COUNTY OF SUFFOLK

STEVE LEVY
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS

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CHIEF DEPUTY COMMISSIONER

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January 27, 2009

Honorable Steve Levy
Suffolk County Executive
H. Lee Dennison Bldg.
Veterans Memorial Hwy
P.O. Box 6100
Hauppauge, N.Y. 11788

Timothy Laube
Clerk of the Legislature
William H. Rogers Bldg.
725 Veterans Memorial Hwy
Smithtown, NY 11787

RE: **Resolution 369-2008**
Feasibility Study/Mastic-Mastic Beach-Shirley

Dear Mr. Levy and Mr. Laube:

In accordance with the referenced resolution, a sewering feasibility study has been prepared and beneficial for the Mastic-Mastic Beach-Shirley area defined within that resolution. All required tasks have been completed with the conclusions and recommendations outlining the need for a substantial planning, engineering and construction project to implement the installation of sewerage systems. The general conclusion is that such a project is feasible and beneficial but the cost may be prohibitive without significant financial assistance. After your review, we are available to meet at your convenience to discuss the report and any future steps you may wish.

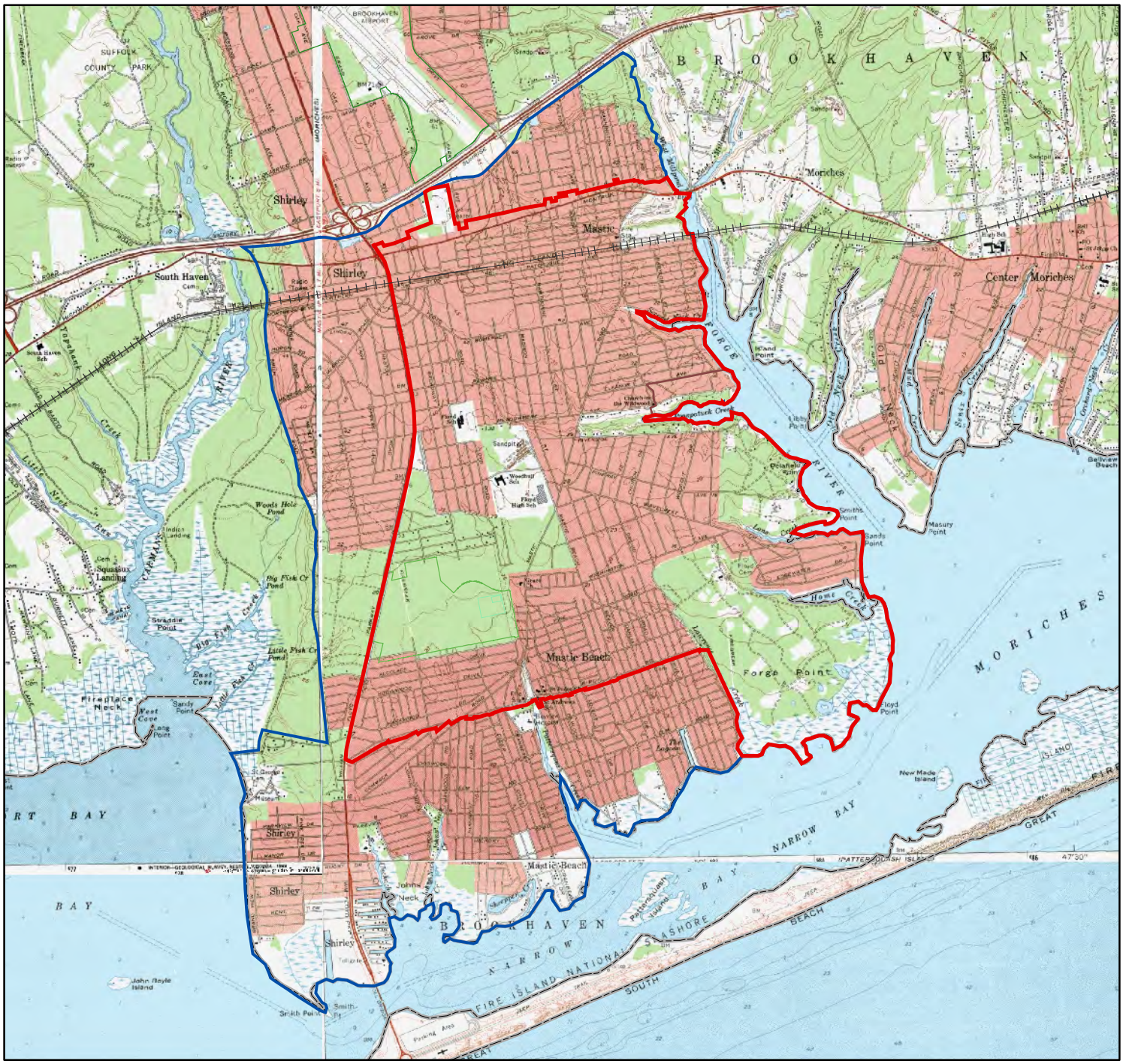
As required by the resolution, Mr. Laube is to distribute the report to all Legislators.

Sincerely,

Gilbert Anderson, P.E.
Chairman, Sewer Agency and Commissioner

GA:BW:ni
cc: Jim Morgo, Chief Deputy County Executive
Gail Vizzini, Budget Review Office
Connie Corso, Budget Director
Ben Wright, P.E., Chief Engineer
ga-bw1-27-09 Mastic Feasibility Study Ltr to SLevy & TLaube

Mastic - Mastic Beach - Shirley Sewering Feasibility Study



Suffolk County Sewer Agency
Suffolk County Department of Public Works
January 2009

TABLE OF CONTENTS

Section		Page
Introduction		1
Summary		1
1.0	Sewering Needs	2
1.1	Environmental Issues	3
1.2	Economic Benefits	4
1.3	Workforce & Affordable Housing	4
2.0	Wastewater Generation Rates	5
3.0	Sewerage System Requirements	5
3.1	Summary	5
3.2	Sewer System	7
3.3	Wastewater Treatment Plants	8
3.4	Disposal Systems	9
4.0	Regulatory Requirements	9
4.1	NYSDEC	9
4.2	Suffolk County Department of Health Services	10
4.3	Industrial Pretreatment Program	10
4.4	Environmental Review	11
4.4.1	EIS	11
4.4.2	FANS	11
4.4.3	Public Input	11

5.0	Sewer District Formation	12
6.0	Financing	12
6.1	ASRF	12
6.2	SRF (Clean Water State Revolving Fund)	12
6.3	Grants	13
6.4	Conventional Financing	13
7.0	Schedule	14
8.0	Costs	14
8.1	Summary	14
8.2	Planning & Engineering	14
8.3	Construction	15
8.4	Operation & Maintenance	15
8.5	Typical Property Annual Cost	16
9.0	Conclusions	16
10.0	Recommendations	16

FIGURES

Number	Title
1	Study Area
2	Simulated Groundwater Flow
3	South Port – Space for Lease
4	William Floyd Plaza – Space Available
5	Neighborhood Road
6	Alternate No. 1
7	Alternate No. 2
8	Alternate No. 3
9	Conceptual Pumping Station
10	Conceptual WWTP 0.4 mgd
11	Conceptual WWTP 3.5 mgd
12	ASCE Fee Curves

EXHIBITS

Number	Title
1	Resolutions 369-08 & 284-08
2	Status Report 9-08
3	Henderson & Bodwell Engineering Analysis, 11/04
4	Minutes – Suffolk County Comprehensive Water Resource Management Meeting
5	Presentation – Nitrogen Loading Model
6	Flow Augmentation Needs Study Summary
7	DPW – Mastic Field Memos
8	Newsday – Vacant Homes
9	LiRo Sewering Letter
10	Sewering Alternatives Literature
11	Public Meeting Information 11/06 and 7/08
12	DPW – Project Status Memos
13	Alternative Description
14	Alternative Infrastructure
15	New York State Needs Survey

Number	Title
16	Sewer District Formation
17	Sewer District Formation Schedule
18	Master Project Schedule
19	Cost Estimate Environment
20	Cost Estimate – Engineering
21	Planning – Design Cost Summary
22	Sewer Inspection Staffing
23	WWTP Inspection Staffing
24	Cost Estimate – Inspection & Administration
25	Cost Estimate – Sewer Construction
26	Cost Estimate – WWTP
27	Cost Estimate – Operation & Maintenance
28	Project Cost and User Rates

Mastic/Mastic Beach/Shirley Sewering Feasibility Study

Introduction – In 1968 the Board of Supervisors directed the Suffolk County Sewer Agency to prepare a report on the need for sewering the southwest portion of the County. That report stated "We find there is an urgent and immediate need for sewers in Suffolk County, particularly within the area of the proposed district. We must call attention to the high cost of construction and financing which will place a substantial additional tax burden on the immediate community within this or any district". Unfortunately the conclusions of the following report mirrors that of forty years ago.

Summary - Sewering the study area is viable and will be beneficial but at a cost significant enough that without subsidy will be a hardship on the typical properties. Three alternatives were evaluated and the annual cost per parcel was estimated to cost between $7,500 and $30,000. The report recommends additional engineering and planning for a three phased project where the business district of CR 80 is sewered initially followed by CR 46/Neighborhood Road and then the residential zones.

Resolution 369-2008 authorized the Department of Public Works, within the limitations of their budget, to undertake and prepare appropriate reports and make recommendations necessary to initiate the process which may ultimately result in the formation of a County Sewer District in and about the Mastic, Mastic Beach, and Shirley communities. This area is more fully described as encompassing the William Floyd Parkway from Montauk Highway south, to Neighborhood Road Business District and as far east as the Forge River and depicted on Figure No. 1. A link was implied by Resolution 284-2008 which authorized, empowered, and directed the Department of Public Works to conduct a Prudency Evaluation regarding the pertinent sewer infrastructure and the size of a wastewater treatment plant(s) needed to best serve the needs of the Shirley/Mastic Business District. Both resolutions are included in Exhibit No. 1. The Prudency Evaluation was to include the actual and acceptable costs of the appurtenances for collection, conveyance, treatment, and disposal of sewage generated in the CR 80 business district and the actual and acceptable cost of usage to the residents and business district. The intent of the Prudency Evaluation was to timely file work plans that could facilitate the installation of sewer infrastructure and documentation, or amended plans and documentation which might be practicably used to secure funding for construction of sewer infrastructure in connection with the Reconstruction of CR 80, Montauk Highway as included in CP 5516. The Prudency Report was the basis for the July 2008 public information meeting.

The link between these two resolutions required the Department of Public Works to consider each in response to the authorizations provided. In addition, the Legislature required a written schedule by June 12, 2008, a status

sewering issues of the area along with the information provided by the Suffolk County Department of Health Services as part of their Comprehensive Water Resource Management Plan and concurrent work by the Town of Brookhaven were utilized in response to the above mentioned resolutions. The evaluation concludes that the sewering is viable but that funding remains a question that must be further evaluated with respect to the source and the acceptable limits and thresholds that the business community and residents are willing and able to pay for the improvement to the environment as well as revitalization of the area. A staged project is anticipated where approximately 400,000 gallons per day of sewage would be initially generated along the CR 80 route and over a period of 15 years, the entire study area could be served with a facility or facilities that would require an increase in the plant to 3.5 million gallons per day (mgd) and a second plant at 1.0 mgd of wastewater treatment and disposal capacity. The evaluation concludes that without financial assistance the annual cost per business parcel (Single Family Equivalent) or residence is cost prohibited being ultimately approaching $30,000 per year for a 20 year financing period. The sewer system would be composed of a combination of conventional gravity sanitary sewers and alternate sewer systems leading to pumping stations that would convey sewage to one or two treatment facilities located at the proposed Holiday Organization site, 2 ½ miles south of CR 80 just east of William Floyd Parkway (the site of the Links at Shirley) and the Brookhaven Airport, approximately ½ mile north of CR 80 on the north side of Sunrise Highway.

Suffolk County Department of Public Works concludes that once costs are confirmed the priority is to pursue the sewer district formation in order to gain New York State Comptroller and environmental approvals for the future installation of sewers in the area. As indicated below, a July 28, 2008 public information meeting (Exhibit No. 3) that was based on the Prudency Report concluded that the sewer system installation as part of the highway restoration project (CP 5516) was not viable.

1.0 Sewering Needs –The sewering needs are associated with the environmental issues of the Forge River and Moriches Bay and Narrows Bay, the revitalization and economic benefits of the business districts along the major thoroughfares and the potential for increased density and the construction of workforce and affordable housing.

Exhibits 4 through 6 contain relatively recent engineering evaluations of the need for sewering and the impacts of unsewered areas on the groundwater. The Henderson & Bodwell Report (Exhibit No. 4) provides estimates of sewage flows and the cost of treatment of the CR 80 corridor from

an area west of the CR 80 and CR 46 intersection to the Forge River with a 400,000 gallon per day wastewater treatment plant at the Brookhaven Airport. The report is to be updated but authorization has not yet been issued by the Town of Brookhaven. Exhibits No. 5 and 6 relate to the Suffolk County Comprehensive Resource Management Plan. The documents relate to impacts of unsewered areas as well as the benefits of sewering and can be related to the Forge River contributory service area. The documents state that there is agreement between predicted and measured nitrate values in the groundwater and if the Mastic area is sewered the prediction that the trend in nitrate increase from over 12 milligrams per liter (mg/l) to 15 mg/l would actually drop to less than 5 mg/l. Additional information may be contained in a forthcoming report from Urbitran which is preparing a report for the Town of Brookhaven that will include infrastructure needs over the next 20 years. Updates on the status of Brookhaven and the available sites are included in Exhibit No. 7.

1.1 Environmental Issues – As can be seen from Figure No. 2 provided by Suffolk County Department of Health Services, the groundwater of nearly the entire area is contributory to the Forge River or Moriches Bay/Narrow Bay. The abandonment of onsite systems which at most can remove 40% of the conventional pollutants and minimal concentrations of nitrogen and phosphorus would be replaced by the state of the art technology with nitrogen of concentrations less than 4 mg/l and conventional pollutants in the single digits. It has been suggested that the concept of individual home on-site treatment systems may provide some benefits in vital areas. Innovative and alternative on-site disposal systems have been evaluated by Health Services with preliminary conclusions that the costly systems are not effective. Due to limited data Health Services will be issuing an RFP to evaluate these alternatives, with results available in late 2009.

The Suffolk County Department of Health Services has been provided assistance by consulting firms with respect to developing groundwater information in the Mastic Area. Exhibit No. 6 includes the presentation of work done by CDM for the "Development and Application of a Nitrogen Loading Model to Assess Impacts to Groundwater from Sanitary Wastewater in Suffolk County, New York". In addition the minutes of June 18, 2008, also prepared by CDM, which is the Suffolk County Department of Health Services Comprehensive Water Resource Management Plan Summary of Steering Committee Meeting No. 4, describes water quality, future land use impacts, contaminated aquifer segments, land use, and population density all which relate to the more generic issues involved in the Mastic, Mastic Beach, and Shirley areas. These documents indicate, as discussed earlier, that without sewering the nitrogen concentrations in the groundwater will increase. Only with sewering can the levels of nitrogen drop to 5 mg/l or below thus having an improvement to the underflow that reaches the Forge River and other surface waters. Although only a percentage of the area which is under the current study was identified within

the Health Department sponsored reports, it can be assumed that the conditions and projections would carry forth to the larger area.

1.2 Economic Benefits – There are 197 lots on CR 80, 74 lots on CR 46, and 45 lots on Neighborhood Road. These lots are mostly commercial in nature and with sewering could provide the economic benefit of increased restaurant seating, higher flows due to a different characteristic, commercial or industrial business taking place, and could include apartments (affordable component) above the stores. An example has been recently provided by the feasibility study prepared by Cameron Engineering for the Smithtown and Kings Park Main Street areas. Utilizing the similar characteristics of both areas, it can be concluded that the current flows would nearly double with the revitalization in the area. Additionally Figures No. 3 and No. 4 show the commercial area does have vacancies that could be filled, indicating space for lease/space available. There may be little opportunity for economic benefits to the residential areas.

Figure 3 – Space for Lease

Figure 4 – Space Available

1.3 Workforce & Affordable Housing – Although the focus of the project is environmental improvement and revitalization of the business districts an element that has potential is affordable housing. Apartments located above buildings along CR 80 and CR 46 (See Figure No. 5 below) would likely be of the 600 square foot range and lend them to an affordable rent. It is estimated that as many as 500 new apartments could be constructed in the floor and one half expansion of building in the business districts. There is little opportunity for affordable housing in the current residential area with the exception of a vacant parcel along the CR 80, CR 46, and Neighborhood Road areas and other isolated areas within the study area. There are only a handful of parcels that are 2 acres or more that could be developed into an affordable type complex. As with other studies, there is an indication that if sewers where available a significant number of apartments including workforce or affordable units could be constructed and contribute to the economic revitalization or improvement of the area. Only recently (January 11, 2009) did a Newsday article focus on examples of foreclosures and vacancies in the Mastic area and the negative impact to the community. Refer to Exhibit No. 8.

Figure 5 – Neighborhood Road

Section 2.0, Wastewater Generation Rates – Water records for the entire study area have been obtained in order to establish current usage and relate that value to sewage generation rates. Based on an evaluation of water records, it has been concluded that the conventional standards will be utilized which do incorporate a factor of safety. The entire area contains on-site systems which lead to a mindset of water conservation and disposal system preservation. Sewering can increase water consumption. The current data concludes that each parcel produces approximately 250 gallons per day while the recommended standard is seventy five gallons per day per person. Even though there are a significant number of vacant or undeveloped parcels it is assumed that all will be utilized once sewering is available. The Health Department standards for commercial, office and industrial development will also be used for those areas. Based on this evaluation and the Henderson & Bodwell report for CR 80, the flows for the areas will be 0.4 mgd for CR 80, 0.15 mgd for CR 46, 0.1 mgd for Neighborhood Road, and 3.8 mgd for the residential area surrounded by these business district areas.

3.0 Sewerage System Requirements

3.1 Summary - Presently, there are no sewage facilities in the Mastic study area with the exception of onsite facilities for each individual parcel. Preliminary work was performed by DPW staff walking the business districts, including CR 80, CR 46 and Neighborhood Road. A total of 316 lots were observed and the location of on-site systems and general use of the developed lots were recorded. Exhibit No. 9 contains memorandums on the observations along with estimates of street miles for sewer installation. The details are that 197 CR 80 lots have sanitary systems mainly in the rear or side of the parcels (65%) and that almost 40% have basements. Higher percentages exist along Neighborhood Road where all the developed lots have rear or side systems and 25% have basements. There are 15 vacant lots of the 45 along the route. CR 46 also has a high percentage of vacant lots (30%) with the developed lots being nearly equal between residential and commercial. In addition, preliminary engineering work of

the LiRo firm relative to gravity sewer installation as an option to the CP 5516 project was considered (Exhibit No. 10). This work states a pumping station would be needed at the east end of CR 80 within 500-750 feet of the Forge River with a 5,000 foot force main discharging to a gravity system. Decisions must be made on serving basements where gravity sewers are proposed.

An assumption has been made that the service area defined in the authorizing resolution may be too broad for immediate consideration and therefore alternatives are recommended with three alternatives developed. The sewering of the area described by Resolution 369-08 is Alternate No. 1 (CR 80 on the north, CR 46 on the west, Neighborhood Road on the south and the Forge River). The CR 80/CR 46 intersection east to the Forge River and south to Neighborhood Road, including Neighborhood Road is Alternate No. 2. Alternate No. 3 is the business district of CR 80. Exhibit No. 11 and Figures No. 6 through 8 describe the alternatives.

Exhibit No. 12 summarizes the potential sewage flows and characteristics of the facilities and infrastructure to handle the flows generated by each of the three alternatives. Current examples of wastewater treatment facilities in the 400,000 gallons per day to 3.5 million gallon per day range are included and relate to SD #2 - Tallmadge Woods, SD # 11 – Selden and SD #21 – SUNY. These facilities are capable of meeting groundwater standards at flows of 400,000 gallons per day to 2.5 million gallons per day with SD # 11 having numerous pumping stations. Similar technologies are available for larger sizes with incremental stages being proposed as the surface area and sewage flows increase.

The alternatives evaluated at wastewater treatment facilities of 0.2, 0.4, 0.5, 1.0 and 3.5 mgd. The treatment process to be utilized consists of preliminary treatment, sequencing batch reactor biological treatment followed by equalization, filtration and if disinfection is needed, ultraviolet disinfection. The disposal of effluent is through underground leaching pools, a majority of which are shallow due to the high groundwater elevations. Residuals or sludge produced and captured at the facility is to be thickened and for the larger facilities dewatered. A vendor contract will be entered into to haul liquid sludge or sludge cake to remote facilities for treatment.

In order to accommodate the needs in the defined service area, approximately 130 miles of sewers must be installed along with numerous pumping stations and force mains leading to a recommendation for 2 sewage treatment plants. The treatment plants would be sized for initial capacity and expandable to the ultimate flows of 1.0 and 3.5 million gallons per day, and would be designed to meet groundwater standards. A priority would be established with respect to the most critical needs to protect the Forge River and to allow revitalization along the business corridors of CR 80, William Floyd Parkway, and

Neighborhood Road and provide an opportunity for affordable housing. The remainder of the peninsula was not considered.

3.2 Sewer System – A combination of low pressure sewers or vacuum sewers, gravity sewers, and other pumping and conveyance systems would be installed. Both low pressure or vacuum systems should be considered for a portion of the area. Each has advantages and disadvantages and while the DPW experience is limited our consultant colleagues have varying opinions on which is the most advantageous. Exhibit No. 13 includes descriptive literature for both system alternatives. The low pressure sewer systems would involve connections from each parcel by a 1 ½ - 2" line into laterals within the rear and side street area of the various highways with sizes up to 4" in diameter. The pressure sewers would require a grinder pump for each parcel which would discharge into the system which can be can be considered a financial and operational disadvantage. Vacuum systems may be more cost effective but do have the potential for operational problems due to piping damage or insufficient air volume. Due to many onsite systems along CR 80 being located in rear of the parcels, the initial construction would require a substantial number of easements and stubs of 2", 25' from those laterals into the various side streets. Double or parallel sewering is also an option in these areas. The easements would be required in order for the service of all lots to cross from one ownership to another while being routed to the stub in the side streets.

The alternate sewer systems would discharge into pumping stations. These pumping stations (refer to Figure No. 9 for a typical pumping station site) would maintain the higher elevation of the sewer system out of the groundwater thus eliminating the expense of dewatering and sheeting for deep trenches. The pumping stations would discharge into major stations or go directly to the wastewater treatment plants that are planned. It is necessary to refine the location of the stations that have been proposed. Due to limited topographic information estimates of location have been made with Alternative No. 1 including eleven stations. Obviously the more stations needed increase costs but also involve difficulty with land availability and public acceptance.

It is assumed that the combination of conventional gravity and low pressure/vacuum systems approach is the cost effective system. State and local regulations must be used in establishing design criteria for the project. A goal was to minimize the number of pumping stations as a function of wastewater treatment plant locations and topographic considerations. As depicted in Figures No. 6 through 8, the alternatives to serve the area include a number of pumping stations as a function of a preliminary review of the service area topography. Sewage is conveyed to the Holiday and or airport site by larger stations. Gravity sewers are to be installed in approximately 25% of the area while pressure sewers/vacuum systems, some in high groundwater areas and some in dry areas, are proposed for 75% of the area.

Based on preliminary information in the area, the assumption with respect to the collection system and the need to convey sewage to one or two wastewater treatment plant sites with a construction period starting in 2016 is as follows:

- The 130 miles of sewers will be allocated by 50% low pressure sewers or vacuum systems in high groundwater areas, 25% pressure sewers or vacuum systems in dry areas, and 25% conventional gravity sewers in areas that must be dewatered.
- Pumping stations with varying sizes will be installed throughout the area and range from 11 stations for Alternate No. 1 to two stations for Alternate No. 3.
- Cost for low pressure sewers or vacuum systems including manhole and other appurtenances are estimated to be $225 per linear foot. In addition the pressure sewer grinder pump stations are $10,000 each.
- Cost of conventional sewers with dewatering and or sheeting is estimated to cost $300 per linear foot.
- Large pump stations are estimated to cost $1.5 million while smaller stations are estimated to cost $0.75 million.
- Force mains required from the pumping stations are estimated to cost $225 per linear foot.
- The crossing under the railroad or Sunrise Highway will be 500 tjo 1,500 feet for each crossing and estimated to be $1,500 per linear foot.
- The planning, engineering design, construction inspection, construction administration and development cost must be added.

3.3 Wastewater Treatment Plants – These plants would be designed to meet groundwater standards which are having an effluent less than 10 mg/l of total nitrogen. The facilities would also include a process which would further polish the effluent such as to minimize the disposal facilities necessary. The initial size being 0.20 to 0.4 million gallons per day and being expandable to ultimate flows of 1.0 and 3.5 mgd. Figures No. 10 and 11 depict a suggested general site plan for wastewater treatment plants in this range with sufficient acreage to go beyond the expanded facilities. It is proposed that the basic process train include influent screening and grit removal, sequencing batch reactors along with pre and post equalization, filtration, and if disinfection is required the use of an ultraviolet system.

The residuals or sludge train would include holding, sludge thickening, and dewatering in combination with sludge stabilization. Liquid side streams from the sludge processing would be returned to the headworks of the wastewater treatment plant. It is anticipated that the staffing required would consume one shift during the day with sufficient SCADA and monitoring control for real time observation of the facility.

As indicated above various alternatives were explored with respect to wastewater treatment facility sites. The alternatives incorporated varying flows at either the Airport site or the Holiday site. The flows developed for each area included 0.4 mgd for CR 80, 0.15 mgd for CR 46, 0.1 mgd for Neighborhood Road, and 3.8 mgd for the residential area exclusive of the 3 business districts. The sites were the basis of alternatives such that Alternative No. 1 would have plants with capacities of 3.5 mgd at the airport and 1.0 mgd at Holiday. The second alternative would be the alternative where the business districts were served as the initial phase of the project and the plant capacities being 0.2 mgd at the Holiday site and 0.5 mgd at the airport. It is noted that with the alternatives involving the Holiday site that project's 0.1 mgd would also be the subject of an adjacent wastewater treatment facility. The final alternative would have a 0.4 mgd plant at the Airport.

Based on the flows developed above, the cost for each gallon per day is $60 for the alternatives involving the 1.0 – 3.5 mgd and $67 for the facilities of .2 - .5 mgd. It is noted that with the extensive underground recharge facilities at the larger sites an additional cost for those shallow pools was also added.

3.4 Disposal Systems – The disposal of the treated sewage from the area had once considered ocean outfalls. Although not considered in this report, recommendations are made to explore the viability of this and other concepts. At the size of the facilities proposed, inland recharge with facilities meeting groundwater standards is the method to be employed. Due to the limitation of land, either at the Holiday site or the need for underground facilities with no standing water at the Brookhaven Airport, underground leaching pools are required for both facilities. With the requirement to install 200% of the capacity of each facility it had been determined that 800 pools would be required per one million gallon per day of capacity assuming that groundwater depth is within 10' of the surface and each pool is ten feet in diameter. Nearly 3,000 pools would be needed for the 3.5 mgd plant.

The disposal of processed sludge would be by a vendor that could utilize the stabilized sludge for land application or beneficial reuse at some other locations, in or out of the State.

Section 4.0, Regulatory Requirements

4.1, NYSDEC

The Recommended Standards for Wastewater Facilities, commonly known as "Ten State" standards, was developed in 1947 by a group known as the Great Lakes – Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers, of which New York State is a party to. This standard is the basis for the design, construction, and operation of sewage works throughout New York. The main goal in the development of the standard is to safeguard the public health and protect water quality. This is achieved through

the use of Best Available Technology practices and the implementation of redundant processes. For example, Sequenchng Batch Reactor (SBR) technology is considered "state of the art" for sewage treatment and has been added to Ten State in the 2004 edition. Also, the installation of back-up equipment such as pumps, emergency generators, and excess sewage storage capacity are all examples of the recommendations by Ten State to avoid any adverse damage to the public or surrounding environment.

In preparation of the Mastic Sewer Feasibility Study all costs for the sewage works were done using Ten State standards as the ultimate guide.

4.2, Suffolk County Department of Health Services

The Department has been delegated authority by NYSDEC to regulate sewering projects and treatment plants by approving their design, inspecting construction, and monitoring the operation of the sewage works through quarterly facility inspections and sampling.

Typical sanitary sewage design flows for all types of users are detailed in "Design Standards for Other than Single Family Residences". Although this is mostly for the design of on-site septic systems, the typical flows designated to certain users, such as commercial, business, and industrial are accurate in predicting the daily sewage flow generated within a sewer service area. The more common design flows that apply to this study are:

	Gallons per Day
Single Family Residence	300/unit
Apartment, Condo, Townhome greater than 600 sf and less than 1200 sf	225/unit
Apartment, Condo, Townhome less than 600 sf	150/unit
Restaurant	30/seat
Dry Retail Store (no food service)	.03/sf
Wet Retail Store (take-out food service)	.15/sf
Office Space	.06/sf
Medical Office Space	.10/sf

4.3, Industrial Pretreatment Program

In order to protect the treatment process, the discharge to air, the discharge within the effluent and the residuals leaving the site from industrial pollutants, it is required that an industrial pretreatment program be in place. Suffolk County does have a program and the creation of a new sewer district would be included in that program. All non-residential parcels would receive a discharge certification (i.e., permit) that would contain the conditions of discharge. A separate cost element is billed to all users in this category and is $43 per single family equivalent in 2009. It is also noted that an excess strength surcharge is billed to users that discharge wastes that are stronger than typical sanitary waste concentrations.

4.4, Environmental Review

4.4.1, EIS

Construction of sewers and treatment plants involves both long and short term impacts. Nuisances of dust, noise, and traffic disruption can be easily mitigated. Long term impacts such as increasing or lowering of groundwater due to discharge in more remote areas and the revisions to air, sludge and effluent discharges must be addressed. A project completed in the southwestern portion of the County (refer to Section 4.4.2) was to address the lowering of the groundwater levels due to sewering. Both the USEPA and New York State Department of Environmental Conservation were involved with this project. It is anticipated that a generic EIS is appropriate for the sewer system and the wastewater treatment plant. Issues such as stimulation of growth and the revitalization of the area due to the increased density as well as the environmental improvements would be a significant element in the GEIS. Due to the scope of this project, a lengthy and costly environmental phase is anticipated.

4.4.2, FANS

As indicated above, a Flow Augmentation Needs Study was performed for the southwestern portion of the project. Exhibit No. 14 includes descriptive information concerning that project that may be appropriate to the service area that is the focus of this project. Assumptions cannot be made on the final scope of the work and, therefore, mitigation cost estimates are difficult to determine for any impact by additional sewering for the projects in this report. As this project develops, the issues of recharge can be incorporated into the options.

4.4.3, Public Input

Social acceptance of this project is important and that support has been received in the past as indicated by the legislative resolution directing this feasibility study to be performed. Public information meetings and hearings for the project are necessary and, therefore, public notification and input prior to the hearing process is advisable. The proposed public hearing would focus on the work to be done, the financial aspects, and the benefits of the project. Construction of sewers in developed areas will lead to nuisance conditions and the public must be made aware of the potential for dust, noise, and inconvenience. Annual costs would include user fees, industrial waste fees, excess strength surcharges, and debt service. Environmental benefits are protecting the groundwater and surface waters and reducing potential health concerns would be compared to the impact of raising or lowering the groundwater levels through inland or surface water discharge. As indicated above it is not likely that surface water discharge would be an option that is acceptable to the public or the regulators. The inland recharge option is, therefore, to secure sufficient land that would also be scrutinized by the surrounding community.

Although public input has been received by elected officials the direct association of DPW included a Chamber of Commerce meeting in November 2006 and the Public Information Meeting of July 2008. Exhibit No. 3 includes narrative and presentation material on these meetings. The public consensus is that sewers are desirable but the location of treatment facilities and the cost will raise opposition to the project.

Section 5.0, Sewer District Formation – The formation of the potential service area is defined in Exhibit No. 15. The steps necessary are embodied in the New York State County Law Article 5-A. The report herein can be considered the initiation of the process that defines the preliminary costs and users to be impacted both beneficially with the potential for negative financial impacts to the typical property. As with the conclusions of this report, it will be necessary for a detailed analysis to be performed on a modified service area that is defined in accordance with Article 5-A. Once the final definition of the service area is established and the estimated annual cost per typical property is confirmed, an application can be made to the State Comptroller's office with respect to district formation. Based on the project cost developed below it will be recommended that a phased project be implemented with the smaller service area being served first, proceeding from Alternate No. 3 to Alternate No.2 and finally Alternate No. 1.

Section 6.0, Financing –

6.1, ASRF,

A large project such as this is not appropriate for the intent of the Assessment Stabilization Reserve Fund. The intent of the ASRF is to stabilize sewer district charges and not to provide new district development with a subsidy for construction. Regardless of the concept to create a sewer district, the actual annual costs must be verified over a period of time, usually three years, in order to determine the eligibility of a project to take advantage of the ASRF program which currently limits increases to 3% annually. The cost opinions are significant enough that if the ASRF would be used it would be exhausted by only a portion of the project. Other financing avenues would be necessary.

6.2, SRF - (Clean Water State Revolving Fund),

The loan program would be used in conjunction with conventional financing. Currently, the County's borrowing rate is approximately 5%. Considering the SRF administrative fees and requirements for application and project approval, the annual costs should be lower in part due to the SRF program amortizing project financing over 30 years. We have been in contact with the New York State Environmental Facilities Corporation in order to discuss a financial schedule for this project. The schedule would estimate the borrowing costs for nearly $700 million with a 30 year repayment. The EFC financing scenario is based on a triple-A rate and although widely fluctuating is assumed to be at 5 percent. EFC fees of 1.7 percent up front would be included along with a 0.25 percentage on the outstanding balance for the life of the bond. The capital

recovery factor of a uniform annual series at 50 percent is a 2.5 percentage rate on a 30 year loan is therefore 0.04778. A comparison could be made to conventional financing under Suffolk County's program which can also borrow at a triple-A rate in the bond market over 20 years with the EFC program being approximately 60% of the conventional program. Typically, municipalities would realize a significant cash flow savings by using the SRF program. EFC explains the estimated savings are somewhat conservative when estimated prior to a project being implemented and may be higher depending upon the investment rate for the SRF reserves allocated to Suffolk County. Actual debt service and savings depend on several factors including the County's construction schedule, draw rate of loan proceeds, and market rates at the time.

New York State had prepared a March 2008 report on the wastewater infrastructure needs within the state. The report indicates that new federal standards push the need for enhanced wastewater treatment systems and that a sustainable funding program should include federal and state grants along with low interest loan programs and local rates sufficient to address current and projected funding requirements. The report does recognize the relationship of infrastructure to smart growth and economic development along with local government efficiency. It is suggested that the loan program be modified such that it be made available to non municipal wastewater infrastructure and that a program similar to the Construction Grants Program providing grants for either 55% or 75% of eligible projects as needed. Both hardship community grants where high local user charges exist, as is demonstrated in the study area, and fair local rates are also discussed. A number of pertinent sections of the report are included in Exhibit No. 16.

6.3, Grants,

Projects are typically forwarded to those federal and state agencies/officials that may have funding available for grants or earmarks. Applications have been unsuccessful for most projects recently, however, with the federal stimulus package being discussed it is possible that some grants will be made available although the intent at this time is to utilize SRF program as the administrator of any funds in a stimulus package. The local listing for stimulus project included the CR 80 portion of the Mastic area in the "pre-planning category", indicating that is was at least 2 years from implementation. At this time, the economic stimulus package appears to be administered by EFC.

6.4, Conventional Financing,

In order to borrow funds for the project, a series of approval steps are necessary. As with the sewer district formation process Article 5-A of the New York County Law is used from the public hearing process through State Comptroller approval. Exhibit No. 17 includes that schedule for implementation. The State Comptroller sets annual thresholds for typical properties to determine if notification or approval is needed. The 2009 thresholds for a typical property are $307 for the maximum to be expended and $17 for the annual increase. It is

obvious that with these low thresholds and significant cost levels, approval will be necessary.

Recent bonds sales have resulted in an interest rate of nearly 5% over twenty years. This is higher than the 4% experienced over the past few years. The capital recovery factor in a uniform annual series is therefore 0.08024 and applied to the project cost with the annual operation and maintenance added to that value in determining the annual cost to users.

Section 7.0, Schedule,

Exhibit No. 18 includes a table and bar chart with the project schedule. The project schedule for financing the district formation which is 12 months and the overall project from notice to proceed to operational facilities is 7 ½ years. Alternates 2 and 3 may not consume the three year construction period. Based on the preparation of this report and the evaluation by the County's elected officials, the inclusion of the project would not take place any earlier then the 2011-2014 Capital Program and Budget with a notice to proceed to DPW in mid-2011. The mid-point of construction and therefore the basis of estimates is mid-2017 with an operational facility by early 2019.

Section 8.0, Costs -

8.1, Summary,

The cost of the project for each of the three alternatives is included in the various exhibits of the report. The planning and engineering phase which also includes the environmental tasks along with the construction of the infrastructure for sewers, alternate sewer systems, pumping stations, disposal facilities and on-site system abandonment are incorporated into the total cost along with operation and maintenance. There are also estimates associated with the construction inspection assuming that the sewering project would take place in a number of zones concurrently. The costs are estimated to be at the mid-point of construction which is June of 2017. As indicated in other sections of the report, the report has been prepared within the limitations of the DPW budget thus various preliminary design assumptions as well as minimal fieldwork that has been performed. Due to conservative cost values only a ten percent contingency has been applied. It has been assumed that no land purchase will be needed for the wastewater treatment plants and that the land for the pumping station sites are small enough to be incorporated into the cost estimates.

8.2, Planning & Engineering,

The environmental tasks for a project of this magnitude are based on similar projects scope and include public participation. Exhibit No. 19 includes the estimated cost of $300,000. In addition it is assumed that a project element will be a supplement to the FANS project (Exhibit No. 19 and prior discussion in Exhibit No. 14). Due to additional work needed on the inventory of streams, ponds and wetlands as well as the Forge River and groundwater modeling this

cost is also $300,000. An Environmental Impact Statement is also needed for the wastewater treatment plant and valued at $350,000. The total for this element is $950,000.

Engineering assistance (Exhibit No. 20) includes the design, construction administration and project labor agreement. Construction costs of the sewer system and wastewater treatment plant are used in conjunction with the ASCE engineering curves (Figure No. 12) to determine the design and construction administration, apportioned at 75% and 25% of the curve value, respectively. Alternate No. 1 costs are estimated to total $33.1 million for this element.

Exhibit No. 21 summarizes the planning, engineering construction management costs for all alternates.

8.3, Construction,

Construction costs are allocated to inspection of all facilities as well as the infrastructure. The costs are based on Alternate No. 1, per the Resolution 369-08. The inspection costs are based on a large sewering project and multiple pumping station and treatment plant sites being constructed concurrently.

The inspection staffing organization chart and cost estimates are included on Exhibits No. 22 through 24. The two treatment plants are within a 5 mile distance and can be administered by a Professional Engineer and Resident engineer with adequate support. The cost is estimated at $5.5 million for the three year construction period. The sewer system installation of 130 miles will require four inspection crews of 7 staff, each being supervised by a resident engineer and with all four crews administered by a professional engineer and office/survey support. The three year cost is $19.5 million.

Exhibits No. 25 and 26 include the construction costs of all three alternatives, including the conveyance, treatment/disposal and on-site abandonment elements. Costs utilized in the estimate are from current experience and inflated to the mid-point of construction (June 2017). The conveyance system for Alternate No. 1 is estimated to cost $305 million and the two wastewater treatment plants including disposal is $330 million. As indicated in the narrative above a combination sewer system is proposed and the two plants will discharge to groundwater.

The total construction cost is $635 million, exclusive of all other costs to be discussed below and in prior exhibits.

8.4, Operation & Maintenance,

Exhibit No. 27 includes the operation and maintenance costs of the conveyance, treatment and disposal systems. The sewer system includes equipment to respond to situations that arise with blocked or damaged facilities

as well as planned maintenance. The total cost including all labor, chemicals, power, materials, sludge removal, etc, for Alternative No. 1 is $8.6 million.

8.5, Typical Property Annual Cost,

As indicated in Section 5, an application to the New York State Comptroller is necessary with respect to district formation and that application is mandated to include what the typical property cost will be for the project. The typical property cost is the median cost for the service area users. There are 8,500 parcels within the service area and a large percentage remains undeveloped. Due to the difficulty in establishing the value of those parcels and considering that the district is to be formed based as a benefit district, it is assumed that the typical property as the basis of this report would be the average parcel use. Due to the overriding number of residential parcels within the user service area, the average parcel is utilized in establishing the typical property annual cost. Exhibit No. 28 incorporates the total cost on an annual basis and the number of parcels. As indicated in that exhibit, the range of annual costs to the average parcel is $7,500 per year for Alternative No. 1, through $30,000 per year per parcel for Alternative No. 3. Lower costs can be realized by using the SRF/EFC program over 30 years.

Section 9.0, Conclusions,

- Implementing the project without subsidies is an extreme burden on users and is considered a hardship
- The earliest implementation of operating facilities is 2019
- Opposition is likely on locating facilities and costs
- The details of the report must be confirmed, especially boundaries/users, field conditions, infrastructure alternatives, locations and costs
- Sewering the area would be beneficial and is viable
- A phased implementation is more likely to be approved
- Environmental and economic conditions will not be improved without sewering
- County wide benefits will be realized by improvement to the environment of the area and the additional of affordable/workforce housing
- Costs would increase for future projects
- The County RFP Committee should include this area as a priority

Section 10.0, Recommendations

- Continue the pursuit of grants
- List the project on the Intended Use Plan of EFC
- Consider service to areas west of CR46, the CR 46/CR 80 intersection and the southern portion of the peninsula
- Continue groundwater and surface water monitoring
- Confirm that surface discharges are not a viable option for disposal of treated effluent
- Obtain updated reports from the Town of Brookhaven on the area and Brookhaven 2030

County.

- Add the planning portion of the project to the Capital Program and Budget for 2010 – 2012
- Consideration should be given to a 30 year financing period.

