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April 27, 1989

Mr. George Stafford, Director
Coastal Management Division
New York State Dept. of State
162 Washington Avenue
Albany, New York 12231

Dear Mr. Stafford:

In fulfillment of Tasks I, II and III of the New York State Comptroller's Contract No. C005567, I transmit herewith the interim report: Great South Bay Stream/River Corridor Study - Neguntatogue Creek Watershed.

Please contact Ms. Lauretta R. Fischer (516-360-4865) of my staff, if any questions arise.

Sincerely,

Lee E. Koppelman
Executive Director

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GREAT SOUTH BAY STREAM/RIVER CORRIDOR STUDY

Neguntatogue Creek Watershed

Long Island Regional Planning Board
H. Lee Dennison Office Building
Veterans Memorial Highway
Hauppauge, New York 11788

Dr. Lee E. Koppelman
Executive Director

April 1989

Interim Report - Task I, II and III

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New York State Comptroller's Contract No. C005567

This report was prepared for the New York State Department of State, Division of Coastal Resources and Waterfront Revitalization, with financial assistance from the Office of Ocean and Coastal Resource Management, National Oceanic and Atmospheric Administration, provided under the Coastal Zone Management Act of 1972, as amended. (Grant-In-Aid Award No. NA-82-AA-D-CZ068)

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Study Overview

The New York State Department of State (DOS) has identified the need to 1) assess the adequacy of existing development standards and regulations in protecting water quality and ecosystems in the Great South Bay; and 2) aid local governments in preparing their Local Waterfront Revitalization Program standards used to implement water quality, habitat protection, and fisheries management policies. The extent to which the regulatory approach can be used to maintain Great South Bay water quality and protect ecosystem function, in the face of development of vacant land and the redevelopment of shoreline areas, must be evaluated in light of the magnitude of current problems that represent the integrated impacts of historic land use and regulatory practice.

With funding from the DOS, the Long Island Regional Planning Board (LIRPB) will conduct an assessment of the extent and mechanisms by which land use patterns and regulatory practices have impacted the environmental quality of stream/river corridors along the northern margin of Great South Bay. The ultimate purpose of this study is to identify ways in which redevelopment of urbanized watersheds and development of semi-rural watersheds of Great South Bay can be regulated to minimize subsequent impacts on the quality of adjacent freshwater and marine environments of tributary streams. The 38 streams/rivers that flow into Great South Bay are conduits by which pollutant loadings reach open bay waters. While regional evaluations of land use and surface water quality relationships have been conducted for the Long Island area, e.g., Long Island Comprehensive Waste Treatment Management Plan; Long Island Segment of the Nationwide Urban Runoff Program, the opportunity to determine the extent to which regulatory changes, land use policy and structural measures can be employed at the local level to maintain or improve surface water quality remains to be addressed.

The approach of the LIRPB study will involve the comparative assessment of two stream/river corridors--one representative of the development scenario and aquatic habitat found in urbanized portions of the Great South Bay watershed; and the other more typical of semi-rural conditions to the east. After assessing the general land use, environmental resource and water quality conditions within the 38 stream/river watersheds tributary to the bay in the Towns of Babylon, Islip and Brookhaven, the LIRPB selected the two case study areas that will be subject to in-depth analysis. The Neguntatogue Creek watershed within

the Town of Babylon was identified as the study area typifying urban conditions; the conditions in the Beaverdam Creek watershed within the Town of Brookhaven led to its selection as the semi-rural case study area. The LIRPB will inventory existing land use, land available for development, environmental resources, point and non-point sources of pollutant discharge and other parameters in the stream/river watersheds.

Affiliates of the Marine Sciences Research Center, SUNY @ Stony Brook, will undertake the component of the study work program that involves the design and implementation of a field-based, water and environmental quality monitoring program for the freshwater and marine portions of the two stream/river corridor study areas.

Utilizing the information assembled, the LIRPB staff and its consultant team will develop recommendations for improving/maintaining fresh and marine water quality within the stream/river corridors; and for mitigating adverse impacts on environmental resources that are now evident, or that could be projected to occur as a result of future development/re-development. It is envisioned that the recommendations will include land use considerations, such as setback and buffer standards, zoning, and acquisition; as well as the control of point and non-point sources of pollution. Structural and non-structural approaches will be assessed, especially with regard to the control of urban runoff to streams and overland flow to marine areas.

