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LONG ISLAND WASTE POLLUTION STUDY

AN ECONOMIC ANALYSIS

U.S. DEPARTMENT OF COMMERCE NOAA
COASTAL SERVICES CENTER
2234 SOUTH HOBSON AVENUE
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Prepared in Partial Fulfillment of Task 8.7
of the New York State Outer Continental Shelf
Development Impact Study By

The Long Island State Park & Recreation Commission
New York State Office of Parks & Recreation

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Summary

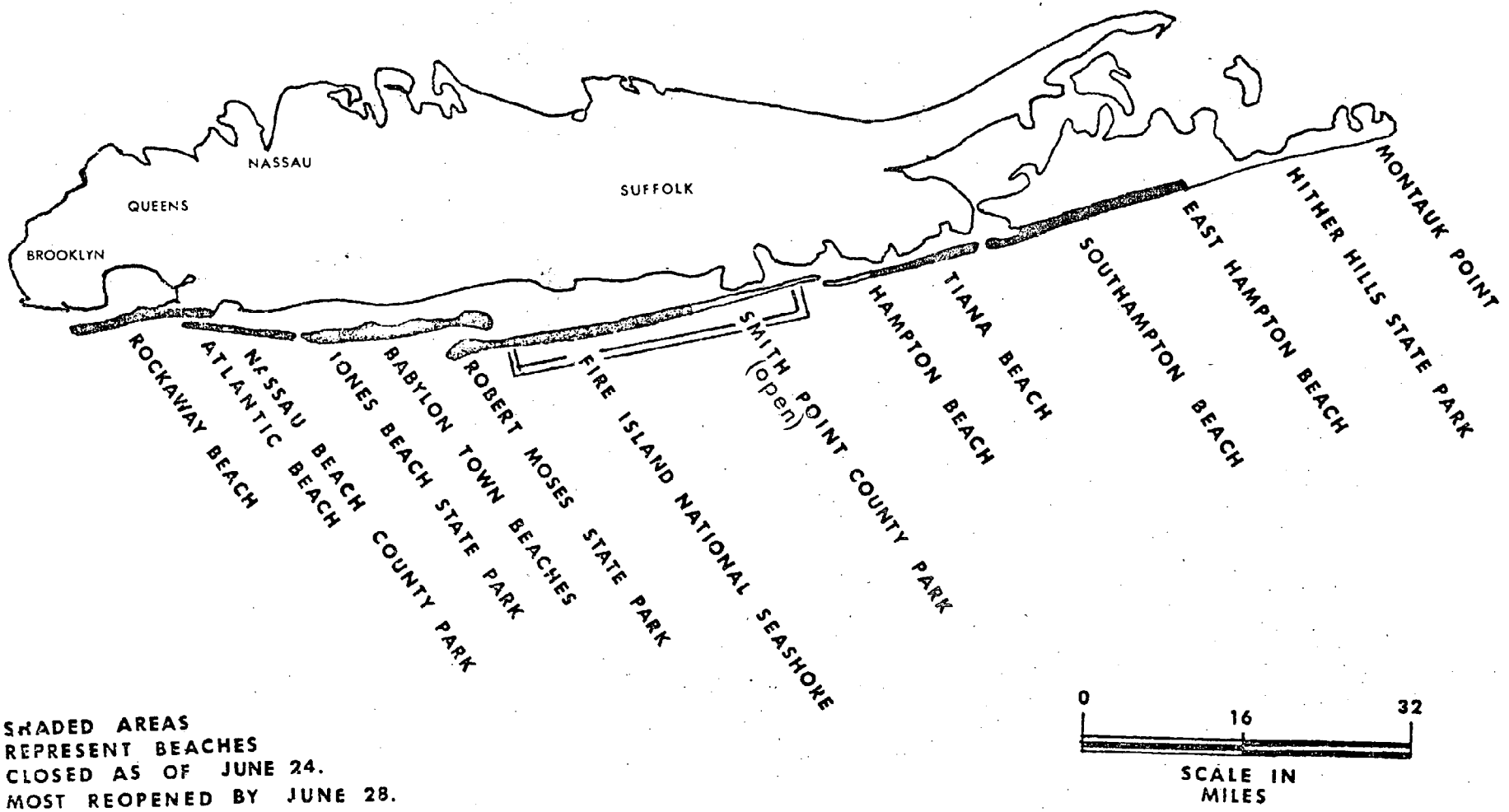
During the period between June 15 and July1 1976, most of the approximately eighty ocean beaches along Long Island's south shore between Rockaway and East Hampton were closed due to the washing ashore of sludge, tar balls, plastic containers, produce, and other waste materials. The origin of these materials became the subject of much concern and considerable debate as officials, environmentalists, and frustrated beach patrons sought to identify who or what was to blame. Now, several months later, the only thing that is certain is that the blame must ultimately be shared by many parties.