Figures, 1-2, 6-12

tudy Area
Figure No. 1

FIGURE NO. 2

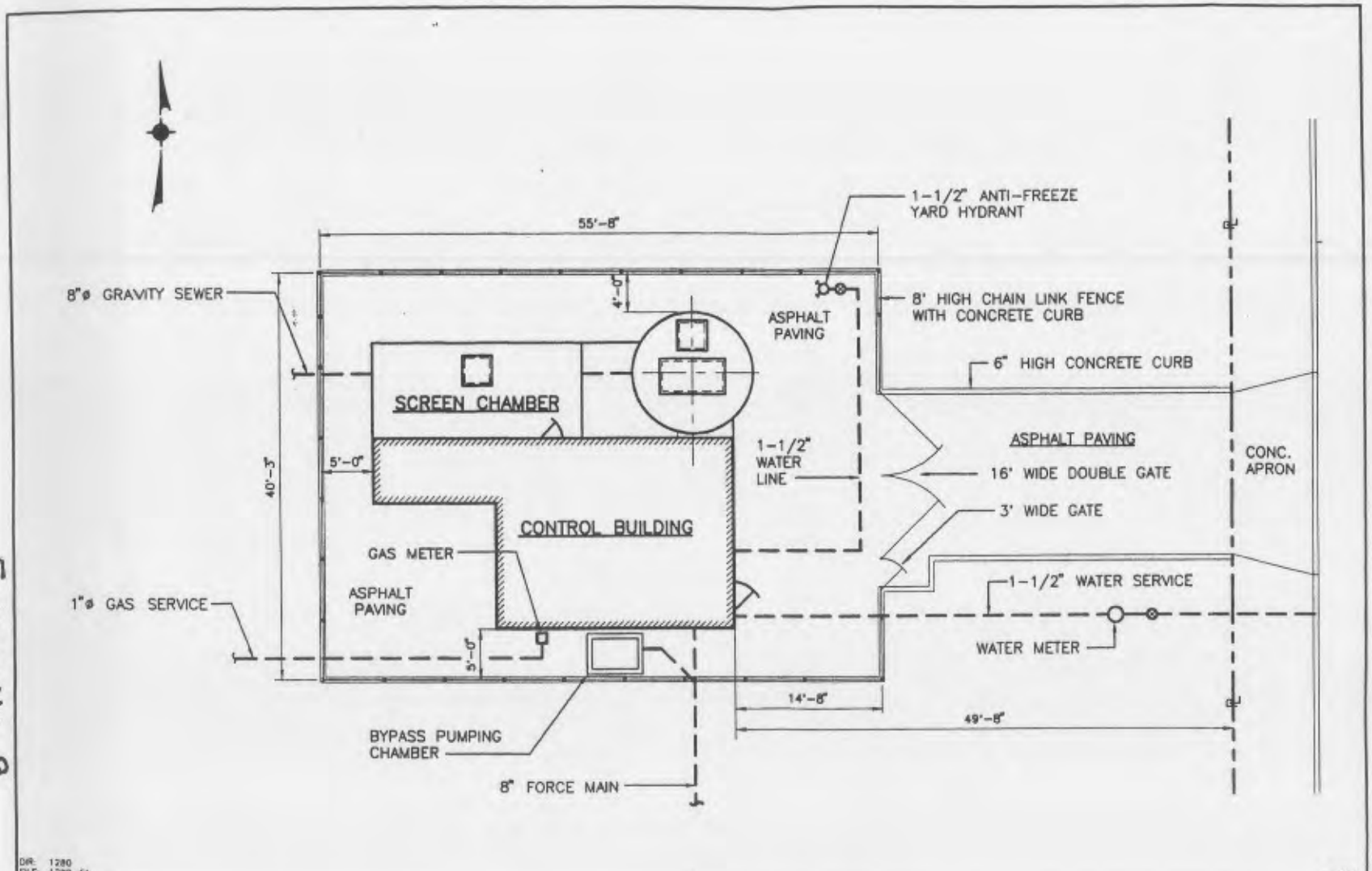
.ternative No. 1

Figure No. 6

ternative No. 2

Figure No. 7

ternative No. 3
Figure No. 8



WALT WHITMAN MALL

PUMPING STATION SITE PLAN

HUNTINGTON, NEW YORK

Dvirka and Bartilucci
Consulting Engineers
A Division of William F. Cosulich Associates, P.C.

3-5

Figure No. 9

WWTP, 0.2 - 1.0 mgd capacity
Figure No. 10

Brookhaven Airport Site
27.1 ac
26.1 ac
14.9 ac
11.5 ac
Flower Hill Dr E
Brookhaven Airport Rd
Campbell Dr
Moriches Middle Island Rd
Keller Dr
Alden St
Claflin St
Carlin Dr
Forestall Dr
Floradora Dr
Applegate Dr
Brandywine Dr
Poncho Dr
Sweetbriar Dr
Grove Dr
Pentmoor Dr
Sachem Dr
Kilroy Dr
Kameo Dr
Rada Dr
Seaford Ave
Sunrise Highway Service Rd
State Hwy 27
Devoe Pl
Dover Pl
Malta Pl
Kent Pl
Hart Pl
Dover St
Forest St
Montgomery Ave
Stuyvesant Ave
Washington Ave
Holly St
Broadway
Dana Ave
Nelson Pl
Logan Pl
Clymen Pl
Elm Pl
Oakland Ave
Midland Ave
Vernon Ave
State St
Lambert Ave
Milford St
Boonar St
Titmus Dr
Ardmay Dr
Bonny Dr
Dress Dr
Gores Dr
Franklin Ct
Herbert Ct
Paul Dr
Terry Dr
Victory Dr
Montauk Hwy
Afton Pl
Hamilton St
Grant St
Foxcroft St
Elgin St
Burney Blvd
Abbott Ave
Cranford Blvd
Weeks Ave
Winters Dr N
Sleepy Hollow Dr
Birch Hollow Dr
Boxwood Dr
Starlight Dr
Puritan Dr
Rawlinson Dr
Crestwood Dr
Lockwood Dr
Avondale Dr
Wellwood Dr
Carnation Dr
Free State Dr
Colin Dr
Helene Ave
Lucerne Ave
Monty Pl
Kingsland Pl
Belmont Dr
Patton Ave
Flower Hill Dr
Decatur Ave
Norwood Dr
N Ridgewood Dr
End Ave
Auborn Ave
Revilo Ave
William Floyd Pkwy
River Rd
Sunset Dr
Forrest Ave
Oak Ave
Dawn Dr
Grand Ave
Park Ave
Maple Ave
Pinelawn Ave
Winston Dr
Beatrice
WWTP, 0.2 - 1.0 mgd capacity
Figure No. 11
0
875
1,750
3,500
Feet
Data Sources: SC Real Property Tax Services, SC DOIT GIS
Prepared by Cathy Cacciola SCDPW

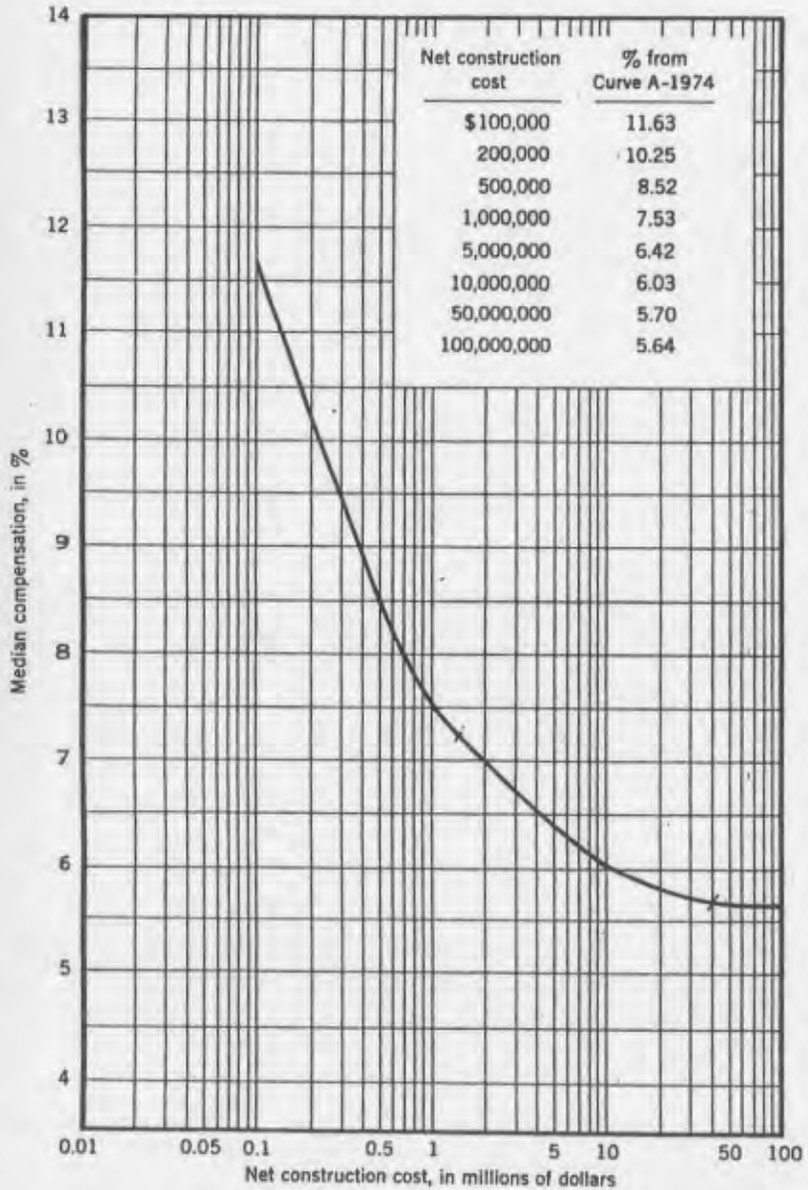


FIG. 1. — CURVE A, MEDIAN COMPENSATION FOR BASIC SERVICES EXPRESSED AS A PERCENTAGE OF CONSTRUCTION COST FOR PROJECTS OF ABOVE-AVERAGE COMPLEXITY (1974)

Figure No. 12

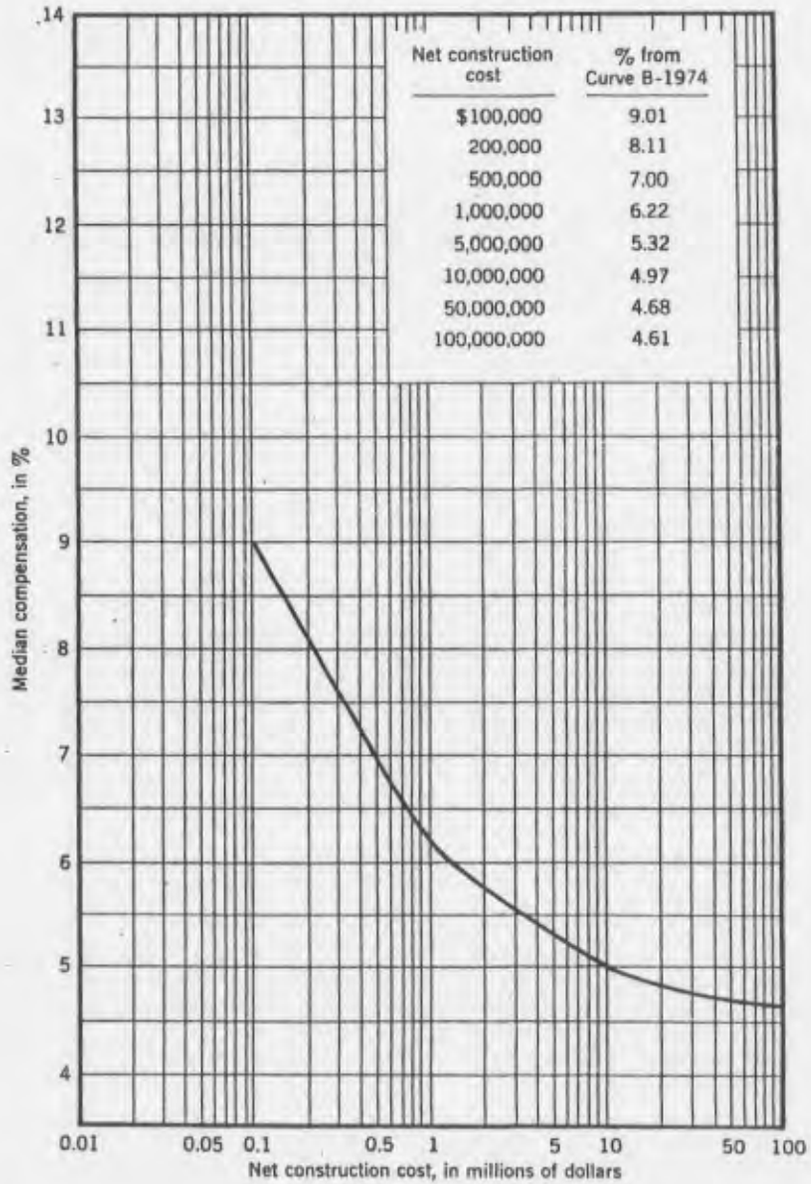


FIG. 2. — CURVE B, MEDIAN COMPENSATION FOR BASIC SERVICES EXPRESSED AS A PERCENTAGE OF CONSTRUCTION COST FOR PROJECTS OF AVERAGE COMPLEXITY (1974)

EXHIBIT NO. 1

Intro. Res. No. 1439-2008 Laid on Table 4/29/2008
Introduced by Legislator Browning

RESOLUTION NO. 284 -2008, DIRECTING THE DEPARTMENT OF PUBLIC WORKS TO CONDUCT A PRUDENCY EVALUATION AND TO PREPARE WORK PLANS FOR THE INSTALLATION OF SEWER PIPES IN THE SHIRLEY/MASTIC BUSINESS DISTRICT

WHEREAS, funds have been appropriated to reconstruct Montauk Highway, east of the William Floyd Parkway in Shirley; and

WHEREAS, this portion of Montauk Highway is a densely developed commercial area that is important to the local economy; and

WHEREAS, providing for the future installation of sewers along this environmentally sensitive portion of Montauk Highway would eliminate the use of cesspools and protect the fresh-water of the Forge River from the leaching of pollutants; and

WHEREAS, it would be prudent to plan for the possibility of construction of sewer infrastructure while the roadway is under reconstruction; and

WHEREAS, the Department of Public Works has the requisite resources to conduct a prudency evaluation regarding the appurtenant sewer infrastructure, and the size of a sewage treatment plant needed to best serve the needs of the Shirley/Mastic business district; and

WHEREAS, a prudency evaluation should include the actual and acceptable costs of said appurtenances and sewage treatment plant, and the actual and acceptable cost of usage to the residents and business in the Shirley/Mastic business district; and

WHEREAS, a prudency evaluation will help determine the best allocation of resources that could bring sewer infrastructure to the Shirley/Mastic business district; now, therefore be it

1st RESOLVED, that the Department of Public Works is hereby authorized, empowered and directed to conduct a prudency evaluation regarding the appurtenant sewer infrastructure, and the size of a sewage treatment plant needed to best serve the needs of the Shirley/Mastic business district; and be it further

2nd RESOLVED, that such prudency evaluation shall include the actual and acceptable costs of said appurtenances and sewage treatment plant, and the actual and acceptable cost of usage to the residents and business in the Shirley/Mastic business district; and be it further

3rd RESOLVED, that the Department of Public Works is hereby further authorized, empowered and directed to timely file all work plans that could facilitate the installation of sewer infrastructure and documentation, or amended plans and documentation, as the case may be, which may practicably secure funding, as available, for construction of sewer infrastructure in connection with reconstruction of CR 80 Montauk Highway, Shirley/Mastic (CP 5516); and be it further

4th RESOLVED, that this Legislature, being the lead agency under the State Environmental Quality Review Act ("SEQRA"), Environmental Conservation Law Article 8, hereby finds and determines that this law constitutes a Type II action, pursuant to Section 617.5 (C) (11) (20) and (27) of Title 6 of New York Code of Rules and Regulations ("NYCRR"), in that the resolution allows for the extension of sewer distribution facilities in a project for which SEQRA review was previously completed and, therefore, the resolution constitutes routine or continuing agency administration and management, not including new programs or major reordering of priorities that may affect the environment; since this resolution is a Type II action, the Legislature has no further responsibilities under SEQRA.

DATED: April 29, 2008

APPROVED BY:

/s/ Steve Levy
County Executive of Suffolk County

Date: May 9, 2008

Intro. Res. No. 1318-2008 Laid on Table 4/29/2008

Introduced by Legislators Browning and Horsley

RESOLUTION NO. 369 –2008, DIRECTING THE SUFFOLK COUNTY SEWER AGENCY TO PREPARE REPORTS AND MAKE RECOMMENDATIONS NECESSARY TO FORM A SEWER DISTRICT AT MASTIC/MASTIC BEACH/SHIRLEY

WHEREAS, the creation of a sewer district in Mastic, Mastic Beach and Shirley has the potential to increase business investment, increase workforce housing opportunities and provide greater environmental protection in these communities; and

WHEREAS, the Montauk Highway Business District in Mastic/Shirley, the Neighborhood Road Business District in Mastic Beach and the Mastic Road Business District in Mastic Beach and Mastic would benefit from the creation of a sewer district; and

WHEREAS, the presence of sewers would allow for greater building density and the creation of affordable, workforce housing in these communities; and

WHEREAS, the prevalence of cesspools and septic tanks in the Mastic, Mastic Beach and Shirley communities has contributed to the depletion of oxygen and the increased levels of nitrogen in the Forge River; and

WHEREAS, cesspools and septic tanks also threaten the extensive wetland areas in the Mastic, Mastic Beach and Shirley communities; and

WHEREAS, the Suffolk County Sewer Agency has entered heretofore and will hereafter enter into agreements with various subdividers, developers and sponsors to make provisions for sewage collection and disposal facilities in and about subdivisions, condominiums, commercial, industrial and other areas, as well as the formation of districts to implement such intentions; and

WHEREAS, it has previously been determined to be in the best interest of all residents of the County of Suffolk for small sewage treatment facilities to be incorporated into the oversight of the Suffolk County Department of Public Works to ensure the quality of ground water and the health and comfort of surrounding communities; and

WHEREAS, the Suffolk County Sewer Agency should study and make recommendations necessary for the formation of a County Sewer District in the Mastic, Mastic Beach and Shirley communities; now, therefore be it

1st **RESOLVED**, that the Suffolk County Sewer Agency, with the assistance of the Suffolk County Department of Public Works, be, and is hereby authorized, empowered and directed within the limitations of their budget, to undertake the preparation of appropriate reports and make recommendations necessary to initiate the process which may ultimately result in the formation of a County Sewer District in and about the Mastic, Mastic Beach and Shirley communities; and be it further

2nd **RESOLVED**, that the boundaries of the subject sewer district shall encompass the William Floyd Parkway from Montauk Highway south to the Neighborhood Road Business District, and as far east as the Forge River; and be it further

3rd **RESOLVED**, that the Suffolk County Sewer Agency shall, within thirty (30) days of the effective date of this resolution, provide members of the Suffolk County Legislature with its written schedule/timeline for the subject sewer district study; and be it further

4th **RESOLVED**, that the Suffolk County Sewer Agency shall give a written status report on the subject sewer district study to the members of the Suffolk County Legislature within one hundred twenty (120) days of the effective date of this resolution; and be it further

5th **RESOLVED**, that the Suffolk County Sewer Agency shall issue their final report and recommendations to the members of the Suffolk County Legislature and to the Suffolk County Executive within two hundred forty (240) days of the effective date of this resolution; and be it further

6th **RESOLVED**, that this Legislature, being the State Environmental Quality Review Act (SEQRA) lead agency, hereby finds and determines that this resolution constitutes a Type II action pursuant to Section 617.5(c)(20), (21) and (27) of Title 6 of the NEW YORK CODE OF RULES AND REGULATIONS (6 NYCRR) and within the meaning of Section 8-0109(2) of the NEW YORK ENVIRONMENTAL CONSERVATION LAW as a promulgation of regulations, rules, policies, procedures, and legislative decisions in connection with continuing agency administration, management and information collection, and the Suffolk County Council on Environmental Quality (CEQ) is hereby directed to circulate any appropriate SEQRA notices of determination of non-applicability or non-significance in accordance with this resolution.

DATED: May 13, 2008

APPROVED BY:

/s/ Steve Levy
County Executive of Suffolk County

Date: May 28, 2008

EXHIBIT NO. 2

Report & Recommendations Status Report to Form a Sewer District at Mastic/Mastic Beach/Shirley

Resolution 369-2008

The Resolution was adopted on May 13th and required a written status report to the Legislature at this time. A number of tasks have been implemented which will lead to the recommendations regarding the sewer district formation, the costs associated with sewer service area, the construction of that infrastructure, and what steps should be taken with respect to the potential formation of a County sewer district in the areas of Mastic, Mastic Beach, and Shirley communities. The resolution identifies the study area as encompassing an area of William Floyd Parkway south from Montauk Highway, to the Neighborhood Road Business District and as far east as the Forge River. On initial evaluation, it is suggested that the entire peninsula be served due to the environmental benefits associated with eliminating onsite sewers west of William Floyd and south of Neighborhood Road, with the following comments:

- The areas associated with the business district from the Forge River along CR 80 to William Floyd Parkway south to Neighborhood Road, and east along Neighborhood Road were walked by DPW staff. The information noted involved the type of business and the location of the onsite systems. Memos and emails are attached with respect to these results. The result indicate that the majority of onsite systems are located in the rear or side lots, therefore, creating technical difficulties and utilizing conventional gravity sewer systems. Without the relocation of the internal plumbing in these buildings, which would be very costly, the abandonment of the onsite systems and connection to a conveyance system in the rear and side lots would be most beneficial. The evaluation would confirm this preliminary conclusion.

- Meetings were held with Town of Brookhaven Planning Department during June and August to discuss a duplication of effort that is proposed by Brookhaven. They intend to authorize an updating of a previous engineering report by Henderson & Bodwell, by that firm, in the next few months. Although a duplication is not cost effective, there is a need to respond to the authorization provided in Resolution 369-2008 and also what could be a larger effort to the north by the Town of Brookhaven. The Town and County will continue the cooperation and coordination necessary for these two parallel paths.

- A meeting was held with Suffolk County Health Services. The purpose of the meeting was to obtain additional information on their pilot work on groundwater levels, groundwater direction, and groundwater quality in the

area. As part of the Comprehensive Water Resource Management Plan that is being updated by the County through the Department of Health Services, pertinent information is available on the areas contributing to the Forge River and other surface bodies.

- Meetings have been held with NYSDEC for other projects that have information pertinent to the Mastic/Shirley area. The various options for recharge have been evaluated and include surface water discharge and various inland recharge options such as beds, pools, and injection wells.

- A public information meeting was held on July 28th for the purpose of discussing the CR 80 roadway reconstruction. As part of that meeting, DPW had prepared preliminary costs on sewering the business areas of CR 80 and William Floyd Parkway, individually and collectively. Attached are slides indicating Alternatives "1" and "2" and the cost associated per lot for a 20 year period. It is noted that the significant costs raise the same questions as most sewering projects, that being the funding necessary must be available from other sources then the local community in order to be affordable.

- The estimated length of sewers in the entire area defined by Resolution 369-2008 is approximately 120 miles. Considering areas south of Neighborhood Road and west of William Floyd Parkway, an additional 85 miles would be necessary. The cost estimates are being prepared on the conveyance system from this extensive area including pumping stations and ultimate sewer systems.

It is the anticipation of Public Works and the Sewer Agency that a report will be filed with the Legislature in accordance with the Resolution by January 15, 2009.

EXHIBIT NO. 3

PUBLIC INFORMATION MEETING ANNOUNCEMENT FOR SANITARY SEWER INSTALLATION IN THE MASTIC/SHIRLEY AREA

Please be advised that Suffolk County Department of Public Works (SCDPW) invites you to join us at a Public Information Meeting to discuss conceptual plans to install sanitary sewers in the Mastic/Shirley area (Town of Brookhaven).

Meeting will be held:

July 28, 2008 at 5:30 P. M.
Mastic Fire Department
1080 Mastic Road
Mastic, NY

Meeting Schedule

5:30 P.M. to 6:00 P.M.	Representatives from the Suffolk County Department of Public Works will give a presentation on conceptual plans to install sanitary sewers in the Mastic/Shirley area.
6:00 P.M. to 7:30 P.M.	Suffolk County Department of Public Works representatives will be available for Q & A opportunities on an individual or small group basis. Also, written comments will be accepted and reviewed.

Steve Levy
County Executive
County of Suffolk Department of Public Works

Gilbert Anderson, P.E., Commissioner
Thomas LaGuardia, P.E., Chief Deputy Commissioner
Louis Calderone, Deputy Commissioner

COUNTY OF SUFFOLK

STEVE LEVY
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS

THOMAS LAGUARDIA, P.E.
CHIEF DEPUTY COMMISSIONER

GILBERT ANDERSON, P.E.
COMMISSIONER

LOUIS CALDERONE
DEPUTY COMMISSIONER

July 1, 2008

Honorable Kate Browning
Legislator, 3rd District
2 Coraci Boulevard, Suite 11
Shirley, NY 11967

Re: Public Information Meeting
Sanitary Sewer Installation in the Mastic / Shirley Area

Dear Legislator Browning:

You are cordially invited to attend a Public Information Meeting on Monday, July 28, 2008 at the Mastic Fire Department, 1080 Mastic Road, Mastic, NY, concerning conceptual plans to install sanitary sewers in the Mastic / Shirley area.

The Meeting is scheduled as follows:

Date:	**Monday, July 28, 2008**
Presentation:	**Beginning at 5:30 P.M.**
Question and Answers:	**Beginning at 6:00 P.M.**
Location:	**Mastic Fire Department, 1080 Mastic Road, Mastic, NY 11950**

This Public Information Meeting will provide an opportunity for the public to express their views and opinions on the potential installation of sanitary sewers in their community. We look forward to seeing you on July 28th.

Very truly yours,

Gilbert Anderson, P.E.
Commissioner

GA:FM:dm
Cc: Jim Morgo, Chief Deputy County Executive
Thomas LaGuardia, P.E., Chief Deputy Commissioner
William Hillman, P.E., Chief Engineer

Public Information Meeting

Sewers for CR 80, Montauk Highway in Mastic/Shirley

History:

- It was the intent of the Department to install dry sewer lines on CR 80 in conjunction with the proposed roadway project from Barnes Rd to Wm Floyd Pkwy.
- However during the design process the following issues were identified:

History: (Continued)

1. The cost to the residents/businesses had never been discussed with the Public to determine if it is acceptable.
2. The location of the sewer plant has not been identified. Knowing that this issue will be controversial and sensitive, it is prudent to discuss this with the community.

History: (Continued)

3. A preliminary investigation of the properties along CR 80 indicates that the majority of the facilities have septic systems in the rear or side yards. This configuration makes it more cost effective to the owners to install the sewer lines behind the buildings.

History: (Continued)

4. A concept has been developed to install the dry sewers along CR 80 corridor and make a connection to the proposed sewer plant at the Holiday development on CR 46 at the Links at Shirley golf course.
5. The Developer has set aside 10 acres for a sewage treatment plant. 10 acres can accommodate 1 million gallon per day plant.
6. A 100,000 gpd plant would be required for the proposed Holiday development.

History: (Continued)

- Therefore, the County believes it is prudent to fully explain to the community the pros and cons of the development of a sewers in this area.

Process to Develop a Sewer District

- The limits of the sewer district must be established and the cost associated with the sewers must be bourn by the residents within the district.
- Upon determination of the limits and cost it must be approved by the NYS Comptrollers office to ensure it is appropriate and beneficial to the community.

Project Limits Alternate 1

- Install sewers on CR 80 from Barnes Rd to Wm Floyd Pkwy
- Trunk sewer from CR 80/Wm Floyd Pkwy to Holiday site
- This will service 197 parcels.

Cost - Alternate 1

- Low pressure sewers & E-1 Pump System – $ 4.25 million
- Pump Station & Force Mains - $ 4.25 million
- 300,000 gpd Sewage Treatment Plant - $ 13.25 million
- Contingency & Engineering - $ 2.5 million

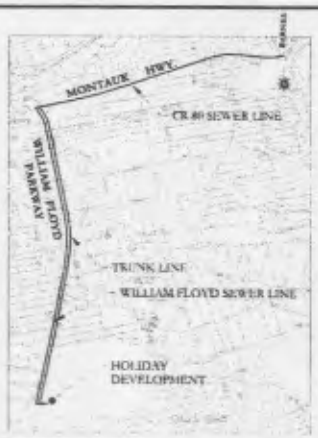
Total Cost - $ 24.25 million

Operating and Maintenance Costs - $ 600,000
20 Year Loan for $ 24.25 million - $ 1,780,000
Total Annual Cost - $ 2,380,000/yr

Cost/Parcel (Commercial)- $ 2,380,000/197 parcels = $ 12,081/yr = $ 1,006/mo
Cost for Residential Parcel - $ 2,380/yr (Normal Cost $ 300/yr to $ 600/yr)

Sewer Plant – Alternate 1

400,000 gallon per day plant



Project Limits Alternate 2

- Install sewers on CR 80 from Barnes Rd to Wm Floyd Pkwy
- Trunk sewer from CR 80/Wm Floyd Pkwy to Holiday site
- Install sewer on CR 46 from CR 80 to Holiday Site
- This will service 272 parcels

Cost Alternate 2

- Low pressure sewers & E-1 Pump System (CR 80) – $ 4.25 million
- Low pressure sewers & E-1 Pump System (CR 46) – $? million
- Pump Station & Force Mains - $ 4.25 million
- 400,000 gpd Sewage Treatment Plant - $ 17.25 million
- Contingency & Engineering - $ 3 million

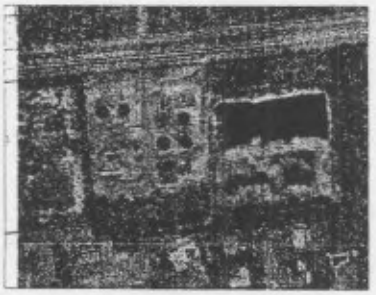
Total Cost - $ 32 million

Operating and Maintenance Costs - $ 600,000
20 Year Loan for $ 32 million - $ 2,350,000
Total Annual Cost - $ 2,950,000/yr

Cost per Parcel - $ 2,950,000/272 parcels = $ 10,845/yr = $ 903/mo

Sewer Plant – Alternate 2

600,000 gallon per day plant

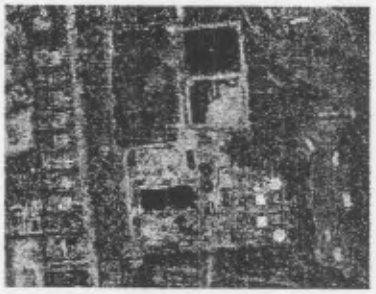


Total Build Out

- 10 Acres are available for 1 million gallon per day (gpd)sewage treatment plant.
- 100,000 gpd plant proposed for development
- Development + Alt 1 = 400,000 gpd plant
- Development + Alt 2 = 500,000 gpd plant
- 500,000 gpd remain for future expansion of the plant. This could potentially sewer an additional 1667 homes.

Total Build Out

1 million gallon per day plant



Wright, Ben

From: Donovan, John
Sent: Tuesday, July 22, 2008 1:05 PM
To: Hillman, William
Cc: Wright, Ben
Subject: Mastic Sewers CR80

Bill,
As per your powerpoint, here is the additional info I think you need:

Sewer Plant – Alternate 1

O&M Costs	$600,000/yr
20 yr loan payback (24.25 Mil)	$1,780,000/yr
	$2,380,000/yr

Per 300 gpd (Single Family unit) $2,380/yr
Per lot (197 total lots) $12,000/yr

Cost Alternate 2

Low Pressure Sewers & E1 Pump (CR80)	4.25 Mil
Low Pressure Sewers & E1 Pump (CR46) (10,000 ft and 75 lots)	3.25 Mil
Pump Station and Forcemain (from CR80)	4.25 Mil
400,000 gpd STP	17.25 Mil
Contingency and Engineering	3.0 Mil
	32 Million

Sewer Plant – Alternate 2

O&M Costs	$600,000/yr
20 yr loan payback (32 Mil)	$2,350,000/yr
	$2,950,000/yr

Per 300 gpd (Single Family Unit) $2,215/yr
Per lot (272 total lots) $10,850/yr

John Donovan

Cost - Alternate 1

- Low pressure sewers & E-1 Pump System – $ 6.5 million
- Pump Station & Force Mains - $ 4.25 million
- 300,000 gpd Sewage Treatment Plant - $ 13.25 million
- Contingency & Engineering - $ 2.7 million

Total Cost - $ 26.7 million

Operating and Maintenance Costs - $ 600,000
20 Year Loan for $ 24.25 million - $ 1,965,000
Total Annual Cost - $ 2,565,000/yr

Cost/Parcel (Commercial)- $ 2,565,000/197 parcels = $ 13,020/yr = $ 1,085/mo
Cost for Residential Parcel - $ 2,565/yr (Normal Cost $ 300/yr to $ 600/yr)

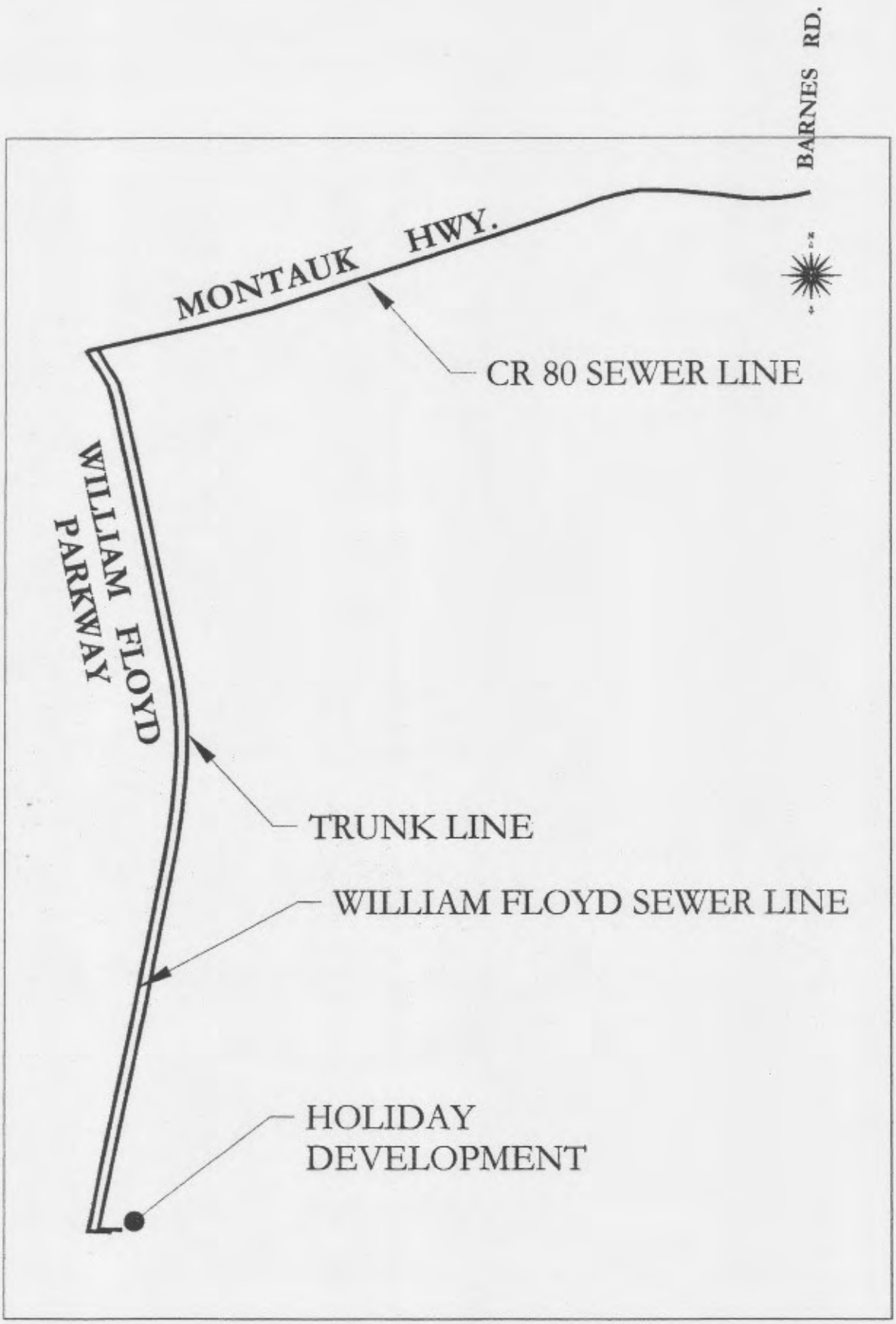
Cost Alternate 2

- Low pressure sewers & E-1 Pump System (CR 80) – $ 6.5 million
- Low pressure sewers & E-1 Pump System (CR 46) – $ 3.25 million
- Pump Station & Force Mains - $ 4.25 million
- 400,000 gpd Sewage Treatment Plant - $ 17.25 million
- Contingency & Engineering - $ 3.5 million

Total Cost - $ 34.75 million

Operating and Maintenance Costs - $ 600,000
20 Year Loan for $ 32 million - $ 2,557,000
Total Annual Cost - $ 3,157,000/yr

Cost/Parcel (Commercial)- $ 3,157,000/272 parcels = $ 11,607/yr = $ 967/mo
Cost for Residential Parcel - $ 2,367/yr (Normal Cost $ 300/yr to $ 600/yr)


BARNES RD.
MONTAUK HWY.
CR 80 SEWER LINE
WILLIAM FLOYD PARKWAY
TRUNK LINE
WILLIAM FLOYD SEWER LINE
HOLIDAY DEVELOPMENT

Wright, Ben

From: Anderson, Gilbert
Sent: Thursday, November 06, 2008 12:39 PM
To: Broughton, Lisa
Cc: Rosen-Nikoloff, Jill; Wright, Ben
Subject: RE: mastic update

Lisa

Pursuant to resolution 369-2008 the Department of Public Works is preparing a report and making recommendations necessary to form a sewer district at Mastic/Mastic Beach/Shirley. The report will be competed by years end and we are coordinating it with Brookhaven Planning who has indicated they are looking to authorize Henderson & Bodwell to update their prior report for this area.

Over the summer, a public hearing was held in Mastic specific to the federally aided Highway Project for the CR80, Montauk Highway corridor within this area. One of the major points of discussion was the inclusion of a dry sewer within this section of highway, which DPW opposed because of the lack of service area definition needed size and install any pipe of this nature properly. DPW has been advised that federal funds will not be permitted to be used for the installation of sewers within this project. As such, we do not anticipate inclusion of a dry sewer under this road project.

Discussion with regards to sewers centered around the construction of a treatment facility by the Holiday Corporation on the western side of CR46, Wm. Floyd Parkway, south of Montauk. There was some local opposition to the placement of a plant in this area. Similarly there was opposition to the creation of a plant north of Montauk from community leaders of that area.

DPW provided information on a proposed district that would include the businesses along Montauk, as well as along CR 46. A proposed annual tax rate for those that would be located within that district was also provided. At the mention of the fees, there was opposition from those that would be included within the district.

There was also some opposition noted from some community leaders should the county proceed with creation of this district, separate from efforts previously made by the Town of Brookhaven toward this end.

Any questions give me a call. Otherwise I will see you tonight.

Regards,

Gil Anderson

Gilbert Anderson, P.E., Commissioner
Suffolk County Department of Public Works
335 Yaphank Avenue
Yaphank, NY 11980
Phone: 631-852-4010

EXHIBIT NO. 4

Please refer to the back portion of the binder for the flow map for this report

Engineering Analysis

for a

Wastewater Treatment Plant and Collection System

to service a

Mastic/Shirley

Business Improvement District

November 8, 2004

Prepared by:

Henderson and Bodwell, L.L.P.
35 Fairchild Avenue
Plainview, NY 11803

HENDERSON AND BODWELL L.L.P.

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DRAFT

Engineering Analysis

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November 8, 2004

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35 Fairchild Avenue
Plainview, NY 11803

John C. Berchtold, P.E.
Partner

TABLE OF CONTENTS

DESCRIPTION	PAGE
Introduction	1
I. Background	3
• Study Area	4
• Existing Wastewater Treatment	4
• Regulation of Septic Systems	7
• Regulation of Wastewater Treatment Plants	8
• Proposed Brookhaven Sewer District	8
• Plant Design Criteria and Staging of Construction	9
II. Summary	11
• Sewerage System	11
• Costs	14
• Financing	14
III. Alternatives	15
• Flow	15
• Phasing	19
• Plant Siting	20
• Plant Sites Considered	21
• Specific Location of Treatment Plant	23
• Collection System	23
IV. Costs	28
• Capital Costs	28
• Operating Costs	29
V. Potential Funding Sources	30
• Treatment Plant	30
• Conveyance/Collection System	30
VI. Conclusions and Recommendations	32
• Conclusions	32
• Recommendations	32

LIST OF FIGURES AND TABLES

DESCRIPTION **PAGE**

Figure 1 – Aerial Photo of Proposed BID (Jan. 13, 2004) 5

Figure 2 – Town of Brookhaven Proposed Rezoning Map 6

Figure 3 – Aerial Photograph of Alternate WWTP sites 12

Figure 4 – WWTP Layout on Town of Brookhaven Airport site 13

Figure 5 – Map of Flows, Zoning, Pumping Stations, Force Main Routing for Proposed BID 18

Table 1 – Summary of Projected Flows from the BID 16

Table 2 – Collection System – Alternatives Cost Comparison 25

Appendix A – List of BID Tax Map Parcels

Appendix B – Town of Brookhaven Zoning Regulations

INTRODUCTION

This report has been prepared to provide preliminary cost estimates for a sanitary collection system and treatment plant to service a proposed Business Improvement District (BID) in the Mastic/Shirley area, along the corridor of Montauk Highway stretching from the Carmans River eastward to the Forge River.

This area currently employs the use of septic systems for disposal of sanitary waste, and envisions rezoning that will greatly increase sanitary discharge. As a result, more effective treatment of wastewater (i.e., denitrification) will be required.

In fact, the present discharge, although in a corridor with SCDHS limitations of 300 gpd/acre, is averaging ±650 gpd/acre and includes one site approaching 5,000 gpd/acre, based on Suffolk County Water Authority (SCWA) records analyzed during this study.

The proposed rezoning now being adopted will essentially double the potential water use and sanitary discharge on ± 140 acres located within the BID, between William Floyd Parkway and the Forge River. A solution for collecting existing and proposed sanitary discharge has been documented in this report, along with cost

estimates and a preliminary plan for the formation of a Town of Brookhaven Sewer District consisting of the following:

A. Collection system funded by Suffolk County, operated and maintained by the District, with funds being generated from a special taxing district composed of connectees;

B. The treatment plant itself, to be built with private funds, where all connectees pay a standard connection charge, with portions of the connection fees paid for by Suffolk County, if the plant services working class housing. The operation of the plant to be funded by an annual charge of approximately $1.70/gpd/year. This equates to $510/year for every 300 gpd design flow required by a connectee.

I. BACKGROUND

As is common for many areas of Suffolk County, the Mastic-Shirley area was developed without public sewers. Therefore, conventional subsurface sewage disposal systems (commonly referred to as "septic systems") are the norm. Septic systems will, when properly installed and maintained, function as intended when there is adequate distance to groundwater.

However, in areas of high groundwater, as is the case for the Mastic-Shirley area, those systems tend to malfunction and fail, resulting in pollution of groundwater and contamination of adjacent surface waters. Even when septic systems here function as intended, the high concentration of nitrogen in septic system discharge, coupled with the relatively small lot sizes, results in unacceptably high levels of nitrogen mass loading as compared to the Suffolk County Department of Health Services (SCDHS) regulations.

Provision for a community sewerage system will reduce nitrogen levels, resulting in improved groundwater and surface water quality. It will also facilitate redevelopment of the downtown Mastic area, as outlined in the "2004 Montauk Highway Study and Land Use Plan," currently being proposed by the Town of Brookhaven.

The William Floyd Community Summit (WFCS) is planning to create a Business Improvement District (BID) along Montauk Highway. Henderson and

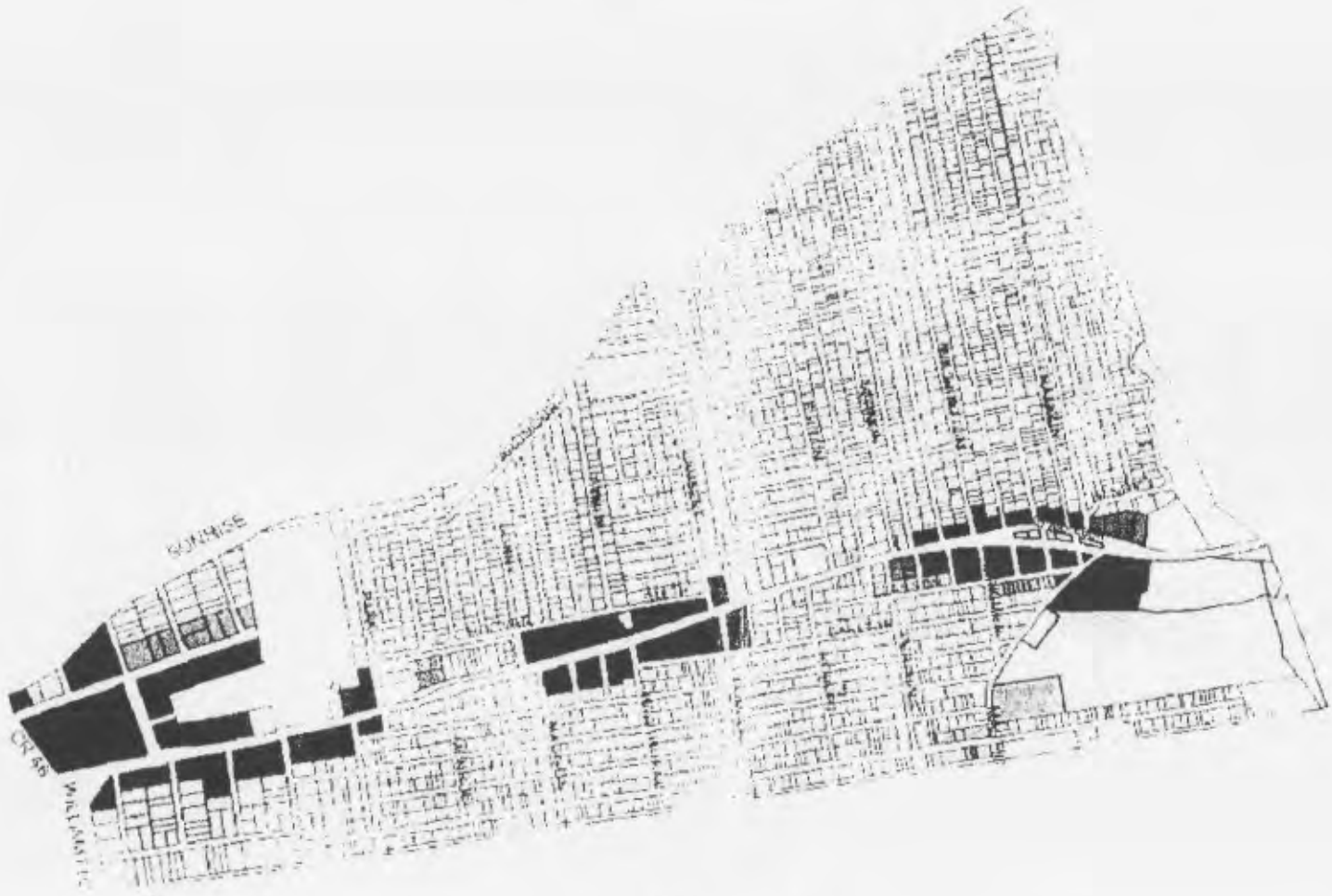
Bodwell has been retained by WFCS to perform a feasibility study for the development of a Wastewater Treatment Plant (WWTP) and sewage collection system for the purpose of servicing the BID.

