique Workshop, Inc.:</i> The defendant, a furniture stripper, was charged with unauthorized disposal of hazardous wastes. The corporation pled guilty, cleaned up the waste, and was fined an additional \$960.00.</p> <p><i>People v. Allied Termite Control Corp.:</i> The defendant was indicted on fourteen counts arising out of the improper application of a restricted pesticide, Aldrin. The corporation pled guilty to six of the counts, and was fined \$2,000.</p> <p><i>People v. Gershowitz and Gershow Recycling Corp.:</i> The defendant was indicted for numerous instances of operating an auto shredder in Medford without a permit. The case is pending.</p>	
<ul style="list-style-type: none"> • all other areas with slopes greater than 10% • trails • critical aquifer recharge areas • archaeological and historic sites • minor swales 		<p><i>People v. BK Industries, Inc., D/B/A The Radiator Center.:</i> Defendant was charged with unlawfully discharging industrial waste. The case is pending.</p> <p><i>People v. New Lehigh Products and Sidney Abramson:</i> Defendants were charged with unlawfully discharging industrial waste. The case is pending.</p> <p><i>People v. T.S. Metal Processing:</i> After this case was referred to the District Attorney's Office, but prior to any charges being brought, the defendant entered into an agreement with the Health Services Department to clean up an unlawful discharge.</p>	
<p>can have significant environmental impacts if not regulated.</p>		<p><i>People v. Oil Recovery of Long Island, Inc. and Ricky S. Anello:</i> Defendants were charged with a total of fourteen felonies, including the unlawful transportation and possession of hazardous waste. The case is pending.</p>	
<p>Environmental Crime Unit —</p>		<p>The latter case has given rise to the first civil suit for forfeiture of a vehicle used to illegally transport or dispose of hazardous waste brought under Local Law 8 of 1983. This law, passed by the Suffolk County Legislature in April, 1983 at the behest of the District Attorney, authorizes the District Attorney to bring civil forfeiture proceedings in the Supreme Court whenever there is reasonable cause to believe a</p>	

vehicle is being used to illegally transport or dispose of hazardous waste. It is anticipated that this law, unique in New York State, will assist greatly in the District Attorney's efforts to deter those who, for illicit gain, would pollute the County's air, land, and water.

Radiation —

Radiation Control Unit—Highlights for 1983: The Radiation Control Unit of the Suffolk County Department of Health Services is responsible for maintaining public exposure to radiation at the lowest achievable levels. The most important source of population exposure after natural background radiation is medical x-ray exposure. The primary objective of the County Radiation Program is to reduce patient and operator exposure to medical and dental x-rays.

Mandated activities require inspection of all diagnostic and therapeutic x-ray installations in Suffolk County. The inspections include a review of plans, proper equipment function and use, personnel monitoring, film storage and processing and radiation levels within and outside the work area. In addition, the Radiation Control unit performs mercury vapor surveys of dental offices and provides consultation when necessary. The unit participates in the FDA's Bureau of Radiological Health Program called DENT (*Dental Exposure Normalization Technique*), which was developed as a means of identifying dental x-ray facilities when patient exposure is outside a normal range. Educational and consultative approaches are then used to gain corrective action. Data from the DENT program in Suffolk County indicate a dose reduction of 25 percent per film in the offices visited. This reduction is commendable since estimates by the Food and Drug Administration indicate that the extent of dose reduction for medical x-ray procedures when equipment is perfect and the operator is well trained is in excess of 30 percent.

In June of this year two Public Health Sanitarians from the Radiation Control Unit attended a one week *Quality Control Steps* course sponsored by the Eastman Kodak Company. Attendance was strongly urged by the NY State Bureau of Environmental Radiation Protection to ensure that the unit would be prepared for the quality assurance audit program which will begin in 1984.

The Radiation Control Unit's environmental monitoring program includes the routine collection of water, milk, soil, vegetation and air samples. In 1984 an air sampling program at Shoreham will be reinstated to keep close surveillance of any changes in airborne radioactive contaminants. Currently, there are four air samplers throughout Suffolk County. Leakage testing of microwave ovens is performed upon request, when malfunctions are suspected.

Accomplishments of the program by the end of 1983 included initial inspections of 1,150 tubes, 256 reinspections, 384 DENT surveys and 121 samples collected. There were six formal hearings held in the first nine months of 1983 and two involved x-ray machine installers who had not notified the Department of the installations. This approach was necessary to make the industry aware that installers of equipment were also subject to the conditions of Article 15, Suffolk County Sanitary Code. Installations not reported can cause serious problems, until they are located by the unit's Sanitarians. Such hearings will improve conditions significantly. In July of 1983, x-ray inspections of chiropractic facilities were suspended pending regulatory changes concerning Section 6551 of the Education Law which removed several limitations to chiropractic use of x-rays.

Shoreham —

During 1983, LILCO's Shoreham Nuclear Power Station continued to be one of the most critical issues ever to face the residents of Suffolk County. With strong legislative and public support, the County has directed substantial resources toward dealing with our ongoing opposition and aggressive action has been taken with regard to each major aspect of the problem.

