GROWTH AND THE COMPREHENSIVE PLAN

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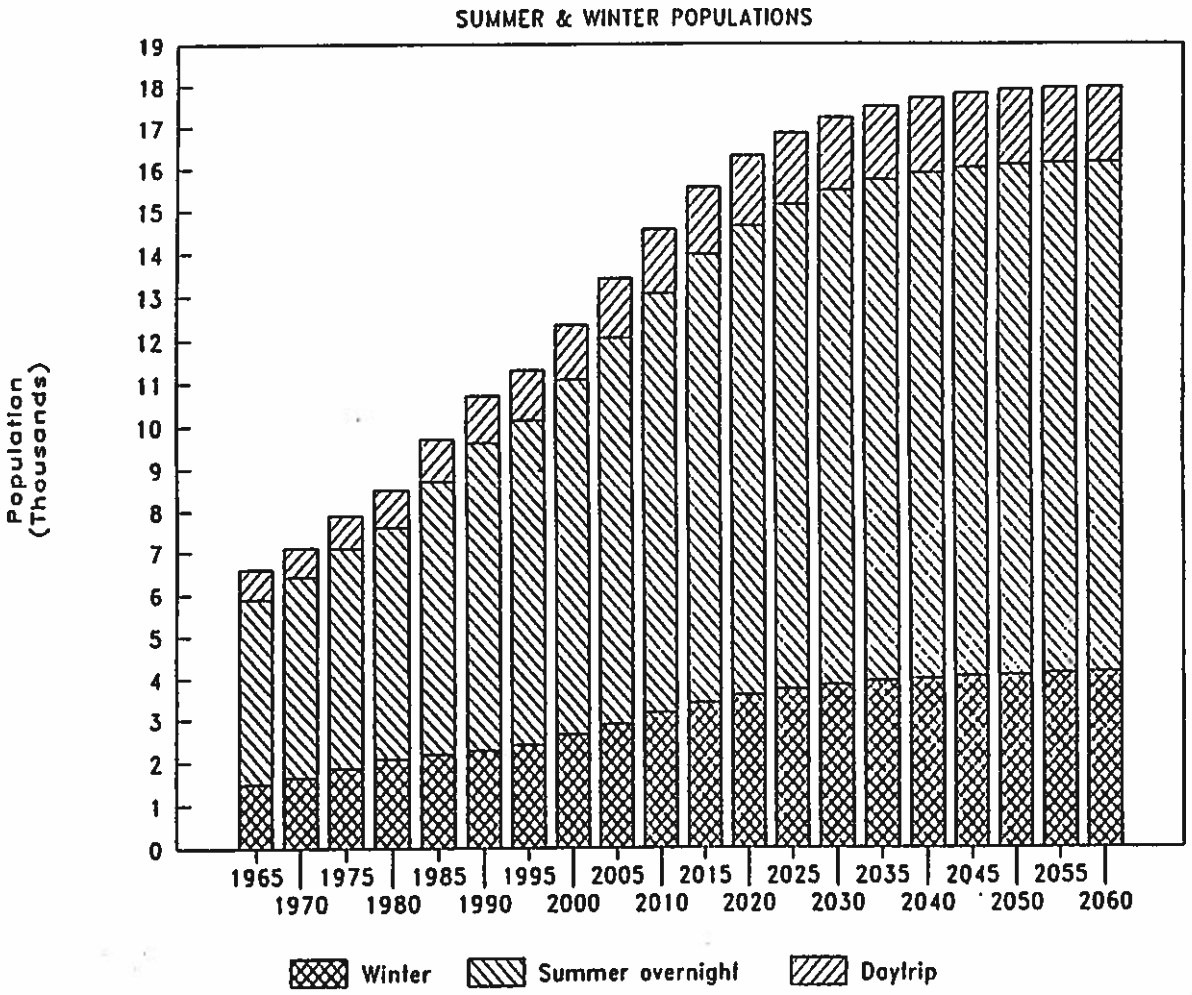

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GROWTH AND THE COMPREHENSIVE PLAN

Attractive places attract growth. A challenge in planning for Shelter Island, certainly an attractive place, is to somehow assure that the growth which results from being attractive doesn't destroy what makes the Island desirable, or exceed sustainable capacity. This analysis lays the groundwork for designing such assurance, by first analyzing the Island's current circumstances, and then projecting growth and its consequences, growth's relationship to carrying capacities, and framing possible actions to protect Shelter Island's critical qualities[1].

CURRENT CIRCUMSTANCES

This part of the report first provides a detailed picture of the relationships among housing, jobs, and taxes at a point in time, 1990, chosen because it is the year for which the fullest possible information is available. It then goes on to consider changes in some of those elements over time past and future.

This analysis is undertaken with a healthy disrespect for the possible precision in any of the statistical data available. That is especially important in the case of a small island community where it is easy for technicians and their standard formats to fail to capture much of what is really happening. At the same time, there is much that is revealing in Census and other government data, and with careful examination, that data can help provide a basis for Town policies on growth, jobs, housing, and taxation.

BASIC EQUILIBRIUM

Places as attractive and fragile as Shelter Island exist in a delicate equilibrium. We have made one of many possible diagrams of the equilibrating forces (see Figure 1 with the other tables and figures, all at the end of the report). The extraordinary quality of living offered by the Island results in many people choosing to spend time there, chiefly in their leisure time, whether tripping, vacationing, or in retirement, in addition to those who choose to live there full-time. That results in summer and winter population growth, and through that results in demand for housing and support for jobs.

The basic population increase in turn results in growth in service demands, growth in need for public funds to support those services, and need for more rules about how those growth and service demands are to be served. The growth, which consumes resources and

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[1] This report borrows analysis and, as appropriate, language from two earlier reports prepared by Herr Associates for Block Island, RI: "Growth and the Comprehensive Plan", revised December 20, 1992, and "Housing, Jobs and Taxes", revised January 9, 1993.

inevitably alters Island character, together with the associated growth in taxes, fees, and rules all combine to reduce, in some measure, the attractiveness which induced the growth in the first place. The negative impacts of growth help keep that growth from being even greater than it is.

The related paradox is that to the degree that the Island succeeds in mitigating the negative impacts of growth it encourages more development than would otherwise occur, potentially adding to strains on resources. In planning we are searching for an extraordinary balance through which this attractive place can manage to maintain its qualities in the face of systematic forces which would destroy them. Critical to that effort is understanding how housing, jobs, and taxes interrelate.

JOBS AND THE LABOR FORCE

While the 1990 U.S. Census gave quite good information on workers who live on Shelter Island (the resident labor force), information about jobs located on Shelter Island is fragmentary and unreliable. About 1,100 Shelter Island residents are in the labor force, holding or seeking jobs (table 1). There are about 750 off-season jobs on Shelter Island, resulting in net out-commuting of about 350 persons. In the summertime, the labor force probably grows to about 1,600 workers (table 4), with perhaps 1,200 on-Island jobs, leaving net out-commuting little changed from off-season.

On-Island jobs are broadly distributed among the major industry groups used in standard reporting (table 1 and figure 2), but the underlying economic base is clearly leisure services, and the construction which growth supports. The distribution of resident workers among industries is similar, with heavy out-commuting in all categories except government, which is nearly "balanced", and transportation and utilities, for which there is apparently net in-commuting.

While leisure industry jobs are commonly low skill and low wage, that is more true for summer-only positions than for jobs held by the year-round labor force directly or indirectly supported by that industry (see table 2 and figures 3-5). The Shelter Island off-season labor force is well educated (almost two-thirds have been to college, more than one in ten holds a graduate degree), and three-quarters hold positions Census-classified as high skill (managerial, professional, technical, service). Census-reported mean income (1989) from wages and salaries was over $45,000, nearly $24,000 from self-employment (often supplementing other sources) (table 3). Average commuting time is under 20 minutes according to the Census, whereas nationally average commuting time is approaching a half hour. None of that description should invite complacency, but it is a picture of a solid economy with a good relationship of jobs to labor force (not surprising for an island).

HOUSING AND JOBS

Jobs and housing on Shelter Island have an important but complex relationship. First, almost a third of all households counted in the April Census had no earnings, but rather were supported by investment income, Social Security, or retirement funds (see table 3 and figure 6). Only 2% of Shelter Island households reported public assistance income. The Comprehensive Plan notes that economic development is an important key to housing affordability, which is true, but it is an incomplete key, since a large share of all year-round households receive no income support from current employment.

Second, workers "double up" in households. The Census found a labor force of 1100 workers living in 619 housing units, or 1.8 workers per worker household, an unusually high ratio.

Third, many housing units are reserved by their owners for seasonal residence. The 1990 Census counted about 2,260 housing units on Shelter Island, but in April found only 1,020 of those units occupied, the rest being vacant, the vacant units predominantly being housing which serves seasonal peaks of population (see table 4). About 85% of the April-occupied housing was owner-occupied, only 15% rented.

It is striking that nearly half of all households resident on Shelter Island in April, 1990 reported income from Social Security, and 29% reported income from other retirement sources. Consistently, the Census reports almost 30% of all households having only one or two members, as is commonly true for retirees. That poses a special type of housing demand, likely to grow in the future.

HOUSING COSTS

The prices associated with that housing inventory reflect the extraordinary character of the Island (see figures 9 and 10, tables 5 and 6). The 1990 median value of housing on Shelter Island which is owner-occupied in April (that excludes summer-only dwellings) was reported by the 1990 Census at $251,000. That is hugely above the County median of $167,000. More importantly, it is much higher than the median-income household living year-round on Shelter Island could possibly afford if they now had to buy their own home. As Figure 9 illustrates, about 80% of Shelter Island households have incomes below $71,000, enough to support the costs for less than 15% of the owner-occupied housing units reported in the Census. As is common, most Shelter Islanders could not afford to buy the house they live in. The housing price decline since 1990 has not erased that problem.

Based on widely accepted relationships of income and cost, it would take an income of about $118,000 to support the median-priced housing unit on Shelter Island. The Shelter Island median household income in 1990 was about $40,000, barely more than a third that required to support the median-priced unit reported in the Census. Note that the only value

figures collected by the Census were for April-occupied units. Had the seasonally-occupied housing been included in the price survey the results might well have been even more startling.

In contrast, the median gross rent (including utilities) on Shelter Island in April, 1990 was reported at $702 per month, below the County median of $802. That rent level, if available year-round, would require only an income of $28,000, about 70% of the community median. Of course, in the summer the Shelter Island median rent would be far different, as would the median rent for year-round rentals. Even allowing for that, it is clear that the dynamic of attractiveness for leisure living very differently impacts rental versus owner-occupied housing. On the other hand, a huge proportion of renter households exceed the common policy guideline of 30% of income going for rent: only at incomes over $35,000 do fewer than half of all Shelter Island households have rent exceeding 30% of income (table 6).

OTHER POPULATION AND HOUSING CHARACTERISTICS

Table 3 and figures 7 and 8 document the Island's reliance on private on-site water supply and sewage disposal systems. That reliance is actually growing, with almost all new homes using individual wells and septic disposal systems. That reliance strongly impacts feasible and appropriate approaches to land management.

Table 7 compares Shelter Island with the County and the State regarding a variety of population and housing characteristics. First, the Shelter Island population is relatively mature, with a small share of population under 18, a large share over 64. As is expected for rural areas in this region, the population has a smaller proportion of non-white or Hispanic population than the County or State. Household size on Shelter Island is a bit smaller than County or Statewide, reflecting age characteristics. A somewhat smaller share of the Shelter Island population lives in family (related) households than is true Countywide, again reasonable in light of an older population (persons living alone are not families).

Median income on Shelter Island is quite low relative to the County, but not relative to the State. Shelter Island's dwellings are largely single-family detached, and hardly any are overcrowded, as indicated by the classic "standard" of one person per room. Housing condition is closely correlated with that indicator, and it apparently is true that a relatively small share of housing on Shelter Island has serious condition problems.

Table 8 adds further Census-based information. The age profile of the housing is not unusual, reflecting moderate growth. Some households have special needs, such as serving the handicapped. According to the Census, nearly 200 Shelter Island households include physically handicapped persons, and perhaps an equal number can be expected to include persons with mental handicaps. As of April, 1990, only 43 single-parent households with all children aged 18 or under were reported, only four of them (all female-headed) with

incomes below Federal poverty level. Another eight households with both parents present reported incomes below poverty level. The number of households in these categories indicates that there is a consistency of need between Shelter Island and the mainland, simply with smaller numbers here, which actually may make meeting some needs more difficult.

"IMP" ANALYSIS

We have used a Herr Associates computer software package called "IMP" to analyze how jobs, housing, population, and taxes interrelate. Now that it is calibrated, that model is available for use in analyzing the impacts of specific projects proposed for the Island. A basic premise of the model is that great precision in such analyses is impossible, so various approximation techniques are used where hard data is difficult or impossible to obtain. No standard model works convincingly for a community like Shelter Island, but we have attempted to shape IMP so that it will do so.

Table 9 Community Profile simply lists the collected data on which the model relies, all for 1990. The only estimates in the "Basic Data" which are made by the model, as opposed to being inputs, are for persons per housing unit for various housing types. That calculation counts all housing units, winter-occupied or not, but the "persons" are only winter residents.

Table 10 Fiscal Profile includes a number of model analyses, using fiscal year 1992 data generalized for the typical location (differences between locations because of service districts are relatively minor). The Cost/Revenue Balance analysis shows that houses cost far more to service than the revenue they provide in taxes, the difference being made up in part by business and utilities, but even more so by taxes on undeveloped land. Undeveloped land in FY 92 comprised 30% of total valuations, but nowhere near that share of costs. It should be noted that this and later analyses are predicated on the judgment that revenues raised each year really meet expenses. In narrow accounting terms that is true: each year has a balanced budget. However, it is commonly argued that many communities, possibly including Shelter Island, are currently failing to keep up with capital needs, so that although the books balance, and any debt is being repaid, investments in public facilities are not keeping pace with deterioration, obsolescence, and growth. Accounting for that shortfall could substantially alter these figures.

In a related analysis, the Fiscal Profile table indicates that before considering indirect impacts, the average new single-family home would have to be assessed for $13,600 to pay as much in taxes as it costs to service, while virtually any new business would pay more in taxes than it costs to service, with an average "break-even" assessed valuation of only $2,000 per thousand square feet (table 10 "Breakeven AV"). Realistically, however, cost/revenue analysis is much more complex than the modeling in that table, and must take into account the indirect impacts which this table does not reflect.