Study Area

The study area considered in this report is the proposed BID, located on the Montauk Highway corridor of the Mastic-Shirley area. This corridor runs along Montauk Highway and is bounded on the west by the Carmans River, and on the east by the Forge River. It is approximately 2.7 miles long, and encompasses ±175 total acres (see Figure 1). Proposed rezoning within this corridor between William Floyd Parkway and the Forge River is shown in Figure 2. Please note the area to be rezoned is larger than the proposed BID.

Existing Wastewater Treatment

There are currently no community sewerage systems in the study area. However, a ±80,000 gpd wastewater treatment plant is being planned to service a PRC community of Mile Development Corporation, located just east of the Brookhaven airport and north of Sunrise Highway. In fact, this site was 1 of 3 considered for a wastewater treatment plant to service the BID, along with this PRC community.



MAP 2-4

Montauk Highway Corridor

Proposed Rezoning Plan for Mastic & Shirley

Mastic clip 1.shp
J-6
J
MF-1
D
A-1
A-2

Feet

JS April 2004

Figure 2

Figure 1

DRAFT

Proposed
Business Improvement District (BID)
Mast c - Shirley

Map Produced JAN 13, 2004

A detailed evaluation of the proposed treatment plant sites will be addressed later in this report.

Regulation of Septic Systems

The SCDHS is responsible for regulation of wastewater systems pursuant to Article 6 of the Suffolk County Sanitary Code (SCSC). The SCSC requires a minimum lot size of 40,000 square feet to utilize septic systems for lots in SCDHS Groundwater Management Zone VI, in which the study area is located, and a maximum sanitary discharge of 300 gpd. However, existing lots held in "single and separate" ownership that are less than 40,000 square feet, but at least 5,000 square feet in size, may be built upon using septic systems, as long as such systems are at least 150 feet distant from any water supply well. As a result, many lots previously developed are discharging an average of 650 gpd/acre, which are more than twice SCDHS standards.

Although SCDHS regulates the design and construction standards for septic systems and wastewater treatment plants and monitors wastewater treatment plant operations on a monthly basis, there is no effective regulation of septic system operation or repair. Thus, malfunctioning or failed septic systems may continue their discharge of contaminants unabated.

Regulation of Wastewater Treatment Plants

Depending upon the form of ownership of the real estate or facility being served by a wastewater treatment plant, regulation is either by Suffolk County (SCDHS and/or Suffolk County Department of Public Works – [SCDPW]) as delegated by the New York State Department of Environmental Conservation (DEC), or directly by the DEC. For example, privately owned wastewater treatment plants that serve one owner, such as in an apartment development or shopping center, are regulated by SCDHS. In the case of privately owned plants serving multiple owners, such as a condominium development, regulation is by the SCDPW and SCDHS, after approval by the Suffolk County Sewer Agency (SCSA). Publicly owned treatment works (POTWs), such as Suffolk County Sewer Districts, are regulated by the DEC. All treatment works, public or private, operate pursuant to a New York State Pollution Discharge Elimination System (SPDES) permit, requiring monthly discharge monitoring reports (DMRs) that are submitted to the DEC by the licensed plant operator.

Proposed Brookhaven Sewer District

It is proposed that the BID area be sewered, with a regional wastewater treatment plant constructed under the jurisdiction of the Town of Brookhaven. Provision of sewerage will allow for connection of businesses with malfunctioning

or failed septic systems, and these septic systems will subsequently be properly abandoned. Furthermore, it is an objective of the Town of Brookhaven that the BID area be rejuvenated, and provision of sewerage would be necessary to accomplish this.

The environmental benefits of converting businesses from septic systems to sewers are significant. Properly functioning septic systems discharge "treated" wastewater at a nitrogen concentration of about 35 mg/L[1]. By comparison, a "state-of-the-art" wastewater treatment plant, such as a Sequence Batch Reactor (SBR) facility; a Biologically Engineered Single Sludge Treatment (BESST) facility; or a Membrane Bioreactor (MBR) facility, discharges treated wastewater at a nitrogen concentration of about 5 mg/L. The SCDHS design standard is 10 mg/L. Thus, it is obvious that a significant reduction in nitrogen discharge results from each business with a septic system converting to sewers. This reduction directly benefits groundwater quality and nearby surface water quality.

Plant Design Criteria and Staging of Construction

The plant will be designed to meet all current DEC and Suffolk County criteria with regards to discharge: Total Nitrogen less than 10 mg/L from any sample, and a pH of 6.5 to 8.5.

[1] mg/L = milligrams per liter

The initial stage and all future stages of the plant will be constructed as an enclosed facility. Effluent recharge will be subsurface (i.e., leaching pools) and also phased to keep pace with plant expansion to handle 1-2 MGD. This can be done in multiple stages, depending upon public and developer needs and funding availability.

At the direction of the WFCS, three (3) potential sites for the wastewater treatment plant were evaluated. These are shown in Figure 3.

The result of this analysis was that the Brookhaven Airport Site, a 500-acre parcel owned by the Town of Brookhaven, located north of Sunrise Highway and east of William Floyd Parkway, was identified to be the preferred location. The plant will be located on a ±19-acre parcel within the airport property (labeled "B" on Figure 4), with a potential layout as indicated.

Sewage will be transported from the BID area to the site by pump stations and force mains, with the pump station sites located near the eastern and western boundaries of the BID area, as well as near the intersection of William Floyd Parkway and Montauk Highway (see Figure 5).

The collection system will convey water to the pump stations via conventional gravity sewers or vacuum systems (for high water table areas). The two (2) smaller pumping stations along Montauk Highway will feed a master pump station near the intersection of William Floyd Parkway and Montauk Highway. That master pump station will convey the sewage to the plant, as shown in Figure 5. This force main will be approximately 4,750 feet in total length from the master pump station to the treatment plant. A more in-depth discussion of the collection system can be found later in this report.

SCALE: 1" = 1000'
TOWN OF BROOKHAVEN AIRPORT
1000 FEET
TAX MAP
0200-710-01-01.2
\dwg\wfctp00\Airportaerial_8x11.dwg 1/7/2005 10:22:10 AM EST

Figure 4

Costs

Total cost for the initial sewerage system to service the BID and to provide for treatment capacity is estimated to be $8,500,000.

Financing

Financing for the treatment plant and collection system is available from a number of sources.

One method could result in the Town of Brookhaven receiving considerable wastewater infrastructure at no cost: developer financing.

Property owners with planned developments within the BID might wish to fund the treatment plant that could be dedicated to a Town sewer district. In return, the developer(s) could earn a return on their investment by collecting connection fees that offset their initial capital outlay.

Other financing options are discussed later in this report.

III. ALTERNATIVES

Flow

We have established the BID service area to be the listing of tax map parcels found in Appendix A.

This list is a combination of data received from the Town of Brookhaven (T.O.B.) assessor's office, along with manual identification of all lots found within the proposed BID boundary (See Figure 1). Corresponding acreages were obtained from the tax maps and T.O.B. database.

Next, the Zoning designation of each of these lots was determined. For those parcels west of William Floyd Parkway, existing zoning was obtained from the T.O.B. assessor's database. For those parcels east of William Floyd Parkway, zoning was assigned based on the proposed zoning indicated in Figure 2.

Table 1 is a summary of projected flows calculated from zoning, density and SCDHS design flows. The values of "FAR" and "unit/acre" were assigned based upon existing and proposed land uses. For example, "A1" zoning utilizes 5.5 units/acre, because typical residential lot sizes within the service area are ±8,000 square feet (1 acre = 43,560 square feet). Similarly, "MF" zoning was assigned a density of 9 units/acre due to projected future development. The "J", "J2", "J4" and "J5" zoned areas were assigned a floor to area ratio (FAR) equal to

BID Projected Flows Summary Sheet 5-Nov-04

Eastern PS

Zoning	Unit/Acre	FAR	Total Ac	Unit	SF Built	GPD/Unit	GPD/SF	GPD
A1 -	5.5		**3.31**	18		300		**5,461.50**
J		0.2	**11.38**		99,142.56		0.06	**5,948.55**
J6*		0.6	**20.96**		547,810.56		0.15	**82,171.58**
J6 rest			**6**				0.11	**28,000.00**
MF	9		**5.76**	52		450		**23,328.00**

* includes 1.95 Ac of A2 as per TOB recommendation

FAR TOTAL: 144,909.64
WATER RECORDS TOTAL: 47,923.35
OVERALL TOTAL: 192,832.99

Western PS

Zoning	Unit/Acre	FAR	Total Ac	Unit	SF Built	GPD/Unit	GPD/SF	GPD
J2		0.35	**18.27**		278,544.42		0.03	**8,356.33**
J5		0.25	**0.48**		5227.2		0.15	**784.08**
A1	5.5		**0.63**	3		300		**1,039.50**

FAR TOTAL: 10,179.91
WATER RECORDS TOTAL: -
OVERALL TOTAL: 10,179.91

Master PS

Zoning	Unit/Acre	FAR	Total Ac	Unit	SF Built	GPD/Unit	GPD/SF	GPD
A1	5.5		**0.41**	2		300		**676.50**
D	5		**2.25**	11		600		**6,750.00**
J		0.2	**3.5**		30,492.00		0.06	**1,829.52**
J2		0.35	**5.82**		88,731.72		0.03	**2,661.95**
J5		0.25	**0.59**		6,425.10		0.15	**963.77**
J6		0.6	**34.45**		900,385.20		0.15	**135,057.78**
J6 rest			**3**				0.11	**14,000.00**
MF	9		**1.1**	10		450		**4,455.00**

FAR TOTAL: 166,394.52
WATER RECORDS TOTAL: 10,889.39
EASTERN PS: 192,832.99
WESTERN PS: 10,179.91
OVERALL TOTAL: 380,296.81

Average Daily Flow for Lots with Water Records

Water Record	Zoning	Acreage	GPD	GPD/Ac
Pathmark Shopping Center	J3	12.31	2,150.02	174.66
Southport Plaza Shopping Center	J2	28.82	8,552.36	296.75
Shirley CVS	J2	0.50	187.00	374.00
Movieland of Mastic and Laundry Experience	J6	5.25	25,381.74	4,834.62
Forge River Nursery	A2	11.50	885.62	77.01

WEIGHTED AVERAGE: 636.46

By Zoning

Zoning	Flow	Acreage
A1	7,177.50	4.35
D	6,750.00	2.25
J	7,778.07	14.88
J2	19,757.65	53.41
J3	2,150.02	12.31
J5	1,747.85	1.07
J6 + A2	307,152.72	81.16
MF	27,783.00	6.86
TOTAL	380,296.81	176.29

NOTE

Forge River Nursery component of total flow based on half its acreage (5.75Ac) being unusable (wetlands) and remainder developed as zoned "J6".
This was done in lieu of water record data for this property.

Table 1

the maximum allowed under current Town zoning regulations, which may be found in Appendix B.

The "J6" zoning designation is a new category with a maximum FAR of 0.6. Before assigning this FAR to all land to be zoned "J6", further analysis was done to ensure projected flows from the BID would be both representative and realistic of the development that could potentially take place over the next several years.

Discussions with the Town Planning Department resulted in the projection of seven (7) 200-seat restaurants within the BID, covering nine (9) acres. These contribute 42,000 gpd of flow to the BID, and are distributed between the Master and Eastern pumping stations as shown in Table 1.

The remainder of the "J6" zoned acreage was assigned an FAR of 0.6.

The gallons per day (gpd) on a "per unit" or "per square foot" basis are specified as per current SCDHS design flow standards (except "J6 rest", which represents the restaurant flow contribution described above).

In addition, actual water bills for some of the existing businesses within the BID were obtained from SCWA. For these businesses, actual flows (rather than calculated) were used. These are listed near the bottom of Table 1. Location of the corresponding parcels is shown in Figure 5.

Please note that the Forge River Nursery was assigned a daily flow of 22,542 gpd. This was based on assuming development of half its acreage using the "J6" zoning designation, which is greater than its water record usage of 886 gpd.

As a result of this analysis, projected flow from the BID is calculated to be 380,297 gpd.

Table 1 also breaks down this flow by pump station. Flow into each station is as follows:

- Master pump station: 189,045 gpd
- Eastern pump station: 181,072 gpd
- Western pump station: 10,180 gpd

Total 380,297 gpd

Please note that the Master pump station will convey all of this flow to the treatment plant, as it will also be receiving all flow from the eastern and western pump stations.

Another development area to be considered as part of an initial sewer district is the 475-unit PRC community of Mile Development. Sewage flow from this community will be an additional ±80,000 gpd.

Future additions to the sewer district might include improvements to the Town of Brookhaven airport itself, previously projected require ±80,000 gpd.

Therefore, a wastewater treatment plant designed to treat 0.6 MGD (600,000 gpd) would service the BID, Mile Development and the Brookhaven Airport.

Phasing

Recognizing that the initial needs for the sewer district are probably 200,000 GPD (0.2 MGD) or less, it is suggested that the initial plant be designed

to treat 0.2 MGD and that plant staging be in 0.2 MGD increments, as needed, for future expansion, as connections to be made over a long period of time are expected.

Plant Siting

Siting a plant of the size projected (0.2 MGD up to 1-2 MGD) must take into account a number of factors:

- Vicinity to residential communities
- Depth to groundwater
- Public well locations
- Soil recharge capabilities
- Site availability
- Accessibility and proximity to area served
- Applicable regulations
- Future use of adjacent properties
- Ability to accommodate future expansion
- Topography

Among the measures considered to ameliorate potential concerns about the plant siting are the following:

- Process tankage will be housed in a building;
- Recharge of treated effluent will be by subsurface methods; no open beds; WHY?

- The plant structure will be aesthetically pleasing;
- Retrofit capabilities, should odor control become a factor; and
- When possible, the plant should be placed as not to require setback variances from existing uses.

Plant Sites Considered

A preliminary list of six (6) sites was submitted to the WFCS who narrowed it down to three. The preferred site was chosen based on evaluation of pros and cons for each of these three (3) sites, while considering the plant siting criteria listed above. The Brookhaven Airport Site, being the closest to the master pump station (i.e., least expensive force main to construct), is being recommended for construction of a wastewater treatment plant for the District.

Tom Murray of Savik and Murray, LLP was consulted about use of this site for a plant. Mr. Murray indicated there are no FAA restrictions on using this land for this purpose. However, plant design must ensure that birds and wild animals would not be drawn to the site.

Figure 3 is an aerial photograph showing the three (3) sites evaluated. A brief summary of the analysis of the sites is as follows:

I. AVR Site (105 Acres)

Pros:

- Can accommodate BID WWTP, expandable to 2 MGD
- Good access to site
- ±40 feet to water table (estimate)
- No residents in vicinity
- Heavily wooded

Cons

- Furthest (21,000 feet) from master pump station (±$1 million force main – including jacking under Sunrise)
- High energy operating cost with potential for odor problems

OFFSET COST W/ OPEN BEDS

II. Mile Development (50 Acres to be dedicated to Town)

Pros

- Can accommodate BID WWTP, expandable to 2 MGD
- ±40 feet to water table (estimate)
- No residents in vicinity
- Heavily wooded
- Relatively flat site

Cons

- 8500 feet from master pump station (±$500,000 force main – including jacking under Sunrise)
- Not readily accessible, but can access site thru Mile Development
- Unable to use open recharge due to 600 ft. wide parcel

III. Brookhaven Airport (500 Acres)

Pros

- Closest (4800 feet) to master pump station (±$300,000 force main – including jacking under Sunrise)
- Can accommodate BID WWTP, expandable to 2 MGD
- ±40 feet to water table (estimate)

- Good access to site
- Some open areas not near residences
- Relatively flat site

Cons

- Open areas not contiguous

NO OPEN BEDS ALLOWED

Other

- Potential leasing agreement with agricultural use of buffers providing further income.

Specific Location of Treatment Plant

Three (3) possible locations (within the airport) have been evaluated for the treatment plant (see Figure 4). It is recommended that parcel "B" be set aside, due to its proximity to the BID, and the fact that it does not border any residential development. Furthermore, its size (±19 acres) will allow for a facility ultimately treating 1-2 MGD.

Collection System

Three (3) alternatives were considered for the BID area collection system. These are summarized as follows:

I. Option A

Install two pump stations at the extreme eastern and western ends of the BID area to feed a master pump station located on Montauk Highway near Titmus Drive, with a combination of force mains and gravity

sewers. This master pump station would collect all the sewage from the BID area, and convey it to the treatment plant.

II. Option B

Only utilize gravity sewers (no force mains) along with six (6) smaller pump stations that would feed a master pump station near Titmus Drive, which would convey all the sewage to the treatment plant.

III. Option C

Construct two pump stations near (but not on) the eastern and western ends of the BID to feed a master pump station at or near William Floyd Parkway, with a combination of force mains and gravity sewers designed based on Montauk Highway topography characteristics. The master pump station would collect all the sewage from the BID area, and convey it to the treatment plant via force main routed north and east as indicated in Figure 5.

A detailed analysis of these options may be found in Table 2.

Option C is recommended for the following reasons:

- Estimated to be the least costly;
- Requires land for only three (3) pumping stations;
- Wet wells to be built above the water table

Note that "$/ft" estimated for gravity sewer and force mains in Table 2 assumes that these lines would be installed at the same time as the planned future road improvements to Montauk Highway. This means that all road digging

Option A - Two pump stations at ends pumping to master pump station at Titmus Dr.

Montauk Highway Gravity Sewers and Force Mains

Description	Type	Length (ft)	$/ft	Cost
Wm. Floyd Pkwy to Smith Rd.	Gravity	4,400	$ 60.00	$ 264,000
Wm. Floyd Pkwy to Titmus Dr.	Gravity	4,700	$ 60.00	$ 282,000
Gravity to Titmus (from East)	Gravity	700	$ 60.00	$ 42,000
Gravity to Barnes Rd.	Gravity	4,200	$ 60.00	$ 252,000
Smith Rd. to Wm. Floyd Pkwy.	Force	4,400	$ 40.00	$ 176,000
Smith Rd. to Wm. Floyd Pkwy.	Gravity	4,400	$ 60.00	$ 264,000
Barnes Rd. to Grav. In between	Force	4,200	$ 40.00	$ 168,000
Barnes Rd. to Grav. In between	Gravity	4,200	$ 60.00	$ 252,000
Main Trunk to WWTP	Force	3,275	$ 40.00	$ 131,000
Sunrise Highway Road Jacking	Road Jacking	350	$ 300.00	$ 105,000
Subtotal				$ 1,936,000
30% Engr/Legal/Contingency				$ 580,800
TOTAL				$ 2,516,800

Pumping Stations

Location	Cost	
Smith Rd.	$ 450,000	(see note 1)
Barnes Rd.	$ 450,000	
Titmus Dr. (master PS)	$ 500,000	
Subtotal	$ 1,400,000	
30% Engr/Legal/Contingency	$ 420,000	
TOTAL	$ 1,820,000	

Option B - Gravity Lines to multiple smaller pump stations that pump to gravity lines into the master PS at Titmus Dr.

Montauk Highway Gravity Sewers

Description	Type	Length (ft)	$/ft	Cost	
Smith Rd. to PS #1	Gravity	520	$ 80.00	$ 41,600	(see note 2)
PS#1 to PS#2	Gravity	440	$ 80.00	$ 35,200	
PS#2 to PS#3	Gravity	2,300	$ 80.00	$ 184,000	
PS#3 to master PS	Gravity	4,540	$ 80.00	$ 363,200	
Barnes Rd to PS#4	Gravity	420	$ 80.00	$ 33,600	
PS#4 to PS#5	Gravity	1,180	$ 80.00	$ 94,400	
PS#5 to Master PS	Gravity	3,360	$ 80.00	$ 268,800	
Main Trunk to WWTP	Force	3,275	$ 40.00	$ 131,000	
Sunrise Highway Road Jacking	Road Jacking	350	$ 300.00	$ 105,000	
Subtotal				$ 1,256,800	
30% Engr/Legal/Contingency				$ 377,040	
TOTAL				$ 1,633,840	

Pumping Stations

Location	Cost
Smith Rd. (#1)	$ 200,000
Barnes Rd. (#4)	$ 200,000
Titmus Dr. (master PS)	$ 500,000
East of Smith/West of Wm. Floyd (#2)	$ 200,000
Just west of Wm. Floyd (#3)	$ 200,000
East of Titmus/West of Barnes (#5)	$ 200,000
Subtotal	$ 1,500,000
30% Engr/Legal/Contingency	$ 450,000
TOTAL	$ 1,950,000

Table 2

Collection System
Alternatives Cost Comparison

Option C - Two pump stations farther in towards middle than Option A, and Master PS at Wm. Floyd Pkwy.
As shown in Figure 5

Montauk Highway Gravity Sewers and Force Mains

Description	Type	Length (ft)	$/ft	Cost
Smith Rd. to PS#1	Gravity	500	$ 60.00	$ 30,000
PS#1 to FM/GS Manhole #1	Force	1,200	$ 40.00	$ 48,000
PS#1 to FM/GS Manhole #1	Gravity	1,200	$ 60.00	$ 72,000
FM/GS MH #1 to Master PS (Wm. Fld)	Gravity	2,700	$ 60.00	$ 162,000
Master PS to FM/GS MH #2	Gravity	3,150	$ 60.00	$ 189,000
FM/GS MH#2 to PS #2	Force	4,500	$ 40.00	$ 180,000
FM/GS MH#2 to PS #2	Gravity	4,500	$ 60.00	$ 270,000
Barnes Rd. to PS#2	Gravity	650	$ 60.00	$ 39,000
Main Trunk to WWTP	Force	4,400	$ 40.00	$ 176,000
Sunrise Highway Road Jacking	Road Jacking	350	$ 300.00	$ 105,000
Subtotal				$ 1,271,000
30% Engr/Legal/Contingency				$ 381,300
TOTAL				$ 1,652,300

Pumping Stations

Location	Cost
PS #1 (~500ft East of Smith Rd)	$ 400,000
PS#2 (~650ft West of Barnes Rd)	$ 400,000
Wm. Floyd Pkwy. (Master PS)	$ 500,000
Subtotal	$ 1,300,000
30% Engr/Legal/Contingency	$ 390,000
TOTAL	$ 1,690,000

TOTALS

Option A.....	$ 4,336,800
Option B.....	$ 3,583,840
Option C.....	$ 3,342,300

Notes:	
1	In the case of Option A, the two outer wet wells will be below the water table, so costs reflect a "bulked up" structure
2	There is significant digging to be performed if Option B is selected, as the gravity sewer will be 15-20ft below grade in spots

and restoration will in essence be paid for with Federal and County funds. In fact, these funds may also cover the cost of installing the gravity sewer and force mains.

The best location for the westernmost pump station is a Suffolk County-owned lot just east of Dorsett Place on Montauk Highway. The tax map number for this lot is 0200 85000 0500 021000. Gravity lines would feed this pump station from approximately 800 feet to the west and approximately 1,700 feet to the east. A force main would carry the sewage approximately 1,700 feet east, where it can be converted to a gravity line, which will run east all the way to the master pump station. This gravity line will be able to pick up any necessary house connections between Francine Place and William Floyd Parkway.

There are potentially two parcels for the master pump location near William Floyd Parkway. The first parcel was found to have no tax map designation, and is best identified as a triangular piece of land in the southeast corner of the intersection of William Floyd Parkway and Montauk Highway. Existing on this site is a sign that says, "Welcome to our Historic Community," along with some landscaping. The second parcel is directly north, on the northeast corner of this intersection. The tax map number for this lot is 0200 85100 0200 005002. This lot is owned by Marie Parisi, according to the Town of Brookhaven Assessor's Office. The lot is currently vacant, with a sign that reads "Will Build to Suit". Purchase of this lot by the BID may be a worthwhile endeavor. Gravity sewers will feed this pump station from the east and west, and the force main will travel north and east, about 4,750 feet to the treatment plant.

The easternmost pump station will be the most challenging to locate. There are very few empty lots available on the eastern side of the BID area. There is a vacant parcel of land, located between the northern and southern splits of Montauk Highway, approximately 600 feet west of the Forge River. Its tax map number is 0200 82400 1000 019000. This lot is owned by 803 Realty Corporation. There is another parcel of land, located approximately 300 feet to the west of this lot that would also be suitable. Its tax map number is 0200 82400 1000 008000. This land is owned by Joan and Vincent Burkard. Perhaps either of these owners might be willing to make a deal for use of their land.

A third, less favorable alternative, might be the parking lot of the nearby movie theater. The movie theater is located directly east of the previously mentioned parcels (tax map number 0200 82400 1000 044001).

Gravity sewers will feed this pump station from the east (Forge River to pump station location), and from the west (Monroe Street). The pump station will transport the sewage west about 5,000 feet back to Monroe Street, where a gravity sewer will convey the sewage to the master pump station.

In Suffolk County, house connections must tap into a gravity sewer, as they cannot be connected to a pressurized force main. This requirement was considered in our layout, so as to allow the maximum number of service connections directly into a main trunk gravity sewer line. Gravity sewers and force mains are proposed to be run side by side only where absolutely necessary.

IV. COSTS

We have looked at three (3) major capital cost elements: plant construction, conveyance system to the plant, and the collection system for the BID. In addition, we have evaluated operating costs.

Capital Costs

Using a first phase plant of 200,000 gpd, we estimate the initial plant cost at $25/gallon (or $5 million).

The 200,000 gpd flow may be allocated entirely to the BID, or divided as follows:

• BID service area	120,000 gpd
• Mile Development	80,000 gpd
Total	200,000 gpd

First phase sewerage costs are estimated as follows:

- *First Phase Plant Cost:* 200,000 gpd @ $25/gallon..... $ 5,000,000
- *Collection and Conveyance System Cost (Option C of Table 2)*..... $ 3,342,300

Total for first phase..... $ 8,342,300

For purposes of this report, this is rounded to..... $ 8,500,000

Note that the estimated cost of the conveyance and collection system for the BID is for a system that can handle the entire projected BID flow of 0.38 MGD.

Operating Costs

Initial budget figures for annual operating cost of the plant and collection system to include labor, utilities, chemicals, administration, collections and miscellaneous system maintenance charges (pump station operation and maintenance):

200,000 gpd x $1.60/gpd/year = $ 320,000/year

In addition to capital and operating costs described above, there is the one time cost of disconnecting from an existing septic system (to be abandoned by pumping and filling and connecting to the new collection system), which is estimated to be a minimum of $2,500/system.

East individual connectee would be responsible for this cost.

V. POTENTIAL FUNDING SOURCES

Alternates for financing the treatment plant, along with the conveyance/collection system are listed below.

Treatment Plant

Construction costs for the first stage of the plant (0.2 MGD) are estimated to be $5 million.

One or more developers in the BID have expressed interest in paying for this with private funds. They could then sell capacity at a minimum of $25/gallon plus a premium to defray interest costs and even make a profit.

Mile Development will have to connect to this facility, as mandated by the Town. Their design flow needs are ±80,000 gpd. At $25/gallon, $2 million would be generated. This would lower the private funds needed up front for the BID to $3 million.

Conveyance/Collection System

Construction costs to service the maximum projected BID flow of ±0.38 MGD are estimated to be $3.5 million.

Some of this cost should be offset by Federal and County funds that have been allocated for the Montauk Highway road improvements believed to be scheduled for 2007-2008.

Another potential funding source is the Suffolk County Workforce Housing Program. Beginning in 2005, capital will be available for developers producing workforce homes, as defined in Article XXXVI of the Suffolk County Administrative Code.

Henderson and Bodwell has previously met with Jim Morgo, who is Commissioner of the Suffolk County Department of Economic Development. Mr. Morgo is aware of the development potential for the BID corridor of Mastic/Shirley and would welcome applications for funding from this program.

Other alternates for funding the collection system include:

- Federal EPA grant, justified by the relatively high septic discharge per acre within the BID;
- New York State grant similar to a request from the Village of Sea Cliff for $3.7 million to take its downtown businesses off septic tanks;
- Long-term bonds (10-20 years) to be repaid through a special taxing district formed by the Town;
- Connectees paying $2/gpd/year for plant operating costs, where ±20% of this fee goes to fund any bond costs (200,000 gpd x $0.4/gpd/year = $80,000/year).

This list is not all inclusive and the options mentioned above are real possibilities that require further investigation.

VI. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Based upon our preceding analysis, it is very feasible to provide wastewater treatment and infrastructure to service the BID and a future Town of Brookhaven Sewer District. Costs may be reasonable, particularly if grants and developer contributions are available to offset a portion of the $8,500,000 estimated cost.

The selected site for the wastewater treatment plant, the Town of Brookhaven Airport, is well suited for construction of the treatment plant. It is relatively close to the BID, yet far enough from homeowners to not be a potential nuisance.

Recommendations

We recommend the following as the next steps towards implementing the plan for serving the BID:

- Meet with Town of Brookhaven officials to gain conceptual support and begin the process of forming a Sewer District to include the BID and proposed treatment plant site;
- Ascertain allocation of funding for Montauk Highway road improvements, as well as expected construction timeframe;
- Fully investigate grant/financing availability as to specific programs, amounts, timing and other requirements;
- Initiate discussions with SCDPW and SCDHS regarding conceptual acceptance of this plan.

TAX MAP LISTING OF PARCELS INCLUDED IN PROPOSED BID

Tax Map Number				Acreage	P_Zone	Total Acreage By Zoning	
200	823	10	10.2	0.34	A1		
200	824	2	24	0.23	A1		
200	824	4	25	0.09	A1		
200	824	4	68	0.23	A1		
200	824	7	15	0.23	A1		
200	824	7	16	0.09	A1		
200	824	7	17	0.27	A1		
200	824	7	18	0.09	A1		
200	824	10	12	0.23	A1		
200	825	1	17	0.32	A1		
200	825	1	18	0.37	A1		
200	850	4	4	0.63	A1		
200	851	3	55	0.18	A1		
200	852	1	22	0.23	A1		
200	852	1	23	0.18	A1		
200	852	1	24	0.23	A1		
200	852	1	84	0.18	A1		
200	853	1	1	0.23	A1	TOTAL ACRES =	4.35
200	824	10	7	0.13	A2		
200	824	10	8	0.13	A2		
200	824	10	14	0.06	A2		
200	824	10	15	0.11	A2		
200	824	10	19	0.12	A2		
200	825	3	1.1	11.5	A2		
200	825	3	.2	0.22	A2		
200	825	3	25	0.68	A2		
200	825	3	26	0.5	A2	TOTAL ACRES =	13.45
200	851	4	22	0.43	D		
200	851	4	23	0.44	D		
200	851	4	24	0.38	D		
200	851	4	25	0.5	D		
200	851	4	26	0.5	D	TOTAL ACRES =	2.25
200	823	10	9	0.33	J		
200	823	10	20	0.32	J		
200	823	10	21.1	0.46	J		
200	824	2	25	0.46	J		
200	824	2	27.1	1.41	J		
200	824	2	28	0.23	J		
200	824	3	18	0.23	J		
200	824	3	19	0.09	J		
200	824	3	20	0.14	J		
200	824	3	55.5	0.46	J		
200	824	4	26	0.23	J		
200	824	4	27	0.18	J		
200	824	8	3	0.27	J		
200	824	8	8	0.14	J		
200	824	8	9	0.09	J		
200	824	8	12	0.41	J		
200	824	8	13	0.09	J		

Appendix A

200	824	8	14	0.04	L	
200	824	8	15	0.09	L	
200	824	8	16	0.14	L	
200	824	8	17	0.14	L	
200	824	8	18	0.23	L	
200	824	8	19	0.23	L	
200	824	8	20	0.14	L	
200	852	1	25	0.41	L	
200	852	1	26	0.46	L	
200	852	1	27	0.21	L	
200	852	1	28	0.04	L	
200	852	1	29	0.04	L	
200	852	1	30	0.04	L	
200	852	1	31	0.12	L	
200	852	1	32	0.04	L	
200	852	1	33	0.04	L	
200	852	1	34	0.04	L	
200	852	1	35	0.04	L	
200	852	1	36	0.04	L	
200	852	1	38	0.09	L	
200	852	1	39	0.06	L	
200	852	1	40	0.06	L	
200	852	1	41	0.06	L	
200	852	1	42	0.06	L	
200	852	1	43	0.06	L	
200	852	1	44	0.06	L	
200	852	1	45	0.05	L	
200	852	1	46	0.05	L	
200	852	1	47	0.05	L	
200	852	1	48	0.05	L	
200	852	1	49	0.05	L	
200	852	1	50	0.18	L	
200	852	1	52.1	0.18	L	
200	852	1	53	0.28	L	
200	852	1	54	0.18	L	
200	852	1	55	0.18	L	
200	852	1	56	0.09	L	
200	852	1	57	0.18	L	
200	852	1	58	0.26	L	
200	852	1	60.1	0.34	L	
200	852	1	61	0.25	L	
200	852	1	62	0.1	L	
200	852	1	86	0.14	L	
200	852	2	3	0.23	L	
200	852	2	4	0.09	L	
200	852	2	6.1	0.32	L	
200	852	2	7	0.23	L	
200	852	2	8	0.23	L	
200	852	3	5.1*	1.08	L	
200	852	3	8	0.23	L	
200	852	3	9.1	0.41	L	

200	852	3	13.2	0.41	J		
200	852	3	64.1	0.52	J	TOTAL ACRES =	14.88
200	850	3	24	0.75	J2		
200	850	4	7	0.75	J2		
200	850	4	8	0.37	J2		
200	850	4	9	0.37	J2		
200	850	4	10.1	0.86	J2		
200	850	4	10.2	0.01	J2		
200	850	4	11	0.87	J2		
200	850	4	19	1.5	J2		
200	850	4	20	0.55	J2		
200	850	4	24.1	0.47	J2		
200	850	4	25	0.3	J2		
200	850	5	18	0.18	J2		
200	850	5	20	0.36	J2		
200	850	5	21	0.24	J2		
200	850	5	22	0.3	J2		
200	850	5	24	0.39	J2		
200	850	5	25	0.24	J2		
200	850	5	26	0.4	J2		
200	850	5	27	0.67	J2		
200	850	6	1	0.3	J2		
200	850	6	2	0.15	J2		
200	850	6	3	0.09	J2		
200	850	6	4	0.06	J2		
200	850	6	5	0.06	J2		
200	850	6	6	0.06	J2		
200	850	6	7	0.18	J2		
200	850	6	8	0.12	J2		
200	850	6	9	0.18	J2		
200	850	6	10	0.5	J2		
200	850	6	12	0.18	J2		
200	850	6	15	0.18	J2		
200	850	6	16	0.18	J2		
200	850	6	17	0.12	J2		
200	850	6	18	0.12	J2		
200	850	7	1	0.53	J2		
200	851	2	1	0.16	J2		
200	851	2	2.1	0.29	J2		
200	851	2	2.2	1.11	J2		
200	851	2	2.3	0.65	J2		
200	851	3	50.2	28.82	J2		
200	851	3	51	0.5	J2		
200	851	3	53.4	1.75	J2		
200	879	1	3.1	1.87	J2		
200	879	1	17.1	4	J2		
200	879	1	30	0.75	J2		
200	879	1	38	1.91	J2		
200	879	2	1	0.5	J2		
200	880	1	2	0.26	J2	TOTAL ACRES =	55.16

200	850	6	42.2	12.31	J3	TOTAL ACRES =	12.31
200	850	4	23.1	0.59	J5		
200	850	6	13	0.18	J5		
200	850	6	14.1	0.3	J5	TOTAL ACRES =	1.07
200	823	8	78	0.14	J6		
200	823	8	38	0.18	J6		
200	823	8	66	0.23	J6		
200	823	8	80.1	1.42	J6		
200	823	8	81	0.04	J6		
200	823	8	82	0.14	J6		
200	823	10	4.2	0.32	J6		
200	823	10	4.3	0.42	J6		
200	823	10	5	0.23	J6		
200	823	10	7	0.04	J6		
200	823	10	8	0.23	J6		
200	824	4	24	0.09	J6		
200	824	4	28	0.23	J6		
200	824	4	70	0.32	J6		
200	824	5	14	0.23	J6		
200	824	5	15	0.14	J6		
200	824	5	16	0.09	J6		
200	824	5	46	0.53	J6		
200	824	5	48.1	0.23	J6		
200	824	6	31	0.23	J6	per TOB recommendation on 11/2/04	
200	824	6	13	0.14	J6		
200	824	6	14	0.09	J6		
200	824	6	15	0.23	J6		
200	824	6	27	0.23	J6		
200	824	6	44	0.23	J6		
200	824	6	45.2	0.12	J6		
200	824	6	46.1	0.22	J6		
200	824	6	47.1	0.27	J6		
200	824	8	1	0.93	J6		
200	824	8	2.1	0.24	J6		
200	824	9	18	0.23	J6		
200	824	9	5	0.32	J6		
200	824	9	11	0.23	J6		
200	824	9	12	0.23	J6		
200	824	9	13	0.14	J6		
200	824	9	14	0.32	J6		
200	824	9	15	0.32	J6		
200	824	9	16	0.14	J6		
200	824	9	17	0.23	J6		
200	824	10	13.1	0.09	J6		
200	824	10	13.2	0.1	J6		
200	824	10	1	0.12	J6		
200	824	10	2	0.14	J6		
200	824	10	3	0.14	J6		
200	824	10	5	0.27	J6		
200	824	10	6	0.27	J6		
200	824	10	9	0.14	J6		
200	824	10	10	0.14	J6		

200	824	10	16	0.14	J6
200	824	10	18	0.25	J6
200	824	10	20	0.1	J6
200	824	10	44.1	5.25	J6
200	851	1	2	0.5	J6
200	851	1	3	0.64	J6
200	851	1	1	0.59	J6
200	851	1	4	1.09	J6
200	851	1	11	0.84	J6
200	851	2	3	1.08	J6
200	851	2	5.1	0.73	J6
200	851	2	5.2	1.28	J6
200	851	2	6	0.35	J6
200	851	2	7	0.2	J6
200	851	2	8	0.28	J6
200	851	2	10.2	0.25	J6
200	851	2	10.3	0.1	J6
200	851	2	11	0.15	J6
200	851	2	12	1.95	J6
200	851	2	13	0.21	J6
200	851	2	14	0.14	J6
200	851	2	15	0.14	J6
200	851	2	16	0.21	J6
200	851	2	17	0.14	J6
200	851	2	18	0.35	J6
200	851	2	19	0.3	J6
200	851	2	20	0.3	J6
200	851	2	21	0.4	J6
200	851	2	22	0.2	J6
200	851	2	23	0.2	J6
200	851	2	24	0.3	J6
200	851	2	25.1	0.04	J6
200	851	2	25.2	0.08	J6
200	851	2	25.3	0.04	J6
200	851	2	26	0.1	J6
200	851	2	27	0.05	J6
200	851	3	3.1	0.3	J6
200	851	3	3.2	0.3	J6
200	851	3	4	0.2	J6
200	851	3	6.1	0.6	J6
200	851	3	7	0.3	J6
200	851	3	8	0.1	J6
200	851	3	10.1	0.5	J6
200	851	3	11	0.15	J6
200	851	3	12	0.15	J6
200	851	3	14.1	0.7	J6
200	851	3	25.1	2.5	J6
200	851	3	27	0.3	J6
200	851	3	32.1	0.5	J6
200	851	3	33	0.1	J6
200	851	3	34	0.15	J6
200	851	3	35	0.3	J6

200	851	3	36	0.4	J6
200	851	3	37	0.1	J6
200	851	3	38	0.1	J6
200	851	3	39	0.4	J6
200	851	3	40	0.1	J6
200	851	3	41	0.1	J6
200	851	3	42	0.3	J6
200	851	3	43	0.3	J6
200	851	3	44	0.2	J6
200	851	3	45	0.3	J6
200	851	3	48.1	0.9	J6
200	851	3	53.2	0.79	J6
200	851	3	54	0.64	J6
200	851	4	17.2	0.58	J6
200	851	4	18.1	0.58	J6
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200	851	4	21.2	0.59	J6
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200	851	4	29	0.34	J6
200	851	4	30.1	0.3	J6
200	851	4	30.2	0.04	J6
200	851	4	39	0.02	J6
200	851	5	1	0.36	J6
200	851	5	2	0.18	J6
200	851	5	12	0.37	J6
200	851	5	13	0.18	J6
200	851	5	14	0.19	J6
200	851	5	15	0.2	J6
200	851	5	16	0.3	J6
200	851	5	17	0.16	J6
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200	851	5	32.1	1.19	J6
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200	851	6	4.2	0.66	J6
200	851	6	7.1	0.28	J6
200	851	6	8.1	0.11	J6
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200	851	6	10	0.54	J6
200	851	6	11	0.04	J6
200	851	6	12	0.09	J6
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200	852	1	83.1	0.12	J6
200	852	1	63.1	0.9	J6
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200	852	1	66.1	0.44	J6
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200	852	1	77	0.05	J6

200	852	1	78	0.05	J6		
200	852	1	79	0.05	J6		
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200	852	1	89	0.46	J6		
200	852	1	90	0.58	J6		
200	852	1	91.1	0.09	J6		
200	852	1	91.2	0.09	J6		
200	852	2	1	0.23	J6		
200	852	2	2	0.23	J6		
200	852	4	1	0.23	J6		
200	852	4	6	0.23	J6		
200	852	4	7	0.23	J6		
200	852	4	15	0.14	J6		
200	852	4	16	0.09	J6		
200	852	4	17	0.23	J6		
200	852	4	20	0.23	J6		
200	852	5	2.1	0.32	J6		
200	852	5	3.1	0.17	J6		
200	852	5	4.1	0.3	J6		
200	852	5	5.1	0.28	J6		
200	852	5	8.1	0.24	J6		
200	852	5	9.2	0.31	J6		
200	852	5	9.3	0.09	J6		
200	852	5	11.2	0.97	J6		
200	852	5	12	0.09	J6		
200	852	5	13	0.09	J6		
200	852	5	14	0.17	J6		
200	852	5	15	0.46	J6		
200	852	5	17.2	0.81	J6		
200	852	5	17.3	0.17	J6		
200	853	1	2	0.22	J6	TOTAL ACRES =	63.31
200	824	7	13	0.33	MF		
200	824	7	14.1	1.1	MF		
200	824	7	14.2	0.74	MF		
200	824	9	1	0.37	MF		
200	824	9	4.2	0.23	MF		
200	825	1	19	2.99	MF		
200	851	1	12	[illegible]	MF	TOTAL ACRES =	6.86

Business Districts: Table of Dimensional Regulations

§ 85-207

(Please consult the individual zoning district for a complete list of uses permitted.)