The final report for this study is scheduled for completion by 1 March 1990.

Great South Bay Stream/River Corridor Study
Neguntatogue Creek Watershed

Task 1: Collect, review and analyze existing sources of data and information pertaining to fresh and marine water quality, ground water quality, point and non-point pollution, land use and environmental resources for stream/river corridors that are located in semi-rural portions of the Great South Bay watershed.

Product: Bibliography of data/information sources with annotations describing relevance to this project.

Bokuniewicz, H.J., and Zeitlin, M.J. 1980. Characteristics of the ground-water seepage into Great South Bay. Marine Sciences Research Center, State University of New York. Special Report 35, Reference 80-2. Stony Brook, NY.

A method is described for measuring the upward flow of freshwater across the bay floor at five sites along the north shore, and one site on south shore of Great South Bay. Measurements were taken at various points along transects running from 5m to 100m offshore under differing time intervals, tidal and meterological conditions during the summer of 1979. These data were used to estimate the contribution to freshwater from groundwater flow through the bay bottom.

Hair, Malcolm E. and Buckner, Stuart. 1973. Assessment of the water quality characteristics of Great South Bay and contiguous streams. Adelphi University Institute of Marine Science. Garden City, NY.

Describes procedures and results of bi-weekly measurements of salinity, temperature, dissolved oxygen, dissolved phosphorus, particulate phosphorus, nitrate, nitrite, ammonia, and chlorophyll at 39 stations in Great South Bay over a seven-month period. Comparison with previously available data with estimate of stability of various areas of the bay.

Jones, C.R., and Schubel, J.R. 1980. Distribution of surficial sediment and eelgrass in Great South Bay, New York. Marine Sciences Research Center, State University of New York. Report #39, Reference 80-6. Stony Brook, NY.

Sediment samples at 582 stations were taken over 290 km^2 of Great South Bay at approximately 800m intervals. The samples were analyzed in terms of mass percent of gravel, sand, silt, clay and shell fragments and organic carbon content, between April 1977 to October 1978. An eelgrass survey was made over the same period and quantified in terms of thin, medium and thick coverage, which was checked by sampling over a measured $1m^2$ area. The results are shown in tables and a series of six maps.

Long Island Regional Planning Board. 1978. Long Island comprehensive waste treatment management plan. Vols. I and II. Hauppauge, NY.

A comprehensive evaluation of groundwater and surface water; its major uses, existing quality and contamination sources. Alternative waste treatment management plans - structural and non-structural approaches were presented for Nassau and Suffolk Counties, NY.

Long Island Regional Planning Board. 1979. Long Island regional element; New York State coastal management program. Hauppauge, NY.

A compilation of subplans relating to Long Island's coastal zone dealing with marine fisheries, coastal erosion, land and water capability, water quality, dredging, recreation and energy. A map series was prepared as part of this report that included land use, land use plan - 1995, natural resource inventory, and land and water capability.

Long Island Regional Planning Board. 1982a. The Long Island segment of the nationwide urban runoff program. Hauppauge, NY.

Project focused on stormwater runoff as a major source of groundwater and surface water contamination as determined in the 1978 208 study. The groundwater component investigated the impacts of recharge basins. The surface water component applied stormwater control measure techniques to three sites in Nassau and Suffolk counties. Included was a modeling program to help determine reductions in coliform necessary to open areas of the bays presently closed to shellfishing.

Long Island Regional Planning Board. 1982b. Land use - 1981 - quantification and analysis of land use for the counties of Nassau and Suffolk. Hauppauge, NY.

An inventory of land uses in the bi-county area. This report includes land use summaries for all cities, towns, and villages. Acres and percent of land area were calculated by land use category. Comparisons between the municipalities were briefly discussed.

Long Island Regional Planning Board. 1983. Public access and recreation adjacent to the coastal waters of Nassau and Suffolk Counties - an inventory and assessment. Hauppauge, NY.

Report provides maps, site evaluation forms and public transportation information for all county, city, town, village and park district properties within the NYS coastal area that provide significant access opportunities or have the potential to provide expanded access to the coastal waters of the bi-county area. A summary statement discussed the report's findings and recommendations.