Tables 11 and 12 (each spanning a number of pages) show an illustrative comparison of the impacts of two arbitrarily selected development possibilities: 20 homes, and addition of a small 20 job store. Although the store will employ twenty people, it does not add twenty to the number of people who will be employed on-Island. Among other things, much of the store's support is reflected in lowered support for employment elsewhere ("displacement job loss"). On the other hand, the nine resulting net added jobs are estimated to lead to three people moving to Shelter Island (or refraining from moving away) to take some of those jobs, resulting in further impacts through the housing which that supports.

Table 12 takes the impacts estimated in table 11 and estimates their fiscal consequences. The analyses summarize not only the money flows associated with the site of development, but also those which are indirect, such as costs and revenues associated with homes of workers drawn to the Island by the business developments, and changes in State aid attributable to changes in assessed valuation per capita. The net impacts are not huge, although the store option has a substantial $4,000 annual excess of public revenues over public costs, large enough that only extreme assumptions about off-site impacts would reduce it to zero, while the homes sum to a $15,000 deficit, which no reasonable assumptions could reduce to zero or reverse.

This modeling, of course, is not a real analysis, just an illustration of a real system for doing such studies. One contribution of the Comprehensive Plan project is provision of this model for making such studies, and perhaps some understanding that intuition about impacts may be grossly incorrect.

CHANGE OVER TIME

To this point, this analysis has focussed on a single point in time, roughly 1990. Equally critical is understanding change over time. Growth and some of its consequences have been modeled for Shelter Island using the LAND model, a set of spreadsheet templates designed for such analyses, extensively modified for this special application. Land use information was chiefly taken from the Suffolk County 1986 Planning Study for Shelter Island, updated based upon building permit data. Data on population, jobs, and utilities were added from a variety of sources, and the model then was calibrated to provide long range projections under a variety of assumptions about zoning change and land acquisition. Projections were carried seventy years into the future, far enough to test ultimate capacity limits, but also so far that going further would strain plausibility. A memo on details of the methodology and still more detailed tabulations of results (available by year to 2000 and by five-year increment to 2060) are available upon request.

THE BASE GROWTH PROJECTION

Four cases or alternatives are analyzed: BASE, SIZE, OPEN, and PACE. The BASE case assumes continuation of current zoning and the current level of land protection efforts. Shelter Island has about 2,200 dwelling units now. Under current zoning, the land's build-out capacity for the Island is about 4,000 dwelling units, more or less. Capacity depends upon how many units utilize "grandfathering" or vested rights, and how many accessory dwellings are added. We estimate that there are nearly 700 housing units which could be built on "grandfathered" lots, and that accessory units would eventually be added to 10% of both new and existing dwelling units. Development on new lots created under current zoning has potential to add about 760 housing units, while grandfathering and accessory units have a reasonable potential to add about 1,000 housing units, essentially immune to change from revising zoning's lot area requirements.

In the next decade some 300 housing units would be added if building continued the pace of the past decade, depending largely on the speed of regional economic recovery, and for the seventy-year study horizon in 2060 the BASE projection indicates 3,900 housing units, nearly double the present number, leaving capacity for adding only about 50 units after 2060 (see tables 13 and 14 for tabulations of the data on which the text is based).

The exact current summer population of Shelter Island is unknown, but we estimate the number of overnight residents at just under 10,000 persons, the bulk of whom are staying in their own or rented houses. In addition there are hotel and inn guests and boat live-ins. It is estimated that they are joined by over 1,000 day-trippers on peak weekends. Population has been growing less rapidly than housing units, with fewer persons per housing unit as the population ages. A reasonable estimate is that the present 9,600 persons summer overnight population would grow to 16,000 persons by 2060, given the housing growth projected under current zoning and land protection.

Shelter Island's winter population growth is largely dependent upon growth in seasonal activity, though there is a retirement population whose growth is independent of seasonal activity, and there are hopes for other forms of economic diversification. Projecting past trends in the relationship of winter to summer population, the winter population of about 2,300 persons now would grow to about 3,800 persons by 2060, given the seasonal growth projected in this analysis.

In a community such as Shelter Island, employment is mainly dependent upon growth in seasonal and year-round population, rather than population being based on economic opportunity. As the seasonal and year-round populations grow, a larger share of the services they support can be expected to be provided locally, so local jobs can be expected to grow more rapidly than population. Our model's BASE projections suggest growth from about 1,300 jobs on Shelter Island in the summer now to about 2,900 jobs in the year 2060, and from 700 winter jobs now to about 1,500 winter jobs in the year 2060.

That BASE case growth has impacts on such things as water demand (and supply), wastewater, groundwater quality, school enrollment, and traffic. Those impacts, as will be discussed below, raise real doubt about the desirability of that level of population and associated activity. For that reason, three alternatives to the status quo of zoning and land protection were analyzed: "SIZE", "OPEN" AND "PACE".

The intent of the alternatives is to explore the "what if..." possibilities. What if there is interest in reducing ultimate buildout population? Two alternative ways of approaching that were explored. The SIZE case explores increasing lot size requirements as a way of reducing build-out. The OPEN case explores major open space acquisition as a means of doing the same. Alternatively, what if there were interest not in reducing ultimate build-out but rather in moderating the rate at which that ultimate saturation is reached? The PACE case explores use of a regulatory growth timing device as a means of accomplishing a reduced growth rate.

THE "SIZE" ALTERNATIVE

In the SIZE alternative all of the lot area requirements for residential development were assumed to be increased by 50%. The RC district, now requiring 30,000 square foot lots, would then require 45,000 square foot ones. The RA district requirement would grow from 80,000 square foot lots now to 120,000 square foot ones.

The projected impacts of those huge zoning changes are modest, reducing total build-out capacity, including existing dwellings, from about 4,000 housing units to about 3,600 housing units. By the year 2060, the projected number of housing units is about 10% lower in the SIZE alternative than would have been true under existing zoning (BASE). A 50% increase in lot area requirements yields less than a 10% reduction in anticipated housing totals because so much of the future housing stock already exists, unaltered by zoning change, and so much of future housing will be built on "grandfathered" land exempt from changes in zoning or as additions to existing buildings.

THE "OPEN" ALTERNATIVE

The OPEN alternative assumes no zoning change, but is predicated on a public and charitable effort at acquisition of nearly half of the remaining developable but unbuilt land, and reserving it for open space. Coupled with the 2,700 acres now protected by ownership, restriction, or being unbuildable (dunes or wetlands), about 40% of the Island's land area would be permanently protected against development. That level of protection would require a heroic level of effort, but it isn't beyond credibility.

That added open space, with resulting reduction in land available for development, has significant but not huge consequence for both eventual levels of development and

nearer-term development rates. By the year 2060, the difference between BASE and OPEN levels of housing, population, and employment is about 10%. That may seem small in relation to such a large protection effort, but half of the development to accommodate future population and jobs is already in place, and the open space acquisition is predominantly in the lowest-density areas.

THE "PACE" ALTERNATIVE

The PACE alternative explores the consequences of Shelter Island legislatively "pacing" the rate of its growth. Complex systems widely exist, but we modeled a simple one: annual increase in single-family housing limited to a 1% increase over existing stock, half the rate of the past decade. That allows about a 22-unit increase annually at present, with the annual limit increasing over the years. Our modeling indicates that by about 2020 that constraint would have lowered the number of units on the Island by about 500 housing units below the number otherwise expected. By sometime around 2030 that constraint would become inconsequential, because the annual increase would fall below that anyhow, as land shortage takes over as the dominant limitation. By 2060, there is almost no difference in the number of units projected to be built as both the PACE-controlled growth and BASE un-controlled growth approach the same saturation limit.

THE IMPACTS OF GROWTH

The impacts of growth under the four alternatives, BASE, SIZE, OPEN and PACE, have important differences. Based on those differences, appropriate actions for the Island begin to emerge.

Water Demand and Supply (figures 19 and 20)

We have analyzed water demand and supply for all of the Island, not simply the small portions served with public water service. The public systems are clearly important, but the more fundamental question has to do with the adequacy of the Island's aquifer resources to supply everyone's needs, whether on individual wells or public supply.

The present Island-wide level of population and employment probably translates into peak demands of nearly one million gallons of water per day for consumption and lawn and garden irrigation. Assuming no change in per capita or per employee rates of consumption, water demand would grow to about 1.6 million gallons per day in 2060 in the BASE case.

On average over the year, there is between 12 million and 15 million gallons of rain per day falling on the Island, of which about half is probably recharged to the aquifer, the rest evaporating, transpiring through vegetation, or running into the ocean. Not all of that 6-7 million gallons of recharge is available for consumption. Some can't be recovered

because it is a necessary separator of fresh water from the salt water which underlies the entire Island. Some is too contaminated by the consequences of development.

To make plausible projections, we modeled usable supply as if 50% of the recharged water would have been usable or recoverable with no human development on the Island, declining proportionately to 25% usable with full development of the Island. Those parameters are simply a plausible point of departure to illustrate the relationship of supply and development. They are consistent with studies by ourselves and others in other coastal communities. If those figures were to be correct, in the BASE case recoverable water supply would decline by 2060 to 3.2 million gallons per day, while demand would have risen to 1.6 million gallons per day, half of the potential supply.

The SIZE and OPEN alternatives reduce water demand somewhat and increase potential supply (by reducing development), but the relatively narrow differences are not significant from a water supply adequacy perspective. The conclusion here is consistent with that emerging from prior water studies: Shelter Island faces serious issues of water quality, but volume of supply is clearly adequate unless resources are spoiled.

Wastewater Generation and Nitrates (figures 21 and 22).

With individual systems of sewage disposal dominant on the Island both at present and in the projected future, the concern regarding wastewater projections is not construction of infrastructure, but rather capacity to assimilate the contaminants which are not treated by those individual systems. Without public sewage collection and treatment, wastewater disposal could eventually degrade groundwater quality, potentially to the level that it no longer is drinkable, and could eventually degrade ponds and coastal embayments to the point of eutrophication.

Nitrate-nitrogen is the contaminant commonly used as the indicator of water quality because it often is the most limiting, and is relatively easy to model. On Shelter Island, human wastes certainly will eventually be the largest nitrogen contributor, but lawn and garden fertilizing is also a major nitrogen source, and increasingly, acidified rain adds to nitrogen levels in groundwater. EPA requires that drinking water contain no more than 10 parts per million of nitrate-nitrogen. On Cape Cod, a standard of 5 parts per million is being enforced, to assure less than 10 parts per million even under unusual climate or soil circumstances.

The present level of development on Shelter Island is estimated to result in an Island-wide averaged impact on groundwater of about 2 parts per million of nitrate-nitrogen, less where there is little development, more where unsewered development is relatively intensive. In the BASE case that average increases to 3.2 parts per million in 2060, based on the estimate that almost no new development would be served by the Heights collection and disposal system, and only a modest extension of service to existing development would occur. The SIZE and OPEN alternatives lower the nitrate average levels to 2.9 parts per

million.

On this basis, there is no demonstrable need to further limit the amount of growth in order to protect groundwater quality against wastewater pollution. There is a need to assure the adequacy of individual disposal systems where they are relied upon.

School Enrollment (figure 23).

Enrollment projections simply assumed that school population would grow at the same rate as year-round population. That could be substantially over or under real growth, depending upon unpredictable long-range change in the proportion of retirement households, birth rates, and family size. However, the general conclusion is plausible: even in 2060, the school system would have only about 350 children in the BASE case, still a tiny system, with all which that implies in terms of wonderfully human scale but inevitably limited ranges of opportunity and high costs per pupil.

Should school enrollment increase as projected in the BASE case there would inevitably be a variety of strains on facilities and systems, but there is no reason why those strains could not be met, and the result might well be superior educational opportunities, at least in the eyes of some. Consideration of school enrollment, like consideration of most year-round services, probably motivates more, not less, growth, or more exactly, more off-season growth in relation to peak season growth.

Traffic (figure 24).

The amount of development on Shelter Island is consistent with nearly 15,000 vehicle trips per typical summer day, or double that number of trip ends (a trip beginning or ending), the usual trip generation measure. County data indicates that Ferry Road near Town Hall apparently experiences volumes of nearly 10,000 trips on a peak day, or 1,500 trips in a peak hour, not hugely under the nominal capacity of the road to handle 2,000 vehicles per hour.

In the BASE case, growth to 2060 results in nearly doubling the present number of trip ends, growing to over 50,000 trip ends per day. If peak hour trips on Ferry Road were to grow commensurately, it would carry over 3,000 trips in a peak hour. Unless roads and their usage are radically transformed, that level of demand can't be served without major and damaging change. Elsewhere, expansion of present volumes to levels consistent with 50,000 trip ends would mean more noise, disturbance, and demands for safety improvements, but there would not be real capacity shortfalls.

The SIZE and OPEN alternatives proportionately lower traffic, but change nothing fundamental: even with them, Ferry Road won't work in 2060 as presently configured and used.

There are many options for dealing with the prospect of crippling traffic problems, but none are both easy and attractive. Roads can be widened and intersections re-engineered, but many residents will view those "improvements" as destructive changes to Island character. Better provisions can be made for the non-auto traffic which consumes so much street capacity, not just to free capacity for autos, but to better serve those travelling without a car. Access to the Island can be managed to reduce the number of autos on-Island. Development can be configured so that more trips can be made on foot, using compactness rather than road widening to provide access adequacy.

Other Impacts

Most other impacts of growth would generally follow the pattern of those analyzed. In many cases, a larger demand base may actually make it easier to maintain reliable and reasonably-priced service, by providing economies of scale more like those of larger communities. Similar observation can be made for many other functions, ranging from telephone to ferry services. In general, "growing pains" can be expected, but for many functions larger demand should allow better or more economical service.

The major exceptions to that pattern are impacts on scarce Island resources. Those impacts will be more like those on water, raising very real concern about exceeding tolerable capacities. For example, Shelter Island's beaches can certainly accommodate more than the amount of growth projected, provided that one accepts urban standards for beach capacity, but the quality of beach experience and beach-related habitats will be profoundly impacted by the level of growth projected in the BASE case.

Buildout of all now-unprotected land, even if using sensitive location and site design, would be disastrously intrusive into numerous areas of critical ecological concern which are not yet protected. With skilled management, siting, and design, negative impacts on the Island's ecology, groundwater, infrastructure, and visual environment might be made tolerable, leaving only the impact of having (in the 2060 BASE case) a seasonal community 16,000 persons strong on a 7,000 acre Island, which people presumably have chosen to live on or visit in part because of its isolation.