ZONE	PERMITTED USES	MINIMUM					MAXIMUM	
		LOT AREA	WIDTH OF LOT THROUGHOUT	YARD SETBACKS			HEIGHT ('/stories)	FLOOR AREA RATIO
				FRONT	REAR	SIDE		
CR	Commercial Recreation	3 acres	200'	50'	50'	50'	45'	25%
J	Single-family dwelling	15,000	100'	40'	40'	10'	35' / 2½ (The height of accessory buildings and structures shall not exceed eighteen feet (18'))	20% (An unenclosed front porch may be excluded from these calculations.)
	Two-family dwelling							
	Office		150'					
	Adult day care facility							
	Mixed-use building							
	Churches or other similar places of worship, Parish houses, libraries or municipie buildings or uses.	40,000						
J2	Neighborhood Business	15,000	100'	25'	25'	10'	35'/2 ½	35%
	Bank or pharmacy with a drive through facility (Requires Special Permit from Town Board)	65,000	150'		40'	25'		
	Commercial Center	5 acres	300'	100'	75'	50'		20%
	Regional Theatre (Requires Special Permit from Town Board)	10 acres						
J4	Adminsistraitve, financial, business and professional office	10,000	75'	40'	25'	10'	35'/2 ½	25%
	Art galleries							
	Exhibit halls							
	Undertaking establishment							
	Bank							
	Day-care facility							
	Bank with a drive through facility (Requires Special Permit from Town Board)	65,000	150'	50'		25'		
	Adminsistraitve, financial, business and professional office use with an accessory restaurant use	3 acres		40'				
J5 (All uses require Special Permit from Town Board)	High intensity Business	20,000	150'	50'	40'	25'	35'/2 ½	25%
	Convenience store, motor vehicle repair, taxi station or gasoline station	1 acre						
	Gasoline station with an accesory convenience store or accessory motor vehicle repair	65,000						
	Motor vehicle wash, gasoline station with accessory car wash, fast food restaurant, commercial boat storage facility, marina, ship yard or boat repair yard	2 acres						
	Lumberyard, ferry terminal/facility or motor vehicle dealership	5 acres	200'					
	Commercial center	5 acres	300'	100'	75'	50'		20%
	Regional theatre	10 acres						
J6	Main Street Business	4,000	50'	Min. 5' Max. 25'	30'	0'	35'/2 ½	60% (Max. single use building area 60,000)
	Multi-family residential	2 acres	100'				50'/3	
	Planned retirement residential							
	Regional movie theatre			Min. 10' Max. 25'			35'/2 ½	
	Hotel, assembly and social recreation hall, or private or public automobile parking field or garage						50'/3	
J8	Hotel-Motel	5 acres	300'	Building Height=Building setback 50' for Outdoor Recreation			Min. 2 Max. 4	15%
K	Duck Ranches	22,500	125'	40'	60'	25'	35'/2 ½	20%
PC	Pet Cemetery	5 acres	300'	50'	50'	50'	—	—

Appendix B

EXHIBIT NO. 5

June 18, 2008
1:00 – 4:00 PM
Suffolk County Comprehensive Water Resources Management Plan Meeting
1st floor auditorium
360 Yaphank Avenue, Yaphank, NY 11980

1. Welcome & Introduction – Martin Trent (1:00-1:10)

2. Review of vital questions to be answered – CDM (1:10-1:30)

3. Task 4.1 Report Groundwater Quality – CDM (1:30-2:15)
    a. Private well surveys, nitrogen and density – Andrew Rapiejko
    b. Sewered vs. unsewered nitrogen levels – Ron Paulsen
    c. Pharmaceutical testing – Paul Ponturo
    d. Agricultural nitrogen impacts & pesticide trends – Martin Trent

4. Task 5.2 Report – Future Land Use Impacts – CDM (2:15-2:45)
    a. Mastic Corridor Pilot Project – major findings
    b. On-site Wastewater disposal
        i. Density in other jurisdictions
    c. STPs and Cromaglass evaluations
    d. STPs and Cromaglass corrective actions implemented – Walter Hilbert

5. Task 5.3 & 5.5 – CDM (2:45-3:15)
    a. Task 5.5 Refined Source Water Assessment update
    b. Task 5.3 Contaminated aquifer segments

6. Task 3.1 Land Use & Population density – Planning Dept (3:15-3:45)
    a. Statistical Land use report
    b. Historical aerials & contributing areas to 30 wellfields

7. Task 7.4 Report – Non-Community Water Supplies – CDM (3:45-4:00)

8. Discussion and next meeting

Rev2

CDM

Suffolk County Department of Health Services Comprehensive Water Resources Management Plan Summary of Steering Committee Meeting No. 4 (June 18, 2008)

The fourth Suffolk County Comprehensive Water Resources Management Plan Steering Committee meeting was held at the Suffolk County Department of Health Services (SCDHS) office in Yaphank, NY on Wednesday, June 18, 2008. A copy of the meeting agenda and sign-in sheet are attached.

Introduction and Overview

Martin Trent, Chief of SCDHS's Office of Ecology and Project Manager for the Comprehensive Plan, welcomed the Steering Committee members and introduced the agenda. Mary Anne Taylor briefly reviewed the continued relevance of the four vital questions posed to the Steering Committee at the initial Steering Committee meeting in 2005, and reiterated the purposes of the Comprehensive Water Resources Management Plan (e.g., to revisit the 1987 Comp Plan and build upon the evaluation framework developed during the Source Water Assessment Program (SWAP) to assess the impacts of land use management choices upon water quality). No additional issues requiring consideration were identified by the Committee.

Task 4.1 – Water Quality

Mary Anne Taylor presented an overview of water quality in Suffolk County, as characterized by levels of nitrates, tetrachlorethene, MTBE, perchlorate and pesticides measured in untreated water from public supply wells. The untreated, or source water nitrate data revealed that nitrate levels in over 98 percent of public supply wells in the County remains below the 10 mg/L drinking water standard, and that nitrate levels in nearly eighty percent of the wells are below 6 mg/L. However, a significant increase in nitrate levels in both the upper glacial and Magothy aquifers (as indicated both by average nitrate concentrations, and number of wells with elevated concentrations) since the last comprehensive water resources management plan was completed in 1987 has been observed. Higher nitrate levels are observed throughout the County, particularly in unsewered densely developed and agricultural areas, underscoring the relationship between overlying land uses and groundwater quality.

Similarly, while neither tetrachloroethene (PCE) nor trichloroethene (TCE) have been detected in untreated water from nearly 90 percent of the County's public supply wells, and both PCE and TCE concentrations in raw water samples from over 98 percent of the supply wells are below the drinking water standard of 5 ug/L, both the number of detections and the average concentrations of these VOCs have increased since 1987. While it is likely that the increased number of wells with VOC detections is at least partially attributable to the lower detection limits achieved in recent years, the higher average and higher maximum values indicate that

the contaminants continue to be introduced to the aquifer, particularly in the more densely developed western part of the County.

Suffolk County has monitored for MTBE since 1991 – the gasoline additive was widely detected in untreated water samples collected in 2005 around the County and has been banned since 2004. While MTBE levels in untreated water from 99 percent of the County's public supply wells remained below the 10 ug/L drinking water standard, low levels of MTBE were detected in raw water samples from 16 percent of the supply wells sampled in 2005. Perchlorate was also detected in untreated or source water samples from six percent of all supply wells tested, including wells located in the western part of the County and wells located in the eastern agricultural areas. None of the detections exceeded the 18 ug/L action level established by New York State. An overview of the results of SCDHS' extensive pesticides monitoring program was also provided; pesticides and/or their breakdown products have been detected in community supply wells located from west to east throughout the County, and pesticide-related chemicals were detected above the MCL (most often, the unspecified organic chemical MCL of 50 ppb) in raw or untreated or water in 15 community supply wells (over two percent of the wells).

Andrew Rapiejko presented a County-wide map relating land use to projected nitrate levels in groundwater, based upon relationships developed by SCDHS during earlier studies. He presented nitrate data collected during a variety of investigations that showed good agreement between the predicted nitrate levels and measured values --- e.g., nitrate levels in agricultural areas of the North Fork and densely developed unsewered areas such as Mastic/Shirley and Rocky Point were indeed elevated, while nitrate levels in less densely developed areas such as the Pine Barrens and the South Fork were not. He also presented an assessment of groundwater nitrate levels resulting from upgradient land use in study areas where an extensive water quality database could be assembled from private well sampling programs. The evaluation of nitrate levels in unsewered shallow private wells located south of BNL clearly showed the impacts of on-site wastewater disposal on downgradient nitrate levels and was consistent with SCDHS's earlier studies.

Ronald Paulsen compared nitrate levels in monitoring wells installed within and outside of the Southwest Sewer District (SWSD). The monitoring wells, which were installed in support of other SCDHS programs and investigations, provided a snapshot of water quality conditions in the upper glacial aquifer. Except for one study area, nitrate levels were significantly lower within the SWSD than in the unsewered residential areas to the east. In addition, observed nitrate levels were higher in areas of increased density.

Paul Ponturo provided an overview of pharmaceuticals and personal care products. SCDHS has been monitoring for a variety of these contaminants for several years and a variety of parameters have been detected in the groundwater. One of the pathways by which these

parameters may be introduced to groundwater is from large laundromat facilities, which were discussed in some detail. He cautioned that no drinking water standards have been established for these parameters, and also presented the current recommendations with respect to pharmaceutical disposal.

Martin Trent presented water quality data characterizing nitrates and pesticides in agricultural areas of the County based upon samples collected from monitoring wells with long term records. The results demonstrated that agricultural land uses continue to result in high levels of nitrogen in excess of the 10 mg/L drinking water standard. Pesticide monitoring conducted in these wells revealed that pesticides and/or their breakdown products continue to be detected in agricultural areas for decades after their registration was withdrawn. He also noted that the unspecified organic contaminant level of 50 parts per billion is still applicable to most pesticides, as specific drinking water MCLs have not been promulgated.

Task 5.2 – Future Land Use Impacts

Daniel O'Rourke reviewed the modeling approach that was developed for Suffolk County to use to evaluate the impacts of proposed development upon nitrate levels in area groundwater. He briefly described the model development, the assigned relationship between land use and assigned nitrogen loadings, and how the model was able to successfully reproduce nitrate levels measured in area monitoring, private and non-community wells. The average simulated total nitrogen concentration in the shallow groundwater beneath the study area under existing conditions was 12.6 mg/L (average parcel size was estimated at approximately 8,800 square feet).

Because the model results had been demonstrated to reasonably represent observed conditions in the study area, it could be used with some confidence to project the changes in nitrogen levels that might be expected from the proposed development scenario. The model was used to simulate nitrogen levels resulting from development according to the proposed Montauk Highway Corridor Land Use Plan. The resulting model simulation showed that average nitrogen levels in the study area were estimated to increase to 15 mg/L as a result of the increased development. If sanitary sewering of the Main Street Corridor was included in the simulation, the average nitrogen level was estimated at 14.3 mg/L; if the entire study area was to be sewered, a significant improvement in groundwater quality could be expected, with average nitrogen levels reduced to 4.1 mg/L.

The model was successful in achieving SCDHS's objective of development and application of a modeling tool that could readily be applied elsewhere throughout the County to assess the impact of proposed development scenarios upon groundwater quality.

Mary Anne Taylor presented an update to a review of density restrictions based upon nitrogen loading elsewhere throughout the country, for comparison to Suffolk County's Article 6 requirements (e.g., areas within the deep recharge zone require sanitary sewers if residential density exceeds 1 dwelling unit per acre and areas outside of the deep recharge zone require sanitary sewers if residential density exceeds 2 dwelling units per acre). Based upon available regulations, studies and interviews:

- No communities were identified that allow development densities greater than two dwelling units/acre in areas that are both unsewered and that derive potable supply from groundwater;
- Unsewered areas that have historically permitted more than two dwelling units/acre have reported water quality problems prompting subsequent construction of sanitary sewers or code changes.

However, available land use and tax map data indicates that approximately two-thirds of Suffolk County residential properties are less than ½ acre, and approximately one-third of residential properties are less than ¼ acre. Therefore, particularly in the west end towns, where population has not increased significantly since 1981 when Article 6 was implemented, existing density often exceeds the unsewered densities established to protect groundwater quality.

Sanitary wastewater from approximately one quarter of the County's population is treated at one of the nearly 180 sewage treatment plants (STPs) that exist throughout the County. Mary Anne Taylor presented a brief overview of SCDHS' data on effluent nitrogen concentrations from the County's network of nearly 180 small sewage treatment plants (STPs). Data collected by SCDHS from 2003 through 2006 indicated that the average effluent nitrogen concentration from the 138 STPs discharging to groundwater and required to remove nitrogen exceeded the 10 mg/L SPDES permit limit at over 50 percent of the STPs. As some of the STPs were successful in consistently achieving the 10 mg/L limit, both technology and operational information were explored. Based on the data provided, the average effluent nitrogen concentration from the sixteen Cromaglass facilities was 22.3 mg/L, with only 25 percent of the facilities meeting the 10 mg/L limit; the performance of the SBR facilities was somewhat better with an average effluent nitrogen concentration of 13 mg/L, and over half meeting the 10 mg/L limit. The data also revealed that all fifteen of the STPs operated by the Suffolk County Department of Public Works (SCDPW) consistently achieved the SPDES limit, with an average effluent nitrogen concentration of 5.2 mg/L. This suggested that it was possible for most of the STPs to achieve the required nitrogen reduction if additional time and resources were invested in operations and maintenance at the plants. SCDHS documented design and operational issues at the small STPs, particularly with the Cromaglass facilities and identified a program of required corrective actions.

Walter Hilbert presented historical background information on the approximately 180 small sewage treatment plants (STPs) in Suffolk County, and provided an overview of the steps that Suffolk County is taking to improve Cromaglass and small sewage treatment plant compliance with SPDES permit limits for nitrogen. While the plants can be successfully operated to comply with permit limits, SCDHS has identified a number of factors (e.g., inadequate operator attention, inadequate funding for maintenance and repairs, lack of replacement parts inventory, etc.) that have historically contributed to permit violations. Since implementation of the County's program to improve STP performance, including imposition of fines for non-compliance, effluent nitrogen levels have been reduced.

Task 5.3 – Contaminated Aquifer Segments
Dan O'Rourke listed the five sites with historical releases of contaminants to the groundwater that SCDHS identified for incorporation into the updated SWAP evaluations (BNL, Fairchild, Lawrence Aviation, Northville Holtsville and Servall), and presented a three-dimensional depiction of contaminant migration from the 2007 Fairchild plume limits.

Task 3.1 – Land Use and Population Density
Ron Verbarg from the Suffolk County Planning Department (SCPD) presented an example of how the SCPD is working with historical aerial photos and land use information to assess land use changes within the source water areas for the wellfields identified by SCDHS. He also provided copies of the Department's 2007 Existing Land Use Inventory for Western Suffolk County for the Committee.

Due to the length of the meeting, two of the agenda topics (an update on the refined source water assessments that are underway, and an overview of the non-community systems) were deferred until the next meeting. Vito Minei and Martin Trent concluded the meeting by thanking the Committee for their participation and noting that the next Steering Committee would be scheduled for later in the year.

Please advise Mary Anne Taylor/CDM at taylormb@cdm.com of any oversights or errors in these summary notes.

cc: Meeting Attendees/Distribution List

Mary Anne Taylor	CDM	Taylormb@cdm.com
Ben Wright	SCDPR	ben.wright@suffolkcountyny.gov
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Kevin Roberts	NYSDEC	kjrobert@gw.dec.state.ny.us
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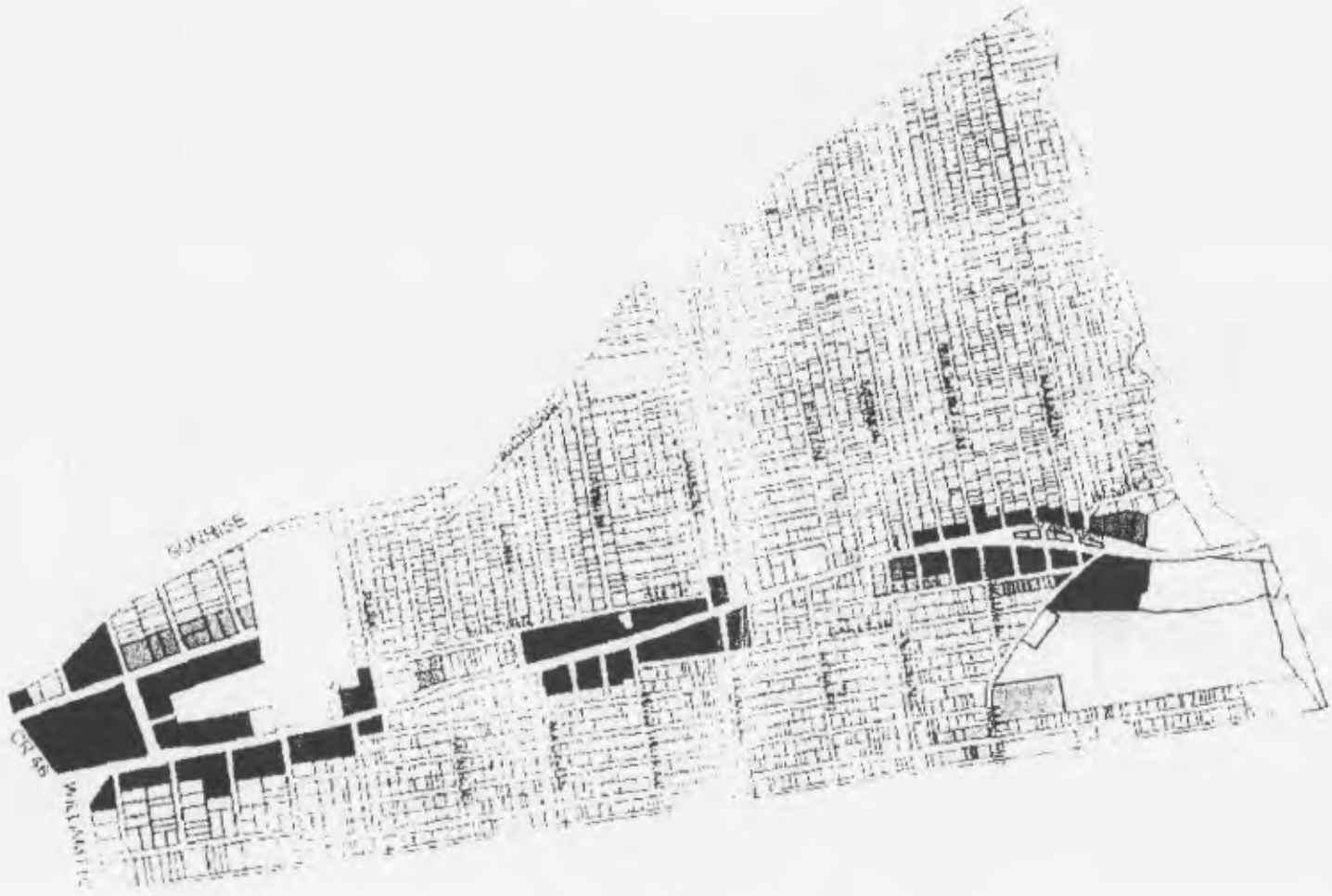
Theresa Grover	SCDHS	Theresa.Grover@ "
Nancy Panarese	" "	Nancy.Panarese@ " "
Tom Isles	SC Planning	
Dan Gulizio	SC Planning	
Jason Hime	SCDHS	jason.hime@
Dan O'Rourke	CDM	orourkeda@cdm.com
Martin Trent	SCDHS	martin.trent@suffolkcountyny.gov

EXHIBIT NO. 6



MAP 2-4

Montauk Highway Corridor

Proposed Rezoning Plan for Mastic & Shirley

Mastic clip 1.shp
J-6
J
MF-1
D
A-1
A-2

Feet

JS April 2004

Figure 2

Figure 1

DRAFT

Proposed
Business Improvement District (BID)
Mast c - Shirley

Map Produced JAN 13, 2004

A detailed evaluation of the proposed treatment plant sites will be addressed later in this report.

Regulation of Septic Systems

The SCDHS is responsible for regulation of wastewater systems pursuant to Article 6 of the Suffolk County Sanitary Code (SCSC). The SCSC requires a minimum lot size of 40,000 square feet to utilize septic systems for lots in SCDHS Groundwater Management Zone VI, in which the study area is located, and a maximum sanitary discharge of 300 gpd. However, existing lots held in "single and separate" ownership that are less than 40,000 square feet, but at least 5,000 square feet in size, may be built upon using septic systems, as long as such systems are at least 150 feet distant from any water supply well. As a result, many lots previously developed are discharging an average of 650 gpd/acre, which are more than twice SCDHS standards.

Although SCDHS regulates the design and construction standards for septic systems and wastewater treatment plants and monitors wastewater treatment plant operations on a monthly basis, there is no effective regulation of septic system operation or repair. Thus, malfunctioning or failed septic systems may continue their discharge of contaminants unabated.

Regulation of Wastewater Treatment Plants

Depending upon the form of ownership of the real estate or facility being served by a wastewater treatment plant, regulation is either by Suffolk County (SCDHS and/or Suffolk County Department of Public Works – [SCDPW]) as delegated by the New York State Department of Environmental Conservation (DEC), or directly by the DEC. For example, privately owned wastewater treatment plants that serve one owner, such as in an apartment development or shopping center, are regulated by SCDHS. In the case of privately owned plants serving multiple owners, such as a condominium development, regulation is by the SCDPW and SCDHS, after approval by the Suffolk County Sewer Agency (SCSA). Publicly owned treatment works (POTWs), such as Suffolk County Sewer Districts, are regulated by the DEC. All treatment works, public or private, operate pursuant to a New York State Pollution Discharge Elimination System (SPDES) permit, requiring monthly discharge monitoring reports (DMRs) that are submitted to the DEC by the licensed plant operator.

Proposed Brookhaven Sewer District

It is proposed that the BID area be sewered, with a regional wastewater treatment plant constructed under the jurisdiction of the Town of Brookhaven. Provision of sewerage will allow for connection of businesses with malfunctioning

or failed septic systems, and these septic systems will subsequently be properly abandoned. Furthermore, it is an objective of the Town of Brookhaven that the BID area be rejuvenated, and provision of sewerage would be necessary to accomplish this.

The environmental benefits of converting businesses from septic systems to sewers are significant. Properly functioning septic systems discharge "treated" wastewater at a nitrogen concentration of about 35 mg/L[1]. By comparison, a "state-of-the-art" wastewater treatment plant, such as a Sequence Batch Reactor (SBR) facility; a Biologically Engineered Single Sludge Treatment (BESST) facility; or a Membrane Bioreactor (MBR) facility, discharges treated wastewater at a nitrogen concentration of about 5 mg/L. The SCDHS design standard is 10 mg/L. Thus, it is obvious that a significant reduction in nitrogen discharge results from each business with a septic system converting to sewers. This reduction directly benefits groundwater quality and nearby surface water quality.

Plant Design Criteria and Staging of Construction

The plant will be designed to meet all current DEC and Suffolk County criteria with regards to discharge: Total Nitrogen less than 10 mg/L from any sample, and a pH of 6.5 to 8.5.

[1] mg/L = milligrams per liter

The initial stage and all future stages of the plant will be constructed as an enclosed facility. Effluent recharge will be subsurface (i.e., leaching pools) and also phased to keep pace with plant expansion to handle 1-2 MGD. This can be done in multiple stages, depending upon public and developer needs and funding availability.

At the direction of the WFCS, three (3) potential sites for the wastewater treatment plant were evaluated. These are shown in Figure 3.

The result of this analysis was that the Brookhaven Airport Site, a 500-acre parcel owned by the Town of Brookhaven, located north of Sunrise Highway and east of William Floyd Parkway, was identified to be the preferred location. The plant will be located on a ±19-acre parcel within the airport property (labeled "B" on Figure 4), with a potential layout as indicated.

Sewage will be transported from the BID area to the site by pump stations and force mains, with the pump station sites located near the eastern and western boundaries of the BID area, as well as near the intersection of William Floyd Parkway and Montauk Highway (see Figure 5).

The collection system will convey water to the pump stations via conventional gravity sewers or vacuum systems (for high water table areas). The two (2) smaller pumping stations along Montauk Highway will feed a master pump station near the intersection of William Floyd Parkway and Montauk Highway. That master pump station will convey the sewage to the plant, as shown in Figure 5. This force main will be approximately 4,750 feet in total length from the master pump station to the treatment plant. A more in-depth discussion of the collection system can be found later in this report.

CDM

Development and Application of a Nitrogen Loading Model to Assess Impacts to Groundwater from Sanitary Wastewater in Suffolk County, New York

Dan O'Rourke

Monday, June 23, 2008

Mary Anne Taylor
Robert Fitzgerald
Martin Trent
Andrew Rapiejko

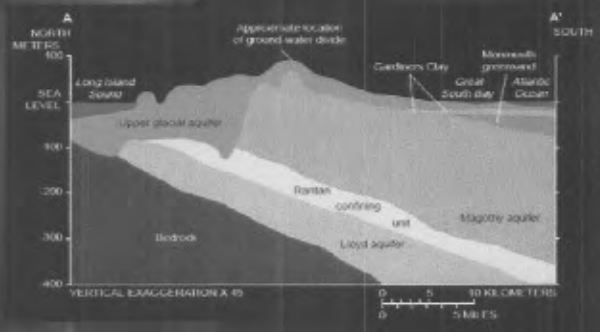
Presentation Outline

- Introduction
  - Study Area
  - Purpose of Nitrogen Loading Model
  - Case Study – Montauk Hwy Corridor
- Modeling Approach
  - Develop Groundwater Model
  - Nitrogen Loading Spreadsheet
  - Integration with Suffolk County Groundwater Model
- Results
- Summary / Future Work

Introduction

- Sole Source Aquifer for >1.4 Million people in Suffolk County
- > 670 Community Public Supply Wells in Suffolk County
  - 548 SCWA
- Most of Suffolk County is un-sewered
  - Risk of elevated nitrogen & other contaminants

Geology



Modified from USGS, 1999

- Unconsolidated Upper Cretaceous and Pleistocene Deposits
- 3 Major Aquifers: upper glacial, Magothy, Lloyd

Nitrogen Loading Model

- Suffolk County Comprehensive Water Resources Management Plan
  - Assess the cumulative impacts of point and non-point sources of sanitary wastewater upon groundwater quality for future hamlet-scale land use scenarios solicited by the County from town and village planning agencies
  - Develop nitrogen loading model that can be used by the County to evaluate potential for groundwater quality degradation
  - Couple nitrogen loading data to existing Suffolk County Groundwater Model

Nitrogen Loading Model

- Case Study
  - Use Regional Groundwater Model to Evaluate Land Use Development Scenario Submitted by the Town of Brookhaven
  - Develop an approach that could be applied to additional scenarios by Suffolk County

2004 Montauk Highway Corridor Study & Land Use Plan for Mastic & Shirley

Case Study: Montauk Hwy Corridor

- 2004 Montauk Highway Corridor Study & Land Use Plan for Mastic & Shirley
  - Plan to re-develop the Montauk Highway Corridor
  - Currently Un-Sewered
  - Evaluate Groundwater Impacts from Implementing the Land Use Plan in 2004 Montauk Highway Corridor Study
- Forge River
  - Currently impacted by point and non-point sources of contamination
  - Algae blooms and fish kills

Montauk Highway Corridor Study Area

Land Use	% of Area
Low Density Res.	0.19%
Med. Density Res.	30.56%
High Density Res.	18.21%
Commercial	14.13%
Industrial	0.75%
Institutional	1.28%
Recreation and OS	7.48%
Vacant	20.32%
Transportation	3.36%
Utilities	0.67%
Water	3.05%

Existing Conditions

Average Lot Size (ft^2)	
Low Density Res.	28,899
Med. Density Res.	12,094
High Density Res.	5,981

Average Residential Lot Size:

8,778 ft^2 (0.202 ac)

Montauk Highway Corridor Study Area – Development Plan

Land Use	% of Area
Med. Density Res.	43.37%
High Density Res.	18.78%
Commercial	5.31%
Institutional	1.28%
Recreation and OS	8.84%
Vacant	0.48%
Transportation	3.09%
Utilities	0.02%
Water	3.05%
Med-High Dens. Res.	3.73%
Main Street District	9.20%
Transitional	2.84%

Average Lot Size (ft^2)	
Med. Density Res.	10,485
Med-High Dens. Res.	14,086
High Density Res.	6,266
Transitional	11,005
Main Street District	15,785

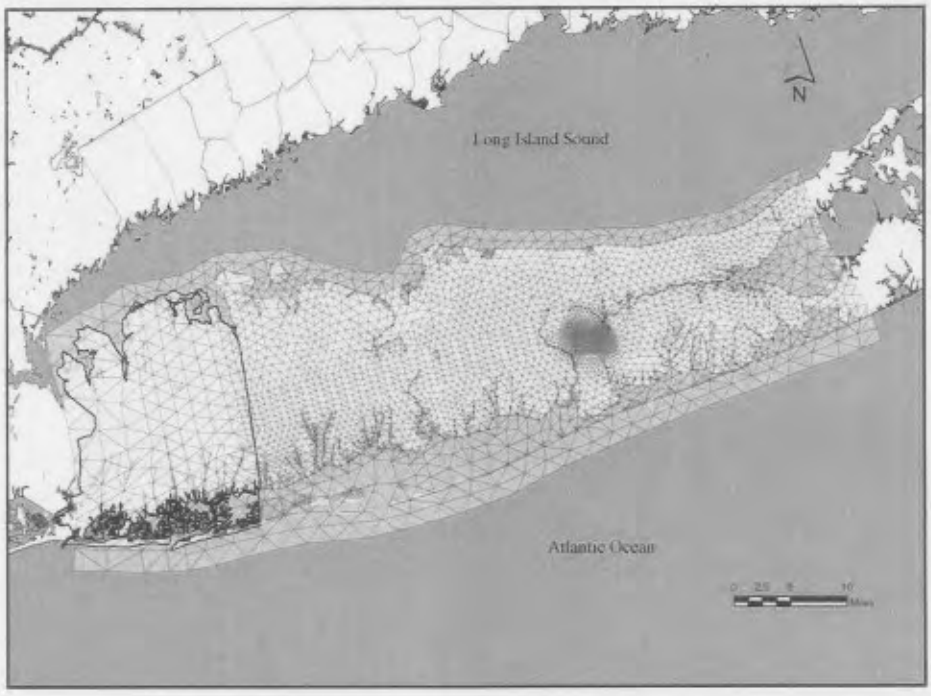
Proposed Conditions

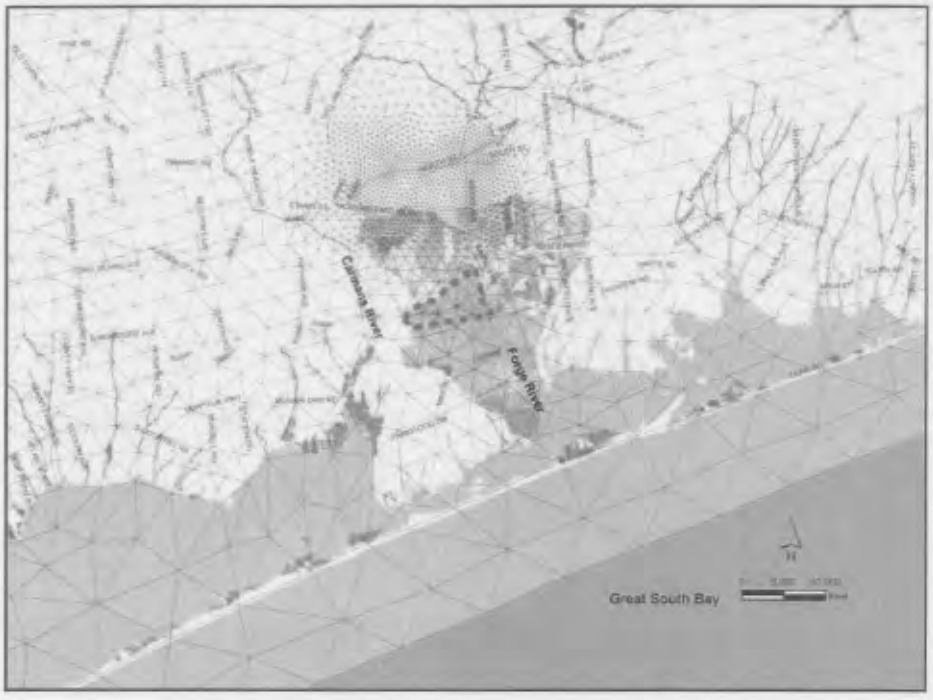
Average Residential Lot Size:

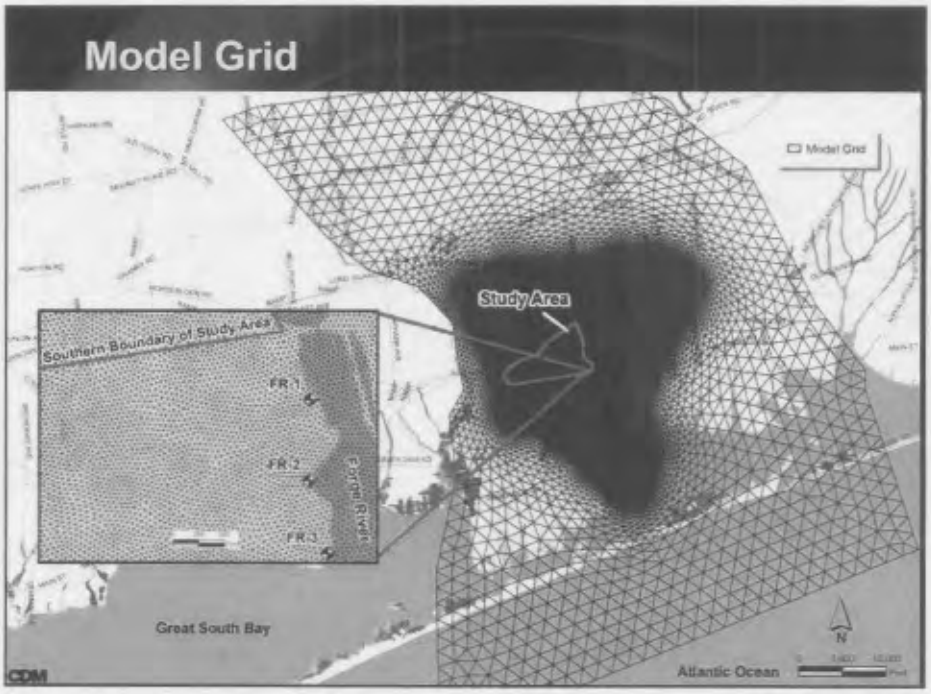
9,457 ft^2 (0.217 ac)

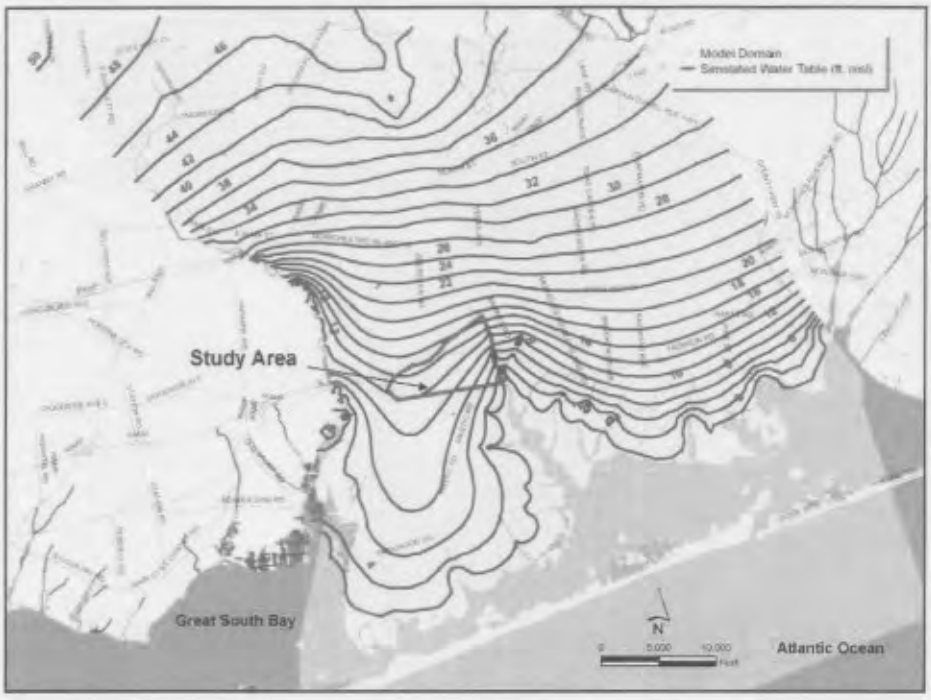
Groundwater Model Development

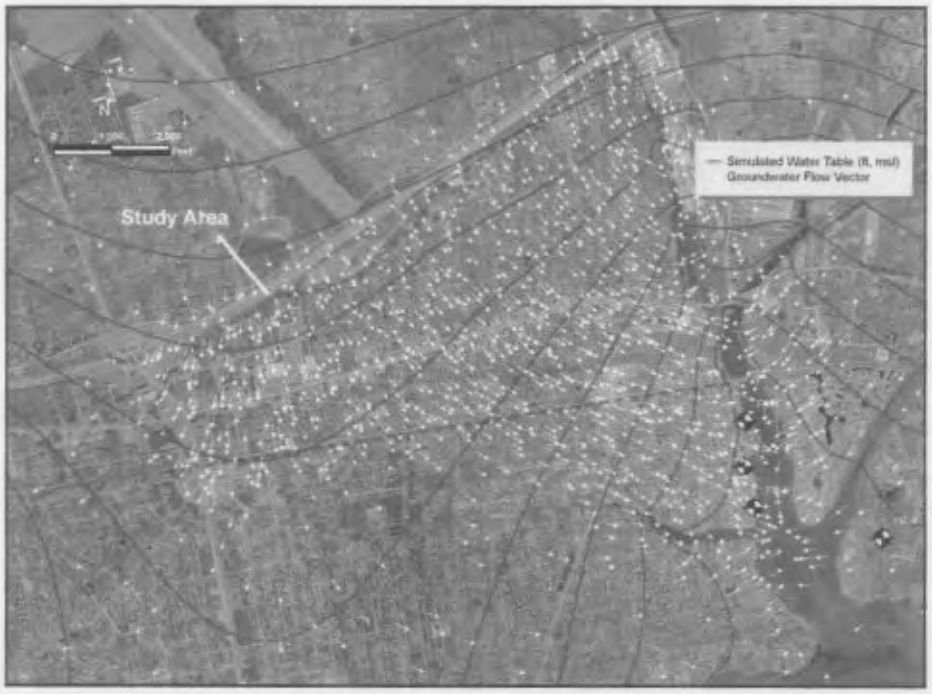
- Use Suffolk County Main Body Regional Groundwater Model
  - 3-D Finite Element Groundwater Model (DYNSYSTEM)
- Simulate Nitrogen Loading
  - Parcel specific point sources
- Run Contaminant Transport Models to Simulate Groundwater Nitrogen Concentration
- Verify Loading Factors with Data Collected by SCDHS




Great South Bay

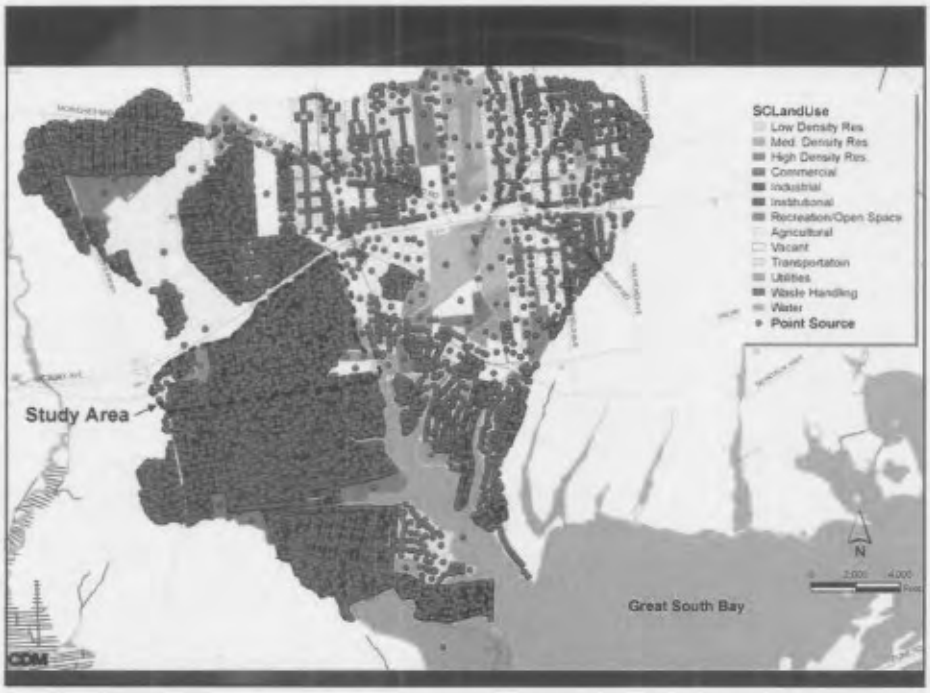

Model Grid
Model Grid
Study Area
Southern Boundary of Study Area
FR-1
FR-2
FR-3
Great South Bay
Atlantic Ocean
CDM

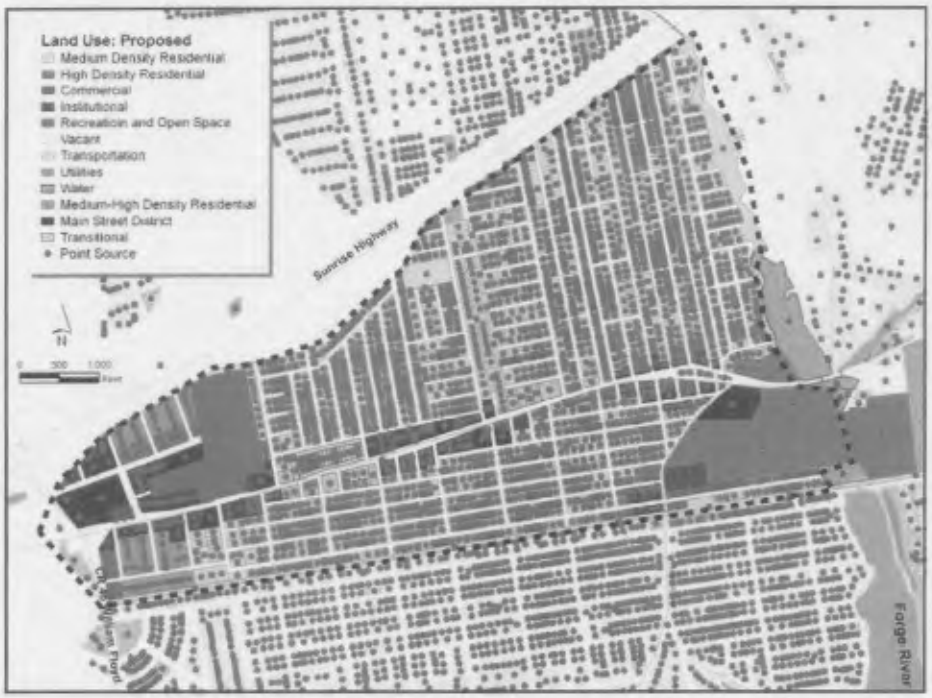

Model Domain
Simulated Water Table (ft. msl)
Study Area
Great South Bay
Atlantic Ocean
N
0
5,000
10,000
Feet


N
Simulated Water Table (ft. msl)
Groundwater Flow Vector
Study Area

Groundwater Model Development

- Montauk Highway Corridor Model
  - 42,571 nodes comprising 84,978 elements
  - 12 Model Levels
  - Refined flow field (increased node discretization, intersect with DEM), but based on REGIONAL STRATIGRAPHIC FRAMEWORK
  - Refinements made for contaminant transport simulation of thousands of point sources (septic tanks)