Long Island Regional Planning Board. 1984. Nonpoint source management handbook. Hauppauge, NY.

Identifies the various non-point sources of groundwater and surface water pollution that effect Long Island. Topics discussed include: land use, stormwater runoff, on-site systems, highway deicing, fertilizer, animal wastes, water supply wells, boat pollution, site plan review, and local ordinances. Key problems, existing management, and recommendations, including best management practices, were presented under each topic.

New York State Department of Environmental Conservation, Division of Fish and Wildlife. 1976. Areas of particular concern to the preservation and maintenance of fish and wildlife populations in the coastal zone of Long Island. Stony Brook, NY.

Map series on USGS quad sheets which identifies specific areas throughout Long Island that are important fish and wildlife habitats. Brief descriptions of these habitats and their associated wildlife are provided and categorized.

New York State Department of State. 1987. Significant coastal fish and wildlife habitats - Nassau and Suffolk Counites - rating forms. Albany, NY.

Compilation of rating forms, maps and habitat narrative for each Designated Significant Coastal Fish and Wildlife Habitat by town within the counties of Nassau and Suffolk.

O'Connor, Joel and Terry, Orville. 1972. The marine wetlands of Nassau and Suffolk Counties, New York - 1972. Nassau-Suffolk Regional Planning Board. Hauppauge, NY.

Inventories and classifies wetlands of Nassau-Suffolk counties, estimates changes in acreage since 1964. Identifies locations (by maps), area, and physical ecological functions of wetlands necessary for planning and management decisions, such as governmental acquisition, definition of zoning regulations, and recreational development.

Spinnello, A.G., Nakao, J.H. and Winowitch, R.B. 1987. Water resources data New York water year 1986. Volume 2. Long Island. Syosset, NY.

Contains records of stage, discharge and water quality of streams; stage, contents and water quality of lakes and reservoirs; water quality of precipitation; and water levels and water quality of groundwater wells for the 1986 water year for the Long Island region.

Suffolk County Department of Health Services. 1980. Study to determine the necessity and, if applicable, the methods of mitigating the decrease in streamflow and related effects associated with sewering Suffolk County Southwest Sewer District No. 3 and Nassau County Sewer District No. 3 Long Island, New York. Milestone I. Hauppauge, NY.

Twenty-two separate streams were studied under separate cover to determine possible effects of sewering activities within the SWSD on stream flow and lake levels. All streams studied flow into Great South Bay and are located east of the Nassau/Suffolk County border to Connetquot River. Each study presented detailed information relating to drainage, stream characteristics, environmental and water quality data. A ranking system was then applied to these streams and compared.

Suffolk County Department of Planning. 1985. Analysis of dredging and spoil disposal activity conducted by Suffolk County - historical perspective and a look to the future. Hauppauge, NY.

Overview of Suffolk County dredging activity provided information and analyses that were used to develop management policies governing future County dredging activities. Criteria was prepared to provide a procedure to determine whether projects are in the public vs. private interest. New options for dredged material disposal and the rehabilitation of spoil sites were also identified.

Suffolk County Department of Planning. 1987a. Strategies and recommendations for revitalizing the hard clam fisheries in Suffolk County, New York. Hauppauge, NY.

An assessment of available management alternatives applicable to hard clam resources for all five fisheries: Great South Bay, Huntington Bay, Moriches and Shinnecock Bays, Peconic and Gardiners Bays, and the north shore bays of Brookhaven and Smithtown. Topics discussed include: local shellfish management, authority, costs, and enforcement; underwater land ownership; shellfish closure areas; digger permits; and commercial fishery landings.

Suffolk County Deparment of Planning. 1987b. A planning analysis of the Accabonac Harbor watershed. Hauppauge, NY.

A analysis of the Accabonac Harbor watershed in terms of its natural resources, existing limits on development, land use, marine water quality, groundwater, demographic profile, and land available for development. Recommendations involving land use, resource protection, and management of human activities are discussed.

Weyl, Peter K. 1974. The pollution susceptibility of the marine waters of Nassau and Suffolk counties, New York. Marine Sciences Research Center, State University of New York. Technical Report Series No. 20. Stony Brook, NY.