One of the major County responsibilities to its residents is ensuring the public's health and safety. It is the County's contention that evacuation of Suffolk County in the case of an accident at Shoreham is impossible to accomplish in a manner consistent with our public safety responsibilities. With this in mind, the County has intervened in the Shoreham licensing hearings conducted by the Nuclear Regulatory Commission.

The County's legal counsel, the law firm of Kirkpatrick, Lockhart, Hill, Christopher and Phillips, has made significant progress through discovery requests, depositions, and the filing of contentions before the administrative judges. Notable among these were contentions involving Shoreham's backup diesel generator system and evacuation planning.

In February 1984, LILCO sought Licensing Board approval of a low power license for Shoreham prior to completion of litigation of the outstanding issues concerning LILCO's emergency diesel generators. This request is unprecedented in that it seeks a low power motion without on-site qualified diesels or any other qualified on-site power sources. In the County and State's view, the hearing schedule was illegal because it deprived the County and State of an opportunity to adequately prepare its case denying LILCO's motion. Federal District Court Judge Norma Holloway Johnson upheld the contention of Suffolk County and the State and issued a temporary restraining order which stopped the hearings. The NRC is considering the entire matter again.

A third major area of activity in 1984 related to Shoreham was LILCO's withholding of its half year \$26.2 million in property taxes on the Shoreham Nuclear Power Station. The County along with Attorney General Abrams and Brookhaven Town have filed a suit to allow collection of the unpaid taxes.

As a reaction to the County's rejection of emergency planning for the Shoreham Nuclear Power Station, LILCO has developed its own emergency plan. This plan is one in which LILCO employees would take the place of government officials in conducting an evacuation. The County has taken action against LILCO in the Supreme Court of New York and is seeking a ruling that LILCO workers cannot assume the police powers called for in the LILCO emergency plan. Governor Cuomo has filed a similar suit. LILCO petitioned to have this case moved to Federal District Court and the County is contesting the removal.

A lawsuit has been filed against the County by Citizens For An Orderly Energy Policy. In this case, the plaintiffs allege that the County has violated Federal and State law by refusing to adopt or implement an emergency plan for the Shoreham plant. The Shoreham-Wading River School District has also alleged similar complaints. The County's motion to dismiss the complaints has been heard and the decision is still pending.

Another major area of activity is the prudence proceedings being heard before the Public Service Commission. This proceeding involves determining what amount of the cost of Shoreham is attributable to LILCO's imprudent management of the construction and engineering of the project. Should it be proven that a significant percentage of the costs of Shoreham are attributable to management imprudence, those costs may not be chargeable to the rate base. The PSC staff has alleged that any cost above \$2.3 billion is imprudent and should not be considered as returnable. The County is actively pursuing this case with legal counsel and consultants in cooperation with the Consumer Protection Board.

The County has established a *Blue Ribbon Panel* to develop a plan that may be used to determine how the costs of Shoreham can be most equitably distributed, without causing irreparable damage to the economy of Suffolk County and Long Island. Also, in this forum, the County has contracted with the accounting firm of Touche Ross and Company to conduct a comprehensive study of LILCO's corporate financial structure. This study resulted in a report on alternatives for the apportionment of the costs of the Shoreham Nuclear Power Station.

LILCO's rate case, which is currently pending, involves a request for \$279 million in rate relief. The County has submitted direct testimony calling for a denial of LILCO's request and in fact the County has requested a credit or refund to LILCO ratepayers of the \$100 million that LILCO expects to save from implementation of its austerity program. That request is currently under consideration by the PSC Administrative Law Judge.

The work of the consulting firm Daverman and Associates, has been completed. They have studied the concept of municipalization which would lead to the County taking actual ownership of sufficient LILCO transmission and generating capacity to service Suffolk County. This would be accomplished either through negotiated purchase or condemnation. While Daverman's Study indicates a somewhat favorable rate impact, substantial further review and study is needed before the County can take any further actions regarding municipalization.

After studying numerous issues regarding the use of New York Power Authority hydropower, the County took the necessary steps during the summer of 1983 to place a proposition on the November ballot which would create a Suffolk County Electric Agency. The proposition was approved by the voters enabling the County to receive and pass on to the ratepayers low cost hydropower. The hydropower is expected to become available in 1985. An application has been prepared by the Agency and submitted to PASNY.

2. Local

Local SEQRA ordinances have been passed by all ten towns within Suffolk County, as well as the Villages of East Hampton, Sag Harbor, Head of the Harbor, North Haven, Lindenhurst and Northport.

The Towns of Babylon, Brookhaven, Huntington and Islip have Environmental Departments which aid their towns' SEQRA reviews in many instances, as well as enforce their towns' environmental laws.

At the local level Suffolk County has a total of 19 Conservation Advisory Councils (CACs) which have been duly authorized by the New York State Department of Environmental Conservation (NYSDEC). The municipalities of Babylon, Brookhaven, East Hampton, Huntington, Islip, Riverhead, Shelter Island, Smithtown, Southampton, Southold, Asharoken, Brightwaters, Head of the Harbor, Lloyd Harbor, Nissequogue, Old Field, Port Jefferson, Village of the Branch and Westhampton have CAC's. All of the CAC's play a direct role in the SEQRA review process in their respective towns and villages giving environmental advice, and are asked to send representatives to the Suffolk County Council on Environmental Quality.