Despite this uncertainty, the implications of this situation for Long Island's recreation and tourist industry was clear. The closing of many of the region's ocean beaches in June portended what could have been financially a disastrous summer season. Recreation and tourism on Long Island has been estimated to be a $ 750 million-a-year industry, employing over forty-five thousand persons during most of the year, and an additional six thousand during the summer months.

The Long Island Association of Commerce and Industry claims that about 20% of this total - or about $ 150 million - is ocean-related spending. With the beaches closed, and the public reluctant to consume locally caught seafood products,

Map 1

MAJOR LONG ISLAND BEACH AREAS AFFECTED BY THE SLUDGE PROBLEM, SUMMER OF 1976.



SHADED AREAS
REPRESENT BEACHES
CLOSED AS OF JUNE 24.
MOST REOPENED BY JUNE 28.

the summer tourist season could have been ruined before it officially began.

Tourist-related businesses suffered through a poor June, a disastrous July 4 weekend, and a slowly improving July. Although most beaches were re-opened as of June 28, the major ocean beach facilities reported attendance levels to be 30% below those for 1975 as late as July 24.

Private businesses suffered similar losses. Many bait and tackle shops in Nassau and Suffolk Counties reported sales decreases in excess of 30% for the season. Hotel, restaurant, bar, and ferry services on Fire Island suffered significant losses over the usually lucrative July 4 weekend and well into the month.

Fortunately, August proved to be a good month, despite Hurricane Belle. Many persons who had been reluctant to visit Long Island during July came in August. Also, in August there was no summer Olympics or Bicentennial to compete with for tourist dollars. Although many businesses reported overall losses for the summer, there is no doubt that, in many cases, a decent August kept many of them from ruin.

Exactly how many millions of tourist dollars were lost to the region's economy during this period is not known. Estimates run anywhere from $ 10 million (plus an added $ 100,000. for cleanup costs) to $ 40 million.

A former Executive Vice President of the Long Island Association of Commerce and Industry estimated that each

summer week during which area beaches were closed would impact the regional economy at the rate of $ 10 million. In view of the importance of Long Island's ocean beaches to its economy, this figure seems reasonable.

When applying this to the length of the actual impact period - three weeks - we arrive at the estimation that the waste pollution problem cost Long Island's economy approximately $ 25-$30 million during the summer months.

The Study

The recent waste pollution situation on Long Island proved to be a useful model through which the potential negative effects of an oil spill resulting from planned offshore oil and gas development and transport operations could be assessed and mitigated.

Task 8.7, Sub-task 1, of the State's Outer Continental Shelf Development Impact Study requires the Office of Parks and Recreation to review the negative effects of oil spills, given their magnitudes and strand times. Despite the fact that data on revenue losses and cleanup costs resulting from oil spills in other locations is easily available, there currently is no hard information on the negative effects of an oil spill in the waters adjacent to Long Island on Long Island itself.

The waste pollution problem provided an opportunity to quantify losses in recreation-related revenues resulting from beach closings and subsequent changes in public recreation demand and spending patterns.

Long Island is the second (after New York City) most popular recreation and tourist region in the state. Depending upon your source of information, the recreation industry contributes between $ 600 and $ 800 million annually to the economy, and represents one of its largest revenue and employment-producing sources.

The key to Long Island's desirability as a summer resort area is the ocean. Thousands of out-of-staters take their annual vacations near the shore, and many times as many New Yorkers spend their free time during the summer season on Fire Island or in the Hamptons, to the east. In addition, many day-trippers visit ocean beach facilities continually during the summer.

The Waste Pollution Problem

The first beach closings occurred soon after the explosion of two massive sludge holding tanks located in Island Park, just north of Long Beach. Nassau County health officials ordered the closing of over sixty local beaches on June 3, the day after the explosion, to determine the extent of the potential health hazard presented by the million gallon sludge spill.

Two weeks later, thirty miles of ocean beaches were closed when combinations of raw sewage, sludge, plastics, and other wastes began washing ashore along the coast between Robert Moses State Park and the Moriches Inlet. Over the next few days more and more facilities were ordered closed as these materials began stranding along the shoreline further west.

By June 24 almost every ocean beach along the south shore between Rockaway and East Hampton was closed. Attendance at the few facilities remaining open was at record low

levels, Governor Carey declared a disaster situation in Nassau and Suffolk Counties on June 23. With July 4 - the traditional start of the summer - only a week and a half away, it appeared that the tourist season was doomed.

It quickly became evident that the material that had been washing ashore since June 15 was not sludge alone, but a puzzling combination of raw sewage, oil, tar balls, produce, wooden and plastic containers, and other things. The entire blame, therefore, could be placed neither upon the June 2 sludge holding tank explosion nor the on-going ocean dumping of sludge by the City of New York and other jurisdictions.