Describes a new parameter of the coastline, pollution susceptibility. This is the average concentration in the water near the coast that would result from a unit rate of discharge of a conservative pollutant that is miscible in water. For potential continuous discharges in restricted bays, a second parameter, steady-state pollution susceptibility, is developed. This is the average concentration that would result from unit rate of discharge after the bay has come to steady state with the pollutant discharge.

Task II: Establish criteria for selection of urban stream/river corridor and watershed for detailed study.

Product: Memorandum describing the criteria to be used in the selection of an urban case study area.

The criteria selected to characterize the 38 stream/river corridors (Table 1) that flow into the Great South Bay include the following parameters: size of stream/river and watershed; mix of land uses within the watershed; environmental resources; availability of data/information on pollutant sources (point and non-point); and availability of data on fresh and marine water quality.

A preliminary table was generated to address these criteria. It included the following information for each of the 38 stream/river corridors: stream/river length, predominant land uses, environmental resources, a determination of whether or not the stream was evaluated in the Flow Augumentation Needs Study (SCDHS, 1980), and the designation of the stream/river corridor as either urban or semi-rural. This information is presented in Table 2 for the 23 stream/river corridors out of a total of 38 that were designated as urban streams.

The length of the stream/river corridors was characterized as either small, medium or large. To assure comparability of the selected urban and semi-rural stream/river corridors, length, stream flow and size of drainage basin were considered.

Table 1. List of the 38 stream/river corridors that flow into Great South Bay.

River/Stream Corridors

Town of Babylon

1. Amityville Creek
2. Woods Creek
3. Great Neck Creek
4. Strong's Creek
5. Neguntatogue Creek
6. Santapogue Creek - West and East Branch
7. Carll's River
8. Sumpwams (Sampawams) Creek

Town of Islip

9. Skookwams Creek
10. Willets Creek
11. Trues Creek
12. Thompson's Creek
13. Cascade Lakes
14. Lawrence Creek
15. Watchogue Creek
16. Pentaquit Creek - West and East Branch
17. Awixa Creek
18. Orowoc Creek - West and East Branch
19. Champlin Creek
20. West Brook
21. Connetquot River
22. Brick Kiln Creek
23. Ludlows Creek/Indian Creek
24. Green Creek
25. Brown's River
26. Homan's Creek
27. Nankee Creek

Town of Brookhaven

28. Stillman Creek
29. Corey Creek
30. Tuthills Creek
31. Patchogue River
32. Swan River
33. Mud Creek
34. Abets Creek
35. Hedges Creek
36. Howell Creek
37. Beaverdam Creek
38. Carmans River
    - Big Fish Creek
    - Little Fish Creek
    - Yaphank Creek
    - Little Neck Creek

Table 2. Great South Bay urban stream/river corridor descriptions.

	Name	Size	Land Use	Environmental Resources	FANS Study Conducted
1.	Amityville Creek	medium	med./high density residential high school apt. complex Town Park	stream - no. of Montauk Hwy. lake/canal system USGS gauging station	x
2.	Woods Creek	medium	med./high density residential condo complexes Town Beach/Recreation Facility marinas	extensive canal development stream - no. of Montauk Hwy. USGS gauging station	x
3.	Great Neck Creek	medium	med. density residential restaurant	interconnecting canal system stream - no. of Montauk Hwy. lake system	x
4.	Strong's Creek	medium	med. density residential undeveloped Co. Park marina	extensive/interconnecting canal system stream - no. of Montauk Hwy.	x
5.	Neguntatogue Creek	medium	med. density residential large marina facilities restaurants	stream - no. of Montauk Hwy. USGS gauging station	x
6.	Santapogue Creek	medium/ large	medium density residential apt. complex regional shopping center Co. golf course SWSD operating plant	diverted stream - no. of Montauk Hwy. east & west branches	x

Name	Size	Land Use	Environmental Resources	FANS Study Conducted
7. Carll's River	large	low/medium density residential Town Park - active LIRR train station high school State Park	extensive stream/pond/ lake system - no. of Montauk Hwy. freshwater wetlands culverts	x
8. Sumpwams (Sampawams) Creek	medium/ large	medium density residential LIRR yard lumber yard bus depot marinas major roadway system (Rte 231)	extensive stream/pond/ lake system - no. of Montauk Hwy. USGS gauging station	x
9. Skookwams Creek	small	low/medium density residential		x
10. Willets Creek	medium	medium density residential high & junior high schools shopping center		x