In fact, well before a population of 16,000 is reached it is likely that the marketplace would assure that such a level isn't reached. Cape Cod, whose notorious overcrowding is now impacting growth, has a peak seasonal overnight density, including the National Seashore's land, of about two persons per acre, similar to that projected for Shelter Island's BASE case. In contrast, Nantucket's peak overnight density is now less than one person per acre, and with its growth management efforts, Nantucket is unlikely to reach Shelter Island's present peak season density for more than a generation. Alternatives to potential Shelter Island congestion will exist for the leisure market. Given no public efforts to the contrary, unattractiveness is likely to be Shelter Island's ultimate growth control, not exhaustion of land or water.

POLICY IMPLICATIONS

The accuracy of long-term forecasts such as these certainly is dubious. However, given the finite resources available to an island, it is imperative that future possibilities be fully explored, and that current actions be designed in light of long term potentials, and the limitations which are foreseeable.

Accordingly, the implications from these analyses appropriately are reflected in each element of the Comprehensive Plan. Clearly, the possibility that development might overwhelm the carrying capacity of the Island is very real, but there are available remedies which, with careful application, can assure a balance among legitimate development opportunity, resource stewardship, and protection of a special quality of life.

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Figure 1.
SHELTER ISLAND EQUILIBRIUM

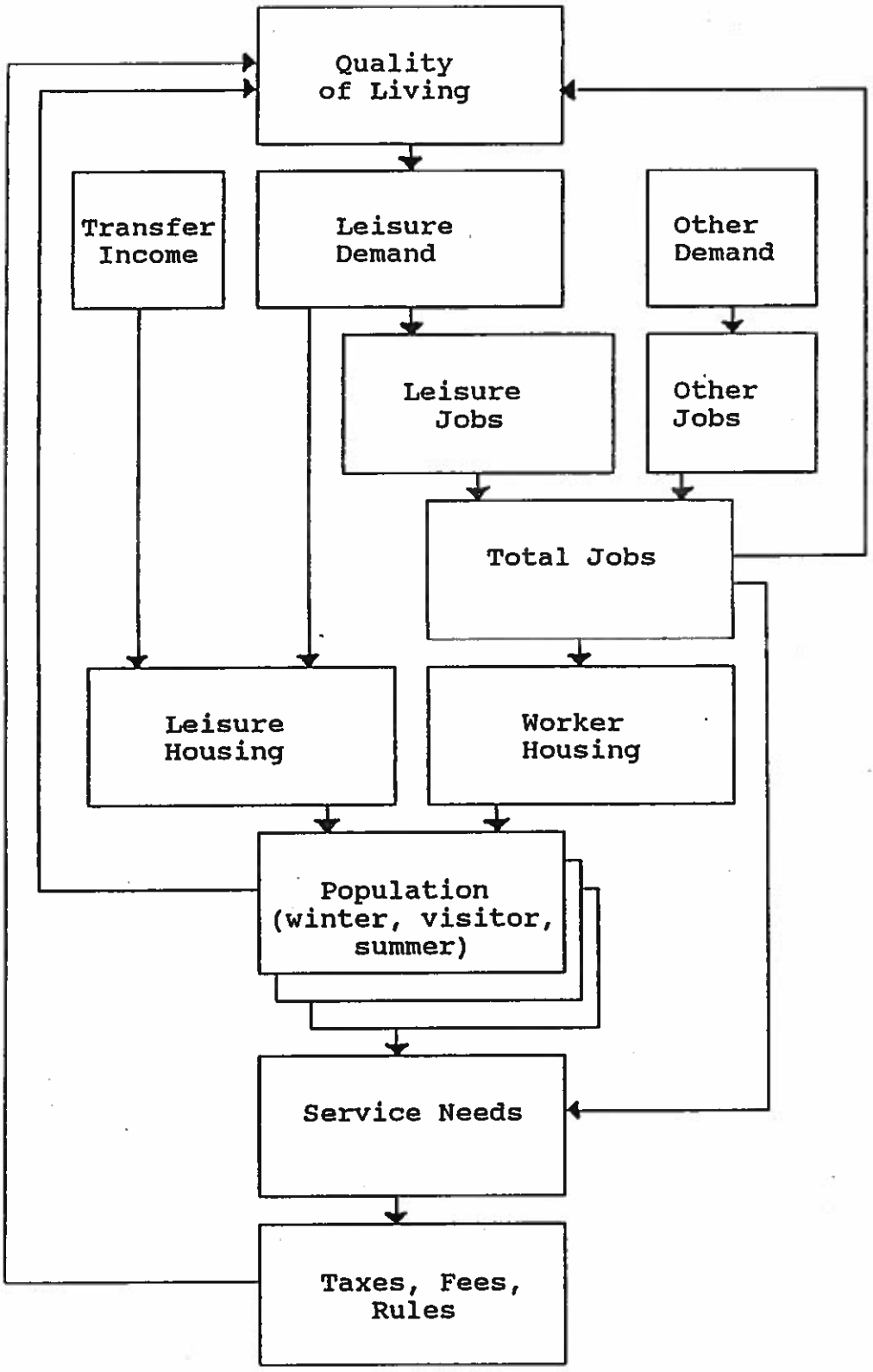

Figure 2

EMPLOYMENT BY INDUSTRY

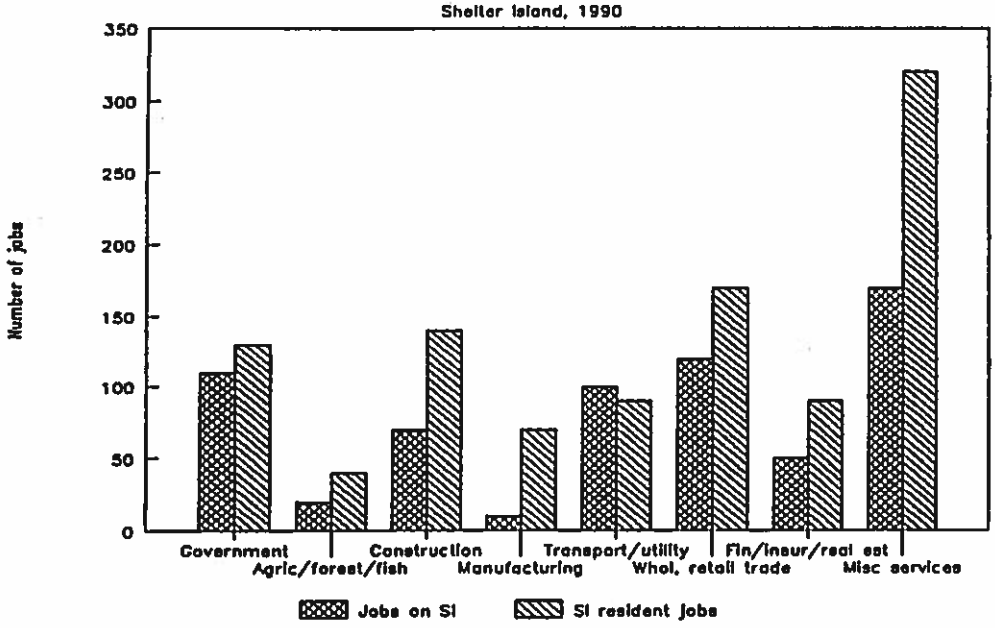

Table 1.

SHELTER ISLAND EMPLOYMENT, 1990

Industry	Jobs on Shelter Is	Shelter Is residents' jobs	Net out-commuting
Government	110	130	20
Agriculture/forestry/fishing	20	40	20
Construction	70	140	70
Manufacturing	10	70	60
Transport/utilities	100	90	-10
Wholesale, retail trade	120	170	50
Finance/insurance/real estat	50	90	40
Miscellaneous services	170	320	150
Total	650	1050	400

Sources:

Jobs on Shelter Is: Herr Associates based on Urban Decision Systems, Inc. data.

Shelter Is residents' jobs: US Bureau of the Census, STF 3A, Spring, 1990.

CENSUSJOBS-A.WK1 05-Jul-93

Table 2.
LABOR FORCE INFORMATION, 1990

	Shelter Island				Suffolk County			
			Cumulative %				Cumulative %	
	#	%	Falling	Rising	#	%	Falling	Rising
EDUCATIONAL ATTAINMENT: Persons 25+								
Graduate degree	266	15%	100%	15%	84,248	10%	100%	10%
Bachelors degree	349	20%	85%	35%	112,047	13%	90%	23%
Associate degree	105	6%	65%	41%	63,919	7%	77%	30%
College, no degree	336	19%	59%	60%	161,154	19%	70%	49%
High school graduate	528	30%	40%	90%	281,557	33%	51%	82%
High school, no diploma	143	8%	10%	98%	101,571	12%	18%	94%
Elementary	41	2%	2%	100%	50,547	6%	6%	100%
Total	1,768	100%			855,043	100%		
OCCUPATION								
Managerial, professional	354	33%	100%	33%	192,565	29%	100%	29%
Technical, service	443	42%	67%	75%	310,879	47%	71%	76%
Farming, fishing	35	3%	25%	78%	8,573	1%	24%	77%
Craftsmen	137	13%	22%	91%	79,624	12%	23%	89%
Operators, laborers	91	9%	9%	100%	73,541	11%	11%	100%
Total	1,060	100%			665,182	100%		
COMMUTING								
Drive alone	785	76%	100%	76%	507,767	78%	100%	78%
Carpool	61	6%	24%	82%	68,963	11%	22%	88%
Bus, Subway, Rail	26	3%	18%	84%	42,988	7%	12%	95%
Ferry	17	2%	16%	86%	209	0%	5%	95%
Bicycle	6	1%	14%	86%	1,520	0%	5%	95%
Walk	49	5%	14%	91%	13,624	2%	5%	97%
Other	5	0%	9%	92%	5,124	1%	3%	98%
Work at home	86	8%	8%	100%	12,794	2%	2%	100%
Total	1,035	100%			652,989	100%		

Source: sample data from Census Tape File 3A.