Businesses, both public and private, depending upon recreation and tourist dollars, were more concerned with attracting customers than with law suits. The July 4th weekend provided no relief. Ferry operators serving Fire Island reported ridership decreases of as high as 80% as compared to July 4, 1975. Correspondingly, hotel and restaurant owners on Fire Island suffered significant losses. One hotel proprieter reported a loss of $ 4000. over the July 4 weekend.

Congressman Thomas J. Downey (D-West Islip) held a series of meetings for local businessmen in early July at which they had the opportunity to discuss their losses resulting from the pollution problem. In general, these businessmen blamed the media for what they described as

" over-reacting " to the problem and therefore blowing the whole matter out of proportion. Most agreed that, despite the fact that the beaches were clean and safe by July 1, most people were reluctant to use them because of negative reporting by the media.

At these meetings, businessmen estimated their losses for the period between June 16 and July 6 to be between 25% and 40 %. Congressman Downey promised a full report on the situation by mid-July, and told those in attendance that he had co-sponsored an amendment to the Small Business Act which would allow for Federal disaster aid in the event of future waste pollution damages. This amendment had cleared the House by early July, he reported, and was being considered in the Senate.

Commercial and recreational fishing was also severely impacted. The public's fear of contaminated seafood reduced consumption during much of July. This resulted in sizeable revenue losses to bait and tackle businesses along the south shore. A survey of nineteen of these establishments between western Nassau and Hampton Bays indicated losses of 15% to 30% during the summer.

Pier fishing was widely prohibited, and the bait station at Captree State Park reported a 30% drop in business between June 15 and July 4.

The $ 15 million a year hard clamming industry was not badly affected, despite a temporary ban on clamming within

three miles of Fire Island which was imposed on June 15.

As July progressed, attendance at Long Island's ocean beaches slowly climbed back up to seasonal levels. By July 28, attendance was back to normal at most facilities and continued to be so until Labor Day.

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Beach Attendance Breakdown

Attendance at Long Island's ocean beaches was markedly down during the months of June and July. Decreases region-wide ranged from 30% to 50% when compared to 1974 and 1975 levels. This is probably the best single indication of the magnitude of the summer's pollution problem.

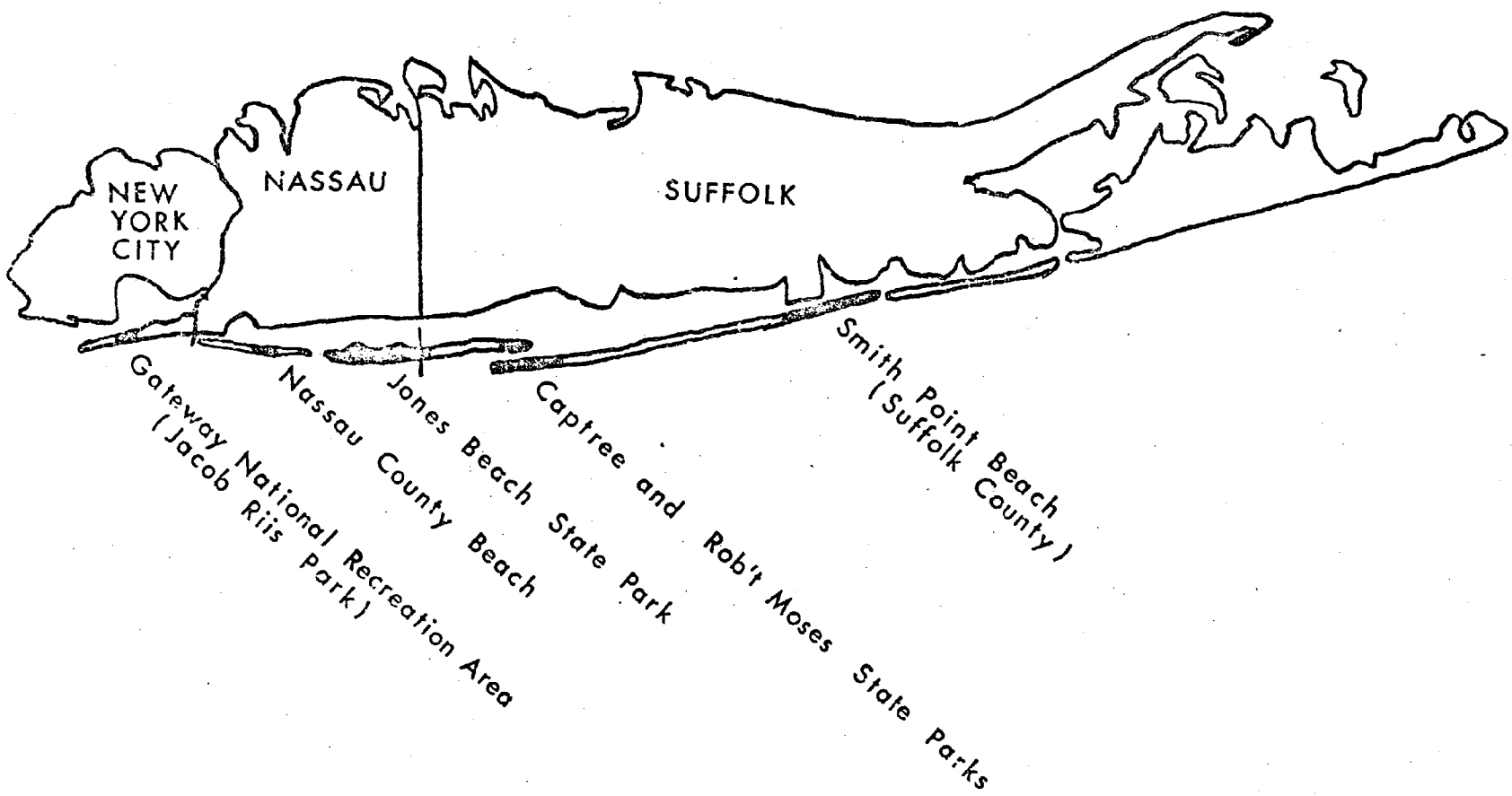
In early June, when many local beaches were closed down as a result of the sludge tank explosion, the ocean water was still too chilly for most people to swim in. Weekenders continued to travel to Fire Island and the Hamptons to enjoy sunbathing and socializing. Later on in the month, when water temperatures were higher but the beaches were closed, many of the weekenders stopped coming.