Name	Size	Land Use	Environmental Resources	FANS Study Conducted
11. Cascade Lakes	small/ medium	low/medium density residential Village Marina	extensive lake/stream system culverts	x
12. Lawrence Creek	small	low/medium density residential car dealership commercial restaurant	lake/pond system	x
13. Watchogue Creek	small	low/medium density residential restaurants ferry terminals boat repair large Town Marina commercial		x
14. Penataquit Creek	large	medium density residential restaurants ferry terminals regional shopping mall boat repair commercial public school	two branches USGS gauging station	x
15. Awixa Creek	medium	low density residential condo complex apt. complex shopping mall cemetery		x

Name	Size	Land Use	Environmental Resources	FANS Study Conducted
16. Orowoc Creek	large	low/medium density residential restaurant fishing industry mobile home complex school facility some vacant land	extensive pond/lake/ stream system two branches freshwater wetlands NYSDOS designated significant fish & wildlife habitat	x
17. Green Creek	medium	low/medium density residential public school vacant land		
18. Homan's Creek	small	low/medium density residential open space - Town Park vacant land		
19. Corey Creek	medium	medium density residential Town Park marinas industrial vacant land	pond/stream system	
20. Tuthills Creek	medium/ large	commercial condo/coops some vacant land	extensive lake/pond/stream system tidal wetlands	

Name	Size	Land Use	Environmental Resources	FANS Study Conducted
21. Patchogue River	large	industrial high/medium density residential town dock Village STP facility boat repair	extensive lake/pond/ stream system	
22. Abets Creek	small	low/medium density residential vacant land marinas		
23. Hedges Creek	small	high/medium density residential vacant land	extensive tidal wetlands lake/stream system	

Based on interpretation of 1984 (1" = 400' Town of Babylon) and 1987 (1" = 1,000" Town of Brookhaven and Town of Islip) aerial photographs and 1977 Existing Land Use Maps (LIRPB, 1979), an evaluation of land use mix was conducted. Low (1 d.u. and less/acre), medium (2 - 4 d.u./acre) and high (5-10 d.u. and more/acre) density residential uses were identified, as well as commercial, marine commercial, industrial, recreational, institutional, agricultural and transportation and utilities. Further clarification within these categories was based on preliminary field inspection. These data provided the information necessary to categorize watersheds as being either urban or semi-rural.
Urban areas typically exhibited medium to high density residential uses, a greater number of commercial, industrial and institutional establishments, and a limited area in vacant, agricultural, or park and recreation uses.

A selective inventory of environmental resources was also conducted for all the urban streams utilizing the 1977 Natural Resources Inventory Maps (LIRPB, 1979), as well as the 1984 and 1987 aerials mentioned above. Characteristics of the stream/river corridors were identified. Extensive tidal and freshwater wetlands were noted, as well as the Designated Significant Coastal Fish and Wildlife Habitats (NYSDOS, 1987). Stream/rivers with USGS gauging stations were also listed (Spinnello, A.G., et al., 1987).

Overall, the urban stream/river corridors lacked significant environmental resources, such as freshwater wetlands, in addition to natural shoreline features. Rather, they were typified by structural alterations of the shoreline, such as bulkheads, wetland filling, and stormwater runoff drainage structures discharging to surface waters.

Stream/river corridors from the western boundary of the Town of Babylon east to the Connetquot River, were extensively evaluated in 1980 as part of the EPA funded Flow Augmentation Needs Study (FANS) which was conducted by the Suffolk County Department of Health Services. The freshwater component of these corridors was the primary focus of this study. Those stream/river corridors that were evaluated under this study were noted in the table.

Under the Long Island Comprehensive Waste Treatment Management Plan (LIRPB, 1978) and more specifically the Long Island Segment of the Nationwide Urban Runoff Program (LIRPB, 1982a), water quality monitoring and computerized modeling efforts were undertaken to examine various parameters that effect the Great South Bay system, such as coliform loading, point source inputs and stormwater runoff.