Shelter-2A\Census\STF-3A 03-Jul-93

Figure 3

EDUCATIONAL ATTAINMENT, 1990

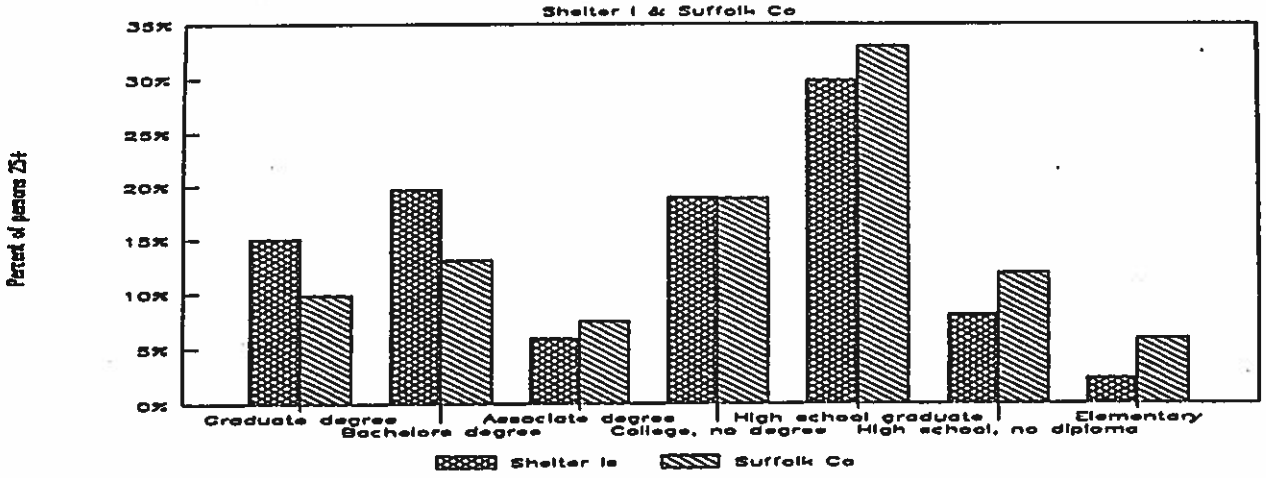

Figure 4

OCCUPATIONS

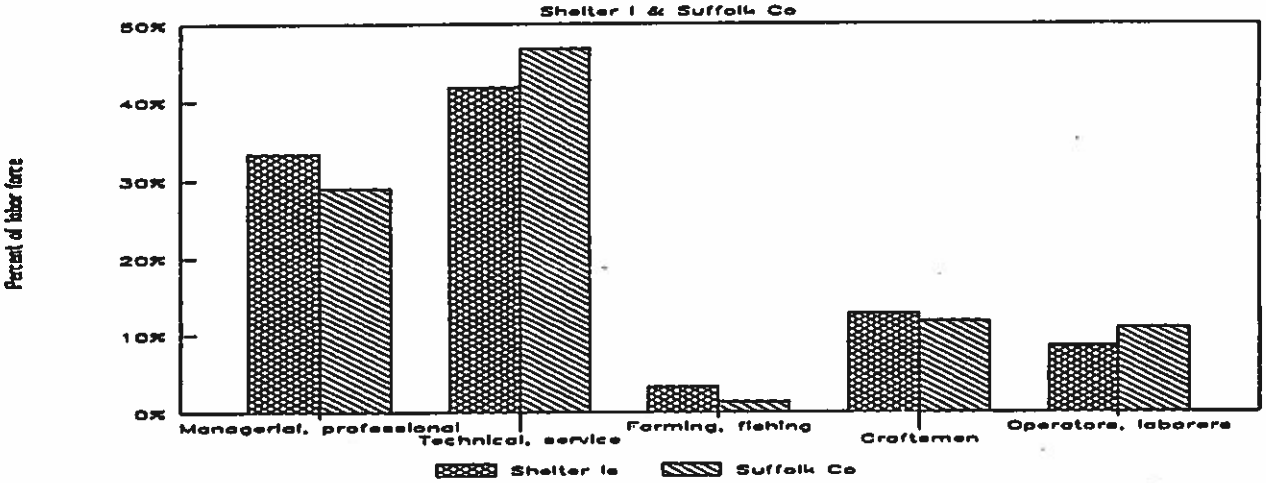

Figure 5

COMMUTING, 1990

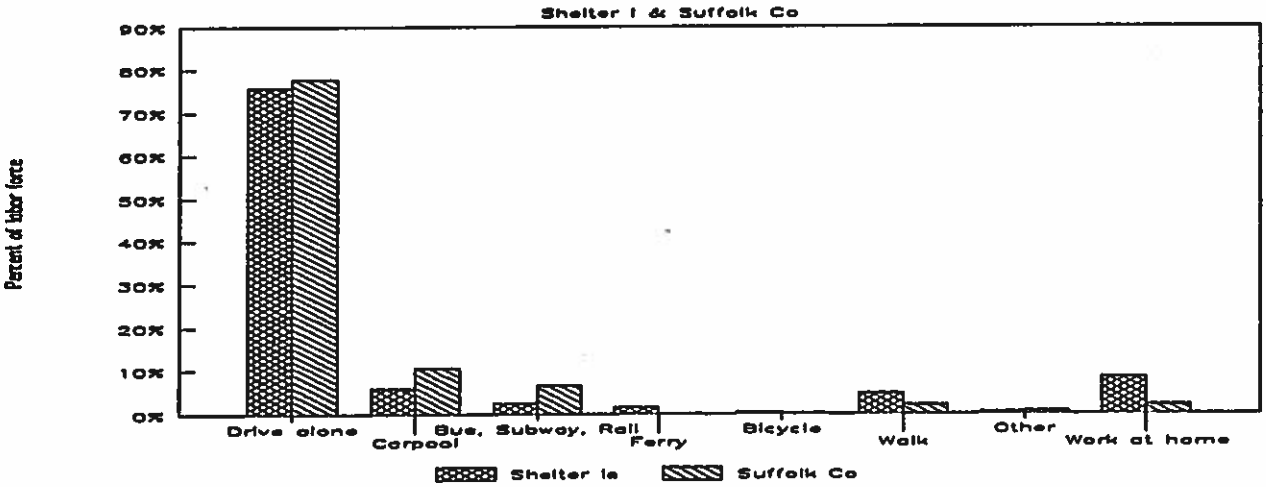

Table 3.
CENSUS INFORMATION, 1990

	Shelter Is		Suffolk Co	
	#	%	#	%
INCOME SOURCES (households)				
With earnings	700	69%	364,199	86%
Wage or salary	619	61%	354,645	84%
Self-employment	266	26%	55,985	13%
Interest, dividends, rent	650	64%	205,098	48%
Social security	462	46%	107,066	25%
Retirement	297	29%	72,311	17%
Public assistance	24	2%	18,340	4%
Other types	79	8%	42,626	10%
Total Households	1,015		424,623	
UTILITIES SERVICE (persons)				
Water service				
Public	197	9%	417,243	87%
Drilled well	1,869	87%	57,585	12%
Dug well	81	4%	5,828	1%
Other	1	0%	661	0%
Sewage disposal				
Public	151	7%	136,890	28%
Septic tank/cesspool	1,988	93%	340,519	71%
Other	9	0%	3,908	1%
Total Persons Served	2,148	100%	481,317	100%

Source: sample data from Census Tape File 3A.

Shelter-2A\Census\INCOME 03-Jul-93

Figure 6
INCOME SOURCES

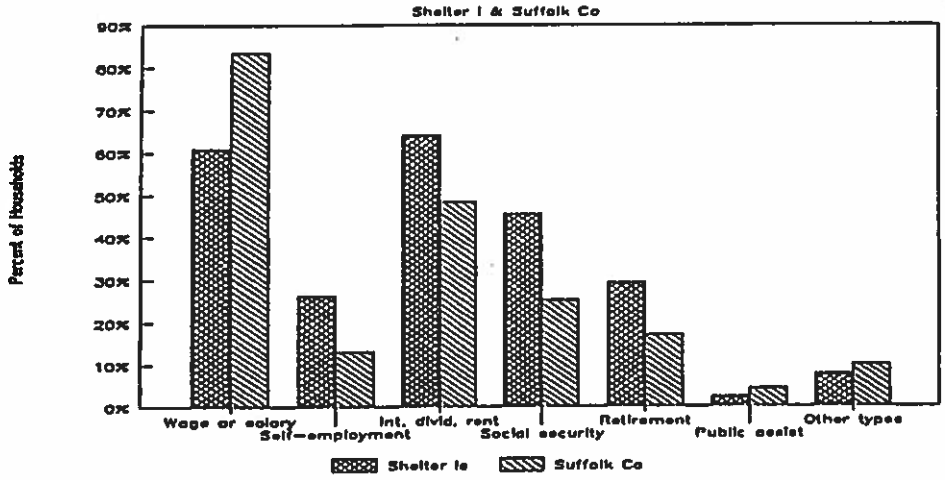

Figure 7
WATER SERVICE

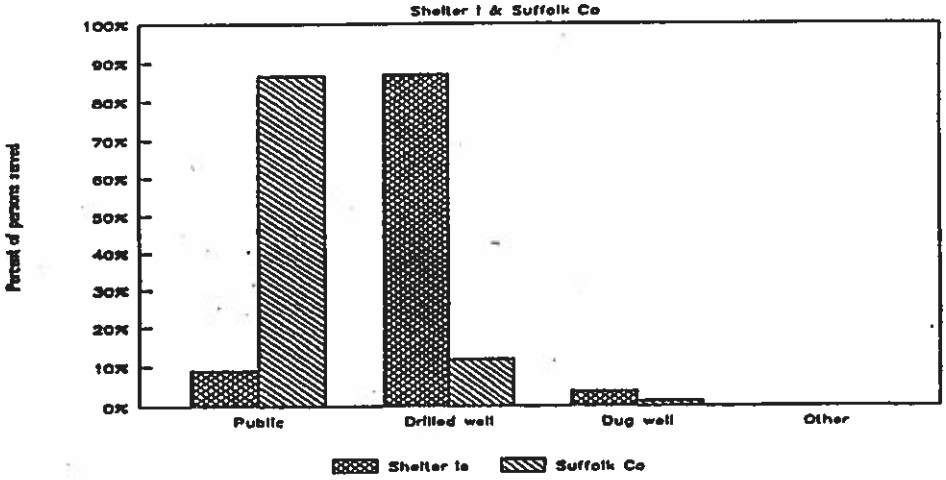

Figure 8
SEWER SERVICE

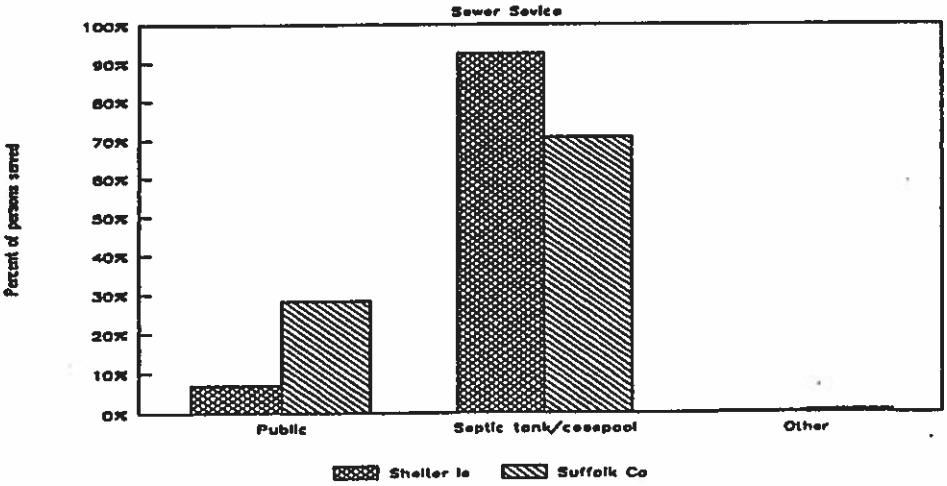

Table 4.
1990 HOUSING, POPULATION & WORKERS

	Housing units	Population		Workers	
		Winter	Summer	Winter	Summer
Occupied dwellings	1,017	2,263	3,700	1,101	1,300
Owner-occupied	862	1,931			
Renter-occupied	155	332			
Vacant dwellings (April)	1,131	0	5,100	0	200
Seasonal	1,018	0			
Other	113	0			
Other accommodations	–	0	800	0	100
Total	2,148	2,263	9,600	1,101	1,600

Sources:
Housing units, winter population: US Census 1990 CPH-1-34.
Total workers:
Winter: US Census STF-3A tape.
Summer: Herr Associates estimate.
Summer population & worker residence: Herr Associates estimates.

SHELTER 2A\CENSUS\HPW

Figure 9

INCOME AND HOUSING "COST"

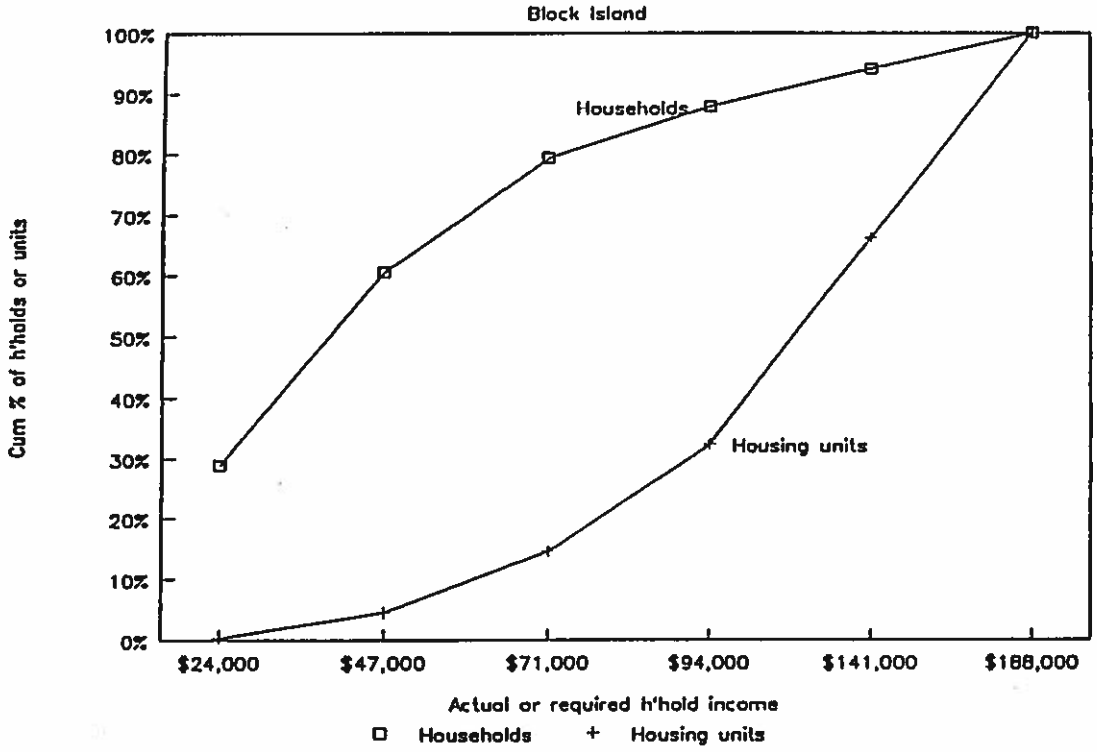

Table 5.

HOUSING OWNERSHIP COSTS V. INCOMES, 1990

	Income req'd	Housing units		Households	
Unit value	@ range top	#	Cumul %	#	Cumul %
Under $50,000	$24,000	3	0.4%	293	28.9%
$50,000-$99,999	$47,000	32	4.4%	321	60.5%
$100,000-$149,999	$71,000	79	14.5%	192	79.4%
$150,000-$199,999	$94,000	140	32.2%	85	87.9%
$200,000-$299,999	$141,000	267	66.1%	64	94.1%
Over $300,000 (a)	$188,000	267	100.0%	60	100.0%
Median: $251,200	$118,000				
Total		788		1015	

Data assumptions & sources:

Interest rate:	8.0%	Insurance:	1.0%
Loan term (years):	30	Monthly condo fee:	0.0%
Down payment:	30.0%	Max. cost/income:	30%
Real estate taxes:	6.9%		

units by value: US Census 1990 CPH-1-41, table 10.
Household income: US Census Tape File STF-3A.
(a) Affordability calculated at $400,000 unit value.

SHELTER 2A\CENSUS\AFFORD-2.WK1 03-Jul-93

Figure 10

GROSS RENT

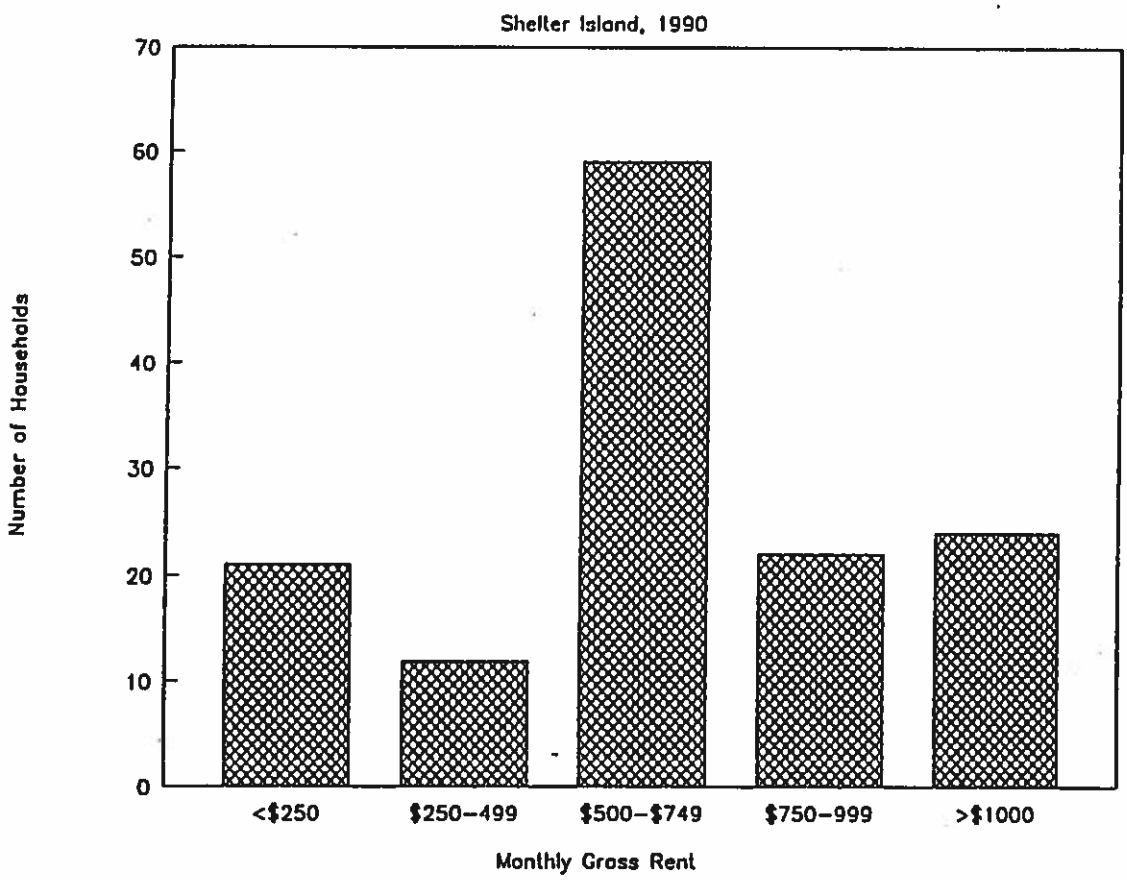

Table 6.