Map 2 identifies the more popular public bathing areas on Long Island. These facilities are owned and operated by Federal, State, and county governments, and are ones for which comparative attendance data best indicate the scale of the pollution problem.

Gateway National Recreation Area

According to the National Park Service, beaches in Jamaica Bay and at Sandy Hook, New Jersey, were unaffected by the pollution problem. However, the beach at Jacob Riis Park (see Map 2) was closed at approximately 8:00 AM on June 30 and remained closed until 1:00 PM on July 1.

Map 2 - MAJOR PUBLIC OCEAN BEACH FACILITIES ON LONG ISLAND



Management at Gateway decided to close the area due to the excessive amount of debris that floated in with the in-coming tide. The floatable material, according to the Assistant Superintendant, consisted of plastics, charred wood, grease balls, etc.

The visitation recorded on June 30 was 20,010, as compared to 63,113 for the same day in 1975. Riis Park re-opened on July 1 at mid-day, and attendance was comparable to the 1975 level of 40,630.

Nassau Beach (Nassau County)

The June 2 explosion of the sludge holding tanks resulted in the immediate closing of over sixty nearby bathing areas, including all three sections of Nassau Beach - the only County owned ocean beach facility. At the time, County officials were more concerned with preventing possible outbreaks of hepatitus, tetanus and diphtheria, than they were with possible financial losses to the tourist industry.

Located a few miles west of Jones Beach State Park, Nassau Beach is made up of three separate beaches, each with their own terrace, pool, parking, and cabana facilities. The whole Beach was closed to ocean bathing during most of the period between June 16 and 27. Although August attendance was above normal, Nassau Beach experienced an overall 27% decrease in attendance for the summer, when compared to 1975 levels.

Total revenues collected for the 1976 season increased by

by about 18% ($519,000.vs.$425,300.) over 1975 levels. Total terrace and swimming pool attendance was greater than total beach attendance for the 1976 season (192,627 vs. 149,365), but in 1975 the opposite was true (161,000 vs. 206,500). This is attributable to the increased demand for swimming pool usage resulting from the beach pollution.

Table 1 - Comparative Attendance Data For Nassau Beach For the Period of June 19 to July 17.

Period	1975	1976	Comments
June 19-26:	12,820 (beaches) 7,518 (pools) 20,338	2,300 (beaches) 1,975 (pools) 4,275	Beaches closed to swimming in 1976.
June 27 - July 3:	4,950 (beaches) 5,095 (pools) 10,045	5,500 (beaches) 10,611 (pools) 16,111	Beaches reopened but patrons fear health hazard. Prefer pools.
July 4-10 :	11,900 (beaches) 16,223 (pools) 28,123	15,200 (beaches) 16,100 (pools) 31,300	Holiday period. Attendance higher due to holiday.
July 11-17:	2,200 (beaches) 2,250 (pools) 4,450	12,650 (beaches) 12,021 (pools) 24,671	Poor weather in 1975. Normal atter dance in 1976.