Development of Nitrogen Loading Factors by Land Use

- **Residential Land Uses:**

$$\left(\frac{lbs-N}{person-yr}\right)\left(\frac{1year}{365days}\right)\left(\frac{\#dwellingunits}{acre}\right)\left(\frac{3.1person}{dwellingunit}\right)(acres)=\frac{lbs-N}{day}$$

- **Non-Residential Land Uses:**

Flow (L/day) x Concentration (mg/L) = Mass Rate (mg/day)

Development of Nitrogen Loading Factors by Land Use

Land Use	Average Nitrate (mg/L)	Range (min-max; mg/L)
Low Density Residential	3.35	2.97 - 3.70
Medium Density Residential	5.82	4.40 - 7.94
Intermed./High Density Residential	2.60	0.34 - 8.03
Commercial	1.74	0.08 - 4.05
Industrial	4.25	1.13 - 6.99
Institutional	8.20	7.87 - 8.53
Recreation/Open Space	3.91	2.40 - 6.07
Agricultural	7.83	5.62 - 10.0
Vacant	1.15	1.00 - 1.30
Transportation	2.39	0.59 - 4.54

Source: [illegible] Plan, 1987

Development of Nitrogen Loading Factors by Land Use

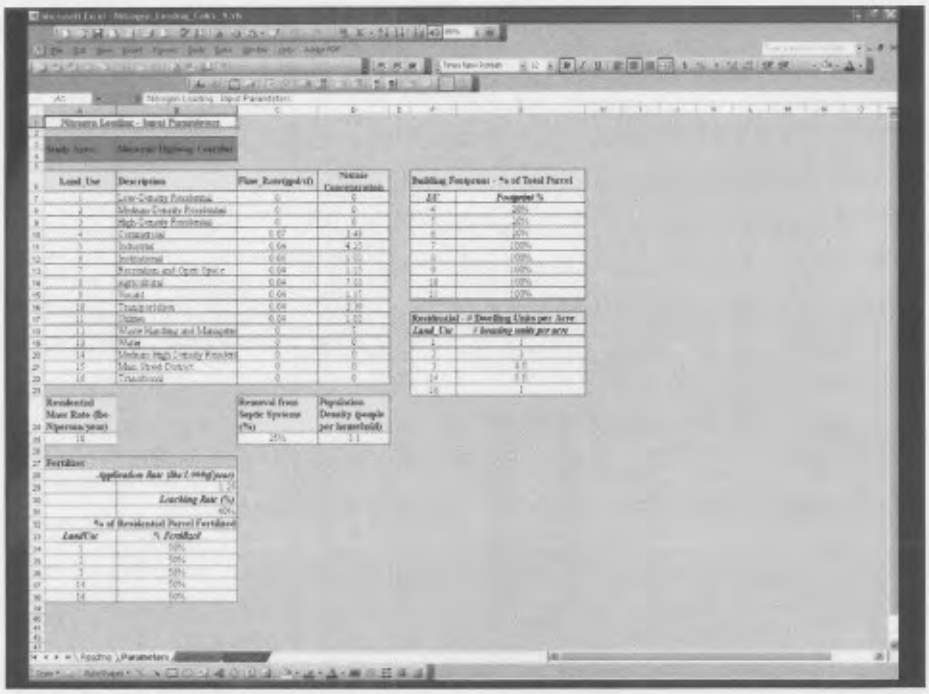
Land Use	Nitrate Concentration at the Water Table beneath Each Land Use (mg/L)	Notes
Wetland, water based recreation salt wetland, water, and marina	0	Recharge to the aquifer does not occur
Pasture, forested, mining, and open space	0.07	Atmospheric deposition
Commercial, industrial, urban open space, and transportation	1.02	
Turf	3.75	Turf was added to residential loading at 500 sq. meters per housing unit
Participation recreation, spectator recreation, and golf	4.10	
Cropland	4.90	
Residential: multifamily, <0.25 acre, 0.25 to 0.5 acre, > 0.5 acre	43.4	
Solid waste disposal / landfill	99.40	

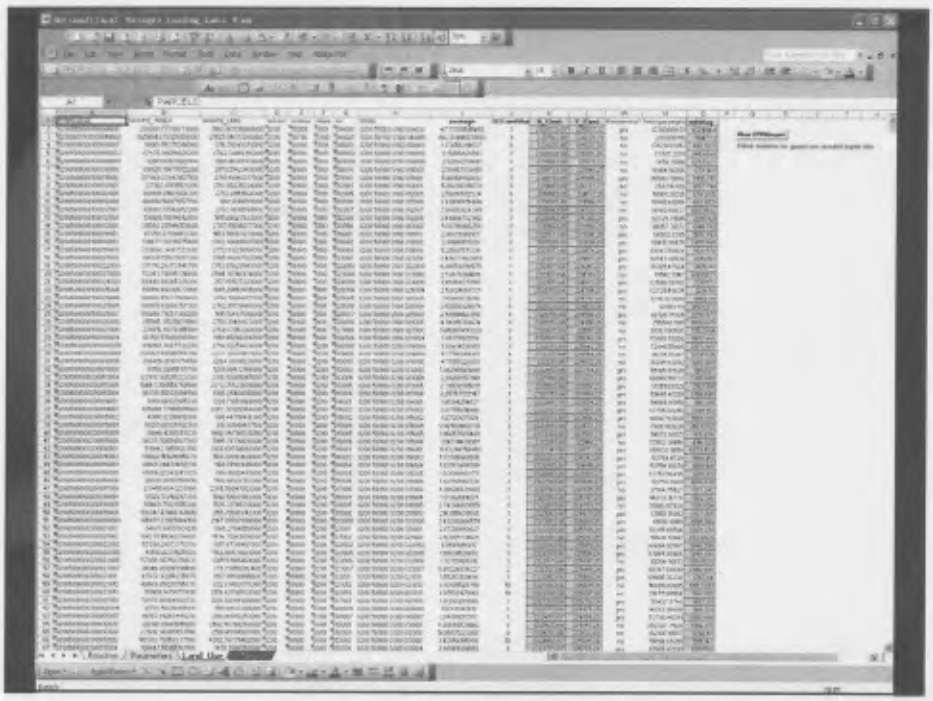
Source: Valiela et al. 2004

Development of Nitrogen Loading Factors by Land Use

Structure Use	Design Flow Rate
Apartment, Condo, HOA – up to 600 sf	150 gpd/unit
Apartment, Condo, HOA – between 601-1,200 sf	225 gpd/unit
Apartment, Condo, HOA – greater than 1,200 sf	300 gpd/unit
General Industrial Space	0.04 gpd/sf (gross floor area)
Non-medical Office Space	0.06 gpd/sf (gross floor area)
Medical Arts Space	0.10 gpd/sf (gross floor area)
Theater	3 gpd/seat
Wet Store	0.15 gpd/sf (gross floor area)
Dry Store	0.03 gpd/sf (gross floor area)
Wet Store (no food)	0.10 gpd/sf (gross floor area)
Restaurant (with sewers)	30 gpd/seat
Multi-use Sports Complex	
Bowling	100 gal/lane
Ice Skating	15 gpd/skater + 5 gpd/spectator
Bar	10 gpd/seat
Mini-Golf	14 gpd/parking space
Food (single serve)	0.15 gpd/sf

Source: SCHDS Sewerage Flow Design Standards

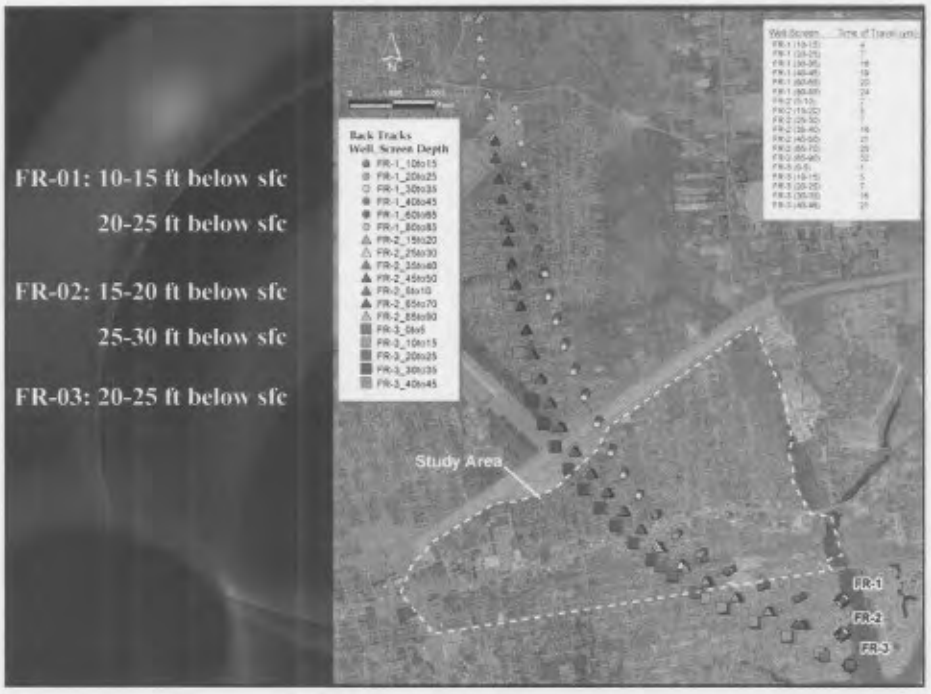




Development of Nitrogen Loading Factors by Land Use

- Verification of Loading Factors
  - SCDHS Monitoring Wells – Nests along western bank of Forge River
  - Non-Community Public Supply Wells
  - Private Supply Wells
- Goal was to simulate range of nitrogen
  - Screen intervals for private and non-community supply wells assumed

Land Use: Existing
Low Density Residential
Medium Density Residential
High Density Residential
Commercial
Industrial
Institutional
Recreation and Open Space
Vacant
Transportation
Utilities
Water
SCDHS Monitoring Well
Non-Community Public Supply Well
Private Supply Well
Sunrise Highway
Forge River
FR-1
FR-2
FR-3


FR-01: 10-15 ft below sfc
20-25 ft below sfc
FR-02: 15-20 ft below sfc
25-30 ft below sfc
FR-03: 20-25 ft below sfc
Back Tracks
Well Screen Depth
Study Area
FR-1
FR-2
FR-3

Simulation Results – Existing Conditions

- SCDHS Monitoring Wells

Well	Depth (ft below sfc)	Total Nitrogen (mg/L) Observed	Simulated
FR-1	10 to 25	11.03	8.34
	30 to 45	12.29	11.56
	80 to 85	0.30	1.56
FR-2	5 to 20	12.63	12.00
	25 to 40	12.35	11.54
	85 to 90	0.50	2.00
FR-3	0 to 15	9.40	8.49
	20 to 35	5.19	8.36
	20 to 25	*7.57*	*7.54*
	40 to 45	3.50	4.51

Simulation Results – Existing Conditions

- Non-Community Public Supply & Private Well Data
  - Results vary, but are within general agreement in several wells
  - Screen intervals – unknown
  - Pumping not simulated
    - Dilution effects
    - Additional Loading from High N in Contributing Area
    - Single sample events

head, ft msl	NC00-0016	NC00-0030	NC00-0033	NC00-0368	PR00-0854	PR98-0947	PR05-0215
Simulated	8.39	8.58	4.93	0.28	10.80	8.92	2.23
Observed	8.20	0.70	4.70	0.30	5.22	12.78	0.62

Simulation Results – Development Scenarios

- Repeat Process
- Load Development Scenario GIS File Data into Spreadsheet to Calculate N Loading
- Run Model:
  - Developed WITHOUT Sewering
  - Developed WITH Sewering Main Street Districts and Transitional Land Uses (as per report)
  - Developed WITH Sewers throughout Study Area
    - Sewering assumed to remove N from entire system (not returned as plant effluent discharge within model)
    - Hydraulic changes from sewering not simulated

Simulation Results

- Average Total N Concentration in Shallow Groundwater Beneath Study Area (mg/L)
  - Existing Conditions: 12.58 mg/L
  - Re-Development Conditions:
    - No Sewers 15.05 mg/L
    - Sewering Main Street 14.30 mg/L
    - Sewering Entire Study Area 4.08 mg/L
- Observed [N]:
  - FR-01: 9.33 – 12.72 mg//L
  - FR-02: 5.90 – 16.30 mg/L
  - FR-03: 2.80 – 17.87 mg/L
  - Private Wells: up to 14.02 mg/L
  - Non-Community Supply Wells: up to 8.20 mg/L

Summary

- Model Developed to Generally Simulate Nitrogen Loading
  - Intended to be used with Suffolk County Model
  - Methodology can be applied in other areas
  - Slight modifications for additional land uses (not already included in SCPD land use categories)
- Draft Simulation Results are in Reasonable Agreement with Measured Concentrations
  - Without Sewering Study Area: 19.6% increase in [N]
  - Sewering Main Street only: 13.7% increase in [N]
  - Sewering Entire Study Area: < 5.0 mg/L [N]*
    * without simulating STP discharge to gw

Summary (con't)

- Forge River
  - Already a stressed system
- Not a site specific model for Forge River analyses
  - Good starting point, but additional work is required

EXHIBIT NO. 7

COUNTY OF SUFFOLK

STEVE LEVY
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS

THOMAS LAGUARDIA, P.E.
CHIEF DEPUTY COMMISSIONER

GILBERT ANDERSON, P.E.
COMMISSIONER

LOUIS CALDERONE
DEPUTY COMMISSIONER

MEMORANDUM

TO: File

FROM: Ben Wright, P.E.

SUBJECT: **Links at Shirley/Holiday Project**

DATE: December 16, 2008

On December 16th, I discussed the status of the project with the Holiday Organization engineer Chic Vorhiss. Mr. Vorhiss indicated that at the next town board meeting they anticipate a positive declaration which will require the scoping process to begin. With the initiation of an environmental impact statement, the environmental phase of the project could consume the next year. The planned project remains as it has in the past where 10 acres would be devoted to wastewater treatment and disposal and the Holiday requirements for a wastewater treatment facility would be constructed for their capacity along with the regulatory requirements for the ability to double its size. As indicated in the past, the 10 acres is sufficient for a wastewater treatment facility of approximately 400,000 gallons per day. Mr. Vorhiss also indicated that the 70 acres to be donated for public use would likely be under the town's control. There will be some discussion with the town with respect to the ability to utilize that land for sub-surface disposal without interfering with the full 70 acre public use concept.

BW:ni
bw12-16-08 Links at Shirley-Holiday Project memo to file

COUNTY OF SUFFOLK

STEVE LEVY
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS

THOMAS LAGUARDIA, P.E.
CHIEF DEPUTY COMMISSIONER

GILBERT ANDERSON, P.E.
COMMISSIONER

LOUIS CALDERONE
DEPUTY COMMISSIONER

MEMORANDUM

TO: File

FROM: Ben Wright, P.E.

SUBJECT: **Mastic/Bodwell Report**

DATE: December 16, 2008

On December 16th, I discussed the updated report with John Berchtold from Henderson and Bodwell. The Town of Brookhaven has yet to authorize their proceeding with updating their report. Mr. Berchtold indicated that a proposal was received and modified with the Town to update the report and also include as much residential area south of Montauk Highway that a gravity system would incorporate. They have also looked at a small area north of Sunrise Highway with the plan that all sewage would be conveyed to the airport that could support a facility of a few mgd.

BW:ni
bw12-16-08 Mastic-Bodwell Report memo to file

COUNTY OF SUFFOLK

STEVE LEVY
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS

THOMAS LAGUARDIA, P.E.
CHIEF DEPUTY COMMISSIONER

GILBERT ANDERSON, P.E.
COMMISSIONER

LOUIS CALDERONE
DEPUTY COMMISSIONER

M E M O R A N D U M

TO: File

FROM: Ben Wright, P.E.

SUBJECT: Mastic/Shirley Sewers

DATE: June 24, 2008

On June 23rd, John Donovan, Matt Bell, and I met with Greg Kelsey and Diane Mazarakis of the Town of Brookhaven Planning Department. Brookhaven had requested the meeting to provide an update on the information they had with regard to the Mastic and Shirley areas as it impacts our sewering evaluation and also the planning activities that they have for the future. The meeting involved a number of discussions that wandered from the original topic and included Brookhaven's 30 year planning studies that are in progress along with the details of many reports that are related to sewering including SD #2 and SD #3. Much information was provided including copies of spare reports and applications to the Planning Department. It appears that Brookhaven representatives were overly anxious to provide information to assist us in our efforts and we are assuming that the duplication of effort is not something that would benefit either agency and we will provide them whatever final documents we develop by the end of the year and coordinate the efforts.

It is apparent from the meeting that the Brookhaven Airport site is desirable with respect to locating the sewage treatment plant for the CR 80 area as well as others and that the groundwater levels and wastewater treatment plant could be done by holiday at the Links site will be restricted by groundwater levels.

BW:ni
bw6-24-08 mastic-shirley sewers memo to file

EXHIBIT NO. 8

newsday.com/services/newspaper/printedition/sunday/lilife/ny-licov5991515jan11,0,542623.story

Newsday.com

Boarded-up homes pose threat to LI neighborhoods

BY ELLEN YAN

ellen.yan@newsday.com

January 11, 2009

A street-facing window has been smashed, torso-sized holes punched in walls and part of the ceiling ripped out after pipes burst one winter, creating a river of ice down the driveway and a moldy basement.

Neighbors park their cars in the home's driveway for a lived-in look, and once in a while they clear trash from the yard. The home's initial for-sale price of $879,000 three years ago has sunk to $429,000.

It's the blight of the block - in West Hempstead.

Unoccupied and boarded-up homes are piling up across Long Island, the latest wave of woes from the mortgage meltdown. As they struggle to keep more troubled borrowers from losing homes, Long Island officials have begun trying to dam the ripple effects of vacant homes on communities and keep past investments from going under. Banks shutter homes as protection from vandals, while governments spend more to nail boards on houses and enforce codes, such as grass height.

The crisis is so fast-moving for local officials and community leaders that they have not been able to quantify the impacts, such as crime, but agree that the vacant homes are "calling cards" for mischief. No official figures exist on the number of unoccupied homes in Nassau and Suffolk, and while not all are foreclosures, one real estate broker who specializes in Long Island foreclosures said the number of boarded-up listings has doubled over the past year.

Banks repossessed more than 78,000 properties nationwide in November, according to RealtyTrac, an online site for foreclosure listings. New York ranks fourth nationally in projected subprime-loan foreclosures through the end of 2009, about 122,000 homes, said the Center for Responsible Lending. That alone would drive down property values of almost 3.6 million homes in the state, with the average loss of $18,117, the center's report said.

A boarded-up or vacant house starts a downward spiral, said Long Island officials, real estate agents and residents. Utilities are turned off. Squatters, raccoons and thieves move in. If the house is damaged, it's a hard sell that languishes.

"It's just demoralizing for the property owners who remain," said Marianne Garvin, chief executive of

the Community Development Corp. of Long Island, a nonprofit housing counselor. "In a neighborhood where people are investing in their properties, you want to keep up with the Joneses kind of thing, so you invest in your property. If you have vacant houses, you have people disinclined to make investments in their properties."

Abandoned houses cleaned

This past summer, the spread of abandoned houses prompted Hempstead Village to hire six workers for its public works crew to clean up properties, sometimes repeatedly. At one house facing foreclosure, crews hauled off about 10 mattresses, dead trees, about three couches and several large bags of trash before calling in a payloader to remove the hill of construction and roofing rubble.

"When you pick up a lot of debris and ... it has been sitting there for a while, it starts smelling," worker Khalil Easa said.

Lynbrook Road in Mastic Beach is an example of what can happen when vacancies are clustered in a small area - less than a mile long. Among well-kept houses are at least four boarded-up homes and more homeowners who say they're in the foreclosure pipeline.

Living next to a sealed house where he once ordered squatters to leave, Glenn Svoboda and his neighbors had talked of maintaining their quality of life by buying some empty homes.

Svoboda knows of neighbors who want to pack up. He's begging them to stay. "We just want to see quality home ownership here," he said.

An exodus could counter the $1 million spent on Neighborhood Road - the local business strip - to attract merchants to empty storefronts. The town recently finished new sidewalks. Antique-looking lamp posts are in and next are flower planters.

Ali Top bought the Pase gas station and mart on Neighborhood Road a year ago, and since then, he said, business has dropped 20 percent from the exodus of residents who lost their livelihoods.

"Once in a while, they come back and say, 'How are you?'" Top said. "They say, 'I moved. I lost my business.'"

The dangers downwind have prompted government officials to funnel resources to the front lines. In Suffolk County, cops will get the addresses of houses with foreclosure judgments in their patrol areas - more than 1,450 properties in the five western towns. Nassau does not have a similar program.

While crime in Suffolk has been going down, abandoned houses attract squatters and criminals who ransack the places for copper pipes, metals and other items to sell, said Police Commissioner Richard Dormer.

"This is a concern for the police," he said. "When they have a free moment, they can take a ride down the street and keep an eye on the home. We're certainly not going to be able to check them on a regular basis, because ... the numbers are very high."

Twice in 2008 Brookhaven Town added funds to "board and secure" contracts - $292,000 - but county residents who don't even live in the town share the cost because the county reimburses the town. The

towns also get reimbursed on cleanup costs of vacant homes, from the labor to landfill dumping fees, and the county adds the bill to the vacant property owner's taxes.

The U.S. Department of Housing and Urban Development recently announced $19 million in "emergency" funding for Long Island municipalities to buy and fix abandoned foreclosures under a $4-billion nationwide program. It's to be spent within 18 months. Garvin's Community Development Corp. seeks $11.5 million from various grants to buy 35 foreclosures, and the Long Island Housing Partnership has done its first rehab, a boarded-up Commack foreclosure.

Affordable-housing boost

A silver lining in the crisis may be the reinvigoration of affordable-housing proposals: "land bank authorities" that buy empty homes, rent-to-own programs and mortgage advantages to owner-occupied buyers of foreclosures.

Nassau officials said the county recently assigned several employees to check for empty foreclosures the old-fashioned way: calling listing agents and driving to the house.

"We're going to have to know how many homes out there can be purchased," said Connie Lassandro, Nassau County's director of housing and homeless services. "What we need to do is get people who are qualified, so we can hook up a buyer with a house. It's like a game: Is this empty? Is this one ready? OK, let's make this match."

However, many warn that there are no quick fixes to the vacancy problem.

Towns seal up more houses in response to residents' complaints, but the boarding up makes neighborhoods look "lousy," said Todd Yovino, broker owner of Island Advantage Realty.

"As soon as you put the boards on the windows, you're taking 10 percent off the property [value]," said Yovino, who added that about 20 percent of his foreclosed homes were empty or boarded up last year, compared to 40 percent today. Instead of boarding up homes, the Huntington broker said, banks will pay "preservation companies" for upkeep, but they often limit expenses.

As the crisis deepens, it might not get pretty in some areas. When the real estate market got hot and financing got creative, people bought second homes or traded up in neighborhoods. Yovino has about 25 $600,000-plus homes, or up to 5 percent of its foreclosure listings, in areas like Brookville.

"That's going to be one of the more disturbing trends," said Michael Watt, head of the Long Island Builders Institute. "You're going to see blights on neighborhoods that aren't used to seeing blights."

House numbers

Data on local home loans and the larger mortgage problems

County Total 90+Days In Bank-

Loans* Delinquent Foreclosure Owned

Nassau 243,000 6,826 3,840 406

EXHIBIT NO. 9

Please refer to the back portion of the binder for the parcel information that accompanies the attached memos.

COUNTY OF SUFFOLK

STEVE LEVY
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS
MEMORANDUM

TO: Ben Wright, P.E.

FROM: Diane Booth

DATE: April 14, 2008

SUBJECT: CR 80/Mastic Shirley Proposed Sewer Installation

A study was conducted during the week of April 7, 2008 regarding the proposal of a Mastic/Shirley sewer district. This study involved the 197 tax parcels located along Montauk Highway, between the Westerly boundary of William Floyd Parkway and the Easterly boundary of Barnes Road (Forge River). Both sides of Montauk Hwy (north and south) were surveyed. There are 117 parcels located on the North side of Montauk Highway and 80 parcels on the South side of Montauk Highway.

Northern tax parcels showed 50% commercial, 41.5% were vacant/parking lots and 8.5% were residences/apartments.

Southern tax parcels showed 50% commercial, 32.5% were vacant/parking lots and 17.5% were residences/apartments. Overviews of findings are as follows:

Septic system Locations:

Northern side of Montauk Hwy:	Southern Side of Montauk Hwy
Rear of building – 54.2%	Rear of building – 50.8%
Front of building – 4.2%	Front of building – 9.8%
Side of building – 23.6%	Side of building – 27.9%
18% unable to determine	11.5% unable to determine

Basements:

Northern side of Montauk Hwy:	Southern Side of Montauk Hwy
43.5% has basements 50.7% on slab 5.8% has crawlspace	30.3% has basements 54.5% on slab 15.2% has crawlspace

COUNTY OF SUFFOLK

STEVE LEVY
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS
MEMORANDUM

TO: Ben Wright, P.E.

FROM: Diane Booth

DATE: May 13, 2008

SUBJECT: Neighborhood Road /Mastic Shirley Proposed Sewer Installation

A study was conducted during the week of May 12, 2008 regarding the proposal of a Mastic/Shirley sewer district involving the 45 tax parcels in the business district located along Neighborhood Road, between the Westerly boundary of Commack Rd and the Easterly boundary of Doris Drive. Both sides of Neighborhood Road (north and south) were surveyed.

Attached is a spreadsheet listing each tax parcel number and the location of its septic system and whether the structure has a basement. In summary, there are 45 tax parcels in the business district on Neighborhood Road. At the time of our survey 15 of the 45 tax parcels were vacant lots. Of the 30 occupied lots on Neighborhood Road:

- 10 have basements;
- 23 have the septic tank in the rear of the property;
- 6 have septic tanks on the side of the property;
- the 1 remaining occupied property was a single family residence and their septic tank location was unknown.

Wright, Ben

From: Bell, Matthew
Sent: Thursday, June 19, 2008 3:38 PM
To: Wright, Ben; Donovan, John
Subject: Roadway Miles in Mastic Shirley

Ben and John,

I made a preliminary estimate of the number of miles of roads using the GIS viewer on the DPW website by using the measure function and tracing along the roadways. In the Mastic SD Study Area (the red outlined region in the photo John gave me, bounded by CR80, the Forge River, Neighborhood Rd and William Floyd Parkway), there is approximately 110 -130 miles of roadway. This corresponds to a paper-grid estimate I made earlier in the week (130+ miles) when I didn't have access to a computer.

The miles of road will increase significantly if the areas directly West to William Floyd and South of Neighborhood Rd are included, as they are relatively more denser. There is approximately 35+ miles of roadway West of William Floyd Parkway and 50+ miles South of Neighborhood Road, which in total represents another 85+ miles of roadway. If these two areas were to be considered for sewering in the initial project or an eventual expansion, they'd clearly factor into the placement of the pump stations, force mains and WWTP.

These estimates are rough and they probably slightly underestimate the actual number of miles of roadway.

I've looked through all the documents a few times and I've got a pretty good idea of what's going on here. I have a few questions that have come up as I've read through the documents, and I have a few questions as to what my overall direction should be. Perhaps we could meet sometime tomorrow to discuss them. I've listed a some of the questions I have below.

Thanks
- Matt

Questions

What are the maximum sizes of the of the WWTP that could be placed at the link/Holiday project (10 acres) and airport, respectively?

What are the fiscal limitations of the project? I understand $1 million was allocated by Levy, but it clearly isn't enough to even sewer ¼ of Montuak Highway. Is that number likely to change and did it factor in building a WWTP in the $ considerations? Or what is the real fiscal limitation of this project (public funds/approval, etc.), as well as the physical limits (only Mastic-Shirley business district, all of Mastic Shirley, and are we expecting expansions, etc.)

I was also wondering if anyone's brought up the financial benefit of the Low Pressure Sewers, in that they reduce total peak loads to the WWTP, since theres no infiltration of rain water to the sewers. E-one claims this reduces total max loads by 50%.

In the 1967 Sewerage proposal, they detailed building a WWTP (fed by gravity lines) at the William Floyd Estate, which is the South-Eastern most point of the Mastic SD Study Area. I have no idea what's there now, but could it be a possible site for a WWTP? This site seems ideal if all of Mastic was eventually to be sewered.

Wright, Ben

From: Bell, Matthew
Sent: Monday, July 07, 2008 1:21 PM
To: Donovan, John; Wright, Ben
Subject: William Floyd Parkway
Attachments: WilliamFloydParkwayLanduse.xls

Ben and John,

I've attached a copy of the spreadsheet detailing the land uses along William Floyd Parkway between Montauk Highway and the Links Golf Course.

Here are the keep numbers:

There are 74 parcels located along William Floyd Parkway between Montauk Highway and the Links Golf Course. Of these parcels, approximately 6 have restaurants/bars with a total of 314 seats between them. In addition, there is a bowling alley with 40 lanes, bar, snack bar and 500 total seats. I'm not sure what the conversion rate would be to translate that number into restaurant seats.

6
1
67
74

There are approximately 24 developed residential properties, 22 commercial properties and 21 properties were vacant. The percentages are as follows:

Residential	32.4%
Commercial	39.2%
Vacant	28.4%

Several of the commercial properties would be able to directly connect to a sewer line located along the Parkway, while laterals would be needed for areas off of Surrey Circle.

In general, most residential buildings appeared to have a basement, while most commercial centers appeared to be without them.

The region seemed to be composed of two primary commercial areas (one from Montauk Highway to Surrey Circle and the other at the bend in William Floyd Parkway from Fleet Rd to Beacon Street) and the golf course at the Southern most part of the survey. These areas are separated by a mixture of residential and vacant properties.

- Matthew Bell

OWNER_NAME	Address_1	LANDUSE	Pool	# of Seats
Peluso Pat		Realty (House)	Unknown	
K&M Realty Enterprises INC		Parking Lot	N/A	
K&M Realty Enterprises INC		Wendys	South	80
Peluso Pat		Taco Bell	South	60
Bollywood Entertainment Group INC		Dunkin Donuts/Nathans	West	30
BGK Holding LLC		Funeral Home	East	
Town of Brookhaven		Railroad Station	Unknown	
Singh Devendra Kumar - Singh Lalita		Small Shopping Center/Resturants	East	
Floyd Surrey Realty LLC		Carwash	West	
Floyd Surrey Realty LLC	Surrey Circle	Deli	West	
LJA Holding	Surrey Circle	Florist/Billards		
LJA Holding	Surrey Circle	Ralphs Ices		
Milazzo Vincent		Vacant	N/A	
Milazzo Vincent		Vacant	N/A	
Hall Lawrence W		Vacant	N/A	
Violand Renee		Vacant	N/A	
Pesce Rocco V	519 CR 46 (WF)	Law Office (House)	East/South	
Merrick LLC	517 CR 46 (WF)	Residential		
Cattabiani Spigonardo R - Cattabiani Theresa		Vacant	N/A	
Cattabiani Spigonardo R - Cattabiani Theresa	513 CR 46 (WF)	Residential		
Orlowski Richard		Vacant	N/A	
Bathua Gobind		Vacant	N/A	
Merz Barbara Ann - Merz Eric R	507 CR 46 (WF)	Residental		
Merz Barbara Ann - Merz Eric R		Private Boatyard		
Bhatti Rashid	503 CR 46 (WF)	Residental		
501 Propertires LTD	501 CR 46 (WF)	Offices (House)		
Bailey Park Realty LLC		Dentist Office		
Menu of Homes INC		Vacant	N/A	
Mennuti Stephen Sr.		Vacant	N/A	
Menu of Homes INC		Vacant	N/A	
Mennuti Stephen Sr.		Vacant	N/A	
Menu of Homes INC		Vacant	N/A	
Mennuti Stephen Sr.		Vacant	N/A	
Fischer John A - Fischer Joseph	485	Realty	East	
Alperti Carmine	483	Ministry/Pools		
Mannino Thomas	481	House		

Heyman Gary - Heyman Lorraine	479	House		
Town of Brookhaven		Vacant	N/A	
Mocilan Andrew - Mocilan Theresa		Vacant	N/A	
Garcia Consuelo - Paz Orlando	59	Residential		
Vargas Carmen - Vargas George	57	Residential		
Hoffman Charles - Hoffman Dolores	55	Residential		
Belfiore Angelina T - Mederos Victor Jr	53	Residential		
Osorio James	51	Residential		
Schwartz Jack - Schwartz Jonap L		Vacant	N/A	
461 William Floyd INC		Gas Station	East	
Sinha Awadhesh - Sinha Sheo N		Diner/Business/Bar	North and East	110
Lake Grove Centers INC		Bowling Alley	North	500
Johanniges Carl M		Vacant	N/A	
Koukis - Missor Paul		Vacant	N/A	
Missor Paul		Vacant	N/A	
Missor Paul		Vacant	N/A	
Koukis Eftychia Maria Chalicaki		Vacant	N/A	
Summit Realty Holdings LLC		Medical Offices	West	
Riccelli Nicola		Pizza/Burger Place	South/West	34
409 423 WFP Shirley LLC		Blockbuster	South	
Joseph Lefkowitz Revocable Trust		King Kullen/Rite Aid	West	
William Floyd Plaza LLC		Home Depot/WaMu	West	
349 351 EFP Shirley LLC		Business/Resturants (Pudgies Takeo	South	0
Fischer Mary E	28 Beacon St	Residental		
Layne Ann - Layne Charles	157 Margin Dr	Residental		
Pagano Frank - Pagano Josephine	155 Margin Dr	Residental		
Pagano Frank - Pagano Josephine	151 Margin Dr	Residental		
Sinitzky Carmen Margaret	149 Margin Dr	Residental		
Marasa Angela - Marasa Benedetto	147 Margin Dr	Residental		
Raguso Arthur	49 Tipton Rd	Residental		
PG Builders INC	48 Tipton Rd	Residental		
Schieber Madeline	49 Breston Rd	Residental		
Koop Toby - Koop William J	46 Breston Rd	Residental		
Bright Giselle - Bright Gregory	137 Margin Dr	Residental		
Paulette Jr John A	135 Margin Dr	Residental		
Khan Shakil	133 Margin Dr	Residental		
Caceres Eksa	131 Margin Dr	Residental		

Michael Parisi and Son Const Co Inc		Warehouse		
Floyd Park Associates LLC		Golf Course	N/A	
Suffolk County Water Authority		Pump Station		

Offices	Food	Vacant	Residential
	1		
		1	
		2	
		3	
			1
			2
			3
			4
	2		
			1
			5
			2
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24

	6	7	21	24

Residentia	32.40%
Commerica	39.20%
Vacant	28.40%

EXHIBIT NO. 10

LiRo Engineers, Inc.
A LiRo Group Company
Three Aerial Way, Syosset, NY 11791-5501 Telephone 516.938.5476 Facsimile 516.938.4368

5 November 2007

RECEIVED
NOV 09 2007
DEPT OF PUBLIC WORKS
CHIEF ENGINEER'S OFFICE
DOCUMENT NO. 16438

William Hillman, P.E.
Chief Engineer
Suffolk County Department of Public Works
335 Yaphank Avenue
Yaphank, NY 11980

Re: PIN 0756.68
CR 80 Montauk Highway Reconstruction from CR46 to Mastic Road
Suffolk County, NY
TRANSMITTAL OF PLAN AND PROFILE DRAWINGS
LiRo Project 198-54-301

Dear Mr. Hillman:

Enclosed for your use, please find plan and profile drawings (3 copies) prepared to present a conceptual design for the installation of dry sanitary sewers in conjunction with the referenced project. Please forward these materials to the Division of Sanitation (sewerage facilities) for their review and comment.

The conceptual layout presented in these drawings generally conforms to that presented in the information and Reports provided to us by the Department. The concept involves the installation of a master pump station in the vicinity of the William Floyd Parkway and pump stations near the eastern and western limits of the corridor to be sewered. The pump station at the eastern end is within the limits of the roadway reconstruction project and has been located on the north side of CR 80 east of Mastic Road in the sidewalk area. The pump station at the western end is beyond the limits of the roadway reconstruction project. The depth of the master pump station was established based on the depth of the gravity sewer to the east. The gravity sewer to the west can be extended beyond the limits of the roadway reconstruction project to the vicinity of west of Windsor Place. The critical control for this gravity sewer extension would be at a low point between Plymouth Place and Ashley Place where there would be roughly 4' cover based on the profile presented. This can be improved by deepening the master pump station and the gravity sewer to the west. However, the practical limit of this gravity sewer is the vicinity of Windsor Place as the roadway grade falls considerably to the west; 10 feet in 500 feet between Windsor Place and Dorset Place and 125 feet in 700 feet between Dorset Place and Smith Road.

The proposed sanitary sewer line has been located on the north side of the roadway for the entire length. This has been proposed in order to avoid interference with existing water main generally located in the south sidewalk area of the existing roadway section. The proposed sanitary sewer would parallel proposed storm drains for much of its length. The offset between these two proposed installations was generally set at 8 feet center to center in an attempt to locate the sanitary sewer trench in the existing shoulder pavement clear of the existing concrete pavement.

However, as depicted in the plans presented, the proposed sanitary sewer installation will require removal of portions of the concrete pavement for much of its length.

We trust this material is adequate for your use and we look forward to receiving your comments and further direction regarding the preparation of design and construction documents for the installation of dry sanitary sewers. Should you have any questions or require additional information, please feel free to call.

Very truly yours,

LiRo Engineers, Inc.

Kenneth Holmstrom

Kenneth J. Holmstrom, P.E.
Project Manager

KJH:kss
Encs.
u:\suffolk\198-54-301 - dpw-cr 80\engineering\final design\correspond\hillman trans plan and profile drawings 11-5-07.doc

COUNTY OF SUFFOLK

STEVE LEVY
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS

THOMAS LAGUARDIA, P.E.
CHIEF DEPUTY COMMISSIONER

GILBERT ANDERSON, P.E.
COMMISSIONER

LOUIS CALDERONE
DEPUTY COMMISSIONER

M E M O R A N D U M

TO: Gil Anderson, P.E., Commissioner

FROM: Ben Wright, P.E.

SUBJECT: Mastic Sewers

DATE: April 22, 2008

At the request of County Executive Levy, the Sanitation Division has completed a preliminary evaluation of the two viable concepts of providing a sewer system to Mastic/Shirley area between William Floyd Parkway and the Forge River. Due to the financial limitation of $1 million, the low pressure system and gravity system were compared. As indicated below, we agree that the concept that you have proposed, i.e., low pressure sewers on the north and south of CR 80 in front of the existing business, commercial and residential lots for a distance of approximately one-half mile is most beneficial.

Two general concepts were explored, that is using the gravity system designed by LiRo along with their updated cost estimate of April 2008, and low pressure systems. The low pressure system could be installed on both sides of the CR 80 route whether it be in front of the existing lots or in the rear of those lots. We considered house connections to each individual parcel or utilizing side streets for access from the rear of those parcels. It is noted that our survey of the area indicates nearly 80% of the lots have on-site systems in the rear or side yard which lend the lots to access to a sanitary system in that location. As with any concept, there are benefits realized and concerns to be resolved. The low pressure lines can be installed in the shoulder of CR 80 on both the north and south to avoid disturbance of the concrete panels in the roadbed. At the intersecting side streets, a lateral would be extended, however, existing and proposed utilities may conflict

for future service for all lots through the rear of the lots. This concept would allow approximately 2,500 feet of sewer to be installed as a dry line for future connection and use depending on the development in the area and the creation of a sewerage system that would include additional wastewater conveyance and treatment.

As with both options, we conclude that work should begin in the easterly portion of the route due to the impact of on-site systems on the Forge River, the need to provide service to those areas through conventional and advanced waste treatment systems as early as possible and the relatively new construction in the vicinity of the CR 46/CR 80 intersection. We do note, however, that the majority of on-site system underflow to the Forge River is from areas north and west of CR 80 (see attached).

Gravity System

LiRo has provided a preliminary design for the entire length of the route. That estimate has been updated from December 2007 to April 2008 and amounts to a value of over $3.7 million ($400 per linear foot) of which 15% is a contingency which includes dewatering. The preliminary design includes a gravity system from Washington Avenue going east to a pumping station with a force main then in the westerly direction until it meets the gravity system which can flow toward William Floyd Parkway and a main pumping station that would then convey sewage to an undetermined wastewater treatment site. The cost estimate includes all aspects required to install the facility including 6 inch house connections. There are aspects of the estimate that are unclear and inaccurate including the total length of house connections being approximately 4,200 feet for 200 lots. Recognizing the number of lots with rear and side yard sanitary systems this particular budget line item is severely underestimated. It is also not clear if the concrete panels that exist within CR 80 are avoided and thus add a significant cost in trenching for the sanitary system and rehabilitation of those panels. Rerouting rear and side lot plumbing is costly but will also lower the depth of the mainline into groundwater. With the cost of this option being approximately $4 million, only 25% of the length or, therefore, 2,200 feet of the 1.7 mile route could be served.

Low Pressure Sewers

Due to the evaluation being linked to a $1 million construction cost, the option of installing lines in the rear of the various lots and the unknown ability to obtain easements for 200 lots the concept is to install properly sized low pressure lines to the extremities of the right-of-way on both the north and south sides of CR 80 and extend the system a minimum of 25 feet for each side road. This concept would allow future connections to be made to the nearest side road mainly by the number of lots with systems in the rear or side areas. The dry, low pressure sewers could be installed on the north to Midland Avenue and the south to Pershing Street (see attached). Following this route for approximately 2,500 feet, only one lot has been observed that has the septic system in the front and it is located at an intersection where the Montauk or CR 80 roadbed would not be disturbed.

Once engineering assistance is obtained a more detailed evaluation of the final design criteria can be prepared and incorporated into the contract documents. It is noted that the material cost of the low pressure system is minimal with respect to the gravity system materials for the installation associated with both options. With the shallow depth and being under pressure during operation the slope and horizontal alignment is not as critical as the gravity system would be. However, one million dollars would only service 25-30 percent of the CR length in the study area.

BW:ni
Attachment
cc: Tom LaGuardia, P.E., Chief Deputy Commissioner
John Donovan, P.E.
Bill Hillman, P.E.
Jim Peterman, P.E.
bw4-22-08 Mastic Sewers memo to GAnderson

EXHIBIT NO. 11

Exhibit No. 11
Mastic, Mastic Beach – Shirley Sewering Alternatives

Alternative No. 1 – Per Resolution 369-08 - The service area is indicated on Figure No. 1. The service area is approximately 4,350 acres and includes 8,500 parcels. 3,680 of those parcels are occupied and would initially contribute to any sewage flow. The boundaries are generally CR 80 Montauk Highway from the Forge River to the intersection with William Floyd Parkway, CR 46, from that intersection south to Neighborhood Road following Neighborhood Road toward the Forge River

Alternative No. 2 - The service area includes the business districts for CR 80, CR 46, and Neighborhood Road. There are 316 parcels within this area the majority of which are commercial in nature, however, there are a significant number of vacant and residential parcels incorporated into the areas. The extent of the boundaries is from the Forge River along CR 80 to the intersection with CR 46 and then south on CR 46 to Neighborhood Road and then from Neighborhood Road easterly to Doris Drive which is a short distance east of the Mastic Road intersection. The Neighborhood Road business district would be from the Commack Road intersection to Doris Drive.

Alternative No. 3 – The service area is the business district for CR 80 from the Forge River to the intersection of CR 80 and CR 46. There are 197 parcels on this route.

EXHIBIT NO. 12

Exhibit No. 12

Mastic – Mastic Beach – Shirley Alternative Details

	Parcels	Total Flow (MGD)	Pumping Stations	WWTP	Sewer (Miles)
Alternative No. 1	8,500	4.50	11	2	130
Alternative No. 2	316	0.70	5	2	6
Alternative No. 3	197	0.40	2	1	2

EXHIBIT NO. 13

Wright, Ben

From: Scott Hansen [SHansen@wrtllc.com]
Sent: Tuesday, July 15, 2008 12:58 PM
To: Wright, Ben
Attachments: Farrell Grinder Pump Article Pumps&Systems Mar 08.pdf

Ben:

Last year we gave a presentation to your group, arranged by Matthew Bell; I spoke to Bob Carballeira at the presentation. We have been working in Suffolk County as you are aware. We have supplied Environment One Grinder Pumps and Pressure mains in Patchogue and other locations. We feel we have the low cost-high quality alternate to gravity or vacuum.