INCOME VERSUS RENT, 1990

	Percentage of income spent on gross rent							
	Number				Percent of households			
Income	<20%	20–30	>30%	Total	<20%	20–30	>30%	Total
<$10,000	0	0	11	11	0%	0%	100%	100%
$10–20,000	0	0	23	23	0%	0%	100%	100%
$20–35,000	2	10	24	36	6%	28%	67%	100%
$35–50,000	9	14	0	23	39%	61%	0%	100%
>$50,000	21	3	2	26	81%	12%	8%	100%
Total	32	27	60	119				

Source: US Census Summary Tape File STF–3A

Shelter-2A\Census\RENT.WK1 03-Jul-93

Table 7
BACKGROUND POPULATION & HOUSING DATA

	Shelter Island	Suffolk County	New York State
Population characteristics			
% of population under 18 years	14.7%	21.9%	21.1%
% of population over 64 years	29.1%	10.7%	13.1%
Median age	48.7	33.5	33.9
% not White	0.8%	9.9%	25.6%
% Hispanic	1.9%	6.7%	12.3%
Household characteristics			
Persons per household	2.23	3.04	2.63
% of pop. in family households	81.7%	87.6%	80.3%
Median income (families)	$45,586	$53,247	$39,741
Dwelling characteristics			
% single-family detached	95.1%	81.0%	40.5%
% over 1.00 persons per room	0.3%	2.5%	6.5%
% increase 1980-90	15.4%		
Median value: owner-occupied	$251,200	$165,900	$131,600
Median contract rent: renters	$571	$696	$428

Source: US Census of Population and Housing, 1990 CPH-1-41.

Shelter-2A\Census\CENSUS-3.WK1 05-Jul-93

Table 8.
SHELTER ISLAND HOUSING INFORMATION

	#	%	Cumulative % Falling	Cumulative % Rising
YEAR DWELLING BUILT				
1939 or earlier	530	25%	100%	25%
1940 - 1949	154	7%	75%	32%
1950 - 1959	281	13%	68%	45%
1960 - 1969	389	18%	55%	63%
1970 - 1979	356	17%	37%	80%
1980 - 1984	214	10%	20%	90%
1985 - 1988	189	9%	10%	98%
1989 - 1990	35	2%	2%	100%
Total	2,148	100%		
POTENTIAL SPECIAL NEEDS HOUSEHOLDS				
Handicapped persons				
Mobility limitation	166	9%	100%	9%
Self-care limitation	33	2%	91%	10%
Both	38	2%	90%	12%
Neither	1,700	88%	88%	100%
Total	1,937	100%		
Households with children				
Below poverty level				
Female householder	4	33%	100%	33%
Male householder	0	0%	67%	33%
Both householders	8	67%	67%	100%
Total	12	100%		
Above poverty level				
Female householder	35	10%	100%	10%
Male householder	4	1%	90%	11%
Both householders	312	89%	89%	100%
Total	351	100%		

Source: sample data from Census Tape File 3A

Shelter-2A\Census\HOUSE.ALL 03-Jul-93

Table 9
COMMUNITY PROFILE: SHELTER IS, NY

BASIC DATA		1990
HOUSING		
Housing Units, 1980		1,735
Units Authorized, 1980 - 1990		413
Housing Units, 1990		2,148
Seasonally Occupied Units		1,018
% Single-Family		95
POPULATION		
Population, 1980		2,071
Population, 1990		2,263
Institutional population		0
Non-Institutional population		2,263
Seasonal home		3,060
Persons/yr-round housing unit		2.00
Public school pupils		241
Expected per housing unit if:	Persons	Pupils
Average	1.05	0.11
Ave. Single family	1.06	0.12
New Single family	1.38	0.14
Two family, townhouse	0.96	0.06
Walkup multi-family	0.74	0.02
Elevator multi-family	0.64	0.01
LABOR FORCE		
Labor force		1,060
Residents working locally		650
Outcommuters		410
Incommuters		100
ECONOMY		
Local jobs		750
Government		110
Agric., fisheries, foresty		30
Mining		0
Construction		90
Manufacturing		10
Transport, commun., utilities		110
Wholesale & retail trade		140
Finance, insur., real estate		70
Misc. services		190
Local tax support jobs		400
DEVELOPMENT		
% Vacant Land		over 40
Employment floor area		581,250
High impact		42,625
Moderate impact		240,250
Light impact		298,375

Table 10
FISCAL PROFILE: SHELTER IS, NY

ASSESSED VALUATION	
Total real and personal	$27,918,000
Residential	16,269,130
Undeveloped	8,375,401
Utility total	1,116,720
Business	2,156,755
Increase per year	1,000,000
Assessment ratio	0.06
Equalized valuation	$465,300,000
TAX RATE ($ per $1000)	
General	221.39
School	131.88
School aid 'hold harmless'	No
Total state aid	$200,000
TAX LEVY	$6,181,000

COST/REVENUE BALANCE

	Revenue	Cost
Residential	$3,602,000	$5,562,000
Business	477,000	198,000
Utility	247,000	49,000
Undeveloped	1,854,000	371,000
Institutional	0	0
Total	$6,181,000	$6,181,000

	Revenue	Cost	Breakeven AV
PER HOUSING UNIT			
Average	$1,680	$2,590	$11,700
New single family	-	3,000	13,600
Two family, twnhse	-	1,760	7,900
Walkup multi-fam.	-	1,150	5,200
Elevator	-	970	4,400
School Ave.	-	1,710	-
Non-School Ave.	-	880	-
PER THOUSAND SQ.FT. BUSINESS FLOOR AREA			
Average	$820	$340	$2,000
Light impact	-	210	1,000
Moderate impact	-	420	2,000
Heavy impact	-	840	4,000

Compiled 05-19-1993

Table 11

P R O J E C T I M P A C T A N A L Y S I S

IMP: Impact Analysis Modeling System

February 11, 1991 Lotus 123 version

Project analysis name:	TWO
Community name:	SHELTER
Base year:	1990
Project analysis filename:	TWO
Analyst's name:	Phil
Analysis date:	07/03/93

Possibilities analyzed:	Name	Description
1.	Houses	Single-family
2.	Store	Groceries

::

JOBS IMPACT INPUTS	SHELTER Possibility Houses	TWO Store
Full time equivalent on-site jobs...	0	20
Area served:		
1 = more than community		
2 = community more or less		
3 = less than community.....	Skip	2
Displacement job loss:		
model estimate.....	-	12
your estimate.....	Skip	12
Net jobs added.....	0	8
Purchases within community by onsite business:		
1 = large (manufacturing)		
2 = moderate or don't know		
3 = small (offices, most retail)..	Skip	3
Business purchase job gain:		
model estimate.....	-	0
your estimate.....	Skip	0
Employee purchase job gain (lunch, commuting, etc.):		
model estimate.....	-	0
your estimate.....	Skip	0
Likelihood this business will attract others to the community:		
1 = unlikely (routine addition)		
2 = some possibility		
3 = very likely to draw others....	Skip	1
Attracted job gain:		
model estimate.....	-	0
your estimate.....	Skip	0

::

INITIAL JOB GAIN	SHELTER	TWO
	Possibility	
	Houses	Store
Full time equivalent on-site jobs...	0	20
Displacement job loss.....	0	-12
Business purchase job gain.....	0	0
Employee purchase job gain.....	0	0
Attracted job gain.....	0	0
Initial added jobs.....	0	9

07/03/93

::

WORKER IMPACT ANALYSIS	SHELTER Possibility Houses	TWO Store
Study community potential to provide housing for jobs created:		
1 = easy		
2 = moderate		
3 = hard.....	Skip	2
Specialization of added jobs:		
1 = high, drawing region-wide		
2 = intermediate		
3 = slight, ubiquitous skills.....	Skip	3
Fit between jobs created and local labor force skills and interest:		
1 = excellent		
2 = moderate		
3 = poor.....	Skip	1
Percent of jobs held by residents:		
All local jobs	87%	87%
Project-added jobs:		
Model estimate.....	-	91%
Your estimate.....	Skip	91%
Number of project-added jobs:		
resident-held.....	0	8
commuter-held.....	0	1
Percent local unemployment in occupations drawn on by project.....	Skip	5.0%
Added jobs held by previously unemployed community residents:		
model estimate.....	-	1
your estimate.....	Skip	1 OK
What type of jobs are being created?		
1 = almost all full-time primary		
2 = some part-time and second jobs		
3 = most part-time, second jobs...	Skip	2
Added jobs held by workers otherwise not in the labor force:		
model estimate.....	-	1
your estimate.....	Skip	1 OK

Added resident-held jobs net of former unemployed, new participants:	0	6
How attractive are the added jobs relative to others in this market? 1 = new jobs relatively poor 2 = new jobs similar to existing 3 = new jobs distinctly better....	Skip	2
Added jobs held by former out-commuters: model estimate.....	-	3
your estimate.....	Skip	3 OK
Added jobs held by inmigrants.....	0	3

INITIAL WORKER SOURCE	SHELTER Possibility Houses	TWO Possibility Store
Initial added jobs.....	0	9
Commuter-held.....	0	1
Resident-held.....	0	8
Former unemployed.....	0	1
New participants.....	0	1
Net resident-held.....	0	6
Former outcommuters.....	0	3
In-migrants.....	0	3

07/03/93
::

HOUSING IMPACT INPUTS	SHELTER	TWO
	Possibility Houses	Store
Dwelling units added on-site.....	20	0
Resulting change in units built on other sites in the community.....	0	Skip
Resulting change in vacant housing units in the community.....	0	Skip

INITIAL HOUSING TABLE	SHELTER	TWO
	Possibility Houses	Store
On-site units added.....	20	0
Off-site construction response.....	0	0
Jobs-linked units.....	0	2
Total added housing units.....	20	2
Vacancy change.....	0	0
Occupied housing units change.....	20	2

07/03/93
::

POPULATION AND ENROLLMENT INPUTS

ESTIMATES PER DWELLING UNIT	SHELTER	TWO
Source:	Model	Analyst
Year:	1990	Horizon
	Persons	
Average, all existing units.....	1.05	1.05
Existing single-family.....	1.06	
New single-family.....	1.38	
Two-family, townhouse, mobile home..	0.96	
Other walkup multifamily.....	0.74	
Elevator multifamily.....	0.64	
	Pupils	
Average, all existing units.....	0.11	0.11
Existing single-family.....	0.12	
New single-family.....	0.14	
Two-family, townhouse, mobile home..	0.06	
Other walkup multifamily.....	0.02	
Elevator multifamily.....	0.01	

INITIAL POPULATION AND PUPILS	SHELTER	TWO
	Possibility	
	Houses	Store
Estimated population per on-site dwelling unit (horizon year):		
Persons per unit.....	1.38	Skip
Public school pupils per unit....	0.16	Skip
Initial population change:		
On-site population change.....	28	0
Community population change.....	28	2
On-site enrollment change.....	3	0
Community enrollment change.....	3	0

07/03/93
::

FINAL PROJECT IMPACTS	SHELTER	TWO
	Possibility	
	Houses	Store
JOB DEVELOPMENT		
Full time equivalent on-site jobs...	0	20
Displacement job loss.....	0	-12
Business purchase job gain.....	0	0
Employee purchase job gain.....	0	0
Attracted job gain.....	0	0
Growth-supported jobs.....	3	0
Total added jobs.....	3	9
WORKER IMPACTS		
Commuter-held jobs.....	0	1
Resident-held jobs		
Total.....	2	8
Former unemployed.....	0	1
New participants.....	1	1
Net resident-held jobs.....	1	6
Former outcommuters.....	1	3
In-migrants.....	1	3
HOUSING IMPACTS		
On-site housing units.....	20	0
Off-site housing units added.....	0	2
Housing construction.....	20	2
Total occupied units added.....	20	2
(On-site - job-related) units.....	20	-2
POPULATION AND ENROLLMENT IMPACTS		
On-site population change.....	28	0
Off-site population change.....	1	2
Total population change.....	28	2
On-site enrollment change.....	3	0
Off-site enrollment change.....	0	0
Total enrollment change.....	3	0

07/03/93

Table 12

F I S C A L I M P A C T A N A L Y S I S

IMP: Impact Analysis Modeling System

February 17, 1991 Lotus 123 version

Project analysis name:	TWO-$
Community name:	SHELTER
Project analysis filename:	TWO-$
Analyst's name:	Phil
Analysis date:	07/03/93

Possibilities analysed:	Name	Description
1.	Houses	
2.	Store	
3.	_____	
4.	_____	
5.	0	
6.	0	
7.	0	
8.	0	

Using revised assessment ratio: "SHELTER.PRN".