(Source: Nassau County Parks & Recreation)

Long Island State Park & Recreation Commission Beaches

Jones Beach and Robert Moses State Parks were closed intermittantly from June 16 to June 26, with Jones Beach's West End closed until June 29.

Attendance figures indicate a 24% decrease in the cumulative attendance at the two facilities between June 15 and July 15, 1976, when compared to the same period in 1975 and 1974. This is

attributable to the beach closings and, to a lesser extent, to unseasonally mild weather in early July. The park admission fee increase to $2.00 per car, initiated in late July, 1975, is also a factor, albeit a minor one.

Table 2 - Attendance At Jones Beach, Robert Moses and Captree State Parks For the Period of June 15 to July 15, 1974, 1975, & 1976.

	June 15-30	July 1-15
1974		
Jones Beach	683,682	1,573,119
Robert Moses	136,798	375,936
Captree	89,448	143,461
	909,928	2,092,516
	Total - 3,002,444	
1975		
Jones Beach	1,056,256	932,068
Robert Moses	261,944	233,652
Captree	123,948	123,452
	1,442,148	1,279,172
	Total - 2,721,320	
1976		
Jones Beach	536,102	974,414
Robert Moses	97,840	244,278
Captree	75,098	122,296
	709,040	1,340,788
	Total - 2,049,828	

(Source: Long Island State Park & Recreation Commission)

The Jones Beach Catering Corporation, which operates all restaurants and food concessions at the three State Parks, reported a 21% decrease in revenues during the above period in 1976, as compared to 1975. As a result of reduced sales, the Corporation cut back the number of summer employees hired and reduced the working hours of many of those who were hired.

These seasonal employees are mainly students who rely on summer earnings to pay tuition or related expenses during the year.

The major State Park facilities within the Long Island region experienced differing attendance patterns during the summer of 1976. While Jones Beach and Robert Moses State Parks had declines in attendance of between 20% and 30% in June and July, other facilities - those not located on the ocean - experienced measurable increases in theirs.

Table 3 - Attendance At Major Long Island State Parks During June and July, 1975 & 1976.

	June-July 1976	June-July 1975	1976 change
Belmont Lake State Park	150,200	134,000	+12.0%
Heckscher State Park	259,700	262,000	- 1.1%
Hempstead Lake State Park	170,000	166,000	+ 2.1%
Jones Beach & Captree State Parks	3,662,000	4,584,000	- 20.0%
Robert Moses State Park	701,600	1,002,600	- 30.0%
Sunken Meadow State Park	437,300	419,400	+ 4.3%

(Source: Long Island State Park & Recreation Commission)

The two to twelve percent increases in attendance registered at the non-ocean front facilities does not offset the decreases reported at Jones Beach and Robert Moses State Parks. Apparently, many persons who normally would have gone to the beaches, had they been open, instead chose to patronize other facilities, such as local swimming pools, or visited areas off of Long Island.

Fire Island & the National Seashore

All of Fire Island's thirty miles of ocean beaches were closed to swimming on June 15 as a result of the washing ashore of raw sewage and oil at points between Robert Moses State Park and Smith Point County Park. Under normal conditions, approximately 70,000 persons visit this area daily during mid-June.

On June 18, when the volume of debris washing ashore declined, these beaches were re-opened. However, on the following day they were forced to close down again as the pollution condition worsened. All of these beaches, with the exception of Smith Point Beach, remained closed until June 28.

According to data provided by the Suffolk County Department of Public Works, attendance at Smith Point Beach for the first two weeks in June was well above that for the same period in 1975. Between June 15 and 21 the facility was closed and, although it remained open for the remainder of the month, attendance dropped some 30% below 1975 levels.

Overall attendance for the summer of 1976 was 15.1% below that of 1975, and toll revenues at the park declined approximately $ 14,200.

The remainder of the National Seashore is made up of small towns and settlements along the ocean and the Great South Bay between Smith Point and Robert Moses State Park. Many businessmen operating in these areas depend upon the summer tourist season for their livelihoods. During late June

and early July, most of these businessmen suffered significant revenue losses. Unfortunately, although the pollution situation was well documented in area newspapers, very little research was done into a determination of the actual financial losses experienced by these tourist-dependant businesses. Certain individual losses, such as that of the ferry operator who reported that his Sunday business dropped from 250 passangers on June 13 to just nine of the 20th, were covered in local newspapers. No data was compiled on losses suffered by segments of the industry - such as all ferry operators or all hotel owners.

Because of this lack of general information, we can only get a sketchy idea of actual losses to the economy.

Conclusions

There are a number of ways of arriving at the approximate cost to the region's economy of the waste pollution problem. One way would involve the soliciting of information about revenue losses and cleanup expenses from every segment of the tourist and recreation industry that is involved with the ocean. This would necessitate contacting and getting accurate data from every hotel, motel, restaurant and bar, ferry and taxicab service, commercial and recreational fishing operation, public and private beach and club operator, and food and souveneir concession in business along Long Island's south shore. Time and financial resources limit this type of research as a feasible alternative.