Water ReSource has a service presence that is available to support any LPS systems we are installing.

We have immediate plans to open an office in Suffolk County with a local sales and service man.

I would like the opportunity to speak you about what we do and how we do it; at your convenience. The main subject would be controlling storm water infiltration, and high ground water complications for installing and leak control over the years.

I have attached an article on LPS ad E/One grinder pumps. I have presentation I am working on not yet complete, I would like to share with you. I can forward a Disc or come by and present this material. It is just to large to forward via email.

Scott Hansen
Cofounder Sales
Water ReSource Sales & Service, LLC

10 Millpond Drive Unit #10
Lafayette, New Jersey 07848
973.300.0036 office phone
973.300.3231 fax
973.903.6194 cell
shansen@wrtllc.com
www.wrtllc.com
Emergency Service call 973.271.5798
Emergency Service call 973.903.7676

The Semi-Positive Displacement Grinder Pump for Wastewater Applications

R. Paul Farrell, PE, Consulting Engineer and Environment One Corporation

Explore the characteristics of SPD grinder pumps and learn how to select the best pump for the job.

Figure 1. Grinder pump station, cutaway view

A grinder pump station stores, grinds and pumps wastewater under pressure to a treatment site or central sewer, depending on the location. Because the output is pressurized, the wastewater can typically be transported horizontally over two miles, or uphill 185-ft vertically. Because the system does not rely on gravity to carry the waste, it provides more options for siting and building, as well as system renovations in geotechnically challenging conditions.

The geometry of the pump not only produces a near vertical pump curve, but also allows passage of ground solids without clogging. The progressing cavity pump itself is based on the Moineau principle. A rotor turns within a stator, creating a sequence of sealed chambers. The rotor moves wastewater through these chambers at a nearly constant flow, over a wide range of conditions—from negative to abnormally high heads.

Basic Characteristics of SPD Grinder Pumps

The significance of a semi-positive displacement (SPD) pump is not immediately apparent except to those experienced and skilled in the art of pump design and application. The SPD characteristic means that the flow (Q) from the pump is very nearly constant, no matter what the back pressure (H).

In practical terms, in a pressure sewer system, it means that when a pump is turned "on," it will deliver a useful amount of flow into the system, no matter where it happens to be within its allowable range of operating pressure. The flow volume will be, for all practical purposes, independent of pressure in the system. The maximum pressure may temporarily exceed the steady state normal rating by up to 50 percent with no harm to the pump or piping.

This reserve capability offers great advantages in handling intermittent or abnormal hydraulic conditions, including:

- More pumps "on" simultaneously than planned (design assumptions non-critical)
- Temporary, greater-than-planned resistance to flow (obstructions or gas pockets)
- Fewer than planned number of pumps connected (oversized pipelines)
- Additional pumps added to an existing system (planned or unplanned growth)
- Undersized pipelines (unexpected growth in customers connected)
- Lower than planned velocities in pipes (fewer customers than planned)
- Scouring pipelines that are temporarily oversize (auto-sizing phenomena)
- Ability to operate far above the point where centrifugals shut off

The choice of the semi-positive displacement principle was made with input from the ASCE Staff and Steering Committee more than 35 years ago based on these irrefutable hydraulic fundamentals. The development of the wastewater pump began with no vested interest in any particular technology, so the developers were free to start from the "ground floor" and devise a unique class of pump, tailored in every respect to the specific needs of pressure sewer systems. The wisdom of that decision has become more evident with each passing year of successful operation.

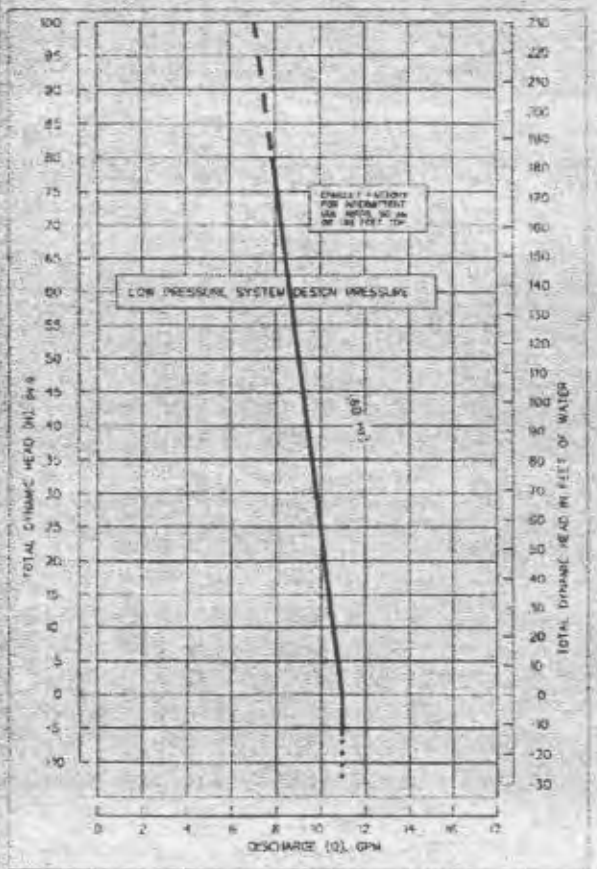

Figure 3. Typical pump performance curve

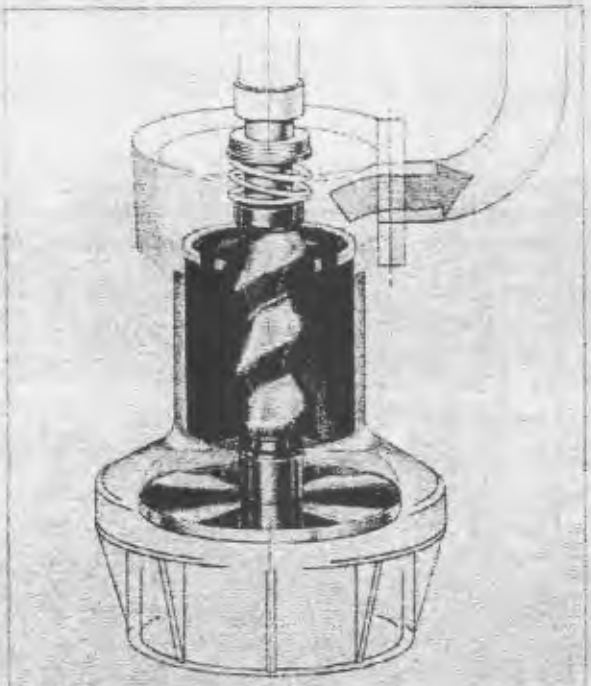

Figure 2. The Moineau principle. A rotor turns within a stator, creating a sequence of sealed chambers. The rotor moves wastewater through these chambers at a nearly constant flow, over a wide range of conditions.

None of these advantages can be attributed to centrifugal pumps. As a class of hydraulic machinery, centrifugals accomplish perhaps 80 percent of the world's pumping tasks, but they work satisfactorily only in the simplest, smallest pressure sewer systems. Centrifugal pumps have been "forced" into low-pressure sewer (LPS) applications, whereas the SPD pump was adapted specifically for this purpose.

Pump Selection and System Design

In evaluating the equipment for use in pressure sewer systems, the designing engineer should begin with two main choices: first, select the pump characteristic (H–Q curve)—either centrifugal or semi-positive displacement; second, select the equipment manufacturer based on additional pump characteristics, including:

- Performance features
- Reliability and track record in the "field"
- Ease of installation

- Serviceability
- Preventive maintenance requirements
- *Real* estimates of operating and maintenance costs
- Initial cost

A rational "system" design cannot proceed beyond the crudest preliminary stage until the pump characteristic is selected. Indeed, neither pumps nor piping network alone constitute a system. Only when they are considered together can an integrated harmonious design be created.

To realize the inherent economy of pressure sewer systems compared to other alternatives, the designer must:

- Fully utilize the head capability of the pumps to eliminate or minimize the use of large lift stations
- Minimize the tank size needed at each site

In evaluating the merits of positive displacement versus centrifugal pumps in light of these two requirements, it is important to remember that the prime function of the LPS system is to remove sewage from the home whenever it is required. There are an almost unlimited number of combinations of pump rate and tank volume that will, theoretically, perform satisfactorily. Large flow rate pumps can use very small tanks, while low-rate pumps require larger tanks to handle peak flows. Installation costs are sensitive to tank

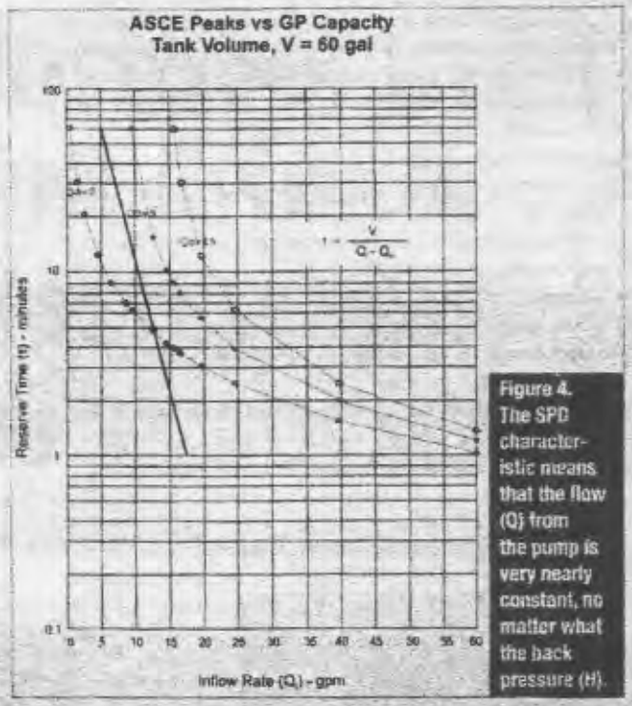

Figure 4. The SPD characteristic means that the flow (Q) from the pump is very nearly constant, no matter what the back pressure (H).

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volume, which should be minimized.

However, once a tank size is chosen, there is a definite relationship between pump flow rate and the ability of the storage tank to handle peak inflows. Figure 4 illustrates this relationship for a typical grinder pump station with a nominal 60-gal capacity normally used for a single-family residence.

The curves marked Q_o=9 and Q_o=15 relate the inflow rate to the time available from pump "turn on" to overflow. The straight line summarizes thousands of test points taken from two different studies reported in the ASCE Pressure Sewer Project. These define the maximum duration of peak inflow rates from single family homes. For example, with a pump out rate of 9-gpm, inflow at the rate of 15-gpm can take place continuously for 10 minutes before the storage volume is filled.

For a pump out rate of 15-gpm, the system would be in equilibrium, and the tank would never overfill. By contrast, the straight line defining peak flow shows that the longest 15-gpm peak recorded lasted only two minutes. Obviously, overflow is not even approached under these conditions. The curve can be interpreted similarly for

Figure 5. The semi-positive displacement pump is ideal for flat, wet, rocky and hilly topographies.

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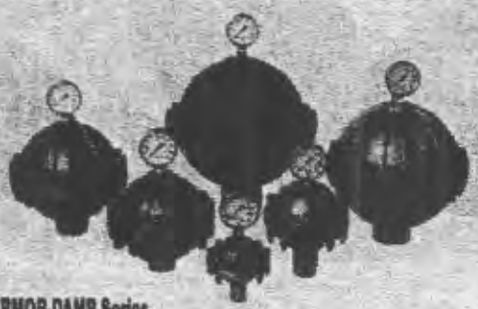

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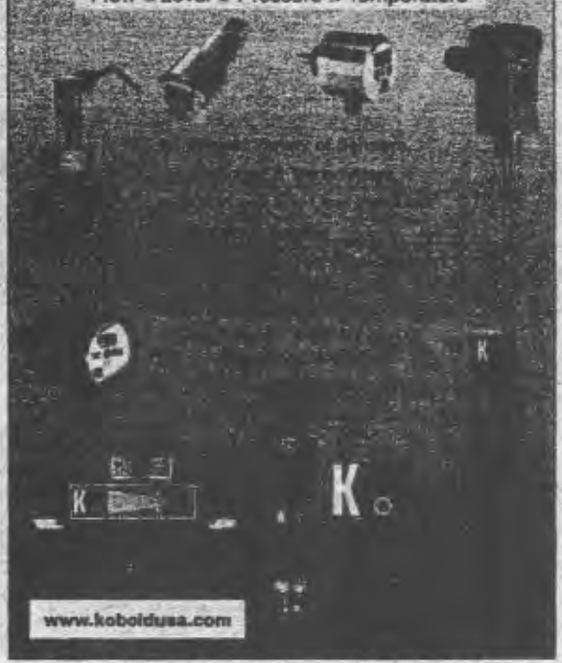

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any inflow rate, and the general conclusion drawn is that any "pump-out vs. volume" curve that lies to the right of the ASCE peak (straight line plot) will never result in overflow.

If a pump is used that can be driven to shutoff (as all centrifugals can), the curve marked $Q_s = 0$ should be used. The intersection with the ASCE peak line indicates that overflow would begin in less than five minutes. To build a reasonable degree of safety into a system with hundreds of pumps, a minimum pump rate should be specified at some head in excess of the nominal maximum.

Applications

Semi-positive displacement grinder pumps have been gaining popularity since the 1970s in a variety of terrains—notably rocky, hilly, and wet or high water table areas. Many of these projects are in lower density residential communities where the cost of conventional gravity sewer would not be economical.

For instance, Great Sky, GA—located at the foothills of the Blue Ridge Mountains—offers recreation and breathtaking views, but the hilly terrain proved challenging for a gravity sewer system. The gravity sewer system would have required 20 lift stations, whereas the LPS system reduced that number to three. The shallow trenching for an LPS system also lowered excavation costs and required less environmental disruption.

In Port Orchard, WA, the community was faced with an urgent problem: septic tanks were failing, creating a serious health issue and impacting the oyster and clam beds of Puget Sound. The proximity of the coast also meant a high water table. The LPS system has saved critical time and cut the cost of replacing the failing septic tanks. The estimate for a gravity system was approximately $6.5 million. The LPS system was estimated at $3 million—a 58 percent savings.

Semi-positive displacement grinder pumps are now being deployed worldwide. As prime tractable land becomes scarcer for new development and existing communities migrate from failing septic tanks to central sewer, the opportunities for this pump will continue to grow.

P&S

R. Paul Farrell is one of the founders of Environment One Corporation. This year he celebrates 50 years of membership in the Water Environment Federation.

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Primed for growth

Fast-growing Hooper, Utah, installs vacuum sewer technology to accommodate development and protect water resources.

By Steve Gibbs

Project
Hooper, Utah, vacuum sewer system

Civil engineer
J-U-B Engineers, Inc.

Project application
Vacuum sewer technology from AIRVAC provided a less-costly wastewater management solution for a small town with shallow groundwater.

Hooper's vacuum sewer system, including valve pit sumps (shown here) was installed amid existing utilities with no disruption of service or inconvenience to residents.

For more than 150 years, Hooper, Utah, was a small, unremarkable rural community near the eastern shore of the Great Salt Lake. It was much like many Western settlements — friendly neighbors, plenty of space, and limited local infrastructure. Hooper began to change in the 1990s as the nearby cities of Ogden and Salt Lake City expanded into the area. What was once a loose collection of farmhouses separated by acreage became a small town. Between 1990 and 2000, Hooper's population grew by 17 percent, from about 3,400 to more than 4,000. It incorporated as a city in 2000. Today there are more than 5,500 people living in Hooper, and the town continues to grow.

Although Hooper is typical in many ways to other small towns, it is unique in both geography and geology. The community sits on what is essentially a peninsula in the Great Salt Lake, surrounded on three sides by wetlands. The terrain is extremely flat and the water table is high. Its situation is much like that of low-lying coastal communities — flat ground with water just below the surface.

Priority problem

When it incorporated, Hooper immediately became the largest unsewered city in Utah. At the time, almost all Hooper residents were relying on septic tanks and drain fields for sewage treatment. A study conducted by the Weber-Morgan (counties) Board of Health in 2001 raised significant concerns about the amount of sewage and gray water that was entering the groundwater supply.

"The Board of Health study led to further investigation of the situation by Hooper's public works officials, and what they found was troubling," said Tracy Allen, P.E., of J-U-B Engineers, Inc., the consulting engineers for the city of Hooper. "There were dozens of documented cases where raw sewage or gray water entered the local waterways, either directly or as a result of a septic tank overflow. This put Hooper at the top of the state's priority list for funding."

Hooper clearly needed a municipal sewer system, but designing and installing it would be far from routine. The city's sewer project began with formation of the Citizen's Advisory Committee in 2002. By the end of that year, the decision was made to authorize a sewer feasibility study. The

A study ... in 2001 raised significant concerns about the amount of sewage and gray water that was entering the groundwater supply.

feasibility study revealed a situation that would be obvious to any experienced engineer: Installing sewers in Hooper would be an expensive proposition.

"Geologically, Hooper has groundwater at about 5 feet below the surface," noted Dennis Steele, the construction manager for J-U-B Engineers. "In cost projections for a gravity sewer, we had to allow for dewatering and installing foundation materials for the collection lines. We estimated that we would need trenches about 20 to 25 feet deep in many locations to establish gravity flow. The excavation would have taken out roads and existing utilities."

Designing a new sewer was further complicated by the fact that some of the local real estate developers had created their own small sewer collection systems within the incorporated city limits. All were gravity systems with small pumping stations. Connecting the patchwork of sewers and integrating them into a master plan made the issue even more complicated.

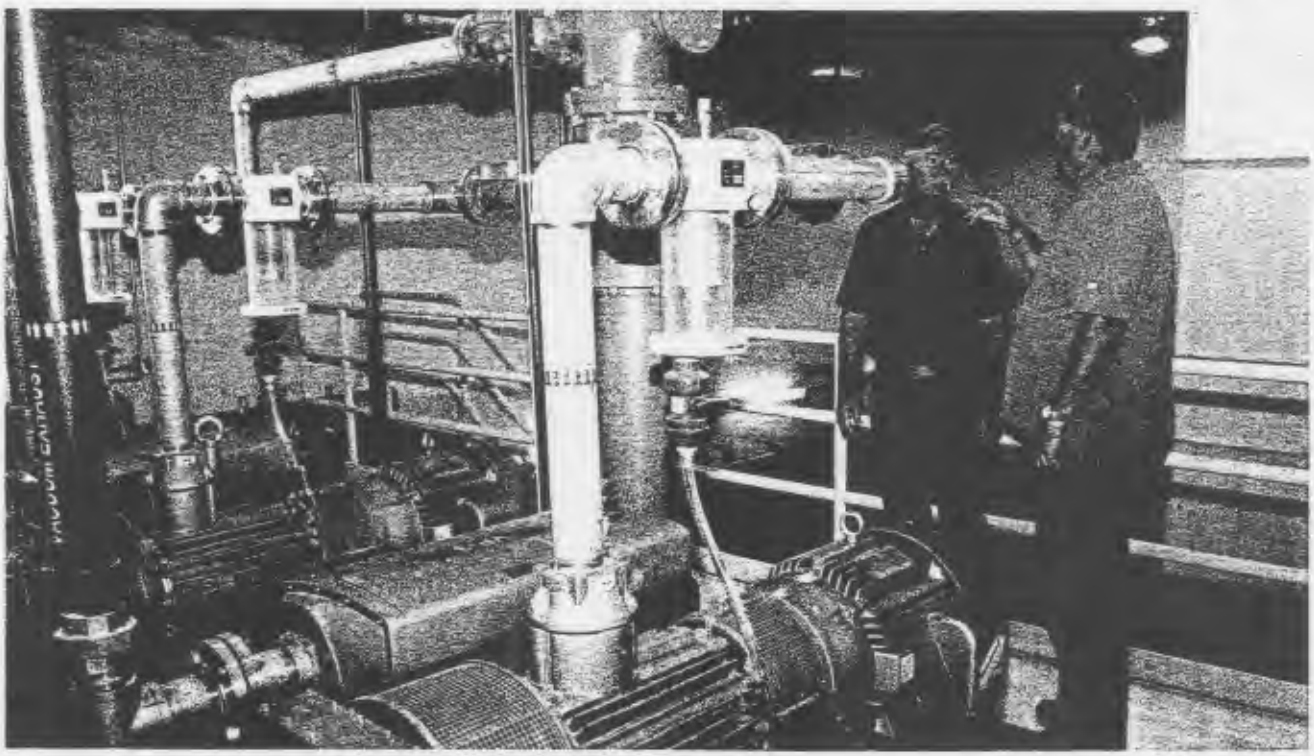
There was a sense of urgency around the project because of Hooper's rapidly growing population and the need to eliminate sewage contamination of the groundwater supply. Also, the U.S. Environmental Protection Agency's Phase II Stormwater Management Program required towns like Hooper to reduce pollutants that were entering the stormwater outfall and, ultimately, the Great Salt Lake.

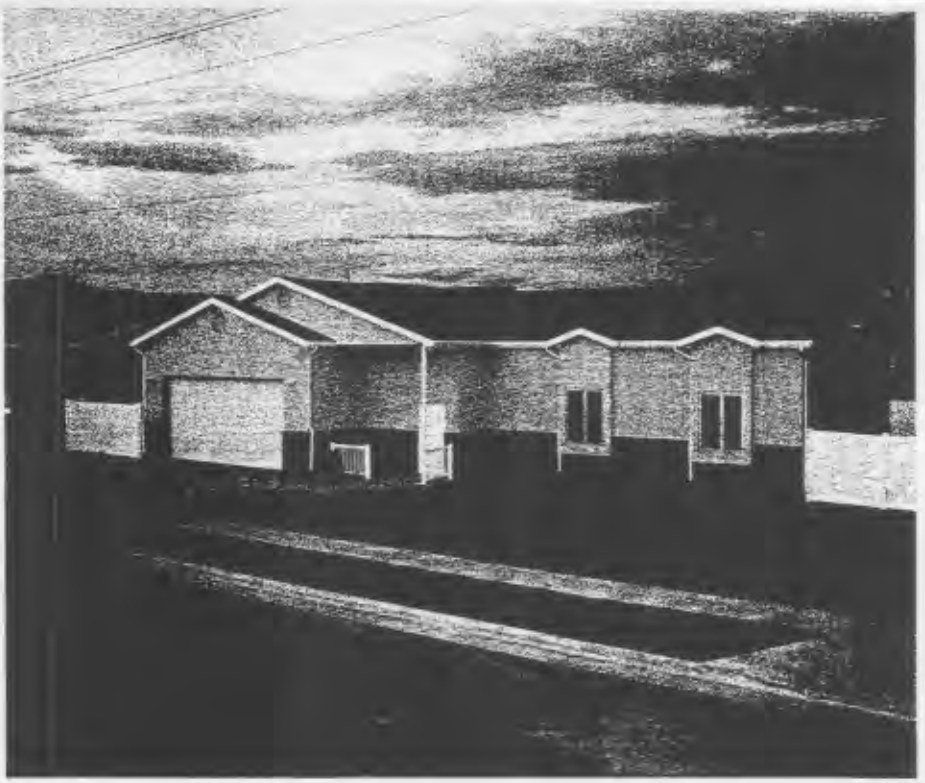
Gravity versus vacuum

Given the geographic situation, it quickly became obvious that gravity sewers would be very expensive and disruptive to install. "The projected cost of a gravity system led us to consider other alternatives," said Allen. "One of the systems we considered was vacuum technology. At the time, it was something we were unfamiliar with. The more we studied it, the more we realized that we could save a tremendous amount of money by installing vacuum sewers."

Allen and his team chose to work with AIRVAC, Inc., of Rochester, Ind., as their vacuum technology provider. Vacuum sewers have the benefit of being relatively easy to install. Because the vacuum collection mains do not require a continual downgrade slope like gravity mains, they can be

Sewer System Manager Dennis Steele (right) discusses operating details with Technician Tymm Fowers inside one of Hooper's new vacuum stations.





Hooper's vacuum stations are clean, quiet, odor-free, and were designed to blend in with the homes in the neighborhood.

buried in shallower trenches, usually 4 to 6 feet deep. The vacuum collection mains are also smaller in diameter. This means faster installation, less heavy equipment, and no dewatering or trench boxes.

Vacuum sewers are remarkably simple in design, have few moving parts, and require little maintenance. Household wastewater enters the vacuum system through a gravity service line (see Figure 1). It empties into a vacuum valve pit that usually is located near the street. Typically, two to four homes can be connected to a single valve pit. Each valve pit is equipped with a vacuum interface valve that activates when wastewater in the lower sump reaches a predetermined level, usually about 10 gallons. Operation of the valve pit is completely pneumatic, so electrical power is not required.

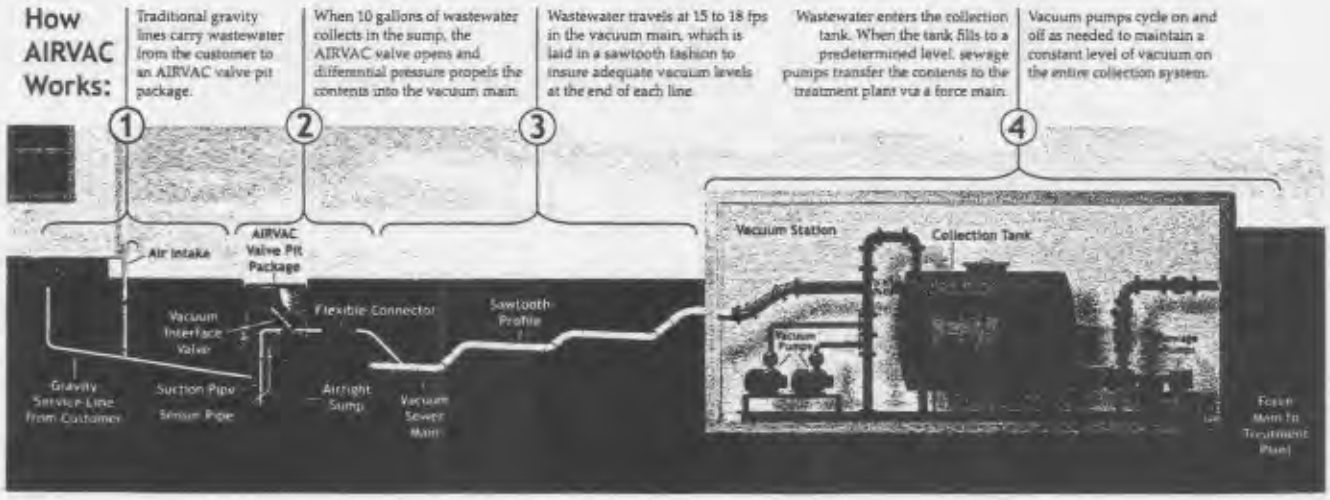
When the valve activates, wastewater is pulled by vacuum pressure into the vacuum collection line, followed by a volume of air. The wastewater forms a slug that is driven by the air because of differential (vacuum) pressure. The slug moves rapidly within the collection main, usually at 15 to 18 feet per second, scouring the pipe and preventing the build up of grease or sludge. And because vacuum technology is a closed system, there are no leaks in a vacuum collection main. That means no groundwater infiltration or sewage exfiltration. Treatment costs are reduced and the local groundwater is protected.

Vacuum pressure within the collection mains is created by vacuum stations. A single vacuum station can provide service to a large area, often replacing multiple lift stations that would be required for a gravity-flow system.

"The initial plan for gravity sewers would have required something like 15 lift stations and hundreds of manholes. The cost would have been astronomical," said Steele. "With the vacuum system, we have only three vacuum stations and no manholes. The total [cost] of installing the vacuum system was 25 percent less than a gravity system would have cost."

Steele also noted that they were able to install the new sewer system with little disruption to existing utilities or traf-

Figure 1: How a vacuum sewer system works



fic. "Hooper is a farming community with a lot of culverts and irrigation ditches. There are also two major highways through the city. We were able to keep the roads open during installation, sometimes with just one lane, but they remained open. Traffic flow and existing utilities were virtually uninterrupted," he said.

After Steele completed installation of the AIRVAC system, he accepted a position as the city's new sewer system manager. One of his primary responsibilities is management of the vacuum sewer network.

"We did a great deal of research before we chose vacuum technology for Hooper's sewer system," said Steele. "We spoke with operators who have experience with AIRVAC and they all told me that maintenance is very easy. Low maintenance helps keep costs under control for the long term, which benefits everyone."

Primed for growth

Hooper's new AIRVAC system recently went on line, and a great deal of attention is focused on how well the technology will work. "This is the first time vacuum sewer technology has been used in the state of Utah," said Mayor Glenn Barrow. "We are being watched very closely by the state Department of Water Quality and by other communities.

"We're very excited about this project," he continued. "We have beautiful vacuum stations that fit in with the existing architecture, we saved money on installation, and we will continue to save money on maintenance costs."

Hooper can expect more growth in the coming years because the city has a modern sewer system that is cost-effective and reliable. Barrow noted that property values are already increasing, a good sign for Hooper's homeowners and business leaders.

"I'm proud of what we have accomplished, and I think this is a great service to our citizens," said Barrow. "As the area develops, we will continue to see new homes built in Hooper. We want to be smart about our growth, and this new vacuum sewer system certainly looks like a smart idea." ■

Steve Gibbs has written about public works and infrastructure for more than 20 years.

"The projected cost of a gravity system led us to consider other alternatives. The more we studied it, the more we realized that we could save a tremendous amount of money by installing vacuum sewers."

Tracy Allen, P.E.
Consulting Engineer, J-U-B Engineers, Inc.
Hooper, Utah

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EXHIBIT NO. 14

EXHIBIT NO. 14
SUMMARY
FLOW AUGMENTATION NEEDS STUDY
(FANS)

The referenced study addresses the issue of surface water discharge of treated sewage on groundwater levels and related impacts. If a surface water disposal option is to be implemented, a similar study would likely be required as part of the SEQRA process for the Mastic area. Although not likely, but on the attached memo further confirmation may be necessary.

Sewer District No. 3 – Southwest was approved in a voter referendum in 1969. Sanitary sewers were installed to reduce groundwater contamination from sanitary wastewater. The National Environmental Policy Act (NEPA) required a detailed examination of the environmental impacts of a proposed project prior to construction. The USEPA prepared an Environmental Impact Statement (EIS). The Environmental Defense Fund (EDF), among others, brought suit against USEPA on the grounds that the EIS did not meet the requirement of NEPA. As a result of this lawsuit, the court ordered USEPA to develop a program to mitigate predicted declines in surface water and groundwater elevation as a result of sewering.

Agreements were made between Suffolk County and USEPA to study the necessity, and if applicable the methods of mitigating the decrease in streamflow and related effects associated with sewering.

Capital Program 8110 "Flow Augmentation Needs Study SCSD#3 (Southwest)" was a detailed, expensive project to evaluate the impact and to mitigate anticipated declines. Sewering could produce impacts to surface water and groundwater elevations especially in the area close to the shoreline. It would be necessary to provide additional funding to study and mitigate any declines associated with development of the proposed district. Until a detailed study is prepared, the cost of such a program can not be determined.

COUNTY OF SUFFOLK

STEVE LEVY
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS

THOMAS LAGUARDIA, P.E.
CHIEF DEPUTY COMMISSIONER

GILBERT ANDERSON, P.E.
COMMISSIONER

LOUIS CALDERONE
DEPUTY COMMISSIONER

M E M O R A N D U M

TO: Gil Anderson, P.E., Commissioner

FROM: Ben Wright, P.E.

SUBJECT: Bergen Point Outfall

DATE: August 1, 2008 **(Portions deleted for Mastic Report)**

On July 30th, John Donovan and I and CDM representatives Kelly and Taylor met with DEC's Scully, Hamilton and Spitz, etc., to discuss the various regulatory issues associated with our plan for the Outfall Replacement. It is also apparent that the tunneling option is the only viable option that DEC would suggest. DEC has gone through the various alternatives that are on the attached agenda and each of the alternatives with the exception of the tunneling alternative has severe time constraints and regulatory issues that would have to be addressed. The open cut through the Bay, a temporary outfall line while the existing outfall is being lined, discharge to the Bay, all contained a significant number of environmental conditions that would have to be defined and would likely end up with a negative position (positive SEQRA determination) by DEC.

Some of the statements made at the meeting included the following:

- The major approach by DEC is to avoid environmental impact followed by mitigation and then restoration. Any approach that is being proposed would require avoidance to take place.

- The open cut method would have to be done during the winter season and due to a 30 month construction period could take 5-6 years to complete.

- The lead time for obtaining a negative response on the open cut could take 3-5 years of modeling and field work.

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EXHIBIT NO. 15

Suffolk County Sewer District Formation Process

The steps necessary to establish a County district are included in New York State County Law Article 5-A. The various sections that apply and are attached and include Section 253 Preparation of Map and Plans, Section 254 Public Hearing, Section 256 Establishment of a County District, Section 257 Permissive Referendum, and Section 258 Application to the Department of Audit & Control.

In summary, the Preparation of Map and Plans is authorized by the County Legislature following a petition by the chief executive officer of a municipality or by at least 25 owners of taxable real property within an area that wishes to become a sewer district. The Legislature would then direct the Sewer Agency/Department of Public Works to prepare the maps and plans for the district formation. The map and plans would show the boundaries of the area, a description of the area, the proposed location of facilities including the sewer system pumping station and treatment plant, and the properties requiring constructional replacement of onsite wastewater facilities. An estimate of the cost would also be included along with statements on the consistency of any comprehensive plan for sewers in the area. It is recognized that if a County district is established, then that district would reimburse the municipal district or persons who have initially paid for the cost of preparing the maps and plans.

Once the maps and plans have been prepared, they are transmitted to the Legislature and the Legislature calls a public hearing for the proposal to establish a district. Following the notice of public hearing in the legal or official newspapers, the hearing is held within 10-20 days from that publication. The details of the notice for the hearing are described within Section 254 of the law.

Following the public hearing and after consideration of any recommendations or comments, the Legislature provides a findings resolution which would lead to an application being prepared for submittal to the New York State Department of Audit & Control. It is noted that if comments are received that require further study or an amendment to the map and plans, then that direction is given to the Agency/Public Works and a modified map and plan is prepared and would be subject of the new public hearing (properly advertised). It is noted that the findings resolution would indicate that all the property and property owners within the proposed district will be benefited and that all property or property owners benefited are included within the limits of the proposed district and that it is in the public interest to establish. Section 256 also includes an exception in Suffolk County. It indicates that if the owner or owners of all land within the proposed district consent in writing to the formation and the Board of Elections certifies that there are no registered voters within the district, then a resolution adopted by the Legislature approving the establishment shall not be subject to a referendum, permissive or otherwise. If this situation is not confirmed, then a referendum would be necessary.

Section 258 details information with respect to the application to the State Department of Audit & Control. There are documents that are much more detailed than

what is contained in Article 5-A that have been utilized in the past in preparing the application. The application process is detailed and somewhat lengthy depending on the attorney reviewing the documents for the State Department of Audit & Control. The application is prepared under the guidance with the County Attorney's office and must be certified and transmitted by the Legislative Clerk to Albany. In some cases, it is necessary to modify information provided and to hold additional public hearings if deemed necessary by the State Department of Audit & Control.

An example is Sewer District No. 17 which was created for the Walt Whitman Mall. The single owner petitioned the Legislature for the district to be established and it was done in a relatively short period of time. Other districts have taken more than a year from the time of the public hearing to have an agreement with the State Comptroller office and in some cases applications to the State Comptroller have been denied.

BW/ni
Attachment
ga-bw11-18-08 sewer district creation attachment

§ 253. Preparation of maps and plans. 1. A petition may be presented to the board of supervisors requesting that a certain area or areas of the county be established as a county district. Such petition shall be executed and acknowledged on behalf of a municipality or district, any part of which is included within such area or areas, by the chief executive officer of such municipality, or of such district furnishing a similar service as the district to be established hereunder. In lieu of execution of the petition by the chief executive officer of such municipality or district, the petition may be executed and acknowledged by at least twenty-five owners of taxable real property of record situated within such municipality or district, or in Suffolk county, if all of the taxable real property of record situate within such municipality which is to be included within a certain area or areas of the county to be established as a county district is owned by one or more but less than twenty-five owners, then the petition may be executed and acknowledged by one or more of said owners within the area or areas to be established as a county district. Upon presentation of such a petition or on its own motion, the board of supervisors may direct the agency to cause maps and plans to be prepared for a project as requested in the petition or for the establishment of a certain area or areas of the county as a county district, provided, however, that if the petitioning municipality, district or owners of taxable property undertake to furnish or pay the cost of such maps and plans at its or their cost and expense, the board of supervisors shall direct the agency to accept or prepare the same. In the case of a petition to create or extend a water quality treatment district, the petition may be executed and acknowledged by one or more of the owners of taxable real property of record situated within such municipality whose private well water is contaminated. At the time the petition is executed and acknowledged, notice and copy of such petition shall be submitted to the state department of health. Such maps or plans shall show (1) the boundaries of the area or areas which the agency in its judgment considers will be benefited by the particular project, (2) a description of the area or areas sufficient to permit definite and conclusive identification of all parcels of property included therein, (3) the proposed location of all facilities such as (a) reservoirs, stand pipes, wells, pumping stations, water purification or treatment works, mains and hydrants, the source of water supply, a description of the lands, streams, water or water rights to be acquired and the mode of constructing the proposed water works, (b) benefited parcels of properties with water quality treatment units or devices installed prior to the formation of the district and/or those properties requiring installation of water quality treatment units or devices and the mode and frequency of testing, monitoring, modifying if required, operation and maintenance, regenerating of such water quality treatment units or devices and the administering of the treatment and disposal of residuals and any other requirements pursuant to rules and regulations adopted by the public health council under section two hundred twenty-five of the public health law. Any water quality treatment unit or device which has been installed prior to the formation of the district must be approved pursuant to rules and regulations adopted by the public health council under section two hundred twenty-five of the public health law, prior to acceptance of such unit or device and its benefited property within the district, (c) trunk, interceptor and outfall sewers, pumping stations, sewage treatment and disposal works, (d) properties requiring construction or replacement of private on-site wastewater disposal systems and the mode and frequency of conveying, treating and disposing of wastewater and residual wastewater, (e) drains, ditches, channels, pumping stations, dams,

dikes, bulkheads and retaining walls, or (f) refuse disposal and incinerator plants and all necessary appliances appurtenant thereto, (4) estimates of the cost of construction, or procurement and installation of the facilities, and/or in the case of water quality treatment districts, estimates of the costs of monitoring, testing, modifying, if required, operation and maintenance, regenerating of such water quality treatment units or devices and the treatment and disposal of residuals, as shown on the maps and plans and the method of financing the same and (5) an evaluation of rehabilitation needs based upon water quality, public use and private development, special wildlife, scenic or other values, sedimentation, shoreland zoning, potential for adequate pollution and erosion controls within the drainage basin, and potential for future successful management. Such maps and plans pertaining to sewer districts shall be consistent with, so far as possible, any comprehensive plan for sewers developed pursuant to section 17-1901 of the environmental conservation law. Such maps and plans pertaining to water districts shall be consistent with, so far as possible, any comprehensive plan for public water supply systems developed pursuant to title thirteen of article fifteen of the environmental conservation law.

2. If the report of the agency required by section two hundred fifty-four of this chapter shall contain recommendations for the establishment of two or more zones of assessment within a county district, such maps and plans shall show the boundaries of each of such zones and the estimated initial allocation of the cost of the construction of the facilities recommended to be charged to each of such zones.

3. Where acceptable maps, plans and related data have theretofore been prepared by or for one or more existing or proposed municipal special or improvement districts, the board of supervisors may, instead, authorize the agency to adopt and utilize such maps, plans and data and, where a county district is thereafter established and facilities constructed thereby on the basis of such maps, plans and data, the district shall reimburse the municipalities, districts or persons who have paid for all or part of the cost of such maps, plans and data in a reasonable amount to be agreed upon among them, which amount shall not exceed their net expenditures therefor, and shall not include any portion of the cost paid from federal or state aid and which amount, when paid, shall be deemed part of the cost of the construction of the facilities by the agency.

§ 254. Public hearing; cost to typical property. 1. When the agency has caused such maps and plans to be prepared, it shall transmit them to the board of supervisors, together with a report of its proceedings and its recommendations, including a recommendation as to what officer, board or body should be the administrative head or body of the proposed district. Such report may further include the recommendations relating to the establishment of two or more zones of assessment within the proposed district and the estimated initial allocation of the cost of the construction of the facilities as between such zones to be assessed, levied and collected in each zone in the same manner and at the same time as other county charges. Upon receipt of the report and the maps and plans, the board of supervisors shall call a public hearing upon a proposal to establish a county district, to comprise the area or areas described and defined in said maps and plans. No public hearing shall be called to establish a water quality treatment district until the maps and plans have been submitted to and approved in writing by the state department of health. Copy of such notice of approval or denial of the maps and plans shall be filed in the office of the clerk of the board of supervisors of the county in which the proposed district is located. The clerk of the board of supervisors shall cause a notice of the public hearing to be published at least once in the official newspapers of the county and in such other newspapers having a general circulation in the proposed district as the board may direct, the first publications thereof to be not less than ten or more than twenty days before the day set therein for the hearing. The notice of hearing shall contain a description of the area or areas to be included within the proposed district, and if the report shall have recommended the establishment of zones of assessment, a description of the area or areas to be included within each zone of assessment, the improvements proposed, the maximum amount to be expended for the improvement, the estimated cost of hook-up fees, if any, to, and the cost of the district or extension to, the typical property and, if different, the typical one or two family home, the allocation of such maximum amount as between the zones of assessment recommended, if any, the proposed method of assessment of the cost and shall specify the time when and place where the board of supervisors will meet to consider the matter and to hear all parties interested therein concerning the same. In the event that zones of assessment are provided for and an allocation of cost of the facilities between such zones of assessment, said notice shall further state that said zones of assessment and said allocations of cost may be changed from time to time by resolution of the board of supervisors adopted after a public hearing whenever said board of supervisors shall determine that such changes are necessary in the public interest. Prior to the publication of the notice of hearing, the board of supervisors shall cause to be prepared, and file for public inspection with the county clerk, a detailed explanation of how the estimated cost of hook-up fees, if any, to, and the cost of the district or extension to, the typical property and, if different, the typical one or two family home was computed.

2. (a) If the permission of the state comptroller is not required pursuant to section two hundred fifty-eight, two hundred sixty-eight or two hundred sixty-nine of this article because it is proposed or required that the county in in which the district is located shall finance the proposed cost by the issuance of bonds, notes, certificates, or other evidences of indebtedness of the county therefor or shall assume the payment of annual installments of debt service on obligations issued to finance the cost of facilities pursuant to section two hundred sixty-two of this article but the cost to typical property or, if different, the cost to the typical one or two family home is not above

the average cost threshold described in those sections, a certified copy of the notice of hearing shall also be filed with the state comptroller on or about the date of publication of the notice.

(b) Notwithstanding the provisions of paragraph (a) of this subdivision, the state comptroller shall not be precluded from requiring the submission of additional information or data in such form and detail as the state comptroller shall deem sufficient or from causing an investigation to be made with respect to the establishment or extension of a district or an increase in the maximum amount to be expended.

§ 256. Establishment of a county district. Upon the evidence presented at the public hearing, and after due consideration of the maps and plans, reports, recommendations and other data filed with it, the board of supervisors shall determine, by resolution, whether or not the proposed facilities are satisfactory and sufficient and, if it shall determine such question in the negative, it shall remand the proceedings to the agency for further study. The agency shall make such further study and amend and revise the maps and plans (including the zones of assessment and allocation of costs if the maps and plans provide therefor) in conformance with its findings, and shall make a further report to the board of supervisors in the same manner as hereinbefore provided. If the revised maps and plans call for an increase in the estimated maximum expenditure for the project, alter the boundaries of the proposed district, or if the maps and plans provide for zones of assessment and allocation of the cost of the facilities, alter the boundaries of the proposed zones of assessment or change the allocation or the costs of the facilities as between the zones of assessment, the board of supervisors shall call a further public hearing thereon in the manner provided in section two hundred fifty-four. When the board of supervisors shall find that the proposed facilities are adequate and appropriate, it shall further determine by resolution, (1) whether all the property and property owners within the proposed district are benefited thereby, (2) whether all of the property and property owners benefited are included within the limits of the proposed district, (3) whether it is in the public interest to establish the district and (4) if said maps and plans and report recommended the establishment of zones of assessment and the allocation of the costs of the facilities as between such zones of assessment, whether such zones of assessment and the allocation of the costs of the facilities thereto represent as nearly as may be the proportionate amount of benefit which the several lots and parcels of land situate in such zones will derive therefrom.