Information in these three reports relating to the stream/river corridors of Great South Bay were evaluated and compared with respect to point and nonpoint loadings and marine and fresh water quality.

Availability of other data/information on pollutant sources and water quality was ascertained through interviews with personnel from the USGS, NYSDEC, SUNY @ Stony Brook Marine Sciences Research Center, Suffolk County Department of Health Services, and the Towns of Babylon, Islip and Brookhaven.

Another criteria that was considered for comparing these corridors included the question of multiple municipal jurisdiction over a watershed area, and hence, the need to consider different zoning codes and other regulations on land use within the watershed. Additional questions were directed to the town representatives for discussion regarding proposed development, rezoning plans, and availability of any local natural resource analyses or town water quality monitoring programs that were conducted. This information was helpful in forecasting potential impacts in the stream/river corridors, as well as obtaining historical field data beneficial to understanding existing conditions in the urban stream/river corridors.

Task III: Select case study area for detailed evaluation.

Product: Memorandum that describes the rationale for selection of the case study area with base map.

Comparative size was the first criteria that was evaluated. Small stream/river corridors were eliminated due to their small impact on the water quality of Great South Bay, due to less stream flow and smaller drainage basin area. Large stream/river corridors were also eliminated based on the greater potential difficulty in identifying specific nonpoint pollutant sources from a larger drainage basin, as well as the demands a large stream/river corridor would impose on additional water quality monitoring and land use evaluation efforts. Table 3 lists those urban stream/river corridors that were eliminated due to size constraints.

Land use was then compared. Areas that included high density uses were classified as urban stream/river corridors; and those exhibiting low density uses and expansive areas of vacant land were classified as semi-rural stream/river corridors. Environmental resources were noted. Areas with natural shorelines, large areas of tidal or freshwater wetlands, or wooded lots were generally categorized as semi-rural stream/river corridors. There were no stream/river corridors flowing into Great South Bay that did not exhibit some degree of development. Therefore, no strictly rural stream/river environments were found along the north side of Great South Bay.

Table 3. List of Great South Bay urban stream/river corridors not considered due to size limitations.

Carlls River	-	large
Skookwams Creek	-	small
Cascade Lakes	-	small
Lawrence Creek	-	small
Orowoc Creek	-	large
Homan's Creek	-	small
Patchogue River	-	large
Abets Creek	-	small
Hedges Creek	-	small

As part of the Long Island Comprehensive Waste Treatment Management Plan (LIRPB, 1978) and The Long Island Segment of the Nationwide Urban Runoff Program (LIRPB, 1982a), modelling studies were conducted to evaluate inputs from both point and nonpoint pollutant sources entering various embayments on Long Island, including Great South Bay. Stream characteristics and baseflow drainage area, as well as total coliform loadings by stream, were described. Stream/river corridors were carefully evaluated as part of the Flow Augmentation Needs Study Milestone I Report (SCDHS, 1980) and a water quality ranking was assigned to the 22 streams that were studied.

Based on the information ascertained to this point, a first round choice list was prepared for the urban stream corridors; see Table 4. Contacts were then made with various governmental agencies and representatives from the Towns of Babylon, Islip and Brookhaven to gather further information/data and to receive feedback as to the preliminary list of candidate study areas.

In conversation with R. Nuzzi (telephone conversation 11/2/88) of the Suffolk County Department of Health Services, it was ascertained that SCDHS has rarely conducted marine water quality monitoring in creeks or the mouths of

Table 4. List of urban stream/river corridors considered for case study - First Round.

Town of Babylon

Amityville Creek
Woods Creek
Great Neck Creek
Strongs Creek
Neguntatogue Creek
Santapogue Creek
Sumpwams (Sampawams) Creek

Town of Islip

Watchogue Creek
Penataquit Creek

Town of Brookhaven

Tuthills Creek

creeks; however, it has conducted bay-wide surveys at identified stations throughout Great South Bay from 1976 to date. The few studies that were conducted for such characteristics as salinity, red tide, etc. were noted.