A more practical method involves the use of a given data base and the application of basic mathematics to come up with the kind of estimate employed by the Long Island Association of Commerce and Industry, and other public business/commercial-oriented organizations.

Many of these organizations use the base figure of $ 700 million (in 1970) as the annual contribution of recreation and tourism to Long Island's economy. With inflation, increases in discretionary free time, and other factors taken into account, this figure could easily be increased to or beyond the $ 790 million base figure used by the Long Island Association of Commerce and Industry.

Base data for tourist and local recreation-related spending on Long Island varies from source to source. Regional State Department of Environmental Conservation Director Donald Middleton, in a July 24 statement before the House Sub-committee on Fisheries and Wildlife Conservation, put the loss in revenues due to the pollution problem at $ 10 million. This does not include beach cleanup costs, which he estimated to total about $ 100,000.

In contrast, Robert Sellers, a former Executive Vice President of the Long Island Association of Commerce and Industry, estimated that losses would have amounted to $ 10 million per week.

Research into the costs of the pollution problem has lead us to believe that the actual losses to the economy lie somewhere in between Middleton's $ 10 million figure and Sellers' much larger figure.

In determining the length of the actual impact period it must be kept in mind that in mid-June, demand for ocean beach facilities is not at peak levels. Peak demand usually occurs in early-to-mid July on Long Island. As was mentioned before, ocean temperatures don't reach their most comfortable levels until mid-to-late July.

It must also be remembered that, although July attendance was well below normal seasonal levels, attendance levels increased steadily throughout the month. This would serve to mitigate the overall loss for the month. Therefore,

the rate of financial loss to the economy declined as July continued.

For these reasons, and others, the actual impact period for the calculation of total revenue losses to Long Island's economy was between two and four weeks. The last two weeks in June can't be counted as two weeks of lost revenues because peak demand had yet to occur at the beaches. The three weeks of low attendance in July were mitigated by a slowly climbing attendance rate.

Taking these factors into account, it is possible that the impact period of the pollution problem lasted for three weeks. Applying the $ 10 million per week standard to this, we arrive at the approximate revenue loss figure of $ 30 million for the summer of 1976.

The stranding of sludge and other waste materials along one hundred miles of the Long Island ocean-front points out the vulnerability of the south shore to a possible disaster situation resulting from a major oil spill in the waters adjacent to Long Island. Studies commissioned by the Nassau/Suffolk Regional Planning Board indicate that during certain times of the year - specifically the spring and summer when currents and prevailing winds are from the south and east - oil spills occurring within a reasonable distance of Long Island stand a very good chance of washing ashore within a relatively short period of time.

Despite technological advances in oil spill cleanup and containment operations, it is quite possible that a major spill occurring anywhere along the shipping route that parellels the south shore will strand somewhere on the oceanfront before it can be completely cleaned up or contained. With plans now underway to lease tracts for oil and gas exploration and development on the Georges Bank, it is possible that oil transport to refineries in New Jersey by tanker will become a daily phenomenon. This increased oil transport traffic will greatly increase the chance of a spill near Long Island.

A major oil spill would have the same effect as the sludge and waste pollution problem of the summer of 1976. If a spill occurs in the spring or summer it is possible that, in addition to severe ecological damage to marine life and water fowl, beaches will be fouled and forced to close down for periods much longer than two weeks.

APPENDIX A

SLUDGE PROBLEM ON LONG ISLAND --- Summer 1976

The following represents an approximate chronological history of the past summer's sludge problem on Long Island, according to local newspaper accounts and other supportive data.

June 2, 1976 (Wed.) - Explosion of sludge holding tank(s) on Hewlett Bay in SW Nassau County releases 1.3 million gallons of sludge waste into the Bay and surrounding waters.

June 3 (Thurs.) - 62 beaches in SW Nassau County are closed by health officials. Projected cleanup costs estimated to reach $4 million.

June 4 (Fri.) - NYC health officials closed 5 miles of beach along the Rockaway Peninsula. Nassau beaches remain closed.

June 15 (Tues.) - 30 miles of ocean beaches along Fire Island are closed when sewage and solid waste materials of questionable origin begin washing up on shore. Robert Moses and Smith Point (Suffolk Co.) beaches are closed. These areas usually accommodate approx. 70,000 bathers per day at this time of year.

June 16 (Wed.) - All 3 Babylon Town (Suffolk Co.) ocean beaches are closed as sewage spreads west. All clamming within 3 miles of Fire Island's beaches is banned.

June 18 (Fri.) - Most of above beaches are reopened as the sewage problem abates.