::

GENERAL FISCAL INPUTS	SHELTER	TWO-$
The Base Year earlier chosen was:	1990	
1. What horizon year do you choose?	2010 OK	
2. What annual % inflation rate do you expect until horizon year?	5.00% OK	

PROJECT FISCAL INPUTS	SHELTER	TWO-$
	Possibility Houses	Store
3. Year of initial occupancy.....	1995	1995
Assessed valuation in the Base Year in the community per:		
housing unit:	$7,574	
1000 sq. ft. business floor area:	$6,957	
4,5. Your estimate of assessed valuation		
per project housing unit:		
At initial occupancy year.....	$12,000	Skip
At base year	$9,402 OK	Skip
per 1000 sf non-resid floor area:		
At initial occupancy year.....	Skip	$10,000
At base year	Skip	$7,835 OK
6. Other change in site-related assessed valuation.....	$0	($5,000)
School enrollment/project unit:	0.16	Skip
Normally expected school cost per housing unit in this project, given earlier estimate of project enrollment/unit:	$2,439	Skip
7. Your estimated school cost/unit.	$2,200 OK	Skip
Non-school service cost per housing unit in this community in the Base Year averaged:	$880	
8. Your estimate of Base Year non-school service cost per on-site housing unit.....	$880 OK	Skip

PROJECT FISCAL INPUTS (continued)	SHELTER Possibility Houses	TWO-$ Store
Service costs per 1000 sq. ft. of non-residential floor area in the community in the Base Year are:		
Heavy impact:	$840	
Moderate impact:	$420	
Light impact:	$210	
Average impact:	$340	
9. Your estimate of Base Year service cost per 1,000 sq. ft. non-residential floor area.....	Skip	$420 OK
10. Local share of any extraordinary capital cost ($).....	$0	$0
11. Years for repayment (bond term).	Skip	Skip
12. Interest rate for bonds.....	Skip	Skip
13. Non-residential floor area on-site:		
Model estimate.....	0	9,000
Your estimate.....	0	9,000
14. Additional revenues or costs (enter as negative) which rise with inflation.....	$0	$0
15. Additional revenues or costs (enter as negative) fixed over time.....	$0	$0

INTERMEDIATE CALCULATIONS	SHELTER Possibility Houses	TWO-$ Store
Horizon deflator	0.358	
Total cost/housing unit onsite	$3,080	$0
Taxable floor area offsite (1000s)	1	-3
AV/1000: community + project	$28,116	$27,975
On-site units revenue	$41,632	$0
On-site floor area revenue	$0	$15,612
Other AV change revenue	$0	($1,107)
Other inflating revenue (cost)	$0	$0
Other fixed revenue (cost)	$0	$0

::

FISCAL INPUTS SUMMARY	SHELTER	TWO-$
1. Horizon Year	2010	
2. Inflation rate	5.00%	
	Possibility	
	Houses	Store
3. Initial occupancy year	1995	1995
4. AV/housing unit	$9,402	Skip
5. AV/1000 sf business floor area	Skip	$7,835
6. Other site-related AV change	$0	($5,000)
7. School cost/housing unit	$2,200	Skip
8. Non-school cost/housing unit	$880	Skip
9. Service cost/1000 sf business	Skip	$420
10. Local capital cost share	$0	$0
11. Repayment term (years)	Skip	Skip
12. Bond interest rate	Skip	Skip
13. Non-resid. floor area on-site	0	9,000
14. Other inflating revenue (cost)	$0	$0
15. Other fixed revenue (cost)	$0	$0

03-Jul-93

FISCAL IMPACTS	SHELTER	TWO-$
	Possibility	
	Houses	Store
Site-related revenue	$41,632	$14,505
Off-site revenue	$2,110	($1,782)
Total revenue	$43,741	$12,723
On-site related service costs		
School	$44,000	$0
Other	$17,600	$3,780
Total	$61,600	$3,780
Off-site service costs	$1,548	$4,116
Attributed capital cost	$0	$0
Total cost	$63,148	$7,896
State aid impact	$4,343	($914)
Net balance	($15,064)	$3,913
Tax rate difference ($/$1000)	$0.54	($0.14)

07/03/93

Table 13.
BASIC SHELTER ISLAND GROWTH

	Alternative			
	BASE	SIZE	OPEN	PACE
HOUSING UNITS				
1980	1,700	1,700	1,700	1,700
1990	2,200	2,200	2,200	2,200
2000	2,600	2,550	2,550	2,450
2060	3,900	3,600	3,550	3,800
SUMMER OVERNIGHT POPULATION				
1980	7,600	7,600	7,600	7,600
1990	9,600	9,600	9,600	9,600
2000	11,100	11,000	11,000	10,500
2060	16,100	14,900	14,700	15,700
SUMMER DAYTRIPPERS				
1980	900	900	900	900
1990	1,100	1,100	1,100	1,100
2000	1,250	1,250	1,250	1,200
2060	1,800	1,650	1,650	1,750
WINTER POPULATION				
1980	2,050	2,050	2,050	2,050
1990	2,250	2,250	2,250	2,250
2000	2,650	2,600	2,600	2,500
2060	4,150	3,800	3,800	4,050
SUMMER EMPLOYMENT				
1980	1,000	1,000	1,000	1,000
1990	1,300	1,300	1,300	1,300
2000	1,600	1,600	1,600	1,500
2060	2,900	2,600	2,500	2,800
WINTER EMPLOYMENT				
1980	700	700	700	700
1990	750	750	750	750
2000	900	900	900	850
2060	1,500	1,350	1,350	1,450

Figures rounded to 50s or two figures.

Table 14.
SHELTER ISLAND GROWTH IMPACTS

	Alternative			
	BASE	SIZE	OPEN	PACE
WATER DEMAND (gallons per summer day)				
1980	750,000	750,000	750,000	750,000
1990	950,000	950,000	950,000	950,000
2000	1,090,000	1,090,000	1,090,000	1,090,000
2060	1,550,000	1,430,000	1,410,000	1,510,000
WATER SUPPLY POTENTIAL (gallons per summer day)				
1980	4,900,000	4,900,000	4,900,000	4,900,000
1990	4,500,000	4,500,000	4,500,000	4,500,000
2000	4,200,000	4,200,000	4,200,000	4,300,000
2060	3,200,000	3,400,000	3,400,000	3,200,000
WASTEWATER GENERATED (gallons per summer day)				
1980	490,000	490,000	490,000	490,000
1990	620,000	620,000	620,000	620,000
2000	720,000	720,000	720,000	680,000
2060	1,030,000	950,000	930,000	1,000,000
TOTAL NITRATE CONCENTRATION (ppm)				
1980	-	-	-	-
1990	1.9	1.9	1.9	1.9
2000	2.2	2.2	2.2	2.1
2060	3.2	2.9	2.9	3.1
PUBLIC SCHOOL ENROLLMENT				
1980	300	300	300	300
1990	250	250	250	250
2000	250	250	250	250
2060	350	350	350	360
DAILY AUTO TRIP ENDS (trip ends per summer day)				
1980	22,000	22,000	22,000	22,000
1990	28,000	28,000	28,000	28,000
2000	33,000	33,000	33,000	31,000
2060	52,000	48,000	47,000	51,000

Figures rounded to 50s or two figures.