If the board of supervisors shall determine that it is in the public interest to establish the district, but shall find that (1) any part or portion of the property or property owners within the proposed district are not benefited thereby or (2) that certain property owners benefited thereby have not been included therein, or (3), if zones of assessment are proposed to be established and the costs of facilities allocated among said zones of assessment, that any part or portion of the property or property owners within a proposed zone of assessment should be placed in a different zone of assessment or that a different allocation of the cost should be made as between the zones of assessment, the board shall specify the necessary changes of the boundaries of the proposed district or the necessary changes of the boundaries of any proposed zone of assessment or the necessary changes as to the allocation of costs, as the case may be, to be made in order that all of the property and property owners and only such property owners as are benefited shall be included within such proposed district, or in order that such zones of assessment and the allocation of the costs of the facilities thereto shall represent as nearly as may be the proportionate amount of benefit which the several lots and parcels of land situate in such zones will derive therefrom, and the board shall call a further hearing at a definite place and time not less than fifteen nor more than twenty-five days after such determination. Notice of such further hearing shall be published in the manner provided in section two hundred fifty-four, except that such notice shall also specify the manner in which it is proposed to alter the boundaries of the proposed district, or the boundaries of the zones of assessment or the allocation of the costs of the facilities as between said zones of assessment, as the case may be.

If and when the board shall determine in the affirmative all of the questions set forth above, the board may adopt a resolution approving the establishment of the district, as the boundaries shall be finally determined, and the construction of the improvement, and if zones of assessment have been established and an allocation of the costs of the facilities made as between such zones of assessment, further approving the establishment of the initial zones of assessment and the initial allocation of the costs of the facilities as between said zones of assessment. Such resolution shall be subject to permissive referendum as hereinafter provided, except in the case of a water quality treatment district and except in the county of Suffolk. In the county of Suffolk, if the owner or owners of all of the land within the proposed district consent in writing to the formation of the proposed district and the board of elections certify that on or after the date of the first publication of the notice of public hearing hereinabove referred to, there is no registered voter within the proposed district, then and in that case the resolution adopted by the board approving the establishment of a district shall not be subject to referendum, permissive, or otherwise.

§ 257. Permissive referendum. 1. The provisions of sections one hundred one and one hundred two of this chapter and the applicable provisions of the election law as to conduct of elections and qualifications of voters shall apply to permissive referenda conducted hereunder, except that only those electors shall be qualified to sign a petition and to vote who are resident within an area included in the proposed county district, and provided further that the number of signatures required on the petition shall be one hundred or five per centum of the owners of taxable real property situated within the proposed district, whichever shall be less.

2. The clerk of the board of supervisors shall cause to be prepared and have available for distribution proper forms for such petition and shall distribute a supply to any person requesting the same.

3. Where there are no resident electors within an area included in the proposed county district, the referendum may be waived upon certification by the county board of elections that there are no qualified electors.

§ 258. Application to the department of audit and control. 1. Whenever a resolution approving the establishment of a county district shall have become effective, and it is proposed or required that the county in which such district is located shall finance the cost thereof by the issuance of the bonds, notes, certificates or other evidences of indebtedness of the county therefor, or shall assume the payment of annual installments of debt service on obligations issued to finance the cost of facilities, pursuant to section two hundred sixty-two of this article, and, if the state comptroller shall have computed average estimated costs for similar types of districts, the cost of the proposed district or extension to the typical property or, if different, the cost of the proposed district or extension to the typical one or or two family home as stated in the notice of hearing is above the average estimated cost to the typical properties or homes for the establishment or extension of similar types of districts as may be annually computed by the state comptroller, the clerk of the board of supervisors shall file an application in the office of the department of audit and control for permission to establish the district. The state comptroller annually shall provide to counties notice of the average cost thresholds as may be computed in accordance with this section. Such application shall be executed and verified by the chairman of the board of supervisors or such other officer as the board may designate and be in such form and contain such information as may be prescribed by the state comptroller. The state comptroller may require the submission of additional information or data in such form and detail as he shall deem sufficient, or may cause an investigation to be made to aid him in making the determinations below mentioned. Upon such application and such other information, data and material which may be submitted, the state comptroller shall determine whether the public interest will be served by the establishment of the district and also whether the cost thereof will be an undue burden upon the property of the proposed district. If such resolution shall have provided for the establishment of zones of assessment and the allocation of the costs of the facilities as between such zones of assessment, the state comptroller shall further determine whether the cost of the facilities allocated to each of said zones of assessment will be an undue burden upon the property of each proposed zone of assessment.

2. Upon completion of the examination of the application and investigation of the project, the state comptroller shall make an order, in duplicate, granting or denying permission for the establishment of the district and shall file one copy of such order in the office of the state department of audit and control at Albany, New York, and the other in the office of the clerk of the board of supervisors of the county in which the proposed district is located. The clerk of the board of supervisors shall present such order to the board at the next meeting thereof. If the state comptroller shall deny permission for the establishment of the district, no further proceedings shall be taken in the matter. If the state comptroller shall grant permission for the establishment of the district or if such permission is not required, the board of supervisors may adopt an order establishing the district.

EXHIBIT NO. 16

New York State Department of
ENVIRONMENTAL CONSERVATION
www.dec.ny.gov

Wastewater Infrastructure Needs of New York State

March 2008

Eliot Spitzer, Governor

Pete Grannis, Commissioner

EXECUTIVE SUMMARY

Introduction

The conservative cost estimate of repairing, replacing, and updating New York's municipal wastewater infrastructure is $36.2 billion[1] over the next 20 years. In the past, the federal and state governments have provided significant funding for infrastructure repair and replacement. This is not true today. In the 1990s, the federal grants program shifted to a low-interest loan program, making it harder for many communities to address their infrastructure needs. New York voters approved the 1996 Clean Water/Clean Air Bond Act (CW/CA BA) which provided funding for wastewater infrastructure in certain areas, but these funds have been fully obligated. To date, New York State has invested over $11 billion in wastewater infrastructure.

Across New York State there are over six hundred wastewater treatment facilities that serve 1,610 municipalities. The facilities range in size from New York City's vast system that processes 1.3 billion gallons of wastewater a day through 14 facilities, to small village systems that process less than 100,000 gallons a day. These facilities provide wastewater treatment for more than 15,000,000 people across the state.

With limited federal and state assistance, the burden of maintaining wastewater infrastructure falls on local governments. Many local municipalities have trouble convincing their residents that infrastructure must be managed proactively, including planning for repairs and replacement and charging rates that cover those costs. Fewer than 40 percent of municipalities have a capital improvement plan for their wastewater collection systems. Except for transportation infrastructure, water and wastewater infrastructure are the largest municipal assets. This report is an initial step toward the development of a sustainable infrastructure funding program at the federal, state and local level. Adequate water infrastructure funding is a critical component of urban revitalization, smart economic growth and property tax relief. It is essential for the protection of public health and environment.

Report Overview

The state fiscal year 07-08 (SFY) budget included $300,000 to assist the Department of Environmental Conservation (Department) in assessing statewide wastewater infrastructure improvement needs and to report its findings.[2] This is the Department's report. The Department

[1]The 2003 Drinking Water Needs Survey documented drinking water infrastructure costs in New York of $14.8 billion over the next 20 years. United States Environmental Protection Agency, "Drinking Water Infrastructure Needs Survey and Assessment, Third Report to Congress," p. 58, June 2005. Available at http://www.epa.gov/safewater/needssurvey/pdfs/2003/report_needssurvey_2003.pdf. Presently, the Department of Health is compiling data for a 2007 needs survey. It is expected that this updated information will document needs in New York of at least $20-22 billion for drinking water infrastructure over the next 20 years.

[2]There are also thousands of small privately - owned residential wastewater treatment facilities that have small

plans to use the budget item to further refine the estimates developed in this report to better understand the full scope of infrastructure funding requirements and to present suggested cost-effective solutions.

There are many factors that have caused the cost of New York State's wastewater infrastructure to increase. Many facilities are past their expected useful lives. In addition, new federal standards push the need for enhanced wastewater treatment systems, as well as the sometimes costly programs to address stormwater, combined sewer overflows (CSOs) and separate sanitary overflows. All this is happening in the wake of the federal government's systematic disinvestment in wastewater infrastructure.

New York State is fortunate to have vast water resources. These resources are critical to the 18 million New Yorkers who rely on them for drinking, bathing and recreation. Plentiful waters can form the foundation of economic expansion, as other areas of the nation suffer from chronic shortages. Yet these resources are in peril of being re-contaminated due to declining wastewater infrastructure. Undertreated or raw sewage, street waste and nutrient pollution cause excess algae and weed growth and otherwise impair New York States precious waters including: Long Island Sound; the Hudson River; the Mohawk River; Lake Champlain; Lake Ontario, Lake Erie and the Finger Lakes.

To assess New York's aging infrastructure, the Department and the Environmental Facilities Corporation (EFC) formed a wastewater infrastructure workgroup. As one of the first steps in developing the report, the workgroup reviewed the Clean Watersheds Needs Survey (CWNS) that EFC conducts every four years with the United States Environmental Protection Agency (EPA). The Needs Survey covers a variety of infrastructure costs, is focused on municipal systems and contains high quality data. However, the Needs Survey covers a limited universe of projects for which actual engineering plans have been prepared, and does not include estimates of any anticipated needs that have not undergone this advanced level of project development. Therefore, the Needs Survey provides only a limited and conservative cost estimate. Emerging issues that affect future wastewater infrastructure needs are not included in the Needs Survey. Nor does the Needs Survey include residential septic systems because they are not eligible for Clean Water State Revolving Loan Fund (CWSRF) funding.

The following two charts show the results of the national and New York State specific Needs Surveys from 1974 to 2004 (the most recently completed survey):

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service areas, such as apartment complexes and mobile home parks. An assessment of the needs for these systems is also included in this report. These systems are privately owned and presently not eligible for public funding.

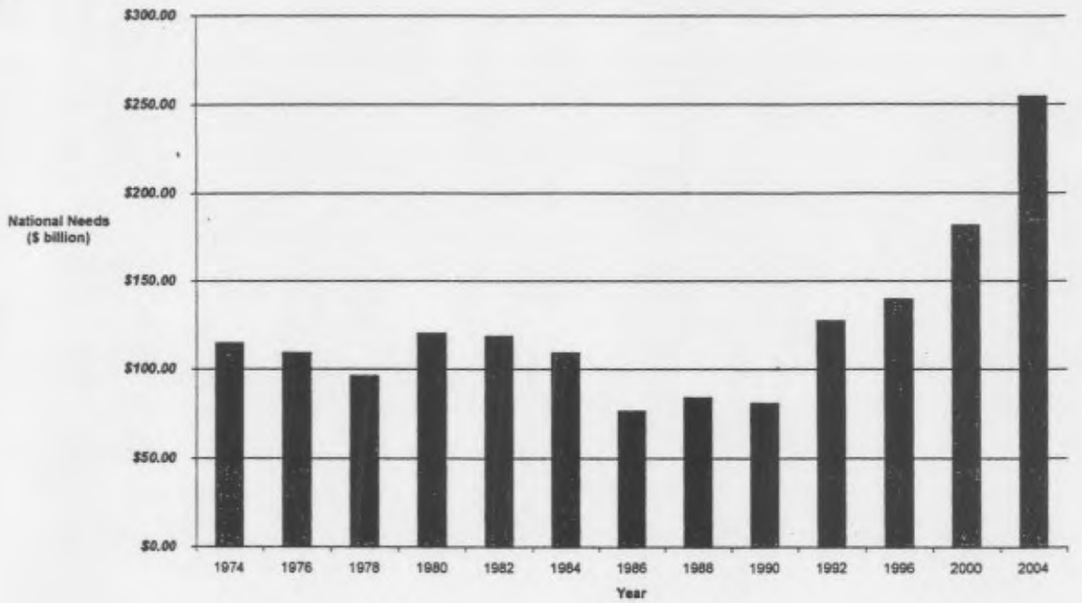
4716

5 mill

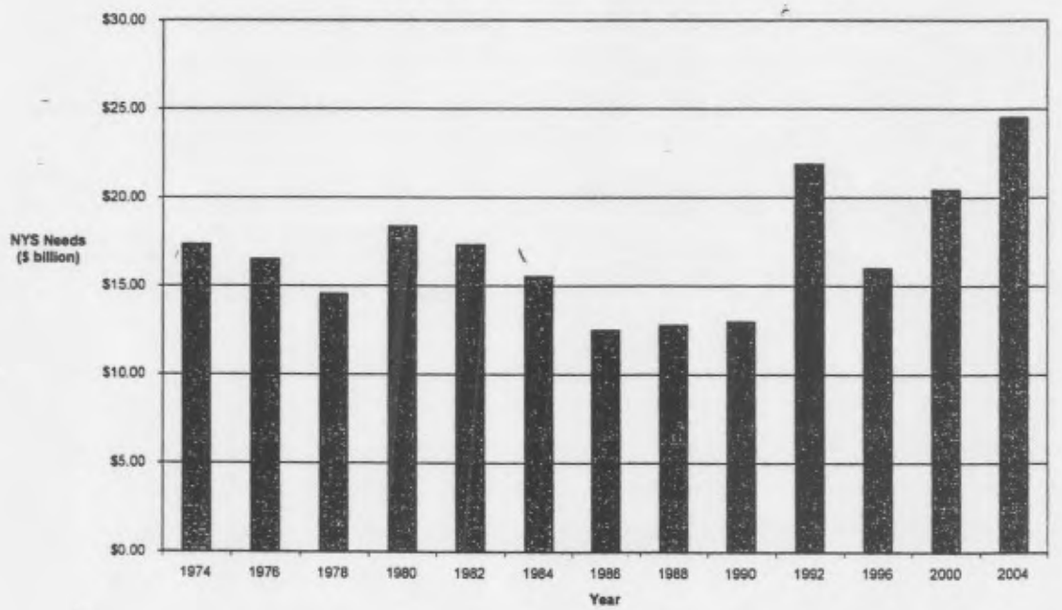
36 billion @ 4% - 20 yr = 147/yr/person

18 mill New York

Summary of National Needs Surveys 1974-2004



Summary of NYS Needs Surveys 1974-2004



In addition to EPA's CWNS, the workgroup reviewed other existing data sets held by the Department and its partners, and considered pollutants and standards that wastewater infrastructure may have to address in the future. The data that the workgroup reviewed fell into three categories for municipal wastewater infrastructure needs:

Clean Watersheds Needs Survey Data

- Municipal Wastewater Treatment Facility Upgrades
- Collection and Conveyance Systems
- Combined Sewer Overflow Correction
- Nonpoint Source Pollution Control

Other Existing Data Sets

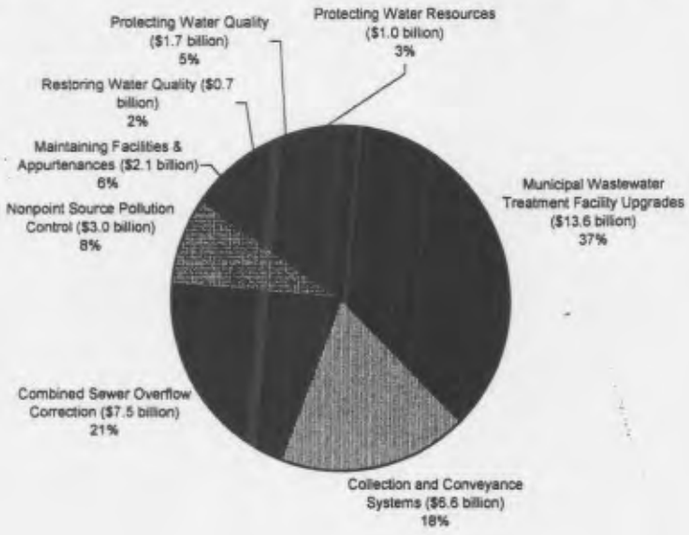
- Maintaining Facilities and Appurtenances
  - Operation and Maintenance
  - Auxiliary Power at Plants
- Restoring Water Quality
  - Unsewered Communities

Future Infrastructure Needs Data

- Protecting Water Quality
  - Municipal Separate Storm Sewer System (MS4) Retrofit
  - New Total Maximum Daily Loads (TMDLs)
  - Enhanced Water Quality Standards
  - Pharmaceuticals and Personal Care Products
- Protecting Water Resources
  - Water Shortages

The following chart shows the proportion of funding projected to be needed for each of these data sets: (More details on how the data was reviewed and a table of the results can be found in the Data Evaluation and Next Steps section of this report. The workgroup plans to refine many of this report's estimates in its continuing work. Further research is likely to identify additional needs.)

20-Year Estimate of Wastewater Infrastructure Needs in NY ($36.2 billion total)



It is unlikely that any one funding source will meet the projected financial needs of wastewater infrastructure that arise under the federal Clean Water Act (CWA) and federal Safe Drinking Water Act. Federal, state and local governments will need to establish stronger partnerships toward a long-term solution. Components for a sustainable funding program could include: a well-funded CWSRF; low-interest loan programs; federal grants; state grants; hardship community grants and adequate local rates sufficient to address current and projected funding requirements. Considerations for developing the program include: asset management; innovative technology; fairness; future infrastructure challenges; the relationship of infrastructure to smart growth and economic development; and local government efficiency. The Department looks forward to working closely with the public and the Legislature on developing this critical funding program.

NEW FUNDING PROGRAM COMPONENTS AND CONSIDERATIONS

New York has diligently leveraged and carefully managed both federal and state funds to build and maintain a healthy wastewater infrastructure across the state. New York State's goals have always revolved around restoring impacted waterbodies and ensuring that the people of the state have adequate clean water for personal and commercial use.

Over the past forty years there have been many changes to the programs used to fund wastewater infrastructure. At one point, the state was successful in getting necessary infrastructure built and maintained. The mechanisms in place today, however, are not adequate to stimulate needed repairs and replacement, causing the potential return to polluted waterways. New funding options for the twenty-first century are needed.

Components of a Sustainable Funding Program

Below are various components of a sustainable program for funding water infrastructure needs. It is envisioned that a sustainable funding program would need to include a mix of low-interest loans, grants and fair user rates. It is clear that the federal government has to be re-engaged in providing appropriate levels of support for this federally mandated program.

Strong CWSRF Loan Program

New York's 15-year-old CWSRF program has been very well-managed and continues to provide necessary funding for municipalities. However, this mechanism also is insufficient to drive municipal reinvestment in infrastructure. For example, in FFY 2008, only approximately 19 percent of the identified needs will be funded. Additional funding to the program in the form of capitalization grants would allow an immediate increase in CWSRF loans. As more loans are issued, repayments would increase each year, allowing the fund to grow further. The CWSRF currently is not available to non-municipal wastewater infrastructure. A change in the federal legislation to remove this restriction would be necessary to fund such projects. In addition, as federal assistance for the CWSRF declines, less state match is needed to get the federal funding. There may be an opportunity to employ budgeted funds not need for a federal match to expand the state fund or for hardship grants.

Other Loans

Other sources of loans are available, though not widely used. The United States Department of Agriculture (USDA) Rural Development Program offers loans, though the interest rate is not competitive with financing through the CWSRF. Also, the sums of money available are sufficient to address only a small portion of the state's wastewater infrastructure concerns.

Federal Grant Awards

No federal CWA grant funding has been available for wastewater treatment since 1991, and the decaying status of the nation's infrastructure reflects this fact. EPA's recently issued 2004 CWNS report identifies New York's need as $24.5 billion, up 20 percent from its 2000 report. A new program similar to the construction grants program, which provided grants for either 55 or 75 percent of eligible project costs, is needed. This was an effective approach in the past and federal participation would again spur infrastructure improvements. Any renewed construction grants program could be layered on a base CWSRF funding.

Other federal funding such as USDA's Rural Development Program and United States Department of Housing and Urban Development's (HUD) Small Cities Community Development Program currently provide grants on a limited basis. These programs cannot provide large sums of funding and have numerous priorities other than water quality projects. Therefore, absent significant amendment these should not be considered primary sources of grants in an expanded program.

State Grant Awards

There is a need for expanded state grants for wastewater infrastructure projects. New York State has a 40-plus year history of providing grant funding through the 1965 PWBA, 1972 EQBA and the 1996 CW/CA BA. State grants for water projects are also available through the EPF, but have not been made available for wastewater infrastructure projects. The Governor's budget language for the SFY2008-09 would allow limited wastewater infrastructure projects to receive EPF funding.

Hardship Community Grants

A portion of wastewater treatment infrastructure grant funding should be set aside for service areas with populations which are subject to unusually high local user charges to support a sewerage system. Under the CWSRF, there is reduced interest or interest-free financing to qualifying hardship communities.

In addition, many New York communities are small, rural communities with many low-income families. In these communities, it is not uncommon for homes to be on small lots where the septic systems and drinking water wells are in close proximity, thus increasing the potential for water quality problems. Older communities tend to have older septic systems that have not been properly maintained, further increasing the potential that septic systems will pollute nearby waterways or drinking water sources. These communities may desire to build collection systems, treatment plants or other alternative systems, but the lack of economy of scale frequently causes homeowners' annual costs to be very high.

Fair Local Rates

There are still a number of municipalities which have neglected to increase sewer rates even though their rates are far below average. While it is understandable that a municipality may not want to further burden its ratepayers, it is fundamentally unfair to provide state or federal grant assistance to these municipalities that fail to demonstrate a commitment to a fair local share.

Considerations of a Sustainable Funding Program

There are several elements that should be considered when developing a sustainable wastewater infrastructure funding program.

Asset Management

Proper asset management promotes planning for adequate maintenance of infrastructure. Asset management forms the foundation of planning for effective use of limited resources, including funds for operation, maintenance, and capital improvement. Properly done, an asset management plan will determine the spending priorities for infrastructure management by focusing on those assets identified as in need of repair or replacement. At present, only 40 percent of municipal wastewater treatment facilities in New York State have developed capital improvement plans. Yet after roads and bridges, wastewater treatment plants are most municipalities' largest asset. An asset management plan can then be used to determine local sewer use charges. It also can extend the longevity of a wastewater treatment plant as it supports regular maintenance. Proper plans can also provide for the maintenance of reserve funds for future needs. Presently, asset management for wastewater treatment plants is voluntary but it should be required if grant funding is provided to the municipality. Another alternative would be to provide grants for municipalities to develop asset management plans.

Innovative Technology

As infrastructure is replaced, there is a need to push for innovative and cost-effective, new technologies. Projects that are more efficient and effective should receive more beneficial funding. For instance, one way to reduce the need and burden on wastewater infrastructure is to reduce the amount of water that comes into the system. This can be achieved through water conservation practices including emerging technologies such as permeable surfaces that allow water to settle into the ground rather than flow into municipal sewers.[36]

[36] "Managing Wet Weather with Green Infrastructure, Action Strategy 2008." American Rivers, et. al., January 2008. [Online] Available http://www.epa.gov/npdes/pubs/gi_action_strategy.pdf.

Other innovations include water reuse for irrigation. An example in New York State is the Riverhead wastewater treatment plant on Long Island, which is currently piloting a project which uses its treated effluent at a source of irrigation water for a nearby golf course.

There is growing interest in "green infrastructure" as a way to reduce the costs and impacts of addressing CSOs. Measures can include tree planting, rain gardens, infiltration systems, rain barrels and pervious parking lots and sidewalks. The concept is that holding stormwater on the urban environment for slow release or infiltration into the ground will reduce the amount of water that goes into a sewer system.

EPA has not updated its best available technology standards for wastewater treatment for over 30 years. Cost effective technologies for new infrastructure should be considered as a requirement for funding. In addition, while security measures for wastewater infrastructure are relatively inexpensive, they should be included in any funded infrastructure.

Finally, electricity is the second largest operating cost at our nation's wastewater treatment plants, making up anywhere from 25 to 40 percent of their total operating budget. More than $6.5 billion is spent by municipal wastewater treatment plants each year. Additional demand for electricity at such plants is expected to increase by 20 percent over the next 15 years. Any new funding program should support energy efficiency and alternatives.

There will be other categories of innovation to be considered in the future. The establishment of an entity similar to NYSERDA that would focus on innovations in wastewater technology could assure that new infrastructure in New York State incorporates the latest technology.

Fairness

There are many municipalities across the state that have vigorously maintained their wastewater facilities and proactively planned for and invested in needed upgrades. Any new funding program must be fair and not penalize these municipalities for being good stewards. If a new sustainable funding program does not recognize good stewardship, it could discourage proper maintenance, management and rate setting. Municipalities should show that they charge fair rates before they could receive any grant funding, and there is a compelling need to maintain consistent enforcement policies to ensure that bad actors are not rewarded.

Future Infrastructure Challenges

As noted above, there are many future challenges for protecting water quality that need to be considered when updating and constructing new wastewater infrastructure. The extent of the impact of these issues is hard to quantify. Any engineering of new infrastructure will have to contemplate whether and to what degree these potential issues should be considered in design. As new information is developed on these issues it must be taken into account in decision-making.

Relationship of Infrastructure to Smart Growth and Economic Development

New York is fortunate to have many historic urban areas and there has been a renewed effort to restore these communities back to their vibrant heydays. Not only can they be attractive and unique neighborhoods and business areas but the re-vitalization of urban areas is a key component of Smart Growth. Wastewater infrastructure is important to overall community planning efforts, and replacement projects should be done in recognition of Smart Growth concepts. Concentrating development to where it already exists protects open space, and should contain the costs of infrastructure. Yet many of our urban areas are financially strapped and struggling to find the resources to address their existing infrastructure needs. In fact, their costs are going up disproportionately which drives residents and businesses to leave. Funding criteria should recognize the importance of supporting Smart Growth and clean development concepts.

Fixing our wastewater infrastructure will also support economic development. A sustainable funding program should include the ability to both upgrade and expand wastewater treatment works which service discreet urbanized areas. This could serve as an inducement for Smart Growth in these areas.

Local Government Efficiency

The Commission on Local Government Efficiency and Competitiveness is part of an effort to streamline government at every level. The Commission is charged with making recommendations in the areas of local government merger, consolidation, shared services, smart growth and regional services. Initiatives to consolidate water/sewer/stormwater systems have been submitted by 10 counties in the state for review by the Commission. It is planned that these projects will receive legal, logistical and technical assistance from state government, including referrals to grant programs and other funding opportunities that may apply.

EXHIBIT NO. 17

Exhibit No. 17

PROJECT SCHEDULE/FINANCING
ON DISTRICT FORMATION

Public Hearing Resolution Submitted (See Note 1)	Start
Public Hearing LOT	1 month
Public Hearing Set	2 months
Advertisement in Paper – 10 to 20 days before hearing	2.5 months
Public Hearing	3.5 months
Findings Resolution LOT	3.5 months
Findings Resolution Approved	4.0 months
Findings Resolution Advertised	4.5 months
Application to State Comptroller (See Note 2)	6.0 months
Comptrollers Order Received (See Note 3)	10 months
Adopting Resolution Submitted	10 months
Adopting and Appropriating Resolution LOT	11 months
Adopting and Appropriating Resolution Approved	12 months

Notes:

1. Engineering Report and SEQRA must be complete, each time period is from start.
2. Findings Resolution effective 45 days after vote.
3. Comptrollers Office assumed to take 4 months.

EXHIBIT NO. 18

Exhibit No. 18A

MASTIC – MASTIC BEACH – SHIRLEY
PROJECT SCHEDULE

Authorization to Proceed	Day 1*
Consultant Selection Process	4 months
Draft and Final Engineering Report	6 months
SEQRA Process with EIS	12 months
Financial Approval (See Exhibit No. 16)	12 months
Concurrent Preparation of Contract Documents	- - -
Permit Process	3 months
Advertise of Award	4 months
Construction (WWTP Sewer 3 years)**	3 years
Startup	- - -
TOTAL TIME	7.5 years

* Assumed 7/2011
** Mid point of Construction – STP and Sewer 6/2017

bw1-27-09 Exhibit No. 18A

Exhibit No. 18 B

Mastic - Mastic Beach - Shirley

Sewering Feasibility Study

Timeline*

Tasks / Time	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
Authorization to Proceed								
Consultant Selection Process								
Draft & Final Engineering Report								
SEQRA Process with EIS								
Financial Approval								
Preparation of Contract Documents								
Permit Process								
Advertise & Award Contract								
Construction work to STP								
Construction work to Sewers								
Punchlist & Startup								

*Construction of Alternates 2 and 3 can be shortened by 6 months.

EXHIBIT NO. 19

EXHIBIT NO. 19

MASTIC – MASTIC BEACH – SHIRLEY
ENVIRONMENTAL COST ESTIMATES
Alternates No. 1-3*

Environmental Impact Statement

Generic statement for service area with all impacts considered, growth potential and public participation.

	Subtotal	$300,000

Flow Augmentation Needs Study (FANS) Supplement*

Inventory of Ponds/Streams
Inventory of Wetlands
Groundwater Model
Preliminary Augmentation Design

	Subtotal	$300,000

Wastewater Treatment Plant(s)EIS	Subtotal	$350,000

TOTAL ENVIRONMENTAL COST	$950,000

* Alternates No. 2 and 3 do not require a FANS type evaluation.

EXHIBIT NO. 20

EXHIBIT NO. 20-1

MASTIC – MASTIC BEACH – SHIRLEY SEWERING STUDY
ENGINEERING COSTS
ALTERNATE NO. 1

Design

a) Sewer System – Refer to Figure No. 8, Curve B and Exhibit 25 which provides an estimate for the service area.
$305 million x 4.6 = $14.0 million
75% design, 25% construction administrative
design = $10.5 million

b) Wastewater Treatment Plant – Refer to Figure No. 8 Curve A and Exhibit 26
$330 million x 5.65 = $18.6 million
Design @ 75% fee = .75 x $18.6 = $14.0 million

Construction Administration

a) Sewer System .25 x $14.0 million = $3.5 million
b) Wastewater Treatment Plant = .25 x $18.6 million = $4.6 million

Project Labor Agreement

Based on previous projects performed, this task is valued at $500,000

TOTAL ENGINEERING COST = $33.1 MILLION

(Design = $24.5 million)
(Construction Administration = $8.6 million)

EXHIBIT NO. 20-2

MASTIC – MASTIC BEACH – SHIRLEY SEWERING STUDY
ENGINEERING COSTS
ALTERNATE NO. 2

Design

a) Sewer System – Refer to Figure No. 8, Curve B and Exhibit 25 which provides an estimate for the service area.
$26 million x 4.75 = $1.71 million
75% design, 25% construction administrative design = $1.28 million

b) Wastewater Treatment Plant – Refer to Figure No. 8 Curve A and Exhibit 26
$54 million x 5.65 = $3.05 million
Design @ 75% fee = .75 x $5.65 = $2.29 million

Construction Administration

a) Sewer System .25 x $1.71 million = $0.43 million
b) Wastewater Treatment Plant = .25 x $3.05 million = $0.76 million

Project Labor Agreement

Based on previous projects performed, this task is valued at $500,000

TOTAL ENGINEERING COST = $5.26 MILLION

(Design = $3.57 million)
(Construction Administration = $1.69 million)

EXHIBIT NO. 20-3

MASTIC – MASTIC BEACH – SHIRLEY SEWERING STUDY
ENGINEERING COSTS
ALTERNATE NO. 3

Design

a) Sewer System – Refer to Figure No. 8, Curve B and Exhibit 25 which provides an estimate for the service area.
$13 million x 4.8 = $.62 million
75% design, 25% construction administrative
design = $0.47 million

b) Wastewater Treatment Plant – Refer to Figure No. 8 Curve A and Exhibit 26
$33 million x 5.7 = $1.88 million
Design @ 75% fee = .75 x $5.7 = $1.41 million

Construction Administration

a) Sewer System .25 x $.62 million = $0.15 million
b) Wastewater Treatment Plant = .25 x $1.88 million = $0.47 million

Project Labor Agreement

Based on previous projects performed, this task is valued at $500,000

TOTAL ENGINEERING COST = $3.00 MILLION

(Design = $1.88 million)
(Construction Administration = $1.12 million)

EXHIBIT NO. 21

EXHIBIT NO. 21

MASTIC – MASTIC BEACH – SHIRLEY
PLANNING AND ENGINEERING DESIGN COSTS
Alternatives No. 1-3

Planning – EIS – Exhibit No. 19	$0.65 million
FANS Supplement – Alternate No. 1 only – Exhibit 19	$0.30 million

Design – Includes PLA and Construction Administration

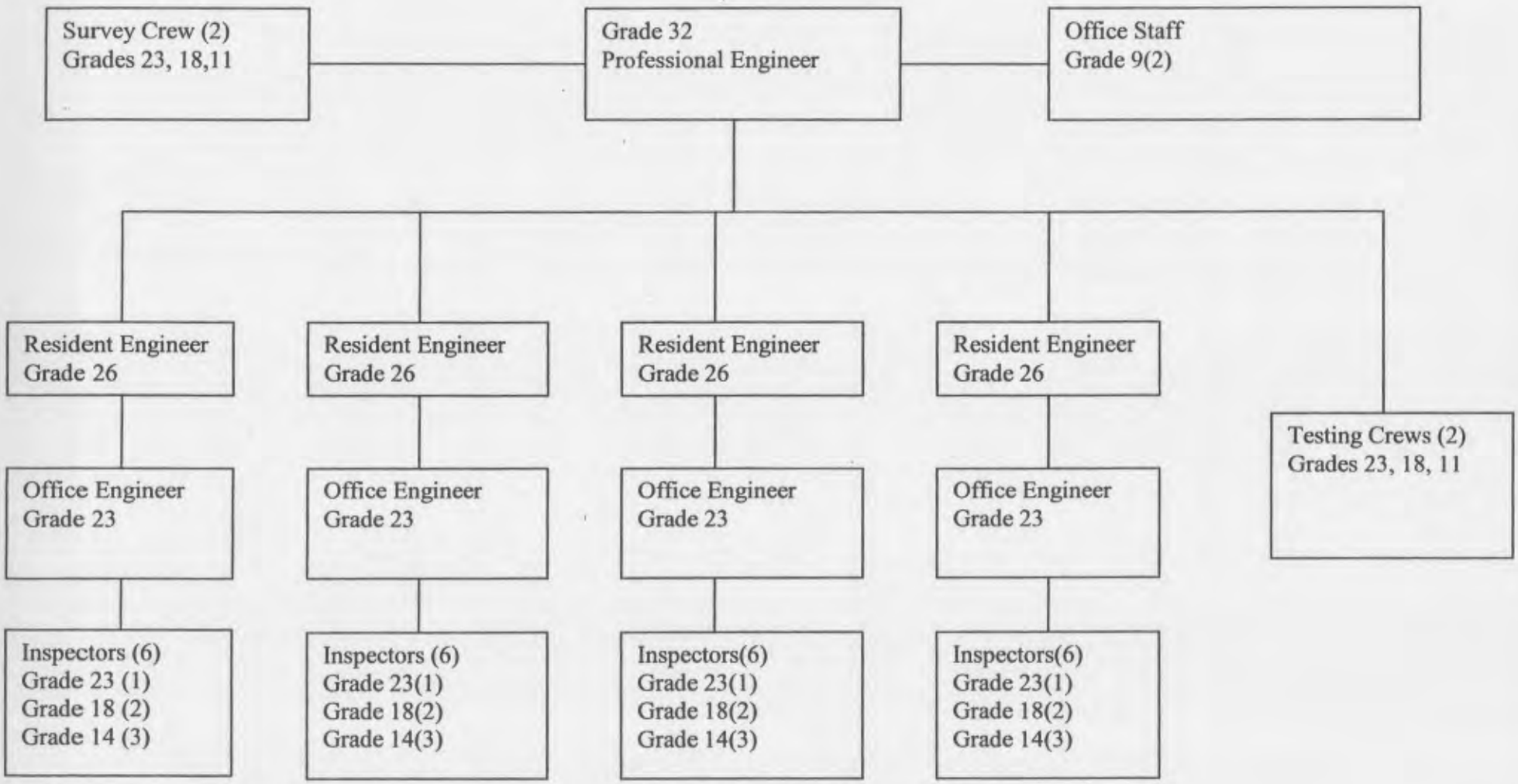
Alternate No. 1, Exhibit No. 20-1	$33.1 million
Alternate No.2, Exhibit No. 20-2	$5.26 million
Alternate No. 3, Exhibit No. 20-3	$3.00 million

TOTAL Alternate No. 1	$34.05 million
TOTAL Alternate No. 2	$5.91 million
TOTAL Alternate No. 3	$3.65 million

bw1-27-09 Exhibit No. 21 plan and engr costs

EXHIBIT NO. 22

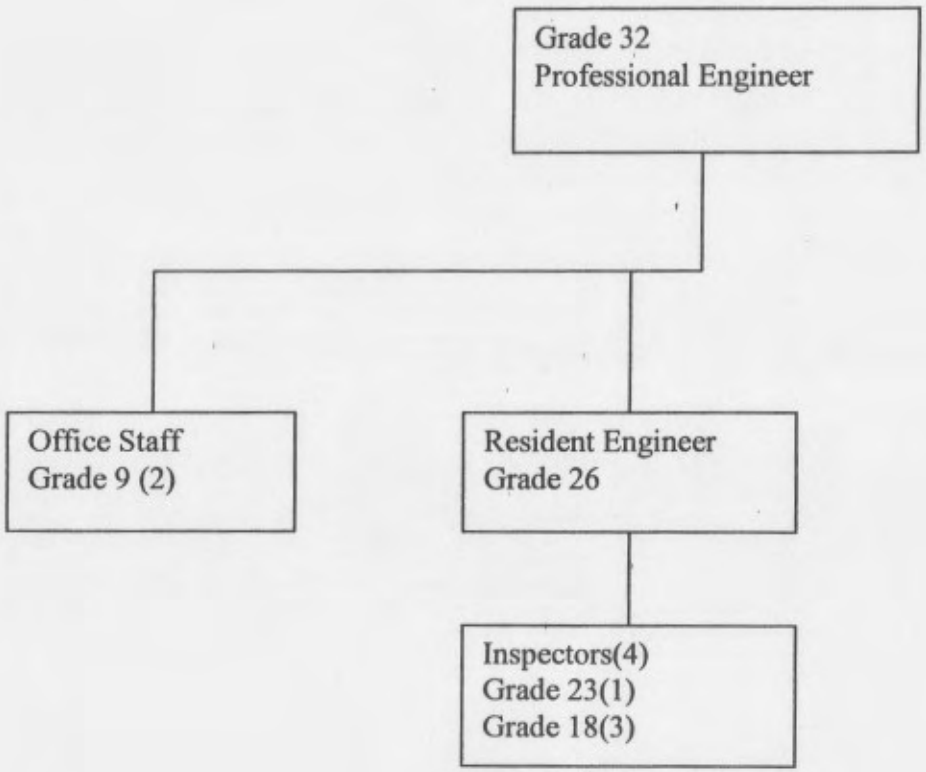
Exhibit No. 22
Mastic – Mastic Beach – Shirley
Sewer Construction Inspection Staffing



Alternate No. 2 – part time/PE/test/survey, 1 Resident, 1 Office Engineer, 3 Inspectors, 1 Office Staff
Alternate No. 3 – part time/PE/test/survey, 1 Resident, 1 Office Engineer, 2 Inspectors, 1 Office Staff
bw1-27-09 exhibit no. 22 MMBS feasibility chart no. 1

EXHIBIT NO. 23

Exhibit No. 23
Mastic – Mastic Beach – Shirley
STP Construction Inspection Staffing



Alternate No. 2 – 3 Inspectors @ grade 18
Alternate No. 3 – PE part time, 2 Inspectors @ grade 18, 1 Office Help

EXHIBIT NO. 24

EXHIBIT NO. 24-1

MASTIC – MASTIC BEACH – SHIRLEY
CONSTRUCTION INSPECTION SERVICES
Alternate No. 1

Sewer System (See Exhibit No. 3)	130 miles and 11 pumping stations to be constructed in 3 communities, multiple projects concurrently, three year construction period; Staff required: (47) 1 – Professional Engineer – Grade 32 4 – Resident Engineers – Grade 26 4 – Office Engineers – Grade 23 24 – Inspectors – Grades 14 – 23 2 – Survey Crews (3 men each) 2 – Testing Crews (3 men each) 2 – Office Helpers 3 year cost (2016 – 2019) = $19.5 million
Treatment Plants (See Exhibits No. 7 and 8)	3.5 and 1.0 mgd facilities, multiple contracts concurrently, 3 year construction period; Staff required: (8) 1 – Professional Engineer – Grade 32 1 – Resident Engineer – Grade 26 4 – Inspectors (Grades 18 – 23) 2 – Office Helpers 3 year cost (2016- 2019) = $5.5 million
	TOTAL COST = $25.0 MILLION

EXHIBIT NO. 24-2

MASTIC – MASTIC BEACH – SHIRLEY
CONSTRUCTION INSPECTION SERVICES
Alternate No. 2

Sewer System (See Exhibit No. 4)	6 miles and 5 pumping stations to be constructed in 3 business districts, multiple projects concurrently, two year construction period; Staff required: (6+) 1 – Professional Engineer – Grade 32* 1 – Resident Engineer – Grade 26 1 – Office Engineer – Grade 23 3 – Inspectors – Grade 18 2 – Survey Crews (3 men each)* 2 – Testing Crews (3 men each)* 1 – Office Helper 2 year cost (2016 – 2018) = $3.0 million
Treatment Plant (See Exhibits No. 7 and 8)	0.2 and 0.4 mgd facilities, multiple contracts concurrently, 2 year construction period; Staff required: (7) 1 – Professional Engineer – Grade 32 1 – Resident Engineer – Grade 26 3 – Inspectors Grade 18 2 – Office Helpers 2 year cost (2016- 2018) = $5.5 million
	TOTAL COST = $8.5 MILLION

* percentage of time

EXHIBIT NO. 24-3

MASTIC – MASTIC BEACH – SHIRLEY
CONSTRUCTION INSPECTION SERVICES
Alternate No. 3

Sewer System (See Exhibit No. 5)	2 miles and 2 pumping stations to be constructed in CR 80, 18 month construction period; Staff required: (5+) 1 – Professional Engineer – Grade 32* 1 – Resident Engineer – Grade 26 1 – Office Engineer – Grade 23 2 – Inspectors – Grades 14 – 23 2 – Survey Crews (3 men each)* 2 – Testing Crews (3 men each)* 1 – Office Helper 18 month cost (2016 – 2017) = $2 million
Treatment Plant (See Exhibits No. 7 and 8)	0.4 mgd facility, 2 year construction period; Staff required: (4+) 1 – Professional Engineer – Grade 32* 1 – Resident Engineer – Grade 26 2 – Inspectors Grade 18 1 – Office Helper 2 year cost (2016- 2018) = $1.8 million
	TOTAL COST = $3.8 MILLION

EXHIBIT NO. 25

EXHIBIT NO. 25

PROJECT COST ESTIMATE – SEWER SYSTEM*

Large Pump Station	$1,500,000
Small Pump Station	$750,000
Sewers (dry-wet)	225-300/lf
Forcemain	225/lf
Grinder Pumps	$10,000 each
Crossings	$1500/lf

Contingency will include easements and ROW

Land $500,000/Acre

(pumping station site @.06 acre = $30,000/site, included in estimate)

Million Dollars

	Alt. No. 1	Alt No. 2	Alt No. 3
Sewers	$185	$9	$2.7
Grinders	$64	$1.6	$2.0
Large Stations	$6	$1.5	$1.5
Small Stations	$5	$3.0	$.75
Forcemain	$13	$6.5	$2.4
Crossings	$2	$2	$2.2
Subtotal	$275	$23.6	$11.6
Contingency 10%	$27.5	$24	$1.2
Total	$303	$25.96	$12.8
Use	$305	$26	$13