June 19 (Sat.) - New discoveries of waste materials along Fire Island beaches and points west forces closing of about 20 miles of beach, including Robert Moses State Park and all of Islip Town's

June 19 (cont'd) - (Suffolk) beaches. Source of pollution is still a question. Investigators and airline pilots claim that the sewage is floating in the waters off of L. I. in patches about 1.5 to 3 miles wide.

June 21 (Mon.) - As of today, every ocean beach between Jones Beach State Park and the Moriches Inlet was closed due to continued stranding of sludge and other waste materials.

June 22 (Tues.) - Sludge forces closing of most of remaining Nassau Co. beaches. For first time, sludge washes ashore on east end of Long Island, including Southampton, Bridgehampton and Amagansett. Beaches along the 60 mile stretch between Atlantic Beach (Nassau) and eastern Fire Island were generally deserted. Suffolk's Smith Point beach was open, but attendance was off about 70% for this time of year.

As of today, every beach between western Nassau County and the Fire Island National Seashore (including all State Parks) were closed, with the exception of Smith's Point.

June 23 (Wed.) - Articles in Newsday and the L. I. Press report that many Fire Island businesses are suffering business losses of 30 to 60%. These tourist-oriented businesses include ferry service, hotels, bars and restaurants, umbrella rentals, food stands, etc.

Gov. Carey declared Nassau and Suffolk Counties a disaster

June 23 (cont'd) - area and asked President Ford for Federal funds to help clear up over 100 miles of shoreline fouled by waste materials over the past 9 days.

All of Nassau's ocean beaches remained closed for bathing (including Jones Beach State Park), but Smith's Point in Suffolk remained open despite very low attendance. All State facilities along ocean were either closed or experiencing low attendance. Eight village beaches in Southampton Township were closed. Cleanup costs for 2 Islip Town facilities expected to exceed $6,000.

June 24 (Thurs.) - Situation continues. All ocean beaches between Jones Beach and the Hamptons remain closed except for Smith's Point, which has been open throughout the month. All Babylon, Islip, Brookhaven and Southampton Town facilities are closed, including all State Park beaches.

June 25 (Fri.) - Most Nassau and Suffolk beaches reopen as sludge pollution eases. Jones Beach remains closed to swimming as new debris appears on west end. Only Islip Town's Atlantique Beach remains closed in Suffolk. East end facilities are hurried in order to be ready for coming weekend. DEC opens information center to answer questions on the status of beaches on L. I.

June 26 (Sat.) - President Ford orders job corps personnel to clean up area beaches. Denies disaster aid funding as requested by Gov. Carey.

June 26 (Cont'd) - As of today, almost all beaches along L. I. shore are open. Jones Beach is open, except for west end.

June 27 (Sun.) - Attendance at open L. I. beaches reported well below normal. Jones Beach attendance is about 40% below normal for the last weekend in June.

Robert Moses State Park attendance is about 55% off.

Smith Point Beach is about 40+% below normal.

North Shore facilities report attendance above normal, but not enough to take up slack resulting from low attendance on south shore. Many people are staying away from beaches in general.

Cab services at east end LIRR stations report marked decrease in weekend recreators.

June 28 (Mon.) - Crowds at ocean beaches east of Jones Beach were down about 50% compared to last weekend in June 1975. Since June 25 one-third of about 40,000 calls asking about L. I. beach conditions came from persons living in Jersey or in areas other than L. I. itself. Good indication as to origin of large segment of summer weekend visitors to L. I.

June 29 (Tues.) - West end of Jones Beach reopened for first time in 2 weeks.

July 9 (Fri.) - Congressman Tom Downey (D - West Islip) holds meetings on Fire Island and in Bay Shore to hear local businessmen discuss problems resulting from sludge pollution. Many put their loss-

July 9 (cont'd) - es at between 25 and 40% for period of June 15 to July 6. One ferry operator claimed his July 4 weekend business was down over 80% from the 1975 level. Many businessmen blamed the media for "blowing the whole situation out of proportion." They claimed that the public was afraid to return to the beaches due to news stories, even though the ocean was very clean by late June.

Congressman Downey is a member of the House Small Business Committee. He introduced a bill amending the Small Business Act to provide Federal aid to businesses in future sewage catastrophies whether a "disaster" is declared by the Feds or not.

July 23 (Fri.) - Overall attendance at ocean beaches is still below normal for July. This can be attributable to the Bi-centennial, the Summer Olympics, the sludge problem, or a generally below par weather picture (many cloudy days in July - 11).

North shore facility attendance is up by 1 to 5% as compared to same period in 1975.

Sunken Meadow State Park had 4.3% increase in attendance in June and July, 1976 over same period in 1975. Picnic-oriented facilities away from ocean beaches, such as Belmont Lake and Hempstead Lake State Parks, had attendance increases of 12 and 2.1% respectively over June and July 1975.