Figure 11

INITIAL LAND USE

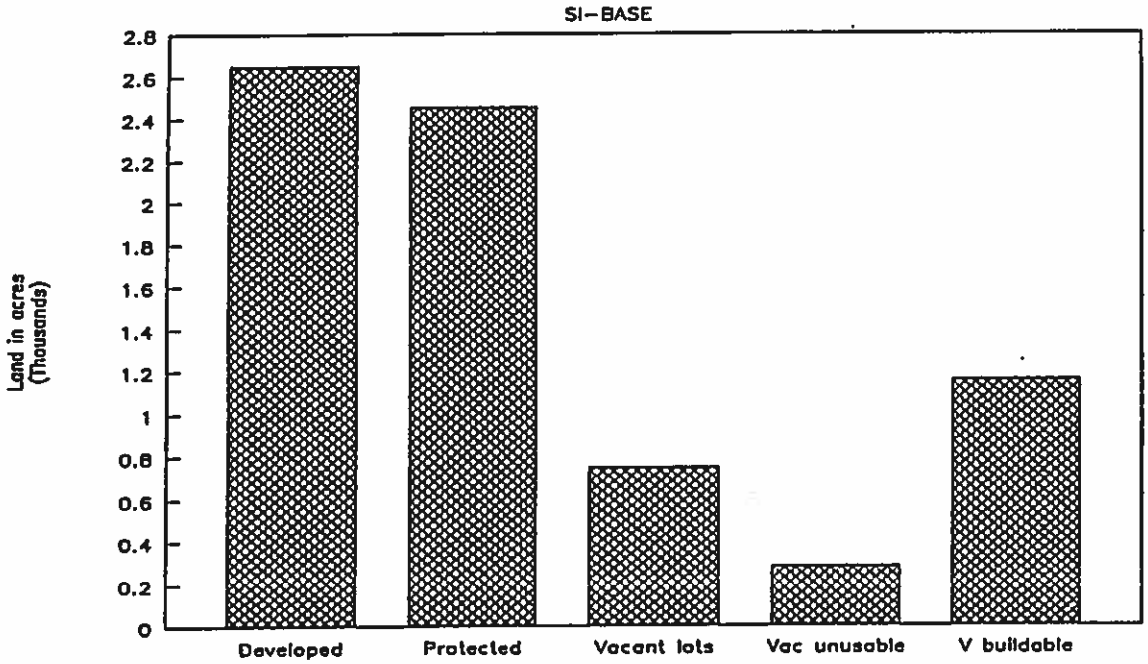

Figure 12

WINTER and SUMMER POPULATIONS

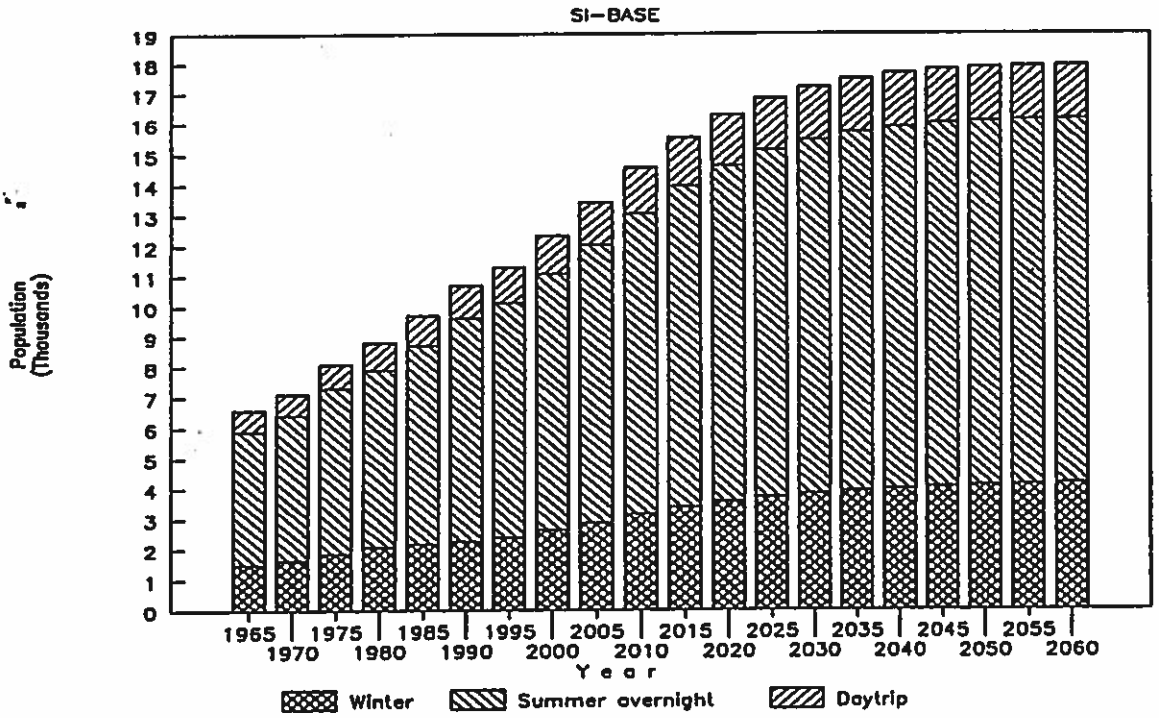

Figure 13

HOUSING UNITS

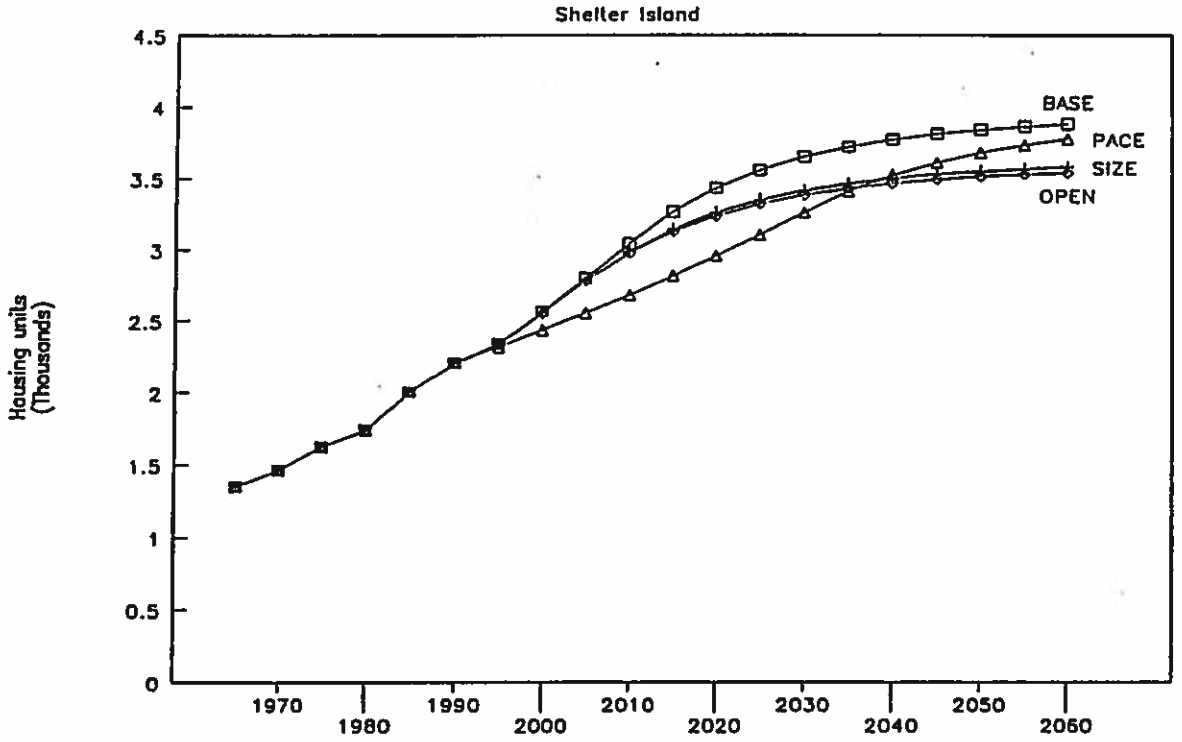

Figure 14

SUMMER OVERNIGHT POPULATION

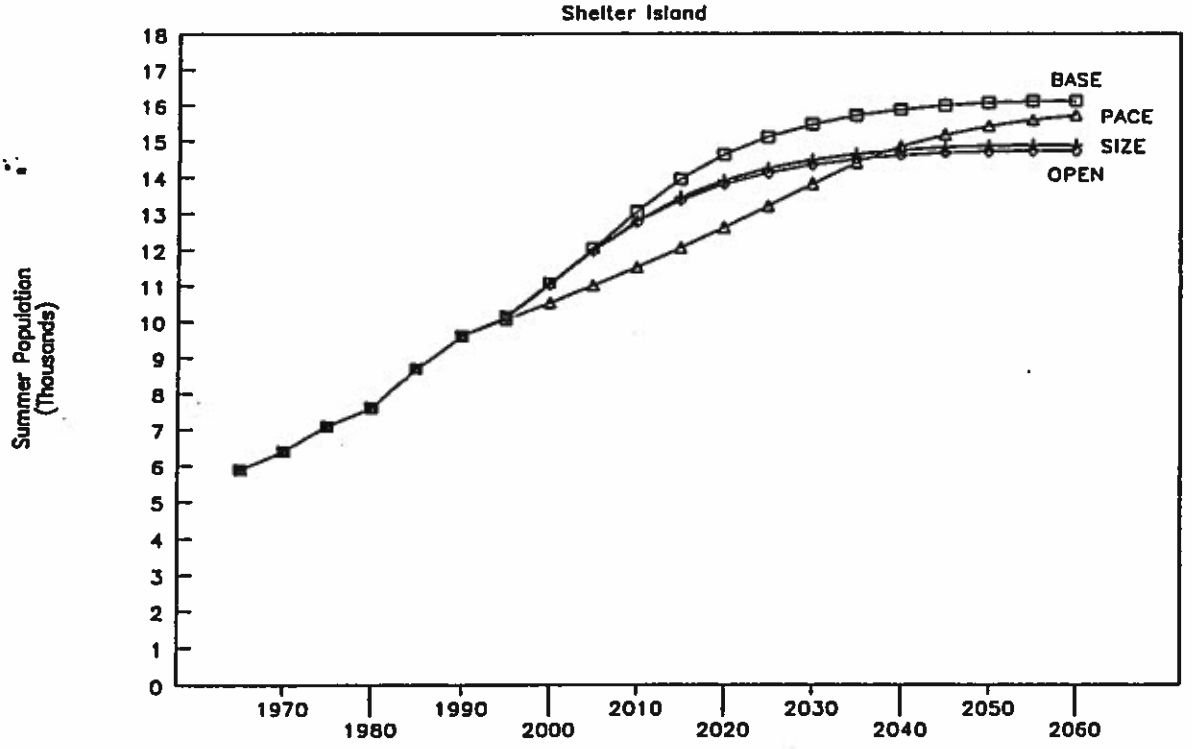

Figure 15

DAY TRIPPERS

Shelter Island

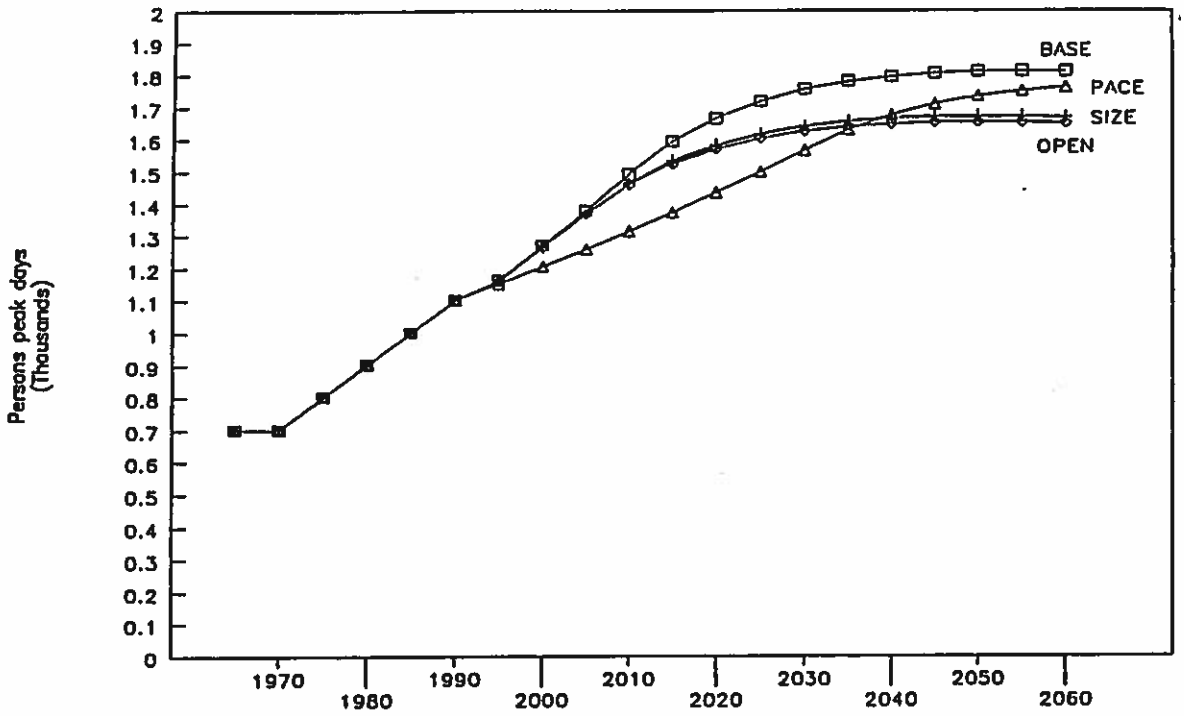

Figure 16

WINTER POPULATION

Shelter Island

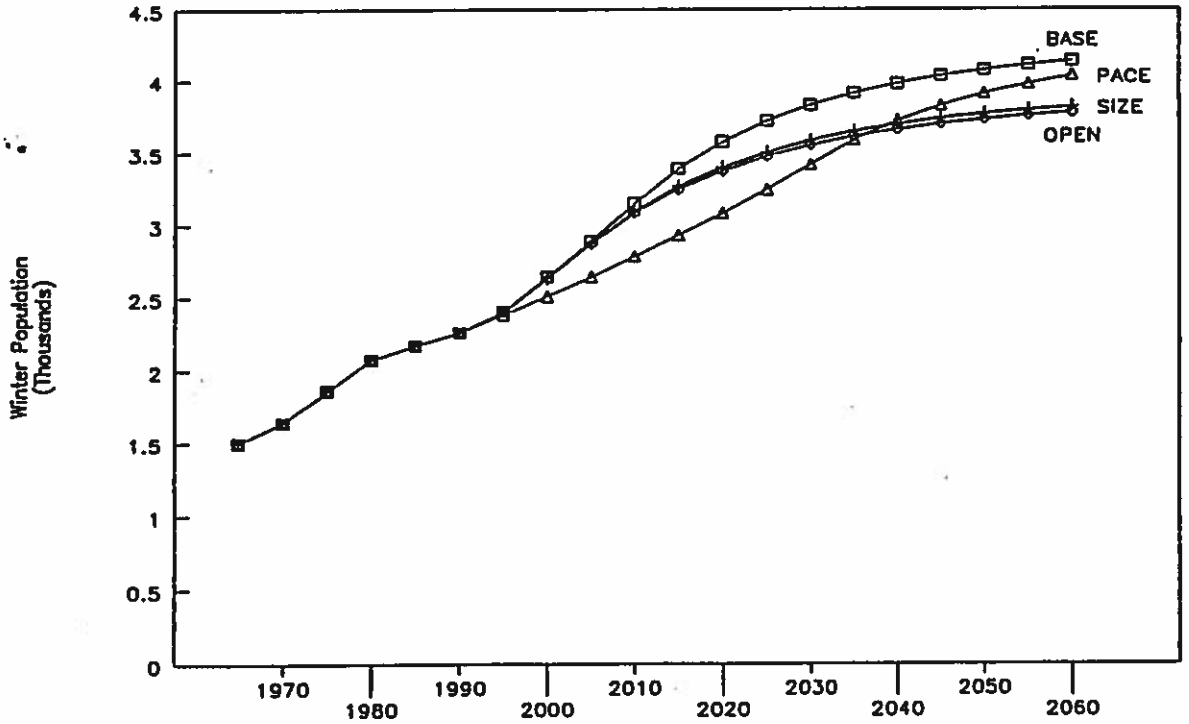

Figure 17

SUMMER EMPLOYMENT

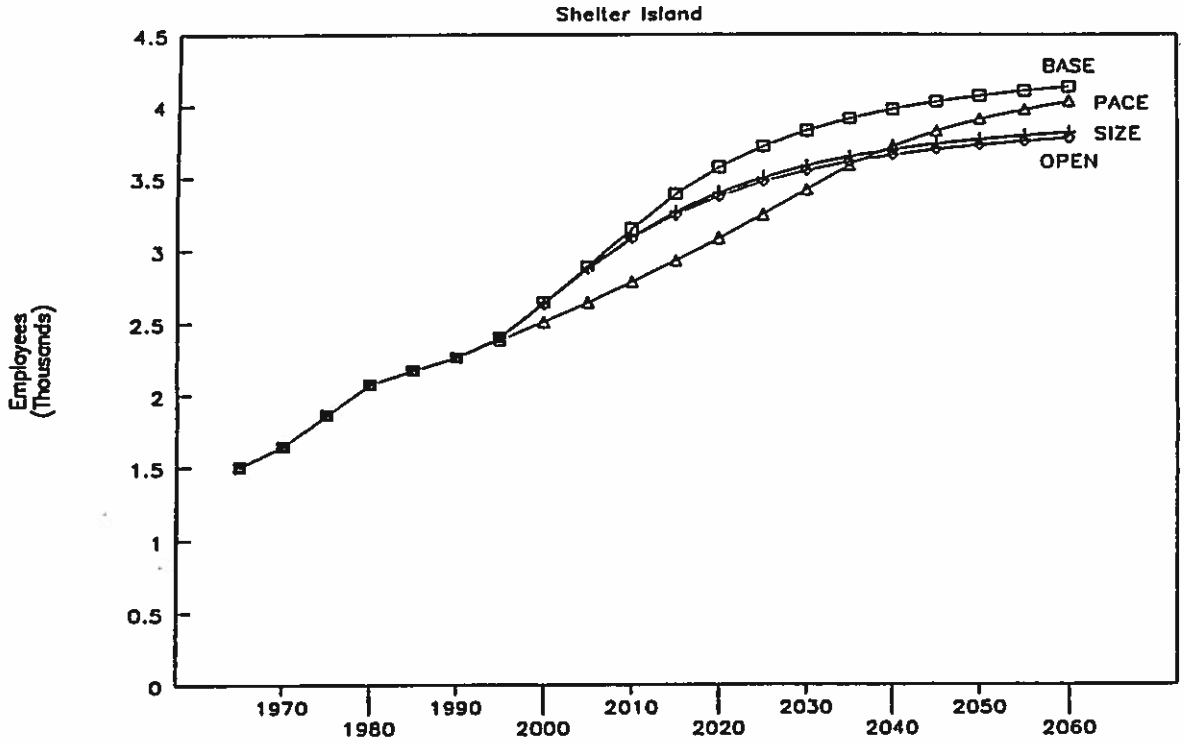