According to C. DeQuillfeldt (telephone conversation 11/3/88), the NYSDEC Region I office is presently conducting shoreline sanitation surveys (storm sewer outflow, industrial point sources) and preparing shellfish growing area reports. This information, however, is in field sheet form at this time. Limited water quality data was collected by NYSDEC in Great South Bay proper and at the mouths of various streams in Babylon and Islip in the early 1980s. Extensive 1987 and 1988 data is available for streams in Brookhaven Town flowing into Patchogue Bay. A toxic survey was conducted for TBTs in one Great South Bay stream/river corridor in 1987.

A meeting with NYSDOS personnel (R. Lanza, S. Resler 11/23/88) resulted in the recommendation that the candidate for the semi-rural stream/river corridor include a NYSDOS designated significant coastal fish and wildlife habitat.

The representative for the Town of Babylon, K. Feustel, stated (telephone conversation 11/3/88) that the Town conducted a stormwater discharge survey, which identified catch basin locations and pipe discharges to the tidal surface water portion of the Town's streams, in 1983 and updated this information in 1986. This survey, however,

did not include those drainage areas and streams located within the incorporated villages of the Town. In addition, studies primarily dealing with flooding/wetlands issues were conducted by the Town on three creeks. K. Feustel recommended Sumpwams Creek as the urban stream/river corridor for study under this program.

The Town of Islip representatives, (telephone conversation 11/3/88) E. Brunn and J. Noeldechen, stated that the Town has a map identifying the location of catch basins that feed into the Town's stream corridors. In 1988 a small water quality survey was conducted of Knapps Lake (Champlin Creek); fecal coliform studies have also been conducted for this waterbody. The NYSDEC has been conducting additional survey work at the mouth of Champlin Creek, a winter conditional shellfish opening area; and at Brown's River. They recommended Champlin Creek as the semi-rural stream/river corridor for study.

J. Kassner, Town of Brookhaven, identified studies (telephone conversation 11/3/88) which had been conducted on stream/river corridors that flowed into GSB within the Town of Brookhaven. He stated that coliform data was available for Swan River; Mud Creek and its associated pond system, Robinson's Pond; and Tuthills Creek. Water quality data, including diurnal oxygen demand data, exist for Patchogue River. Other stream/river corridors mentioned where

historical water quality data has been collected included: Corey Creek, Hedges Creek and Abets Creek. J. Kassner recommended Swan River as the semi-rural stream/river corridor for study under this program.

Further detailed discussion on the second round choice list in Table 5 ensued with the Town representatives. Subjects that were discussed included: additional water quality data; toxic measurements; detailed stormwater drainage data; municipal boundary locations; shellfish data; wetlands; marina development; proposed development; natural vegetation analyses; USGS pumping station information; groundwater monitoring wells; rezoning plans; and town water quality monitoring programs.

Discussions with Babylon Town (K. Feustel, P. Hadgeoff) officials on 11/18/88 included a review of problems relating to boating activities in Neguntatogue Creek. A proposed condominium development along Sumpwams Creek was identified. Additionally, a shoreline sanitation survey was conducted by the Town of Babylon for NYSDEC along the tidal portion of all the stream corridors leading into Great South Bay.

At a meeting with Islip Town officials (J. Noeldechen, E. Brunn) on 11/14/89, monitoring/sampling programs were recently conducted by the Town in Brown's River and Champlin Creek. Improvements to the Town park at Knapps Lake in Champlin Creek are underway.

Table 5. Urban stream/river corridors considered for case study - Second Round.

Town of Babylon

Amityville Creek

- Located within the Village of Amityville. Potential problems include different goals/plans than those of the Town of Babylon; drainage information might be difficult to obtain from Village consultant.
- According to the FANS study, Amityville Creek was ranked 5th of 22 streams for water quality (1 = worst in water quality; 17 = best).
- Headwaters between Sunrise Highway and Southern State Parkway.

Woods Creek

- Located within both the Village of Amityville and Town of Babylon boundaries. Potential problems include different goals/plans between the two jurisdictions; drainage information might be difficult to obtain for Village.
- Town of Babylon has proposed acquisition for a portion of the creek for inclusion on State's EQBA list.
- A vegetation analysis has been conducted for a portion of the creek corridor. The freshwater wetlands have been proposed for Town acquisition.
- According to the FANS study, Woods Creek was ranked 6th of 22 streams for water quality (1 = worst in water quality; 17 = best).
- Headwaters at or south of Sunrise Highway.