Between June 15 and July 15, 1976, Jones Beach attendance was down 560,000 (20%) from 1975 levels.

July 23 (cont'd) - Robert Moses attendance was down 158,000 (30%) from 1975 levels.

Captree State Park, which has many fishing piers, and does a large charter boat fishing business, saw a 20% decrease (60,000) in paid attendance over the same 30 day period. During the same period, attendance at Nassau County's only ocean beach was up about 5% over 1975 levels. However, this facility has a minimum of five pools, which showed attendance increases of 11%, indicating that most of the attendees were using the pools, not the ocean beaches.

Smith's Point, the Suffolk County facility, showed a decrease in attendance for the same period of 28%.

July 24 (Sat.) - Attendance at Jones Beach was about 30% below normal mid-July levels. Robert Moses attendance was off about 33%, but mild weather throughout the week of July 18 could be a reason.

July 25 (Sun.) - Despite small washup of debris on Jones Beach's west end, all south shore beaches were open.

September 15 (Wed.) - In retrospect, the summer of 1976 was not the financial disaster that was first feared. Businessmen from Montauk to western Nassau agreed that despite the poor start due to the sludge, things could have been worse. Most said that August was a good month, which made up for a poor June and a moderate July. Problems arose when L. I. was hit by Hurricane Belle on August 9,

September 15 (cont'd) - and the south shore beaches were once again badly impacted. Both the Bi-centennial and the Montreal Olympics contributed, most felt, to any decreases in tourism on Long Island during the summer season.

Many businessmen were unable to determine what percentage of their losses resulted from each of the above-mentioned phenomena. One motel owner in Montauk claimed to have lost more ($1200.) due to Belle than due to the sludge situation. Suffolk County's Dept. of Public Works claims that its toll at the Smith's Point bridge collected $14,200 less in 1976 than it did in 1975, but attributed this loss to no one reason in particular.

LONG ISLAND WASTE POLLUTION STUDY - Data Sources

Newsday, New York Times, Long Island Press Articles

Long Island Association of Commerce and Industry (Thomas Conoscenti)

Long Island State Park & Recreation Commission Revenue Office

N.Y.S. Department of Environmental Conservation (Middleton, MacMillan, Poole)

Suffolk County Supervisor's Office (Ms. Judith Fischer)

Suffolk County Department of Public Works (Deputy Commissioner Evans)

Suffolk County Department of Commerce & Industry (Comm. Gilbert Hanse)

Suffolk County Parks & Recreation Commission (Comm. John Chester)

Nassau County Health Department, Bureau of Water Pollution Control (Cusumano)

Nassau County Department of Parks & Recreation (Ingolia, Piccininni)

Congressman Thomas J. Downey's Office (Fred Kass)

Robert Sellers, Former Exec. Vice President of the LIACI

Irving Like, Special Attorney For Suffolk County in Litigation Over Offshore Oil and Gas Operations

DeWitt Davies, Principal Planner for the Nassau/Suffolk Regional Planning Board

Helen Calderone, Assistant Supervisor of Babylon Township

Vincent Manna, Babylon Town Parks & Recreation Department

Long Island Business Review (Townshend, Sanders)

Kenneth O. Morgan, Acting Assistant Superintendant, Gateway National Recreation Area

James Heatley, Public Relations Director, Gurney's Inn (Montauk)

James K. Mitchell, Professor of Environmental Resources, Rutgers University

Howard Udell, Director of Hempstead Town Department of Waterways

Jones Beach Catering Corporation, Wantagh, L.I.

Data Sources (continued)

Lessing's Catering Corporation, Amityville, L.I. (serves Babylon Town Beach facilities

Fire Island Fisheries, Inc., Bay Shore, L.I.

South Bay Clam Company, Brightwaters, L.I.

The following commercial and recreation fishing-related businesses were contacted in late November 1976 to ascertain their particular losses due to the waste pollution problem:

SUFFOLK COUNTY

Charlie's Bait & Tackle, Lindenhurst

Augie's Bait & Tackle Shop, Babylon

Babylon Fishing Station

Captain Andy's Fishing Station, Mastic Beach

Moriches Bait & Tackle

Cerullo Brothers' Fishing Station, East Moriches

Skidmore's Fishing Station, East Moriches

Seatuck Cove Fishing Station, Eastport

Bradley's Fishing Station, Hampton Bays

Shinnecock Bait & Tackle Company, Hampton Bays

NASSAU COUNTY

Chet Chapel's Bait & Tackle Shop, East Rockaway

B.J.'s Bait & Tackle, Lynbrook

Beckmann's Fishing Station, Long Beach

Commodore Fishing Station, Island Park

Freeport Sea Clam, Freeport

Causeway Bait & Tackle, Wantagh

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