*gravity/conventional/low pressure/pumping station – cost 2017

EXHIBIT NO. 26

EXHIBIT NO. 26
WASTEWATER TREATMENT AND DISPOSAL COSTS

Alternate No.1	Plant 1	3.5 mgd – Airport
	Plant 2	1.0 mgd – Holiday
Alternate No. 2	Plant 1	.5 mgd – Airport
	Plant 2	.2 mgd – Holiday
Alternate No. 3	Plant 1	.4 mgd – Airport

Basic WWTP Costs

1.0 – 3.5 mgd @ $60/gpd
.2 - .5 mgd @ $67/gpd

Land – assume Brookhaven and Holiday donate land

1. Treatment

Alternate No. 1	3.5 mgd @ $60/gpd = $210 million
	1.0 mgd @ $60/gpd = $60 million
Alternate No.2	0.5 mgd @ $67/gpd = $30 million
	0.2 mgd @ $67/gpd = $13.4 million
Alternate No. 3	0.4 mgd @ $67/gpd = $26.8 million

2. Disposal

Refer to Cameron SD # 6 Report = $6,000/pool
Add 50% for inflation = $9,000/pool

For a 1 mgd facility use
10' diameter pools with an effective depth of 8 feet

@ 1.0 mgd 200,000 sq. feet required - 800 pools

use standard $50,000 for site work

per 1.0 mgd cost is
800 x 9,000 = $7.2 million
plus site work ($50,000)

Alternate No. 1	Total Flow = 4.5 mgd - cost is (4.5 x $7.2 million) + $ 50,000 = $32.45 million
Alternate No. 2	Total Flow = 0.7 mgd – cost is (.7 x $7.2 million) + $50,000 = $5.09 million
Alternate No. 3	Total Flow = 0.4 mgd – cost is (.4 x $7.2 million) + $50,000 = $2.93 million

Summary of Treatment and Disposal Costs
(Million Dollars)

Alternate No. 1

Treatment	270
Disposal	32
Subtotal	302
10% Contingency	30.2
Total	332 use $330

Alternate No. 2

Treatment	43.4
Disposal	5.1
Subtotal	48.50
10% Contingency	4.85
Total	53.35 use $54

Alternate No. 3

Treatment	26.80
Disposal	2.93
Subtotal	29.73
10% Contingency	2.97
Total	32.70 use $33

EXHIBIT NO. 27

EXHIBIT NO. 27-1
ALTERNATE NO. 1

MASTIC – MASTIC BEACH – SHIRLEY SEWERAGE FACILITIES
OPERATION AND MAINTENANCE COSTS (2018)*

Sewer System –	130 miles of sewers	
	11 Pump Stations	$1,200,000
	1 – Operator	200,000
	1 – Heavy Equipment Operator	200,000
	2 – Helpers	250,000
	1 – Vactor – 10 yr life, maintenance	80,000
	System Maintenance	250,000
	Subtotal	$2,180,000
Treatment Plant –	3.5 mgd and 1.0 mgd	
	a) Labor, equipment, utilities, materials and supplies, and sludge values were used for SD #11 and SD # 1, adjusted as necessary with inflation to 2018.	
	Subtotal	$6,400,000
	Total	
	Sewer system	$2,180,000
	Treatment Plant	6,400,000
		$8,580,000
	TOTAL	$8.6 million

* multiplier applied

bw1-27-09 Exhibit No. 27-1, alt No. 1 o&m

EXHIBIT NO. 27-2
ALTERNATE NO. 2

MASTIC – MASTIC BEACH – SHIRLEY SEWERAGE FACILITIES
OPERATION AND MAINTENANCE COSTS (2018)*

Sewer System –	130 miles of sewers, 5 pump stations	$525,000
	1 – Operator	10,000
	1 – Heavy Equipment Operator	10,000
	2 – Helpers	15,000
	1 – Vactor – 10 yr life, maintenance	80,000
	System Maintenance	12,500
	Subtotal	$652,500
Treatment Plant –	0.2 mgd and 0.4 mgd	
	a) Labor, equipment, utilities, material and supplies, and sludge values were used for SD #12 and SD # 18, adjusted as necessary with inflation to 2018.	
	Subtotal	$1,310,000

Total

Sewer system	$652,500
Treatment Plant	1,310.000
	$1,962,500

TOTAL $2.0 million

* multiplier applied

bw1-27-09 Exhibit No. 27-2, alt No. 2 o&m

EXHIBIT NO. 27-3
ALTERNATE NO. 3

MASTIC – MASTIC BEACH – SHIRLEY SEWERAGE FACILITIES
OPERATION AND MAINTENANCE COSTS (2018)*

Sewer System –	2 miles of sewers, 2 pump stations	$225,000
	1 – Operator	10,000
	1 – Heavy Equipment Operator	10,000
	2 – Helpers	15,000
	1 – Vactor – 10 yr life, maintenance	80,000
	System Maintenance	10,000
	Subtotal	$350,000
Treatment Plant –	0.4 mgd	
	a) Labor, equipment, utilities, material and supplies, and sludge values were used for SD # 18, adjusted as necessary with inflation to 2018.	
	Subtotal	$900,000

Total

Sewer system	$350,000
Treatment Plant	900,000
	$1,250,000

TOTAL $1.25 million

* multiplier applied

bw1-27-09 Exhibit No. 27-3, alt No. 3 o&m

EXHIBIT NO. 28

EXHIBIT NO. 28-1

PROJECT COST SUMMARY
ALTERNATE NO. 1

Environmental (Exhibit 19)	$ 0.95
Design (Exhibit 20-1)	24.5
Project Labor Agreement (Exhibit 20-1)	0.50
Sewer Construction (Exhibit 25)	305
STP Construction (Exhibit 26)	330
Construction Administration (Exhibit 20-1)	8.1
Construction Inspection (Exhibit 24-1)	25.0
TOTAL	$694,050,000

Amortized Cost

$694,050,000 @ (20 yr, 5%) = $55,690,572 = $55.7 million/year

Annual Charges

Operations and Maintenance (Exhibit 27-1)	$8.6 million
Debt Service	55.7 million
TOTAL ANNUAL	$64.3 million

Annual Per Parcel Charge = $\frac{\$64.3 \text{ million}}{8{,}500 \text{ parcels}}$ = $7565

NOTE: EFC annual per parcel charge 2.5%/30 years (excluding administrative fees) = $4,913

bw1-27-09 Exhibit 28-1, alt No. 1 summary

EXHIBIT NO. 28-2

PROJECT COST SUMMARY
ALTERNATE NO. 2

Environmental (Exhibit 19)	$ 0.65
Design (Exhibit 20-2)	3.57
Project Labor Agreement (Exhibit 20-2)	0.50
Sewer Construction (Exhibit 25)	26
STP Construction (Exhibit 26)	54
Construction Administration (Exhibit 20-2)	1.19
Construction Inspection (Exhibit 24-2)	8.5
TOTAL	$94,410,000

Amortized Cost

$94,410,000 @ (20 yr, 5%) = $7,575,458 = $7.58 million/year

Annual Charges

Operations and Maintenance (Exhibit 27-2)	$2.0 million
Debt Service	7.58 million
TOTAL ANNUAL	$9.58 million

Annual Per Parcel Charge = $\frac{\$9.58 \text{ million}}{316 \text{ parcels}}$ = $30,316

bw1-27-09 Exhibit 28-2, alt No. 2 summary

EXHIBIT NO. 28-3

PROJECT COST SUMMARY
ALTERNATE NO. 3

Environmental (Exhibit 19)	$ 0.65
Design (Exhibit 20-3)	1.88
Project Labor Agreement (Exhibit 20-3)	0.50
Sewer Construction (Exhibit 25)	13
STP Construction (Exhibit 26)	33
Construction Administration (Exhibit 20-3)	.62
Construction Inspection (Exhibit 24-3)	3.8
TOTAL	$53,450,000

Amortized Cost

$53,450,000 @ (20 yr, 5%) = $4,288,828 = $4.3 million/year

Annual Charges

Operations and Maintenance (Exhibit 27-3)	$1.25 million
Debt Service	4.3 million
TOTAL ANNUAL	$5.55 million

Annual Parcel Charge = $\frac{\$5.55 \text{ million}}{197 \text{ parcels}}$ = $28,173

NEIGHBORHOOD RD. SHIRLEY/MASTIC

	A	F	H	I	K	L	M
1							
2	TMN	OWNER_NAME	ADDRESS_1	AI	LANDUSE	Pool Location	Basement Y/N
3							
4	0200978900400054003	HANDY PANTRY STORES INC			One Story Small Structure	West Side	Yes
5	0200978900400055000	KENSINGTON REALTY HOLDING CORP	323 NEIGHBORHOOD RD	M	One Story Small Structure	Back North Side	?
6	0200978900400056000	PALAZOTTO CATHERINE	NEIGHBORHOOD RD	M	Vacant Land - Commercial Areas	Vacant Lot	n/a
7	0200978900400058000	PALAZZOTTO CONSTANCE - PALAZZOTTO	331 DIANA AKA NEIGHBOR	M	Unknown	Vacant Lot	n/a
8	0200978900500010001	SHAHERY FARZAD - SHAHERY SHAW - SH			Vacant Land - Commercial Areas	Vacant Lot	n/a
9	0200978900500011000	BROWN KATHLEEN - BROWN WILLIAM G	293 NEIGHBORHOOD RD	M	Single Family Residence	?	Yes
10	0200978900500012000	GALANG BIENVENIDO - PRINZIVALLI VINCE	NEIGHBORHOOD RD	M	Vacant Land - Commercial Areas	Vacant Lot	n/a
11	0200978900500013000	GOULIAMAS JOHN	NEIGHBORHOOD RD	M	Vacant Land - Commercial Areas	Vacant Lot	n/a
12	0200978900500014000	GRAY JEAN F	273 NEIGHBORHOOD RD	M	One Story Small Structure	Back North Side	No
13	0200980500100007000	ANO - CACCIATO PAUL	NEIGHBORHOOD RD	M	One Story Small Structure	Back North Side	Yes
14	0200980500100013001	LANG GARY	391 NEIGHBORHOOD RD	M	One Story Small Structure	Back North Side	No
15	0200980500100014000	NEIGHBORHOOD ROAD CORP	389 NEIGHBORHOOD RD	M	One Story Small Structure	Back North Side	Yes
16	0200980500100015000	ACETO PASQUALE	NEIGHBORHOOD RD	M	Vacant Land - Commercial Areas	Vacant Lot	n/a
17	0200980500100016000	OCONNOR CARMELA - OCONNOR CHARLE	385 NEIGHBORHOOD RD	M	One Story Small Structure	Side	Yes
18	0200980500100017000	LINSALATA BARBARA R - TORRES AVA L	373 NEIGHBORHOOD RD	M	One Story Structure-Multi Occp.	Rear	No
19	0200980500100018001	BROOKHAVEN TOWN OF			Unknown	Rear	Yes
20	0200980500100019000	MILLER GLORIA VIRGINIA	NEIGHBORHOOD RD	M	Vacant Land - Commercial Areas	Vacant Lot	n/a
21	0200980500100031000	CARMICHAEL JR ROBERT	NEIGHBORHOOD RD	M	Parking Lot	Vacant Lot	n/a
22	0200980500100032000	BRUCKNER LIVING TRUST FAMILY SHARE	400 NEIGHBORHOOD RD	M	Auto Body, Tire Shops	Rear	Yes
23	0200980500100040000	LPM ENTERPRISES INC	384 NEIGHBORHOOD RD	M	One Story Small Structure	Rear	No
24	0200980500100041000	LPM ENTERPRISES INC	384 NEIGHBORHOOD RD	M	Vacant Land - Commercial Areas	Vacant Lot	n/a
25	0200980500100042000	STANZONI ROBERT	376 NEIGHBORHOOD RD	M	One Story Small Structure	Rear	No
26	0200980500100043000	BAYVIEW PROPERTY MANAGEMENT CORP	374 NEIGHBORHOOD RD	M	One Story Small Structure	Rear?	No
27	0200980500100044000	GAGLIANO ANTONIETTA - GAGLIANO SALV	366 NEIGHBORHOOD RD	M	One Story Small Structure	Side?	No
28	0200980500100045000	NUCCIO ANGELA	351 NEIGHBORHOOD RD	M	One Story Structure-Multi Occp.	Side	Yes
29	0200980500400001000	NUCCIO ANGELA	NEIGHBORHOOD RD	M	Restaurants	Rear	Yes
30	0200980500400002000			M		Multiple pools	
31	0200980500400004000	SATTAR KHALID	343 NEIGHBORHOOD RD	M	Unknown - combined into 1 lot	on east side of	Unknown
32	0200980500400004001					building	
33	0200980500400006002	H P S STORE FIXTURES INC	346 NEIGHBORHOOD RD	M	One Story Small Structure	Multiple pools/west side	No
34	0200980500400023000	STANZONI ROBERT	336 NEIGHBORHOOD RD	M	One Story Structure-Multi Occp.	2 Pools ~~south~~ of bldg Rear	No
35	0200980500400024000	EL STEVE MANAGEMENT CORPORATION	193 DIANA DR	M	One Story Structure-Multi Occp.	~~South??~~ Rear	Unknown
36	0200980500400045000	EL STEVE MANAGEMENT CORPORATION	NEIGHBORHOOD RD	M	Vacant Land - Commercial Areas	Vacant Lot	n/a

	A	F	H	I	K	L	M
37	020098O500400046000	EL STEVE MANAGEMENT CORPORATION	322 NEIGHBORHOOD RD	M	Vacant Land - Commercial Areas	Vacant Lot	n/a
38	020098O500500001000	FIVE CORNER LTD	312 NEIGHBORHOOD RD	M	Service &Gas Stations	Back	No
39	020098O500500002000	CAMPBELL MICHAEL	308 NEIGHBORHOOD RD	M	One Story Small Structure	Back	No
40	020098O500500003000	BAYVIEW PROPERTY MANAGEMENT CORP	304 NEIGHBORHOOD RD	M	One Story Small Structure	Back	No
41	020098O500500004000	RIKER FRANCINE - RIKER WILLIAM R	298 NEIGHBORHOOD RD	M	One Story Small Structure	Back	No
42	020098O500500008000	MAZANEK RICHARD III	286 NEIGHBORHOOD RD	M	One Story Small Structure	Back	Yes
43	020098O500500009000	MAZANEK GERALDINE - MAZANEK JR RICH			Residential Vacant land	Vacant Lot	n/a
44	020098O500500010000	VASSALLO JOHN T - VASSALLO MILDRED		Y	Vacant Land - Commercial Areas	Vacant Lot	n/a
45	020098O500500011000	VASSALLO JOHN T - VASSALLO MILDRED	276 NEIGHBORHOOD	Y	Single Family Residence	West/Back?	No
46	020098O500500012000	MASTIC BEACH FIRE DISTRICT	274 NEIGHBORHOOD RD	M	Community Services	Back	No
47	020098O500500013002	CAMPBELL MICHAEL	NEIGHBORHOOD RD	M	Vacant Land - Commercial Areas	Vacant Lot	n/a
48	020098O500500048000	STANZONI ROBERT	302 NEIGHBORHOOD RD	M	One Story Small Structure	Back	No
49	020098O500500049000	STANZONI ROBERT	306 NEIGHBORHOOD RD	M	One Story Small Structure	Back	No

Montauk Hwy. SMITHLEY / 1983/11

DISTRI	SECTIO	BLOCK	LOT	OWNER_NAME	ADDRESS_1	A	LAND USE	POOL LOCATION	BASEMENT
0200	82400	0900	015000	YOUNG EUGENE F	MONTAUK HWY	M	One Story Structure-Multi Occp.	Rear	CRAWL
0200	85100	0300	034000	MALTESE ANGELA	MONTAUK HWY	S	Parking Lot		
0200	82400	1000	009000	DAMICO MARGARET - DAMICO SALVATO	1620 MONTAUK HW	M	One Story Structure-Multi Occp.	Rear	NO
0200	85100	0500	001000	LIBERTI PAMELA M	ORMOND PL	S	Residential Vacant land	Rear	YES
0200	85200	0500	006001	BADALA SALVATORE			Vacant Land - Commercial Areas	Front	
0200	85200	0100	077000	BAYNON PROPERTIES LLC	MONTAUK HWY	M	Vacant Land - Commercial Areas		
0200	85100	0300	038001	921 CORP			Unknown	Rear	YES
0200	82400	0500	015000	VISCO CATERINA - VISCO FRANK	1585 MONTAUK HW	M	One Story Small Structure	Rear	YES
0200	82300	1000	005000	DANTINUCCI CORP	MONTAUK HWY	M	Auto Body, Tire Shops	East	NO
0200	85200	0100	036000	BOLLYWOOD ENTERTAINMENT GROUP	MONTAUK HWY	S	Vacant Land - Commercial Areas		
0200	85200	0200	009000	MAIO ANGELA	17 CLINTON AVE	M	Single Family Residence	Don't Know	CRAWL
0200	85100	0200	027000	MENNUTI REALTY CORP			Vacant Land - Commercial Areas		
0200	82400	0900	001000	DUBICKI MARIA	MONTAUK HWY	M	One Story Small Structure		NO
0200	82400	1000	013002	MASTIC AMBULANCE DISTRICT	GUNTHER PL	M	Communily Services	Front	NO
0200	85200	0100	045000	BOLLYWOOD ENTERTAINMENT GROUP	MONTAUK HWY	S	Vacant Land - Commercial Areas		
0200	85200	0400	007000	DEVOE JAMES HAROLD - DEVOE PATRIC	MONTAUK HWY	M	Single Family Residence	East	YES
0200	85200	0100	087000	UNKNOWN			Unknown		
0200	82400	0700	013000	MCCARTHY CATHERINE	23 OLD MONTAUK H	M	Unknown	Don't Know	?
0200	82300	0800	080001	TOWNE PLAZA MASTIC REALTY LLC			Area,Neighborhood Shopping Centers	Don't Know	NO
0200	85100	0300	044000	TOMASELLO CARMELO	MONTAUK HWY	M	Vacant Land - Commercial Areas		
0200	85100	0300	045000	C S K CORP	947 MONTAUK HWY	S	Dinres & Luncheonettes	Don't Know	CRAWL
0200	85200	0100	053000	C S K CORP	1167 MONTAUK HW	M	Religious	Don't Know	?
0200	85200	0300	064001	BAYVIEW PROPERTY MANAGEMENT COF			Vacant Land - Commercial Areas		
0200	85200	0100	089000	UNKNOWN			Unknown		
0200	85200	0100	086000	ARORA UMESH	BONNY DR	M	Vacant Land - Commercial Areas		
0200	85100	0200	011000	MENNUTI REALTY CORP	863 MONTAUK HWY	Y	One Story Structure-Multi Occp.	Rear	YES
0200	82400	0800	014000	DUBICKI WACLAW	MONTAUK HWY	M	Residential Vacant land		
0200	82300	0800	066000	PEDERSEN JOHN	1401 MONTAUK HW	M	One Story Small Structure	East Side	YES
0200	85200	0100	057000	UNIVERSAL TOOL SALES AND SERVICE C	1175 MONTAUK HW	M	One Story Small Structure	Rear	NO
0200	85200	0400	015000	FARMER RAYMOND H	1248 MONTAUK HW	M	Converted Residence	Rear	CRAWL
0200	85200	0100	033000	BOLLYWOOD ENTERTAINMENT GROUP	MONTAUK HWY	S	Vacant Land - Commercial Areas		
0200	85200	0300	005001	AUTOZONE INC			Unknown	Rear	NO
0200	85200	0300	011001	FLYNN MICHAEL A			Unknown		
0200	85100	0200	005002	FLOYD HARBOR LLC	WM FLOYD PKY	S	Vacant Land - Commercial Areas		
0200	82400	0900	005000	RICHJAN CORP	1560 MONTAUK HW	M	One Story Small Structure	Rear	YES
0200	85200	0400	006000	SOUTHLAND CORP	MONTAUK HWY	M	One Story Small Structure	East	NO
0200	85200	0500	012000	CASOLA LORINDA C	CUMBERLAND ST	M	Residential Vacant land		
0200	85100	0400	029000	MAURICE JOHN	878 MONTAUK HWY	S	Converted Residence	Rear	CRAWL
0200	85200	0100	067000	AIRWAY PROPERTIES INC	1245 MONTAUK HW	M	One Story Small Structure	West Side	YES
0200	85200	0300	010001	NOSZKO ALEXANDER			Unknown		

0200	82400	0300	020000	ESSANI SOFIA	1513 MONTUAK HW	M	Vacant Land - Commercial Areas	Don't Know	
0200	85100	0600	009001	LENTINI ROBERT			One Story Structure-Multi Occp.	Rear	CRAWL
0200	85200	0100	048000	BOLLYWOOD ENTERTAINMENT GROUP	MONTAUK HWY	S	Vacant Land - Commercial Areas		
0200	82300	0800	038000	CASOLA ROBERT F	MONTAUK HWY	M	Residential Vacant land		
0200	82400	0400	026000	SFOGLIA BENEDICT - SFOGLIA ERIC - SF	723 MONTAUK HWY	M	Dinres & Luncheonettes	Rear	CRAWL
0200	82400	0400	028000	RICHJAN CORP	1555 MONTAUK HW	M	One Story Small Structure	Rear	YES
0200	82300	1000	007000	GARERA GARY R	1430 MONTAUK HW	M	Residential Vacant land		
0200	85200	0100	047000	BOLLYWOOD ENTERTAINMENT GROUP	MONTAUK HWY	S	Vacant Land - Commercial Areas		
0200	85200	0100	038000	TAORMINA CALOGERO - TAORMINA MAR	8 MERRICK RD	S	Restaurants	Rear	NO
0200	85200	0100	063001	1219 MONTAUK HIGHWAY CORP			Service &Gas Stations	Rear	NO
0200	85200	0200	004001	MAZZELLA ANTHONY - MAZZELLA WILM			Unknown	Rear	YES
0200	85200	0300	008000	C J & B J PROPERTIES INC	1180 MONTAUK HW	M	Auto Body, Tire Shops	Rear	NO
0200	85100	0300	043000	TOMASELLO CARMELO	945 MONTAUK HWY	S	One Story Small Structure	Rear	YES
0200	82300	1000	009000	MOLE HOUSING CORP	MONTAUK HWY	M	Restaurants	East Side	YES
0200	82400	0600	013000	DAVIN SR RICHARD M	DANA AVE	M	Vacant Land - Commercial Areas		
0200	82400	0500	046000	DAVIN SR RICHARD M	WASHINGTON AVE	M	Parking Lot		
0200	82400	0500	048001	DAVIN SR RICHARD M			Funeral Homes	Rear	YES
0200	85100	0300	053002	DICARLO JAMES SR			One Story Structure-Multi Occp.	Rear	NO
0200	85200	0100	058000	DOULMAN ERIC - MAHONEY JOHN	MONTAUK HWY	M	Vacant Land - Commercial Areas		
0200	85200	0100	060001	WESEMANN FRED	1169 MONTAUK HW	M	One Story Small Structure	West	NO
0200	85200	0100	083001	BROOKHAVEN TOWN OF			Community Services		
0200	82400	0800	008000	ISHIKA LLC	MONTAUK HWY	M	Vacant Land - Commercial Areas		
0200	82300	1000	004002	ERDELY TATIANA			Professional Building	Rear	YES
0200	82300	1000	008000	GARERA GARY R	1430 MONTAUK HW	M	One Story Structure-Multi Occp.		
0200	85200	0100	050000	DELUCA ANGIOLA - DELUCA SALVATORE			One Story Structure-Multi Occp.	Don't Know	NO
0200	85200	0100	030000	BOLLYWOOD ENTERTAINMENT GROUP	MONTAUK HWY	S	Vacant Land - Commercial Areas		
0200	85200	0500	005001	BROOKHAMPTON OFFICES INC			Vacant Land - Commercial Areas	East	YES
0200	85200	0100	078000	BAYNON PROPERTIES LLC	MONTAUK HWY	M	Vacant Land - Commercial Areas		
0200	85100	0500	018000	SFOGLIA BENEDICT	970 MONTAUK HWY	S	Converted Residence	Rear	CRAWL
0200	85200	0100	037001	TOWNE PLAZA MASTIC REALTY LLC			Unknown		
0200	85200	0500	017002	DANTINUCCI CORP			One Story Structure-Multi Occp.	Front	NO
0200	85100	0200	007000	M PARISI & SON CONSTRUCTION CO INC	MONTAUK HWY	S	Vacant Land - Commercial Areas		
0200	82300	1000	020000	MOLE HOUSING CORP	MONTAUK HWY	M	Parking Lot		
0200	82400	1000	007000	WESEMANN FRED J JR	1619 MONTAUK HW	M	One Story Structure-Multi Occp.	Rear	YES
0200	82400	1000	014000	BURKARD JOAN	1631 MONTAUK HW	M	Single Family Residence		YES
0200	85100	0300	050002	SHIRLEY DRIVE IN ASSOCIATES L P	MONTAUK HWY	S	Regional Shopping Centers	Don't Know	NO
0200	85200	0100	062000	SOTO GLADYS - SOTO OTTO R - SOTO W	32 HOOVER CT	M	Single Family Residence	Rear	YES
0200	85200	0100	037002	BROOKHAVEN TOWN OF			Unknown		
0200	85200	0100	088000	UNKNOWN			Unknown		
0200	82400	0700	014001	KIRK JEFFREY KEITH - LINDA ANN	31 OLD MONTAUK H	M	One Story Small Structure	Rear	YES
0200	85200	0400	017000	SHIMINSKY WILLIAM	HAWTHORNE ST	M	Vacant Land - Commercial Areas	Front	
0200	85200	0500	013000	CASOLA ROBERT F	CUMBERLAND ST	M	Residential Vacant land		
0200	85100	0600	042000	GUGLIOTTA CARL EDWARD	5 GARDEN PL	S	Single Family Residence	Rear	YES

0200	85100	0200	025001	ADIPIETRO MARGARET - ADIPIETRO SAL			Unknown		
0200	85100	0200	025002	M PARISI & SON CONSTRUCTION CO INC			One Story Small Structure		
0200	82400	0800	013000	DUBICKI WACLAW	MONTAUK HWY	M	Residential Vacant land		
0200	85100	0300	033000	FLSK REALTY LLC	911 MONTAUK HWY	S	One Story Structure-Multi Occp.	Rear	YES
0200	82400	1000	006000	PASTORE JOHN - PASTORE NOREEN	STERLING PL	M	Vacant Land - Commercial Areas		
0200	85200	0100	046000	BOLLYWOOD ENTERTAINMENT GROUP	MONTAUK HWY	S	Vacant Land - Commercial Areas		
0200	85200	0100	052001	DELUCA SALVATORE			Vacant Land - Commercial Areas		
0200	85200	0100	032000	BOLLYWOOD ENTERTAINMENT GROUP	MONTAUK HWY	S	Vacant Land - Commercial Areas		
0200	82400	0500	014000	VISCO CATERINA - VISCO FRANK	1585 MONTAUK HW	M	Office Building	East Side	NO
0200	82400	0800	003000	VEP COMPUTER SYSTEMS INC	1470 MONTAUK HW	M	One Story Structure-Multi Occp.	West Side	NO
0200	82400	0300	019000	GIORDANO FRANK	MONTAUK HWY	M	Vacant Land - Commercial Areas		
0200	85200	0100	055000	C S K CORP	MONTAUK HWY	M	Parking Lot		
0200	85100	0400	028001	BURGER KING CORP	ALETTA PL	S	Fast Food Franchises	East	NO
0200	85200	0500	002001	SHIRLEY AUTO BODY INC			Auto Body, Tire Shops	West	CRAWL
0200	85200	0500	003001	ALIPERTI JOSEPHINE			Vacant Land - Commercial Areas		
0200	85200	0400	085000	COUNTY OF SUFFOLK			Unknown		
0200	82400	0700	014002	CIGNA THEODORE	31 OLD MONTAUK H	M	Auto Body, Tire Shops	Rear	NO
0200	85200	0300	013002	FLYNN MICHAEL A			Unknown		
0200	85100	0300	040000	FAZIO MICHAEL - SURIANI JOANN V - TE	MONTAUK HWY	S	Vacant Land - Commercial Areas		
0200	82400	1000	044001	PUNIT COMPLEX L L C	1600 MONTUAK HW	M	Area,Neighborhood Shopping Centers	Rear	NO
0200	85100	0300	051000	GROSS MICHAEL - GROSS TERRY R	1009 MONTAUK HW	S	One Story Structure-Multi Occp.	West	NO
0200	85200	0100	039000	BOLLYWOOD ENTERTAINMENT GROUP	MONTAUK HWY	S	Vacant Land - Commercial Areas		
0200	85200	0500	009003	CASOLA LORINDA CHRISTI			Unknown		
0200	85100	0200	010002	NINETY FOUR ASSOCIATES INC			One Story Structure-Multi Occp.	Don't Know	NO
0200	85100	0300	048001	PRUDENTI ANTHONY - WEILER MARIE			Fast Food Franchises	Rear	NO
0200	85200	0100	061000	DEVOE THOMAS	1193 MONTAUK HW	M	One Story Structure-Multi Occp.	Rear	YES
0200	85100	0500	013000	LIBERTI & SONS REALTY CO LTD	MONTAUK HWY	S	Parking Lot		
0200	85100	0400	039000	K & M REALTY ENTERPRISES INC			Vacant Land - Commercial Areas	South	NO
0200	85200	0500	011002	CASOLA ROBERT F			Unknown	Rear	YES
0200	85200	0100	080000	BAYNON PROPERTIES LLC	MONTAUK HWY	M	Apartments	East Side	YES
0200	82400	0900	011000	POJE FRANK - POJE MARIE	1574 M ONTAUK HW	M	One Story Structure-Multi Occp.	Don't Know	NO
0200	82400	0900	004002	FLEISHER LAWRENCE	DENTON PL	M	Apartments	Don't Know	YES
0200	85100	0300	039000	KATSAMANIS ANTONIA - KATSAMANIS ST	MONTAUK HWY	S	Vacant Land - Commercial Areas		
0200	85100	0300	054000	DICARLO SR JAMES	PARK AVE	M	Vacant Land - Commercial Areas		
0200	85100	0500	002000	WORLD REALTY CORP	910 MONTAUK HWY	S	One Story Small Structure		
0200	85200	0100	091002	UNKNOWN			Unknown		
0200	85200	0100	081000	BAYNON PROPERTIES LLC	MONTAUK HWY	M	Apartments	East Side	YES
0200	82400	0600	046001	PRIANTI CATHERINE A - PRIANTI JR DOM			Single Family Residence	Rear	YES
0200	85200	0300	006000	C J & B J PROPERTIES INC	5 MILLER PL	M	Auto Body, Tire Shops	Rear	NO
0200	85200	0300	009001	NOSZKO ALEXANDER			Unknown	Rear	NO
0200	82300	1000	021001	COAST TO COAST PETROLEUM CORP			One Story Small Structure	East Side	YES
0200	82300	0800	078000	HELLMER BRYAN	SMITH ST	M	Residential Vacant land		
0200	85200	0100	083002	BROOKHAVEN TOWN OF			Community Services		

0200	82400	1000	005000	PASTORE NOREEN	STERLING PL	M	Vacant Land - Commercial Areas		
0200	82400	0200	024000	VIN RICH INC	1467 MONTAUK HW	M	Residential-not Living Accomd		NO
0200	82400	0800	016000	DUBICKI WACLAW	MONTAUK HWY	M	Residential Vacant land		
0200	85200	0100	034000	BOLLYWOOD ENTERTAINMENT GROUP	MONTAUK HWY	S	Vacant Land - Commercial Areas		
0200	85200	0100	023000	RUSSO DEBRA J - RUSSO VINCENT J	HOOVER CT	M	Single Family Residence	Don't Know	?
0200	85200	0500	014000	CASTELLANO VINCENT	MONTAUK HWY	M	Vacant Land - Commercial Areas	Rear	
0200	85200	0200	002000	MAZZELLA ANTHONY - MAZZELLA WILM	MONTAUK HWY	M	Vacant Land - Commercial Areas		
0200	85100	0400	021002	PELUSO PAT			Standard Bank/Single Occupant	Don't Know	CRAWL
0200	82400	0900	014000	LANNI JOSEPH - LANNI RUTH	1580 MONTAUK HW	M	One Story Structure-Multi Occp.	Rear	YES
0200	85100	0300	042000	TORTORICE FAMILY REVOCABLE TRUST	943 MONTAUK HWY	S	One Story Small Structure	Don't Know	YES
0200	82400	1000	008000	BURKHARD JOAN - BURKHARD VINCENT	MONTAUK HWY	M	Vacant Land - Commercial Areas		
0200	82400	0500	027000	INTERCITY PROPERTY MANAGEMENT CC	FRANKLIN AVE	M	Vacant Land - Commercial Areas		
0200	85100	0500	015000	NASTASI CARMELLA - NASTASI GERARD	6 VERSA PL	S	Single Family Residence	Front	YES
0200	85200	0400	016000	FARMER RAYMOND H	MONTAUK HWY	M	Vacant Land - Commercial Areas		
0200	85200	0100	026000	PORCELLI JAMES	MONTAUK HWY	Y	One Story Small Structure	Rear	NO
0200	85200	0500	007000	GONZALEZ DANCY - GONZALEZ JOSE A	9 CARLTON AVE	M	Single Family Residence	Don't Know	YES
0200	85200	0100	090000	UNKNOWN			Unknown		
0200	85200	0200	001000	HETTYS BELL REALTY CORP	MONTAUK HWY	M	Auto Body, Tire Shops	West	NO
0200	85100	0400	030002	MAURICE JOHN			Unknown		
0200	82400	0600	045002	PRIANTI CATHERINE A - PRIANTI JR DOM			Vacant Land - Commercial Areas		
0200	82400	0500	016000	MUSUMECI PAUL	1583 MONTAUK HW	M	One Story Small Structure	Rear	?
0200	82400	0200	025000	DRNEK LAURA L - DRNEK II RICHARD J	1473 MONTAUK HW	M	One Story Structure-Multi Occp.	Rear	NO
0200	85100	0300	053004	HL MASTIC ASSOCIATES LLC	MONTAUK HWY	S	Vacant Land - Commercial Areas		NO
0200	85200	0100	040000	BOLLYWOOD ENTERTAINMENT GROUP	MONTAUK HWY	S	Vacant Land - Commercial Areas		
0200	85200	0500	008001	CASOLA LORINDA CHRISTI			Unknown		
0200	85200	0100	092000	UNKNOWN			Unknown	Rear	YES
0200	82400	0600	047001	PRIANTI CATHERINE A - PRIANTI DOMINI			Unknown	Rear	YES
0200	82400	1000	001000	PASTORE JOHN - PASTORE NOREEN	1 HERKIMER ST	M	One Story Small Structure	East Side	NO
0200	85100	0200	026000	NINETY FOUR ASSOCIATES INC			Vacant Land - Commercial Areas		
0200	85200	0100	043000	BOLLYWOOD ENTERTAINMENT GROUP	MONTAUK HWY	S	Vacant Land - Commercial Areas		
0200	82400	1000	002000	PASTORE JOHN	3 HERKIMER ST	M	One Story Small Structure	East Side	NO
0200	82400	0800	007000	MAC COMMUNICATIONS INC	8 ROBERT ST	M	Single Family Residence	East Side	YES
0200	82400	1000	013001	MASTIC AMBULANCE DISTRICT	GUNTHER PL	M	Community Services	Rear	NO
0200	85200	0100	041000	BOLLYWOOD ENTERTAINMENT GROUP	MONTAUK HWY	S	Vacant Land - Commercial Areas		
0200	85200	0100	064000	DEVOE AUTO PARTS INC	1225 MONTAUK HW	M	One Story Small Structure	Rear	CRAWL
0200	82400	1000	020000	H & R REALTY ASSOCIATES INC	1650 MONTAUK HW	M	Auto Body, Tire Shops	East Side	NO
0200	85100	0600	011000	TEPPER JACK - TEPPER JULIUS	VAN BUREN ST	M	Parking Lot		
0200	85200	0100	071001	MEH REALTY CORP INC			Unknown	Rear	NO
0200	82500	0300	001001	SWIFT STREAM FARMS INC			One Story Small Structure	East Side	NO
0200	85200	0300	007000	JOHANNTGES BARBARA - JOHANNTGES	1180 MILLER PL	M	Two family Year-Round Residence	East Side	YES
0200	82400	0800	009000	VIRAL L L C	MONTAUK HWY	M	One Story Small Structure	Rear	NO
0200	82400	0800	018000	DUBICKI MARIA	1518 MONTAUK HW	M	Single Family Residence	Rear	YES
0200	82300	1000	004003	LUKASZEWSKI PAUL - SCEUSA PETER P	1425 MONTAUK HW	M	Professional Building	Don't Know	NO

0200	82400	1006	015000	WOLF C A REALTY CORP	MONTAUK HWY	M	Service &Gas Stations	West Side	CRAWL
0200	82400	1006	019000	803 REALTY CORP			Service &Gas Stations	Rear	NO
0200	85100	0600	001000	SOUTH SHORE PROPERTIES INC	980 GARDEN PL	S	Service &Gas Stations	Rear	NO
0200	85200	0406	020000	SHIMINSKY III WILLIAM - SHIMINSKY JR V	1268 MONTAUK HW	M	One Story Small Structure	Rear	NO
0200	85200	0100	031000	BOLLYWOOD ENTERTAINMENT GROUP	MONTAUK HWY	S	Vacant Land - Commercial Areas		
0200	85200	0200	006001	ALFANO VINCENT - ALFANO VIVIAN			One Story Small Structure	Rear	YES
0200	85200	0200	007000	DESHLER ENTERPRISES LLC	1154 MONTAUK HW	M	Bank Complex-Office building	Rear	NO
0200	85200	0100	079000	BAYNON PROPERTIES LLC	MONTAUK HWY	M	Apartments	East Side	YES
0200	82400	0400	027000	SFOGLIA BENEDICT - SFOGLIA ERIC - SF	1535 MONTAUK HW	M	Parking Lot		
0200	82400	0800	019000	DUBICKI MARIA	1530 MONTAUK HW	M	One Story Small Structure	Rear	NO
0200	82300	0800	081000	HELLMER BRYAN	MONTAUK HWY	M	Residential Vacant land		
0200	85100	0300	041000	FAZIO MICHAEL - SURIANI JOANN V - TE	MONTAUK HWY	S	Vacant Land - Commercial Areas		
0200	85100	0600	004002	RHINEBECK REALTY LLC			Vacant Land - Commercial Areas	Rear	NO
0200	85200	0100	049000	BOLLYWOOD ENTERTAINMENT GROUP	MONTAUK HWY	S	Vacant Land - Commercial Areas		
0200	85100	0500	014000	LIBERTI & SONS REALTY CO LTD	920 MONTAUK HWY	S	One Story Structure-Multi Occp	East Side	
0200	85200	0100	029000	BOLLYWOOD ENTERTAINMENT GROUP	MONTAUK HWY	S	Vacant Land - Commercial Areas		
0200	85200	0100	091001	UNKNOWN			Unknown		
0200	85100	0300	032001	EDFLO PROPERTIES INC			One Story Structure-Multi Occp.	Front (N. of M. Hwy)	YES
0200	82400	0200	027001	TAMWEST PROPERTIES LLC			Area,Neighborhood Shopping Centers	Front	YES
0200	85100	0500	012000	LIBERTI AND SONS REALTY CO LTD	MONTAUK HWY	S	Vacant Land - Commercial Areas		
0200	85200	0100	027000	PORCELLI JAMES - PORCELLI NICHOLAS	MONTAUK HWY	M	Vacant Land - Commercial Areas		
0200	85200	0500	009002	BRENNAN THOMAS - CONDON MAUREEN	MONTAUK HWY	M	One Story Small Structure	Front	YES
0200	85200	0100	076000	BAYNON PROPERTIES LLC	MONTAUK HWY	M	Vacant Land - Commercial Areas		
0200	85100	0500	017001	LONG ISLAND COMMERCIAL BANK			Unknown	West	NO
0200	82300	0800	082000	HELLMER BRYAN	MONTAUK HWY	M	Residential Vacant land		
0200	82400	0600	015000	SUNDERMAN HELEN - SUNDERMAN RUD	MONTAUK HWY	M	Single Family Residence	Rear	YES
0200	85100	0600	010000	TEPPER JACK - TEPPER JULIUS	MONTAUK HWY	M	dog Kennels-Veterinary Clinics	Rear	YES
0200	85200	0100	044000	BOLLYWOOD ENTERTAINMENT GROUP	MONTAUK HWY	S	Vacant Land - Commercial Areas		
0200	85200	0100	054000	C S K CORP	MONTAUK HWY	M	Parking Lot		
0200	85200	0100	056000	TAORMINA MARIA	MONTAUK HWY	S	Vacant Land - Commercial Areas		
0200	85100	0200	010003	NINETY FOUR ASSOCIATES INC			Vacant Land - Commercial Areas	Rear	NO
0200	85100	0200	008000	ADIPIETRO SALVATORE	795 MONTAUK HWY	S	Unknown	West	NO
0200	82400	0300	055005	POWER TEST REALTY CO LTD PARTNERS			Minmart	East Side	NO
0200	85100	0300	035000	MALTESE ANGELA	915 MONTAUK HWY	S	One Story Small Structure	Rear	YES
0200	82400	0600	044000	TOMASELLO CARMELO	9 MONTGOMERY AV	M	Single Family Residence	Rear	YES
0200	85200	0100	035000	BOLLYWOOD ENTERTAINMENT GROUP	MONTAUK HWY	S	Vacant Land - Commercial Areas		
0200	85200	0100	042000	BOLLYWOOD ENTERTAINMENT GROUP	MONTAUK HWY	S	Vacant Land - Commercial Areas		
0200	85200	0400	001000	PRIME PROPERTY I LLC	1226 MONTAUK HW	M	Unknown		
0200	85200	0100	066001	NORTH FORK BANK	1235 MONTAUK HW	M	Bank Complex-Office building	Rear	NO
0200	85100	0200	006000	M PARISI & SON CONSTRUCTION CO INC	795 MONTAUK HWY	S	Vacant Land - Commercial Areas		
0200	82400	0800	012000	ILLARDO FRANK	MONTAUK HWY	M	One Story Structure-Multi Occp.	East Side	NO
0200	82400	0800	015000	DUBICKI WACLAW	MONTAUK HWY	M	Residential Vacant land		
0200	82400	0800	017000	DUBICKI MARIA	1510 MONTAUK HW	M	Residential-not Living Accomd		

0200	82500	0100	019000	RIVERSEDGE AT MORICHES INC	900 MONTAUK HWY	M	Apartments	Rear	YES
0200	82400	0300	018000	COUNTY OF SUFFOLK	MONTAUK HWY	M	Vacant Land - Commercial Areas		
0200	85200	0100	025000	NAIM SHEIKH M	1133 MONTAUK HW	M	One Story Structure-Multi Occp.	Front / Rear	YES
0200	85200	0500	015000	CASTELLANO VINCENT	1412 MONTAUK HW	M	Converted Residence	Don't Know	CRAWL
0200	85200	0100	075001	TOM BORG ENTERPRISES INC			One Story Structure-Multi Occp.	Rear	NO
0200	82400	0400	070001	SINGH DEVENDRA K - SINGH LALITA			Unknown	Don't Know	YES
0200	85100	0300	027000	GALELLA MARY - MARTINEZ JOSE - SCA	890 MONTAUK HWY	S	One Story Structure-Multi Occp.	East (N. of Mon.Hwy)	NO
0200	82400	0600	014000	DAVIN SR RICHARD M	SOUTH COUNTRY R	M	Vacant Land - Commercial Areas		
0200	82400	0200	028000	VIN RICH INC	1467 MONTAUK HW	M	Converted Residence	Rear	YES
0200	85100	0500	032001	GARDEN MONTAUK ASSOCIATES LLC	964 MONTAUK HWY	S	One Story Structure-Multi Occp.	Rear	NO
0200	85200	0100	028000	BOLLYWOOD ENTERTAINMENT GROUP	MONTAUK HWY	S	Vacant Land - Commercial Areas		
0200	85200	0500	004001	ALIPERTI JOSEPHINE			Converted Residence	Don't Know	YES
0200	85200	0200	008000	MAIO ANGELA	1160 MONTAUK HW	M	Auto Body, Tire Shops	East	NO
0200	85100	0400	030001	JIFFY LUBE INTERNATIONAL OF MARYLAI			Unknown	Rear	NO