Neguntatogue Creek

- Limited water quality data is available. In addition, a toxic survey was conducted by NYSDEC which analyzed TBT concentrations in the creek.
- Located within Village of Lindenhurst and Town of Babylon boundaries. Potential problems include different goals/plans between the two jurisdictions; drainage information might be difficult to obtain.
- Stream corridor with highest concentration of boating vessels in Town of Babylon.

- List of marinas and pump out stations available from the Town of Babylon, however, material is dated.

- According to the FANS study, Neguntatogue Creek was ranked 1st of 22 streams for water quality (1 = worst in water quality; 17 = best).

- Headwaters at or south of Sunrise Highway.

Sumpwams (Sampawams) Creek

- Located within both the Village of Babylon and the Town of Islip. Potential problems include different goals/plans between the two jurisdictions; drainage information might be difficult to obtain for Village.

- More coliform data available than other streams in Babylon.

- Proposed residential condominium development for former lumber yard.

- 1982 Town report identified steps the Town should take to allow for orderly development and protection of wetlands along this stream corridor.

- According to the FANS study, Sumpwams Creek was ranked 13th of 22 streams for water quality (1 = worst in water quality; 17 = best).

- Headwaters north of Southern State Parkway.

Town of Islip

Watchogue/Pentaquit Creeks

- Pending Town application for expansion of the South Shore Mall.

- Large watershed.

- Additional NYSDEC coliform count data for Bay Shore Cove.

- According to the FANS study, Watchogue Creek was ranked 3rd and Penataquit Creek was ranked 8th of 22 streams for water quality (1 = worst in water quality; 17 = best).

- Headwaters of Watchogue Creek south of Sunrise Highway. Headwaters of Pentaquit Creek between Sunrise Highway and Southern State Parkway.

Town of Brookhaven

Tuthills Creek

- Some water quality data available.
- Recent condominium construction has altered a large portion of the river corridor shoreline.
- Located within the Village of Patchogue and Town of Brookhaven boundaries. Potential problems include different goals/plans between the two jurisdictions; drainage information might be difficult to obtain.
- Water quality monitoring has been conducted by SCDHS vicinity of the condominium development.

Future expansion of a large mall at the headwaters of Penataquit Creek and subdivision activity on Brick Kiln Creek were also discussed.

A meeting on 11/16/88 with Brookhaven Town officials (C. Swick, J. Kassner, N. Giffen) provided further discussions including a review of historical dredging data; vegetation analyses conducted on various streams within the Town; proposed rezoning of stream corridors within Town and proposed subdivision activity along Beaverdam and Mud Creeks. Stormwater discharge studies, if undertaken, have not been coordinated on a townwide basis. Research into town records will be required.

After review of the opinions expressed and information/data collected, final designation of the urban stream corridor was awarded to Neguntatogue Creek. It is located within the incorporated Village of Lindenhurst and the unincorporated hamlet of West Babylon, Town of Babylon.

According to the 1980 FANS study, Neguntatogue has the worst freshwater quality ranking of the 22 streams entering western Great South Bay. The major land uses within this watershed include medium density residential, institutional, industrial and marine commercial (particularly, restaurants and marina facilities). It has the highest concentration of boats within the Town of Babylon; two major marina facilities are located at the mouth of the stream. A toxic survey conducted by NYSDEC in 1987 for this stream detected

the highest TBT concentrations found to date in the U.S.

Neguntatogue Creek is approximately the same length as the semi-rural stream/river corridor selected for study - Beaverdam Creek - and both watersheds are comparable in area. While alterations have been made to virtually all the 38 stream corridors leading into Great South Bay, the relative differences between these two streams (based on the degree of development within the watersheds) also led to their selection.

Topographic maps (Western Suffolk Sewer Topographic Maps 1" = 200'; 1964) were utilized to determine the surface water drainage boundary for Neguntatogue Creek. From this preliminary boundary a final boundary was established by interpreting to the nearest road or tax map parcel boundary. A base map at a scale of 1" = 300' that shows tax map parcels and the case study area boundary has been prepared; a copy of the base map is appended to this report.

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