Figure 18

WINTER EMPLOYMENT

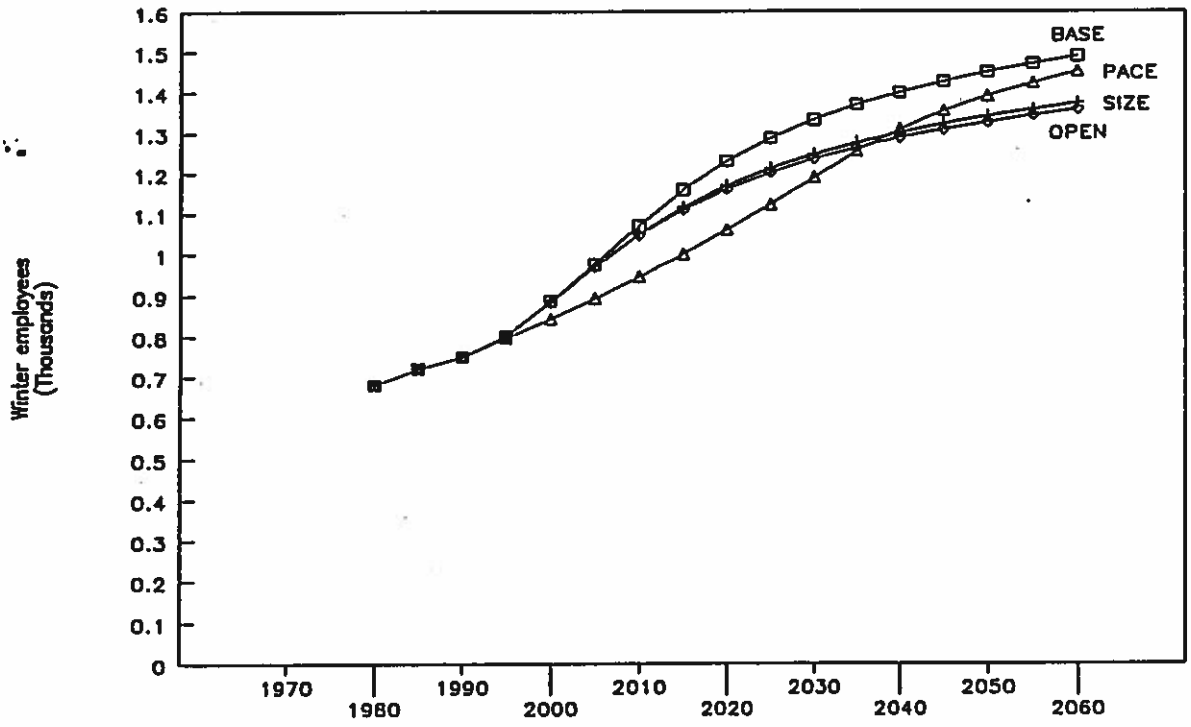

Figure 19

WATER DEMAND

Shelter Island

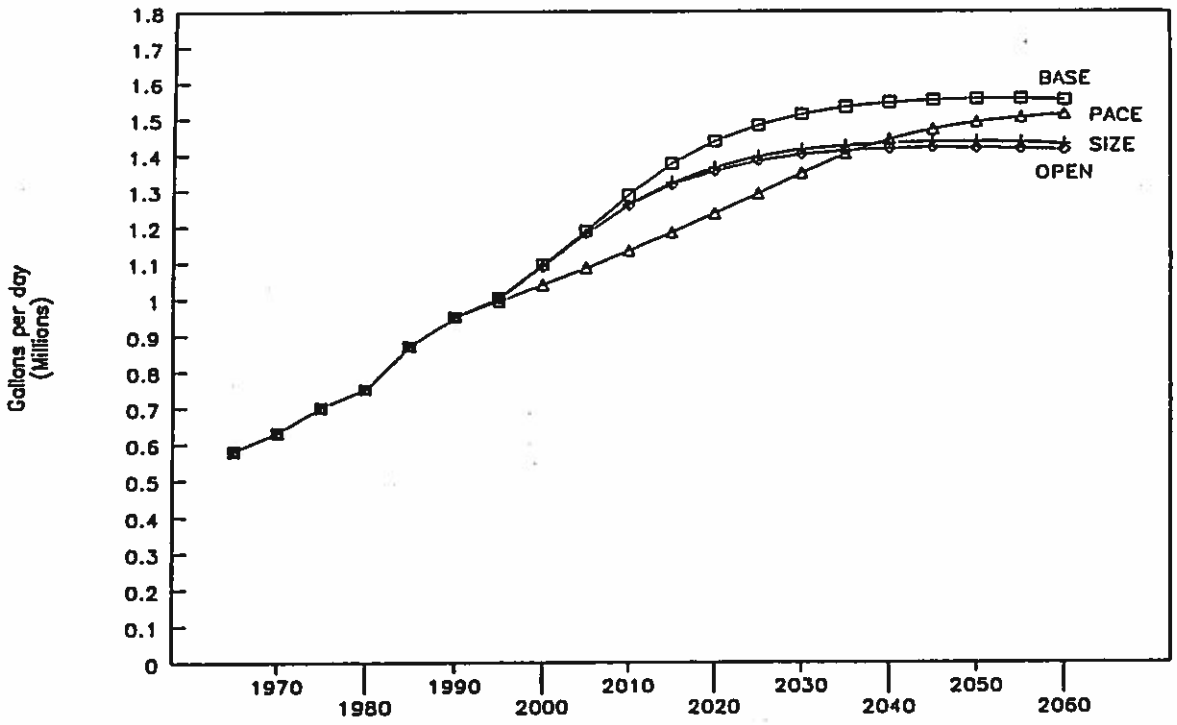

Figure 20

WATER SUPPLY POTENTIAL

Shelter Island

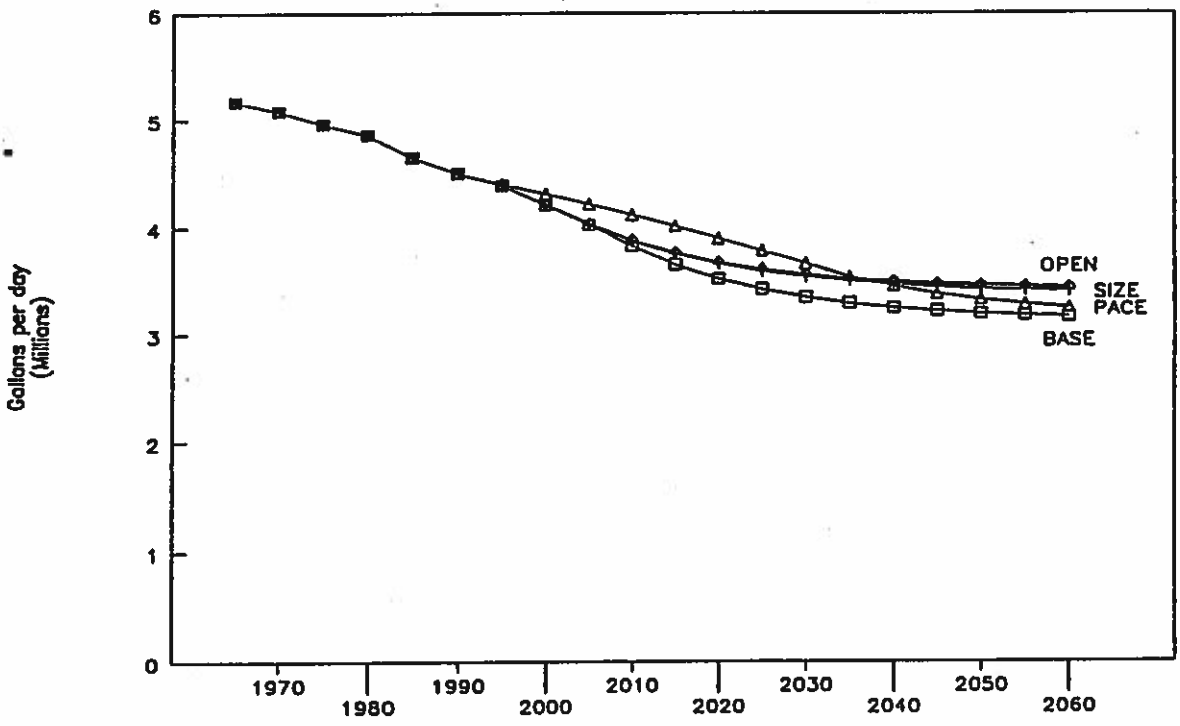

Figure 21

SEWAGE GENERATED

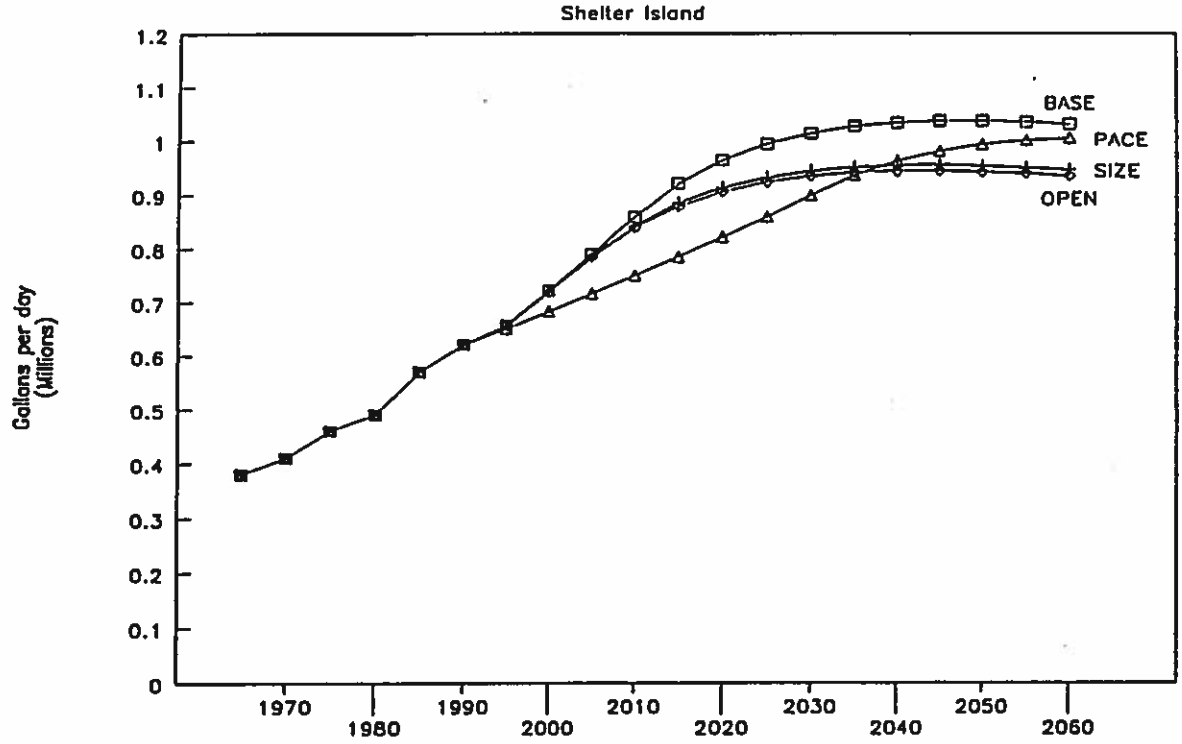

Figure 22

NITRATE CONCENTRATION

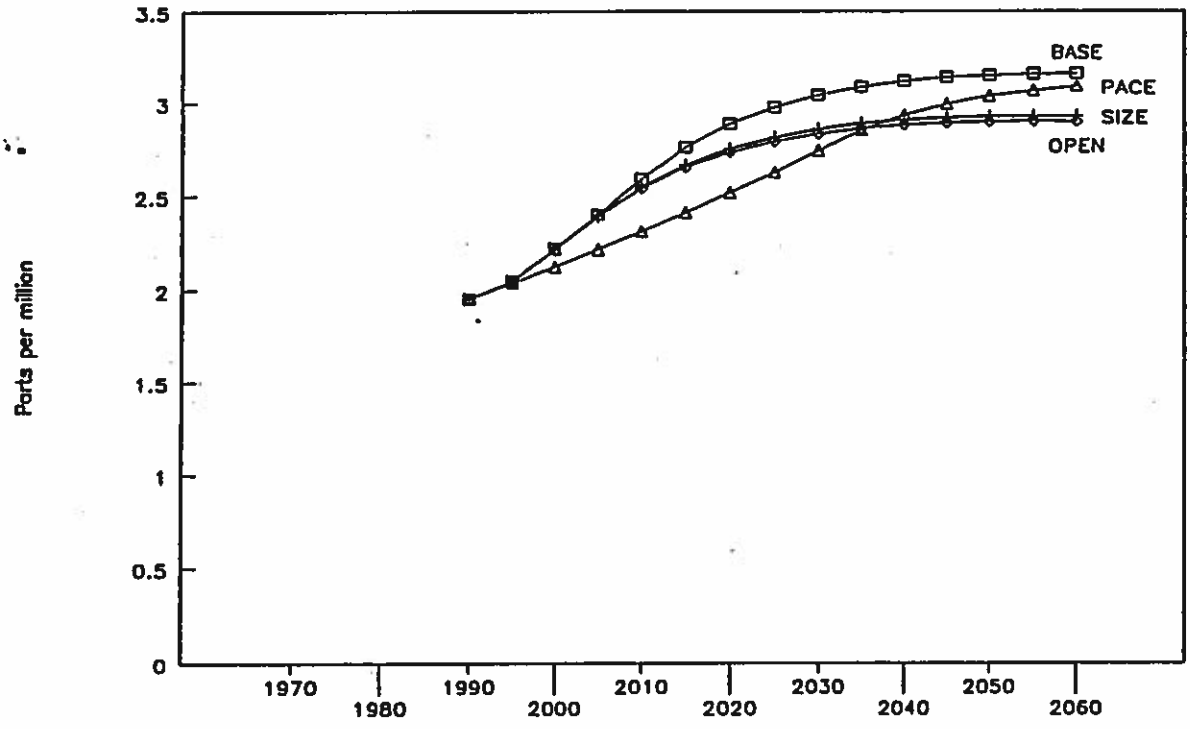

Figure 23

SCHOOL ENROLLMENT

Shelter Island

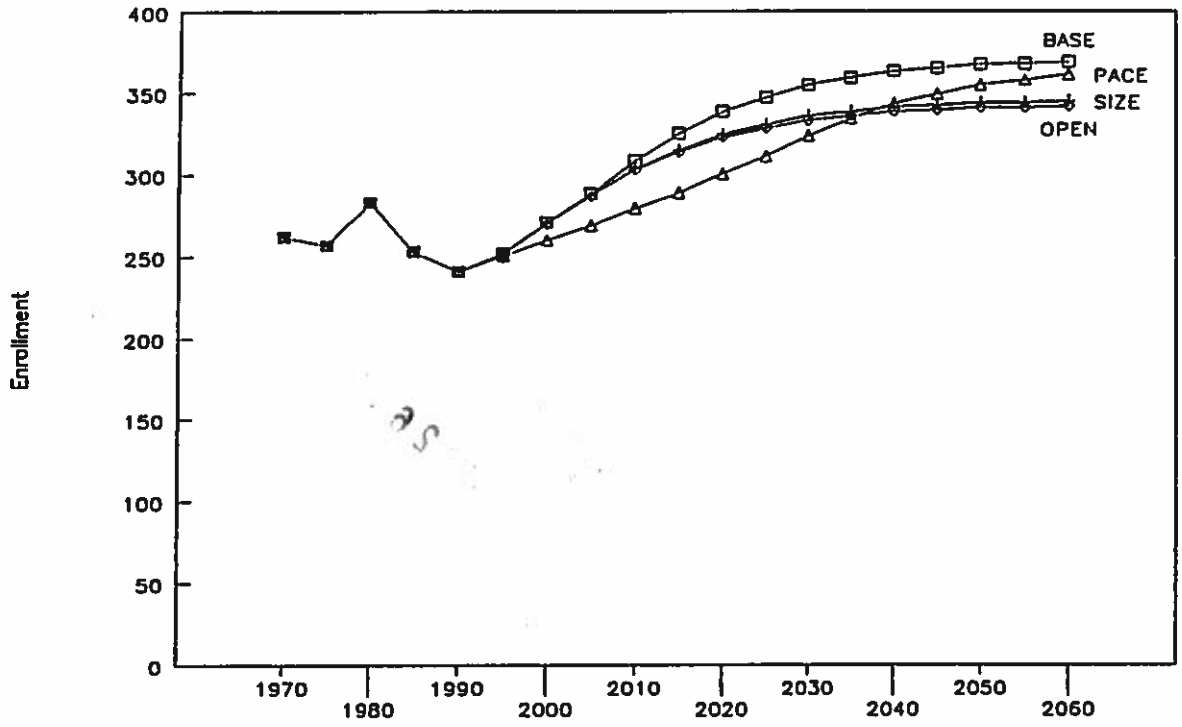

Figure 24

AUTO TRIP ENDS

Shelter Island